Appendix C
Scoping Report

This Appendix contains the *Final Scoping Report Stirling Energy Systems Solar Two Project* (Scoping Report; LSA Associates, Inc. September 2009). The Scoping Report is provided on a compact disc in the sleeve following this page of text.

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FINAL

SCOPING REPORT

STIRLING ENERGY SYSTEMS SOLAR TWO PROJECT

IMPERIAL COUNTY, CALIFORNIA

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LSA

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LIST OF ACRONYMS

ac	acre/acres
ACEC	Areas of Critical Environmental Concern
AFC	Application for Certification
ATCC	Area of Traditional Cultural Concern
BLM	United States Department of the Interior, Bureau of Land Management
BMPs	best management practices
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CURE	California Unions for Reliable Energy
DPC	Desert Protective Council
EEMP	Equipment Emissions Mitigation Plan
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EIS/SA	Environmental Impact Statement/Staff Assessment
EPA	United States Environmental Protection Agency
FSA	Final Staff Assessment
I-8	Interstate 8
IID	Imperial Irrigation District
kV	kilovolt
kW	kilowatt
mi	mile/miles
MOU	Memorandum of Understanding
MTBF	mean time between failure
mW	megawatt
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NOI	Notice of Intent
PM_{10}	particulate matter less than 10 microns in size
POCF	Protect Our Communities Fund
PSA	Preliminary Staff Assessment
SDG&E	San Diego Gas and Electric
SES	Stirling Energy Systems, LLC
SHPO	State Historic Preservation Officer
TDS	total dissolved solids

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

On June 30, 2008, Stirling Energy Systems, LLC (SES) submitted an Application for Certification (AFC) to the California Energy Commission (CEC) to construct and operate the proposed SES Solar Two project, a solar electric generating system on an approximately 6,500-acre site in Imperial County, California. In addition, the applicant has applied to the United States Department of the Interior, Bureau of Land Management (BLM) for a right-of-way grant to construct and operate the project on federally owned lands managed by BLM. The project will also require BLM to process and adopt an amendment to the *California Desert Conservation Area Plan,* as amended (BLM 1980) to reflect the use of certain areas on BLM lands for a power plant and transmission lines that are proposed as part of the Solar Two project.

The BLM and CEC have executed a Memorandum of Understanding (MOU) regarding their intent to prepare a joint environmental document for the proposed Solar Two project that combines these agencies' required environmental evaluation and documentation processes under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively. The joint document will be an Environmental Impact Statement/Staff Assessment (EIS/SA).

1.2 SCOPING FOR THE SOLAR TWO PROJECT

This report describes the scoping activities conducted by the BLM in compliance with the requirements of NEPA for the proposed project. These scoping activities were conducted jointly with the CEC. This report provides documentation that the BLM appropriately conducted scoping for the proposed project consistent with the requirements of NEPA and with the *BLM National Environmental Policy Act Handbook H-1790-1* (BLM, January 2008).

Public notice regarding the proposed EIS/SA and two scoping meetings was provided as follows:

- A "Notice of Intent (NOI) to prepare an Environmental Impact Statement/Staff Assessment and Proposed Land Use Plan Amendment for the Proposed SES Solar Two Project, Imperial County, CA" was published by the BLM in the Federal Register on October 17, 2008. The publication of the NOI initiated the 45-day public scoping period for the project.
- The CEC issued a "Notice of Informational Hearing and Public Site Visit and Bureau of Land Management Scoping Meeting" on October 10, 2008, inviting agencies and the public to attend a scoping meeting on November 24, 2008.
- The CEC issued a "Notice of BLM and Energy Commission Staff Data Response and Issues Resolution/Scoping Meeting for the SES Solar Two Project" on December 2, 2008, for a workshop/scoping meeting scheduled for December 18, 2008.

- Notices of the November 24, 2008 scoping meeting were published in the *Imperial Valley Press* on November 15, 2008, and the *Adelante Valle* on November 28, 2008.
- The public information/scoping meetings were conducted jointly by the BLM and CEC on November 24, 2008, and December 18, 2008.

Verbal comments were received from 20 attendees and written comment cards were received from many of the attendees at the November 24, 2008, scoping meeting. Verbal comments were received from 20 attendees and written comment cards were received from many of the attendees at the December 18, 2008, scoping meeting. In addition, the CEC received a total of 13 written comment letters in response to the NOI.

Section 3.0, Public Notices and Public Comments, describes the scoping process for the proposed Solar Two project in more detail.

1.3 SUMMARY OF COMMENTS RECEIVED DURING SCOPING

The verbal and written comments received during the scoping period covered a number of topics as summarized below. More detailed summaries of these comments are provided later in Section 3.0. In addition, the transcripts from the scoping meetings and the written letters received by the CEC are provided in appendices to this report.

1.3.1 Purpose and Need

- Provide a clear and objective statement of the project's purpose and need;
- Confirm when the power will actually be needed in San Diego; and
- Concern that the energy generated will go to San Diego with none to the Imperial Irrigation District (IID) or other nearby land uses.

1.3.2 Project Description

A number of questions and comments regarding the proposed project were provided, as follows:

- **Technology:**
  - Concerns regarding the commercial viability of the proposed SES technology
  - The mean time between failure (MTBF) at the New Mexico site
  - The differences between Sandia, New Mexico, and the Imperial Valley because that prototype was of a smaller scale and in a different type of area
  - Regarding how the Solar Two energy generation process works
  - The reliability of the process and the ability to provide the number of solar dishes (called SunCatchers) proposed for this and other projects
  - In early phases without details on manufacturing of the project components
  - The estimated MTBF for the Solar Two project
  - Going from small prototype to large-scale commercial facility without an intermediate level of facility or experience
  - How the technology will work

- How the facility components will hold up to desert weather
- Whether other technologies would quickly make the Solar Two technology obsolete
- SunCatcher reliability is not proven in actual operation
- Stirling engines are not successfully adapted for other commercial uses
- Issues related to metal creep, metal fatigue, and seal integrity
- The viability of the proposed technology
- The availability of technical information on the technology

- **Phasing:**
  - Consider granting right-of-way for Phase I only, with Phase II dependent on approval and finalization of the Sunrise Power Link project and resolution of additional issues regarding the Solar Two project
  - Consider a level of project between the small amount of units tested at Sandia and the total proposed number of units for the Solar Two project
  - Suggest 1 megawatt
  - Concern with how the project will be phased

- **Project Features:**
  - Concerns regarding the relationship of the Southwest Power Link project to the Solar Two Project
  - The role of Sempra
  - Consider deferral of the Southwest Power Link project until it's needed in the future
  - The locations of the SunCatchers on the site
  - Whether the Sunrise Power Link project has sufficient transmission capacity available for the Solar Two project
  - Whether other sources of capacity are available
  - Need a better description of evaporation ponds and the waste materials generated in those ponds
  - Transmission lines go through open desert or through Anza Borrego Desert State Park?
  - The life expectancy of the SunCatcher dishes and what happens when they are abandoned
  - The need for the Sunrise Power Link project and whether Solar Two is dependent on that project
  - Whether there is available capacity in the Southwest Power Link project
  - Why the fabrication factory is not being constructed in the project area
  - The effects of wind on the project components
  - The potential value and disposal of scrap metal when the project is decommissioned
  - How access and other considerations regarding parcels that are not part of the project or are immediately adjacent to the project site will be addressed

- **Project Operations:**
  - Concerns regarding why the electricity generated by Solar Two is not going to be available to IID for use in Imperial County
  - What factors will contribute to MTBF and ongoing facility maintenance
  - How materials needed for the project will be brought to the site
  - The amount of hydrogen that will be stored on site and where it will be stored
  - The effect of higher summer temperatures in Imperial County on the Solar Two system
  - The amount of water needed for mirror cleaning

- The amount of runoff onto the ground versus evaporation
- The management and maintenance of the impoundment areas
- How the waste impoundment areas will be addressed when the facility is decommissioned, including restoration of the land occupied by the impoundment areas
- The potential effects of sand on the facility
- The need for data on current wind conditions to understand the effects of wind resulting in downtime
- The effects of high winds and fine-grained dust on the moveable parts of the SunCatcher assembly
- How the assembly will be protected from the effects of high winds and dust
- The effect of high winds and fine-grained dust on the MTBF and the need to clean the mirrors
- The frequency of cleaning the mirrors
- The effect of gypsum dust from the U.S. Gypsum Plaster City factory may have on the facilities
- When would project construction start?

- **Right-of-Way:**
  - Consider establishing requirements for a demonstration of technological and economic viability with 3 to 5 years of approval of right-of-way before extending the length of the right-of-way approval

- **Funding and Financing:**
  - Conduct analysis of the energy return on investment to assess the net energy production value of the project
  - Want cash bonds to cover future decommissioning and site clean up and restoration costs with bonds phased with the project phasing
  - What is the financial experience of the project financial backers for this type of project
  - Where will the money come from that is needed for the entire project
  - Will the components have any resale or recycling value after decommissioning
  - Who will be responsible for the bond costs
  - Concern the project may not be cost competitive
  - Who is financially responsible for cleanup if the technology is not successful
  - What is the cost for and/or liability of the taxpayers?
  - Commercial availability and viability of the technology
  - Availability/sources of funding
  - Concern regarding public investment in the Sunrise Power Link project, which is part of the cost of the Solar Two project
  - Concerned that use of public land is to ensure profitability of the project
  - Will project funding sources include federal funding?
  - Where will the engines will be on site?
  - Will an anemometer be used to study winds?
  - When will the draft land use amendment be released?

1.3.3 Alternatives

- Provide a robust range of alternatives
- Explain why some alternatives were eliminated

- Look at alternative sites, capacities, and technologies
- Look at alternatives to avoid the impacts of the project on cultural resources and to reduce the reliance on fossil fuels
- The No Project Alternative could include other energy-generating options
- Install units in San Diego County closer to the users of the electricity
- Install units at dispersed locations in Imperial County such as the prison, schools, hospitals, and IID
- Consider alternative sites such as Mesquite Lake, which is zoned for industrial uses, or other sites already disturbed by agricultural or other uses
- Look at multiple smaller sites
- Use the SES technology at existing natural gas or coal-fired power plants
- Consider a site closer to water sources to take advantage of gravity flow and avoid the need for pumps
- Consider alternative sources for San Diego such as rooftop solar, photovoltaics, and distributed electricity
- Concern that industry thinks public lands are a less expensive way of getting land than using fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots, rooftops
- Consider a shift from large mega stations to decentralized, localized, and alternative sources

1.3.4 Air Quality

- Provide a detailed discussion of ambient air quality
- Quantify project emissions
- Identify emissions sources (mobile, stationary, ground disturbance)
- Identify the need for an Equipment Emissions Mitigation Plan (EEMP) and Fugitive Dust Control Plan during construction
- Prevention of air quality impacts during construction and operation
- Dust and potential health (asthma) effects
- Effects of sand storms and "white clouds" from Plaster City
- Potential impacts related to dust, hydrogen gas, and diesel emissions
- Cumulative impacts with other area land uses
- Concerns regarding carbon sequestration on the affected lands
- The need for an air quality permit and dust mitigation
- Concern about dust generation on project roads
- Effects of dust on the mirrors and other moving parts of the Solar Two project

1.3.5 Biological Resources

- Address threatened and endangered species, including baseline conditions and avoidance, minimization, and mitigation measures
- Long-term management and monitoring efforts
- Impacts to sensitive plants and animals
- Conduct species surveys at appropriate times of the year
- Potential impacts of scraping for roads on sensitive and rare plants and animals
- Strategies to minimize attracting birds and other wildlife to the wastewater impoundment areas
- Prioritize protection of species in the project area
- Develop best management practices (BMPs) and other steps to minimize and mitigate impacts on resources;
- Potential impacts to big horn sheep and sheep migration route to Mexico
- Status of jurisdictional delineation and whether it addresses transmission or water lines off the project site
- Effects on the burrowing owl and flat-tailed horned lizard
- Whether the project will require a Streambed Alteration Agreement from the California Department of Fish and Game (CDFG)

1.3.6 Climate Change

- Address climate change and how climate change could potentially affect the project
- Identify any climate change benefits of the project
- Address potential effects of climate change on demographics in San Diego

1.3.7 Cumulative Impacts

- Clearly identify resources that may be cumulatively impacted and the geographic area that will be impacted by the project
- Look at past impacts on resources
- Identify opportunities to avoid and minimize cumulative impacts
- Consider potential for cumulative impacts of this project and other nonrenewable and renewable energy, and land development projects
- Cumulative impacts on biological resources, cultural resources, environmental justice, air quality, visual, and recreation uses/users
- Cumulative impacts of solar and geothermal projects on BLM lands on cultural resources
- Cumulative impacts of various renewable energy projects on 2.5 million acres of BLM lands

1.3.8 Cultural Resources and Consultation with Tribal Governments

- Describe the process for and outcome of government-to-government consultation
- Ongoing consultation with Native American tribes is needed
- Discuss any National Register of Historic Places (National Register) properties and any Indian Sacred Sites
- Development of a Cultural Resources Management Plan
- Need complete surveys of the project site
- Local archaeologists should be considered
- Prioritize protection of cultural resources
- Develop strategies to minimize and mitigate effects on cultural resources
- Cultural resource studies should be evaluated by outside consultants familiar with the area
- Address issues related to the site potentially being designated as an Area of Traditional Cultural Concern (ATCC)
- Seek input from the State Historic Preservation Officer (SHPO)
- Concern regarding impacts on cultural resources, National Register resources, archaeological sites, historic trails, Lake Kuwae, District for the Yuha Intaglios, and cremation sites
- Concern regarding the survival of Native American culture
- Wants a Native American monitor to be included in site surveys
- Area has a lot of pottery deposits that could be sacrificial burial areas
- Concerned regarding impacts outside immediate disturbance areas
- Cultural studies should be conducted by persons familiar with the desert and desert cultures
- BLM should work closely with Native Americans
- Should engage Native American leaders to provide input on the cultural integrity of the area

1.3.9 Environmental Justice

- Identify environmental justice populations in the project area and potential impacts of the project on those populations
- Identify whether the impacts are disproportionate on those populations
- Discuss any coordination with environmental justice populations

1.3.10 Hazardous Materials and Wastes

- Address the potential for direct and indirect impacts of hazardous wastes generated during project construction and operation

- Identify types and volumes of wastes
- Identify handling, storage, disposal, and management plans
- Consider alternative industrial processes using less toxic materials
- Analyze the potential effects of hydrogen leakage and identify strategies to minimize and mitigate impacts

1.3.11 Invasive Species

- Potential to introduce nonnative invasive species
- Precautions or mitigation measures to prevent invasive species and to control invasive species during construction and operation
- Need for invasive species management plan
- Restoration, as appropriate, of native species

1.3.12 Land Use

- Identify consistency and/or conflicts with federal, State, Tribal, and local land use plans, policies
- Address project and cumulative loss of public lands to other uses (particularly energy projects)
- Impacts to community character in the Ocotillo and Nomirage communities
- Definition of "limited use" designation
- Concern about the BLM land use amendment and its relationship to the updated resource management plan
- Concern on how the plan amendment will be done

1.3.13 Public Health

- Issues associated with the potential for airborne soil fungi and risks for Valley Fever
- Risks to project employees and employees/prisoners at Centinela State Prison of exposure to Valley Fever and as a general public health issue
- Concern regarding glare from mirrors to aircraft

1.3.14 Recreation

- Address project effects on recreational users in the project area, including potential hazards to those users, that are associated with the project facilities
- Identify appropriate safety precautions
- Address impacts to the recreational experience at the Plaster City Open Area, Superstition Hills Recreation Area, Painted Gorge Recreation Area, and Anza-Borrego Desert State Park

- Potential for cumulative effects on recreation uses/users and general quiet enjoyment of public lands

1.3.15 Seismic

- Potential damage/risks to project associated with seismic activity, including activity on the nearby Elsinore/Laguna Salada fault

1.3.16 Socioeconomics

- Need information on the skill levels for the kinds of jobs that will be created
- Whether those jobs will be met by existing employees in Imperial County or employees relocating from elsewhere
- Want jobs to go to local people and not people brought in from outside the community
- Need to address the economic impacts of the project

1.3.17 Traffic

- The traffic study should include traffic associated with Centinela State Prison

1.3.18 Use of Public/BLM Lands

- Recommend that BLM continue to improve its right-of-way application process, including appropriate BMPs and addressing the difference between solar development and other uses of right-of-way
- Prioritize development on already disturbed lands close to existing transmission facilities.

1.3.19 Visual

- Need to analyze potential for project visual impacts
- Dark skies impacts
- Effects on visual resources in the area
- Effects of motion-sensitive lighting
- Potential for glare impacts on motorists on Interstate 8 (I-8), other streets, and United States Navy, United States Border Patrol, and general aviation activities in the area
- Assess visual impacts consistent with the BLM Visual Resources Manual

1.3.20 Water Resources Quality, Supply and Use

- Evaluate the project need for water and effects on water supply
- Sources of water for the project
- Adequacy of water supplies for the project
- Direct and indirect effects on groundwater
- Impacts on springs, open water bodies, and other aquatic resources
- Impacts on the Ocotillo/Nomirage aquifer
- Confirm that needed water is available and consistent with existing CEC policy
- Should not use drinking quality water from the Ocotillo aquifer for industrial uses
- Has IID committed to provide the water needed for the project
- Effects of floods on project facilities
- Project facilities located in floodplains
- Concerns regarding how total dissolved solids (TDS) in the wastewater impoundment areas will be handled to avoid runoff outside the impoundment areas or becoming airborne as dust
- How will TDS be disposed of?
- The potential need for a Section 404 permit
- Need to describe/discuss any Section 303(d) impaired waters in the project area
- Will the project need a general or individual storm water permit during construction
- Has consultation with the appropriate water quality control agencies been initiated?
- The amount of water that would be stored on site and the issue of evaporation of that water
- The issue of high TDS in area groundwater

In addition to these comments on technical and project-related issues, many of the comments also indicated either support for or opposition to the project. There were also comments indicating support for renewable energy projects in general.

2.0 INTRODUCTION

2.1 PROJECT OVERVIEW

On June 30, 2008, Stirling Energy Systems, LLC (SES), the project applicant, submitted an Application for Certification (AFC) to the California Energy Commission (CEC) to construct and operate the proposed SES Solar Two project, a solar electric generating system project in Imperial County, California. In addition, the applicant has applied to the United States Department of the Interior, Bureau of Land Management (BLM) for a right-of-way grant to construct and operate the project on federally owned lands managed by BLM. The project will also require BLM to process and adopt an amendment to the *California Desert Conservation Area Plan,* as amended (BLM, 1980) to reflect the use of certain areas of BLM lands for a power plant and transmission lines that are proposed as part of the Solar Two project.

The SES Solar Two project is proposed on an approximately 6,500-acre (ac) site consisting of approximately 6,140 ac of federal land managed by BLM and approximately 360 ac of privately owned land. The project site is approximately 100 miles (mi) east of San Diego, 14 mi west of El Centro, and 4 mi east of Ocotillo Wells. The project site and key project features are shown on Figure 2.1.

The project would be a nominal 750-megawatt (mW) Stirling engine project, with approximately 30,000 25-kilowatt (kW) solar dishes referred to as SunCatchers. The project technology is proprietary to SES Solar Two, LLC. This project is one of many projects proposed in California to provide electricity using renewable resources such as solar, wind, and geothermal energy.

In addition to the SunCatchers, the project will require the construction of a 230-kilovolt (kV) substation located approximately in the middle of the site. That substation would be connected to the existing San Diego Gas and Electric (SDG&E) Imperial Valley Substation by a new, approximately 10.3 mi long, double-circuit, 230 kV transmission line between the two substations.

The BLM and CEC have executed a Memorandum of Understanding (MOU) regarding their intent to prepare a joint environmental document for the proposed Solar Two project that combines these agencies' required environmental evaluation and documentation processes under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

This report summarizes the scoping activities conducted by the BLM and CEC in late 2008 and early 2009 for the proposed Solar Two project.

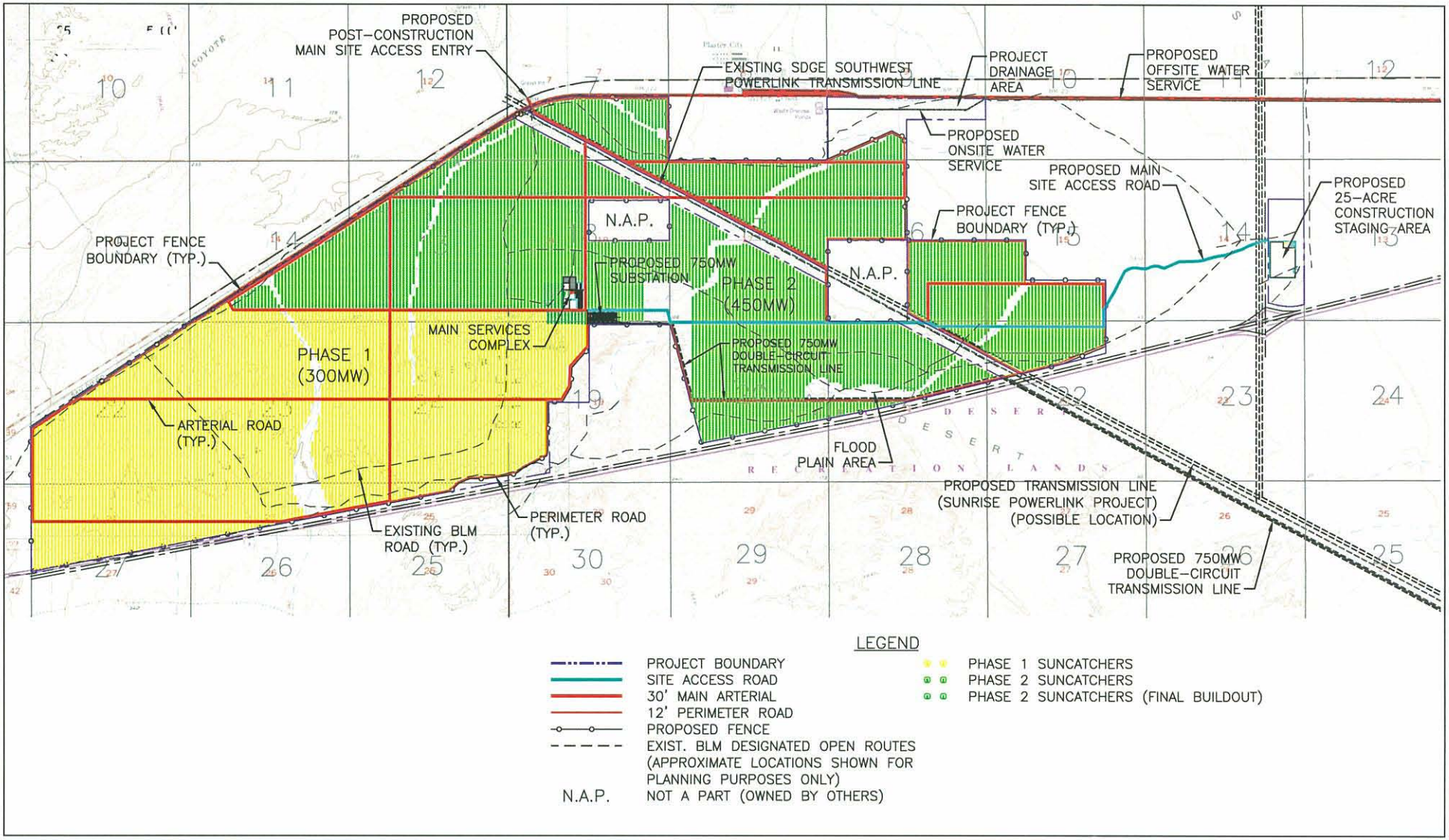

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FIGURE 2.1

N

0 2500 5000

FEET

SOURCE: SANTEC Consulting Inc.

Stirling Energy Systems Solar Two Project
Bureau of Land Management Scoping Report

Project Site and Key Project Features

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2.2 FEDERAL LEAD AGENCY

The BLM is the federal Lead Agency for the SES Solar Two project approvals related to the use of federal land for the project and the amendment to the *California Desert Conservation Plan*. The BLM has determined that an Environmental Impact Statement (EIS) is the appropriate environmental document for the identification and evaluation of the potential environmental impacts of the proposed project under NEPA.

As of the completion of the scoping process for the Solar Two project, no other federal agencies have requested to be cooperating or participating agencies on the EIS for the project.

This report provides documentation that the BLM appropriately conducted scoping for the proposed project consistent with the requirements of NEPA and with the *BLM National Environmental Policy Act Handbook H-1790-1* (BLM, January 2008).

2.3 STATE LEAD AGENCY

The CEC is the State Lead Agency for the SES Solar Two project approval for the AFC. The CEC will prepare a Preliminary Staff Assessment (PSA) and a Final Staff Assessment (FSA) as the appropriate environmental documents for the project under CEQA. The PSA and FSA will be prepared consistent with the CEC's established process for the identification and evaluation of the potential environmental impacts of a project under CEQA as part of its overall process for the consideration of AFCs for energy projects in California.

2.4 OVERVIEW OF THE SCOPING PROCESS

As discussed in Section 9.1.3, Scoping, in the *BLM National Environmental Policy Act Handbook H-1790-1*, the intent of the scoping process under NEPA is to:

- Invite participation from affected federal, state, local, and tribal organizations and interested persons;
- Determine the scope of the EIS and the significant issues to be analyzed, including identifying potential connected or cumulative actions;
- Identify other environmental documents that may have relevance for the project EIS;
- Identify other environmental review and consultation requirements for the project; and
- Discuss the timing of the preparation and processing of the EIS and the overall planning and decision-making schedule for the project.

This scoping report describes actions taken by the BLM and the CEC to solicit agencies' and interested parties' input into the environmental review processes for the proposed Solar Two project. This scoping report also documents the written and verbal comments received by the BLM and CEC during the scoping period for the project.

3.0 PUBLIC NOTICES AND PUBLIC COMMENTS

3.1 PUBLICATION OF THE NOTICE OF INTENT

A "Notice of Intent (NOI) to prepare an Environmental Impact Statement/Staff Assessment (EIS/SA) and Proposed Land Use Plan Amendment for the Proposed SES Solar Two Project, Imperial County, CA" was published by the Bureau of Land Management (BLM) in the Federal Register on October 17, 2008. The publication of the NOI initiated the 45-day public scoping period for the project. A copy of the NOI is provided in Appendix A.

The California Desert District Office of the United States Department of the Interior, BLM issued a news release on October 17, 2008, providing notice to the public that the BLM and the California Energy Commission (CEC) were proposing to prepare a joint environmental document for the proposed Solar Two project. That press release is provided in Appendix B.

3.2 NOTICES OF SCOPING MEETINGS

The CEC issued a "Notice of Informational Hearing and Public Site Visit and Bureau of Land Management Scoping Meeting" on October 10, 2008, inviting agencies and the public to attend a scoping meeting on November 24, 2008, to provide input on the project and the issues to be evaluated in the environmental document. The Notice is provided in Appendix C. The distribution list for the notice is provided in Appendix D.

The CEC issued a "Notice of BLM and Energy Commission Staff Data Response and Issues Resolution/Scoping Meeting for the SES Solar Two Project" on December 2, 2008, for a workshop/scoping meeting scheduled for December 18, 2008. That notice, in English and Spanish, is provided in Appendix C. The distribution list for that notice is provided in Appendix D.

Notices of this scoping meeting were published in the *Imperial Valley Press* on November 15, 2008, and the *Adelante Valle* on November 28, 2008. Copies of the pages from those newspapers with the scoping meeting notice are provided in Appendix D.

3.3 SCOPING MEETINGS

3.3.1 November 24, 2008, Public Informational/Scoping Meeting

A public informational/scoping meeting was conducted by the BLM and CEC on November 24, 2008. The meeting was held at the Imperial County Administration Center Board Chambers (940 West Main Street, El Centro, CA 92243). Stirling Energy Systems, LLC (SES), with support from its consultants (URS Corporation), assisted in hosting this meeting.

The format of the meeting was a combination of formal presentations, an open house, and a public hearing during which public input was documented by a court reporter.

The following documents were provided to the attendees at the November 24 meeting:

- Solar Two Fact Sheets in English and Spanish (Appendix E)
- Comment Cards in English and Spanish (Appendix F)
- Informational Hearing and Site Visit Presentation and Handouts in English (Appendix G)

Other materials at this scoping meeting were:

- Sign-in Sheets in English and Spanish (Appendix H)
- Informational Display Boards in English and Spanish (Appendix I)

The formal presentations started with a presentation by the CEC Public Advisor's Office representative regarding the public information and participation process for the proposed project. A copy of that PowerPoint presentation is provided in Appendix G. This presentation was also provided as a hard copy handout at the scoping meeting.

At the November 24 meeting, Jim Stobaugh (BLM Project Manager), Christopher Meyer (CEC Project Manager), and John Egan (SES Senior Director of Project Development) presented an overview of the proposed project and the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) process for the project. A copy of that PowerPoint presentation is provided in Appendix J. This presentation was also given at the December 12, 2008, workshop/ scoping meeting.

Following the presentation, questions and comments were taken by Messrs. Stobaugh, Meyer, and Egan, who were assisted by other SES and URS Corporation staff. A copy of the transcript of this meeting, including comments received from the meeting attendees, is provided in Appendix K. As shown in that transcript, 20 attendees asked questions or provided verbal comments. In addition to the opportunity to provide verbal input, meeting attendees were also encouraged to provide written comments on the comment cards provided at the meeting. Written comments cards were received from some of the meeting attendees. The written comments provided on comment cards at this meeting were provided by the same attendees who provided verbal comments as documented in the meeting transcript. In addition, many of the attendees also submitted comment letters, as described later. The comments provided in the transcript and on the written comment cards are summarized later in this report.

Following the presentation and comment session, meeting attendees were invited to participate in a project site visit. The purpose of the site visit was to offer members of the public a first-hand view of the site for the proposed Solar Two project. The site visit was attended by CEC, BLM, SES, and URS staff, and members of the public. During the site visit, SES and URS technical staff described the size and scale of the proposed project. Additionally, an informal question and answer session was held and members of the SES and URS technical staff were available to respond to those questions and comments.

3.3.2 December 18, 2008, Workshop/Scoping Meeting

The December 18, 2008, workshop/scoping meeting was a data response and issues resolution workshop for SES to address BLM and CEC data requests Set 1 Parts 1 & 2 (1–127), the Issues Identification Report, and public comments received at the November 24, 2008, scoping meeting. This workshop also served as a second scoping meeting for the BLM right-of-way application and proposed amendment to the *California Desert Conservation Area Plan*. This workshop/meeting was formatted similar to the November 24 meeting, with a formal presentation, an open house, and a hearing during which public input was documented by a court reporter.

The following documents were provided to the attendees at the December 18 workshop/meeting (the same materials were provided at the November 24, 2008, scoping meeting):

- Solar Two Fact Sheets in English and Spanish (Appendix E)
- Comment Cards in English and Spanish (Appendix F)

Other materials at the December 18 workshop/meeting, which also were the same as those provided at the November 24 scoping meeting, were:

- Sign-in Sheets in English and Spanish (Appendix H)
- Informational Display Boards in English and Spanish (Appendix I)

During the December 18 workshop/meeting, Messrs. Stobaugh, Meyer, and Egan presented an overview of the proposed project and the CEQA/NEPA process for the project. Following the presentations, questions and comments were taken by Messrs. Stobaugh, Meyer, and Egan. Public questions and comments that focused primarily on specific resource areas and data requests were also responded to by SES and URS Corporation technical staff. A copy of the PowerPoint presentation presented at that meeting is provided in Appendix J.

A copy of the transcript of the December 18 workshop/meeting, including comments received from the meeting attendees, is provided in Appendix L. As shown in that transcript, six attendees asked questions or provided verbal comments. In addition to the opportunity to provide verbal input, meeting attendees were also encouraged to provide written comments on the comment cards provided at the meeting. Written comments cards were received from some of the meeting attendees. The written comments provided on comment cards at this meeting were provided by the same attendees who provided verbal comments as documented in the meeting transcript. In addition, many of the attendees also submitted comment letters, as described later. The comments provided in the transcript and the written comment cards are summarized later in this report.

3.4 SCOPING PERIOD

As noted earlier, the 45-day scoping period started on October 17, 2008, on the publication date of the NOI in the Federal Register, and ended on January 2, 2009. During that time, comments were received as follows:

- Written comment letters provided to the CEC
- Verbal comments received at the two scoping meetings

These comments are summarized in the following sections.

3.4.1 Written Comments Received by the CEC

During the scoping period, the CEC received comment letters from the following:

- **Public Agencies**
  - United States Environmental Protection Agency (November 14, 2008)
  - Imperial Irrigation District (November 24, 2008)
- **Groups and Organizations**
  - El Centro Chamber of Commerce and Visitors Bureau (November 24, 2008)
  - Desert Protective Council (December 30, 2008)
  - The Wilderness Society and the Natural Resources Defense Council (December 31, 2008)
  - Sierra Club, San Diego Chapter (January 2, 2009)
  - Mussey Grade Road Alliance (January 2, 2009)
- **Members of the General Public**
  - Marilyn Moskowitz (December 23, 2008)
  - Richard A. Ayers (December 27, 2008)
  - Cheryl Lenz (January 2, 2009)
  - Charlene Ayers (January 2, 2009)
  - Donna Tisdale (January 2, 2009)
  - Denis Trafecanty (January 3, 2009)

Copies of these comment letters are provided in Appendix M. Table 3.A summarizes the comments provided in these letters and indicates where in the environmental document those topics will be addressed. The tables cited in this section are provided following the last page of text in this section.

3.4.2 Verbal Comments Received at the Scoping Meetings

Verbal comments were received from the following at the November 24, 2008, scoping meeting as documented in the transcript of that meeting:

- Paul Foley, California Unions for Reliable Energy (CURE)
- Gary Wyatt, Supervisor, Imperial County
- John Mennvielle, President, Imperial Irrigation District Board of Directors
- Mark Gran, City Council Member, City of Imperial
- Marlene Best, Imperial Valley Economic Development Corporation
- Connie Bergmark, Resident, Imperial Lakes

- Jennifer Donavan, Resident, Imperial Lakes
- Maurice Lam
- Dennis Trafecanty, Protect Our Communities Fund, San Diego Foundation
- Laura McDonald, San Diego Gas and Electric (SDG&E)
- Carroll Buckley, President of the El Centro Chamber of Commerce and Visitors Bureau
- Karen Collins
- Tim Kelly, President and Chief Executive Officer of the Imperial Valley Economic Development Corporation
- Christina Luhn, San Diego Regional Economic Development Corporation
- Steve Taylor, SDG&E
- Carmen Lucas
- Elias Felix
- Donna Tisdale
- Edie Harmon
- Thomas Topuzes, Co-Chair, MegaRegion Initiative
- Tim Dubose, Second Vice-President, Building Industry Association, Desert Chapter

A copy of the November 24, 2008, meeting transcript is provided in Appendix K. Table 3.B summarizes the comments in the transcript and indicates where in the environmental document those topics will be addressed.

Verbal comments were received from the following at the December 18, 2008, scoping meeting as documented in the transcript of that meeting:

- Paul Foley, CURE
- Edie Harmon
- Donna Tisdale
- Teri Weiner, Desert Protective Council
- Marilyn Moskowitz
- Steve Taylor, SDG&E

A copy of the transcript is provided in Appendix L. Table 3.B summarizes the comments in the transcript and indicates where in the environmental document those topics will be addressed.

3.5 ONGOING PUBLIC INFORMATION

As part of an ongoing public information process, the CEC is administering a joint agency project website that has provided and will continue to provide project-related information, meeting notices, reports, and other materials. The BLM also has a website for this project. These websites are:

- http://www.energy.ca.gov/sitingcases/solartwo/index.html; and
- http://www.blm.gov/ca/st/en/fo/elcentro/nepa/stirling.hmtl.

Sample webshots from the CEC and BLM websites for the Solar Two project are provided in Appendix N.

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Comment Letters from Public Agencies			
United States Environmental Protection Agency (EPA) (letter dated 11/14/08)	EPA-1	EPA supports the use of renewable energy resources.	See Note 1
	EPA-2	Purpose and Need: Provide a clear and objective statement of the project's purpose and need.	Purpose and Need
	EPA-3	Alternatives: Provide a robust range of alternatives; explain why some alternatives were eliminated; look at alternative sites, capacities, technologies.	Alternatives
	EPA-4	Biological Resources: Address threatened and endangered species in detail, including baseline conditions; how avoidance, minimization, and mitigation measures will protect species; and long-term management and monitoring efforts.	Biological Resources and Areas of Critical Environmental Concern
	EPA-5	Air Quality: Detailed discussion of ambient air quality; quantify project emissions; identify emissions sources (mobile, stationary, ground disturbance); identify the need for an Equipment Emissions Mitigation Plan (EEMP) and Fugitive Dust Control Plan during construction.	Air Quality
	EPA-6	Climate Change: Address climate change and how climate change could potentially affect the project; identify any climate change benefits of the project.	Air Quality
	EPA-7	Cumulative Impacts: Clearly identify resources that may be cumulatively impacted and the geographic area that will be impacted by the project; look at past impacts on resources; identify opportunities to avoid and minimize cumulative impacts.	Cumulative Impacts (in sections by environmental parameter)
	EPA-8	Water Resources: Evaluate project need for water and effects on water supply.	Hydrology, Water Use, and Water Quality
	EPA-9	Groundwater: Direct and indirect effects on groundwater.	Hydrology, Water Use, and Water Quality
	EPA-10	Water Resources: Impacts on springs, open water bodies, other aquatic resources.	Hydrology, Water Use, and Water Quality, and Biological Resources
	EPA-11	Water Use: Clarify the water rights permitting process.	Project Description
	EPA-12	Water Quality: Potential need for a Section 404 permit.	Hydrology, Water Use, and Water Quality, and Biological Resources

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	EPA-13	Water Quality: Discuss any Section 303(d) impaired waters in the project area.	Hydrology, Water Use, and Water Quality
	EPA-14	Consultation with Tribal Governments: Describe process for and outcome of government-to-government consultation; discuss any National Register of Historic Places properties and any Indian Sacred Sites; and development of a Cultural Resources Management Plan.	Cultural Resources and Native American Values
	EPA-15	Environmental Justice: Identify environmental justice populations in the project area and potential impacts of the project on those populations; identify whether the impacts are disproportionate on those populations; discuss any coordination with environmental justice populations.	Socioeconomics and Environmental Justice
	EPA-16	Recreation: Address effects of the project on recreational users in the project area, including potential hazards to those users associated with the project facilities; identify appropriate safety precautions.	Land Use
	EPA-17	Invasive Species: Address potential for project to introduce invasive species; how they will be controlled; development of an invasive species management plan; and restoration, as appropriate, of native species.	Biological Resources
	EPA-18	Hazardous Materials and Wastes: Address the potential for direct, indirect, and cumulative impacts of hazardous wastes generated during project construction and operation; identify types and volumes of wastes; identify handling, storage, disposal, and management plans; alternative industrial processes using less toxic materials should be considered.	Hazardous Materials Management
	EPA-19	Land Use: Identify consistency and/or conflicts with federal, State, Tribal, and local land use plans, policies, and controls in the project study area.	Land Use
Imperial Irrigation District (IID) (letter dated 11/24/08) (see Note 3)	IID-1	Supports the proposed Solar Two project.	See Note 1
Comment Letters from Groups and Organizations			
El Centro Chamber of Commerce and Visitors Bureau (letter dated 11/24/08) (see Note 3)	ECCC-1	Supports the proposed Solar Two project.	See Note 1

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Teri Weiner, Imperial County Projects and Conservation Coordinator, Desert Protective Council (letter dated 12/30/08) (see Note 3)	DPC-1	Cultural Resources: Complete surveys of cultural artifacts, sites, and areas in the project area are needed; local archaeologists should be considered; consultation with Native American tribes is needed; need to address cumulative impacts.	Cultural Resources
	DPC-2	Land Use: Need to address project and cumulative loss of public lands to other uses (particularly energy projects).	Land Use
	DPC-3	Biological Resources: Need to address impacts to sensitive plants and animals; conduct species surveys at appropriate times of the year.	Biological Resources
	DPC-4	Invasive Species: Control of invasive species during construction and operation.	Biological Resources
	DPC-5	Animals and Plants: Potential impacts of scraping for roads on sensitive and rare plants and animals.	Biological Resources
	DPC-6	Air Quality: Air quality (PM_{10} [particulate matter less than 10 microns in size]); prevention of air quality impacts during project construction and operation.	Air Quality
	DPC-7	Water Supplies/Use: Impacts on Ocotillo/Nomirage aquifer; overall effect on demand for water.	Hydrology, Water Use, and Water Quality
	DPC-9	Land Use, Visual, and Noise: Impacts to community character in the Ocotillo and Nomirage communities; dark skies impacts; noise impacts.	Land Use, Visual Resources, Noise
	DPC-10	Aviation Impacts: Air space impacts; glare to pilots.	Health and Safety
	DPC-11	Recreation: Address impacts to recreational experience at the Plaster City Open Area, Superstition Hills Recreation Area, Painted Gorge Recreation Area, and Anza-Borrego Desert State Park.	Land Use
Alex Daue, Renewable Energy Coordinator, The Wilderness Society, and Johanna Wald, Senior Attorney, Natural Resources Defense Council (letter dated 12/31/08)	TWS-1	Description of the Wilderness Society and the Natural Resources Defense Council.	See Note 1
	TWS-2	Supports responsible use of renewable energy resources in a responsible manner when on public lands.	See Note 1
	TWS-3	Recommend that United States Department of the Interior, Bureau of Land Management (BLM) continue to improve its right-of-way application process, including appropriate best management practices (BMPs) and addressing the difference between solar development and other uses of right-of-way, and prioritize development on already disturbed lands close to existing transmission facilities.	See Note 1

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	TWS-4	Project Description: The Solar Two site appears to have potential for developing solar energy with fewer impacts to resources than other areas managed by BLM; should prioritize on already disturbed lands and in proximity to existing transmission lines.	Project Description
	TWS-5	Minimize and mitigate unavoidable impacts to resources and values.	In sections by environmental parameter.
	TWS-6	Cultural Resources: Prioritize protection of area's cultural resources; develop strategies to minimize and mitigate unavoidable effects on cultural resources; conduct ongoing consultation with local Native American tribes.	Cultural Resources
	TWS-7	Biological Resources: Prioritize protection of species in the project area; analyze project impacts on species; develop BMPs and other steps to minimize and mitigate unavoidable impacts on resources.	Biological Resources
	TWS-8	Water Supply/Use: Confirm that the water needed for the project is available and consistent with existing California Energy Commission (CEC) policy.	Hydrology, Water Use, and Water Quality
	TWS-9	Project Description: Concerns regarding viability of technology.	Project Description
	TWS-10	Project Phasing: Consider granting right-of-way for Phase I only, with Phase II dependent on approval finalization of the Sunrise Power Link project and resolution of additional issues regarding the Solar Two project.	Project Description
	TWS-11	Project Phasing: Consider establishing requirements for a demonstration of technological and economic viability with 3 to 5 years of approval of right-of-way before extending the length of the right-of-way approval.	Project Description
	TWS-12	Project Description: Conduct an analysis of the energy return on investment to assess the net energy production value of the project.	Project Description
	TWS-13	Hazards: Analyze the potential effects of hydrogen leakage and identify strategies to minimize and mitigate impacts.	Hazardous Materials Management
	TWS-14	Project Description/Funding: Want cash bonds to cover future decommissioning costs with bonds phased consistent with the project phasing.	Project Description
Edie Harmon, Sierra Club, San Diego Chapter (letter dated 1/2/09) (see Note 4)	SC-1	Alternatives: Analyze a range of alternatives to avoid the impacts of the project on cultural resources and to overall reduce the reliance on fossil fuels.	Alternatives
	SC-2	Alternatives: Suggest No Project Alternative include other energy-generating options.	Alternatives

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	SC-3	Alternative Use of Funds: Suggest using money from Solar Two and Sunrise Power Link projects for conservation and weatherization improvements.	See Note 1
	SC-4	Alternatives: Suggest installing units in San Diego County closer to the users of the electricity.	Alternatives
	SC-5	Alternatives: Suggest installing units in Imperial County at dispersed locations.	Alternatives
	SC-6	Alternative Sites: Suggest looking at alternative sites such as Mesquite Lake that are already disturbed or looking at multiple smaller sites.	Alternatives
	SC-7	Alternatives: Use the Stirling SunCatcher dish at existing natural gas or coal-fired power plants.	Alternatives
	SC-8	Project Description: Why is the electricity generated by Solar Two not going to be available to IID for use in Imperial County?	Project Description
	SC-9	Project Description and Air Quality: How will high winds and fine-grained dust affect the moveable parts of the SunCatcher assembly? How will the assembly be protected from the effects of high winds and dust?	Project Description Air Quality
	SC-10	Project Description: What will be the effect of high winds and fine-grained dust on the mean time between failure (MTBF) and the need to clean the mirrors?	Project Description
	SC-11	Project Description: What effect will gypsum dust from the US Gypsum Plaster City factory have on the facilities?	Project Description
	SC-12	Project Description: What was the MTBF at the New Mexico site? What is the estimated MTBF at the proposed site?	Project Description
	SC-13	Socioeconomics: What kind of jobs at what skill levels will be created? Will those jobs be met by existing employees in Imperial County or will they require employees relocating from other areas?	Socioeconomics
	SC-14	Project Description: Concern regarding going from small prototype to large-scale commercial facility without an intermediate level of facility or experience.	Project Description
	SC-15	Phasing: How will the project be phased?	Project Description
	SC-16	Project Description: What factors will contribute to MTBF and ongoing facility maintenance?	Project Description
	SC-17	Project Description: How will materials for the project be brought to the site?	Project Description
	SC-18	Project Description: How much hydrogen will be stored on site? Where will it be located on site?	Project Description

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	SC-19	Project Funding: What is the financial experience of the project financial backers for this type of project? Where will all the money come from that is needed for the entire project?	See Note 1
	SC-20	Project Description/Funding: Want cash bonds to cover future decommissioning costs; will components have any resale or recycling value; how much material might end up in landfills; who will be responsible for the bond costs?	Project Description
	SC-21	Project Description: How will higher summer temperatures in Imperial County affect the system?	Project Description
	SC-22	Project Description: How much water will need to be used for mirror cleaning? How much will run off into the ground versus evaporation?	Project Description
	SC-23	Invasive Species: Introduction of nonnative invasive species; precautions or mitigation measures needed to prevent invasive species.	Biological Resources
	SC-24	Project Description: How will total dissolved solids (TDS) in the wastewater impoundment areas be handled to avoid runoff outside the impoundment areas or becoming airborne as dust; how will TDS be disposed of; how will the impoundment areas be managed and maintained; how will the waste impoundment areas be addressed when the facility is decommissioned, including restoration of the land occupied by the wastewater impoundment areas; what strategies will be in place to minimize attracting birds to the wastewater impoundment areas?	Project Description
	SC-25	Cultural Resources: Have all cultural resource studies been evaluated by outside consultants familiar with the area prior to release to the public?	See Note 1
	SC-26	Cultural Resources: Address issues related to site potentially being designated as an Area of Traditional Cultural Concern (ATCC).	Cultural Resources
	SC-27	Cultural Resources: Seek input from Native American groups and the State Historic Preservation Officer.	Cultural Resources
	SC-28	Visual Resources: Effect on visual resources in the area, including potential cumulative effect of this and other projects in the area.	Visual Resources
	SC-29	Traffic and Land Use: Traffic study should include traffic associated with Centinela State Prison; the prison should be labeled appropriately on figures.	Traffic and Land Use
	SC-30	Hazards: Issues associated with the potential for Valley Fever; risks to project employees and employees/prisoners at Centinela State Prison.	Health and Safety

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	SC-31	Cumulative Impacts: Consider potential for cumulative impacts of this project and other nonrenewable and renewable energy, and land development projects; cumulative impacts on biological resources, cultural resources, environmental justice, air quality, and recreation uses/users.	Cumulative Impacts (in sections by environmental parameter)
	SC-32	Seismic: Potential damage/risks to project associated with seismic activity, including activity on the nearby Elsinore/Laguna Salada fault.	Geologic Stability
Mussey Grade Road Alliance (letter dated 1/2/09)	MG-1	Scoping: Requests that this comment letter be included in the scoping record.	Scoping Report
	MG-2	Other Environmental Document: Requests that the Final Environmental Impact Report (EIR) for the Sunrise Power Link project, including its mitigation measures, be incorporated into the record for this project and used to scope the current project.	See Note 2
	MG-3	Project Description: Concerns regarding the commercial viability of the proposed Stirling Energy Systems, LLC (SES) technology; will it work; will it hold up to desert weather; not cost competitive.	Project Description
Comment Letters from Members of the General Public			
Marilyn Moskowitz (email dated 12/23/08) (see Note 3)	MM-1	Opposed to the Solar Two project.	See Note 1
	MM-2	Air Quality: Concerned regarding dust and potential health (asthma) effects on children.	Air Quality
	MM-3	Water Use: Objects to the use of drinkable water from the Ocotillo aquifer for industrial uses.	Hydrology, Water Use, and Water Quality
	MM-4	Project Description: Concerned that cleanup costs be provided in a bond.	Project Description
	MM-5	Project Description: Concerned other technologies will quickly make the Solar Two technology obsolete.	Project Description
Richard A. Ayers (letter dated 12/27/08)	RA-1	Project Description: Who is financially responsible for cleanup if the technology is not successful; taxpayer liability?	Project Description
	RA-2	Project Description/Purpose: Relationship to the Southwest Power Link and role of Sempra.	Project Description
	RA-3	Project Description: SunCatcher reliability is not proven in actual operations.	Project Description
	RA-4	Stirling engines not successfully adapted for other commercial uses.	See Note 1
	RA-5	Project Description: Issues related to metal creep, metal fatigue, and seal integrity.	Project Description

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	RA-6	Project Description: Need a level of project between small amount of units tested at Sandia and total proposed number of units for the Solar Two project; suggest 1 megawatt (mW)	Project Description
	RA-7	Recommends deferral of the Southwest Power Link until needed in the future.	See Note 1
Cheryl Lenz (letter dated 1/2/09)	CL-1	Project Description: Who is financially responsible for cleanup if the technology is not successful; taxpayer liability?	Project Description
	CL-2	Project Description: SunCatcher reliability is not proven in actual operations.	Project Description
	CL-3	Air Quality: Effects of sand storms and "white clouds" from Plaster City.	Air Quality
	CL-4	Project Description: Need a level of project between small amount of units tested at Sandia and total proposed number of units for the Solar Two project; suggest 1 mW	Project Description
Charlene Ayers (letter dated 1/2/09)	CA-1	Project Description: Concerns regarding viability of technology and availability of technical information on the technology.	Project Description
	CA-2	Project Description: Potential effects of sand on the facility.	Project Description
	CA-3	Project Description: Commercial availability and viability of the technology.	Project Description
Donna Tisdale (letter dated 1/2/09) (see Note 3)	DT-1	Suggests rejecting the Solar Two and other projects because they do not represent the best and highest use of land, are not in the best interest of the taxpayers, and will result in loss of the use of public lands and recreation areas.	See Note 1
	DT-2	Alternatives: Other technologies are less destructive, expensive, and time consuming for approvals/litigation.	Alternatives
	DT-3	Other Environmental Document: Incorporates by reference the Final EIR and other materials for the Sunrise Power Link project in her comments.	See Note 2
	DT-4	Incorporates by reference the *San Diego Smart Energy 2020* report in her comments.	Refer to comment DT-3 above, which includes a copy of that report.
	DT-5	Project Funding: Concerned regarding availability/sources of funding.	Project Description
	DT-6	Project Description: SunCatcher reliability is not proven in actual operations.	Project Description
	DT-7	Project Description: Construction of SunCatchers on site: where will that facility be, how big will it be, what are the impacts of that facility?	Project Description
	DT-8	Land Use: Definition of "limited use" designation.	Land Use
	DT-9	Cultural Resources: Potential for additional cultural resources in the area.	Cultural Resources
	DT-10	Recreation: Impacts on recreation uses and users.	Land Use

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	DT-11	Visual Resources: Effects of motion-sensitive lighting.	Visual Resources
	DT-12	Project Description: Need data on current wind conditions to understand the effects of wind resulting in downtime.	Project Description
	DT-13	Project Description: Does Sunrise Power Link have sufficient transmission capacity available for the Solar Two project? If not, are there other sources of capacity available?	Project Description
	DT-14	Socioeconomics: What kind of jobs at what skill levels will be created? Will those jobs be met by existing employees in Imperial County or other American workers or will they require employees from other countries?	Socioeconomics
	DT-15	Visual: Potential for glare impacts on motorists on Interstate 8, other streets, and United States Navy, United States Border Patrol, and general aviation activities in the area.	Visual Resources
	DT-16	Visual: Potential for project and cumulative visual impacts.	Visual Resources
	DT-17	Cultural Resources: Potential for project and cumulative impacts on cultural resources.	Cultural Resources
	DT-18	Air Quality: Potential project impacts related to dust, hydrogen gas, and diesel emissions, and cumulative impacts with other area land uses.	Air Quality
	DT-19	Water Use: Not clear that IID has committed to provide the water needed for the project.	Hydrology, Water Use, and Water Quality
	DT-20	Hydrology: Effects on watercourses and groundwater.	Hydrology, Water Use, and Water Quality
	DT-21	Floods: Effects of rare floods on project facilities; project facilities and debris basins located in floodplains.	Hydrology, Water Use, and Water Quality
	DT-22	Project Description: Need better description of evaporation ponds and the waste materials generated in those ponds.	Project Description
	DT-24	Recreation: Cumulative effects on recreation uses/users and general quiet enjoyment of public lands.	Land Use
	DT-25	Cumulative Impacts: Potential effects related to a wide range of environmental parameters.	Cumulative Impacts (in sections by environmental parameter)
	DT-26	Value of Land: Appraisal, calculation of value of BLM lands, likely fees that would be paid to BLM.	See Note 1

Table 3.A: Summary of Written Comments Received by the CEC

Name and Agency of Commenter (and Date of Comment)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	DT-27	Project Description: Concerned that cleanup costs be provided in a bond.	Project Description
	DT-28	Alternatives: Look at different technologies.	Alternatives
Denis Trafecanty (letter dated 1/3/09) (see Note 5)	DET-1	Opposed to both the Sunrise Power Link project and the Solar Two project.	See Note 1
	DET-2	Project Description: SunCatcher reliability is not proven in actual operations.	Project Description
	DET-3	Project Description: Costs to produce electricity too high; refer to the *San Diego Smart Energy 2020* report attached to this comment.	Project Description

NOTE 1: This comment does not raise an issue under the National Environmental Policy Act (NEPA) or the California Environmental Quality Act (CEQA). All comments describing support for or opposition to the proposed project or asking for analyses not required under CEQA or NEPA will be considered by the decision-makers at the BLM and the CEC.

NOTE 2: The Final EIR for the Sunrise Power Link project (A.06-08-010) is on file at the CEC and therefore does not need to be incorporated in the record for this current project. The CEC and the BLM used that document, plus other materials and past experiences on energy projects, plus agency and public input provided during the scoping process, to scope the technical studies and environmental document for the proposed Solar Two project.

NOTE 3: This commenter also provided verbal comments at the November 24, 2008, scoping meeting and/or the December 18, 2008, workshop/scoping meeting. Refer to Table 3.B for a summary of those verbal comments. Comments from these parties are numbered consecutively, including the written comments in Table 3.A and the verbal comments in Table 3.B.

NOTE 4: Ms. Harmon also provided written comments to the CEC, as summarized in Table 3.A, as a representative of the Sierra Club, San Diego Chapter. Ms. Harmon did not indicate that she was commenting on behalf of the Sierra Club in her verbal comments provided at the two scoping meetings. Therefore, her comments at the scoping meeting are numbered as comments from an individual and separately from her comments as a representative of the Sierra Club.

NOTE 5: Mr. Trafecanty also provided written comments to the CEC, as summarized in Table 3.A, as an individual. In those written comments, Mr. Trafecanty did not indicate that he was commenting on behalf of the Protect Our Communities Fund (POCF) as he did in his verbal comments at the November 24, 2008, scoping meeting. Therefore, his verbal comments at the scoping meeting are numbered as comments from Mr. Trafecanty as a representative of POCF and separately from his written comments to the CEC as an individual.

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Verbal Comments Received at the November 24, 2008, Scoping Meeting			
Paul Foley, California Unions for Reliable Energy (CURE), Intervener (pg 10)	--	No comment; acknowledged his presence as a representative of CURE as an intervener for the Solar Two project.	--
Gary Wyatt, Supervisor, Imperial County (pp 62–66)	GW-1	Supportive of renewable energy opportunities, and new industry/jobs in Imperial County; supportive of the Solar Two project.	See Note 1
John Mennvielle, President, Imperial Irrigation District (IID) Board of Directors (pp 66 and 67) (see Note 2)	IID-2	Supportive of the Solar Two project and its benefits for employment and the regional economy.	See Note 1
Mark Gran, City Council Member, City of Imperial (pp 67 and 68)	MG-1	Supportive of the Solar Two project, economic driver for the area, good paying jobs.	See Note 1
Marlene Best, Imperial Valley Economic Development Corporation (pp 68 and 69)	MB-1	Supportive of the Solar Two project and the economic and employment benefits.	See Note 1
Connie Bergmark, Resident, Imperial Lakes (pp 69 and 70)	CB-1	Public Participation: Supportive of renewable energy, wants to be kept informed about construction and operations as project progresses.	Public Coordination
Jennifer Donavan, Resident, Imperial Lakes (pg 70)	JD-1	Supportive of Solar Two project and employment and economic benefits.	See Note 1
Maurice Lam (pp 71 and 72)	ML-1	Supportive of Solar Two project and employment and economic benefits; area has substantial resources to offer to project.	See Note 1
Dennis Trafecanty, Protect Our Communities Fund, San	POCF-1	Project Description: Concerned about Stirling Energy Systems, LLC (SES) and the Solar Two project; concerned about the commercial viability of the project.	Project Description
	POCF-2	Project Description: Concerned about availability of funding for the project.	Project Description

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Diego Foundation (pp 73–77) (see Note 4)	POCF-3	Project Description: Relationship to the Sunrise Power Link project; does not think Sunrise Power Link project is commercial.	Project Description
	POCF-4	Project Description: Concerned regarding public investment in Sunrise Power Link, which is part of the cost of the Solar Two project.	Project Description
	POCF-5	Purpose and Need: Questions when power will actually be needed in San Diego.	Purpose and Need
	POCF-6	Air Quality and Health and Safety: Health concerns in Imperial Valley, asthma; concerned regarding bringing "dirty" fossil fuels from Mexico to support the San Diego Gas and Electric (SDG&E)/Sempra projects.	Air Quality and Health and Safety
	POCF-7	Project Description: Do not want transmission lines through open desert or through Anza Borrego Desert State Park.	Project Description
	POCF-8	Impacts to big horn sheep and sheep migration route to Mexico.	Biological Resources and Areas of Critical Environmental Concern (ACEC)
Laura McDonald, SDG&E (pp 77 and 78)	LM-1	Supportive of the Solar Two project.	See Note 1
Carroll Buckley, President of the El Centro Chamber of Commerce and Visitors Bureau (pp 78 and 79) (see Note 2)	ECCC-2	Supportive of Solar Two project and employment and economic benefits.	See Note 1
Karen Collins (pp 79–81)	KC-1	Project Description: Concerned that energy generated will go to San Diego with none to IID.	Project Description
	KC-2	Project Description: Concern regarding life expectancy of dishes and what happens when they are abandoned.	Project Description
	KC-3	Cultural Resources: Concerned regarding impacts on cultural resources, National Register of Historic Places resources, Lake Kuwae, District for the Yuha Intaglios, cremation sites.	Cultural Resources
	KC-4	Alternatives: Suggests sites already disturbed by agricultural uses.	Alternatives
	KC-5	Alternatives: Site closer to water sources to take advantage of gravity flow and avoid the need for pumps.	Alternatives

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	KC-6	Water Supplies/Use: Does not think there is sufficient water available for the project.	Hydrology, Water Use, and Water Quality
Tim Kelly, President and Chief Executive Officer of the Imperial Valley Economic Development Corporation (pp 81–84)	TK-1	Appreciates current economic benefits based on presence of SES in Imperial County.	See Note 1
	TK-2	Supportive of the Solar Two project, job creation, training for project jobs, dust mitigation/reduction in health impacts, tourism to see the project, generation of energy, lower rates in Imperial County.	See Note 1
Christina Luhn, San Diego Regional Economic Development Corp. (pp 84 and 85)	REDC-1	Supportive of the Solar Two project for creation of jobs in industries that have a future.	See Note 1
Steve Taylor, SDG&E (pp 85 and 86)	ST-1	Supportive of the Solar Two project and technology, benefits SDG&E achievement of defined renewable portfolio standard.	See Note 1
Carmen Lucas (pp 86–90)	CL-1	Cultural Resources: Commenter is a Native American, concerned regarding survival of culture.	Cultural Resources
	CL-2	Requests that a Native American monitor be included in site surveys.	Cultural Resources
	CL-3	Cumulative impacts of solar and geothermal projects on Bureau of Land Management (BLM) lands.	Cultural Resources
	CL-4	Cultural Resources: Wants care taken; area has a lot of pottery deposits that could be sacrificial burial areas.	Cultural Resources
	CL-5	Cultural Resources: Concerned regarding impacts outside immediate disturbance areas.	Cultural Resources
Elias Felix (pg 90)	EF-1	Supportive of the Solar Two project, economic development, educational opportunities to learn about energy production alternatives.	See Note 1
Donna Tisdale (pp 90–94) (see Note 2)	DT-29	Project Description: Relationship of Solar Two project to the Sunrise Power Link project. What is the need for Sunrise? Is there available capacity in the Southwest Power Link project?	Project Description
	DT-30	Project Description and Land Use: Concern about the BLM land use amendment and its relationship to the updated resource management plan.	Project Description and Land Use
	DT-31	Socioeconomics: Concern that jobs go to local people and not people brought from outside the community.	Socioeconomics
	DT-32	Project Description: Will project need tax breaks or incentives?	Project Description

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	DT-33	Project Description: Why not build the fabrication factory in the project area?	Project Description
	DT-34	Visual and Aesthetics, and Public Health and Safety: Concern regarding reflection from mirrors on drivers and aircraft.	Visual and Aesthetics, and Public Health and Safety
	DT-35	Project Description: What will the cost of the Solar Two project be to ratepayers?	Project Description
	DT-36	Cumulative Impacts: Concerned about cumulative impacts of various renewable energy projects, on 2.5 million acres of BLM lands.	Cumulative Impacts
Edie Harmon (pp 94–99) (see Note 3)	EH-1	Air Quality: Questions the effect of dust on the mirrors and other moving parts of the Solar Two project.	Air Quality
	EH-2	Project Description: Effects of wind on the project components	Project Description
	EH-3	Project Description: Concern regarding the differences between Sandia, New Mexico and the Imperial Valley; prototype was a smaller scale and in a different type of area.	Project Description
	EH-4	Concern regarding impacts on cultural resources.	Cultural Resources
	EH-5	Project Description: Why isn't the electricity being generated going to nearby land uses or the IID?	Project Description
	EH-6	Project Description: Is this project dependent on the Sunrise Power Link project?	Project Description
	EH-7	Alternatives: Why not alternative sources for San Diego in San Diego: rooftop solar, photovoltaics, distributed electricity?	Alternatives
	EH-8	Project Description and Alternatives: Concerned that industry thinks public lands are a less expensive way of getting land than using fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots, rooftops.	Project Description and Alternatives
	EH-9	Air Quality: Concerns regarding carbon sequestration on the affected lands.	Air Quality
Thomas Topuzes, Co-Chair, MegaRegion Initiative (pp 101 and 102)	TT-1	Supportive of the Solar Two project and the jobs it would provide.	See Note 1
Tim Dubose, Second Vice-President, Building Industry Association, Desert Chapter (pp 102–105)	TD-1	Supportive of the Solar Two project and the jobs it would provide.	See Note 1

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Verbal Comments Received at the December 18, 2008, Scoping Meeting			
Paul Foley, CURE, Intervener (pp 9, 10, 23–26, 31–33, 41–43, 70, 71, and 102)	--	No comment; introduced himself as a representative of CURE as an intervener for the Solar Two project.	--
	CURE-1	Biological Resources: Questions regarding the jurisdictional delineation provided by the applicant: status, whether it addresses the transmission or water lines off the project site.	Biological Resources
	CURE-2	Project Description: Question regarding the value and disposal of scrap metal when the project is decommissioned.	Project Description
	CURE-3	Water Quality and Project Permits: Will the project have a general or individual storm water permit during construction? Have the appropriate water quality control agencies been contacted regarding the project?	Water Quality and Project Permits
	CURE-4	Air Quality: Questions regarding air quality permit and dust mitigation.	Air Quality
	CURE-5	Project Description and Land Use: Questions regarding parcels that are not part of the project or are immediately adjacent to the project site and how access and other considerations regarding those parcels will be addressed.	Project Description and Land Use
	CURE-6	Comment on the size of the project parcel (10 square miles)	See Note 1
	--	No comment; acknowledged his presence as a representative of CURE as an intervener for the Solar Two project (during the second half of the meeting).	--
Edie Harmon (pp 71–88, 122, 123, 140–148, and 156–158)	EH-10	Water Use/Supply: Questioned the amount of water that would be stored on site and the issue of evaporation.	Water Use
	EH-11	Question regarding effects of high total dissolved solids (TDS) in area groundwater.	Water Quality
	EH-12	Project Description and Water Use: Question regarding which aquifer water will come from.	Project Description and Water Use
	EH-13	Biological Resources: Comment that wastewater ponds should not be attractive to wildlife.	Biological Resources
	EH-14	Project Description and Water Use: Question regarding how much water will be used by project.	Project Description and Water Use
	EH-15	Project Description and Air Quality: Question on whether project roads will be paved; issue of dust generation.	Project Description and Air Quality
	EH-16	Project Description: Question regarding frequency of mirror washing.	Project Description

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	EH-17	Cultural Resources: Concern regarding cultural resources, archaeological sites, historic trails in the area.	Cultural Resources
	EH-18	Cultural Resources: Concern that cultural studies are conducted by persons familiar with the desert and desert cultures.	Cultural Resources
	EH-19	Cultural Resources: Concern that Native American issues be handled appropriately and sensitively.	Cultural Resources
	EH-20	Air Quality and Public Health and Safety: Questions regarding airborne soil fungi and potential effects on prisoners at the State Prison and as a general public health issue.	Air Quality and Public Health and Safety
	EH-21	Wants the real estate appraisals to be public.	See Note 1
	EH-22	Alternatives: Look at alternative sites including Mesquite Lake, which is zoned for industrial uses.	Alternatives
	EH-23	Alternatives: Look at an alternative site that is already disturbed, such as for agriculture or feedlots.	Alternatives
	EH-24	Cumulative Impacts: Look at cumulative impacts of all solar projects on BLM lands.	Cumulative Impacts
	EH-25	Alternatives: Look at in-base and solar rooftop alternatives.	Alternatives
	EH-26	Air Quality and Socioeconomics: Address climate change and potential effects on demographics in San Diego.	Air Quality and Socioeconomics
	EH-27	Project Description and Alternatives: Disperse units to provide electricity to the prison, schools, hospitals, etc; or to IID; or to meet high daytime demand in the county.	Project Description and Alternatives
	EH-28	Project Description: Concerned that use of public land is solely to ensure profitability of the project.	Project Description
	EH-29	Visual and Aesthetics: Assess visual resources impacts consistent with the BLM Visual Resources Management guidelines.	Visual and Aesthetics
	EH-30	Project Description and Land Use: Concern on how the plan amendment will be done.	Project Description and Land Use
	EH-31	Project Description: Will sources of funding include federal funding for a private profit-making company?	Project Description
	EH-32	Project Description: Comments from Dr. Butler on the downtime for the dishes.	Project Description

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	EH-33	Project Description: Concerns regarding the reliability of the process and the ability to provide the number of solar dishes proposed for this and other projects.	Project Description
	EH-34	Project Description: Concerns about where the engines will be on the site.	Project Description
	EH-35	Project Description and Biological Resources: Concerns about the evaporation of water from the wastewater ponds; does not want the ponds to be attractive to birds.	Project Description and Biological Resources
	EH-36	Biological Resources: Concern regarding invasive plant species.	Biological Resources
	EH-37	Cultural Resources: Wants BLM to work closely with Native Americans.	Cultural Resources
Donna Tisdale (pp 88, 89, and 48–152) (see Note 2)	DT-37	Concerned that the California Energy Commission (CEC)/BLM should not depend on the Environmental Impact Report (EIR) for U.S. Gypsum because the commenter feels it was inadequate.	See Note 1
	DT-38	Concerned that government employees are subject to substantial political pressure.	See Note 1
	DT-39	Commented on approval of the Sunrise Power Link project through the community of Boulevard.	See Note 1
	DT-40	Project Description: Concerned with winds on the site; will an anemometer be used?	Project Description
	DT-41	Cumulative Impacts: Wants cumulative visual impacts addressed, including several projects in the vicinity of the Solar Two project.	Cumulative Impacts
	DT-42	Project Description: Concerned that project is in early phases without details on funding and manufacturing of the project components.	Project Description
	DT-43	Project Description: Concern about whether there is sufficient capacity in the Sunrise Power Link project for the Solar Two project and other projects in line or proposed.	Project Description
Teri Weiner, Desert Protective Council (DPC) (pp 89–94, 123, and 137–139) (see Note 2)	DPC-1	Project Description: Questions regarding how the Solar Two energy generation process works.	Project Description
	DPC-2	Biological Resources: Concerned regarding effects on the burrowing owl.	Biological Resources
	DPC-3	Biological Resource: Concerned regarding effects on the flat-tailed horned lizard.	Biological Resources
	DPC-4	Biological Resources and Project Permits: Question regarding need for a Streambed Alteration Agreement from the California Department of Fish and Game.	Biological Resources and Project Permits

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
	DPC-5	Project Description: When would construction start? After the environmental process?	Project Description
	DPC-6	Project Description and Land Use: Question on when the draft land use amendment would be released.	Project Description and Land Use
	DPC-7	Requests an economic analysis comparing the Solar Two project with other renewable energy projects such as rooftop solar.	See Note 1
	DPC-8	Alternatives: Concern regarding use of public lands for so many projects, including renewable energy such as the Solar Two project, when there are alternative areas where those projects could be located.	Alternatives
	DPC-9	Visual and Aesthetics: Importance of visual resources in the desert.	Visual and Aesthetics
	DPC-10	Socioeconomics: What are the economic impacts of the project?	Socioeconomics
	DPC-11	Public Health and Safety: Concern regarding glare from mirrors to aircraft.	Public Health and Safety
	DPC-12	Cultural Resources: Engage Native American leaders to provide input on the cultural integrity of the area.	Cultural Resources
	DPC-13	Water Use: Concern regarding the demand for water to wash the mirrors.	Water Use
Marilyn Moskowitz (pp 152–154) (see Note 2)	MM-6	Air Quality and Public Health and Safety: Concerned regarding air quality in the area and health effects such as asthma.	Air Quality and Public Health and Safety
	MM-7	Water Sources and Use: Concerned regarding using drinking quality water from the aquifer.	Water Use
	MM-8	Alternatives: An alternative to Solar Two would be rooftop solar.	Alternatives
	MM-9	Project Description: Concerned about technological obsolescence of the project and who will be financially responsible at that point. Wants a large bond posted for cleanup and restoration of the site.	Project Description
	MM-10	Alternatives: Shift from large mega stations to decentralized, localized, and alternative sources.	Alternatives

Table 3.B: Summary of Verbal Comments Received at the November 24, 2008, and December 18, 2008, Scoping Meetings

Name and Agency of Commenter (transcript pages)	Comment Number	Summary of Comments by Environmental Parameter or Topic	Where the Comments will be Addressed in the Environmental Document
Steve Taylor, SDG&E (pp 155 and 156)	ST-2	Supportive of the Solar Two project	See Note 1

NOTE 1: This comment does not raise an issue under the National Environmental Policy Act (NEPA) or the California Environmental Quality Act (CEQA) relative to the proposed Solar Two project. All comments describing support for or opposition to the proposed project or asking for analyses not required under CEQA and NEPA will be considered by the decision-makers at the United States Department of the Interior, Bureau of Land Management (BLM) and the California Energy Commission (CEC).

NOTE 2: This commenter also provided written comments to the CEC. Refer to Table 3.A for a summary of those comments. Comments from these parties are numbered consecutively, including the written comments in Table 3.A and the verbal comments in Table 3.B.

NOTE 3: Ms. Harmon also provided written comments to the CEC, as summarized in Table 3.A, as a representative of the Sierra Club, San Diego Chapter. Ms. Harmon did not indicate that she was commenting on behalf of the Sierra Club in her verbal comments provided at the two scoping meetings. Therefore, her comments at the scoping meeting are numbered as comments from an individual and separately from her comments as a representative of the Sierra Club.

NOTE 4: Mr. Trafecanty also provided written comments to the CEC, as summarized in Table 3.A, as an individual. In those written comments, Mr. Trafecanty did not indicate that he was commenting on behalf of the Protect Our Communities Fund (POCF) as he did in his verbal comments at the November 24, 2008, scoping meeting. Therefore, his verbal comments at the scoping meeting are numbered as comments from Mr. Trafecanty as a representative of POCF and separately from his written comments to the CEC as an individual.

4.0 REFERENCES

California Desert Conservation Area Plan, as amended (BLM 1980)

BLM National Environmental Policy Act Handbook H-1790-1 (BLM, January 2008)

APPENDIX A

NOTICE OF INTENT

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CACA 47740, LLCAD07000 L51030000]

Notice of Intent To Prepare an Environmental Impact Statement/Staff Assessment and Proposed Land Use Plan Amendment for the Proposed SES Solar Two Project, Imperial County, CA

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice.

SUMMARY: In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), and the California Environmental Quality Act (CEQA), the Department of the Interior, Bureau of Land Management (BLM), together with the California Energy Commission (Energy Commission), (hereinafter jointly referred to as the Agencies) intend to prepare an Environmental Impact Statement/Staff Assessment (EIS/SA), and a Proposed Land Use Plan Amendment, for the Stirling Energy Systems (SES) Solar Two Project (Project), a Stirling engine systems solar dish project in Imperial County, California. SES is seeking approval to construct and operate an electrical generating facility with a nominal capacity of 750 megawatts (MW), using concentrated solar thermal power. The approximately 6,500 acres of land needed to develop the Project consists of approximately 6,140 acres of BLM administered public land and approximately 360 acres of privately owned land.

SES has submitted an application to the BLM requesting a right-of-way (ROW) to construct the Project and related facilities. Pursuant to the California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan will be considered through the plan amendment process.

Under Federal law, BLM is responsible for processing requests for rights-of-way to authorize such proposed projects and associated transmission lines and other appurtenant facilities on land it manages. BLM must comply with the requirements of NEPA to ensure that environmental impacts associated with construction, operation, and decommissioning will be identified, analyzed and considered in the application process. In the case of solar thermal power plant projects, this will be accomplished through coordination of the state and federal application processes, public participation, environmental analysis, and the preparation of Draft and Final Environmental Impact Statement (EIS) in coordination with the Energy Commission and its Preliminary and Final Staff Assessments.

Under California law, the Energy Commission is responsible for reviewing the applications for certification filed for thermal power plants over 50 MW, and also has the role of lead agency for the environmental review of such projects under the CEQA (Public Resources Code, section 25500 *et seq.*; and Public Resources Code, section 21000 *et seq.*) The Energy Commission conducts this review in accordance with the administrative adjudication provisions of the Administrative Procedure Act (Gov. Code, section 11400 *et seq.*) and its own regulations governing site certification proceedings (Cal. Code Regs., tit. 20, section 1701 *et seq.*), which have been deemed CEQA equivalent by the Secretary of Resources. SES Solar Two, LLC has submitted an Application for Certification (AFC) to the Energy Commission. The AFC facilitates analysis and review by staff prior to an Energy Commission decision.

DATES: Publication of this notice initiates a public scoping period of at least 30 days. During the public scoping period, the Agencies will solicit public comments on issues, concerns, potential impacts, alternatives, and mitigation measures that should be considered in the analysis of the proposed action. In addition, the Agencies expect to hold at least one public meeting/workshop during the scoping period to encourage public input. The public meeting(s) will be announced through the local news media, newspapers, mailings, the BLM Web page (*http://www.ca.blm.gov/elcentro*) and the Energy Commission Web page (*http://www.energy.ca.gov/sitingcases/solartwo/*) at least 15 days prior to the event. While you may have the opportunity to make oral comments, comments must also be submitted in writing. In order to be included in the Draft EIS/Preliminary Staff Assessment (DEIS/PSA), all comments must be received prior to the close of the scoping period or 15 days after the last public meeting, whichever is later. Additional opportunities for public participation and formal comment occur when the DEIS/PSA is issued.

ADDRESSES: You may submit comments in a variety of ways: (1) By U.S. mail, (2) by electronic mail, (3) or by attending the public scoping meeting(s) and submitting written comments at the meeting(s).

By Mail: Please use first-class postage and be sure to include your name and a return address. Please send written comment to: Christopher Meyer, Project Manager, Systems Assessment & Facility Siting Division, California Energy Commission, 1516 Ninth Street, MS–15, Sacramento, CA 95814.

By Electronic Mail: E-mail comments are welcome; however, please remember to include your name and return address in the e-mail message. E-mail messages should be sent to *CMeyer@energy.state.ca.us.*

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

FOR FURTHER INFORMATION CONTACT: Information regarding the BLM process may be obtained from the Bureau of Land Management, 1661 So. 4th Street, El Centro, 92243, attention Lynda Kastoll, (760) 337–4421, *lynda_kastoll@ca.blm.gov*; or Erin Dreyfuss, (760) 337–4436, *erin_dreyfuss@ca.blm.gov.* Information regarding the Energy Commission process may be obtained from Christopher Meyer, Project Manager, Systems Assessment & Facility Siting Division, California Energy Commission, 1516 Ninth Street, MS–15, Sacramento, CA 95814, (916) 653–1639, *CMeyer@energy.state.ca.us.* Information on participating in the Commission's review of the project may be obtained through the Commission's Public Adviser's Office, at (916) 654–4489 or toll free in California, (800) 822–6228, or by email at *PublicAdviser@energy.state.ca.us.* News media inquiries should be directed to the Commission's media office at (916) 654–4989, or via email at *mediaoffice@energy.state.ca.us.*

Status of the proposed project, copies of notices, an electronic version of the AFC, and other relevant documents are also available on the Commission's internet Web site at *http://www.energy.ca.gov/sitingcases/solartwo.* You can also subscribe to receive e-mail notification of all notices at *http://www.energy.ca.gov/listservers.*

SUPPLEMENTARY INFORMATION: SES Solar Two, LLC has applied to BLM for a right-of-way on public lands to

construct a concentrated solar thermal power plant facility approximately 14 miles west of El Centro, CA, in Imperial County. The project site is just south of Plaster City between the Union Pacific Railroad tracks and the Interstate 8 highway. The facility is expected to operate for approximately 30 years. The proposed project would utilize SunCatcher technology, consisting of approximately 30,000 25-kilowatt solar power dishes with a generating capacity of approximately 750 megawatts (MW) to be built in two phases. The first phase would consist up to 12,000 SunCathers configured in 200 1.5 MW solar groups of 60 SunCatchers per group and have a net nominal generating capacity of 300 MW. The second phase would consist of approximately 18,000 SunCatchers configured in 500 1.5 MW groups with a net generating capacity of 450 MW. Each SunCatcher system consists of an approximate 38-foot high by 40-foot wide solar concentrator dish that supports an array of curved glass mirror facets designed to automatically track the sun and focus solar energy onto a Power Conversion Unit which generates electricity. Related structures would include a main services complex, assembly buildings, a 230-kilovolts (kV) electrical substation, a 10-mile transmission line, access roads, supply water line, and a 10-mile double circuit 230kV transmission line from the project site to San Diego Gas and Electric's existing Imperial Valley electrical substation interconnecting the project to the existing 500 kV transmission system. The 450–MW Phase II is dependent on the approval of the proposed Sunrise Powerlink 500kV transmission line that would also interconnect with the Imperial Valley electrical substation. The EIS/SA will analyze the site-specific impacts on air quality, biological resources, cultural resources, water resources, geological resources and hazards, hazardous materials handling, land use, noise, paleontological resources, public health, socioeconomics, soils, traffic and transportation, visual resources, waste management and worker safety and fire protection, as well as facility design engineering, efficiency, reliability, transmission system engineering and transmission line safety and nuisance. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process.

The following Planning Criteria will be utilized during the plan amendment process:

- The plan amendment process will be completed in compliance with FLPMA, NEPA, and all other relevant Federal law, Executive orders, and management policies of the BLM;
- The plan amendment process will include an EIS that will comply with NEPA standards;
- Where existing planning decisions are still valid, those decisions may remain unchanged and be incorporated into the new plan amendment;
- The plan amendment will recognize valid existing rights;
- Native American Tribal consultations will be conducted in accordance with policy and Tribal concerns will be given due consideration. The plan amendment process will include the consideration of any impacts on Indian trust assets;
- Consultation with the SHPO will be conducted throughout the plan amendment process; and
- Consultation with USFWS will be conducted throughout the plan amendment process.

If the ROW and proposed land use plan amendment are approved by BLM, the concentrated solar thermal power plant facility on public lands would be authorized in accordance with Title V of the Federal Land Policy and Management Act of 1976 and the Federal Regulations at 43 CFR part 2800.

A certificate designating approval of the Energy Commission must be obtained by SES before it may construct a power plant and/or electric transmission line and related facilities.

Dated: October 10, 2008.

Thomas Pogacnik,

Deputy State Director, Natural Resources (CA–930), California State Office.

[FR Doc. E8–24685 Filed 10–16–08; 8:45 am]

BILLING CODE 4310–40–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[WY–060–1320–EL, WY–060–5110–GA–CK33, WY–060–5110–GA–CK36, WY–060–5110–GA–CK35, WYW161248, WYW172585, WYW172657, WYW173360]

Notice of Availability and Notice of Hearing for the South Gillette Area Coal Draft Environmental Impact Statement That Includes Four Federal Coal Lease by Applications, Wyoming

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of Availability.

SUMMARY: In accordance with the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321 *et seq.*) and the Federal Land Policy and Management Act of 1976 (FLPMA, 43 U.S.C. 1701 *et seq.*), the Bureau of Land Management (BLM) has prepared a Draft Environmental Impact Statement (DEIS) for the South Gillette Area Coal project that contains four Federal Coal Lease By Applications (LBAs), and by this Notice is announcing a public hearing requesting comments on the DEIS, Maximum Economic Recovery (MER), and Fair Market Value (FMV) pursuant to 43 Code of Federal Regulations (CFR) 3425.4.

DATES: To ensure comments will be considered, the BLM must receive written comments on the South Gillette Area Coal DEIS, MER, and FMV within 60 days following the date the Environmental Protection Agency publishes the Notice of Availability in the **Federal Register**. The public hearing will be held at 7 p.m. MST, on November 19, 2008, at the Campbell County George Amos Memorial Building, 412 South Gillette Avenue, Gillette, Wyoming.

ADDRESSES: You may submit comments by any of the following methods:

- *E-mail: casper_wymail@blm.gov.*
- *Fax:* 307–261–7587.
- *Mail:* Casper Field Office, Bureau of Land Management, Attn: Teresa Johnson, 2987 Prospector Drive, Casper, Wyoming 82604.

Copies of the DEIS are available at the following BLM office locations: BLM Wyoming State Office, 5353 Yellowstone Road, Cheyenne, Wyoming 82009; and BLM Casper Field Office, 2987 Prospector Lane, Casper, Wyoming 82604. The DEIS is available electronically on the following Web site: *http://www.blm.gov/wy/st/en/info/NEPA/cfodocs/south_gillette.html.*

FOR FURTHER INFORMATION CONTACT: Teresa Johnson or Mike Karbs at the above address, or telephone: 307–261–7600.

SUPPLEMENTARY INFORMATION: The DEIS analyzes the potential impacts for Federal Coal LBAs serialized as WYW161248, WYW172585, WYW172657, and WYW173360 and referred to as the Belle Ayr North, West Coal Creek, Caballo West, and Maysdorf II tracts, in the decertified Powder River Federal Coal Production Region, Wyoming. The BLM is considering issuing these four coal leases as a result of four applications filed between July of 2004 and September of 2006.

SUPPLEMENTARY INFORMATION by application is as follows.

APPENDIX B

OCTOBER 17, 2008, BLM NEWS RELEASE

U.S. Department of the Interior
Bureau of Land Management

News Release

For Immediate Release: October 17, 2008 CA-CDD-09-10
Contacts: Stephen Razo 951-697-5217 srazo@ca.blm.gov

Environmental Review Process Begins for Solar Project in Imperial County

The U.S. Bureau of Land Management (BLM), together with the California Energy Commission (CEC), today published a notice announcing that the agencies intend to prepare an Environmental Impact Statement/Staff Assessment (EIS/SA) for the Stirling Energy Systems' Solar Two Project in Imperial County.

The project, to be located about 14 miles west of El Centro, involves about 6,500 acres, including 6,140 acres of BLM public lands and 360 acres of private lands. The project site is just south of Plaster City between the Union Pacific Railroad and Interstate 8. Stirling has submitted an application to BLM requesting a right-of-way to construct and operate an electric generating facility using concentrated solar thermal power to generate at least 750 megawatts of power, enough to meet the needs of 750,000 people.

BLM El Centro Field Manager Vicki Wood said the publication of the notice in the Federal Register initiates a 30-day public scoping period, during which the public can submit comments on issues to be addressed in the EIS/SA. Under California law, CEC is responsible for thermal power plants over 50 megawatts and is the lead agency under the California Environmental Quality Act. BLM is the lead agency under the federal National Environmental Policy Act.

Wood said the agencies expect to hold at least one public meeting at a time and date to be announced shortly. She also explained that the proposed project will require an amendment to the California Desert Conservation Area Plan. According to Stirling's application, the proposed project would be built in two phases, and ultimately consist of 30,000 25-kilowatt power dishes utilizing "Suncatcher" technology consisting of a solar concentrator dish approximately 38-feet high by 40-feet wide. Related structures include transmission lines, access roads, water lines, and other facilities.

Comments should be sent to Christopher Meyer, Project Manager/CEC, 1516 Ninth Street, MS-15, Sacramento, CA 95814, CMeyer@energy.state.ca.us Further information can be obtained from Meyer and Lynda Kastoll, BLM, 1661 So. 4th St., El Centro, CA 92243 (760) 337-4421, Lynda_Kastoll@ca.blm.gov Agencies websites also contain information on the project: http://222.energy.ca.gov/sitingcases/solartwo/ and http://www.ca.blm.gov/elcentro

-BLM-

"visit our website at www.blm.gov/ca"

APPENDIX C

SCOPING MEETING NOTICES

This appendix contains the following:

- "Notice of Informational Hearing and Public Site Visit and Bureau of Land Management Scoping Meeting" (October 10, 2008; English only [9 pages])
- "Notice of BLM and Energy Commission Staff Data Response and Issues Resolution Workshop/Scoping Meeting for the SES Solar Two Project" (December 2, 2008; English [7 pages] and Spanish [5 pages])
- Notices of the Scoping Meeting in the *Imperial Valley Press* (November 15, 2008 [1 page]) and the *Adelante Valle* (November 28, 2008 [1 page])

STATE OF CALIFORNIA — THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*
CALIFORNIA ENERGY COMMISSION
1516 Ninth Street
Sacramento, California 95814

Main website: www.energy.ca.gov

Notice of BLM and Energy Commission Staff Data Response and Issues Resolution Workshop / Scoping Meeting for the SES Solar Two Project (08-AFC-5)

The Bureau of Land Management (BLM) and the California Energy Commission (Energy Commission) will conduct a data response and issues resolution workshop/BLM scoping meeting for the Stirling Energy Systems Solar Two Project (SES Solar Two) on December 18, 2008. The purpose of the workshop is to discuss Stirling Energy Systems Solar Two, LLC's responses to the BLM and Energy Commission staff's data requests and issues identified in the November 17, 2008 Issues Identification Report. The workshop will also function as a second scoping meeting for the BLM Right-of-Way Application CACA-47740. All interested agencies and members of the public are invited to participate. The workshop/scoping meeting will be held:

Thursday, December 18, 2008
1:00 p.m. – 4:00 p.m. Workshop
4:00 p.m. – 5:00 p.m. Break (time permitting)
5:00 p.m. – 7:00 p.m. Public Comments/BLM Scoping

Imperial County
County Administration Building
Board Chambers
940 Main Street
El Centro, CA 92243
(Map Attached)

Purpose

The BLM and Energy Commission are currently reviewing Stirling Energy Systems Solar Two, LLC's (SES Solar Two, LLC's) Application for Certification for the proposed development of the SES Solar Two Project. To facilitate its review of the joint Application for Certification and Environmental Impact Statement process, the BLM and Energy Commission staff published the first set of joint data requests for the following technical areas on November 14, 2008: biological resources, land use, socioeconomics, soil and water resources, traffic and transportation, transmission system engineering, visual resources, waste management, and worker safety/fire protection. Additional data requests will be issued for the technical areas of air quality and cultural resources on December 2, 2008.

Project Description

The proposed project would utilize SunCatcher technology, consisting of approximately 30,000 25-kilowatt solar power dishes with a generating capacity of approximately 750 megawatts (MW) to be built in two phases. The first phase would consist up to 12,000 SunCatchers configured in 200 1.5 MW solar groups of 60 SunCatchers per group and have a net nominal generating capacity of 300 MW. The second phase would consist of approximately 18,000 SunCatchers configured in 500 1.5 MW groups with a net generating capacity of 450 MW. Each SunCatcher system consists of an approximate 38-foot high by 40-foot wide solar concentrator dish that supports an array of curved glass mirror facets designed to automatically track the sun and focus solar energy onto a Power Conversion Unit which generates electricity. Related structures would include a main services complex, assembly buildings, a 230-kilovolt (kV) electrical substation, access roads, supply water line, and a 10-mile double circuit 230-kV transmission line from the project site to San Diego Gas and Electric's existing Imperial Valley electrical substation interconnecting the project to the existing 500-kV transmission system. The 450 MW Phase II is dependent on the approval of the proposed Sunrise Powerlink 500-kV transmission line that would also interconnect with the Imperial Valley electrical substation.

Background

On October 8, 2008, the Energy Commission began review of the project. During the review period, Energy Commission staff will determine whether the proposed project complies with applicable laws related to public health and safety, environmental impacts, and engineering requirements. As the lead agency under the California Environmental Quality Act (CEQA), the Energy Commission is responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants, 50 MW and greater, in California. The Energy Commission facility certification process carefully examines public health and safety, environmental impacts and engineering aspects of proposed power plants and all related facilities such as electric transmission lines and natural gas and water pipelines.

Under federal law, the BLM is responsible for processing applications for rights-of-way to authorize the proposed project and associated transmission lines and other facilities to be constructed and operated on land it manages. In processing applications, the BLM must comply with the requirements of the National Environmental Policy Act (NEPA), which requires that federal agencies consider the environmental impacts associated with the projects they approve.

The purpose of the BLM action is to provide the applicant a decision in processing its application for a right-of-way (ROW) grant for legal use and access of the public lands in Imperial County, California managed by the BLM. The need for BLM action is established by the BLM's responsibility under the Federal Land Policy and Management Act (FLPMA), NEPA and other federal laws to respond to SES's request for a ROW for legal

access to construct, operate and decommission a proposed concentrated solar thermal generation plant and related facilities on the public lands. For the decision to be made, BLM will decide whether or not to grant a ROW, and if so, under what terms and conditions.

The proposal would also create the need for amending the BLM California Desert Conservation Plan 1980 (CDCP). The purpose of the CDCP amendment is to ensure the public lands are managed through land use planning according to the principles of multiple use identified in FLPMA while managing valid existing rights and other obligations established. The proposed amendment is necessary to address changing resource demands and technological development proposals on public lands. The CDCP as amended requires (page 95) that "Sites associated with power generation or transmission not identified in the Plan (as is this case) will be considered through the Plan Amendment process."

Pursuant to a Memorandum of Understanding (MOU), the BLM and the Energy Commission staff intend to conduct a joint environmental review of the SES Solar Two Project in a NEPA/ CEQA process. It is in the interest of the BLM and the Energy Commission to share in the preparation of a joint environmental analysis of the proposed project to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate public review by providing a joint document and a more efficient environmental review process.

Public Participation

The Energy Commission's Public Adviser's Office provides the public with assistance in participating in Commission activities. If you want information on how to participate in this proceeding, please contact the Associate Public Adviser, Loreen McMahon, at: (916) 654-4489, toll free at (800) 822-6228, by FAX at (916) 654-4493, or by e-mail at public.adviser@energy.state.ca.us If you have a disability and require assistance to participate, please contact Lourdes Quiroz at lquiroz@energy.state.ca.us or at (916) 654-5146 at least five days in advance or the workshop. Spanish translation services will be available at the workshop.

Questions

General information about the proposed generating facility and related documents are available on the Energy Commission's website at: http://www.energy.ca.gov/sitingcases/solartwo/index.html or the BLM's website at: http://www.blm.gov/ca/st/en/fo/elcentro/nepa/stirling.html.

Please direct all news media inquiries to the Energy Commission's media office at (916) 654-4989 or e-mail at mediaoffice@energy.state.ca.us. For technical questions on the subject matter, please contact Christopher Meyer, the Energy Commission Project Manager, at (916) 653-1639 or by e-mail at: cmeyer@energy.state.ca.us or Jim Stobaugh, the BLM Project Manager, at (775) 861-6478 or by e-mail at: jim_stobaugh@blm.gov. If you are unable to attend the workshop, written comments may be sent to the Energy Commission Project Manager electronically or to the Energy Commission's street address shown on the letterhead of this notice by January 2, 2009, the end of the BLM scoping period.

Date: Dec 2, 2008

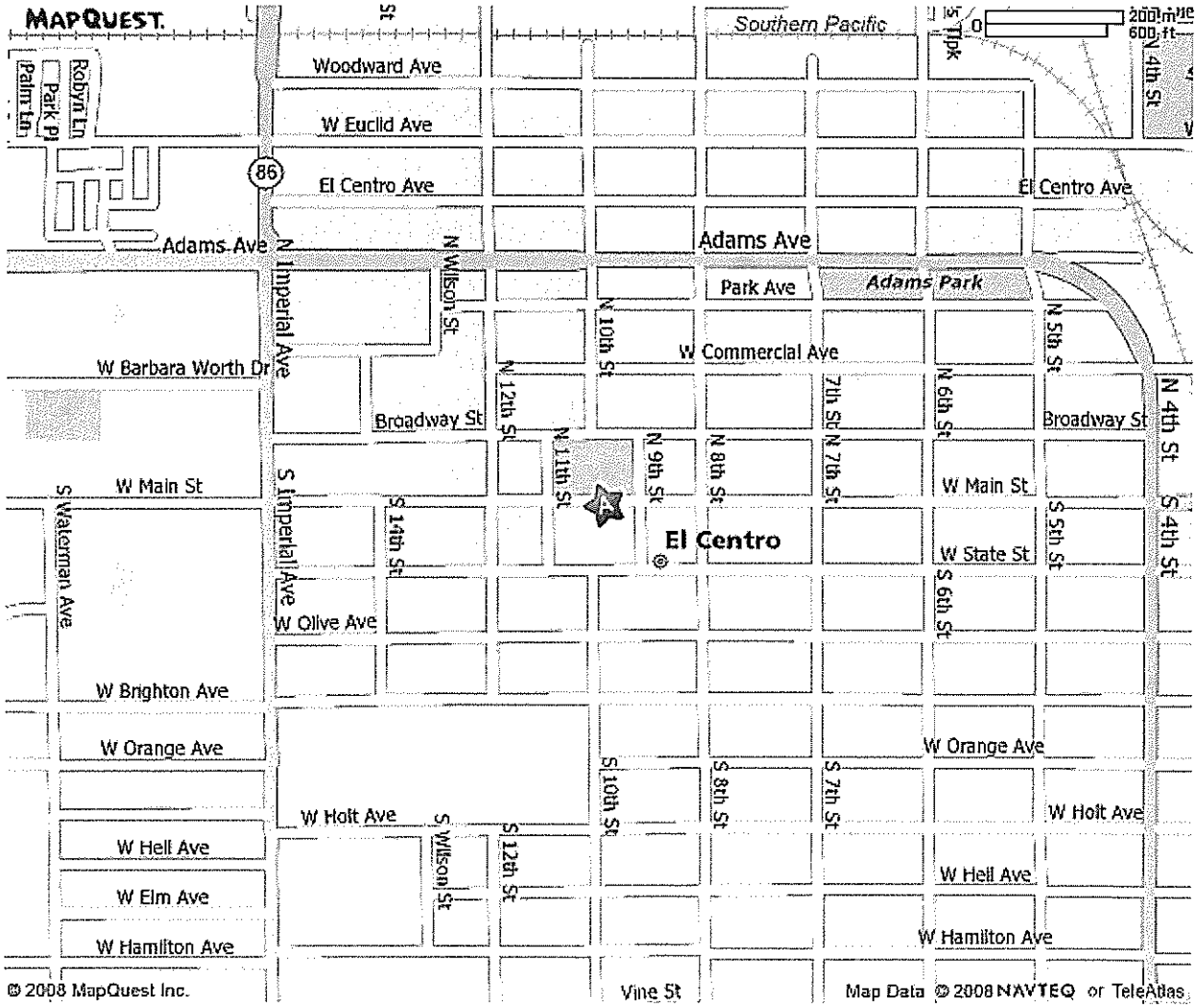
Original Signature in Dockets
Terrence O'Brien, Deputy Director
Siting, Transmission, and Environmental Protection Division

Proof of Service List
Mail Lists: 7302, 7303, 7304, 7305

Thursday, December 18, 2008
1:00 p.m. – 4:00 p.m. Workshop
4:00 p.m. – 5:00 p.m. Break (time permitting)
5:00 p.m. – 7:00 p.m. Public Comments/BLM Scoping

Imperial County
County Administration Building
Board Chambers
940 Main Street
El Centro, CA 92243

(Wheelchair Accessible)



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the SES SOLAR TWO PROJECT

Docket No. 08-AFC-5

PROOF OF SERVICE
Revised 11/26/08

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-5
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512
docket@energy.state.ca.us

APPLICANT

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Christine Henning
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CONSULTANT

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COUNSEL FOR APPLICANT

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allanori@comcast.net

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e-recipient@caiso.com

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lkastoll@ca.blm.gov

Jim Stobaugh
National Project Manager
Bureau of Land Management
BLM Nevada State Office
P.O. Box 12000
Reno, NV 89520-0006
jim_stobaugh@blm.gov

INTERVENORS

***CURE**
c/o Paul F. Foley
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
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pfoley@adamsbroadwell.com

ENERGY COMMISSION

Jeffrey D. Byron
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Jackalyne Pfannenstiel
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Raoul Renaud
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Caryn Holmes
Staff Counsel
cholmes@energy.state.ca.us

Christopher Meyer
Project Manager
cmeyer@energy.state.ca.us

Public Adviser
publicadviser@energy.state.ca.us

DECLARATION OF SERVICE

I, Mineka Foggie, declare that on December 2, 2008, I deposited copies of the attached Notice of BLM and Energy Commission Staff Data Response and Issues Resolution Workshop/ Scoping Meeting for the SES Solar Two Project in the United States mail at Sacramento with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Original Signature in Dockets

ESTADO DE CALIFORNIA – AGENCIA DE RECURSOS ARNOLD SCHWARZENEGGER, *gobernador*
COMISIÓN DE ENERGÍA DE CALIFORNIA
1516 Ninth Street
Sacramento, California 95814

Sitio Web principal: www.energy.ca.gov

Aviso del personal de la Oficina de Administración de Tierras y la Comisión de Energía Taller de respuesta de información y solución de problemas / Reunión para tratar el alcance del proyecto SES Solar Two Project (08-AFC-5)

La Oficina de Administración de Tierras (BLM, Bureau of Land Management) y la Comisión de Energía de California (Comisión de Energía), realizarán un taller de respuesta de información y solución de problemas y una reunión de la Oficina de Administración de Tierras, para tratar el alcance del proyecto Stirling Energy Systems Solar Two Project (SES Solar Two) el 18 de diciembre de 2008. La finalidad del taller es analizar las respuestas de Stirling Energy Systems Solar Two, LLC a las solicitudes de información realizadas por el personal de la Oficina de Administración de Tierras y la Comisión de Energía y los problemas identificados en el Informe de identificación de problemas, del 17 de noviembre de 2008. El taller también funcionará como una segunda reunión para tratar el alcance del proyecto de solicitud de derecho de paso CACA-47740 a la Oficina de Administración de Tierras. Se invita a participar a todos los organismos y miembros del público interesados. El taller y la reunión para tratar el alcance del proyecto se realizarán el:

Jueves 18 de diciembre de 2008
1:00 p.m. a 4:00 p.m. Taller
4:00 p.m. a 5:00 p.m. Descanso (si hay tiempo)
5:00 p.m. a 7:00 p.m. Comentarios públicos/Reunión de la Oficina de Administración de Tierras para tratar el alcance del proyecto

Condado de El Centro
Edificio de Administración del Condado
Sala del Consejo
940 Main Street
El Centro, CA 92243
(mapa adjunto)

Propósito

La Oficina de Administración de Tierras y la Comisión de Energía se encuentran actualmente revisando la solicitud de certificación de Stirling Energy Systems Solar Two, LLC (SES Solar Two, LLC) para el desarrollo propuesto del proyecto SES Solar Two Project. Para facilitar la revisión del proceso conjunto de solicitud de certificación y declaración de impacto ambiental, el personal de la Oficina de Administración de Tierras

y la Comisión de Energía publicó el primer conjunto de solicitudes de información conjuntas para las siguientes áreas técnicas, el 14 de noviembre de 2008: recursos biológicos, uso del suelo, aspectos socioeconómicos, recursos del suelo y el agua, tráfico y transporte, ingeniería de sistemas de transmisión, recursos visuales, gestión de residuos y seguridad de los trabajadores y protección contra incendios. El 2 de diciembre de 2008 se publicarán solicitudes de información adicionales para las áreas técnicas de calidad del aire y recursos culturales.

Descripción del proyecto

El proyecto propuesto utilizaría tecnología de SunCatcher, que consta de aproximadamente 30,000 paneles de energía solar de 25 kilowatts con una capacidad de generación de electricidad de aproximadamente 750 megawatts (MW), que se armarían en dos fases. La primera fase constaría de un máximo de 12,000 SunCatchers, configurados en 200 grupos solares de 1.5 MW, compuestos por 60 SunCatchers por grupo y con una capacidad de generación de electricidad neta de 300 MW. La segunda fase constaría de aproximadamente 18,000 SunCatchers, configurados en 500 grupos de 1.5 MW, con una capacidad de generación de electricidad neta de 450 MW. Cada sistema SunCatcher consta de un panel concentrador solar de aproximadamente 38 pies de alto y 40 pies de ancho, que acepta una variedad de facetas de espejos curvos diseñados para seguir automáticamente al sol y concentrar la energía solar en una unidad de conversión de energía que genera electricidad. Las estructuras relacionadas incluirían un complejo de servicios principales, estructuras de ensamblaje, una subestación eléctrica de 230 kilovoltios (kV), una línea de transmisión de 10 millas, caminos de acceso, línea de suministro de agua y una línea de transmisión de doble circuito de 230 kV que recorre 10 millas, desde el emplazamiento del proyecto hasta la subestación eléctrica de San Diego Gas and Electric existente en Imperial Valley, la cual interconecta el proyecto al sistema de transmisión de 500 kV existente. La fase II de 450 MW depende de la aprobación de la línea de transmisión Sunrise Powerlink de 500 kV propuesta, que también se interconectaría con la subestación eléctrica de Imperial Valley.

Antecedentes

El 8 de octubre de 2008, la Comisión de Energía comenzó la revisión del proyecto, proceso que tomará aproximadamente 18 meses. Durante el período de revisión, el personal de la Comisión de Energía determinará si el proyecto propuesto cumple con las leyes pertinentes relacionadas con la salud y la seguridad públicas, los impactos ambientales y los requisitos de ingeniería. Como la agencia líder según la Ley de calidad ambiental de California (CEQA, por sus siglas en inglés), la Comisión de Energía es responsable de la revisión y aprobación o denegación final de todas las solicitudes para construir y operar plantas termoeléctricas de 50 MW y más en California. El proceso de certificación de las instalaciones por parte de la Comisión de Energía analiza cuidadosamente la salud y seguridad públicas, los impactos ambientales y los aspectos de ingeniería de las plantas de energía y todas las instalaciones relacionadas propuestas, tales como líneas de transmisión eléctrica y tuberías de gas natural y de agua.

Según la ley federal, la Oficina de Administración de Tierras es responsable de procesar las solicitudes de derecho de paso para autorizar el proyecto y las líneas de transmisión

asociadas propuestos, además de otras instalaciones que se construirán y operarán en terrenos que ésta administra. Al procesar las solicitudes, la Oficina de Administración de Tierras debe cumplir los requisitos de la Ley nacional de política ambiental (NEPA, por sus siglas en inglés), lo cual requiere que los organismos federales consideren los impactos ambientales asociados con los proyectos que aprueban.

El propósito de la medida de la Oficina de Administración de Tierras es brindar una decisión al postulante al procesar su solicitud de una concesión de derecho de paso (ROW, por sus siglas en inglés) para uso y acceso legal a los terrenos públicos en el condado de Imperial, California, administrados por la Oficina de Administración de Tierras. La necesidad de la medida de la Oficina de Administración de Tierras es establecida por la responsabilidad de ésta, según la Ley federal de políticas y administración de tierras (FLPMA, por sus siglas en inglés), la Ley nacional de política ambiental y otras leyes federales para responder a la solicitud de SES de derecho a paso para tener acceso legal para construir, operar y decomisar una planta de generación térmica solar e instalaciones relacionadas propuestas en los terrenos públicos. Para tomar la decisión, la Oficina de Administración de Tierras decidirá si conceder o no un derecho de paso y, de hacerlo, bajo qué términos y condiciones.

La propuesta crearía también la necesidad de modificar el Plan de conservación del desierto de California (CDCP, por sus siglas en inglés) de 1980, de la Oficina de Administración de Tierras. El propósito de la modificación del Plan de conservación del desierto de California es garantizar que los terrenos públicos se administren a través de la planificación del uso de terreno de acuerdo con los principios de uso múltiple identificados en la Ley federal de políticas y administración de tierras, a la vez que se administran los derechos válidos existentes y otras obligaciones establecidas. La modificación propuesta es necesaria para abordar las cambiantes demandas de recursos y las propuestas de desarrollo tecnológico en terrenos públicos. Según la modificación, la Ley de conservación del desierto de California exige (página 95) que "Los sitios asociados con generación o transmisión de energía no identificados en el Plan (como en este caso) se considerarán a través del proceso de modificación del Plan".

En conformidad con un Protocolo de comprensión (MOU, por sus siglas en inglés), el personal de la Oficina de Administración de Tierras y la Comisión de Energía pretende realizar una revisión ambiental conjunta del proyecto SES Solar Two Project en un proceso de la Ley nacional de política ambiental y la Ley de calidad ambiental de California. El interés de la Oficina de Administración de Tierras y la Comisión de Energía es compartir en la preparación de un análisis ambiental conjunto del proyecto propuesto para evitar doblar los esfuerzos del personal, compartir la experiencia e información del personal, promover la coordinación intergubernamental a nivel local, estatal y federal, así como facilitar las revisiones públicas al proporcionar un documento conjunto y un proceso de revisión ambiental más eficiente.

Participación pública

La Oficina del Asesor Público de la Comisión de Energía invita al público a participar en las actividades de la Comisión. Si desea información sobre cómo participar en este procedimiento, comuníquese con la asesora pública asociada, Loreen McMahon, al: (916) 654-4489, sin costo al (800) 822-6228, por FAX al (916) 654-4493, o por correo electrónico a public.adviser@energy.state.ca.us. Si tiene una discapacidad y necesita ayuda para participar, comuníquese con Lourdes Quiroz a lquiroz@energy.state.ca.us o al (916) 654-5146 al menos cinco días antes del taller. En el taller habrá servicios de traducción al español disponibles.

Preguntas

La información general sobre la instalación de generación de energía eléctrica propuesta y los documentos relacionados se encuentran disponibles en el sitio Web de la Comisión de Energía, en: http://www.energy.ca.gov/sitingcases/solartwo/index.html o el sitio Web de la Oficina de Administración de Tierras en: http://www.blm.gov/ca/st/en/fo/elcentro/nepa/stirling.html.

Dirija todas las preguntas de los medios de comunicación a la Oficina de Medios de Comunicación de la Comisión de Energía al (916) 654-4989 o por correo electrónico a mediaoffice@energy.state.ca.us. Para realizar preguntas técnicas sobre el tema, comuníquese con Christopher Meyer, gerente de proyecto de la Comisión de Energía, al (916) 653-1639 o por correo electrónico a: cmeyer@energy.state.ca.us o con Jim Stobaugh, gerente de proyecto de la Oficina de Administración de Tierras, al (775) 861-6478 o por correo electrónico a: jim_stobaugh@blm.gov. Si no puede asistir al taller, puede enviar sus comentarios escritos por vía electrónica al gerente de proyecto de la Comisión de Energía o a la dirección postal de la Comisión de Energía que figura en el membrete de este Aviso, antes del 2 de enero de 2009, el fin del período de alcance de la Oficina de Administración de Tierras.

Fecha: _____

_____
Terrence O'Brien, director suplente
División de emplazamiento, transmisión y protección ambiental

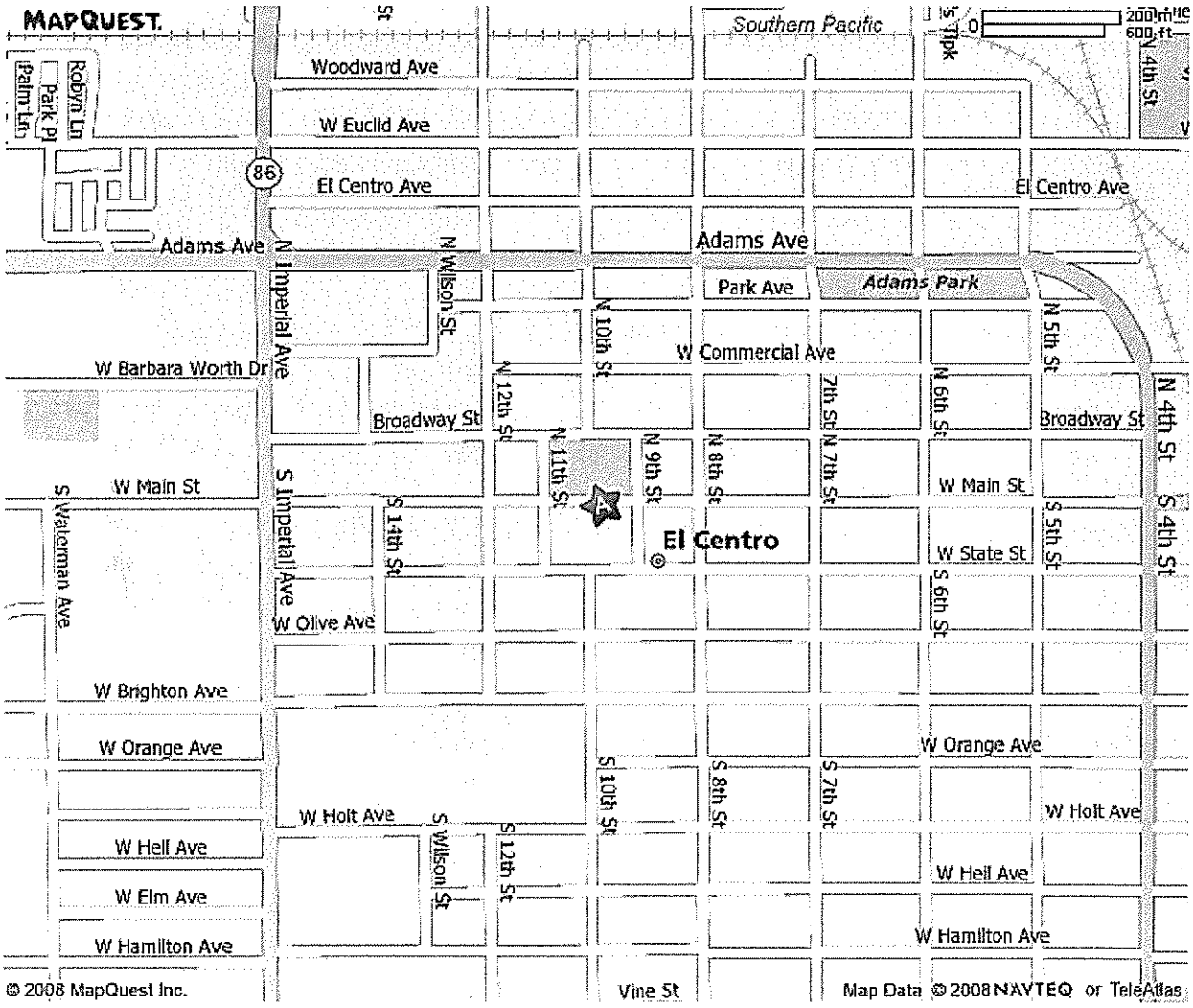
Comprobante de lista de servicio

Listas de correo: 7302, 7303, 7304, 7305

Jueves 18 de diciembre de 2008
1:00 p.m. a 4:00 p.m. Taller
4:00 p.m. a 5:00 p.m. Descanso (si hay tiempo)
5:00 p.m. a 7:00 p.m. Comentarios públicos/Reunión de la Oficina de Administración de Tierras para tratar el alcance del proyecto

Condado de El Centro
Edificio de Administración del Condado
Sala del Consejo
940 Main Street
El Centro, CA 92243

(Con acceso para sillas de ruedas)



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE
SOLAR TWO POWER PROJECT
STIRLING ENERGY SYSTEMS

DOCKET NO. 08-AFC-5

NOTICE OF INFORMATIONAL HEARING AND PUBLIC SITE VISIT AND BUREAU OF LAND MANAGEMENT SCOPING MEETING

On June 30, 2008, Stirling Energy Systems (SES) Solar Two, LLC (Applicant), submitted an Application for Certification (AFC) to the Energy Commission to construct a concentrated solar thermal power plant facility approximately 14 miles west of El Centro, in Imperial County. The project site is just south of Plaster City between the Union Pacific Railroad tracks and the Interstate 8 Highway. The Energy Commission has exclusive state-level jurisdiction to license this project and is considering the proposal under a twelve-month review process established by Public Resources Code section 25540.6. The Bureau of Land Management (BLM) is conducting its own concurrent process to determine whether to approve an amendment to the 1980 California Desert Conservation Area Plan and a right-of-way grant authorizing the construction and operation of the proposed project on federal lands.

PLEASE TAKE NOTICE that the Energy Commission has designated a Committee of two commissioners to conduct proceedings on the Application. The Committee has scheduled a public Informational Hearing and Site Visit to discuss the proposed Project and the BLM will conduct a Public Scoping Meeting as described below:

Monday, November 24, 2008
Public Informational/Scoping Meeting begins at 2:00 p.m.
Site Visit begins (bus leaves) at 3:30 p.m.

Imperial County Administration Center
Board Chambers
940 West Main Street, Suite 211
El Centro, California 92243
(Map to Location)

After the Informational Hearing/Scoping Meeting, members of the public are invited to join the Committee and the BLM on a tour of the proposed site. The Applicant will provide transportation to and from the site. For reservations, contact the Energy Commission's Public Adviser's Office at (916) 654-4489 or 1-800-822-6228 or e-mail: **[publicadviser@energy.state.ca.us]**. Please make your reservation prior to **Monday, November 17** so that we can assure you a space.

Background

On October 8, 2008, the Energy Commission began review of the Project. During the review period, Energy Commission staff will determine whether the proposed project complies with applicable laws related to public health and safety, environmental impacts, and engineering requirements. This Informational Hearing/Scoping Meeting is co-sponsored by the Energy Commission and BLM to inform the public about the Project and to invite public participation in the review process.

As the lead agency under the California Environmental Quality Act (CEQA), the Energy Commission is responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants, 50 MW and greater, in California. The Energy Commission facility certification process carefully examines public health and safety, environmental impacts and engineering aspects of proposed power plants and all related facilities such as electric transmission lines and natural gas and water pipelines.

Under federal law, the BLM is responsible for processing applications for rights-of-way to authorize the proposed project and associated transmission lines and other facilities to be constructed and operated on land it manages. In processing applications, the BLM must comply with the requirements of the National Environmental Policy Act (NEPA), which requires that federal agencies consider the environmental impacts associated with such projects.

Pursuant to a Memorandum of Understanding (MOU), the BLM and the Energy Commission staff intend to conduct a joint environmental review of the SES Solar Two Project in a single NEPA/ CEQA process. It is in the interest of the BLM and the Energy Commission to share in the preparation of a joint environmental analysis of the proposed project to avoid duplication of Staff efforts, to share Staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate public review by providing a joint document and a more efficient environmental review process.

Purpose of the Informational/Scoping Hearing

This Informational Hearing/Scoping Meeting provides an opportunity for members of the community in the project vicinity to obtain information, to offer comments and concerns, and then to view the project site. The Applicant will explain plans for developing the Project and the related facilities and Energy Commission staff will explain the

administrative licensing process and Staff's role in reviewing the Application. The BLM staff will also explain the role of their agency in the joint process as is described in **Attachment A** to this Notice—BLM's Notice of Intent to Prepare an Environmental Impact Statement/Staff Assessment.

Project Description

The proposed project would utilize SunCatcher technology, consisting of approximately 30,000 25-kilowatt solar power dishes with a generating capacity of approximately 750 megawatts (MW) to be built in two phases. The first phase would consist up to 12,000 SunCatchers configured in 200 1.5 MW solar groups of 60 SunCatchers per group and have a net nominal generating capacity of 300 MW. The second phase would consist of approximately 18,000 SunCatchers configured in 300 1.5 MW groups with a net generating capacity of 450 MW. Each SunCatcher system consists of an approximate 38-foot high by 40-foot wide solar concentrator dish that supports an array of curved glass mirror facets designed to automatically track the sun and focus solar energy onto a Power Conversion Unit which generates electricity. Related structures would include a main services complex, assembly buildings, a 230-kilovolts (kV) electrical substation, access roads, supply water line, and a 10.3-mile double circuit 230-kV transmission line from the project site to San Diego Gas and Electric's existing Imperial Valley electrical substation. Development of the 450 MW Phase II is dependent on the approval and construction of additional transmission capacity, such as the proposed Sunrise Powerlink 500-kV transmission line that would also interconnect with the Imperial Valley electrical substation.

The engineering and environmental details of the proposed project are contained in the AFC. Copies of the AFC are available at the local public agencies that are involved in the review process and at the following libraries: Imperial County Free Library, Ocotillo and Seeley Branches; Fresno County Library; San Diego Public Library; UCLA, University Research Library; Barstow Branch Library; San Bernardino County Library; Humboldt Library; San Francisco Public Library; the Energy Commission's Library in Sacramento; and the California State Library in Sacramento.

Proposed Schedule and Issue Identification Report

To assist the parties and public in understanding the process, Staff shall file a proposed schedule for project review. Staff shall also file an Issue Identification Report summarizing the major issues. The proposed schedule and Staff's report shall be filed no later than **noon on November 17, 2008**. The Applicant shall file its response, if any, no later than **noon on November 20, 2008**.

Public Adviser and Public Participation

The Energy Commission Public Adviser Office is available to assist the public in participating in the application review process. For those individuals who require general information on how to participate, please contact the Associate Public Adviser, Loreen R. McMahon at (916) 654-4489 or 1-800-822-6228 or e-mail: **[publicadviser@energy.state.ca.us]**. If you have a disability and need assistance to participate in this event, contact Lourdes Quiroz at 916-654-5146 or e-mail: **[lquiroz@energy.state.ca.us]**.

Information

Questions of a legal or procedural nature should be directed to Raoul Renaud, the Hearing Officer, at (916) 651-2020 or e-mail: **[rrenaud@energy.state.ca.us]**.

Technical questions concerning the Project should be addressed to Christopher Meyer, the Staff Project Manager, at (916) 653-1639 or e-mail: **[cmeyer@energy.state.ca.us]**.

Technical questions concerning the BLM permitting process should be addressed to Lynda Kastoll at (760) 337-4421, **[lynda_kastoll@ca.blm.gov]** or Jim Stobaugh, (775) 861-6478, **[Jim_Stobaugh@blm.gov]**.

Media inquiries should be directed to the Office of Media and Public Communications at (916) 654-4989 or e-mail: **[mediaoffice@energy.state.ca.us]**.

Information concerning the status of the project, as well as notices and other relevant documents may be viewed on the Energy Commission's Internet web page at: **[http://www.energy.ca.gov/sitingcases/solartwo/]**.

Dated: October 30, 2008, at Sacramento, California.

Original Signed By:
JEFFREY D. BYRON
Commissioner and Presiding Member
Solar Two AFC Committee

Original Signed By:
JACKALYNE PFANNENSTIEL
Chairman and Associate Member
Solar Two AFC Committee

Attachment A

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
(CACA 47740, LLCAD07000 L51030000)

Notice of Intent to Prepare an Environmental Impact Statement/Staff Assessment
and
Proposed Land Use Plan Amendment for the Proposed SES Solar Two Project, Imperial County, California

AGENCY: **Bureau of Land Management**
ACTION: **Notice** (4310-40-P)

SUMMARY: In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), and the California Environmental Quality Act (CEQA), the Department of the Interior, Bureau of Land Management (BLM), together with the California Energy Commission, (hereinafter jointly referred to as the Agencies) intend to prepare an Environmental Impact Statement / Staff Assessment (EIS/SA), and a Proposed Land Use Plan Amendment for the Stirling Energy Systems (SES) Solar Two Project (Project), a Stirling engine systems solar dish project in Imperial County, California. SES is seeking approval to construct and operate an electrical generating facility with a nominal capacity of 750 megawatts (MW), using concentrated solar thermal power. The approximately 6,500 acres of land needed to develop the Project consists of approximately 6,140 acres of BLM administered public land and approximately 360 acres of privately owned land. SES has submitted an application to the BLM requesting a right-of-way (ROW) to construct the Project and related facilities. Pursuant to the California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan will be considered through the plan amendment process.

Under Federal law, BLM is responsible for processing requests for rights-of-way to authorize such proposed projects and associated transmission lines and other appurtenant facilities on land it manages. BLM must comply with the requirements of NEPA to ensure that environmental impacts associated with construction, operation, and decommissioning will be identified, analyzed and considered in the application process. In the case of solar thermal power plant projects, this will be accomplished through coordination of the state and federal application processes, public participation, environmental analysis, and the preparation of Draft and Final Environmental Impact Statement (EIS) in coordination with the Energy Commission and its Preliminary and Final Staff Assessments.

Under California law, the Energy Commission is responsible for reviewing the Application for Certification filed for thermal power plants over 50 MW, and also has the role of lead agency for the environmental review of such projects under the CEQA (Pub. Res. Code, §§ 21000 et seq., 25500 et seq.) The Energy Commission conducts this

review in accordance with the administrative adjudication provisions of the Administrative Procedure Act (Gov't. Code § 11400 et seq.) and its own regulations governing site certification proceedings (Cal. Code Regs., tit. 20, § 1701 et seq.), which have been deemed CEQA equivalent by the Secretary of Resources. SES Solar Two, LLC, has submitted an Application for Certification (AFC) to the Energy Commission. The AFC facilitates analysis and review by staff prior to an Energy Commission decision on the proposed project.

DATES: Publication of this notice initiates a public scoping period of at least 30 days. During the public scoping period, the Agencies will solicit public comments on issues, concerns, potential impacts, alternatives, and mitigation measures that should be considered in the analysis of the proposed action. In addition, the Agencies expect to hold at least one public meeting/workshop during the scoping period to encourage public input. The public meeting(s) will be announced through the local news media, newspapers, mailings, the BLM web page [**http://www.ca.blm.gov/elcentro**] and the Energy Commission web page [**http://www.energy.ca.gov/sitingcases/solartwo/**] at least 15 days prior to the event. While you may have the opportunity to make oral comments, comments must also be submitted in writing. In order to be included in the Draft EIS/Preliminary Staff Assessment (DEIS/PSA), all comments must be received prior to the close of the scoping period or 15 days after the last public meeting, whichever is later. Additional opportunities for public participation and formal comment occur when the DEIS/PSA is issued.

ADDRESSES: You may submit comments in a variety of ways: 1) By U.S. mail, 2) by electronic mail, (3) or by attending the public scoping meeting(s) and submitting written comments at the meeting(s). By Mail: Please use first-class postage and be sure to include your name and a return address. Please send written comment to: Christopher Meyer, Project Manager, Siting, Transmission and Environmental Protection Division, California Energy Commission, 1516 Ninth Street, MS-15, Sacramento, CA, 95814. By Electronic Mail: e-mail comments are welcome; however, please remember to include your name and return address in the e-mail message. E-mail should be sent to **[cmeyer@energy.state.ca.us]**.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment including your personal identifying information may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

FOR FURTHER INFORMATION CONTACT: Information regarding the BLM process may be obtained from the Bureau of Land Management, 1661 So. 4th Street, El Centro, California 92243, attention Lynda Kastoll, (760) 337-4421, **[lynda_kastoll@ca.blm.gov]**; or Erin Dreyfuss , (760) 337-4436, **[erin_dreyfuss@ca.blm.gov]**. Information regarding the Energy Commission process may be obtained from Christopher Meyer, Project Manager, Siting, Transmission and Environmental Protection Division, California Energy Commission, 1516 Ninth Street, MS-15, Sacramento, CA 95814, (916) 653-1639, [cmeyer@energy.state.ca.us].

Information on participating in the Commission's review of the project may be obtained through the Commission's Public Adviser's Office, at (916) 654-4489 or toll free in California, (800) 822-6228, or by email: **[publicadviser@energy.state.ca.us]** News media inquiries should be directed to the Commission's media office at (916) 654-4989, or via email at **[mediaoffice@energy.state.ca.us]**.

Status of the proposed project, copies of notices, an electronic version of the AFC, and other relevant documents are also available on the Commission's internet web site at **[http://www.energy.ca.gov/sitingcases/solartwo/]**. You can also subscribe to receive email notification of all notices at **[http://www.energy.ca.gov/listservers/]**.

SUPPLEMENTARY INFORMATION: SES Solar Two, LLC has applied to BLM for a right- of-way on public lands to construct a concentrated solar thermal power plant facility approximately 14 miles west of El Centro, CA, in Imperial County. The project site is just south of Plaster City between the Union Pacific Railroad tracks and the Interstate 8 highway. The facility is expected to operate for approximately 30 years. The proposed project would utilize SunCatcher technology, consisting of approximately 30,000 25-kilowatt solar power dishes with a generating capacity of approximately 750 megawatts (MW) to be built in two phases. The first phase would consist up to 12,000 SunCatchers configured in 200 1.5 MW solar groups of 60 SunCatchers per group and have a net nominal generating capacity of 300 MW. The second phase would consist of approximately 18,000 SunCatchers configured in 300 1.5 MW groups with a net generating capacity of 450 MW. Each SunCatcher system consists of an approximate 38-foot high by 40-foot wide solar concentrator dish that supports an array of curved glass mirror facets designed to automatically track the sun and focus solar energy onto a Power Conversion Unit which generates electricity. Related structures would include a main services complex, assembly buildings, a 230-kilovolts (kV) electrical substation, access roads, supply water line, and a 10-mile double circuit 230-kV transmission line from the project site to San Diego Gas and Electric's existing Imperial Valley electrical substation. The 450 MW Phase II is dependent on the approval and construction of additional transmission such as the proposed Sunrise Powerlink 500-kV transmission line that would also interconnect with the Imperial Valley electrical substation. The EIS/SA will analyze the site-specific impacts on air quality, biological resources, cultural resources, water resources, geological resources and hazards, hazardous materials handling, land use, noise, paleontological resources, public health, socioeconomics, soils, traffic and transportation, visual resources, waste management and worker safety and fire protection, as well as facility design engineering, efficiency, reliability, transmission system engineering and transmission line safety and nuisance. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process.

The following Planning Criteria will be utilized during the plan amendment process:

- The plan amendment process will be completed in compliance with FLPMA, NEPA, and all other relevant Federal laws, Executive orders, and management policies of the BLM;

- The plan amendment process will include an EIS that will comply with NEPA standards;
- Where existing planning decisions are still valid, those decisions may remain unchanged and be incorporated into the new plan amendment;
- The plan amendment will recognize valid existing rights;
- Native American Tribal consultations will be conducted in accordance with policy and Tribal concerns will be given due consideration. The plan amendment process will include the consideration of any impacts on Indian trust assets;
- Consultation with the SHPO will be conducted throughout the plan amendment process; and
- Consultation with USFWS will be conducted throughout the plan amendment process.

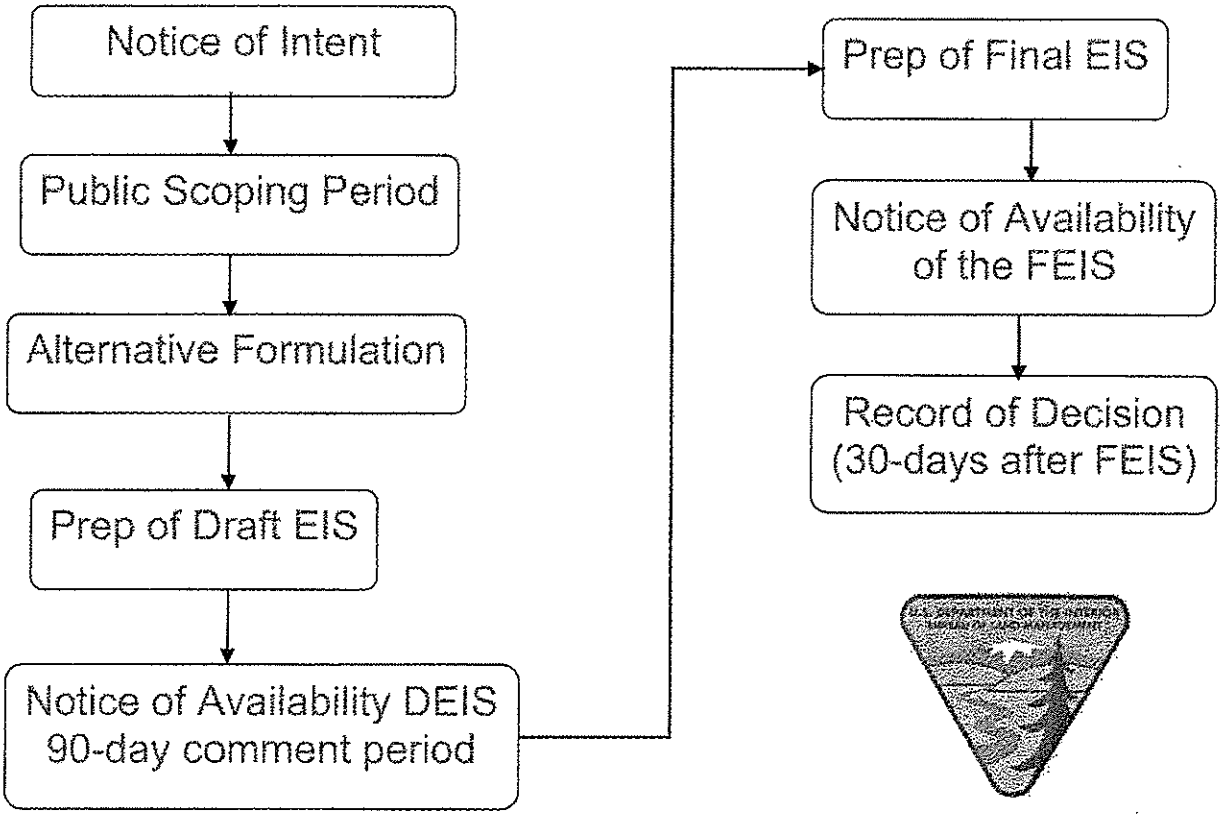
If the ROW and proposed land use plan amendment are approved by BLM, the concentrated solar thermal power plant facility on public lands would be authorized in accordance with Title V of the Federal Land Policy and Management Act of 1976 and the Federal Regulations at 43 CFR 2800. A certificate designating approval of the Energy Commission must be obtained by SES before it may construct a power plant and/or electric transmission line and related facilities.

Dated October 10, 2008

Original Signed By:

THOMAS POGACNIK
Deputy State Director
Natural Resources (CA-930)
California State Office

BLM NEPA Process for EIS



Mailed to Lists: POS, 7302, 7303, 7304, 7305

Crews overwhelmed by raging wildfire

▶ HOMES BURN:
Fire still not contained.

SANTA BARBARA (AP) — Firefighters held their own Friday against a dangerous wildfire that destroyed more than 100 homes in a wealthy, celebrity-studded enclave and credited lighter-than-expected winds for helping them keep the blaze from growing.

But authorities cautioned that the blaze in tony Montecito was still uncontained and could flare up again as wind gusts of up to 30 mph picked up at sundown, despite a day of grueling work by more than 1,000 firefighters. Several more homes burned Friday.

INSIDE: Celebrities flee the flames. See A10

AP PHOTO

Rick Pointer (right), professor of history at Westmont College, his daughter Katie and wife, Barbara, look over the ruins of their home, one of several Westmont faculty homes lost, Friday morning after a wildfire that began Thursday destroyed about 100 homes and other structures in Montecito.

"It's not a time to relax," said Santa Barbara County Deputy Fire Chief Tom Franklin. "Everybody's got to be diligent through tonight. It's the last evening of these wind events."

Franklin said "upwards of 150 homes" may have burned in the area and asked for patience from residents as crews try to catalog the devastation in remote hilly areas accessible only by winding roads. There were 3,500 parcels in the hardest-hit area and all homes might not be accounted for until Sunday, said Santa Barbara City Fire Chief Ron Prince.

"We want to make sure the area is completely safe before we let people back in there," he said. "I have to beg, basically, for your patience."

The fire may also have claimed a victim: a 98-year-old man with multiple medical problems died after being evacuated to a hotel, but it was unclear if his death was directly related to the blaze, Santa Barbara County Sheriff-Coroner Bill Brown said.

No more details were immediately available.

Earlier Friday, blistering winds gusting to 70 mph, dry brush and oil-rich eucalyptus trees helped turn an ordinary brush fire into an exploding inferno.

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Carrier Delivery

Total		Total
1 Month $10.00	3 Month	$30.00
6 Month $60.00	1 Year	$120.00

Motor Vehicle Delivery

Total		Total
1 Month $11.00	3 Month	$33.00
6 Month $66.00	1 Year	$132.00

Mail Delivery within Imperial County

Total		Total
1 Month $12.25	3 Month	$36.75
6 Month $73.50	1 Year	$151.00

Mail Delivery outside Imperial County

Total		Total
1 Month $11.50	3 Month	$34.00
6 Month $102.00	1 Year	$204.00

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AP PHOTO

State employee Debbie Berman, a single mother of four, said the state could stop paying overtime on holidays rather than eliminating two days, when discussing Gov. Arnold Schwarzenegger's proposal to take two holidays from state employees outside the Capitol in Sacramento on Thursday.

Budget fix: Trim holidays

▶ STATE WORKERS:
Governor's idea could save $114 million.

SACRAMENTO (AP) — Gov. Arnold Schwarzenegger has nothing against Lincoln or Columbus. He just thinks state workers don't need their holidays as a paid day off while California faces a mounting budget deficit.

The governor has proposed eliminating them as paid holidays, a move his administration estimates will save California $114 million during this fiscal year and the next one starting in July. Much of that will come from saved overtime costs.

"We think it's not so painful to give up a couple of holidays," said Mike Genest, Schwarzenegger's finance director.

California is one of just a few states considering trimming the number of paid days off given to state employees as a way to save money in lean economic times.

New Jersey passed a benefit-cutting bill in September that included eliminating Lincoln's Birthday as a state paid holiday amid a budget deficit projected to reach $1.2 billion in the current fiscal year. Gov. Jon Corzine also stopped issuing an annual executive order giving employees the day after Thanksgiving as a paid day off, ending a long-standing tradition.

Utah, which is experimenting with a four-day work week, eliminated Columbus Day as a paid holiday.

Scott Pattison, executive director of the National Association of State Budget Officers, said California and New Jersey are rare because they offer so many paid holidays to government workers: 14 in California, which includes a "personal holiday," and 13 in New Jersey.

According to the U.S. Bureau of Labor Statistics, the average number of paid holidays for state and local government employees nationwide is 11 days a year. The average private-sector employee receives eight paid holidays.

CALIFORNIA BRIEFS

Police: 3 dead in office park shooting

SANTA CLARA — Police are searching for a man who allegedly returned to the office where he was recently laid off and opened fire, killing three people.

The suspect is identified as 47-year-old Jing Wu of Mountain View.

Santa Clara Police Lt. Mike Sellers says the shooting happened just before 4 p.m. Friday at an office complex on Scott Boulevard and Montgomery Drive. The victims are two men and one woman.

Police say the bodies were found in Building 7 of the complex, but they won't release the name of the company that had laid off Wu.

Sellers says Wu is about 5 feet 7 inches tall and weighs 170 pounds and may have been driving a silver Mountaineer SUV.

Twist in Web hoax trial

LOS ANGELES — Evidence from the suicide of a Missouri girl can be used by prosecutors against a woman charged with helping to create a false Internet identity that was used to harass the teenager, a federal judge ruled Friday.

The ruling came days before the start of the potentially groundbreaking trial of Lori Drew, 49, of O'Fallon, Mo., who pleaded not guilty to conspiracy and accessing computers without authorization. Prosecutors said Drew helped create the MySpace account and harassed Megan Meier, her daughter's former friend.

Prosecutors say Meier, 13, who was being treated for depression, hanged herself after receiving messages saying the world would be better off without her.

Drew's lawyer had argued the suicide evidence would lead jurors to focus on the death, rather than whether Drew violated the terms of service of MySpace.

THE ASSOCIATED PRESS

POWER PLANT PUBLIC HEARING AND SITE VISIT
by the California Energy Commission
www.energy.ca.gov
and the US Bureau of Land Management

DATE: Monday, November 24, 2008
TIME: 2:30 p.m. Site Visit, bus departs from County Administration Building (BUS RESERVATIONS REQUIRED)
4:00 p.m. Informational Hearing/Scoping Meeting
LOCATION: County of El Centro
County Administration Building
Board Chambers
940 Main Street, El Centro, CA 92243

The California Energy Commission and the US Bureau of Land Management will hold a joint site visit and informational hearing/scoping meeting regarding Stirling Energy Systems Solar Two Power Project application to construct and operate a nominal 750-megawatt concentrating solar dish power system, including transmission lines, substation and other associated facilities. Proposed to be located about 14 miles west of El Centro, it would involve about 6,500 acres, including 6,140 acres of BLM-administered public lands and 360 acres of private lands. The site visit will show the exact location of the proposed project and the public meeting will provide project details, as well as an explanation of the agency joint processes and requirements under the California Environmental Quality Act and the National Environmental Policy Act, including public participation opportunities and comment periods. This will be the first of several public events during the review of this proposed project.

For bus reservations and more information:
Public Advisor's Office
Tel: (916) 654-4489 or toll-free at (800) 822-6228 (msg. only)
E-mail: PublicAdviser@energystate.ca.us

Intensa revisión a proyecto de Casino

ARTURO BOJORQUEZ
adelante@vpresslive.com

De manera enérgica, el Supervisor del Condado por el Distrito 1, Víctor Carrillo, exigió a los altos funcionarios del gobierno local un trato justo para el proyecto del Casino de Calexico y no ponerle obstáculos.

El supervisor indicó que las autoridades no trataron de la misma forma al Centro Comercial del Valle Imperial a como se está haciendo con el casino.

"Espero que no se enfrente el asunto para poner obstáculos", afirmó Carrillo, quien admitió que el proyecto del casino debe contar con medidas que mitiguen cualquier impacto al cien por ciento.

Carrillo agregó que los problemas de tránsito vehicular en el Centro Comercial no han sido resueltos por "opiniones subjetivas".

El supervisor aseguró que aún falta por arreglar varias calles como Chick, Dogwood, McCabe y la Carretera 86.

"Yo no veo impactos adicionales sólo por contar con un casino", dijo Carrillo respecto al Reporte de Impacto Ambiental emitido por la Ciudad de Calexico a finales del mes de octubre.

El Supervisor por el Distrito 3, Joe Maruca, señaló que los problemas del tránsito vehicular alrededor del Centro Comercial no eran el objetivo de este proyecto.

Maruca recordó que Calexico se opuso a la construcción del 'Mall' en voz de su entonces Director de Obras Públicas, Mariano Martínez.

Por su parte, el Director del Departamento de Planeación y Servicios para el Desarrollo, Jurg Heuberger, mencionó que el proyecto del Centro Comercial tomó más tiempo revisarlo, al aceptar que los impactos de éste no se analizaron adecuadamente.

El funcionario del condado expresó que el reporte no cuenta con un plan específico para el casino.

Heuberger mencionó que el tema no habría sido abordado el martes de no ser por la controversia que se ha levantado.

La fecha límite para expresar opiniones respecto al documento vence este viernes 21.

El director informó que el reporte no es final, ya que todavía falta otra etapa de audiencias y comentarios.

El Supervisor por el Distrito 5 y férreo opositor al Casino, Wally Leimgruber, mencionó que todos los proyectos se analizan de la misma forma.

Añadió que el Casino Paradise, en Winterhaven, se encuentra en territorio indígena, mientras el de Manzanida está fuera de reservación.

Al ser cuestionado por Carrillo sobre la ausencia de autoridades de Calexico y de la Tribu Manzanita, el Oficial Ejecutivo en Jefe, Ralph Córdova, respondió que éstos no fueron notificados personalmente, pero dijo que la agenda fue publicada el jueves.

Fotos| ARCHIVO

El proyecto de construcción del Casino de Calexico enfrenta un duro análisis por parte de las autoridades del Condado de Imperial.

Revisan hasta la ortografía

ARTURO BOJORQUEZ
adelante@vpresslive.com

La respuesta del gobierno del condado al Reporte de Impacto Ambiental llevó a los funcionarios locales a hacer comentarios hasta por la forma en que fue redactado.

Las anotaciones oficiales indican que el Departamento de Planeación se llama Departamento de Planeación y Servicios para el Desarrollo, según un documento firmado por el titular de esta agencia, Jurg Heuberger.

Además, el funcionario señala varios errores de escritura en el Mapa de Uso de Suelo.

Este mismo departamento le pide a los responsables del Casino a estudiar todas las calles que se ubiquen a 20 millas a la redonda, esto es, desde Ocotillo hasta Brawley y Holtville, así como el pago de mejoras de estos caminos.

También piden mejorar los sistemas de agua, drenaje y electricidad.

Entre estos últimos destaca la ampliación de un tramo del Camino Dogwood, entre la Carretera 8 y el Camino McCabe, que desde un principio estuvo a cargo del condado, la Ciudad de El Centro y los desarrolladores del Centro Comercial del Valle Imperial.

Heuberger fue el único que señaló inconsistencias en el tamaño del terreno que ocupará el Casino.

El Director de Obras Públicas del Condado, Bill Brunet, presentó en otro documento la necesidad de mejorar o pagar una "parte justa" de más de 20 proyectos de calles en la región, incluido el Corredor del Camino Jasper y el análisis del aumento del tránsito desde la Garita Este.

Ante los posibles problemas que cause el Casino a las familias locales, el Departamento de Servicios Sociales solicitó casi 42 mil dólares para contratar personal.

"Una vez que el casino esté en operación, revisaremos el impacto actual y los costos para darles la información que se requiera", agregó James Semmes, Director de Servicios Sociales.

Brad Poiriez, Director del Distrito de Control de la Contaminación del Aire, así como Tony Rouhotas, Director de Bomberos, hicieron señalamientos al reporte.

El Alguacil del Condado, Ray Loera, solamente estimó que el impacto del casino en los servicios carcelarios y de investigaciones -entre otros-, serán moderados, al proporcionar una lista del costo por hora de éstos.

Presentarán casas construidas por residentes

ARTURO BOJORQUEZ
adelante@vpresslive.com

BRAWLEY — El próximo martes 25 de noviembre, la Coalición de Vivienda del Valle de Coachella (CVHC) presentará las residencias de 12 personas que construyeron sus casas con sus propias manos, dentro del Programa de Auto Ayuda.

El evento se llevará a cabo a las 4:30 de la tarde en la Comunidad Poe Colonia de Auto Ayuda, ubicada en el Camino Cady en esta ciudad.

De acuerdo a un comunicado de la CVHC, las familias decidieron abrir las puertas de sus casas y mostrar el vecindario "para demostrar a la comunidad lo que un grupo de individuos pueden hacer par mejorar las vidas de sus familias y cambiar el rostro de la comunidad".

Este es el primer proyecto hecho por el programa y se espera que en el futuro se construyan otras 12 residencias.

Las Colonias Poe son administradas por el Departamento de Vivienda y Desarrollo Urbano (HUD) del gobierno federal en áreas rurales ubicadas a 150 millas de la frontera entre México y Estados Unidos.

Dentro de este proyecto de auto ayuda, entre 10 y 15 familias trabajan juntas para construir hasta 12 viviendas, las cuales son ocupadas hasta que son terminadas.

El promedio del costo de cada residencia es de 170 mil dólares y se les asigna una hipoteca de hasta 145 mil dólares a cada familia.

El pago de "entre" se da con la mano de obra de las familias.

El programa ha ayudado a unas mil 300 familias en la región, de las cuales 27 se ubican en Brawley.

AUDIENCIA PÚBLICA
By the California Energy Commission and the US Bureau of Land Management
www.energy.ca.gov

FECHA: **Lunes, 24 de Noviembre de 2008**
HORA: **2:00 p.m.: Salida del autobús para la visita al emplazamiento**
(ES NECESARIO HACER RESERVACIONES PARA EL AUTOBÚS)
3:30 p.m. Audiencia informativa
LUGAR: County of Imperial
County Administration Center
Board Chambers
940 Main Street, El Centro, CA 92243

La Comisión de Energía de California y la Oficina de Administración de Tierras de los Estados Unidos realizarán una visita conjunta al emplazamiento, una audiencia pública y una reunión para tratar el alcance de la solicitud de realización del proyecto Stirling Energy Systems Solar Two Power Project, cuya finalidad es construir y operar un sistema de energía a base de paneles solares con una capacidad nominal de 750 megavatios, el cual incluye líneas de transmisión, una subestación y otras instalaciones asociadas. Con una ubicación propuesta a aproximadamente 14 millas al oeste de El Centro, comprendería aproximadamente 6,500 acres, incluidos 6,140 acres de terrenos públicos administrados por la Oficina de Administración de Tierras (BLM, por sus siglas en inglés) y 360 acres de terrenos privados. En la visita al emplazamiento se mostrará la ubicación exacta del proyecto propuesto, y en la reunión pública se entregarán los detalles del proyecto, así como una explicación de los procesos conjuntos de la agencia y de los requisitos conforme a la Ley de calidad ambiental de California y a la Ley nacional de política ambiental, que incluye las oportunidades de participación pública y los períodos de comentarios. Éste será el primero de muchos eventos públicos durante la revisión de este proyecto propuesto.

Reservaciones para el autobus llame:
La Oficina del Asesor Público
Tel: (916) 654-4489 or toll-free at (800) 822-6228
E-mail: PublicAdviser@energy.state.ca.us

APPENDIX D

DISTRIBUTION LISTS FOR THE SCOPING MEETING NOTICES

This appendix contains the following distribution lists for the scoping meeting notices:

- Agency Distribution List (1 page)
- General Distribution List (1 page)
- Property Owners List (2 pages)
- Library List (1 page)
- Solar 2 Merge List (2 pages)

AGENCIES

197769	DEELLEN	BRASHER	NAVY REGION SOUTHWEST	REGIONAL ENVIR COORDINATOR OFFICER	33000 NIXIE WAY, FASW BLDG 50 RM 332	SAN DIEGO	CA	92147-5110			619	532-2434	DEELLEN.BRASHER@NA.MIL
197581	CRAIG J	WEIGHTMAN	ACTING SENIOR ENVIR SCIENTIST	CALI DEPT OF FISH & GAMES	78-078 COUNTRY CLUB DRIVE STE 109	BERMUDA DUNES	CA	92203	760	2009358	760	200-9394	
197559	ROBERT	YUST	PLANNING OFFICIER		BLDG 504 NAVAL AIR FACILITY	EL CENTRO	CA	92243					ROBERT.YUST@NAVY.MIL
197560	MICHELLE	DEE	PUBLIC AFFAIRS OFFICIER		BLDG 214 NAVAL AIR FACILITY	EL CENTRO	CA	92243					MICHELLE.DEE@NAVY.MIL
194644	WILLIAM	BRUNET		IMPERIAL CO. PUBLIC WORKS DEPARTMENT	155 SOUTH 11TH STREET	EL CENTRO	CA	92243-2803					
194643	JURG	HEUBERGER		IMPERIAL CO. PLANNING/BUILDING DEV.	801 MAIN STREET	EL CENTRO	CA	92243-2811					
194639	TOM	ZALE		BLM - EL CENTRO FIELD OFFICE	1661 S. 4TH STREET	EL CENTRO	CA	92243-4561					
194640	CARRIE	SIMMONS		BLM - EL CENTRO FIELD OFFICE	1661 S. 4TH STREET	EL CENTRO	CA	92243-4561					
194641	DANIEL	STEWARD		BLM - EL CENTRO FIELD OFFICE	1661 S. 4TH STREET	EL CENTRO	CA	92243-4561					
194642	LYNDA	KASTOLL		BLM - EL CENTRO FIELD OFFICE	1661 S. 4TH STREET	EL CENTRO	CA	92243-4561	760	3374490	760	337-4421	LKASTOLL@CA.BLM.GOV
194634	STEVE	BORCHARD		BLM - CALIFORNIA DESERT DISTRICT	22835 CALLE SAN JUAN DE LOS LAGOS	MORENO VALLEY	CA	92553-9046					
194635	ALAN	STEIN		BLM - CALIFORNIA DESERT DISTRICT	22835 CALLE SAN JUAN DE LOS LAGOS	MORENO VALLEY	CA	92553-9046					
194636	GREG	MILLER		BLM - CALIFORNIA DESERT DISTRICT	22835 CALLE SAN JUAN DE LOS LAGOS	MORENO VALLEY	CA	92553-9046					
194637	GREG	THOMSEN		BLM - CALIFORNIA DESERT DISTRICT	22835 CALLE SAN JUAN DE LOS LAGOS	MORENO VALLEY	CA	92553-9046					
194638	ROLLA	QUEEN		BLM - CALIFORNIA DESERT DISTRICT	22835 CALLE SAN JUAN DE LOS LAGOS	MORENO VALLEY	CA	92553-9046					
194633	DYABE	MARTI		BLM STATE OFFICE	2800 COTTAGE WAY, SUITE W-1834	SACRAMENTO	CA	95825-1886					

GENERAL

197785	KELLY	FULLER			POB 6732	MINNEAPOLIS	MN	55406-0732					
197800	STEVE	SIEGEL	STAFF ATTORNEY	CENTER FOR BIOLOGICAL DIVERSITY	3421 PARK PLACE	EVANSTON	IL	60201-4938					
194654	SHERRY	CORDOVA	CHAIRWOMAN	COCOPAH INDIAN TRIBE	AVENUE G AND COUNTY 15TH STREET	SOMERTON	AZ	85350					
194655	JILL	MCCORMICK	CULTURAL RESOURCES	COCOPAH INDIAN TRIBE	AVENUE G AND COUNTY 15TH STREET	SOMERTON	AZ	85350					
164697	MIKE	JACKSON SR	#NAME?	FORT YUMA INDIAN RESERV - QUECHAN TR	PO BOX 1899	YUMA	AZ	85366-1899					
194651	BRIDGET	NASH-CHRABASCZ	HISTORIC PRESERVATION OFFICER	FORT YUMA INDIAN RESERVATION	P.O. BOX 1899	YUMA	AZ	85366-1899					
197780	CRAIG	DEUTSCHE			2231 KELTON AVE	LOS ANGELES	CA	90064-2010					
197789	ELDEN	HUGHES			14045 HONEYSUCKLE	WHITTIER	CA	90604-2516					
197797	LORI L.	PAUL			153 JAXINE DRIVE	ALTADENA	CA	91001-3817					
177497	MICHAEL	GARCIA		EWIIAAPAAYP TRIBAL OFFICE - EPA DIRECTOR	PO BOX 2250	ALPINE	CA	91903-2250					MICHAELG@LEANINGROCK.NET
177498	WILL	MICKLIN		EWIIAAPAAYP TRIBAL OFFICE - EXEC DIRECTO	PO BOX 2250	ALPINE	CA	91903-2250					WMICKLIN@LEANINGROCK.NET
194652	ROBERT	PINTO SR.	CHAIRMAN	EWIIAAPAAYP BD OF KUMEYAAY INDIANS	P.O. BOX 2250	ALPINE	CA	91903-2250					
177500	GWENDOLYN	PARADA	CHAIRPERSON	LA POSTA BAND OF MISSION INDIANS	PO BOX 1120	BOULEVARD	CA	91905-0220					LAPOSTA1@AOL.COM
194658	JAMES	HILL	EPA DIRECTOR	LA POSTA BAND OF KUMEYAAY INDIANS	P.O. BOX 1120	BOULEVARD	CA	91905-0220					
197802	DONNA	TISDALE		BOULEVARD SPONSOR GROUP	POB 1275	BOULEVARD	CA	91905-0375					
177502	LEROY J	ELLIOTT	CHAIRPERSON	MANZANITA BAND OF MISSION INDIANS	PO BOX 1302	BOULEVARD	CA	91905-0402					
194648	KEITH	ADKINS	EPA DIRECTOR	MANZANITA BAND OF MISSION INDIANS	P.O. BOX 1302	BOULEVARD	CA	91905-0402					
194649	NICK	ELLIOTT		MANZANITA BAND OF MISSION INDIANS	P.O. BOX 1302	BOULEVARD	CA	91905-0402					
194656	MONIQUE	LACHAPPA	CHAIRPERSON	CAMPO KUMEYAAY NATION	36190 CHURCH ROAD, SUITE 1	CAMPO	CA	91906-2732					
194657	FIDEL	HYDE	EPA SUPERVISOR	CAMPO KUMEYAAY NATION	36190 CHURCH ROAD, SUITE 1	CAMPO	CA	91906-2732					
177507	CARMEN	LUCAS		KWAAYMII LAGUNA BAND OF MISSION INDIANS	PO BOX 775	PINE VALLEY	CA	91962-0775					
197773	MARIS	BRANCHEAU	STAFF WRITER	BORREGO SUN	POB 249	BORREGO SPRINGS	CA	92004-0249					
197774	RICHARD	CAPUTO			POB 1660	JULIAN	CA	92036-1660					
194650	COURTNEY ANN	COYLE		KWAAYMII LAGUNA BD OF MISSION INDIANS	1609 SOLEDAD AVENUE	LA JOLLA	CA	92037-3817					
197804	MYRNA	WOSK			2059 CAMINITO CIRRCULO SUR	LA JOLLA	CA	92037-7214					
197776	DIANE	CONKLIN			POB 683	RAMONA	CA	92065-0683					
195640	CAROLYN	MORROW			36255 GRAPEVINE CANYON RD	RANCHITA	CA	92066		619	977-9961		RANCHITAROCKS.ORG
197783	ANNIE	FAGAN			POB 90	SANTA YSABEL	CA	92070-0090					
197777	GREG	COURSON			4115 HWY 78	SANTA YSABEL	CA	92070-9779					
197805	JOSEPH	ZECHMAN		SIERRA CLUB, SAN DIEGO CHAPTER	1885 DIAMOND STREET #103	SAN DIEGO	CA	92109-3354					
194659	STEVEN	LUCAS-PFINGST			6225 STANLEY AVENUE, #2	SAN DIEGO	CA	92115-4019					
197781	NICK	ERVIN		DESERT PROT COUNCIL	4781 MOUNT ST HELENS DR	SAN DIEGO	CA	92117-3027					
197792	LORENE	JOOSTEN			9061 TRUMAN ST.	SAN DIEGO	CA	92129-3629					
195641	GRAZYNA	KRAJEWSKA			4657 CALLE MAR DE ARMONIA	SAN DIEGO	CA	92130					GRAZYNAK@GMAIL.COM
194660	TERRY	WEINER		DESERT PROTECTIVE COUNCIL	P.O. BOX 3635	SAN DIEGO	CA	92163-1635					
197788	DAVID	HOGAN		CENTER FOR BIOLOGICAL DIVERSITY	POB 7745	SAN DIEGO	CA	92167-0745					
197793	WALTER	KSAZEK			929 MESQUITE	OCOTILLO	CA	92259					
197786	RON	GAUL			POB 31	OCOTILLO	CA	92259-0031					
197787	RICK	HAMILTON			POB 51	OCOTILLO	CA	92259-0051					
197798	ROBERT	SCOTT			POB 63	OCOTILLO	CA	92259-0063					
197791	ELEANOR	JONES			POB 76	OCOTILLO	CA	92259-0076					
197782	PARKE	EWING			POB 84	OCOTILLO	CA	92259-0084					
197779	GAIL	CULVER			POB 132	OCOTILLO	CA	92259-0132					
197801	KATHLEEN	THAYER			POB 192	OCOTILLO	CA	92259-0192					
197796	DENIS	O'SHEA			POB 268	OCOTILLO	CA	92259-0268					
197778	MIKE	CUFF			POB 338	OCOTILLO	CA	92259-0338					
197799	EVELYN	SEPIN			POB 391	OCOTILLO	CA	92259-0391					
197795	WILLIAM	MARRS			POB 399	OCOTILLO	CA	92259-0399					
197775	KAREN	COLLINS			POB 416	OCOTILLO	CA	92259-0416					
197803	JAY	VON WERLHOFF			POB 430	OCOTILLO	CA	92259-0430					
194661	EDIE	HARMON			P.O. BOX 444	OCOTILLO	CA	92259-0444					
194653	WILLIAM J.	CONTRERAS		TORRES-MARTINEZ DSRT CAHUILLA INDIANS	P.O. BOX 116	THERMAL	CA	92274-0116					
177545	RAYMOND	TORRES	CHAIRPERSON	TORRES-MARTINEZ DESERT CAHUILLA INDIANS	PO BOX 1160	THERMAL	CA	92274-1160					
197790	BRYN	JONES		CA WILDERNESS COALITION	4065 MISSION INN AVE	RIVERSIDE	CA	92501-3204					
197772	LISA	BELENKY	SENIOR ATTORNEY	CENTER FOR BIOLOGICAL DIVERSITY	351 CALIFORNIA ST., STE 600	SAN FRANCISCO	CA	94104-2404					
197784	KEITH	FORREST		ENEXCO	5000 EXECUTIVE PARKWAY, STE 140	SAN RAMON	CA	94583-4342					
197806	RON	GAUL			2807 BROOKDALE AVE, #B	OAKLAND	CA	94602-2134					
197794	RICHARD	LIEBMANN			POB 32	HAWI	HI	96719-0032					

PROPERTY OWNERS

194608	G.W.	NORRIS			6310 ORCHARD ROAD	LINTHICUM HTS	MD	21090-2627
194595	J.M. & R.M.	LARUE			295 PARKER PLACE	ORANGE	VA	22960-1454
194604	PATRICIA & ROBERT	TYYNISMAA			528 OAK LANE	JACKSONVILLE	NC	28540-4940
194569				CREOLE CORPORATION	1341 W MOCKINGBIRD LANE	DALLAS	TX	75247-6913
194577				VENTURE II	1700 E. LAKESIDE DRIVE #49	GILBERT	AZ	85234-4981
194626	VIRGINIA	DANIELS			P.O. BOX 548	SELIGMAN	AZ	86337-0548
194573	RAYMOND/STEPHEN	STOLL			1465 CHEROKEE TRL	RENO	NV	89521-7234
194571	CHRIS	SUTTON			1423 CONNOLLY DRIVE	ELKO	NV	89801-4770
194612	MICHAEL	KAUFMAN	TRUSTEE		716 NO PALM DRIVE	BEVERLY HILLS	CA	90210-3417
194618	BEGUM	AHMED			8761 MOODY STREET #B	CYPRESS	CA	90630-2261
194600	SUSAN HUNTSMAN	JAMES GALLOWAY			4393 BEULAH DRIVE	LA CANADA	CA	91011-3322
194605				BEL-AIR FAMILY LIMITED PARTNERSHIP	5333 ZELZAH AVE # 306	ENCINO	CA	91316-2207
194602	HOSSEIN	ALIMAMAGHANI			4716 WHITE OAK PLACE	ENCINO	CA	91316-3725
194594	FIDEL & FLORES	MERLUZA			28636 N HIGH RIDGE DRIVE	SANTA CLARITA	CA	91390-5743
194630				FAMILY NURSERY CO INC	P.O. BOX 57292	SHERMAN OAKS	CA	91413-2292
194621	WILLIAM & PALMA	LEWIS			P.O. BOX 1605	ALPINE	CA	91903-1605
194615	TERRANCE	FOSTER			803 EAST J STREET	CHULA VISTA	CA	91910-6650
194570	TEOFILO R	CAPULE			1398 CALLE TEMPRA	CHULA VISTA	CA	91911-4147
194611	STEPHEN	HULBERT			6852 COLORADO AVENUE	LA MESA	CA	91942-1111
194620	JACK & ETAL	OATMAN	TRUSTEES		P.O. BOX 1081	DEL MAR	CA	92014-1081
194580				PLASTER BEACH INC	213 JARRETT LANE	EL CAJON	CA	92021-4027
194616	ALLEN & BEATRICE	CRANE			8115 EL PASEO GRANDE	LA JOLLA	CA	92037-0017
194565	THOMAS L	BROOKS	TRUSTEE		10093 VISTA PARQUE	LAKESIDE	CA	92040-2505
194627				ED L CONSTRUCTION INC	P.O. BOX 785	SAN MARCOS	CA	92079-0785
194582				THE SALVATION ARMY	2320 5TH AVENUE	SAN DIEGO	CA	92101-1611
194568	NATHAN & VIRGINIA	MOORE			1258 OPAL STREET	SAN DIEGO	CA	92109-1832
194607	MARK	JOHNSON	TRUSTEE		6225 MARINDUSTRY DRIVE	SAN DIEGO	CA	92121-2537
194628	EDGAR	PRIDDY			P.O. BOX 964	BRAWLEY	CA	92227-0964
194599	ENRICO & EUGENE	VALSASINA			308 NORTH EASTERN AVENUE #D-6	BRAWLEY	CA	92227-2129
194609	L.J. OCONNELL	H. KEATING			648 MARILYN AVENUE	BRAWLEY	CA	92227-3053
194564	JAMES	NUCKLES			1007 CALLE LUNA STREET	BRAWLEY	CA	92227-7712
194601	THOMAS & NANCY	WISE	TRUSTEES		4496 BRANDT ROAD	BRAWLEY	CA	92227-9762
194584	GRESELDA	MEDINA			233 PAULIN AVENUE PMB 8025	CALEXICO	CA	92231-2615
194629	HORTENCIA	LOPEZ			P.O. BOX 4687	CALEXICO	CA	92232-4687
194610	SHARON	RODRIGUEZ			68204 FERRELL LANE	CATHEDRAL CITY	CA	92234-7837
179414	TONY & NELLIE	RODRIGUEZ			955 N OAK ST	EL CENTRO	CA	92243-1525
194589	GEORGE/CLEMENCE	LERNO	TRUSTEES		2801 W. MAIN STREET	EL CENTRO	CA	92243-2291
194613	JUAN & SOCORRO	ESPINOZA			763 W HOLT	EL CENTRO	CA	92243-3227
194574	ROY & BOBBIE	GODFREY			1558 WENSLEY AVENUE	EL CENTRO	CA	92243-3746
194576	KRISTINE & JASON	ZARA			1622 AURORA DRIVE	EL CENTRO	CA	92243-4107
194575	THOMAS	BROOKS			1593 S 22ND STREET	EL CENTRO	CA	92243-9403
194579	EDWIN & MARY	MEALEY			1805 BASS COVE ROAD	EL CENTRO	CA	92243-9405
194598	MARIA	ACUNA			371 ROSS ROAD #201	EL CENTRO	CA	92243-9787
194567	GUADALUPE R	VELARDE			1166 N. BAKER AVENUE	HEBER	CA	92249-9798
194606	ANN	FOSTER			545 PINE	HOLTVILLE	CA	92250-1121
194631				FAMILY NURSERY CO INC	PARK AVENUE NORTH	IMPERIAL	CA	92251

PROPERTY OWNERS

194632				UNITED STATES GYPSUM CO	3810 W EVAN HEWES HWY	IMPERIAL	CA	92251
194563				IMPERIAL LAKES HOME OWNERS ASSOC	2828 W EVAN HEWES HWY # 22	IMPERIAL	CA	92251-9550
194614	FAUSTINO	RAMIREZ			787 W WORTHINGTON ROAD	IMPERIAL	CA	92251-9626
194590	BENJAMIN ANGEL	BARAJAS			2804 EVAN HEWES HWY	IMPERIAL	CA	92251-9680
194591	FRANCISCO/MARIA	VALADEZ			2810 EVAN HEWES HWY	IMPERIAL	CA	92251-9680
194592	MARTIN & CARMEN	REDONDO			2825-A W EVAN HEWES HWY	IMPERIAL	CA	92251-9680
194593	JOANNA	PATTON			2861 EVAN HEWES	IMPERIAL	CA	92251-9680
194566	THOMAS L	BROOKS			2783 EVANS HEWES STREET	IMPERIAL	CA	92251-9732
194585	JUAN & MARIA	RAMIREZ			2615 PARK ROAD	IMPERIAL	CA	92251-9783
194623	LAURI	LAHEY			P.O. BOX 233	SEELEY	CA	92273-0233
194572	CATARINO & SALAME	REYES			145 W 11TH STREET	SAN BERNARDINO	CA	92410-3605
194583	JOHN C	JONES			2327 WOLLOWBROOK LANE	PERRIS	CA	92571-3519
194588	MICHAEL & DANIEL	BURKE			28 HAMMOND F	IRVINE	CA	92718
194619	AFTAD	AHMED	TRUSTEE		9193 CHAPMAN AVENUE #D	GARDEN GROVE	CA	92841-2542
194597	BERTIE	KEATING			3201 W VALLEY DRIVE	VISALIA	CA	93277-1935
194586	CLAUDE JAMES	LLOYD			2751 WEST FIR	FRESNO	CA	93711-0315
194624	NABEEL	BAKRI			P.O. BOX 2553	SALINAS	CA	93902-2553
194578	CARLOS & LUZ	PEREZ			17229 GARLEN COURT	SALINAS	CA	93907-9022
194617	ED & ELVIA	BOYDSTON			824 MARIN STREET	VALLEJO	CA	94590-5915
194587	JOHN C	SALAMON			2790 ALDER ROAD	CRESCENT CITY	CA	95531-8820
194596	JUNE	DICKENS	TRUSTEE		3004 SOLITO STREET	DAVIS	CA	95616-0268
194622	F.	TRIP			P.O. BOX 22603	SACRAMENTO	CA	95822-0603
194625	S.B. GRANT	E.B. FRANKLIN			P.O. BOX 31	NEWBERG	OR	97132-0031
194581	RONALD A	BUSS			2232 SE 37TH AVENUE	PORTLAND	OR	97214-5865
194603	DONNA & RAYMOND	HERTZ			4918 S 360TH STREET	AUBURN	WA	98001-9154

LIBRARIES

ID_NO	FIRSTNAME	LASTNAME	TITLE	ORG	ADDRESS	ADDRESS_2	CITY	STATE	ZIP	COUNTRY	F_AREACODE	FAX	P_AREACODE	PHONE	E_MAIL
187359			PUBLIC AFFAIRS SERVICE	UCLA UNIVERSITY RESEARCH LIBRARY	405 HILGRAD AVENUE		LOS ANGELES	CA	90024						
187148				SAN DIEGO PUBLIC LIBRARY	820 E STREET		SAN DIEGO	CA	92101						
131987			CENTRAL HEADQUARTERS	FRESNO COUNTY LIBRARY	2420 MARIPOSA STREET		FRESNO	CA	93721						
187361			GOVERNMENT INFORMATION CENTER	SAN FRANCISCO PUBLIC LIBRARY	100 LARKIN STREET		SAN FRANCISCO	CA	94102						
187358				CALIFORNIA ENERGY COMMISSION	1516 9TH STREET, MS-10		SACRAMENTO	CA	95814						
187362			GOVERNMENT PUBLICATION STATION	CALIFORNIA STATE LIBRARY	914 CAPITOL MALL, RM 400		SACRAMENTO	CA	95814						
			OCOTILLO BRANCH	IMPERIAL COUNTY LIBRARY	12159 N. IMPERIAL HWY.		OCOTILLO	CA	92259						
			SEELEY BRANCH	IMPERIAL COUNTY LIBRARY	1812 RIO VISTA STREET		EL CENTRO	CA	92243						

CEC-PAO

Title	Name	Last Name	Position	Agency	Address 1	Address 2	City	State	Zip
Mr.	Andy	Horn	Executive Officer	County of Imperial	940 W. Main Street Suite 208		El Centro	CA	20503
Ms.	Lynn	Bogdan	Administrative Assistant	Pioneers Museum	373 E Aten Rd		Imperial	CA	95814
			Administrator	County of Imperial Park & Recreation: Sunbeam Lake	1750 Drew Road		Seeley	CA	92273
			Administrator	Date Gardens Mobile Home Park	1020 Evan Hewes Hwy #41		El Centro	CA	92243
			Administrator	Heber Library	1078 Dogwood Rd.		Heber	CA	92243
			Administrator	Imperial County Fire Dept.	2514 La Brucheria Road		Imperial	CA	92243
			Administrator	Imperial County Library	1125 W 9th Street		Imperial	CA	92243
			Administrator	Ocotillo Branch Library	1159 N Imperial Hwy		Ocotillo	CA	92259
			Administrator	Rio Bend RV Resort Ranch	1589 Drew Road		El Centro	CA	92243
			Administrator	Center for Employment Training	294 South 3rd Street		El Centro	CA	92243
			Administrator	El Centro Regional Medical Center	1415 Ross Avenue		El Centro	CA	92243
			Administrator	Imperial Lakes Park	2828 Evan Hewes Hwy		Seeley	CA	92273
			Administrator	Ocotillo Trailer Park and Motel	14 Agate Road		Ocotillo	CA	92259
Mr.	Timothy	Kelly	CEO	Imperial Valley Economic Development Corp	P.O. Box 3005		El Centro	CA	92251
Ms.	Leory J.	Elliott	Chairman	Manzanita Band Of Mission Indians	P.O. Box 1302		Boulevard	CA	92244
Mr.	Raymond	Torres	Chairman	Torres-Martinez Desert Cahuilla Indians	P.O. Box 1160		Thermal	CA	92243
Ms.	Monique	LaChappa	Chairperson	Campo Kumeyaay Nation	36190 Church Road Suite 1		Campo	CA	92501
Ms.	Gwendolyn	Parada	Chairperson	La Posta Band of Kumeyaay Indians	P.O. Box 1120		Boulevard	CA	92251
Ms.	Sherry	Cordova	Chairwoman	Cocopah Indian Tribe	Avenue G and County 15th St.		Somerton	AZ	92251
Ms.	Dennis H.	Morita	City Attorney		300 South Imperial Avenue, Suite 9		El Centro	CA	92011
Ms.	Debra	Jackson	City Clerk	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
Ms.	Marlene D.	Best	City Manager		420 South Imperial Avenue		Imperial	CA	96719
Mr.	Steve	Shaner	City Treasure	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
	The Honorable Bob	Filner	Congressman		101 Airport Road, Suite D		Imperial	CA	92251
Mr.	DeEllen M.	Brasher	Coordinator Officer	Navy Region Southwest	937 N Harbor Drive Box 81		San Diego	CA	91905
	The Honorable Rick	Breland	Council Member	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
	The Honorable Doug	Cox	Council Member	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
	The Honorable Mark	Gran	Council Member	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
Mr.	Roland	Banks	Director	EL Centro Public Library	539 State		El Centro	CA	92231
Mr.	Mike	Abatti	District Director (Division 1)	Imperial Irrigation District	333 E Barioni Blvd.		Imperial	CA	92243
Mr.	John	Pierre Menvielle	District Director (Division 2)	Imperial Irrigation District	333 E Barioni Blvd.		Imperial	CA	92243
	Giantonio	Baggio	Father	ST. Anthony's Catholic Church	210 W 7th Street		Imperial	CA	92104
Ms.	Bridgett	Nash-Chrabascz	Historic Preservation Officer	Quechan Indian Tribe	P.O. Box 1899		Yuma	AZ	92132
Ms.	Terry	Weiner	Imperial City Conservation Coordinator	Desert Protective Council	P.O. Box 3635		San Diego	CA	92117-3027
Ms.	Jackie	Loper	Imperial Director of Community Development		420 South Imperial Avenue		Imperial	CA	91001
Mr.	Jorge	Galvan	Imperial Planning Manager		420 South Imperial Avenue		Imperial	CA	92243
	The Honorable Geoff	Dale	Mayor	City of Imperial	420 South Imperial Avenue		Imperial	CA	92251
	The Honorable Betty	Sampson	Mayor Pro Tem	City of Imperial	420 South Imperial Avenue		Imperial	CA	92243
	Juan R.	Bermudez	Pastor	Apostolic Assembly	158 South J Street		Imperial	CA	92251
	Dan	Bruce	Pastor	Faith Assembly of God	320 South J Street		Imperial	CA	91903-2250
	Doug	Moody	Pastor	First S. Baptist Church	401 W. 14th Street		Imperial	CA	92061-1002
	Wayne	Mudge	Pastor	Imperial Community Church	300 W Barioni Blvd.		Imperial	CA	92251
			Pastor	Saleey Community Church	1774 W Rio Vista		Seeley	CA	92273
Mr.	Miguel	Colon	Police Chief	Imperial Police Dept.	424 South Imperial Avenue		Imperial	CA	92251
Mr.	Mike	Jackson	President	For Yuma Indian Reservation	PO Box 1899		Yuma	AZ	92251

CEC-PAO

Mr.	Gary	Redfern	President	Imperial Chamber of Commerce	101 4th Street		Imperial	CA	92037-3817
Mr.	Steve	Cato	Principal	T.L Waggoner Elementary School	627 Joshua Tree Street		Imperial	CA	92109-3344
Mr.	Jerry	Johnson	Principal	Ben Hule Elementary School	303 South D Street		Imperial	CA	92251
Mr.	Diego	Lopez	Principal	Frank Wright Middle School	885 North Imperial Avenue		Imperial	CA	85366
Mr.	Jeffrey	Magin	Principal	Central Union High School	1001 Brighton Avenue		El Centro	CA	94101
Ms.	Danette	Morrell	Principal	South West High School	2001 Ocotillo Drive		El Centro	CA	85366-1899
Mr.	Ruben	Castro	Principal	Seeley Elementary School	1812 W Rio Vista		Seeley	CA	92273
	The Honorable Barbara	Boxer	Senator		600 B Street, Suite 2240		San Diego	CA	92101
Mr.	Charles	Lucas	Sergeant	Imperial County Sheriff/Coroner		P.O. Box 1040	El Centro	CA	92243
Mr.	Robert	Pinto	Sr. Chairman	Ewiiaapaayp Band of Kumeyaay Indians	P.O. Box 2250		Alpine	CA	94583
	Michael	Smelosky	Warden	Centinella State Prison	P.O. Box 731		Imperial	CA	92251-0731
	Hossein	Alimamaghani			4710 White Oak Place		Encino	CA	91316
Ms.	Maria	Ambriz		Desert Oasis	1302 South 3rd Street		El Centro	CA	92243
Mr.	Richard	Bird		California Highway Patrol	2331 Highway 86		Imperial	CA	91203
Mr.	David	Black		Imperial County Dept. of Planning and Building	801 Main Street		El Centro	CA	92243
Mr.	Roy D.	Buckner		Imperial County Assessor's Office	940 West Main Street		El Centro	CA	92251
Mr.	Richard	Cabanilla		Imperial County Planning Dept.	801 Main Street		El Centro	CA	92249
Ms.	Christina	Carter		Imperial Public Library	200 West 9th Street	P.O. Box 38	Imperial	CA	92251
Mr.	Nick	Ervin		Desert Protective Council	4781 Mount St. Helens Drive		San Diego	CA	92243
Mr.	Cydean	Gillespie		US Dept. of Agriculture, NRCS	177 North Imperial Avenue		El Centro	CA	92251
Ms.	Rosa	Hernandez		Imperial County Office of Emergency Services	1078 Dogwood Road		Heber	CA	92243
Mr.	Jurg	Heuberger		Building Development Dept.	801 Main Street		El Centro	CA	92251-9712
Mr.	David	Hogan		Center for Biological Diversity	P.O. Box 7745		San Diego	CA	30201
Mr.	Neil	Jargonson		Imperial County Public Works Dept.	155 S 11th Street		El Centro	CA	92243
Mr.	Joe	Larson		County Of Imperial Public Works Dept.	155 South 11th Street		El Centro	CA	92243
Ms.	Carmen	Lucas		Kwaaymii Laguna Band of Mission Indians	P.O .Box 775		Pine Valley	CA	92251
Mr.	James	Minnick		Imperial County Dept. of Planning and Building	801 Main Street		El Centro	CA	92243
Mr.	Larry	Myers		Native America Heritage Commission	915 Capitol Mall Rm 364		Sacramento	CA	91962
Mr.	Douglas R.	Newland		Imperial County Auditor's Office	940 West Main Street		El Centro	CA	92251
Ms.	Lori L.	Paul			153 Jaxine Drive		Altadena	CA	92243-2808
Mr.	Chris	Petree		City of El Centro Fire Dept.	775 State Street		El Centro	CA	92243
Mr.	Reyes	Romero		Imperial County Air Pollution Control District	150 South 9th Street		El Centro	CA	92251
Ms.	Nancy	Rood		Westside Elementary School	2294 West Vaughn Road		El Centro	CA	92274
Ms.	Lisa	Tabarez		Imperial High school	517 West Barioni Blvd.		Imperial	CA	92244
Mr.	Hugo	Valdez		Imperial County Planning Dept.	801 Main Street		El Centro	CA	92243
Ms.	Patricia A.	Velenzuela		Imperial County/Building Development Dept.	801 Main Street		El Centro	CA	92243
Mr.	Roger	Vintze		DTSC Imperial County CUPA Office	301 Herber Avenue		Calexico	CA	92163
Ms.	Madeline	Willis		Imperial Unified School District	219 North E Street		Imperial	CA	92251
Mr.	Joseph	Zechman		Sierra Club San Diego Chapter	1855 Diamond Street # 103		San Diego	CA	92251

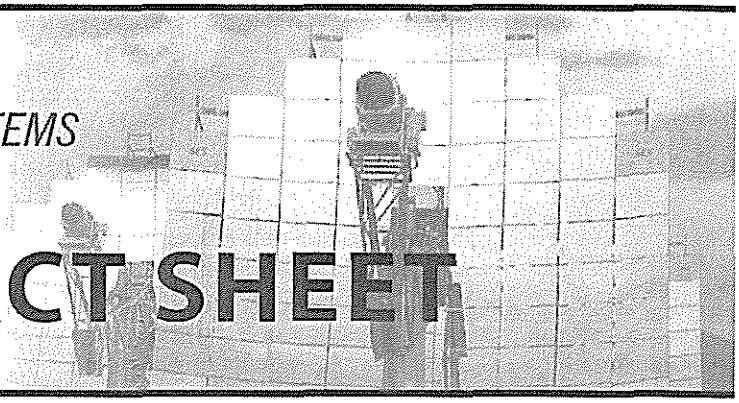
APPENDIX E

SES SOLAR TWO FACT SHEETS

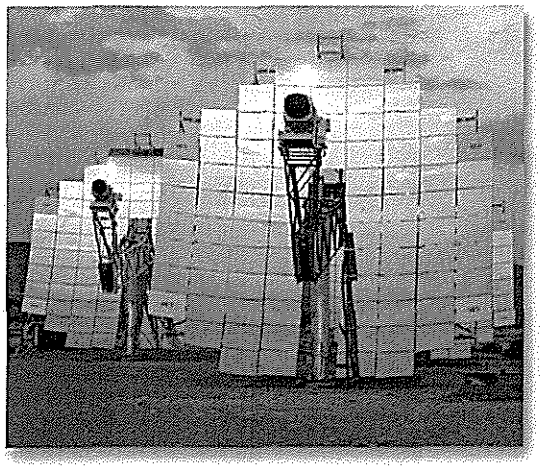
This appendix contains the following:

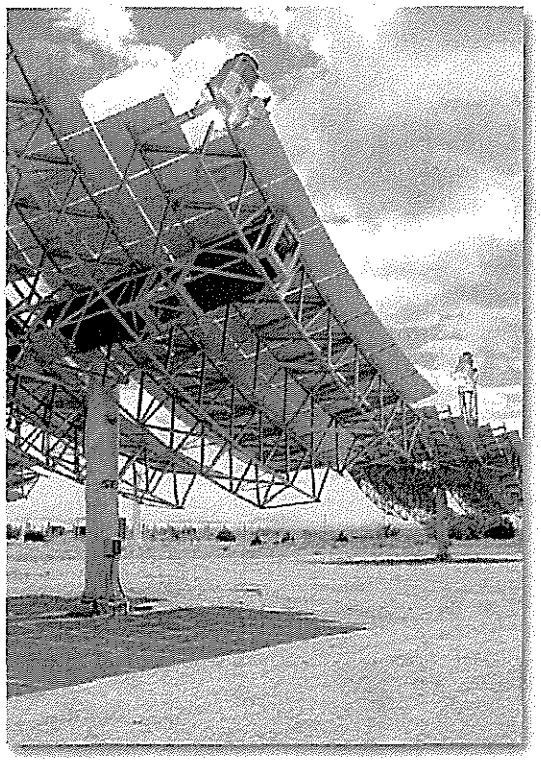
- SES Solar Two Fact Sheet (English [4 pages])
- SES Solar Two Fact Sheet (Spanish [4 pages])

SES STIRLING ENERGY SYSTEMS



SOLAR TWO FACT SHEET





ABOUT STIRLING ENERGY SYSTEMS

- Unique SunCatcher technology that combines a mirrored concentrator dish with a high-efficiency Stirling engine specially designed to convert sunlight to electricity.
- Technology on the ground since 1984.
- Holds World Record in efficiency of converting the sun's energy into grid-quality electricity.
- A United States Company Headquartered in Phoenix, Arizona:
  - Project & technical development offices are located in Tustin, California and Albuquerque, New Mexico.
- Renewable utility grade power ready for commercialization.

PURPOSE

- Provide up to 750MW of renewable electric capacity under a 20-year Power Purchase Agreement (PPA) to San Diego Gas & Electric (SDG&E).
- Develop renewable solar energy to help California achieve its Renewables Portfolio Standard (RPS) requirement.
- Help protect the environment by delivering clean, renewable solar energy.
- Assist the State of California in meeting its goal of reducing greenhouse gas emissions to 1990 levels by 2020 (Assembly Bill 32).

SOLAR TWO PROJECT DESCRIPTION

Project Size/Location

- One of the world's largest solar power projects.
- 750 net megawatt (MW) solar power project in Imperial Valley, California.

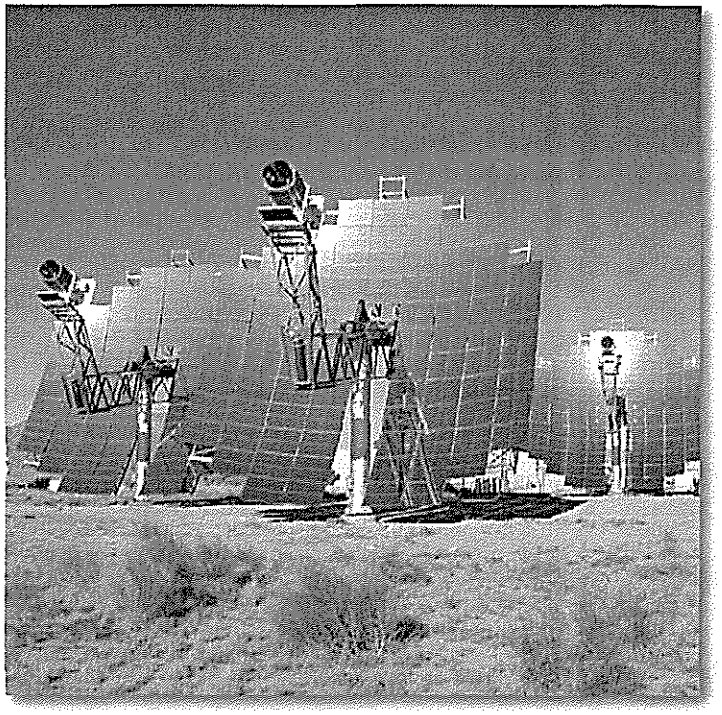
Technology

Solar Two would consist of:

- Approximately 30,000 solar dish Stirling systems (referred to as SunCatchers) which would consist of solar concentrating dishes and Stirling Engine Power Conversion Units (PCUs).
- Associated equipment and support systems.

Construction

- The Project would be constructed in two phases. Phase I would consist of up to 12,000 SunCatchers and produce a net 300MW. Phase II would expand the Project with 18,000 SunCatchers and produce a net 450MW.
- Subject to receipt of all necessary approvals, construction should start in 2010, with projected commercial operations beginning later that year.

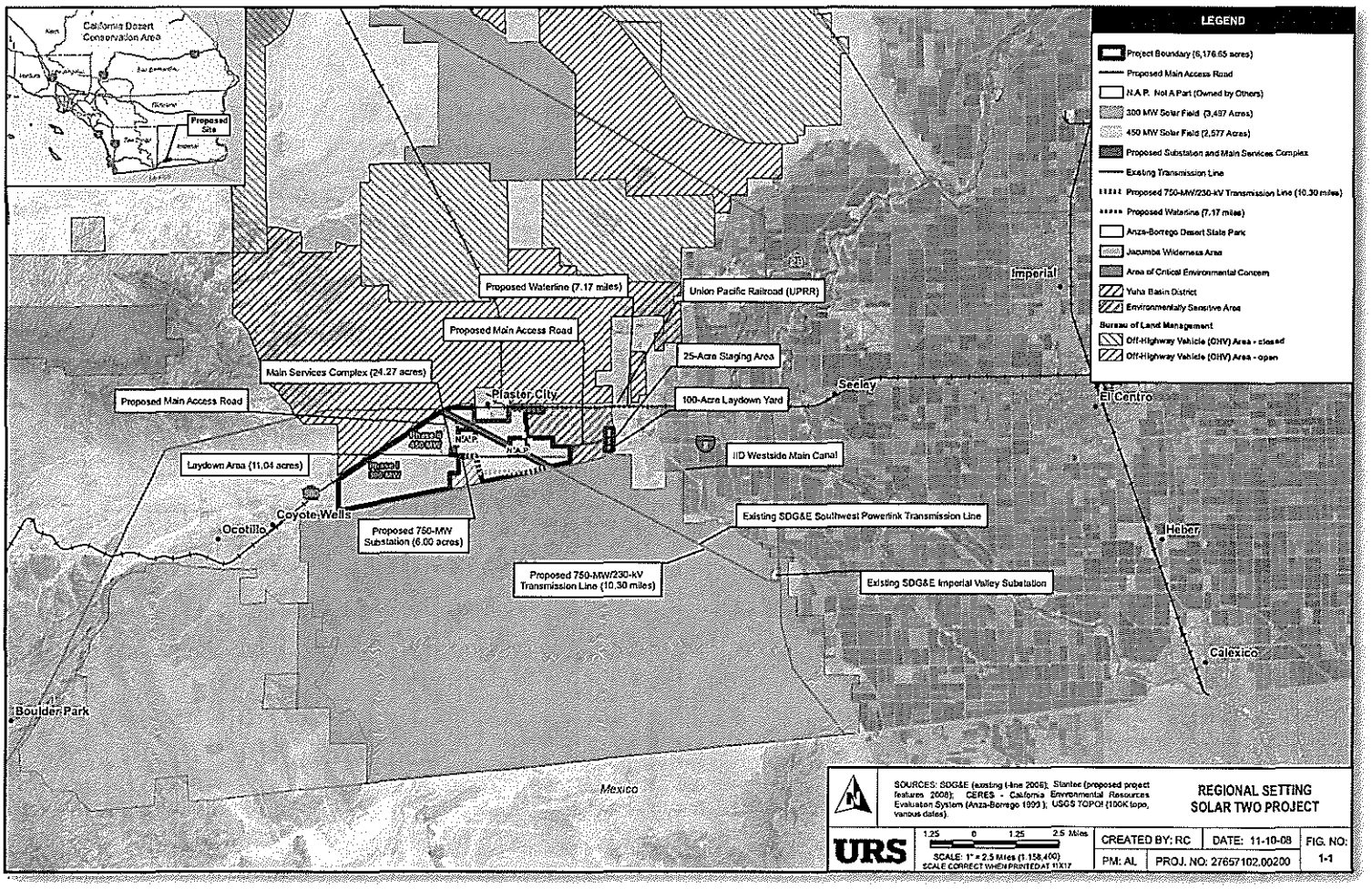


Transmission

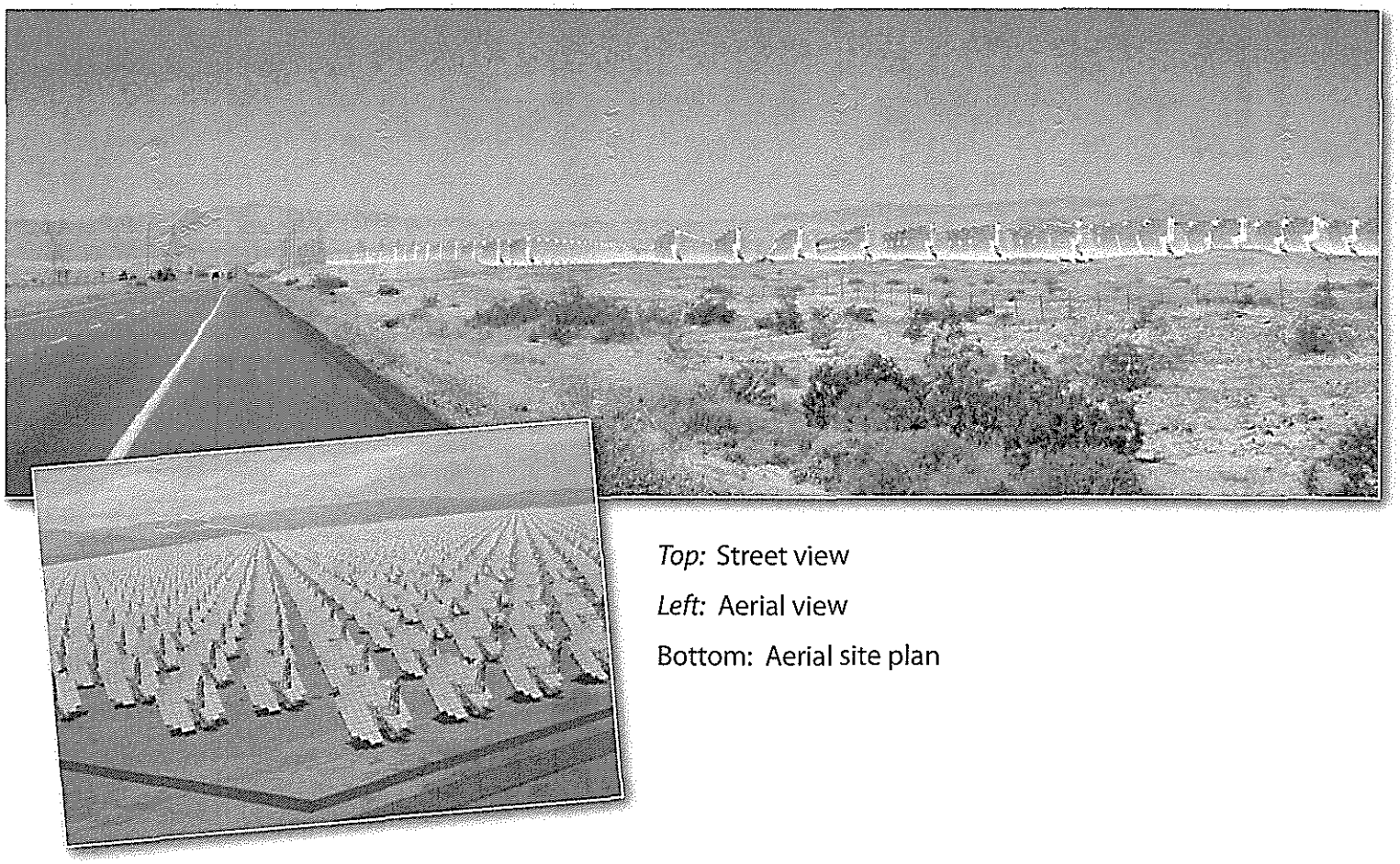
- Construction of a new 230kV substation located in the center of the Project Site.
- Interconnection to the SDG&E Imperial Valley Substation.

SOLAR TWO SITE LOCATION

- Located on approximately 6,140 acres of federal land administered by the Bureau of Land Management (BLM) and 360 acres of private land.
- The Project was sited to avoid or minimize impacts to recreation and environmentally-sensitive areas.



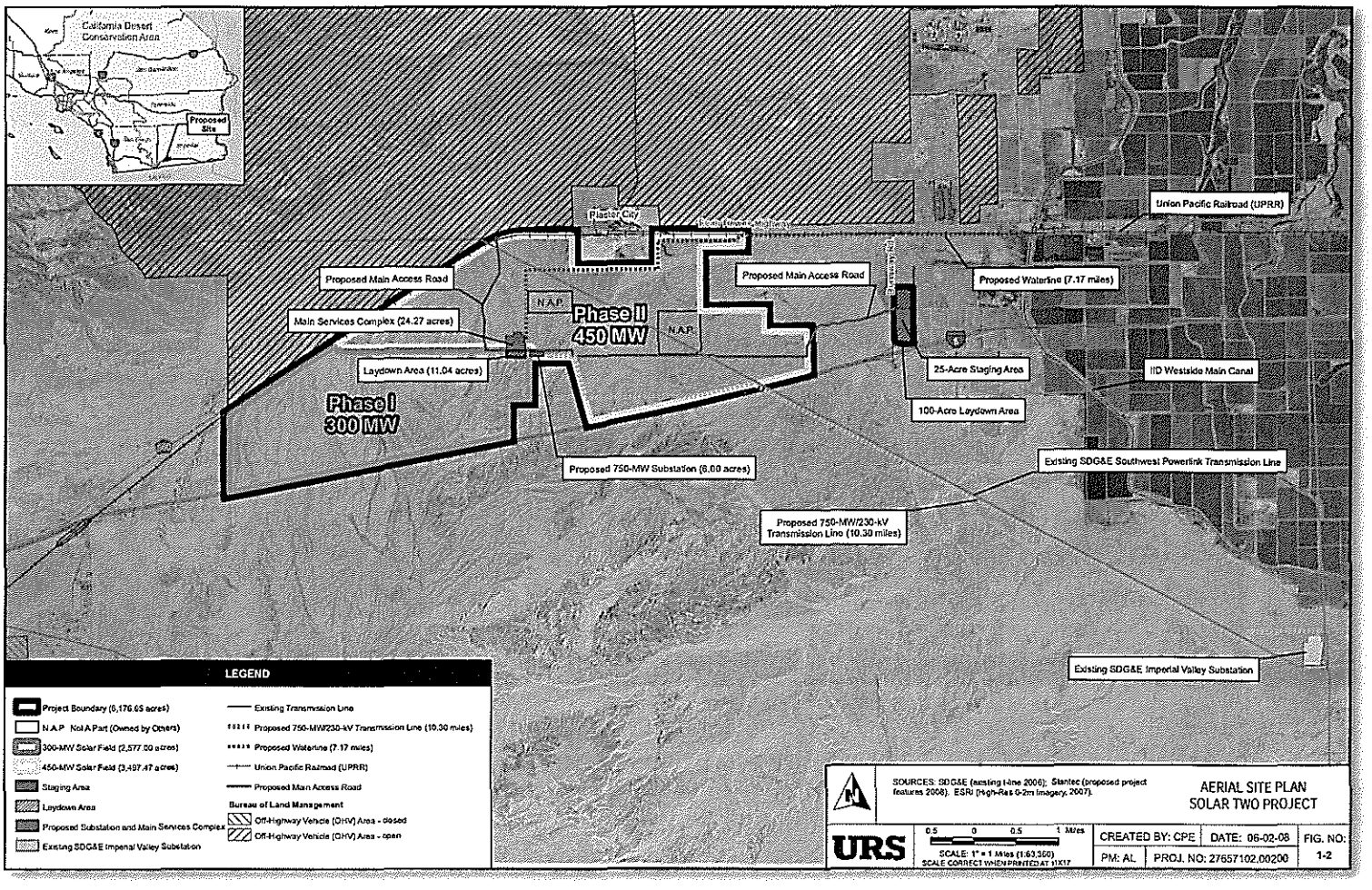
SOLAR TWO VISUAL SIMULATIONS



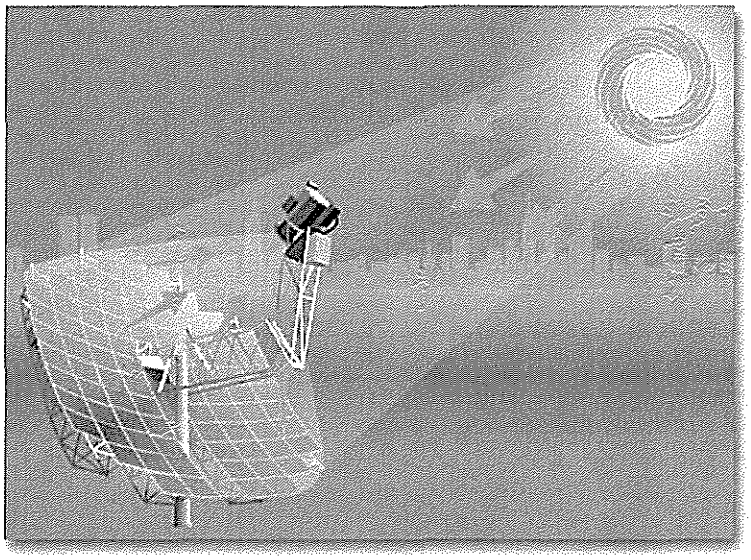
Top: Street view

Left: Aerial view

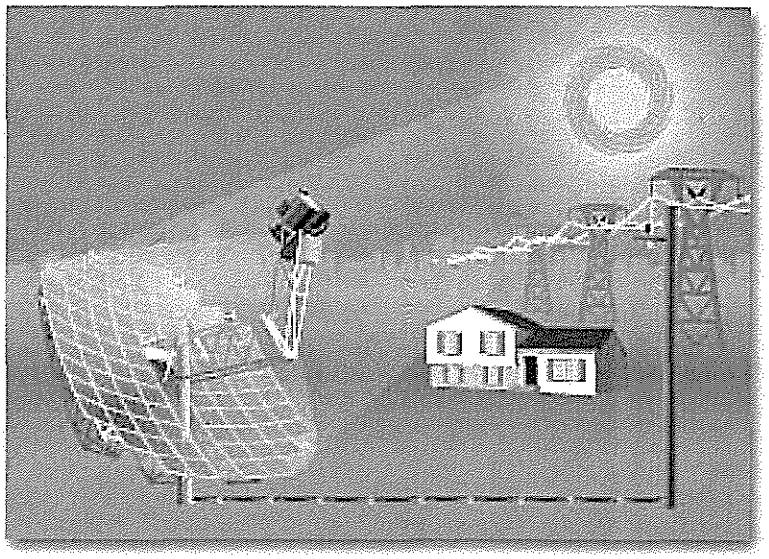
Bottom: Aerial site plan



SOLAR TWO PROJECT PROCESS (HOW IT WORKS)



Dish concentrator tracks, collects, and focuses the sun's energy.



Stirling engine converts energy to grid-quality electricity.

SOLAR TWO PROJECT BENEFITS

- Solar Two would develop renewable solar energy to help California achieve its RPS requirement and in meeting its goal of reducing greenhouse gas emissions to 1990 levels by 2020.
- The Project would introduce approximately 160 permanent jobs in the supervisory, administrative, construction, operations and maintenance fields.
- Construction of Solar Two would lead to increased revenue from sales taxes, due to construction and operational employees' economic activities.
- Solar Two would provide approximately $60,000,000 (in 2008 dollars) in construction payroll with an average monthly construction workforce of approximately 360 jobs.
- Educational benefits – students from local schools and colleges are expected to study the Project as a model for future growth in the renewable energy development and technology.
- Potential boosts to tourism are also anticipated.

SOLAR TWO PROJECTED PROJECT SCHEDULE

2008 – 2nd Quarter
File Application for Certification

2009 – 4th Quarter
Receive Certification

2010 – 1st quarter
Begin Construction
– 3rd Quarter, Phase I
First Units Online

2012 – 2nd Quarter, Phase II
First Units Online

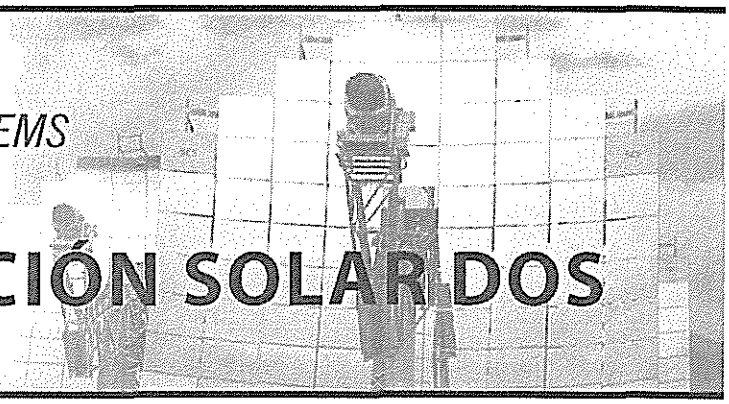
2014 – 4th Quarter
Completion of 750MW Project Construction

SES

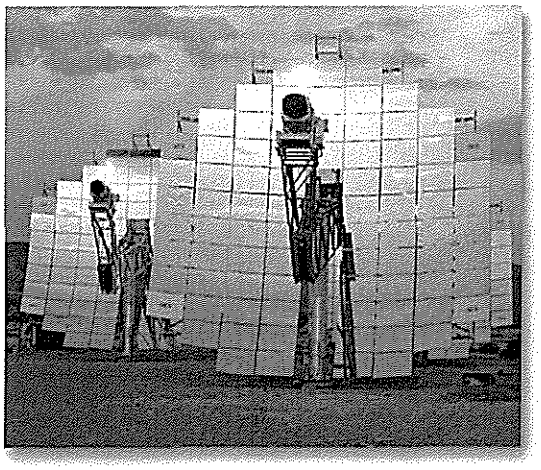
Solar Two Project Contact Information
Stirling Energy Systems, Inc.
2920 East Camelback Road, Suite 150
Phoenix, AZ 85016

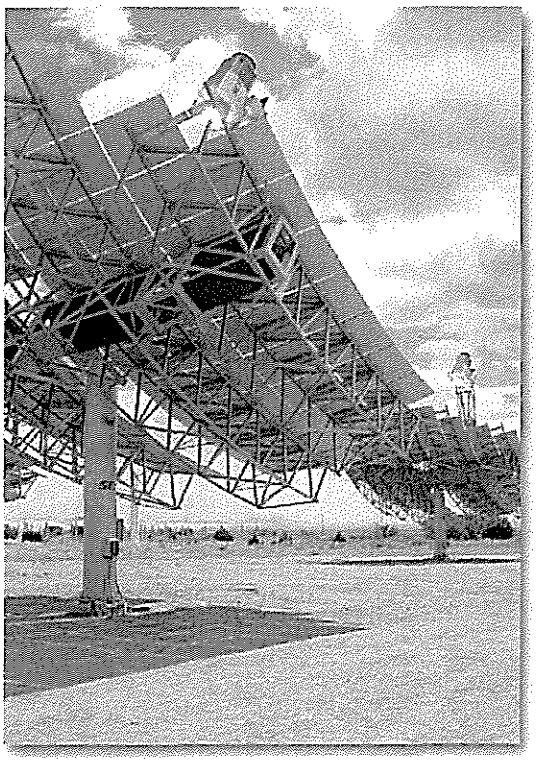
☎ Toll free: 866.698.5275
solartwo@stirlingenergy.com
www.stirlingenergy.com

SES STIRLING ENERGY SYSTEMS



HOJA DE INFORMACIÓN SOLAR DOS





SOBRE LA COMPAÑÍA STIRLING ENERGY SYSTEMS

- Tecnología exclusiva de SunCatcher que combina una parabólica concentrador de espejos con un motor Stirling de gran rendimiento específicamente diseñado para convertir la luz solar en electricidad.
- Tecnología usado desde el año 1984.
- Posee el récord mundial en eficiencia para la conversión de energía solar en electricidad de calidad para red eléctrica.
- Compañía de los E.E.U.U. con sede en Phoenix, Arizona.
  - Oficinas para proyecto y desarrollo técnico ubicadas en Tustin, California y en Albuquerque, Nuevo México.
- Energía renovable de grado de servicios públicos lista para comercialización.

PROPÓSITO DEL PROYECTO SOLAR DOS

- Proveer hasta 750 megavatios de capacidad de electricidad renovable, en conformidad con un acuerdo de 20 años de compra de energía con San Diego Gas y Energía Eléctrica.
- Desarrollar energía solar renovable para ayudar al estado de California a realizar su requisito a Criterio de Portafolio Renovable (RPS).
- Ayudar a proteger el medio ambiente al proveer energía solar limpia y renovable.
- Ayudar al estado de California a lograr su meta para reducir las emisiones de gases invernaderos a los niveles del año 1990 por el año 2020 (Proyecto de Ley Número 32 de la Asamblea).

DESCRIPCIÓN DEL PROYECTO SOLAR DOS

Tamaño del Proyecto/Ubicación

- Uno de los proyectos de energía solar más grandes del mundo.
- Proyecto de energía solar de 750 megavatios (cantidad neta) en el Valle Imperial de California.

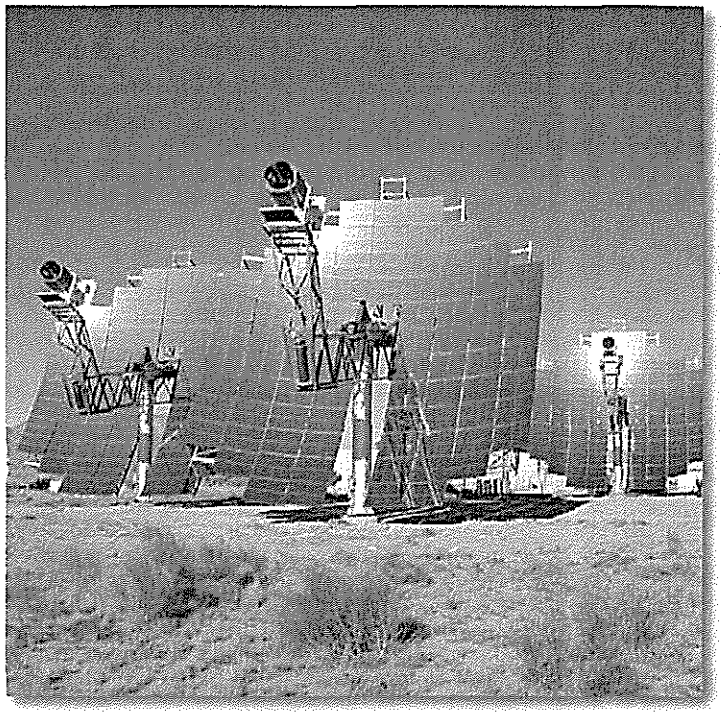
Tecnología

Solar Dos consistiría de:

- Aproximadamente 30.000 SunCatchers y Unidades de Conversación de Energía Motor Solar Stirling.
- Equipo y sistemas de apoyo asociados.

Construcción

- El Proyecto sería construido en dos fases.
  Fase I = 12.000 de los SunCatchers (300 megavatios)
  Fase II = añadir otros 18.000 de los SunCatchers (450 megavatios)
- Suponiendo la aprobación de todos los permisos, construcción empezaría en 2010 con el comienzo de operaciones comerciales proyectado por más tarde del año 2010.

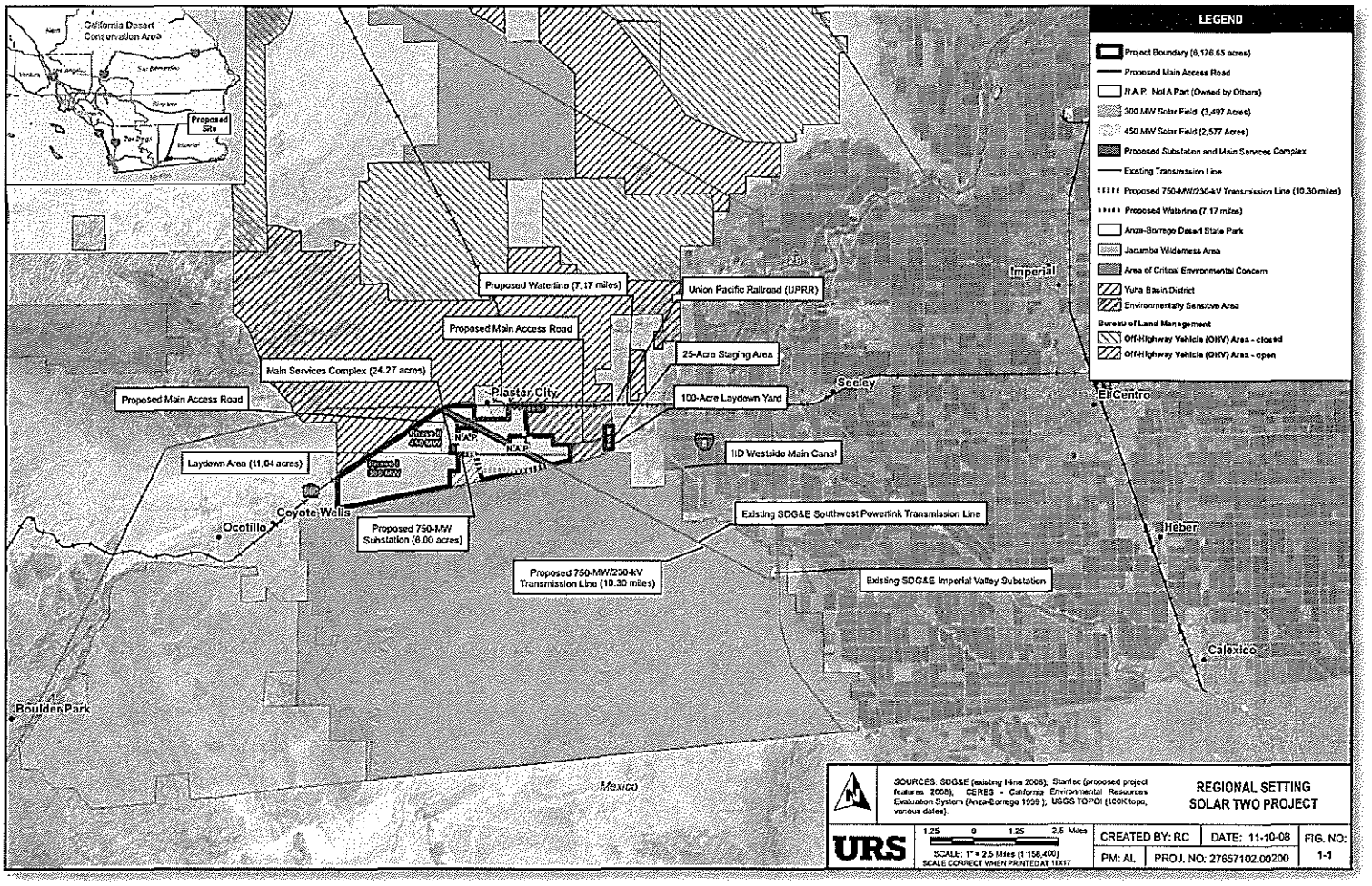


Transmisión

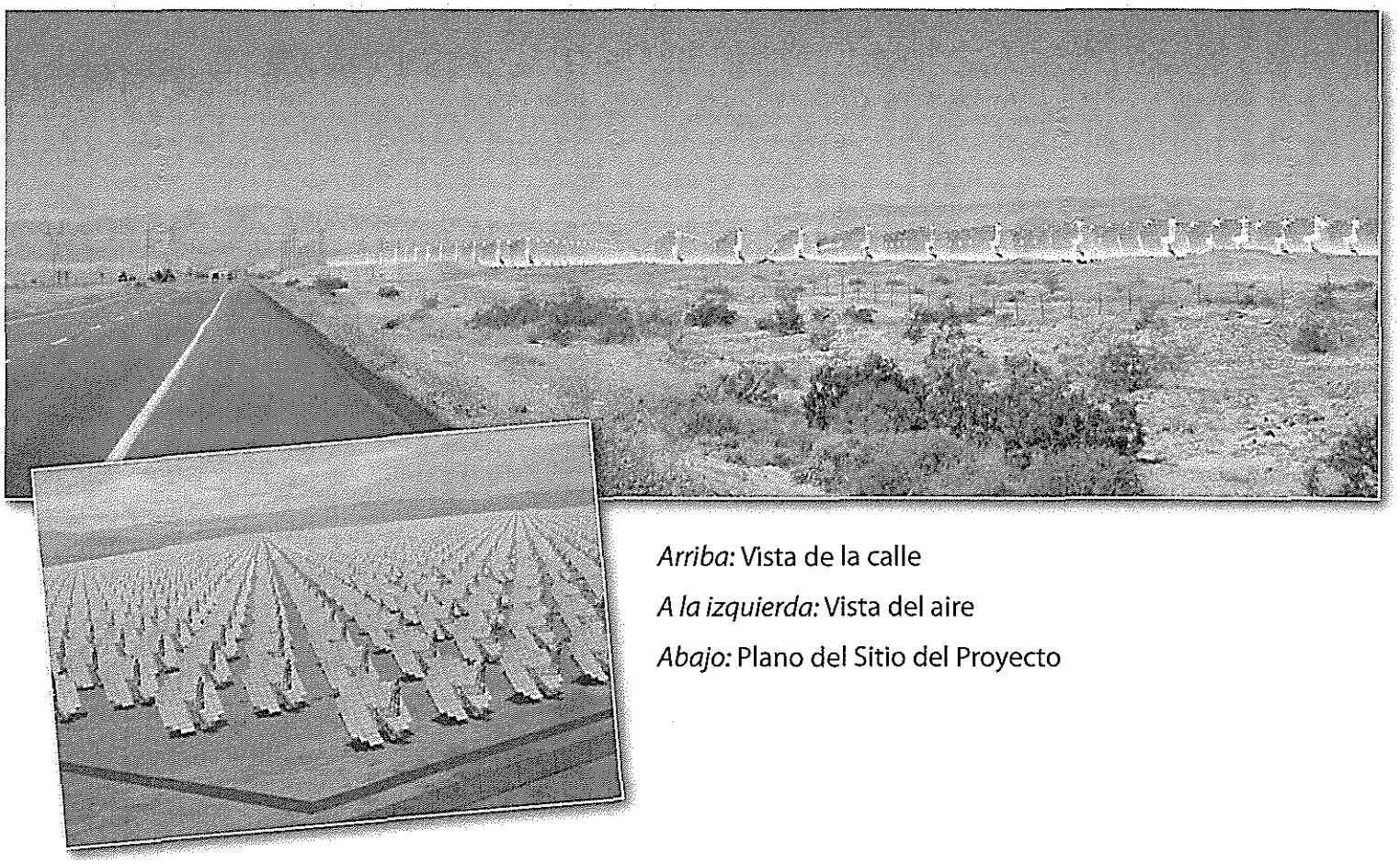
- Construcción de una nueva subestación de 230 Kilovoltios ubicada en el centro del sitio del proyecto.
- Interconectado a la Subestación Valle Imperial de SDG&E.

UBICACIÓN DEL SOLAR DOS

- Ubicado en aproximadamente 6.140 acres de tierra del gobierno federal administrado por el Bureau de la Administración de Tierra (BLM) y en 360 acres de tierra privada.
- Se ubicó el Proyecto para evitar o minimizar los impactos a la recreación y a áreas de medio ambiente sensible.



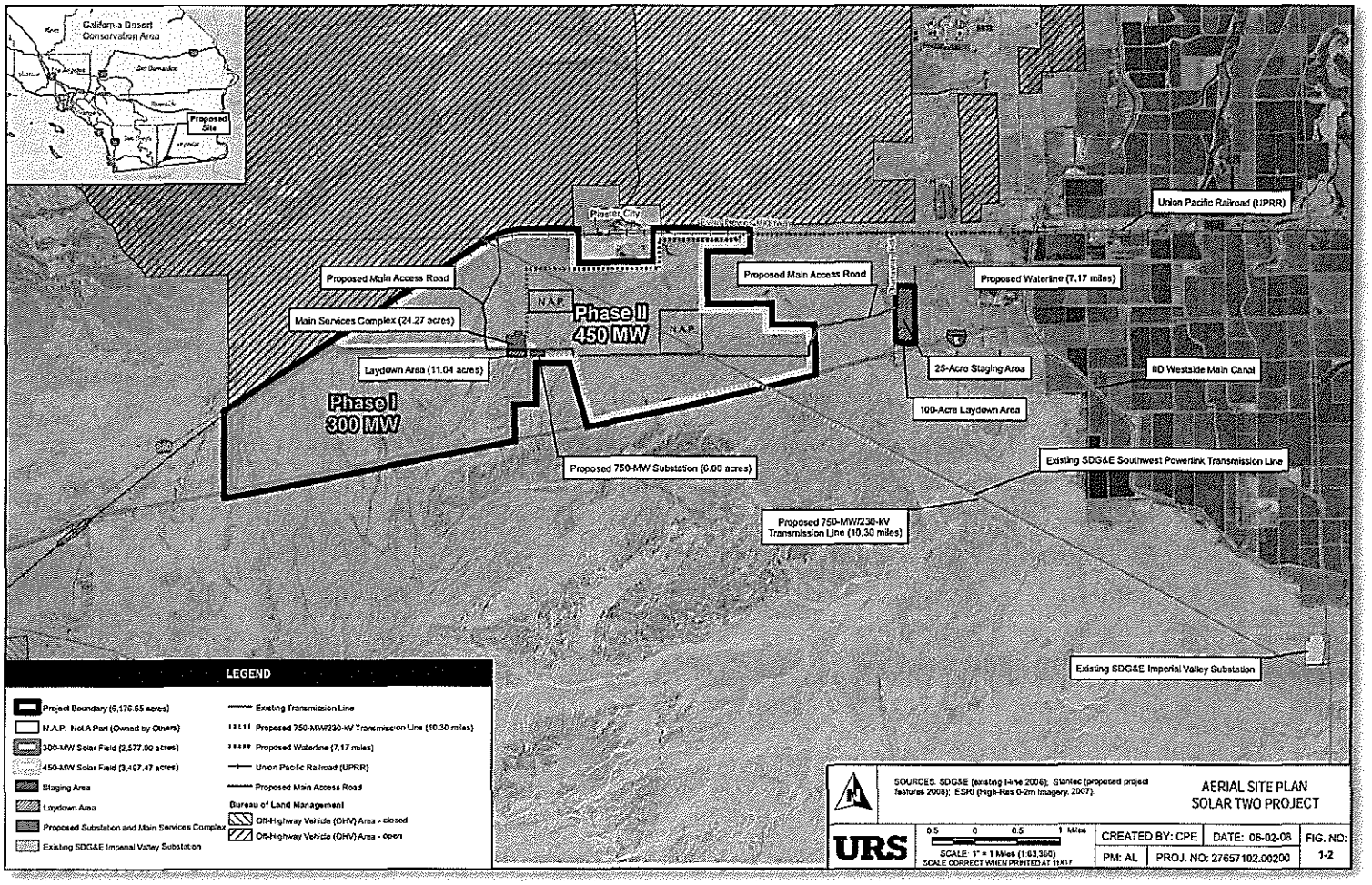
SIMULACIONES VISUALES SOLAR DOS



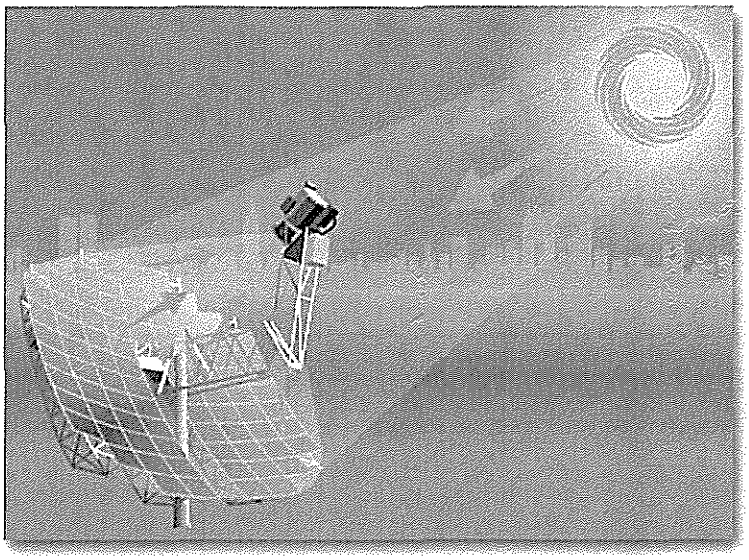
Arriba: Vista de la calle

A la izquierda: Vista del aire

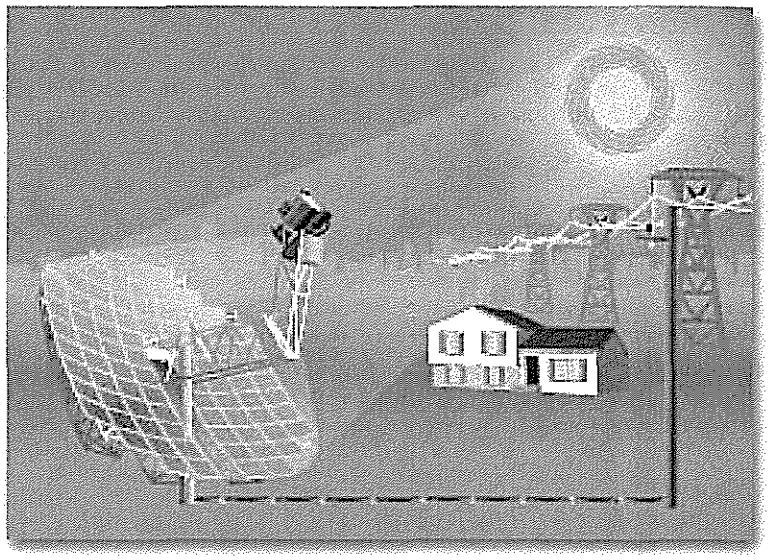
Abajo: Plano del Sitio del Proyecto



PROCESO DEL PROYECTO SOLAR DOS (COMO FUNCIONA)



Parabólica concentrador sigue, junta, y concentra la energía del sol.



Motor Stirling convierte la energía a electricidad de calidad para red eléctrica.

BENEFICIOS DEL PROYECTO SOLAR DOS

- Solar Dos desarrollaría energía solar renovable para ayudar el estado de California a realizar su requisito al RPS y a lograr su meta para reducir las emisiones de gases invernaderos a los niveles del año 1990 por el año 2020.
- Solar Dos crearía unos 160 trabajos permanentes de supervisor general, administrativos, de construcción, de operaciones y del mantenimiento.
- Construcción del Proyecto Solar Dos aumentaría ingresos por medio de impuestos de venta, construcción, y actividades económicas de los empleados de las operaciones.
- Solar Dos proveería aproximadamente $60.000.000 (dólares del año 2008) de nómina de la construcción, con un medio de población activa de 360 empleados.
- Beneficios educacionales – se supone que los estudiantes de escuelas y universidades locales estudiarían el Proyecto como modelo de aumentación del desarrollo y la tecnología de energía renovable.
- Se espera también aumentos potenciales del turismo.

HORARIO ESTIMADO PARA EL PROYECTO SOLAR DOS

2008 – Segundo Trimestre
Someter Aplicación para Certificación

2009 – Cuarto Trimestre
Recibir Certificación

2010 – Primer Trimestre
Empezar Construcción
– Tercer Trimestre, Fase I,
Primeros Elementos en Funcionamiento

2012 – Segundo Trimestre, Fase II,
Primeros Elementos en Funcionamiento

2014 – Cuarto Trimestre, Terminación de Construcción del Proyecto de 750 Megavatios

SES

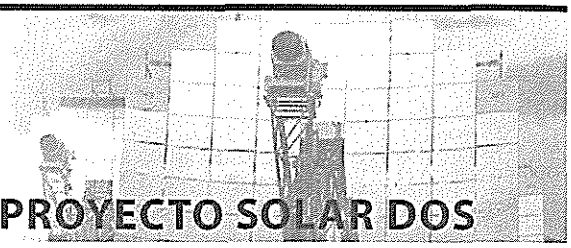
Stirling Energy Systems, Inc.
2920 East Camelback Road, Suite 150
Phoenix, AZ 85016

☎ Número de Teléfono Gratuito: 866.698.5275
solartwo@stirlingenergy.com
www.stirlingenergy.com

APPENDIX F

COMMENT CARD FORM

SES STIRLING ENERGY SYSTEMS



SOLAR TWO PROJECT COMMENT FORM
FORMULARIO DE COMENTARIOS SOBRE EL PROYECTO SOLAR DOS

What additional information would you like to know about this project?/¿Que información adicional le gustaría tener sobre este proyecto?

What are your thoughts or concerns about this project?/¿Que piensa Ud. y cuales son sus inquietudes sobre este proyecto?

Name/Nombre _____

Address/Dirección _____

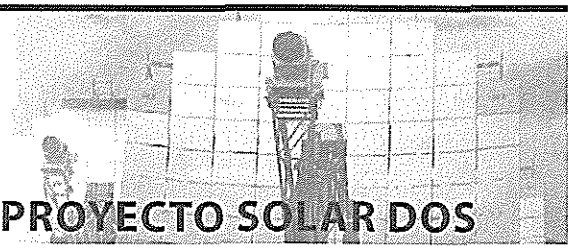
Phone/Teléfono _____

E-mail/Correo Electrónico _____

Please place in basket when complete or send to the address on the other side.
Favor de colocar formulario dentro de la canasta o enviar a la dirección en el otro lado.

THANK YOU FOR YOUR INPUT! / MIL GRACIAS POR SU COOPERACIÓN

SES STIRLING ENERGY SYSTEMS



SOLAR TWO PROJECT COMMENT FORM
FORMULARIO DE COMENTARIOS SOBRE EL PROYECTO SOLAR DOS

What additional information would you like to know about this project?/¿Que información adicional le gustaría tener sobre este proyecto?

What are your thoughts or concerns about this project?/¿Que piensa Ud. y cuales son sus inquietudes sobre este proyecto?

Name/Nombre _____

Address/Dirección _____

Phone/Teléfono _____

E-mail/Correo Electrónico _____

Please place in basket when complete or send to the address on the other side.
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THANK YOU FOR YOUR INPUT! / MIL GRACIAS POR SU COOPERACIÓN

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California Energy Commission
Public Advisor's Office
1516 Ninth Street
Sacramento, CA 95814

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California Energy Commission
Public Advisor's Office
1516 Ninth Street
Sacramento, CA 95814

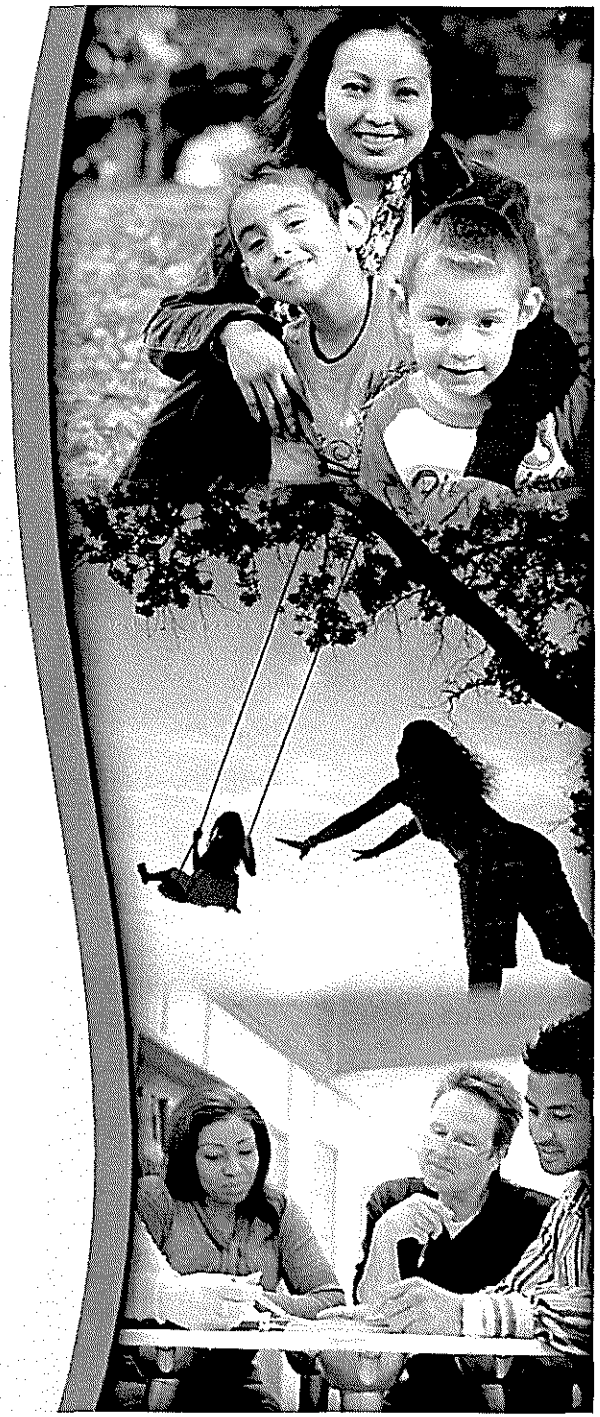
APPENDIX G

INFORMATIONAL HEARING AND SITE VISIT PRESENTATION AND HANDOUT

This appendix contains the PowerPoint presentation used at the November 24, 2008, scoping meeting. This presentation was also provided as a handout at that meeting (English only [11 pages]).

The SES Solar Two Power Project (08-AFC-5)

Informational Hearing and Site Visit



Loreen R. McMahon
Associate Public Adviser

November 24, 2008

CALIFORNIA
ENERGY COMMISSION

What's a Public Adviser?

At the Commission

Help the public understand the process

Make recommendations for the best way to be involved

Assist in successful participation in proceedings

Brochures are available for more information

Where to Get Information

The Public Adviser's Office

At the Commission

Energy Commission Website

www.energy.ca.gov/sitingcases/solartwo

Dockets Email

docket@energy.state.ca.us

List Server

www.energy.ca.gov/listservers

Energy Commission Library in Sacramento

Where to Get Information

The Public Adviser's Office

In Your Community

Where the Public can Read the Application for Certification (AFC)

Public Library

> Imperial County Library – 1812 Rio Vista St, El Centro, CA

> Imperial Public Library – 12159 N. Imperial Hwy, Ocotillo, CA

> San Diego Public Library – 820 E St, San Diego, CA

Electronic Access to AFC

> www.energy.ca.gov/sitingcases/solartwo/documents

Notice to the Public

The Public Adviser's Office

Solar Two Outreach

Notice of our receipt of an AFC via U.S. Postal Service mailing

> Property owners within 1,000 ft. of project

> Letters to Librarians with copies of the AFC

> Agency Letters (Local, State & Federal) with CDs of the AFC

> Letters to Elected Officials (Legislators, mayor, etc.)

Notice announcing this meeting via U.S. Postal Service mailing:

> Project Mailing List(s), includes 'Interested Parties"

> Proof of Service List

Applicant, Committee, Staff, Intervenors, Interested Agencies

> Above 3 lists: Property Owners, Libraries (with additions), Agencies

List Server List (electronic list distributed by e-mail)

Notice to the Public

The Public Adviser's Office

Solar Two Outreach

Public Adviser's Office Notice in English & Spanish:

Hon. Barbara Boxer, Senator

Hon. Diane Feinstein, Senator

Hon. Bob Filner, Congressman

Hon. Geoff Dale, Mayor, City of Imperial

Local elected officials; City Council members; interested parties that have contacted our office; local Native American Tribes and registered members; public and private schools; places of worship; local non-profit groups (community, environmental, ethnic organizations); state prison, mobile home parks; emergency services; museums and libraries.

Newspaper Advertisements publicizing this event:

Imperial Valley Press

Adelante Valle

How to Participate

The Public Adviser's Office

Energy Commission Meetings

Attend Publicly Noticed Project Events

Sign-In Sheet to Receive Notice of All Upcoming Events

Note: Per CA Govt. Code § 11124, you are not required to register your name or provide any information as a condition to attend or participate in this proceeding

Non-English Speaking Welcome

Special Accommodations for Persons With Disabilities

Lourdes Quiroz (916) 654-5146
lquiroz@energy.state.ca.us

Public Encouraged to Comment on Noticed Agenda Topics

Two Levels of Public Participation

The Public Adviser's Office

Informal Participation

Making your voice heard

> Blue Cards: Verbal Comments at Public Meetings

> Written Comments or Statements to the Commission Dockets Unit (Docket No. 08-AFC-5)

Comments

> Considered by the Commissioners

> Part of the record

> Not evidence

Two Levels of Public Participation

Formal Participation (Intervenor)

How to Formally Participate

> Contact the Public Adviser's Office

> File Petition to Intervene

Who can Become and Intervenor

> Anyone may file a Petition to Intervene in a proceeding

> You do not have to be or have an attorney to intervene

> The petition is considered by the assigned committee

> If approved, you become a party to this proceeding

Two Levels of Public Participation

Benefits & Responsibilities to Intervening

Intervenors have the same rights and responsibilities as other parties

- Receive
  - All filings in a case, including AFC
  - Notices of hearings and workshops through Proof of Service
- Fully participate in the process of obtaining information
- File documents and serve them on all parties
  - Motions
  - Petitions
  - Objections
  - Briefs
- Present evidence and witnesses
- Cross-examine witnesses provided by other parties

Loreen R. McMahon, Associate Public Adviser

(916) 654-4489

(800) 822-6228 Toll Free Voicemail

(916) 654-4493 FAX

1516 Ninth St, MS-12

Sacramento CA 95814-2950

publicadviser@energy.state.ca.us

www.energy.ca.gov/public_adviser

APPENDIX H

SCOPING MEETING SIGN-IN SHEETS

This appendix contains the following:

- Sign-in sheets for the November 24, 2008, Scoping Meeting (32 pages)
- Sign-in sheets for the December 18, 2008, Workshop/Scoping Meeting (12 pages)

SES STIRLING ENERGY SYSTEMS

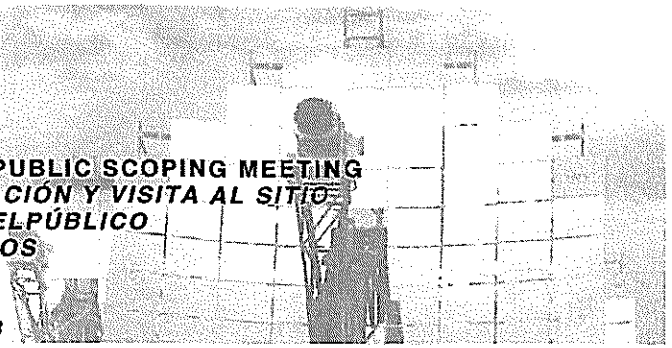
INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* RICHARD HOLLIDAY	**Name/*Nombre***
Organization/*Organización* ASA	**Organization/*Organización***
Address/*Dirección* 13667 JORDAN CT	**Address/*Dirección***
City, State, Zip/ *Ciudad, Estado, Código Postal* RANCHO CUCA MONGA CA 9173	**City, State, Zip/ *Ciudad, Estado, Código Postal***
Email/*Correo Electrónico* DICKHOLLIDAY@CHARTER.NET	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* LUCK	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*	**Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*	**Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre*
Organization/*Organización* Charles Bush
Address/*Dirección* 821 Mountain View Rd
City, State, Zip/ *Ciudad, Estado, Código Postal* El Cajon Ca 92021
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Property Owner Notified
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Vicki Wood
Organization/*Organización* BLM
Address/*Dirección* 1661 S 4th
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro 92243
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

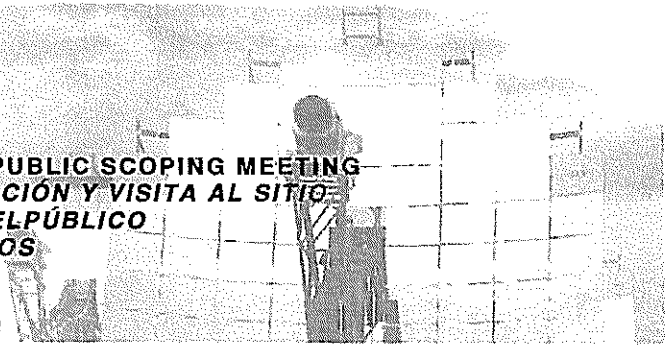
INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO/*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Thomas Zale	**Name/*Nombre***
Organization/*Organización* BLM	**Organization/*Organización***
Address /*Dirección* Rio Grande	**Address/*Dirección***
City, State, Zip/ *Ciudad, Estado, Código Postal*	**City, State, Zip/ *Ciudad, Estado, Código Postal***
Email/*Correo Electrónico*	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* EVAN AYERS
Organization/*Organización* SELF
Address/*Dirección* 10801 DEWITT COURT
City, State, Zip/ *Ciudad, Estado, Código Postal* ELCAJON, CA 92020
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* NOTICE FROM BLM
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí* (No)
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí* (No)

Name/*Nombre* Edie Harmon
Organization/*Organización*
Address/*Dirección* Box 444
City, State, Zip/ *Ciudad, Estado, Código Postal* Ocotillo CA 92259
Email/*Correo Electrónico* desertharmon@gmail.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* notice by mail
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No* email + paper

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

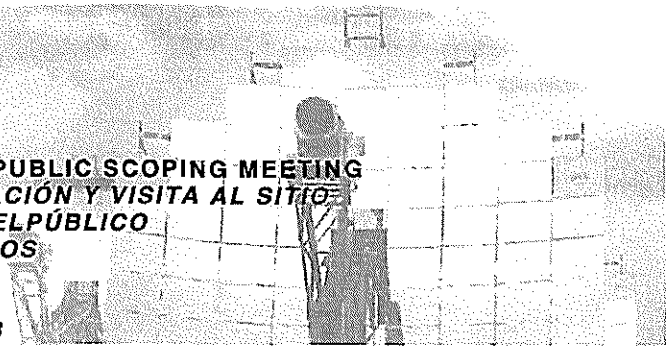
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Eusebio Arballo
Organization/*Organización* IVEDC
Address /*Dirección* PO Box 3005
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92244
Email/*Correo Electrónico* sebi@ivedc.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* CEC, SES
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Linda Self
Organization/*Organización* BLM
Address/*Dirección* 1661 So. 4th St.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* lself@ca.blm.gov
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
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(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* HOSSEIN ALIMAHANI
Organization/*Organización*
Address/*Dirección* 4716 WHITE OAK PLACE
City, State, Zip/ *Ciudad, Estado, Código Postal* ENCINO, CA. 91316
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* LISTSERV
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Michelle Doo
Organization/*Organización* NAF El Centro
Address/*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO/*
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PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

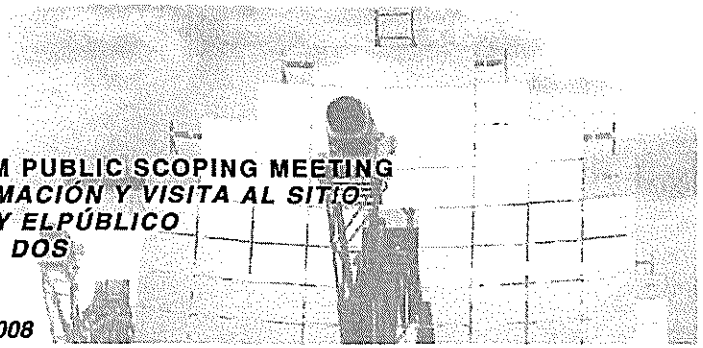
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Erik M. Reyes
Organization/*Organización* Institute for Socio-Economic Justice
Address /*Dirección* 541 Main St.
City, State, Zip/ *Ciudad, Estado, Código Postal* Brawley CA 92227
Email/*Correo Electrónico* e.reyes@sociojustice.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Internet
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* DOUG WASSER
Organization/*Organización* DRIVE OFF-ROAD
Address/*Dirección* PO. Box 1646
City, State, Zip/ *Ciudad, Estado, Código Postal* EL CENTRO CA 92244
Email/*Correo Electrónico* doug@drive-racing.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* WEB
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO/*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

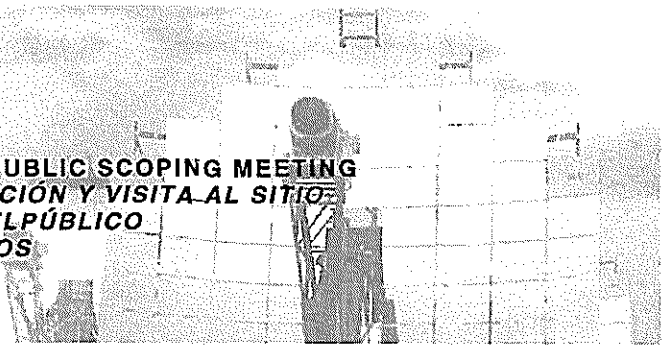
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Patricia J. Lauri
Organization/*Organización* PO Box 1605
Address/*Dirección*
City, State, Zip/*Ciudad, Estado, Código Postal* Altadena, CA 91003
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Saw in the property in the area
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Marla McMullen
Organization/*Organización*
Address/*Dirección* 2464 Gladiola Dr.
City, State, Zip/*Ciudad, Estado, Código Postal* CAmpo CA 91906
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* friend
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí* (No)
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí* (No)

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO-*
PARA EL PÚBLICO/CONFERENCIA BLM Y EL PÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Jim Stobaugh
Organization/*Organización* BLM Washington Office
Address/*Dirección* 1340 Financial Blvd
City, State, Zip/*Ciudad, Estado, Código Postal* Reno, NV 89509
Email/*Correo Electrónico* jstobaug@nv.blm.gov
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Participant For BLM
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Karen Collins
Organization/*Organización*
Address/*Dirección* 1705 Haun
City, State, Zip/*Ciudad, Estado, Código Postal* Hoitville CA 92250
Email/*Correo Electrónico* e-k collins @ sbc global.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* email
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Jaime Hernandez
Organization/*Organización* Imperial County APCD
Address /*Dirección* 150 S 9th St
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA
Email/*Correo Electrónico* jaime.Hernandez@imperialcounty.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/ *Sí* (No)
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/ (*Sí*) *No*

Name/*Nombre* BRAD VILLANUEVA
Organization/*Organización* SOUTHERN INSPECTION
Address/*Dirección* 557 COMMERCIAL #5
City, State, Zip/ *Ciudad, Estado, Código Postal* EL CENTRO CA 92243
Email/*Correo Electrónico* bigbradvillanueva@HOTMAIL.COM
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* IV PRESS
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Christina Luhr
Organization/*Organización* San Diego Regional EDC
Address/*Dirección* 530 B street, Suite 700
City, State, Zip/ *Ciudad, Estado, Código Postal* San Diego CA 92
Email/*Correo Electrónico* CL@sandiegobusiness.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Steve Borchard
Organization/*Organización* BLM
Address/*Dirección* 22835 Calle San Juan De los Lagos
City, State, Zip/ *Ciudad, Estado, Código Postal* Moreno Valley CA 92555
Email/*Correo Electrónico* Steven_j_borchard@BLM.gov
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SOLAR TWO POWER PROJECT
SITE VISIT & INFORMATIONAL HEARING
(08-AFC-5)

November 24, 2008, beginning at 2:00 p.m.

El Centro – Board Chambers – County Administration Center
940 Main Street, El Centro, CA

NOTE: Signing this list is voluntary. Pursuant to section 11124 of the California Government Code, you are not required to register your name or provide any information as a condition to attend or participate in this proceeding.

PLEASE CHECK THE BOX(s) IF YOU WOULD LIKE TO BE ON THE PROJECT MAILING LIST AND / OR IF YOU WOULD LIKE TO RECEIVE NOTICES ELECTRONICALLY.

☐ Please put me on the postal mailing list.

☑ Please send notices to my e-mail address below.

Name Imperial County

Organization/Company Diana Lean

Address 2695 S. 4th St.

City El Centro State CA Zip 92243

E-mail dleon@icwdb

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name Roger Santos

Organization/Company

Address P.O. Box 256

City Heber State CA Zip 92249

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name Larry Gloyd AIA

Organization/Company County of Imperial

Address Mail - 4441 W. Main St

City El Centro State Ca Zip 92243

E-mail larry@carothersandgeo.com

☒ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name JUAN VERDUGO

Organization/Company ASSESSOR'S OFFICE

Address

City E.C State Zip

E-mail JUANVERDUGO@IMPERIALCOUNTY.NET

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name LISA GOVER

Organization/Company CAMPO EPA

Address

City State Zip

E-mail lgover@campo-nsn.gov

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name GARY WYATT

Organization/Company Imperial Bd. of Supervisors

Address 940 Main St.

City El Centro State CA Zip 92243

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name Kerm Shipp

Organization/Company Campo Band of Mission Indians

Address 36190 Church Road

City Campo State CA Zip 91906

E-mail Kermii@aol.com

☐ Please put me on the postal mailing list.

☒ Please send notices to my e-mail address below.

Name BOBERT EMERY

Organization/Company 682 W MAIN RD

Address EL CENTRO CA 92243

City BOB@EMERYUSA.NET State Zip

E-mail

☐ Please put me on the postal mailing list.

☐ Please send notices to my e-mail address below.

Name

Organization/Company

Address

City State Zip

E-mail

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Jim Minnick & Richard Cabildo
Organization/*Organización* Imp Co: Planning & Development
Address/*Dirección* 801 main Street.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* Jimminnick@imperialcountyinet
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Thomas Torres
Organization/*Organización* Thomas Torres & Associates, LLC
Address/*Dirección* 367 S Hoskins Rd.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* tonytt@hotmail.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Email / Mail
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO:*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Richard MACIAS
Organization/*Organización* OWNER
Address/*Dirección* 9411 Kaschube WAY
City, State, Zip/*Ciudad, Estado, Código Postal* SANTEE CA 92071
Email/*Correo Electrónico* macias9411@yahoo.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* [signature]
Organization/*Organización* GS LYON CONSULTANTS, INC.
Address/*Dirección* 780 North 4th St.
City, State, Zip/*Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* jlyon@landmark-ca.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* IVEDC
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO/*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

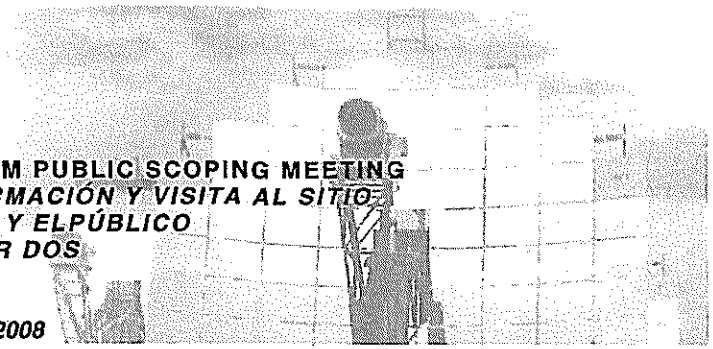
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Elias Felix
Organization/*Organización* Nolte Associates, Inc.
Address /*Dirección* 1605 West Main Street
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA, 92243
Email/*Correo Electrónico* elias.felix.nolte.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* e-mail
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Nancy Rood
Organization/*Organización* Westside Elementary School
Address/*Dirección* 2294 W. Vaughn Rd.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92249
Email/*Correo Electrónico* nrood@ivnet.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* you sent a letter
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

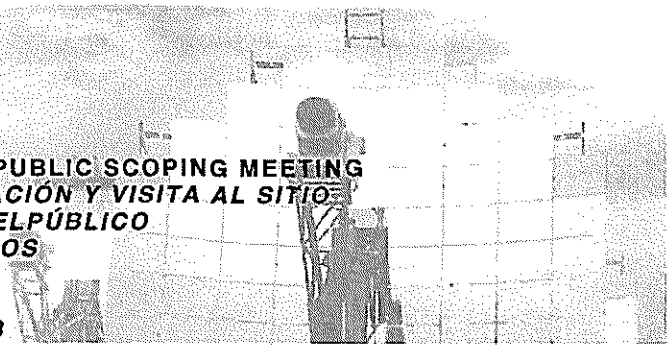
Sign-In Sheet/*Registro*

Name/*Nombre* JAN STUBBS
Organization/*Organización*
Address/*Dirección* 1612 TRENTON WAY
City, State, Zip/*Ciudad, Estado, Código Postal* SAN MARCOS CA 92078
Email/*Correo Electrónico* janstubbs@cox.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* JUAN ZARATE
Organization/*Organización*
Address/*Dirección* 2630 W ESAN HEWES HWY
City, State, Zip/*Ciudad, Estado, Código Postal* IMPERIAL CA 92251
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

name	organization	phone / email
HEATHER KERESLTE	FEHR & PEERS	h.keres2tes@fehrandpeers.com
Steve Taylor	SDG&E	SETaylor@sempracities.com

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Daniel Machain
Organization/*Organización* IBEW 569
Address /*Dirección* 4545 Viewridge Ave. Ste. 100
City, State, Zip/ *Ciudad, Estado, Código Postal* San Diego CA 92123
Email/*Correo Electrónico* dmachain@ibew569.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* News Paper
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

Name/*Nombre* Tom DuBose
Organization/*Organización* Development Design & Engineering
Address/*Dirección* 1065 State st.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* tdubose@ode-inc.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* AD
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Jane Sharma
Organization/*Organización* Solar Energy
Address /*Dirección* 1210 Santa Luisa
City, State, Zip/ *Ciudad, Estado, Código Postal* Solana Beach
Email/*Correo Electrónico* jane@solarenergy.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Email
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Chanda Kuhn
Organization/*Organización* Westside school
Address/*Dirección* 2294 W. Vaughn Rd
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* ckuhn@imperial.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* letter to the school
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO -*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Vince Signorotti
Organization/*Organización* Terra-Gen Power
Address /*Dirección* 1059 Sandalwood Dr
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* vsignorotti@tgpnyc.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* IVEDC
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Denis Trafficanty v Glendale Kimmerly
Organization/*Organización*
Address/*Dirección* PO Box 305
City, State, Zip/ *Ciudad, Estado, Código Postal* Santa Ysabel CA 92070
Email/*Correo Electrónico* denis@vitalityweb.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y EL PÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre*
Organization/*Organización*
Address/*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre*
Organization/*Organización*
Address/*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* EMILY CAPELLO
Organization/*Organización* CEC
Address /*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Roxanna Bayon Moore
Organization/*Organización* Hale Engineering dba TESCO
Address/*Dirección* 242 N. Eighth Street
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* rbmoore@haleengineering.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* newspaper
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO-*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Phil Villamar
Organization/*Organización* IVRCP
Address /*Dirección* 687 State St.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* pvillamar@ivrcp.org
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Sterling- SES
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Jennifer White
Organization/*Organización* BLM
Address/*Dirección* 1661 S. 4th St
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO-*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* J.P. Menvielle	**Name/*Nombre*** Tim Kelley
Organization/*Organización* IID - Director	**Organization/*Organización*** IVEDC
Address /*Dirección* 897 West Ross Rd	**Address/*Dirección*** 1224 State Suite B
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA. 92243	**City, State, Zip/ *Ciudad, Estado, Código Postal***
Email/*Correo Electrónico*	**Email/*Correo Electrónico*** timd@ivedc.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* RICHARD AYERS	**Name/*Nombre*** Charlene Ayers
Organization/*Organización* SCE	**Organization/*Organización*** Self
Address/*Dirección* 10801 DeWitt Ct Glen Avon	**Address/*Dirección*** 10801 DeWitt Ct EC 92020
City, State, Zip/*Ciudad, Estado, Código Postal* R-A-A@att.net	**City, State, Zip/*Ciudad, Estado, Código Postal***
Email/*Correo Electrónico*	**Email/*Correo Electrónico*** char.ayers@att.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*** NOTICE BOARD
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y EL PÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Connie Bergmark	**Name/*Nombre*** DONNA TISDALE
Organization/*Organización* Imperial Lakes	**Organization/*Organización***
Address/*Dirección* 2828 W. Evan Hewes	**Address/*Dirección*** PO BX 1275
City, State, Zip/*Ciudad, Estado, Código Postal* Imperial CA	**City, State, Zip/*Ciudad, Estado, Código Postal*** BOULEVARD, CA 91905
Email/*Correo Electrónico* ab.de@sbcglobal.net	**Email/*Correo Electrónico*** donnatisdale@hughes.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*** e-mail notice
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO/*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

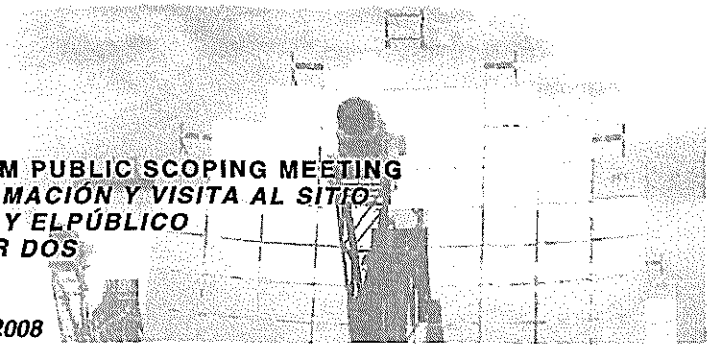
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Cheryl Berry
Organization/*Organización*
Address /*Dirección* 2040 Ross Ave
City, State, Zip/ *Ciudad, Estado, Código Postal* Boulder CA 91901
Email/*Correo Electrónico* Cheryna@netzero.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* email
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* DALE SUGGETT
Organization/*Organización* C.J. WHITING - TURNER
Address/*Dirección* 3 CORP PARK IRVINE CA
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico* DALE.SUGGETT@CJWHITING-TURNER.Com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* EMAIL
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO;*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* MARK T. GRAM
Organization/*Organización* Elected Council member City of Imperial
Address/*Dirección* 316 Butterfield Trail
City, State, Zip/*Ciudad, Estado, Código Postal* Imperial, CA
Email/*Correo Electrónico* mgram@adelphia.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* IVEDC
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Ben Franco
Organization/*Organización*
Address/*Dirección* 226 E. Mills Ave
City, State, Zip/*Ciudad, Estado, Código Postal* Claremont CA 91711
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Friend
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No* benigno.franco@whitney-turner.com

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO.*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* CARROLL BUCKLEY
Organization/*Organización* EL CENTRO CHAMBER OF COMMERCE
Address /*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal* EL CENTRO CA
Email/*Correo Electrónico* KXOAMFM@KXORADIO.COM
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* RADIO
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

Name/*Nombre* Gordon Cheniae
Organization/*Organización* Cheniae & Assoc
Address/*Dirección* P.O. Box 12515
City, State, Zip/ *Ciudad, Estado, Código Postal* Glendale, AZ 85318
Email/*Correo Electrónico* gcheniae@cox.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Angela
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO.*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Paul Foley
Organization/*Organización* Gateway Blvd
Address/*Dirección* South San Francisco, CA
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico* pfoley@adamsbroadwell.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Meg Mossglass
Organization/*Organización* ORBA/SDORC
Address/*Dirección* 32883 Pereaard Rd
City, State, Zip/ *Ciudad, Estado, Código Postal* Winchester, CA 92596
Email/*Correo Electrónico* M.Jen@ORBA.biz
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Bdbroom
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

INFORMATIONAL HEARING AND PUBLIC SITE VISIT/ BLM PUBLIC SCOPING MEETING
SOLAR TWO POWER PROJECT/*AUDIENCIA DE INFORMACIÓN Y VISITA AL SITIO*
PARA EL PÚBLICO/CONFERENCIA BLM Y ELPÚBLICO
PROYECTO DE ENERGÍA SOLAR DOS
(08-AFC-5)

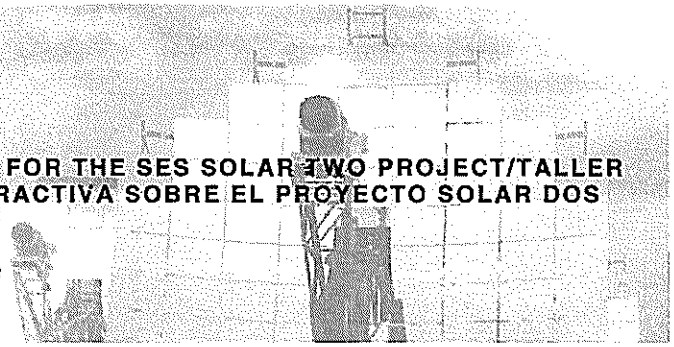
November 24, 2008/*24 Noviembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Steve Taylor
Organization/*Organización* SDG&E
Address /*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico* SRTaylor@SempraUtilities.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre*
Organization/*Organización*
Address/*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



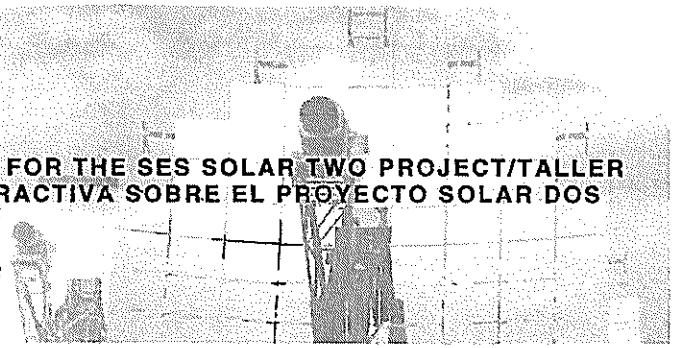
DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Marilyn Mosbrat	**Name/*Nombre***
Organization/*Organización*	**Organization/*Organización***
Address/*Dirección* 625 O. Main Ave	**Address/*Dirección***
City, State, Zip/*Ciudad, Estado, Código Postal* Fruitvale	**City, State, Zip/*Ciudad, Estado, Código Postal***
Email/*Correo Electrónico*	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí* (*No*)	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí* (*No*)	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Kevin Grant
Organization/*Organización* PMC
Address/*Dirección* 1122 State St
City, State, Zip/*Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* kgrant@pmcworld.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* County
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* Wayne Olesh
Organization/*Organización*
Address/*Dirección* PO Box 1684
City, State, Zip/*Ciudad, Estado, Código Postal* Brawley CA 92227
Email/*Correo Electrónico* Wayneo@brawleyonline.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* word of mouth
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Thomas Zale
Organization/*Organización* BLM
Address /*Dirección* El Centro
City, State, Zip/ *Ciudad, Estado, Código Postal* CA 92251
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Edie Harmon
Organization/*Organización*
Address/*Dirección* BOX 444
City, State, Zip/ *Ciudad, Estado, Código Postal* Ocotillo CA 92259
Email/*Correo Electrónico* desertharmon@gmail.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* by mail.
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* GORDON JUDD	**Name/*Nombre*** LONNA TISDALE
Organization/*Organización* NRG Energy Inc	**Organization/*Organización***
Address/*Dirección* 1817 Aston Ave Suite 104	**Address/*Dirección*** PO BX 1275
City, State, Zip/*Ciudad, Estado, Código Postal* Carlsbad, CA 92008	**City, State, Zip/*Ciudad, Estado, Código Postal*** BOULEVARD, CA 91905
Email/*Correo Electrónico* gordon.judd@nrgenergy.com	**Email/*Correo Electrónico*** donnatisdaleehughes.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* e-mail	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*** e-mail
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** (Yes) No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** (Yes) No/*Sí No*

SES STIRLING ENERGY SYSTEMS

DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

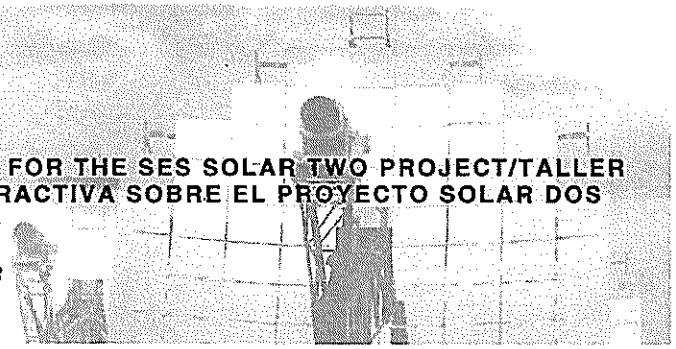
December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre*
Organization/*Organización*
Address/*Dirección*
City, State, Zip/ *Ciudad, Estado, Código Postal*
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

Name/*Nombre* Dahna Lean
Organization/*Organización* IC Workforce Development Board
Address/*Dirección* 2695 S. 4th St.
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* dlean@ICWDB.ORG
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS



DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

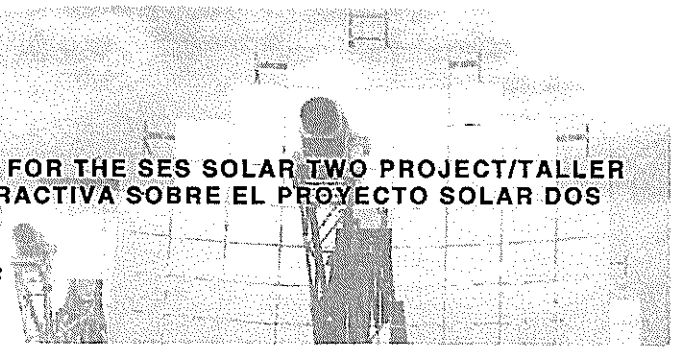
December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Linda D. Esparza
Organization/*Organización* Assessor's.
Address/*Dirección* $ 451 W 6th.
City, State, Zip/ *Ciudad, Estado, Código Postal* Imperial
Email/*Correo Electrónico* lindaesparza@sbcglobal.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Meeting
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

Name/*Nombre* David Blanke
Organization/*Organización* IC Planning
Address/*Dirección* 801 Main
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Other
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes (No)/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes (No)/ *Sí No*

SES STIRLING ENERGY SYSTEMS



DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

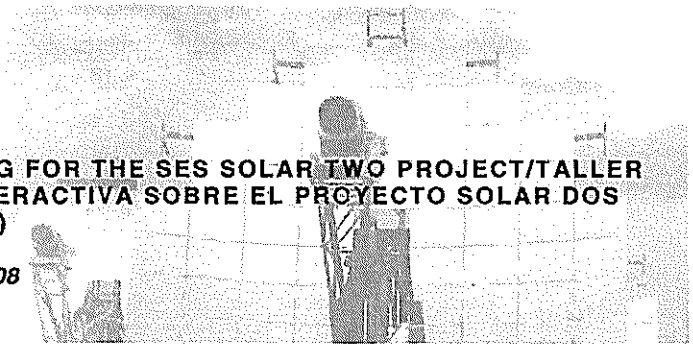
December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Robert Mutaw
Organization/*Organización* URS
Address/*Dirección* 8181 E Tufts Ave
City, State, Zip/ *Ciudad, Estado, Código Postal* Denver CO 80237
Email/*Correo Electrónico* robert_mutaw@urscorp.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

Name/*Nombre* Eusebio Arballo
Organization/*Organización* Imperial Valley EDC
Address/*Dirección* 1224 State St., Suite B
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro, CA 92243
Email/*Correo Electrónico* sebio@ivedc.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* CEC & SES
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/ *Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/ *Sí No*

SES STIRLING ENERGY SYSTEMS



DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Robert Menvielle
Organization/*Organización*
Address /*Dirección* 2047 Willow Drive
City, State, Zip/ *Ciudad, Estado, Código Postal* El Centro CA 92243
Email/*Correo Electrónico* robertmenvielle@imperialcounty.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Postal At County Admin. Building
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* (Yes) No/*Sí No*

Name/*Nombre* TERRY WEINER
Organization/*Organización* DESERT PROTECTIVE COUNCIL
Address/*Dirección* PO BOX 3635
City, State, Zip/ *Ciudad, Estado, Código Postal* SAN DIEGO CA 92163
Email/*Correo Electrónico* terryweiner@sbcglobal.net
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*
Please place me on the mailing list for this project/ *Por favor ponga mi nombre en su lista de correo para este proyecto.* (Yes) No/*Sí No*
Please send future notices to my email address/ *Por favor envíeme información por correo electrónico.* Yes (No)/*Sí No*

SES STIRLING ENERGY SYSTEMS

DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Jim Stobaugh	**Name/*Nombre*** Steve Taylor
Organization/*Organización* BLM	**Organization/*Organización*** SDG&E
Address/*Dirección* P.O. Box 12000	**Address/*Dirección***
City, State, Zip/*Ciudad, Estado, Código Postal* ~~West~~ Reno, NV 89520	**City, State, Zip/*Ciudad, Estado, Código Postal***
Email/*Correo Electrónico* jstobaug@nv.blm.gov	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* help organize mtg	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No* yes	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

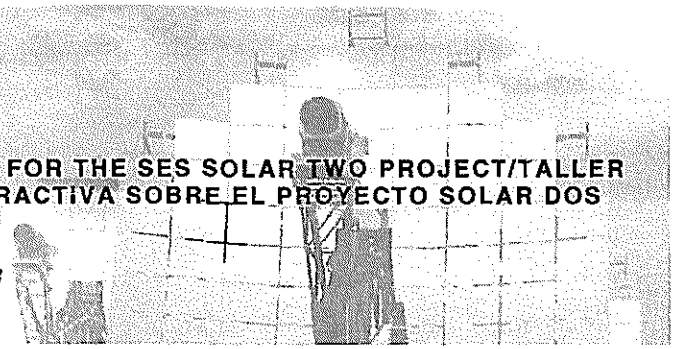
DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Alan Stein	**Name/*Nombre*** Julie Ambach
Organization/*Organización* BLM	**Organization/*Organización*** IID
Address/*Dirección* 22835 Calle San Juan de Los Lagos	**Address/*Dirección*** 1699 W Main St
City, State, Zip/*Ciudad, Estado, Código Postal* Moreno Valley CA 92553	**City, State, Zip/*Ciudad, Estado, Código Postal*** El Centro, CA 92243
Email/*Correo Electrónico* astein@ca.blm.gov	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* e-mail	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?*** Notificacion
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** (Yes) No/*Sí* (No)
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** Yes No/*Sí* (No)

SES STIRLING ENERGY SYSTEMS



DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* Tony Belello	**Name/*Nombre*** Caryn Holmes
Organization/*Organización* LSA	**Organization/*Organización*** CEC
Address/*Dirección* 703 Palomar Airport Rd	**Address/*Dirección***
City, State, Zip/*Ciudad, Estado, Código Postal* #260 Carlsbad, CA 92011	**City, State, Zip/*Ciudad, Estado, Código Postal***
Email/*Correo Electrónico* Tony.Belello@LSA-ASSOC.com	**Email/*Correo Electrónico***
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Sim Globash	**How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?***
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí No*	**Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.*** Yes No/*Sí No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí No*	**Please send future notices to my email address/*Por favor envíeme información por correo electrónico.*** Yes No/*Sí No*

SES STIRLING ENERGY SYSTEMS

DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT/TALLER DE REACCIÓN A DATOS Y RESOLUCIÓN DE ASUNTOS/CONFERENCIA INTERACTIVA SOBRE EL PROYECTO SOLAR DOS (08-AFC-5) / (CA-670-2006-33)

December 18, 2008/*18 Diciembre 2008*

Sign-In Sheet/*Registro*

Name/*Nombre* RICHARD CROANILLO
Organization/*Organización* I.C. PLANNING + DEV. SERVICES DEPT
Address/*Dirección* 801 MAIN STREET
City, State, Zip/*Ciudad, Estado, Código Postal* EL CENTRO, CA
Email/*Correo Electrónico*
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* NOTICE
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes ~~No~~/*Sí* *No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí* *No*

Name/*Nombre* Gerald Shannon
Organization/*Organización* OptiSolar
Address/*Dirección* 777 Mariton St
City, State, Zip/*Ciudad, Estado, Código Postal* San Francisco, CA 94129
Email/*Correo Electrónico* dshannon@optisolar.com
How did you hear about this meeting?/*¿Cómo supo sobre esta conferencia?* Eusebio
Please place me on the mailing list for this project/*Por favor ponga mi nombre en su lista de correo para este proyecto.* Yes No/*Sí* *No*
Please send future notices to my email address/*Por favor envíeme información por correo electrónico.* Yes No/*Sí* *No*

APPENDIX I

SCOPING MEETING DISPLAY BOARDS

This appendix contains the following:

- Display Boards in English (10 pages)
- Display Boards in Spanish (10 pages)

SES STIRLING ENERGY SYSTEMS

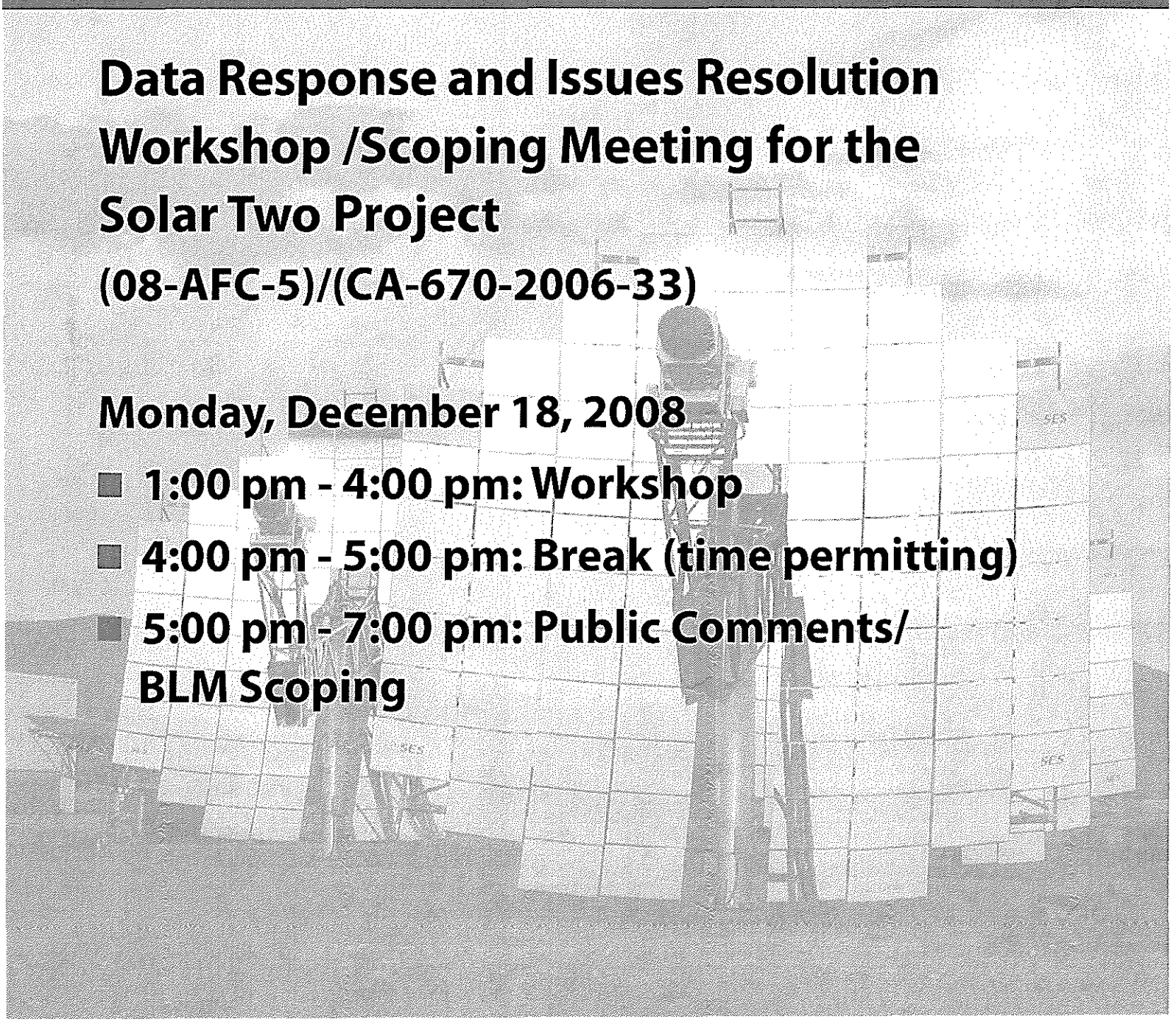
Welcome!

Data Response and Issues Resolution Workshop /Scoping Meeting for the Solar Two Project

(08-AFC-5)/(CA-670-2006-33)

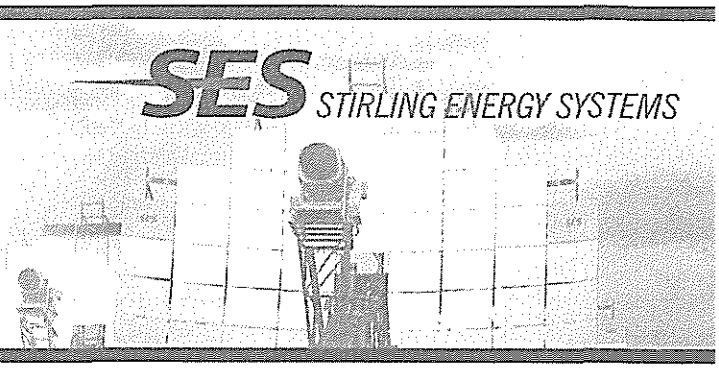
Monday, December 18, 2008

- **1:00 pm - 4:00 pm: Workshop**
- **4:00 pm - 5:00 pm: Break (time permitting)**
- **5:00 pm - 7:00 pm: Public Comments/ BLM Scoping**

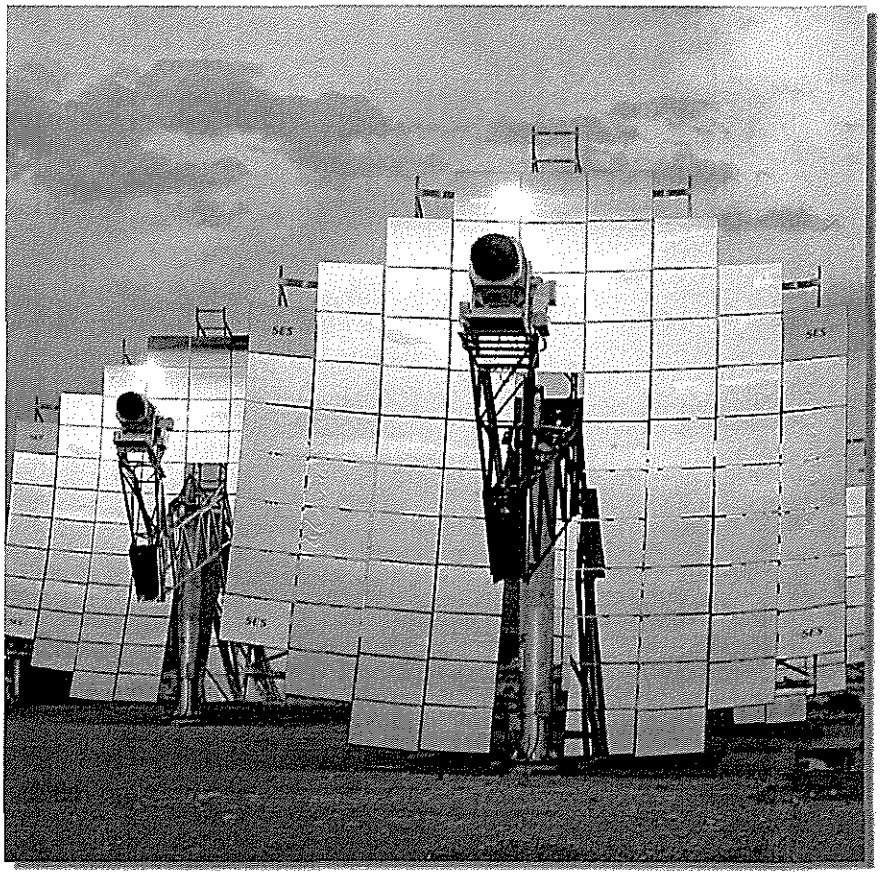


ABOUT STIRLING ENERGY SYSTEMS

SES STIRLING ENERGY SYSTEMS

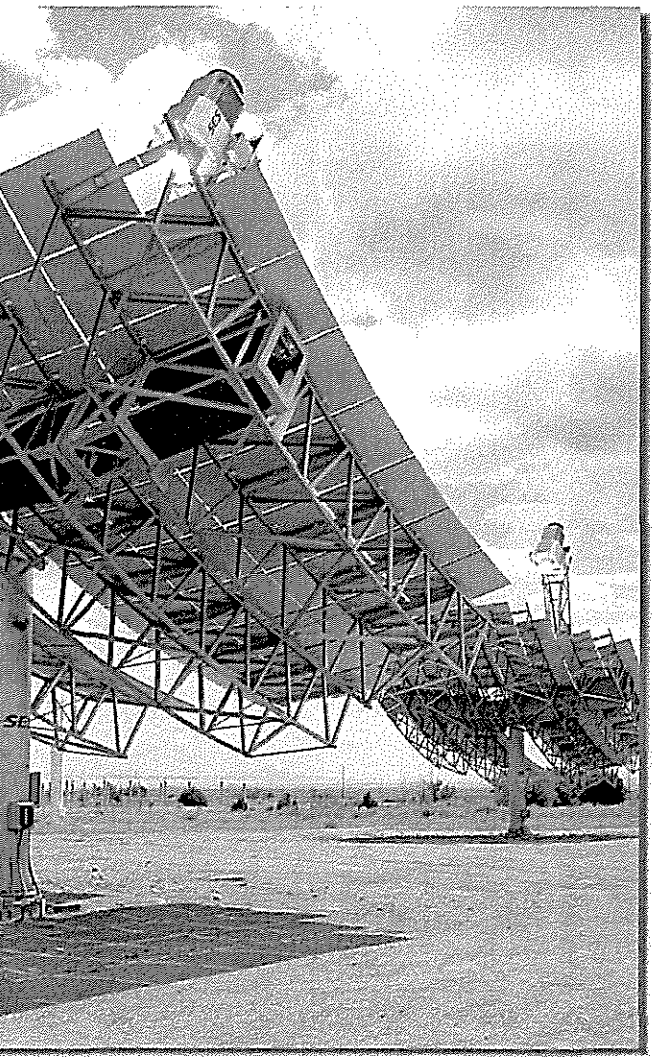


- Unique SunCatcher technology that combines a mirrored concentrator dish with a high-efficiency Stirling engine specially designed to convert sunlight to electricity.
- Technology on the ground since 1984.
- Holds World Record in efficiency of converting the sun's energy into grid-quality electricity.
- A United States Company Headquartered in Phoenix, Arizona:
  - Project & technical development offices are located in Tustin, California and Albuquerque, New Mexico.
- Renewable utility grade power ready for commercialization.



SOLAR TWO PROJECT PURPOSE

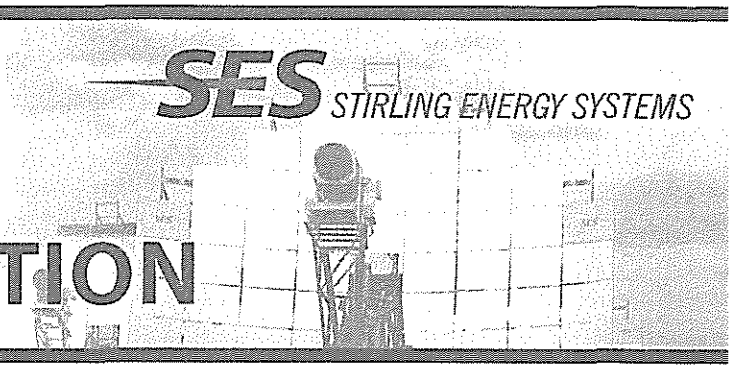
SES STIRLING ENERGY SYSTEMS



- Provide up to 750MW of renewable electric capacity under a 20-year Power Purchase Agreement (PPA) to San Diego Gas & Electric (SDG&E).
- Develop renewable solar energy to help California achieve its Renewables Portfolio Standard (RPS) requirement.
- Help protect the environment by delivering clean, renewable solar energy.
- Assist the State of California in meeting its goal of reducing greenhouse gas emissions to 1990 levels by 2020 (Assembly Bill 32).

SOLAR TWO PROJECT DESCRIPTION

SES STIRLING ENERGY SYSTEMS



PROJECT SIZE/LOCATION

- One of the world's largest solar power projects.
- 750 net megawatt (MW) solar power project in Imperial Valley, California.
  - Approximately 100 miles east of San Diego, 14 miles west of El Centro, and 4 miles east of Ocotilllo.

TECHNOLOGY

- Solar Two would consist of:
  - Approximately 30,000 solar dish Stirling systems (referred to as SunCatchers) which would consist of solar concentrating dishes and Stirling Engine Power Conversion Units (PCUs).
  - Associated equipment and support systems.

CONSTRUCTION

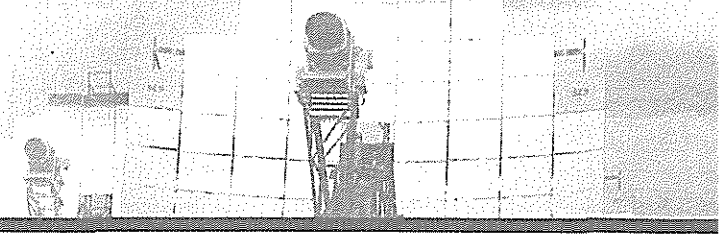
- The Project would be constructed in two phases. Phase I would consist of up to 12,000 SunCatchers and produce a net 300MW. Phase II would expand the Project with 18,000 SunCatchers and produce a net 450MW.
- Subject to receipt of all necessary approvals, construction should start in 2010, with projected commercial operations beginning later that year.

TRANSMISSION

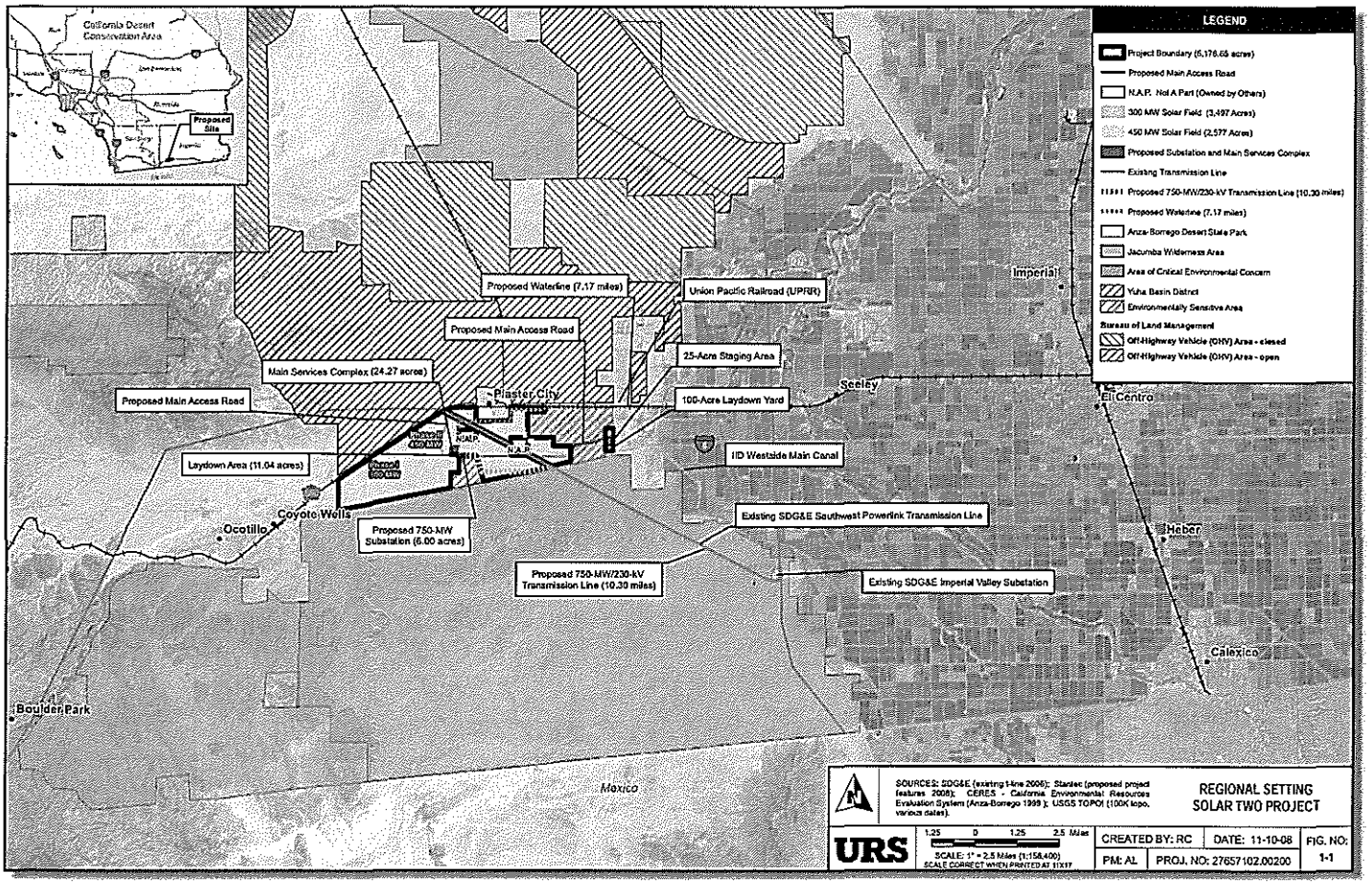
- Construction of a new 230kV substation located in the center of the Project Site.
- Interconnection to the SDG&E Imperial Valley Substation.

SOLAR TWO SITE LOCATION

SES STIRLING ENERGY SYSTEMS

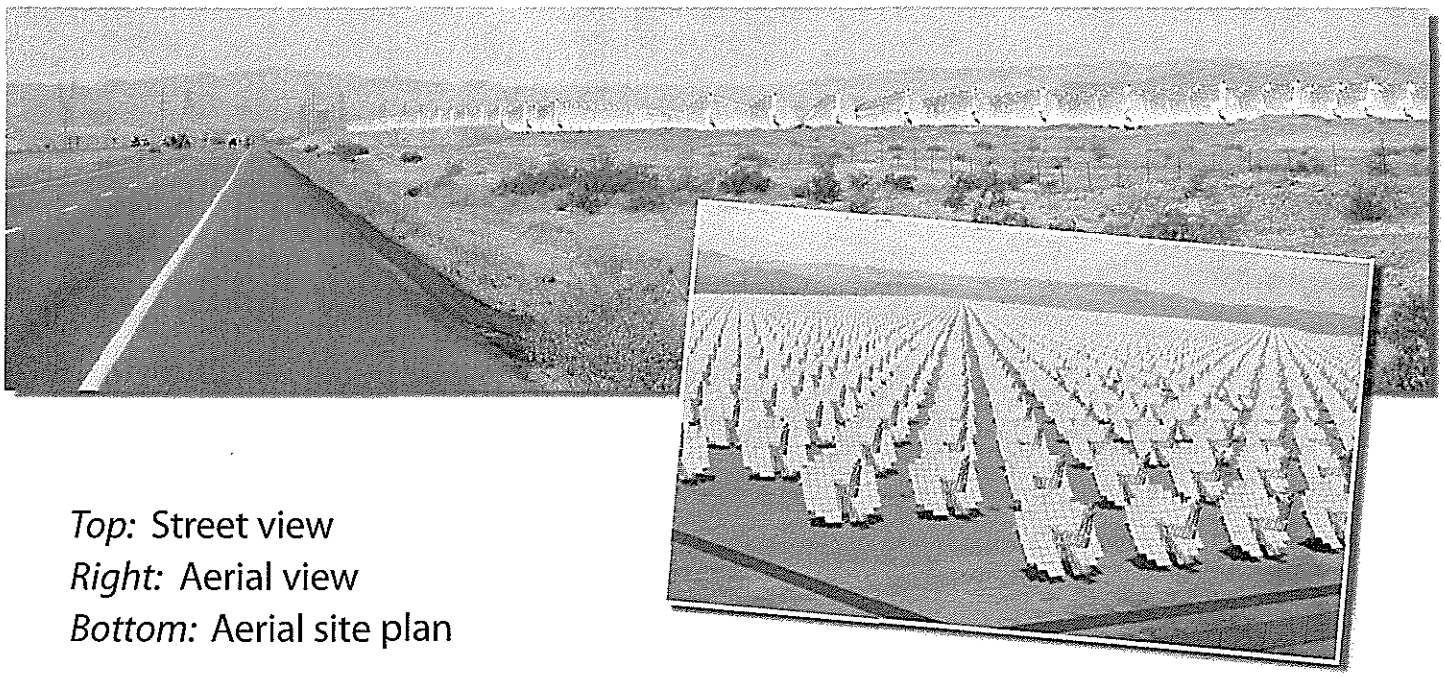


- Located on approximately 6,140 acres of federal land administered by the Bureau of Land Management (BLM) and 360 acres of private land.
- The Project was sited to avoid or minimize impacts to recreation and environmentally-sensitive areas.

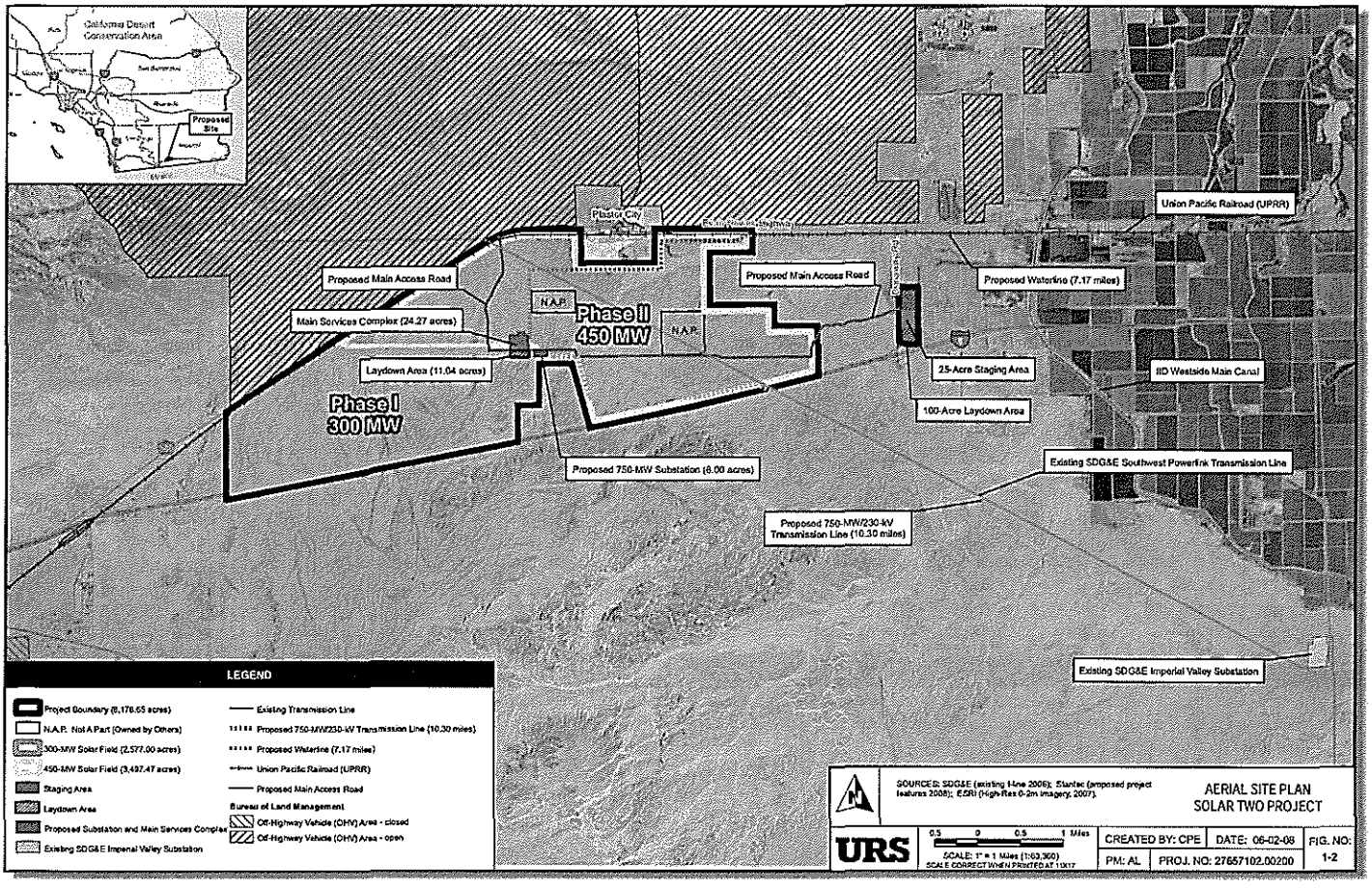


SES STIRLING ENERGY SYSTEMS

SOLAR TWO VISUAL SIMULATIONS

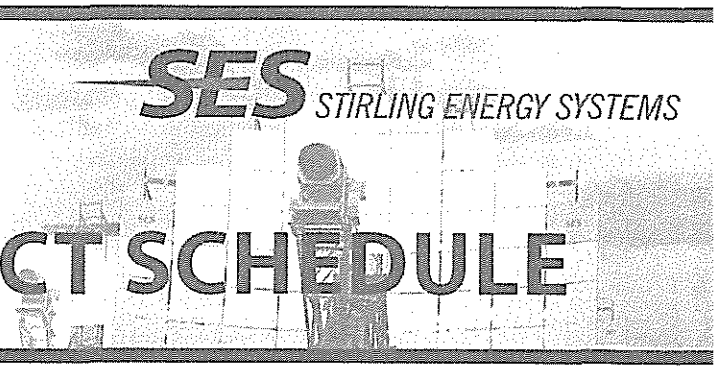


Top: Street view
Right: Aerial view
Bottom: Aerial site plan



SES STIRLING ENERGY SYSTEMS

SOLAR TWO
PROJECTED PROJECT SCHEDULE



2008 – 2nd Quarter
File Application for Certification

2009 – 4th Quarter
Receive Certification

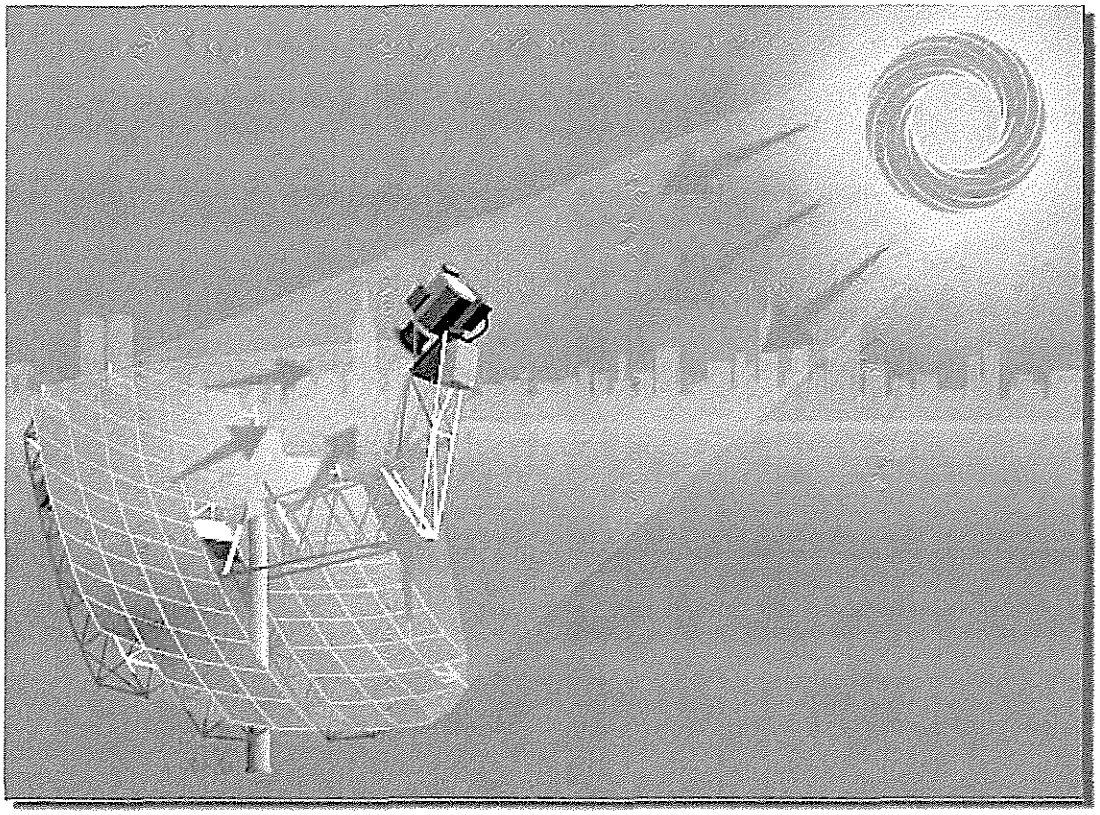
2010 – 1st Quarter
Begin Construction
– 3rd Quarter, Phase I
First Units Online

2012 – 2nd Quarter, Phase II
First Units Online

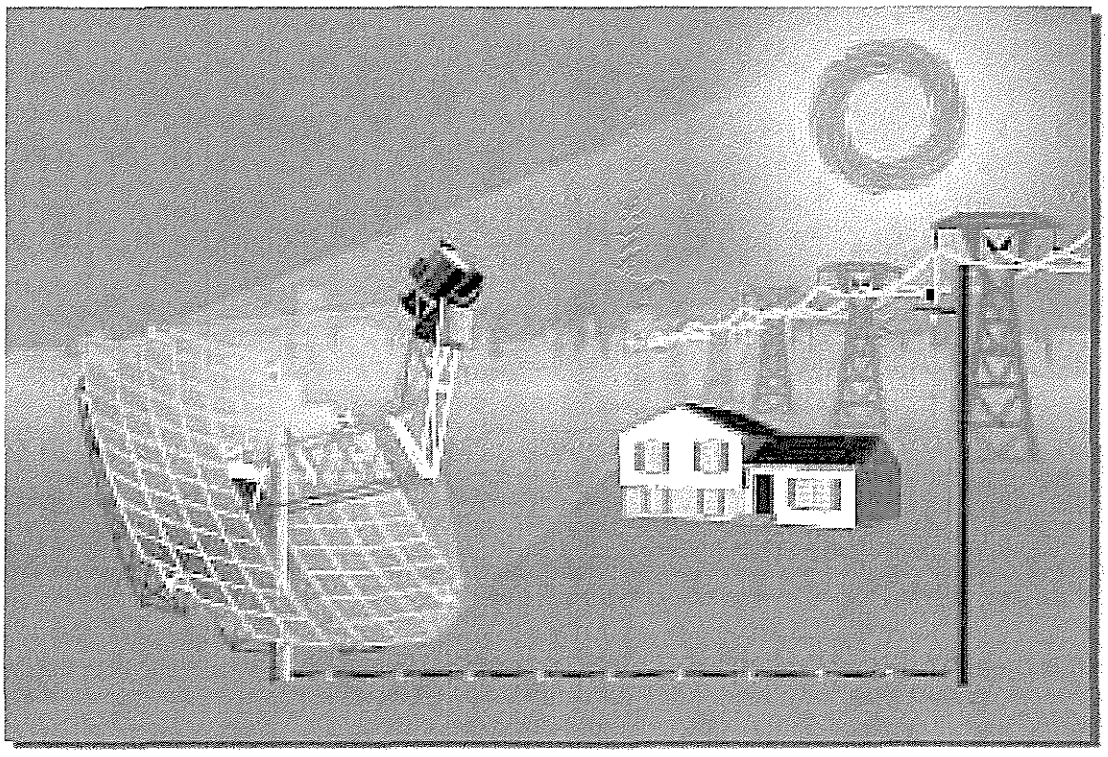
2014 – 4th Quarter
Completion of 750MW
Project Construction

SES STIRLING ENERGY SYSTEMS

SOLAR TWO PROJECT PROCESS (HOW IT WORKS)

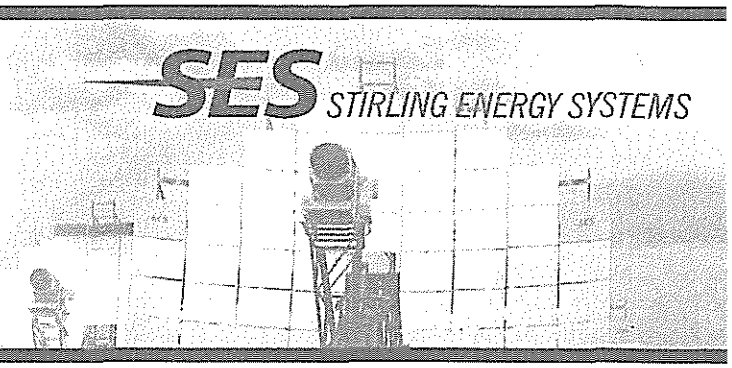


Dish concentrator tracks, collects, and focuses the sun's energy.



Stirling engine converts energy to grid-quality electricity.

SES STIRLING ENERGY SYSTEMS



RESOURCE AREAS

Solar Two will adhere to all local, state and federal laws, ordinances, regulations and standards (LORS).

CULTURAL RESOURCES

- Extensive archaeological and historic architecture pedestrian surveys were conducted to identify and avoid potential adverse cultural effects of the Project.

VISUAL RESOURCES

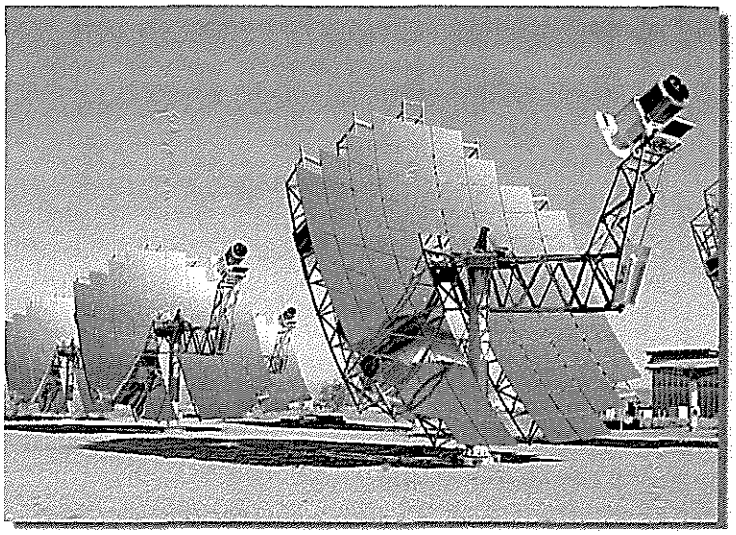
- Visual survey conducted including the preparation of visual simulations from various locations.
- Visual character of the area would change.

LAND USE

- Project Site was intentionally chosen to avoid impacts to recreational land uses.
- BLM would require the approval of a Land Use Amendment and issuance of a right-of-way grant.

SES STIRLING ENERGY SYSTEMS

SOLAR TWO PROJECT BENEFITS



- Solar Two would develop renewable solar energy to help California achieve its RPS requirement and assist in meeting its goal of reducing greenhouse gas emissions to 1990 levels by 2020.
- The Project would introduce approximately 160 permanent jobs in the supervisory, administrative, construction, operations and maintenance fields.
- Construction of Solar Two would lead to increased revenue from sales taxes, due to construction and operational employees' economic activities.
- Solar Two would provide approximately $60,000,000 (in 2008 dollars) in construction payroll with an average monthly construction workforce of approximately 360 jobs.
- Educational benefits – students from local schools and colleges are expected to study the Project as a model for future growth in the renewable energy development and technology.
- Potential boosts to tourism are also anticipated.

SES STIRLING ENERGY SYSTEMS

Bienvenidos

Taller de Reacción a Datos y Resolución de Asuntos/Conferencia Interactiva Sobre el Proyecto Solar Dos (08-AFC-5) / (CA-670-2006-33)

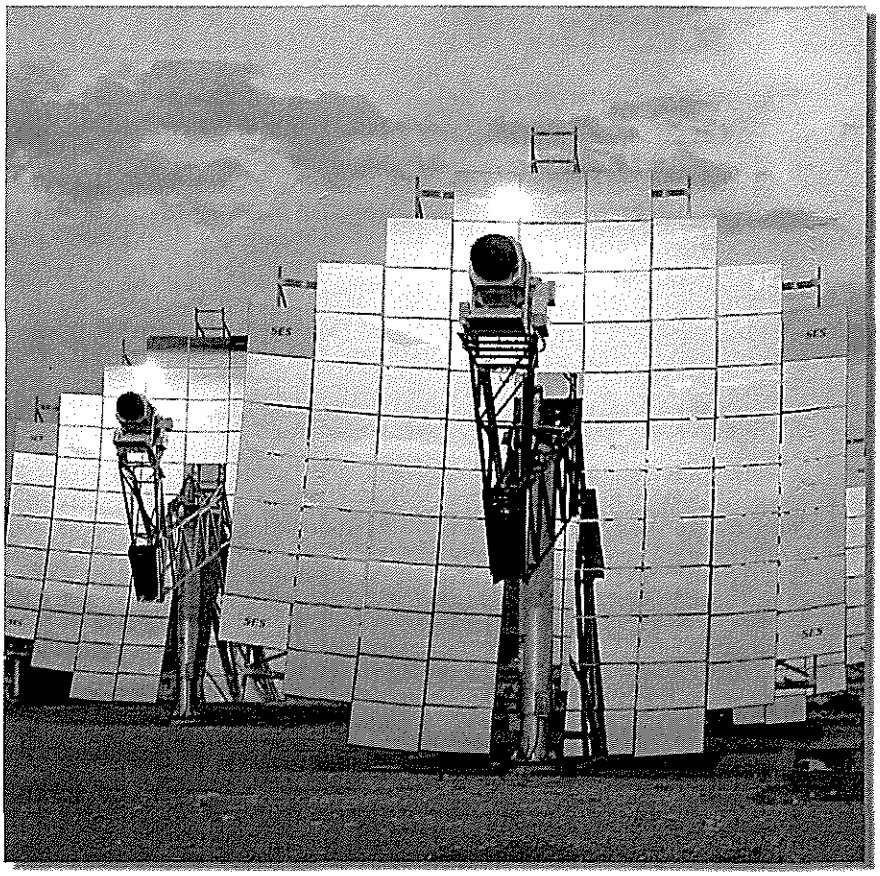
Lunes, 18 de diciembre 2008

- **1:00 - 4:00 de la tarde: Taller**
- **4:00 - 5:00 de la tarde: Descanso (si queda tiempo)**
- **5:00 - 7:00 de la tarde: Comentarios del Público/Presentación del BLM**

SES STIRLING ENERGY SYSTEMS

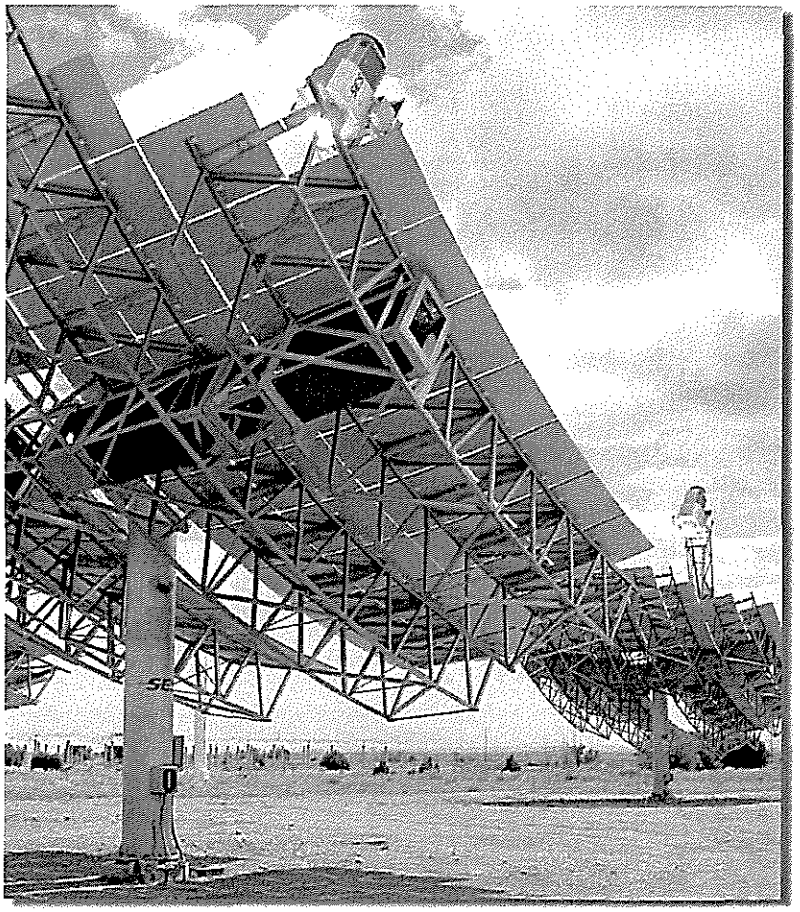
SOBRE LA COMPAÑÍA STIRLING ENERGY SYSTEMS

- Tecnología exclusiva de SunCatcher que combina una parabólica concentrador de espejos con un motor Stirling de gran rendimiento específicamente diseñado para convertir la luz solar en electricidad.
- Tecnología usado desde el año 1984.
- Posee el récord mundial en eficiencia para la conversión de energía solar en electricidad de calidad para red eléctrica.
- Compañía de los E.E.U.U. con sede en Phoenix, Arizona.
  - Oficinas para proyecto y desarrollo técnico ubicadas en Tustin, California y en Albuquerque, Nuevo México.
- Energía renovable de grado de servicios públicos lista para comercialización.



SES STIRLING ENERGY SYSTEMS

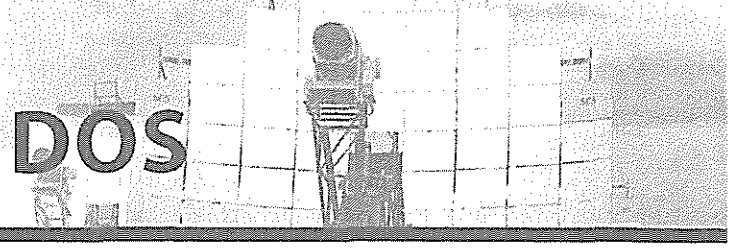
PROPÓSITO DEL PROYECTO SOLAR DOS



- Proveer hasta 750 megavatios de capacidad de electricidad renovable, en conformidad con un acuerdo de 20 años de compra de energía con San Diego Gas y Energía Eléctrica.
- Desarrollar energía solar renovable para ayudar al estado de California a realizar su requisito a Criterio de Portafolio Renovable (RPS).
- Ayudar a proteger el medio ambiente al proveer energía solar limpia y renovable.
- Ayudar al estado de California a lograr su meta para reducir las emisiones de gases invernaderos a los niveles del año 1990 por el año 2020 (Proyecto de Ley Número 32 de la Asamblea).

DESCRIPCIÓN DEL PROYECTO SOLAR DOS

SES STIRLING ENERGY SYSTEMS



TAMAÑO DEL PROYECTO/UBICACIÓN

- Uno de los proyectos de energía solar más grandes del mundo.
- Proyecto de energía solar de 750 megavatios (cantidad neta) en el Valle Imperial de California.
  - Aproximadamente 100 millas al este de San Diego, 14 millas al oeste de El Centro, y 4 millas al este de Ocotillo

TECNOLOGÍA

- Solar Dos consistiría de:
  - Aproximadamente 30.000 SunCatchers y Unidades de Conversación de Energía Motor Solar Stirling.
  - Equipo y sistemas de apoyo asociados.

CONSTRUCCIÓN

- El Proyecto sería construido en dos fases. Fase I = 12.000 de los SunCatchers (300 megavatios). Fase II = añadir otros 18.000 de los SunCatchers (450 megavatios) .
- Suponiendo la aprobación de todos los permisos, construcción empezaría en 2010 con el comienzo de operaciones comerciales proyectado por más tarde del año 2010.

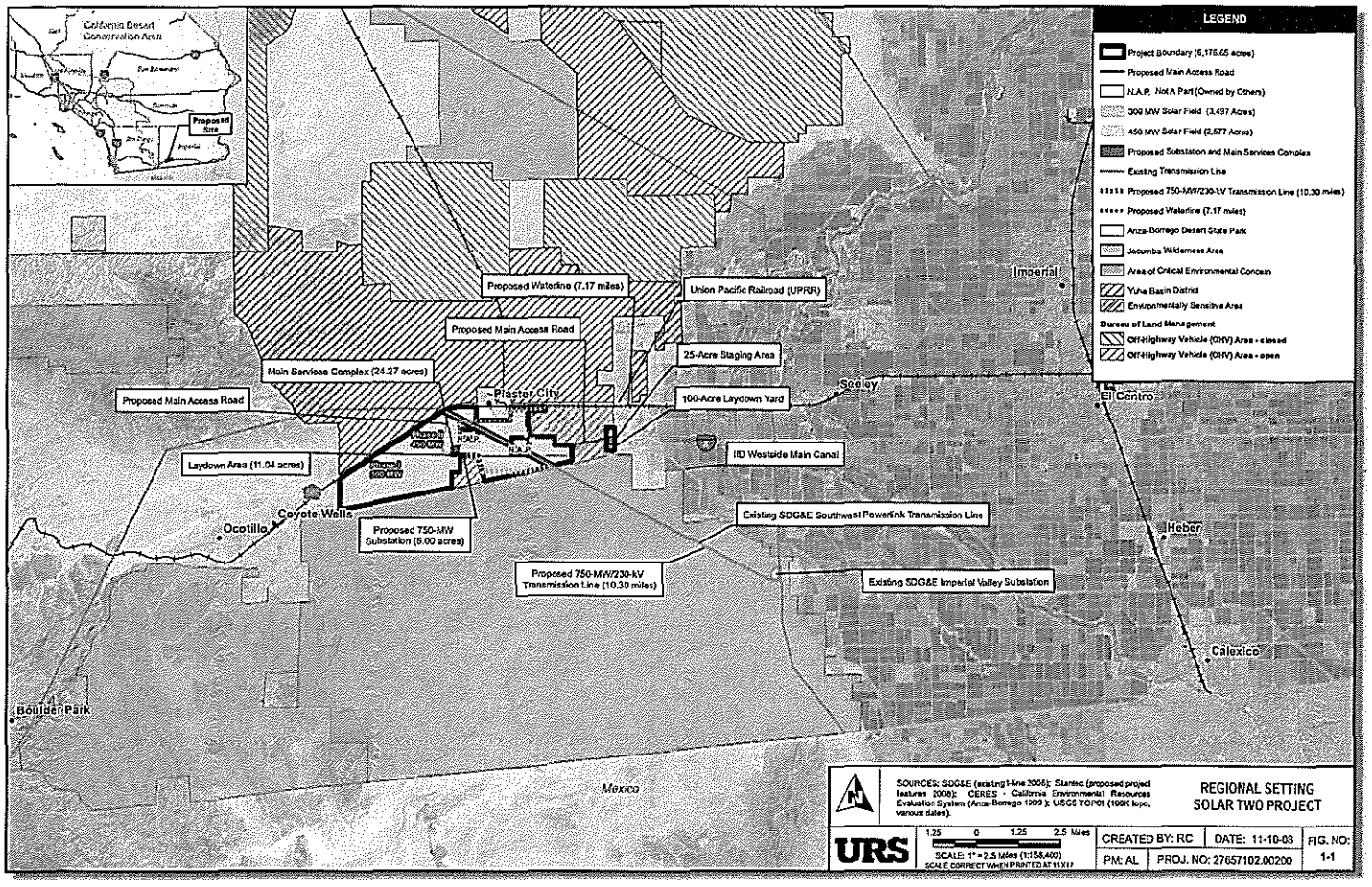
TRANSMISIÓN

- Construcción de una nueva subestación de 230 Kilovoltios ubicada en el centro del sitio del proyecto.
- Interconectado a la Subestación Valle Imperial de SDG&E.

SES STIRLING ENERGY SYSTEMS

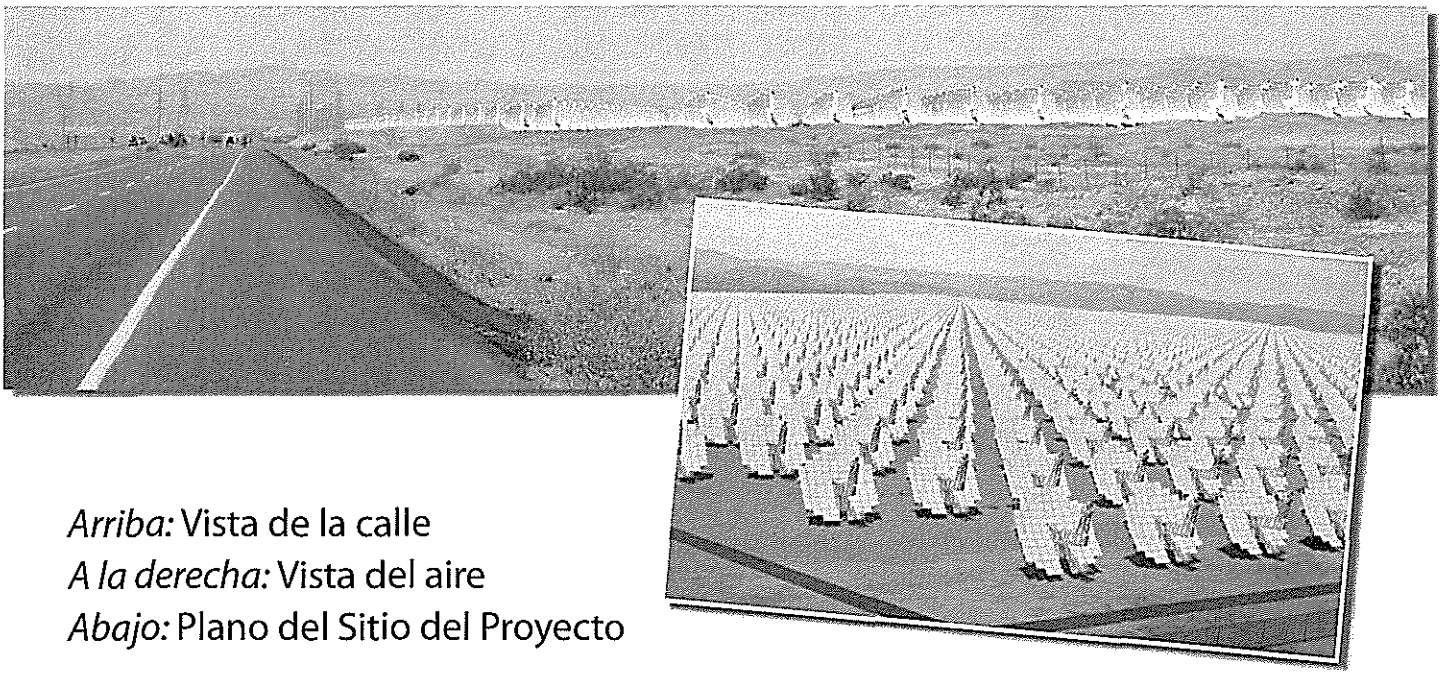
UBICACIÓN DEL SOLAR DOS

- Ubicado en aproximadamente 6.140 acres de tierra del gobierno federal administrado por el Bureau de la Administración de Tierra (BLM) y en 360 acres de tierra privada.
- Se ubicó el Proyecto para evitar o minimizar los impactos a la recreación y a áreas de medio ambiente sensible.

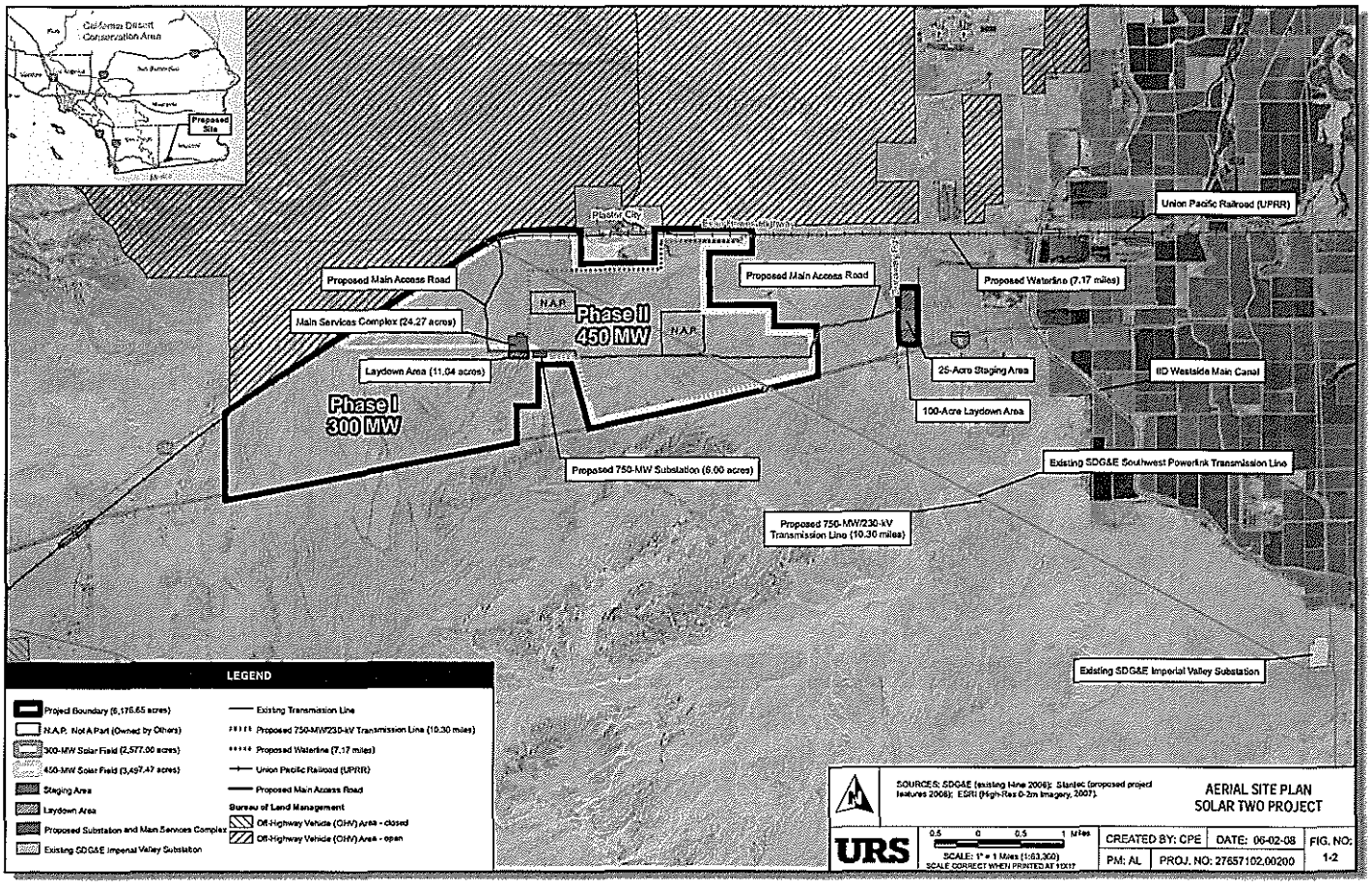


SES STIRLING ENERGY SYSTEMS

SIMULACIONES VISUALES SOLAR DOS

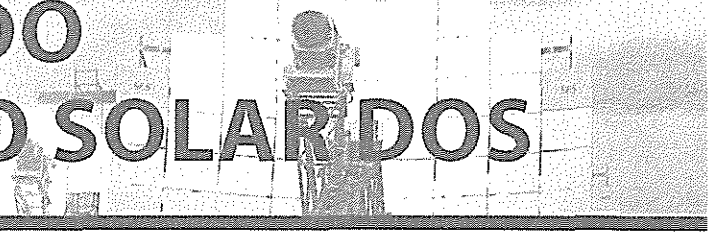


Arriba: Vista de la calle
A la derecha: Vista del aire
Abajo: Plano del Sitio del Proyecto



SES STIRLING ENERGY SYSTEMS

HORARIO ESTIMADO PARA EL PROYECTO SOLAR DOS



2008 – Segundo Trimestre
Someter Aplicación para Certificación

2009 – Cuarto Trimestre
Recibir Certificación

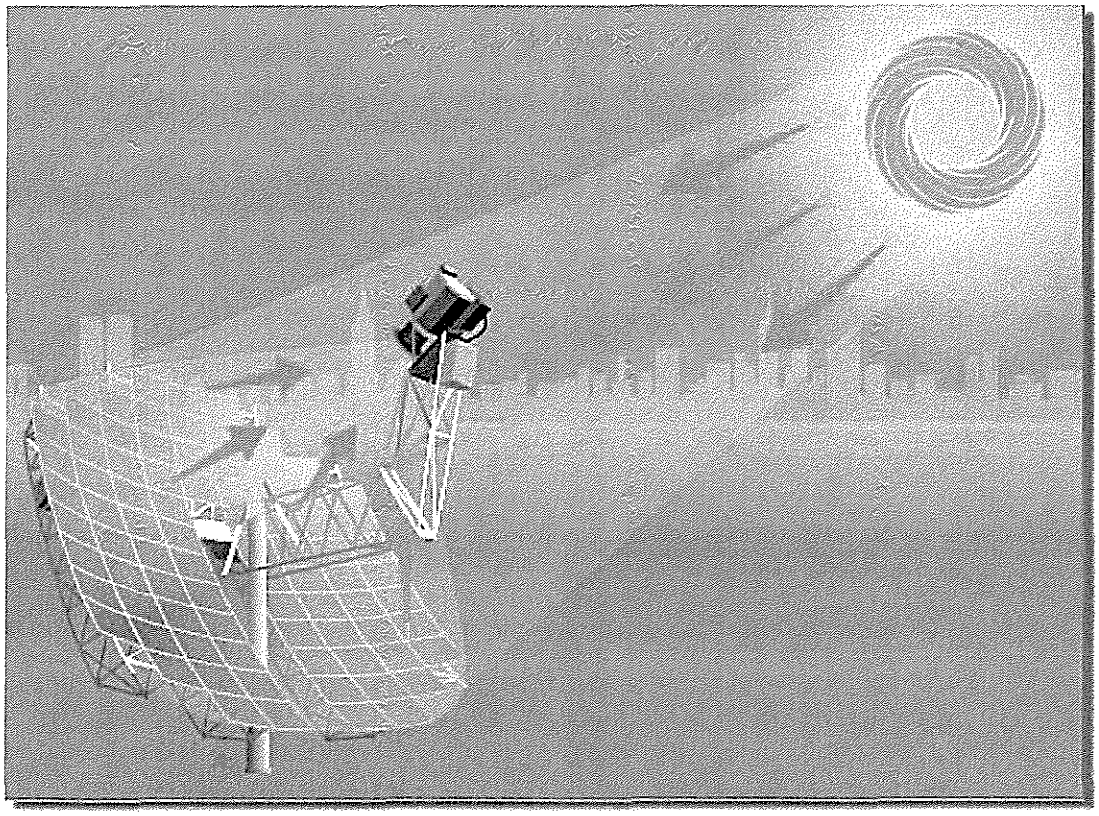
2010 – Primer Trimestre
Empezar Construcción
– Tercer Trimestre, Fase I
Primeros Elementos en
Funcionamiento

2012 – Segundo Trimestre, Fase II
Primeros Elementos en
Funcionamiento

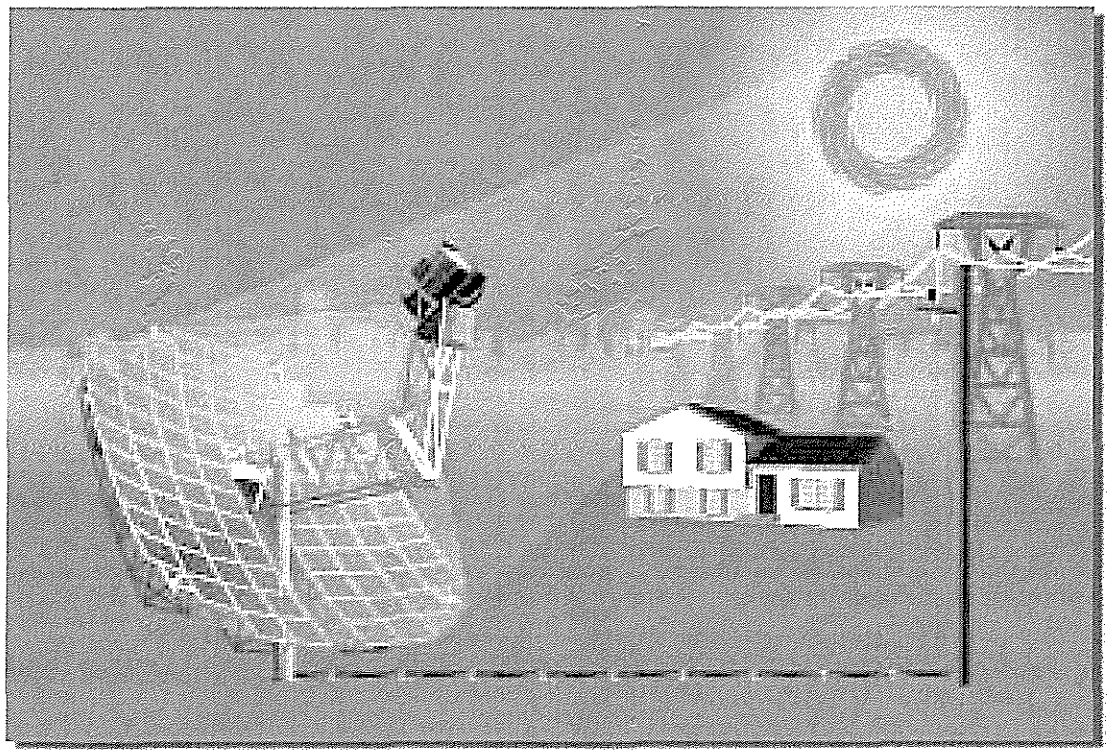
2014 – Cuarto Trimestre,
Terminación de Construcción
del Proyecto de 750 Megavatios

SES STIRLING ENERGY SYSTEMS

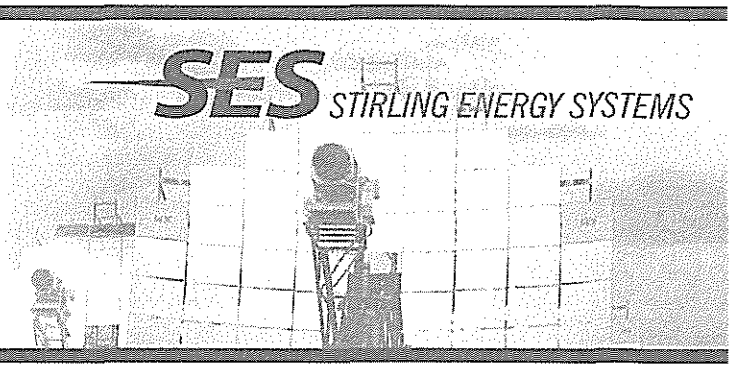
PROCESO DEL PROYECTO SOLAR DOS (COMO FUNCIONA)



Parabólica concentrador sigue, junta, y concentra la energía del sol.



Motor Stirling convierte la energía a electricidad de calidad para red eléctrica.



RECURSOS

Solar Dos va cumplir con todas las leyes pertinentes federales, del estado, y locales.

RECURSOS CULTURALES

- Estudios extensos arqueológicos y de la arquitectura histórica fueron conducidos a pie para identificar y evitar impactos adversos del Proyecto a los recursos culturales.

RECURSOS VISUALES

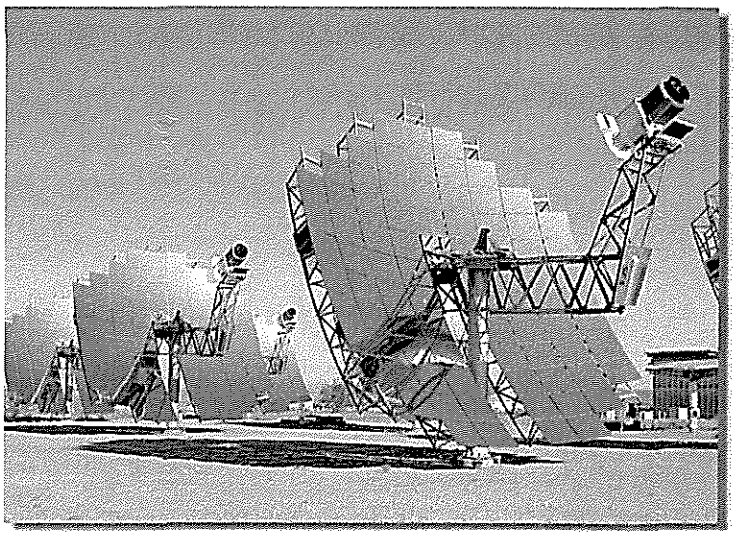
- Estudio visual fue conducido, incluyendo la preparación de simulaciones visuales de varios puntos de vista.
- El carácter del área cambiaría.

USOS DE LA TIERRA

- El sitio del Proyecto fue escogido específicamente para evitar impactos adversos a los usos recreativos de la tierra.
- BLM requeriría la aprobación de una Enmienda a los Usos de la Tierra y la facilitación de un derecho de paso.

SES STIRLING ENERGY SYSTEMS

BENEFICIOS DEL PROYECTO SOLAR DOS



- Solar Dos desarrollaría energía solar renovable para ayudar el estado de California a realizar su requisito al RPS y a lograr su meta para reducir las emisiones de gases invernaderos a los niveles del año 1990 por el año 2020.
- Solar Dos crearía unos 160 trabajos permanentes de supervisor general, administrativos, de construcción, de operaciones y del mantenimiento.
- Construcción del Proyecto Solar Dos aumentaría ingresos por medio de impuestos de venta, construcción, y actividades económicas de los empleados de las operaciones.
- Solar Dos proveería aproximadamente $60.000.000 (dólares del año 2008) de nómina de la construcción, con un medio de población activa de 360 empleados.
- Beneficios educacionales – se supone que los estudiantes de escuelas y universidades locales estudiarían el Proyecto como modelo de aumentación del desarrollo y la tecnología de energía renovable.
- Se espera también aumentos potenciales del turismo.

APPENDIX J

PRESENTATION MADE AT THE NOVEMBER 24, 2008, SCOPING MEETING AND THE DECEMBER 18, 2008, WORKSHOP/SCOPING MEETING

BUREAU OF LAND MANAGEMENT
and
CALIFORNIA ENERGY COMMISSION

Stirling Energy Systems Solar Two Project
Application for Certification
Stirling Energy Systems Solar Two, LLC
08-AFC-5

DATA RESPONSE AND ISSUES RESOLUTION WORSHOP
&
SCOPING MEETING
BLM Rights-of-Way Application CACA-47740

December 18, 2008

Christopher Meyer, CEC Project Manager
Jim Stobaugh, BLM Project Manager

BLM's Role

- **BLM Permitting Authority**
  - Administration of public lands under Federal Land Policy and Management Act (FLPMA)
  - Review of land use planning and processing of Land Use Plan Amendment
  - California Desert Conservation Area Plan (1980)
  - Issuance of right-of-way grants for use of federal land
  - Lead federal agency for National Environmental Protection Act (NEPA), National Historic Preservation Act, and other federal law compliance

Energy Commission's Role

- **Energy Commission permitting authority**
  - Thermal power plants 50 megawatts or greater
  - Related facilities
    - transmission lines
    - substations
    - water supply systems
    - natural gas pipelines
    - waste disposal facilities
    - access roads
  - Lead state agency for California Environmental Quality Act (CEQA)

Local, State and Federal Coordination

- BLM and Energy Commission Staff work closely with local, state and federal agencies, for example:
  - Local: City or Township, if any
  - Regional: Imperial County
  - State: Department of Fish and Game, Regional Water Quality Control Board, Office of Historic Preservation, Native American Heritage Commission
  - Federal: Environmental Protection Agency, Fish and Wildlife Service, and National Parks Service

Overview of Licensing Process

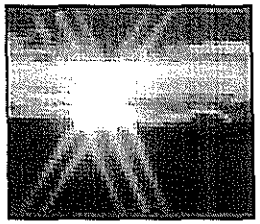
1. Data Adequacy
   - Minimum requirements to accept application
2. Staff Discovery and Analyses
   - Data requests
   - Issues Identification
   - Public Workshops
   - Preliminary and Final Staff Assessments
3. Committee Evidentiary Hearing and Decision
   - Evidentiary Hearings on FSA and other information
   - Presiding Member's Proposed Decision (PMPD)
   - PMPD hearing and Commission decision

Discovery and Analysis Process

- Determine if proposal complies with Laws, Ordinances, Regulations, Standards (LORS)
- Conduct engineering and environmental analysis
  - identify issues
  - evaluate alternatives
  - identify mitigation measures
  - recommend conditions of certification
- Facilitate public and agency participation
- Staff products: Preliminary Staff Assessment (PSA) and Final Staff Assessment (FSA)
- Make recommendations to the Committee

Evidentiary Hearing & Decision Process

- Committee conducts hearings on all information
  - Issues Presiding Member's Proposed Decision (PMPD)
  - PMPD contains findings relating to:
    - Environmental impacts, public health, engineering
    - Project's compliance with LORS
    - Recommends conditions of certification
    - Recommends whether or not to approve the project
- Full Commission makes decision
- Energy Commission monitors compliance with all conditions of certification, for the life of the project and closure



BLM Solar Energy Development Policy

- WO IM No. 2007-097 (April 4, 2007)
- Policy: facilitate environmentally responsible commercial development of solar energy projects on public lands.
- ROW applications for solar energy projects are a high priority and will be processed in a timely manner.
- If approved, authorize under Title V of FLPMA.
- Rent established by appraisal.
- Information on solar energy technology is available at: http://www.eere.energy.gov/RE/solar.html or http://www.nrel.gov.

Ref. Handout WO- IM No. 2007- 097

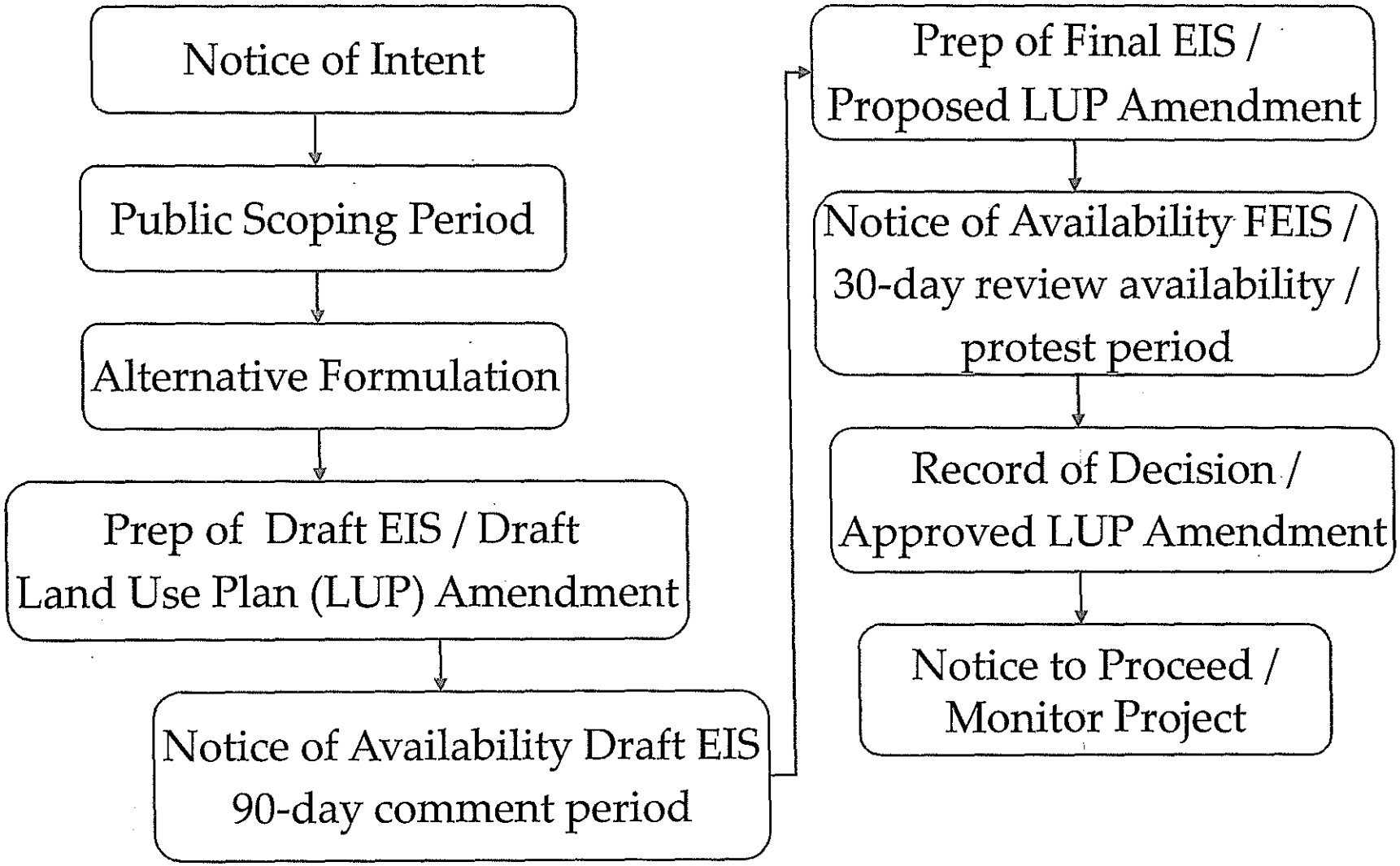
Summary of BLM ROW Processing and Administration

- BLM:
  - Regulations: 43 CFR 2800
  - Right-of-Way Toolkit Information:
    - General ROW
      http://www.blm.gov/wo/st/en/prog/energy/cost_recovery_regulations.html
    - Solar ROW
      http://www.blm.gov/wo/st/en/prog/energy/solar_energy.html

BLM Authorized Officer's Role

- Initial Response to Proposal
- Pre-application Screening
- Accept Application or Reject Proposal
- Process Application / Land Use Plan Amendment
- - Conduct Scoping
- - Prepare NEPA EIS document/LUP Amendment
- Decision on Application / Approve LUP Amendment
- Authorize the Use
- Administer through Termination

BLM NEPA EIS / LUP Amendment Process



Energy Commission Contacts and Web Site

- Committee Assigned
  - Jeffrey Byron, Commissioner, Presiding Member
  - Jackalyne Pfannenstiel, Chairman, Associate Member
- California Energy Commission Staff
  - Raoul Renaud, Commission's Hearing Officer
    - (916) 654-5103, e-mail: raoul.renaud@energy.state.ca.us
  - Christopher Meyer, Project Manager
    - (916) 653-1639 e-mail: christopher.meyer@energy.state.ca.us
    - Web page: www.energy.ca.gov/sitingcases/solartwo
  - Public Adviser's Office
    - (916) 654-4489 or (800) 822-6228
    - e-mail: PublicAdviser@energy.state.ca.us

BLM Contacts and Comment Web Site

- Jim Stobaugh, Project Manager
  Phone: (775) 861-6478
  e-mail: jim_stobaugh@blm.gov
- BLM Web Page:
  http://www.blm.gov/ca/st/en/fo/elcentro/nepa/stirling.html
- Scoping comments to:
  SES Solar Two Scoping Comments
  c/o Christopher Meyer, Project Manager
  California Energy Commission
  1516 9th Street, MS-15
  Sacramento, CA 95814-5512

  Or email comments to:
  christopher.meyer@energy.state.ca.us
  (attention Solar Two)

Public Participation Information

- Open Public Process
  - Workshops and Hearings noticed at least 15 days in advance
  - Mailing lists
  - List Server: www.energy.ca.gov/listservers
- Documents are available for public review at:
  - Public Libraries in Imperial County, Eureka, Sacramento, San Francisco, Fresno, Los Angeles and San Diego
  - Energy Commission Library in Sacramento
  - Energy Commission Web site: www.energy.ca.gov/sitingcases/solartwo
  - Dockets Unit at the Energy Commission
    1516 9th Street, MS - 4
    Sacramento, CA 95814-5512

Public Participation Opportunities

- Submit written comments or statements to the Commission
- Provide oral comments at public meetings
- Participate in workshops
- Become a formal intervenor (Contact Public Advisor's Office)
- Provide written comments on Scoping, the PSA/DEIS, FSA/FEIS and PMPD

Potential Issue Areas
SES Solar Two Project

- Cultural Resources
- Land Use
- Air Quality
- Visual Resources
- Cumulative Effects and Alternatives

Cultural Resources
Potential Issues

- High Frequency of Cultural Resources (number and density)
- Potential for Unanticipated Discoveries
- Mitigation of Potential Significant Impacts
- Cumulative Impacts

Land Use
Potential Issues

- Exclusive use of 6,140 acres of public land could eliminate other BLM authorized land uses
- Land within the 360-acre portion of private land designated as Recreation/Open Space
- Cumulative Impacts

Air Quality
Potential Issues

- Fugitive dust from construction and operation

- Vehicle emissions from operations

Visual Resources
Potential Issues

- New intrusions on the landscape from 30,000 SunCatchers on over 6,500 acres

- Development of VRM classification

Cumulative Effects and Alternatives Issues

- NEPA and CEQA requirements for analysis of the environmental impacts of the proposed project and other proposed projects in the desert would include a cumulative effects review of all proposed projects.
- Alternatives to a proposed project including no action.

APPENDIX K

TRANSCRIPT OF THE NOVEMBER 24, 2008, SCOPING MEETING

INFORMATIONAL HEARING AND SITE VISIT

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

In the Matter of:	)	
	)	
Application for Certification for	)	Docket No.
The Solar Two Power Project by	)	08-AFC-5
Stirling Energy Systems	)	
	)	

BOARD CHAMBERS

IMPERIAL COUNTY ADMINISTRATION CENTER

940 WEST MAIN STREET, SUITE 211

EL CENTRO, CALIFORNIA 92243

MONDAY, NOVEMBER 24, 2008

2:03 p.m.

Reported by:
Troy Ray
Contract No. 170-07-001

COMMITTEE MEMBERS PRESENT

Jeffrey Byron, Presiding Member

Jackalyne Pfannenstiel, Associate Member

HEARING OFFICER AND ADVISORS

Raoul Renaud, Hearing Officer

Laurie ten Hope, Advisor

Kristy Chew, Advisor

STAFF AND CONSULTANTS PRESENT

Christopher Meyer, Project Manager
Aspen Environmental Group

Caryn Holmes, Staff Counsel

Mary Dyas, Compliance Project Manager

Negar Vahidi

Susan Lee

Keith Golden

Eric Knight

William Walters

PUBLIC ADVISER

Loreen McMahon

APPLICANT

John H. Egan, Senior Director, Project Development
Bob Ziden, Vice President
Sean Gallagher
Stirling Energy Systems, Inc.

Allan Thompson, Attorney
on behalf of Stirling Energy Systems, Inc.

APPLICANT

Angela Leiba, Senior Project Manager
URS Corporation

Corrine Lytle
Seth Hopkins
Amy Gramlich
Matt Moore
Brian Glenn
Theresa Miller
Emily Bierman
Cheryl Rustin
Sylvia Novoa
Kevin Harper
Christine Henning
Ken Kostok
Simon Day
Namid Arshadi
Sean Gallagher

BUREAU OF LAND MANAGEMENT

Steven J. Borchard, District Manager
James Stobaugh, National Office Project Manager
Thomas Pogacnik
Linda Kastoll
Tom Zale
Vicky Wood
Eryn Dreyfus
Carrie Simmons
Greg Thompson
Greg Miller
Allen Stein
Stephen Razo
David Briery

INTERVENORS

Paul Foley, Attorney
California Unions for Reliable Energy

ALSO PRESENT

Gary Wyatt, Chairman
County Board of Supervisors

John Pierre Menvielle, President
Imperial Irrigation District

ALSO PRESENT

Mark T. Gran, Councilmember
City of Imperial

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P R O C E E D I N G S

2:03 p.m.

PRESIDING MEMBER BYRON: Welcome and thank you for having us here. This is a wonderful setting and venue to be able to conduct this preliminary hearing.

Allow me to introduce myself. I'm Jeff Byron; I'm a Commissioner at the California Energy Commission, and I'm the Presiding Member on a Committee for this project, the Stirling Energy Systems Solar Two project. And with me is the Chairman of our Commission, who is actually the Associate Member on this Committee. And that's Jackalyne Pfannenstiel. And I'll ask the Chairman if she has some remarks in just a moment.

But if you'll indulge me for just a second I'd just like to introduce what we're doing here today in my own words. And then I'll turn it over to our Hearing Officer. And we'll also go around for other introductions so you'll have a sense of everyone who's here.

As I said, we are a Committee of two. There are five Commissioners at the California Energy Commission. And many of you might already know this. But what we're going to do here is

we're going to eventually make a recommendation to the full Commission. And we're all independently appointed Commissioners. We will make independent decisions with regard to this case, as we do with all the others. In a sense we're acting as judges in this proceeding.

And it's not until after we've collected all the evidence from the applicant, all the analysis from our staff, who, by the way, will be independent of us. We have no contact with them, as our Hearing Officer will explain about the ex parte rules.

And, of course, we're also -- there will be intervenors in this case, and we're also very interested in what the public has to say. And that's why we're here.

The Commissioners maintain no contact at any time with the parties in this case except in publicly noticed meetings such as this.

So, the Hearing Officer is Mr. Raoul Renaud to my right. He'll conduct the proceeding. And he's also the point of contact as we go forward on any procedural issues that come up.

I was going to just mention briefly, as well, and we'll go into more detail on all of

these, this normally when we get an application before the California Energy Commission we try and get through this process within a year's time.

This one's a little more complicated in that a good deal of the land that's being proposed by the applicant is under the jurisdiction of the Bureau of Land Management. And so we're actually conducting this case and this hearing today with the BLM. And you'll meet those gentlemen shortly, who I just met this morning, as well.

So we have to be cognizant of the fact that we have state law involved here, as well as federal law. And you'll learn more about all of that as we go on.

The primary reason that we're meeting here today is to explain the process that we go through. And, of course, you'll have opportunity to meet all the participants. But we're really learning about the basics of the project today. And we want to make sure that the public process is explained.

We have our Public Adviser here today and you'll get to hear from her, as well, so that we not only make sure that the public is included, but we encourage public participation in this

process. And that is Loreen McMahon, who's here, all the way, I believe, to my left. You'll hear from her shortly.

And we also have some elected officials here today. Elected officials are extremely important to this process because obviously many of them represent your interests. I think I can mention them now, certainly.

Is that -- and if you wouldn't mind, because we look forward to seeing and meeting you, as well, I have Mr. John Pierre Menvielle, the President of the Imperial Irrigation District. Did I say that correctly?

MR. MENVIELLE: Yes, sir.

PRESIDING MEMBER BYRON: Thank you. Gary Wyatt, Chairman of the County Board of Supervisors is here -- was here. Well, I hope he returns.

And it looks like Mark T. Gran, and it just says elected official. City of Imperial. I'd like to welcome you very much; I hope we'll have opportunity to hear from you this morning -- I'm sorry, this afternoon, as well.

Just by way of perspective, there are about currently 24 siting cases like this before

the Commission right now. So, as you can imagine, when we have committees of two of the Commissioners, you can kind of see how that workload divides out.

We take this very seriously at the Commission. And what we're going to do here is go through some preliminary process, introduce you to the project. The applicant will be making a presentation, as well as our staff.

And then we're going to take a bus ride, as I understand it, around 3:30. And we'd really like to try and hold to that schedule if we could for a couple of reasons. One is to get there before the sun sets. And the other is so that we get home tonight in order to be back in Sacramento for meetings tomorrow morning.

So, I'd like to thank you all for being here and I appreciate your indulging me to just kind of put my perspective on what we're all about. And because our Chairman has been doing this a lot longer than I have, I'd like to defer to her and see if my Associate Member has any comments.

ASSOCIATE MEMBER PFANNENSTIEL: Thank you, Commissioner Byron. I just want to thank

everybody for hosting us for this preliminary hearing today. It's really important for us to get out into the community and hear from people here on support or concerns or, you know, to let us know. That's why we come out here, to hear from you.

And so we appreciate the turnout. It's important that there are people who both hear the process and participate by going out and seeing the site.

So, thank you for being here today.

PRESIDING MEMBER BYRON: Thank you, Madam Chairman. So, I'm going to sit back and turn our hearing over to Hearing Officer Mr. Renaud.

HEARING OFFICER RENAUD: Thank you, Commissioner Byron. And welcome, on my behalf, as well. I think before we go any further let's get introductions from the rest of the people who will be making presentations today. We'll start with the Energy Commission Staff, Chris Meyer. And if you would perhaps introduce yourself and your staff that you've brought with you.

MR. MEYER: Well, I'm Christopher Meyer; I'll be the Project Manager for the Energy

Commission section of this. And as you've heard, it's a joint process between the BLM and Energy Commission.

I have actually several members of the Energy Commission Staff here from Negar Vahidi from land use, Susan Lee who will be working on alternatives analysis. Also I have Keith Golden from air quality, who's a senior, a lot of experience in this, which will be very helpful.

Will Walters on air quality; Eric Knight from the Energy Commission is an office manager over the siting unit, who's in the back there. I think I've gotten -- oh, and then Mary Dyas who will speak a little later. She is the compliance project manager assigned to this project.

PRESIDING MEMBER BYRON: Excuse me, Mr. Meyers. Would all the Energy Commission Staff please hold up your hands for just a few moments so everybody can kind of see who you are. And these folks are available if you'd like to talk to them.

MR. MEYER: Yeah. And one last, Caryn Holmes is staff attorney on this project. Thank you.

HEARING OFFICER RENAUD: Okay, thank you

very much. Immediately to Commissioner Byron's left is his Advisor, Kristy Chew; and to her left is Commissioner Byron's other Advisor, Laurie ten Hope.

And now I'd like to ask Loreen McMahon to introduce herself, please.

MS. McMAHON: Hi, Loreen McMahon, the Associate Public Adviser. I will have one of the first presentations to explain the Public Adviser's role and how we can help you be involved in the process.

HEARING OFFICER RENAUD: Great, thank you. And now, on behalf of the applicant, could you give us some introductions, please.

MR. EGAN: Yes, thank you very much. My name is John Egan; I'm a Senior Director for Project Development for Stirling Energy. And with me today I have quite a crowd.

Angela Leiba behind me, who is our Project Manager, with URS Corporation. Corrine Lytle, who is over here on my left. Seth Hopkins, socioeconomics; Amy Gramlich, visual resources; Matt Moore, water resources; Brian Glenn, cultural resources; Theresa Miller, biological resources; Emily Bierman, public involvement; Cheryl Rustin,

biological resources; and Sylvia Novoa is our translator today, back in the back.

For Stirling Energy, myself, Allan Thompson, our counsel, here on the left. Kevin Harper, front row; he's our Project Manager of the project here in the area. Christine Henning is next to him. Ken Kostok, one of our engineers. Ed Vaugh, another engineer. Simon Day, my right-hand person, when he's not in Ireland. Namid Arshadi, our land man. Bob Ziden, one of the Vice Presidents of Stirling Energy. And Sean Gallagher.

HEARING OFFICER RENAUD: Thank you very much.

PRESIDING MEMBER BYRON: I don't think we've ever had that many folks here from an applicant.

HEARING OFFICER RENAUD: Well, it's a good showing and we're pleased to have them here.

Are there people from the Bureau of Land Management here who would care to introduce themselves?

MR. BORCHARD: As I looked around the room I realized there's a lot of people here from the Bureau of Land Management. I'm Steve

Borchard; I'm the California Desert District Manager.

I have several people here on District Staff here today. The Project Manager for this project is sitting to my right, Jim Stobaugh. He's from our national office; he's a BLM National Office Project Manager.

I have many people from the El Centro Field Office here who will be working and have been working on this project. Linda Kastoll, Tom Zale, Vicky Wood, Eryn Dreyfus, Carrie Simmons. And from my District Staff in Moreno Valley I have Greg Thompson and Greg Miller and Allen Stein, Steven Razo and David Briery.

And if there are other BLM employees I haven't seen out there in the audience, I apologize for not mentioning your name.

HEARING OFFICER RENAUD: All right, thank you. And do we have any representatives of intervenors today? CURE?

MR. FOLEY: Yes.

HEARING OFFICER RENAUD: Please.

MR. FOLEY: Hi. My name is Paul Foley; I'm here on behalf of California Unions for Reliable Energy. And we filed a petition to

intervene recently.

HEARING OFFICER RENAUD: Yes, we did receive that. Thank you for coming.

You might have noticed, we've asked everybody who is going to say something to come to a microphone. And there is a reason for that. This proceeding, like all Energy Commission public meetings, is being recorded and will be transcribed into a written transcript.

Notice of this meeting was sent to all interested parties, adjoining landowners, government agencies and other individuals on October 30, 2008. And we made sure to follow California law in all respects in terms of noticing these meetings.

The reason for that is that the Energy Commission wants its proceedings to be as open and transparent and available to the public as possible. So, we do everything we can to make sure that interested members of the public know about meetings and are able to get to them. We try to hold them in places that are convenient for the people who may be affected by these projects.

We also require that the Energy Commission Staff, the applicant and any other

party to the proceeding avoid private contact with members of the Committee, that is the Commissioners who are assigned to the case.

We want every fact, every piece of information about the proceeding that is going to be used to decide the proceeding to come out and be available to the public in an open forum such as this one. We call that the ex parte rule, and it's set forth in the California Government Code.

The purpose of the hearing today is to provide this public forum. This is the first of several hearings and meetings that will take place over the coming months. We're here to provide information about the project, describe the process by which the Energy Commission reviews applications to build power generation facilities, and to identify opportunities for public participation.

And to accomplish that we will have a series of presentations. First we will have a presentation by the Public Adviser, Loreen McMahon, who will explain about the ways the public can participate in this case.

Then the applicant will provide a presentation, giving information about the

proposed project. Then our Energy Commission Staff and Bureau of Land Management will jointly give a presentation about the review process.

And we will, as always, have an opportunity, as well, for public comment. When it is time for public comment we'll ask those who wish to speak to come up to one of the microphones up here and provide public comment.

We're hoping to be able to set out toward the site visit at about 3:30. So, we'll move right along and start in with the Public Adviser's presentation, if you're ready. Loreen McMahon. Thank you.

MS. McMAHON: Thank you, Raoul. I'll add my good afternoon, as well. There's a lot of nuances to this process and Chris will go through the details of it. But another part of it is that the Public Adviser's Office is another independent, separate office. We don't -- so that we can do our job, which is directly to interface with the public and to help you understand the process.

So I have some slides, and I apologize to the people who have their backs to it. But primarily we're supposed to help the public

understand the process and how they can best be involved. There's different ways and different levels of involvement.

I do have a brochure in the back of the room. And I'll be sitting at that table afterwards. I've got my cards out there, as well, and I've got my presentation. So, if you miss anything or you want to talk to me about it, or get the information on it, that's back there.

At the Commission there's a lot of ways to get information directly from us. You can get it off the website, or from dockets. We have a listserver and we have a library that's open to the public.

In your community there's lots of places to get information. The application for certification for the project has been distributed to the libraries. And also at the libraries you can get access to our website if you don't have internet access at home. That's another way to view it and see what the details of the project are.

For this particular project we've had a lot of outreach that we've started quite awhile ago. We sent mailing notices, as was already

mentioned, to property owners. We've sent them to the librarians so they can post. Agencies and elected officials. That was when we received the application for certification at the beginning.

Then to notice this hearing we expanded our list; we did community outreach and we tried to meet local officials. We put notices out in both -- they were bilingual. They included Spanish. We put notices in newspapers. We did the television and the radio.

And if you know of anybody who had not received notification or anybody who would be interested in this project, be sure to invite them in and have them contact my office. We want to make sure that everyone in the community has an opportunity to know about it and to have their voices heard, as the project moves forward.

Also in the back we have sign-up sheets. I know some of you have been, you know, signing up when you got in. If any -- we missed you, it's not required that you sign up, but if you sign up you can get mail, U.S. mail notice, or you can sign up for the listserve and get email notification. Or both, if you want both.

If you sign the blue cards that

information is not transcribed onto a list. So if you want to be on any of our mailing lists, you have to do it on the actual sign-up sheets.

I just wanted to also reiterate that everybody's welcome to participate, and that we really encourage it. We really want to hear what the public has to say. Have the local residents know about the issues in their area here.

So the two types of participation that we have available for the public is informal and formal. In the informal participation you can make your voice heard by speaking at the workshops and the informational hearings that we will be having throughout the project.

You can also write comments that come to you and that you want to have docketed into the proceedings. If you do want to make comments at this proceeding or any other one, this is the little blue card that I mentioned. If you could fill this out then I can give it to the Hearing Officer so he can call you to the podium. That's pretty much what these are used for.

I have some at the table that I'm sitting at, at the back of the room, and I left some out front, too. And then when you fill them

out give them to me and I'll bring them up to the podium, or up to the Hearing Officer.

So, when you make comments, whether they're written or whether they're verbal, they are considered by the Commissioners. They're put into the record. They're docketed in and they're considered. But they are not considered evidence. And that's a big distinction in these types of hearings. And Chris will go over that later.

The our other type of participation is the formal participation where you become an intervenor. And you already heard that CURE has filed a petition to become an intervenor.

And to do that, if you feel that you want to be at that level of participation, we have forms on the website so that you can file to intervene. And our office will help you with that. So please be sure to contact us so we can help you fill out the forms and help you decide if that's the type of involvement that you want to have.

So anyone can file to be an intervenor. And you don't have to be an attorney. And once you file a petition, the Committee will look at the petition and make a decision on whether or not

you're approved to intervene.

When you do file to become an intervenor you will have the same rights and responsibilities of all the other parties to the proceedings, which would be in this case, CURE, it would be the staff, it would be the applicant.

And comments that you file will be considered evidence in the hearing. And you will be able to present your own witnesses for evidence, and cross-examine other people's witnesses, as well. So you become a full party.

And lastly there's all the rest of my contact information which is also available in paper form back there. And it's also on the website. So I will be in the back of the room if anybody wants to talk to me about any of this, or get any information from me. Thanks.

HEARING OFFICER RENAUD: Okay, thank you, Loreen. And so now we'll move on to a joint presentation by the Energy Commission Staff and Bureau of Land Management.

MR. MEYER: While we get that set up on the PowerPoint presentation, in the back of the room there are paper handouts that have places for notes. You can either grab them now or later.

Strongly recommend these for people who are going to be involved in the project. It has a lot of contact information and steps that will be very useful throughout this process. So the websites and things that you see here, telephone numbers, are all on this handout for your future reference.

HEARING OFFICER RENAUD: Oh, I'm sorry, did I say -- I think I got the order backwards. I'm sorry, let's do the applicant first. I apologize, just happened to be looking in that direction. Applicant, please.

MR. EGAN: Thank you very much. Ladies and gentlemen and Commissioners, again, John Egan, Director of Project Development, Stirling Energy.

For those in the audience, if you possibly can, see if you can get your eyeballs on one of these two screens. It's a little tough, but the presentation, for the most part, will be on the screens.

This presentation today is about the Stirling Energy Systems', we call ourselves SES, the Solar Two project. The agenda for today, I'm going to talk about Stirling Energy Systems; the Solar Two project purpose; the Suncatcher, that's what we call the unit; technology overview; the

Solar Two project description; resource areas; the Solar Two project benefits.

And you've heard the large number of people we have with us today, so there's a Q&A team, or a question-and-answer team; they'll be assembled on the buses. And they'll be in the back of the room after this. And those in the audience that have technical questions, they can be answered there, as well.

Stirling Energy Systems. What we have is a very unique technology; we call it the Suncatcher. It combines a mirrored concentrator dish with a highly efficient Stirling engine, especially designed to convert sunlight into electricity.

We've had the technology in development since 1984, but the original engine goes clear back to the early 1800s when a Scottish minister named Stirling, spelled that way, invented this engine during the period of the steam engine, because steam engines were blowing up and killing people. He designed this to be a safer method of converting heat to mechanical energy.

We hold one of the world's records of efficiency for conversion of sun's energy into

grid quality electricity at 31.25 percent. We're a United States company. We're headquartered in Phoenix, Arizona. We do have offices in Tustin, California and Albuquerque at Sandia National Labs is doing all our research.

So what's the project purpose? Our purpose is to provide 750 megawatts of renewable electrical capacity under a 20-year power purchase agreement with San Diego Gas and Electric. To develop renewable solar energy to help California achieve its renewable portfolio standard, also known as the RPS, requirement. This was raised just recently, and most of us and the audience know this, to 33 percent by Governor Schwarzenegger, which was signed on November 17th. So it's 33 percent by 2020.

We'd like to help protect the environment by delivering clean, renewable solar energy. And to assist the State of California in meeting its goals reducing greenhouse gas emissions to 1990 levels by 2020, also known as Assembly Bill 32.

So an overview of the technology. It actually in many ways is quite simple. The sunlight shines on a large mirrored dish. The

mirrors are very simple, very similar to the windows in your car. It's a silvery dish.

The light then shines into the back of the engine which you can see on one of these slides. The back of the engine, sunlight is concentrated to approximately 7-inch beam. Then it heats the back of the engine, driving a mechanical process. It generates 25,000 watts of electricity per unit. The electricity then is put out on the grid for us all to use.

The unit has some unique environmental properties. One, if you notice the bottom of the unit -- I'll use this one over here to point -- there's only a 2-foot circle where this touches the ground. The rest of the ground is untouched by our units, therefore it doesn't have to be plowed ground in order to put these up.

It consists of some fairly simple things to make, such as a box truss which supports the mirrors; a couple of azimuth drives that move the unit around. And then a controller that always knows where the sun is. Each one of these is like an independent robot, be it one or a million of them, they all work basically the same way.

In the morning the sun comes up; the

unit knows where the sun is. It goes and finds the sun and plugs the light beam into the back of the engine. Six seconds later the engine starts; it starts putting power onto the grid.

The interesting thing about these units is it's one of the few technologies right now available that can be constructed in U.S. steel plants, or U.S. auto plants. The possibility of helping put Americans back to work and get us off foreign oil.

The unit is designed to produce and provide peak generation in peak demand periods. So the engine is really about the size of an oil drum. And this is a picture right here on this one over here, on the left.

It has no combustion products, no air emissions, no hazardous heat transfer fluids, no fossil fuel infrastructure is needed to operate it. It's cost competitive; it fits the model T mass production model, can be made by the thousands. Zero pollution. Provides peak power when we all need it the most. And that's when we get up in the morning, when the sun is up, and we come home at night and turn on the air conditioner.

The Solar Two project site is located west of here in an area next to what's known as Plaster City. And it is going to be constructed in two phases. Phase one, 450 megawatts -- I'm sorry, 300 megawatts, and phase two will be 450 megawatts. Phase one is shown in green on this slide. Phase two is in the yellow.

It is connected to the grid via a gen tieline which comes from the main center down an existing power line to the IV substation where it will be connected into the grid.

This will be one of the world's largest solar power plants. And it probably will be when it comes online, the world's largest, at least for awhile. 750 megawatts of solar power right here in the Imperial Valley.

It's located on approximately 6140 acres of federal land administrated by the BLM. And 360 acres are private land. Total about ten square miles of land.

The project was sited to avoid or to minimize impacts to the environment, such as ORV, offroad areas, and environmentally sensitive areas.

Solar Two would consist totally, if the

whole thing was built out, as many as 30,000 of these units with associated equipment and support systems. Probably more interesting things is here in the desert is our water need. At the startup level of 300 megawatts we only need 14.5 acrefeet of water to operate this system. And we need 32.7 acrefeet once we go into the full 750 megawatts.

To give you a feel for that, an average house in San Diego with four people in it consumes an acrefoot. So it's very minimal water use. And it's mainly to wash our mirrors.

Again, two phases. Phase one, 12,000 Suncatchers, 300 megawatts. Phase two will expand out to 18,000 additional Suncatchers for a total of 450 megawatts. Total up 750 megawatts.

Subject to receipt of all necessary approvals construction should start in about 2010 with a projected commercial operation start date of later that same year.

It will require the construction of a new 230 kilovolt substation which will be located in the center of our project. Interconnected, as I said earlier, with the SDG&E Imperial Valley Substation along the existing power corridor.

The Sunrise Power Link is required for

us to move the second phase power of our unit, 450 megawatts, and for future clean, renewable power projects in the Imperial Valley to move their power into the grid.

It's hard to hide ten square miles of solar dishes. It will be visible. It'll probably be a tourist attraction. This is a picture of generally what it would look like as you're going down the freeway, the bottom picture on the slide.

Proposed project schedule, we've already submitted the application for certification, and that's how we got to this point. By 2009, fourth quarter, we hope to receive certification of the plant.

By 2010, first quarter, we'd like to begin construction. In the third quarter, phase one units should go online. 2012, second quarter, phase two first units online. And by 2014 complete construction of 750-megawatt plant.

Resource areas. We're going to do this to adhere to all local, state and federal laws, ordinances, regulations and standards, known as LORS. Cultural resources, we have done extensive archeological and historical architecture, pedestrian surveys to try to identify and

potentially mitigate adverse cultural effects of the project.

Visual resources surveys were also conducted, including the preparation of visual simulations like you just saw. The visual character of the area will change.

Land use. The project site, again, was chosen carefully to avoid impacts to recreational land uses including ORVs. BLM would require the approval of a land use amendment issuance of a right-of-way grant for us to go forward.

Solar Two project benefits. Would help California achieve its RPS standard, and also help California reduce its greenhouse gas emissions to 1990 levels by 2020.

Jobs. We would create approximately 106 permanent jobs in the Imperial Valley. This would be supervisory, general, administrative, construction, operations and maintenance. Typically sociologists put a 30 multiplier on new jobs, therefore we're creating close to 500 permanent new opportunities here in the valley.

Construction of Solar Two would lead to increased revenue in the area from sales tax due to construction and operation employees' economic

activities. Solar Two would provide approximately 60 million in 2008 dollars in construction payroll with an average monthly construction workforce of approximately 360 people. Total project value, $1 billion approximately.

Educational benefits have already started. We've been working with some of the local schools and tech colleges. We're just getting started on this. We'd like to, as much as possible hire local. We expect a potential boost in tourism, as well.

I'd like to thank you for your time. And if you notice on the slide, there's both our address and the California Energy Commission. I also have cards if anybody's interested. Thank you very much.

HEARING OFFICER RENAUD: Thank you very much. And now we'll turn to a presentation by the staff and the Bureau of Land Management. Sorry if I scared you there earlier, Chris. Now, it's your turn.

MR. MEYER: Just sort of threw me for a loop there, I was trying to catch up.

Okay, once again, Christopher Meyer. I will be working on the Energy Commission portion

of this joint process. And to my right is Jim Stobaugh.

MR. STOBAUGH: Hi, I'm Jim Stobaugh, the Project Manager assigned for the Bureau of Land Management.

MR. MEYER: And just a second here, we're -- hold on just a second.

(Pause.)

PRESIDING MEMBER BYRON: While there's a break in the action can I just ask our audience if you wouldn't mind just raising your hand if you're here because you're a local resident or someone who lives here in southern California that's interested in this project and that's why you're here.

Thank you very much. It's just that we have so many applicants and so many members of the staff and others here, it was just good to see that there were members of the public here today.

(Laughter.)

MR. STOBAUGH: Commissioner Byron, I'd really like to thank the Commission for this opportunity, as well, on behalf of the BLM, as well as a wonderful turnout for this, because we're here for the folks here to provide them the

opportunity to input, so it's great to see the turnout we have.

MR. MEYER: Okay, as I said before, it'll be a joint process. And this presentation will also be on our website for those of you who go later, you can always see this as a pdf. It'll have all the same information, if you have any questions on the process, contact information.

And as I said, it's going to be a joint process. Jim and I will be working very closely together to make sure that both NEPA and CEQA aspects of this project are addressed.

MR. STOBAUGH: Yes, and as you can see from the slide, the Bureau of Land Management is tasked or charged with administering this application through our Federal Land Policy and Management Act. That's our FLPMAs, sometimes as we refer to it as. That is what the right-of-way is actually filed under, what the Stirling Energy Systems is looking for a decision from BLM.

And we also, as the second bullet talks about, is review our land use planning and processing and land use plan amendment. Because under the current application and our current land use plan, which I'm going to hold up quickly here,

it's the California Desert Conservation Area Plan passed in 1980. Sites associated with power generation and transmission sites identified in the plan, such as this one, will be considered through plan amendment process.

And if I could, just to help frame BLM's purpose and need in here, so folks understand what's involved with our process and why we're here asking for your input, really the purpose of BLM's action, and I want to stress that, BLM's action, is to provide the applicant a response decision in processing their application for a right-of-way grant for the legal use and access of the public lands managed by BLM.

And the need for that action, in view of the underlying opportunity here, is established by FLPMA, our responsibilities under FLPMA, as well as the National Environmental Policy Act and other laws to respond to the applicant's request for these right-of-way of the legal use opportunities on this, on the public lands.

And that's not only just from the construction and operation, even through the decommissioning of the proposed concentrated solar thermal generation plan related facilities.

So, the decision we're looking at down the road here is BLM to decide whether or not to grant a right-of-way. And if so, under what terms and conditions will that be.

So, that's kind of helping your frame, if you would, and kind of the gist behind what most of the bullets are on this particular slide.

MR. MEYER: Okay. And the Energy Commission's role, as you've heard from several people already, is we're looking at the CEQA side versus the NEPA side. And our role is to look at thermal power plants that are greater than 50 megawatts.

What you may hear this back and forth, when we talk about thermal, this is referring to any power plants that derive their electricity from a process that is involving heat. Something like a photovoltaic site, wind, those do not have a heat component, and are therefore outside the jurisdiction of the Energy Commission.

Anything like solar troughs or this project, which is the Stirling engines using heat, fall into the jurisdiction of the Energy Commission.

We also look at other facilities such as

the transmission lines that are associated with this project. We look to the first point of interconnection which basically is from the project site to the substation in this case.

And we also look at if there are portions of transmission lines after that point that will need to get upgraded, you know, heavier wires, larger poles, anything of that nature, because of this project, we'll look at those in more of a cursory manner. And they also have to be dealt with at a later point.

We also deal with water supply systems, you know, for this project; you know, access roads that may be necessary; laydown areas that are not directly part of the process, but will be areas that will be disturbed because of the construction or operation.

And as I said, you know, we are the lead agency for the CEQA portion, which is the California Environmental Quality Act.

And one of the things that both Jim and I worked very closely on is to make sure that any local agencies, federal agencies, state agencies that have jurisdiction on this process, who are going to be, you know, providing this information

either on cultural, biological issues, to make sure that we work with them.

Also work with any local agencies, elected officials, to make sure that their concerns, comments are addressed in our environmental document.

So basically there are three parts of the Energy Commission's process which the BLM and the Energy Commission will be working to align these as much as possible.

The first stage has already occurred, which is data adequacy. When we refer to something as data adequate we do not mean that it has every bit of information that we need to go forward. We're just saying that data adequacy is the minimum to accept that application as adequate. It has the minimum that we need to start the whole process.

Then what brings us to the second phase, which is the discovery and analysis. One of the first steps on that is data requests where we say, okay, you've given us the minimum amount of information for your application to be considered complete. Now we need additional information to do a full and comprehensive environmental

analysis.

So that's where we start asking the applicant questions. We've sent out the first part of our data request to the applicant already. And they'll be, by about December 9th they'll be getting us information back on that.

Another thing we'll talk about a little bit more later is the issues identification report. That's basically a very early document in the process where we say what major issues, what potentially are either show-stoppers or significant environmental areas could be impacted from the proposed project. And that's online, as well. So you can see the entire report. I'll talk about it a little bit more later.

The public workshops, as Raoul talked about, there will be a couple different types of public meetings, forums, for people to give comments. One will be the hearings like this, which will be a very formal setting. It'll have a court reporter; there'll be an official record.

Later on you'll have workshops that will basically be between the BLM Staff, Energy Commission Staff, the applicant, any intervenors, other parties. And because of the ex parte rule

and sort of the open meeting rules, we have to have any substantive discussions on topics in the public view. So that any decisions that we make, issues that we need to get clarified, we have to make those in the full view of the public so you know what issues are going back and forth on the project.

So basically these workshops are almost like it's an open meeting. It'll be a meeting between the parties to get work done. But it offers the public a chance to ask questions, get clarification.

So we use this as a chance for -- the Energy Commission to work with the BLM to open this as part of a scoping process.

And the next workshop, you know, we'll talk about, it'll be fully noticed, will be on December 18th. That will give our staff a little time to get the data responses in. It'll be a data response, issues resolution, workshop and scoping. And that'll be the final sort of scoping workshop of the process. And then the scoping period for the BLM within 50 days after that. So you have a little bit more time to get scoping comments in there.

Then the preliminary and final staff assessments. That's, for those of you who are familiar with, like the environmental impact reports, environmental impact statements, sort of a NEPA/CEQA process. Our preliminary and final staff assessments are equivalent to an environmental impact report.

And basically then we come to the third portion, after our staff works together with the BLM, to get these preliminary and final documents out, on my side I turn that over to the Committee.

And then the Committee will go ahead and the Hearing Officer, Raoul, will be holding evidentiary hearings, and the Committee will put together a decision.

This gives you a little bit of an idea, sort of that same process of how it goes through. It's just sort of a good place just to sort of see how things flow together between the hearings and the proposed decision and the final decision.

And these different processes, different hearings and the spaces between the different preliminary documents and the next one, there'll be a lot of public involvement for people to provide us comments.

And we always ask people to provide written comments wherever possible. Anything you give me in writing, it makes it very easy for me to pass it on to staff, make sure everyone understands exactly what you're asking for, what questions, concerns you have. So that I don't have to try to interpret what your concerns are as I pass them on.

And I've pretty much gone through most of this, as I talked about before. This goes into a little bit more detail you can reference later. But when we look at our discovery and analysis process, the job of staff is to work as almost a disinterested third party. We're neither an opponent or proponent of the project.

Our job is to make sure that the public questions are addressed, and that the public good is looked after. And just to facilitate that process.

And that brings us, you know, to after the staff has finished our part, our main job is to give the Committee as much information as possible, to give a very complete record so that they can make the best decision possible. As has been said several times before, any information

you're able to provide us helps us get a better product.

So, you know, the more public participation we can get, more comments we can get early in the process, that makes sure that we can address them in our preliminary and our final documents, and give the Committee a complete record.

And one last thing just on the last one, just very briefly, the Energy Commission, at the very end of our process, one of our important roles is any decision that comes out of the Energy Commission to allow to go forward during construction, the Energy Commission has the responsibility to make sure that any conditions, all conditions, are enforced throughout the construction and operation.

So we'll be working with the BLM and their code enforcement staff to make sure that if we go to a point where this project is recommended and it does actually get approved, in that case any conditions that are put in there to mitigate environmental or potential environmental impacts, we have a special crew that is focused on making sure that that happens.

And as I introduced before, Mary Dyas is with our compliance unit and she'll be taking charge of that.

Thank you.

MR. STOBAUGH: Thanks, Christopher. One of the things, to just kind of let the audience realize, as you've been hearing Christopher, we're walking down this aisle together, if you would.

We both have responsibilities, one at the state, and, of course, at the federal level. There has been a memorandum of understanding developed between BLM and the Energy Commission. And the intent behind that is to conduct a joint environmental review of the Solar Two project into a single NEPA, as I referred to earlier, under BLM's guidelines, and CEQA, the state process, to share in the preparation of a joint environmental analysis. And to avoid duplication, if you would, of our staffs; share that expertise among our staffs.

As well as promote the intergovernmental coordination, both the local, state and federal levels. And facilitate public review. You know, instead of having you guys here one set of meetings, yet another set of meetings, and you

realize we're all walking down the analyzing the same project. Let's bring them together like this so you can understand we are walking down two process and trying to combine the efforts, as well as the efficiencies, that we can, you know, build in with them.

And the other points I just bring up here is the policies. We want -- the second bullet there is we want to facilitate environmentally responsibility commercial development of solar energy projects on the public lands.

That's the gist of what that W, Washington Office instruction memorandum of 2007-97 gets into. And there's copies, as you can see at the bottom there. You can go to it and pull up that particular document. But that's what the policy is after.

We want to also look at the right-of-way applications for solar energy projects. They're all considered a high priority that will be processed in a timely manner. And if approved, as I mentioned earlier, it would be approved under Title 5 of the Federal Land Policy and Management Act.

So, as we, again we're walking down, trying to do this in a joint, collaborative effort to facilitate and invite, at the same time, the public's input and your perspective of what you see as far as the related issues, if you would, or concerns you may have in this.

And I want to reiterate something Christopher brought up. Of course, you may speak on things. But if we could -- we certainly want to encourage written comments. That way we know exactly what you are trying to state in there, and we will look at those verbatim. So we have in your own words the comments you really want to place in any type of input regarding this project.

So strongly encourage you, if you will, to not only do it verbally, but at minimum do it in writing. And hopefully we'll have it right. We'll be able to track it. We'll even be able to see where we addressed it in our NEPA and CEQA documents in the processes, to make sure that the comment was addressed.

This is a slide that shows basically the regulations that the Bureau of Land Management is going to be working under, 43 Code of Federal Regulations 2800, to walk through our processes.

These two sites on here are on the internet on the website. The first one is just general right-of-way guidance. And the one down at the bottom on solar right-of-way is specifically getting at the policies and that instruction memorandum that was referred to on the previous slide.

So as we go through the BLM authorized role in this is going to look at the initial response to the proposal; go through this preapplication screening to see much like Christopher and them were talking about, what do we have in an application to consider it complete enough to move on to acceptance in processing. Or is it something we know through land use planning would not be warranted or allowed.

This one actually is going to require a land use plan amendment, and is allowable under the rules of land use plans, if you would, to consider an amendment for this type of proposal. It's about it being, you know, excluding or disallowing all together.

We conduct the scoping. You can see where we're at in this slide right here today. And after this we collect your input. We begin

developing our environmental impact statement document. And at the same time, it's a land use plan amendment.

So, as I mentioned, the two purposes and needs earlier, that's the reason why the BLM is looking at a twofold decision in this case. So we have a decision on the application, as well as the approval of the land use plan amendment, to authorize the use, as Christopher referred to as what the Commission is up to, we have to look at administering this all the way through its termination. So cradle to grave.

Here, if you want, real quick -- I'm not going to go into all of the points, but as you can see, here is the process both for under the National Environmental Policy Act, NEPA, for an environmental impact statement, as well as the land use plan amendment.

The notice of intent was released on October 17th in the Federal Register. We're at this public scoping period right now. From this we will help us, from the information and data requests and working with the CEC on this, help us, as well as our own data and our own staff under Steve Borchard's and Vicky Wood's

organization here, who really have the on-the-ground expertise of looking at things more realistically and practically, will formulate our alternatives to be considered, as well.

And then again, eventually, you can see there's going to be the preparation of a draft environmental impact statement, as well as the draft land use plan amendment.

That'll have a 90-day comment period. So there is, after the scoping ends for the front end to develop that draft EIS, will be a 90-day comment period afforded you in the future.

There'll also be another comment period for 30 days after the final, as you can see, as we work our way toward the record of decision and approval of the land use plan amendment.

And as Christopher brought up, as well, you can see the last little bullet is monitoring the project is all a part of the process, as well.

Thanks a lot.

MR. MEYER: Okay, I won't go through this because you've actually heard the introductions of everyone here, but this is a slide that's good for you to reference throughout the process if you want to contact any of the

parties from the Energy Commission side.

MR. STOBAUGH: And here's the contact information for the Bureau of Land Management. As you can see, the receipt of scoping comments are actually going to Christopher Meyer and the Commission, itself. Again, trying to streamline and make convenience where these comments are going in our joint effort to analyze this proposal.

MR. MEYER: And Loreen actually did a great job just going through the public participation process. And this just gives you a little bit more information on the listserver. If you go to the Energy Commission website you'll see right on the website there is a little box there you can enter your email address in. And that way anything that gets put on the website you'll get an automatic email. It's a great way of just keeping up to date if there are any changes on the project website, any new documents that are added.

And as I talked about before,, our dockets unit, you know, will keep a complete record. Even documents that are just letters going back and forth, memos, records of conversations that may not go onto our website.

There'll be a complete docket log of those.

And that docket log will be on the website. You can see, even if it's not printed as a full document, it'll be on the website as a list. And if there's anything you see in there that you'd like to see a copy of, you can contact the dockets unit to get a copy.

And basically this is just stuff we've gone over before, as far as the different ways you can make oral comments in a forum such as this, and there'll be a record. At the different workshops, which will be run by Jim and I. Your opportunities to come up and make, you know, oral comments, as well.

But there will not be a reporter at those workshops, the staff workshops. So any comments you make there it's just really dependent on how well our staff can write down your comments and take notes on it.

So it's great for you to come out and express your issues to everyone verbally. But if it's really an issue that you want us to deal with in sort of very strict detail, following it up with a written comment and just send it to my attention, would be wonderful. And then I can

make sure that Jim and all the other parties get a copy of your comments and your questions.

And a formal intervenor is -- you know, she's gone over fairly well, and it's a good idea, when you're thinking of potentially becoming a formal intervenor, talk to Loreen as far as what both of the advantages and also responsibilities. Because by being a formal intervenor, it changes some of the responsibilities you have as a party in the case. And it's good to understand this before you decide, you know, make that decision.

And this is just what the webpage looks like. You can see where the listserver is, the little box there. So this will be consistently updated throughout the project. And you'll see different tabs. You can go to different places throughout.

Actually when you go here you can also go backwards onto the Energy Commission's website and see other cases. Also you'll see the different memorandums of understanding that Jim spoke of. Those things are all in pdf so you can look and see what the details of those are, as well.

MR. STOBAUGH: And this is the Bureau of

Land Management's site for over here and El Centro, as well. So you can -- you know you're in the right place if your slide looks like this when you bring it up.

MR. MEYER: Just to make a note, I think both of our websites have links to our counterparts. So, if you find one of them, you should be able to, you know, look around and you'll find a link to the corresponding agency's website on the same project.

Okay, this bring us to the staff issues identification report, which I talked about before. Sort of our initial impressions of the project in looking through the application for is it complete, and also starting to formulate our data requests.

Staff, at that point, looks at the things that they say, okay, I have lots of questions on a certain area. And if it looks like it could be a significant issue, either delaying the project or possibly affecting staff's ability to make a recommendation, we try to focus on those things early on so that the public understands what issues staff is focusing on, so you can make comments specific to those areas.

On this project really there are three areas, and then the cumulative impacts. So, cultural resources is one of the big areas. Land use, as you can imagine, for a project of this size. Visual resources, again from the scope.

When we talk of cumulative effects and alternatives, cumulative effects is for almost any area that you can have an environmental impact. We want to look at are there four or five other projects in this area, that this project may not have a significant impact, but when you add it to all of the other ones that may not have a significant impact, either, but cumulatively there is a significant impact. That's one of the things that the Energy Commission and the BLM will be looking at throughout this process.

And then alternatives. If a significant impact is identified in any one of the technical -- either engineering or environmental areas, we will be looking at alternatives that focus on reducing that to a less-than-significant impact.

Cultural resources. Potential issues on this project are based on just both the frequency of the cultural resources, basically meaning for this 10-square-mile portion. There are a lot of

archeological resources on this land. And we're still doing a lot of work and the applicant is doing a lot of work, as well, trying to determine the level of importance and significance of these different sites. And what potential impact the proposed project would have on them.

So, the Energy Commission Staff and the Bureau of Land Management Staff, the cultural resource experts, have been working very hard on this one. But, as you can imagine, when most power plants traditionally will affect up to maybe 100 acres maximum, looking at 6500 acres is a lot of paperwork.

So, we're anticipating having data requests on that, you know, probably just after the first of the year -- excuse me, the first of December.

The other one we talk about potential discoveries, that's just a very simple way of saying we don't know what's under the ground. We may have a situation where any number of activities could have either obscured or removed a surface expression of an archeological site.

When the project starts getting constructed we could discover that there are

things there that we didn't know about. So, that's one thing we have to make sure that our documents address and we keep in consideration.

And then the mitigation is a part of that. The concern on cultural, you know, how can you mitigate these impacts.

Land use, as I said, is simply right now if you have land that is open for potential use by the public for multiple uses, whether it's camping, hiking, offroad use, to transfer that land out of the general public use into a more industrial use for the production of power, staff considers that a potentially significant impact to the public.

And that's something that we're going to be looking at very closely. And BLM is going to be really taking the lead on that, working with our staff. And, as I say, this is one where the cumulative impact becomes big. And I'll let Jim talk about that, as far as just the BLM, what they're dealing with right now.

MR. STOBAUGH: Well, there are solar power generation -- Steve, you're actually in the frontlines on this, what you're seeing. But, how many applications right now we have?

MR. BORCHARD: Seventy-seven.

MR. STOBAUGH: Seventy-seven applications. I mean it's just unbelievable what we've looked at.

You know, we're looking at the -- you have the 30,000 25 kilovolt solar power dishes that John Egan had covered in there. And these are wonderful maps, by the way, and slides that we have to look at. So if you want a picture's-worth-a-thousand-words.

But the related structures you have, I mean you have a main services complex; you've got assembly buildings; you got a 230 kilovolt electrical substation to make this work. The access roads and the water supply lines. And then there's the 10.3-mile, double-circuit 230 kV line that's going to put this -- if approved, going to put this on the grid, itself.

So, you have, you know, a wide array, if you would, of impacts to look at. And the links, as well, as with other projects in this vicinity.

So, yes, it is going to be a large-scale scope of looking at things, but there are processes in place for both the state and the federal government to deal with them. And we're

going to walk through the process. And you are participants being invited, as of today, to walk through that process with us.

MR. MEYER: And visual resources, as you can imagine, as John pointed out, that, you know, you can't hide 30,000 of these 40-foot Suncatchers. They do sort of jump out at you.

You know, whereas he says, we're going to look at it, you know, there are some people who are going to be really just fascinated to come see them. Staff has to look at this as far as what is the impact of having that many units of that size, you know, in a landscape that right now is just more of an open desert.

And the development of the VRM classifications is going to fall into the BLM. It's just to make sure that when our visual staff and BLM visual staff work together that the criteria that we use meet the BLM's needs.

I think I pretty much spoke about this, we've covered it pretty well, it's just the cumulative effects is something that we're going to be looking at very closely just because of the sheer number of renewable projects.

And not just thermal, but you know,

wind, photovoltaic, other projects in the nature that if they're planned for this area they're not going to take up land, have visual impacts, any of the areas. We have to look at those in a cumulative nature.

And let me point out, this is a proposed schedule. This is something that staff, both on the BLM and the Energy Commission, we're looking at how fast -- if everything goes really smoothly, how fast can we push this thing through to the point where we can make a recommendation, either for or against this project.

And as I say, you know, our job is to be objective on this as neither a proponent or an opponent of the project. So we don't presuppose that we're going to make recommendations to our respective management teams, and in my case, the Commission, to either approve or deny it at this point.

But this schedule is something that I have worked with Jim on, and ultimately the Committee that's assigned to this project will look at that. And they will put out an official schedule that they will propose.

And, as I say, this project, because

it's a joint document between the Energy Commission and the BLM, there will be procedural issues that take a little bit more time than a normal Energy Commission project, plus the sheer volume of information we're dealing with with a site of this size.

So our normal 12-month process is just not viable here. And one of the biggest things that I'll say to everyone is this will not be a schedule-driven exercise. We are not going to publish a document before it's ready.

We're going to get the information and provide a comprehensive document that'll give the public a chance to participate, but also we want to get the best document possible produced. And if that affects the schedule, unfortunately it does. We'll just work as fast as we can to get a good product together for you, as the public, to review, so that we can get the best comments back from you to get this process, you know, continue it going in a good direction.

And I think I've sort of hit all the caveats. I think I made all the possible excuses I can make on why the schedule may get delayed a little bit.

It's one of the things that Jim can speak on awhile is that in the NEPA process there are some other protest periods.

MR. STOBAUGH: Once we get to a record of decision, should we go with the approval of a land use plan amendment and there after the final, well, actually the issuance of the final environmental impact statement, there will be a 30-day availability for review by the public, as well as what's part of that is a protest opportunity.

And if there are no protests, you know, the process can move along after 30 days. If there are protests, we're looking more at a 90-day process to deal with rendering resolution with the protests after the final environmental impact statement is published.

MR. MEYER: And that concludes my presentation on our process for the siting and I'd like to ask Mary Dyas, the Compliance Project Manager, to speak to you very briefly on our compliance project, if the project were to be approved, the post-certification process.

MS. DYAS: Good afternoon, everyone. My name is Mary Dyas; I'm the Compliance Project

Manager assigned to this project for the Energy Commission.

And I first off want to make sure, assure you that my being here and giving this presentation by no means is meant to imply or assure that the project has been approved. Approval or disapproval will come after the comprehensive siting process, which Chris and the BLM Staff have just gone over for you.

I'm here to assure you that if the project is licensed, there is a rigorous ongoing monitoring process by the compliance unit for the proposed project to insure that it is built, constructed and operated in accordance with all applicable laws, ordinances, regulations and standards, to include the conditions of certification that are put forth in the final documents that's going to be produced.

In addition, also before I move on to that next step, during the siting process now is the appropriate time for the public, as well as agencies and all other parties to the project, to comment on the document and the conditions of certification, because it becomes much more difficult to change the conditions once the

license is issued.

In addition to myself and Commission management, there is a third-party delegate involved in the compliance process to oversee the construction of the project. This delegate is a chief building official, which is delegated by the Energy Commission.

The CBO, or chief building official, can be a local building official such as the city or building department, but in most cases it is a third-party company from the preapproved statewide list of qualified delegate CBOs that is maintained by the compliance unit at the Commission.

And though the CBO reports directly to the Commission compliance unit, their expenses and activities are paid for by the applicant.

In most cases, shortly after this final staff assessment or final EIS, I don't know what they're calling it for sure, shortly after that document the final document is published, the Compliance Project Manager, in this case myself, and legal staff will delegate authority to enforce onsite compliance to the CBO through a memorandum of understanding.

The delegate CBO is responsible for

monitoring all critical construction activities to insure compliance with facility design, transmission system engineering. And to insure that related civil, structural, electrical and mechanical codes are consistent with county, state and federal building requirements.

Also, once a project is licensed, a compliance fee is imposed on the project. And those fees are due after licensing and then every year after that for the life of the project, by July 1st.

And occasionally, as I mentioned, it's more difficult to change the conditions of certification after the license, but occasionally a project owner may decide that they do want to make changes. And some of those changes may be due to new technology or unforeseen constraints that have come up.

If this occurs, the applicant will be required to contact the Commission compliance unit and arrange a pre-amendment petition meeting to discuss the proposed changes. And then, if and when the owner proceeds with an amendment petition, a notice of receipt will be sent out to the combined mailing lists that will include all

the names that are on the mailing list in the siting process, as well as any additional ones that have been added during the compliance process. And this also includes the surrounding landowners and residents within 1000 feet of the project.

Staff will then process the amendment, and where needed will provide technical analysis similar to the analysis that's being done on this application for certification during the siting phase.

And that is pretty much about what the compliance process is. And this goes on for the life -- we monitoring the operation of the project for the life of the project, not matter how long that could be, 20, 30 years or longer, if necessary.

I have cards if anyone is interested. And then there's also on the website, I don't believe they put it on till later in the process, but they do create a compliance project page associated with a particular project. And then my name and information will be on there if you need to contact me.

Thanks.

HEARING OFFICER RENAUD: Okay, thank you, everyone, for those excellent presentations. Very informative.

The Committee will review the proposed schedule and the comments submitted by the applicant with respect to the schedule, and issue a scheduling order which will constitute the expected schedule for the case. Sometimes, as Mr. Meyer pointed out, unavoidable, things occur that you can't -- that will affect the schedule. But for the most part we'll try to stick to the schedule that will be set forth by the Committee in the next few days.

At this point I think we will move into our public comment period. I have a card first indicating that Imperial County Supervisor Gary Wyatt is here. Mr. Wyatt, did you wish to speak?

SUPERVISOR WYATT: Yes.

HEARING OFFICER RENAUD: All right, please come forward. I'm sure you're used to speaking in this room, so.

SUPERVISOR WYATT: Maybe, a couple times. Maybe this morning, as a matter of fact.

(Laughter.)

SUPERVISOR WYATT: Good afternoon and

thank you for being here today, and for everyone else that has attended this very critically important meeting. Not only for this project, but we believe for our county, as a whole.

Let me start, I have asked, about a half hour ago, if they could find out why it's about 150 degrees in here. You know, when summer has already ended, and so hopefully we can get it cooler than it is now in the room.

I'll keep my comments very brief. It's just plain and simple. We sent a letter in; we'll be commenting further, I believe, as a county. But I'm here to re-register those particular feelings and my own personal feelings on this particular project.

This particular project, we believe, is the beginning of a great deal of opportunities our county has been looking for for many many years. We are the answer to many of the needs of people throughout the southwest and throughout California.

We are the home of renewable energy. We believe that we are the county that could literally become the capital of renewable energy in the United States. Between geothermal, solar,

and wind power we believe that we could produce thousands and thousands of megawatts.

What we do need, of course, with this is we cannot magically move this power from here to those centers that need that power through some other type of technology, other than transmission lines. And we need transmission lines. This project specifically needs that.

But we believe this is a great renewable, clean project that will do tremendous things, not only for our county, but for others, as well.

Being a rural county, a small county, that sits next to a million people to our south and millions and millions of people to the west and to the north, we've given a great deal of our resources sometimes not so willingly, in the form of water and other types of things. And now when we are trying to give the power, we hope that you will work with us to make that happen.

We want to do it in a responsible manner, of course. And all the compliance issues must, of course, be followed. But this is about meeting the needs not only for the RPS for areas outside of ours, but also to meet the needs for

this area.

We're historically one of the highest unemployment areas in the United States; in excess of 20 percent. When I saw the other day they were complaining in areas that their unemployment had gone up to 6 percent and 8 percent, we would be so ecstatic if our unemployment rates were just down around 10 percent. But historically they've been anywhere from 17 to 25 percent per year.

It's unbelievable that that could occur year after year, and we've been working very hard to help that to be different than that.

This project will be the beginning of that type of thing. This is the future for our Valley. It brings a new industry other than just farming. We'll always have farming, but we believe that renewable energy is something that's very viable for our Valley. And we can provide the answers and the solutions for many of the other parts of the southwest United States and all of California.

We encourage you to help us get this through and get it passed, and get it built. That's what we would like to see done. Imperial County stands strongly behind Stirling Energy's

project.

PRESIDING MEMBER BYRON: Mr. Wyatt, thank you for being here.

HEARING OFFICER RENAUD: Thank you. John Menvielle, did you wish to speak?

MR. MENVIELLE: Yes, thank you. Good afternoon. I'm John Pierre Menvielle, President of the Imperial Irrigation District Board of Directors.

I am here to speak in favor of the Stirling Energy Systems solar project in the Imperial Valley.

IID is the third largest public power provider in the State of California, and is a staunch supporter of the development of renewable energy resources within its service area.

We view projects like this one as being essential to spurring the growth and development of this emerging segment of the regional economy. The District has committed its own resources to upgrading its transmission systems to promote the growth and development in the coming years.

As an energy balancing authority we applaud Stirling's innovative technology. As an irrigation district, we are greatly encouraged by

the efficiency measures it will employ to conserve water.

And as a leading public sector employer and corporate citizen with an obvious stake in the economic progress of the communities we serve, we look forward to the hundreds of jobs the company will create in the future.

If IID can be of any further assistance in moving this project forward through the scoping process, you may be assured that we stand ready to do so. Thank you.

HEARING OFFICER RENAUD: Thank you. Very good. And let's see, Mark, I believe it's Gran -- did I get that right? And your affiliation?

COUNCILMEMBER GRAN: I'm a City Councilmember for the City of Imperial. And I have to make a disclaimer at this point in time I can't represent the City Council or the City, since we haven't brought this subject up in front of the forum. But I'm saying this as an elected official and a resident of the County.

I have to reiterate what Mr. Wyatt and Mr. Menvielle said in that I do support this wholeheartedly. We have the opportunity to build

a center for renewable energy. And just coincidentally, I also work for a renewable energy company, Cal Energy, which does geothermal. And so this could be the economic driver that we need in this Valley. And we look forward to your support on that.

Mr. Wyatt mentioned that we're the highest unemployment. We're also the lowest per capita income. And we need industries that bring jobs to the area that pay more than minimum wage. And this would do that, and start to bring these renewable energy companies here and show them that it can be done. And we also need the Sunrise Power Link to get this power out of here.

So we look forward to your support in getting this project going. Thank you.

HEARING OFFICER RENAUD: Thank you very much. And so far everybody's doing a great job of keeping it brief so we can stay on schedule. And I'll just remind everybody to keep that in mind.

Let me ask Marlene Best of Imperial Valley Economic Development to come up.

MS. BEST: Good afternoon, ladies and gentlemen. Thank you for coming here to Imperial County; we certainly welcome you.

From the Imperial Valley Economic Development Corporation's mission statement, we are here to help promote and market economic development opportunities for our county, for our region as a whole.

We have a strong agricultural background in our area which allows us to fee the nation. We are very interested in supplying the opportunity for Stirling Energy to help us power the nation. We would like the opportunity for this project to move forward. We've heard many comments already about our poverty levels, our economic levels and our interest in promoting and supporting those.

And we are here from the Economic Development Corporation to support this project and urge your agreement on this project.

Thank you very much.

HEARING OFFICER RENAUD: Thank you. Connie Bergmark.

MS. BERGMARK: Hi; my name is Connie Bergmark. I'm with Imperial Lakes; we are the closest residential community to the project. Jennifer Donovan standing with me here. We are both property owners there. I've been a property owner there for about 18 years.

We would like to say that Stirling Energy came out and briefed us on the project back in April. We certainly appreciate that. They gave us a rundown, pretty much the same slide show that we had here today. So we got to see the technology and the impacts on our residential community. We are very impressed, and we appreciate the time that they spent with us.

We would encourage ongoing communication on the project so we're kept in the loop as far as the construction impacts, operational impacts. But other than that, we support the renewable energy in the Valley. And all of our homeowners wholeheartedly support the project. Thank you.

PRESIDING MEMBER BYRON: Ms. Donovan, do you want to add anything?

MS. DONOVAN: No, that's it. We're very excited about the project. I live here full time, so I also am very excited about the opportunity for new jobs and new economic improvements here in the Valley. So we support Stirling Energy a hundred percent.

PRESIDING MEMBER BYRON: Thank you.

MS. DONOVAN: Thank you.

HEARING OFFICER RENAUD: Thank you.

Mauricio Lam.

MR. LAM: My name is Mauricio Lam and I'm here to share a few words in support of this power generation project in Imperial County.

Many people from other areas identify the Imperial County as an area with diverse economic activities, as well as having a great potential to offer new opportunities to business in the area.

We have land, we have power, water, and most importantly, qualified labor. The fact that Stirling Energy is interested in developing this project in our community has to be well seen by us. Why, many of us may ask. Because besides creating jobs during its construction, which are estimated to be around 700 new jobs, and during its operation, estimated about to be 200, the project will bring additional invaluable benefits.

The generation systems proposed for this particular plant will not use any type of fossil fuel or gases that when combusted or burned generate gases that are discharged directly into the open atmosphere, contributing towards the greenhouse effect condition and deteriorate the air quality.

The proposed fuel for this plant is a hundred percent natural, abundant and inexhaustible. It is available almost 365 days of the year. I am referring to the solar energy. This abundant energy that irradiates every day in our region and does not contaminate.

Solar energy does not produce gases, and we will always have a state of the art example of a power plant in our community that we will see improving as technology advances to make these systems more reliable and efficient.

In a summary way I would like to encourage and promote this type of projects. This project, besides producing the power we use and require in our daily lives, also take care of our environment.

The most important benefit is that beside ours, as a community of Imperial Valley, we will be ceding a great benefit for the future generations to come with this sustainable project. That production of clean power is vital for our future generations and provide us with a better quality of life.

Thank you.

PRESIDING MEMBER BYRON: Thank you,

Mr. Lam. Did you have an affiliation you wanted to share with us?

MR. LAM: Yes. I'm with Nolte Associates; we're a local engineering and surveying firm.

PRESIDING MEMBER BYRON: Thank you.

HEARING OFFICER RENAUD: Okay. Dennis Trafecanty. Sorry if I mispronounced that.

MR. TRAFECANTY: Hello; my name's Dennis Trafecanty. I'm with the Protect Our Communities Fund, which is at the San Diego Foundation, a not-for-profit fund. We embark on trying to protect our communities from unnecessary developments and other environmental issues and education for our children.

I have a great deal of concern. I don't mean to pour cold water on something, but I have a great deal of concern about SES and their project. This is like a startup. There's seven units, to my knowledge, in the whole country, and in the world, that are in prototype stage. And we're talking about in one year approving a project.

There's no way on God's green earth that we will ever be able to go to commercial production on something like this. I'm a CFO, I'm

a business owner in Poway. By the way, in Poway it was 82 degrees when I left today. When I got here it was 82 degrees. The sun was shining in San Diego; it does shine in San Diego.

This is also a key renewable project that SDG&E has been touting for three years as a basis for approval of the proposed Sunrise Power Link project.

I understand there's a hundred million of money that SES has garnered through a commitment from a, I think a Danish firm, but anyway, a firm from a foreign county.

I heard on the slides, or saw on the slides that this is a $1 billion project. So the funding isn't in place. Why would you approve something unless you were sure funding was in place and it was a viable project.

By the way, I have an article here from USA Today, in February. I'm happy to give it to you if you want it. There's a lot of questions about this project.

I know that Southern Cal Edison sold the technology to Stirling for something like $300,000. And Edison even ordered some of these units. And it's in this article. And I don't

think Edison wants them anymore. And part of it has to do with their ability to develop the project.

I've been involved in the Sunrise Power Link project for three years. And I haven't seen any changes to what's going on. Of course, I'm not privy to that, but it isn't anywhere near commercial.

So why would we want to give away 6000 acres of public lands to a company that's a startup, that doesn't have enough money to finish the project -- what prudent investor is going to invest in that? Are you going to allow the ratepayers to pay $2 billion to put a line into San Diego, and then ultimately up to L.A. which has to be added to the cost of this? They need the Sunrise Power Link, that's what they said. That has to be added to the cost.

San Diego doesn't need any power until 2014, that's what the ALJ Steven Weissman said in connection with the EIR/EIS hearings. We believe it's 2017.

It was in the Wall Street Journal just this week, 3 percent decline in power usage countrywide. Wonder what's that go to do with?

Probably the economy. I know I just bought a fuel efficient car.

SWPPL, Sunrise -- Southwest Power Link, built in 1984, 24 years ago, touting geothermal. Check the records. They've got 60 megawatts of geothermal on the Sunrise Power Link. And people here, there's the worst health hazard in the country right here in Imperial Valley for children, elderly and all of us in the middle, because of asthma. It's that powerline in Mexicali that San Diego Gas and Electric's parents built. And they're bringing LNG from the far east.

So this isn't just an open desert. The powerlines will desecrate the open desert. It will desecrate the remote back country wilderness. Anza Borrego Desert State Park, no, it's not just north county. You're going through Anza Borrego Desert State Park in south county, as well. Nature Conservancy just bought the land to designate as part of the park.

So, don't endanger our bighorn sheep population and the migration by going right through the park. That's their only corridor to the herds in Mexico.

So, Mr. Wyatt, geothermal, solar and SES, okay. You'll be paying for the health concerns of your residents of Imperial Valley because when a project fails you're going to be getting more dirty fossil fuel from Mexico thanks to SDG&E's parents, Sempra's projects down there. And you're going to have to take care of those children.

Thank you.

PRESIDING MEMBER BYRON: Mr. Trafecanty, I heard you say you work in Poway. Are you a resident here or do you live in Poway?

MR. TRAFECANTY: I'm a resident in Santa Isabel and I work in Poway. I'm a business owner in Poway.

PRESIDING MEMBER BYRON: Thank you, sir.

HEARING OFFICER RENAUD: All right, thank you. Laura McDonald.

MS. McDONALD: Hi, Laura McDonald, representing San Diego Gas and Electric. I am the Project Manager for the Sunrise Power Link project.

And I, too, just wanted to voice my support and the company's support for the Stirling Energy Solar Two project. As you know, San Diego

Gas and Electric has an RPS mandate to meet 20 percent renewables by 2010. We recently voluntarily supported the 33 percent goal that the Governor has set forth.

So we're pleased to be a partner with Stirling Energy on this project. We're thrilled to see the project moving forward. Hopefully we'll have a decision on the Sunrise Power Link in the middle of December. And then we'll see both of these projects go forward. Good for the Imperial Valley; good for San Diego; and good for the California region.

So, thank you very much.

HEARING OFFICER RENAUD: Thank you. Carroll Buckley.

MR. BUCKLEY: Carroll Buckley, President of the El Centro Chamber of Commerce and Visitors Bureau. On behalf of the El Centro Chamber and Visitors Bureau, thank you for visiting today.

The Chamber is on record with a policy statement that says, in part, we support policies that encourage the generation of additional local energy, including production of renewable energy resources for export and local consumption, provided that renewable energy projects are

consistent with land use policies and environmental impacts are fully mitigated.

On behalf of the Chamber of Commerce we support the project. We support the jobs. The fact that renewable energy sources are being mandated, where are you going to build them, how are you going to get that renewable energy, Imperial County has the answers.

I have my comments in writing if you would like them.

HEARING OFFICER RENAUD: Thank you. Karen Collins.

MS. COLLINS: I am an anthropologist. I am not associated with anybody, but I do live down here.

To begin with I am concerned simply that the energy is going to San Diego and that we're not getting it. I would have thought that IID would have done something about trying to get something, but, you know, that's IID.

I am also concerned with what is the life expectancy of these dish. In 50 years are we going to have a bunch of abandoned large solar things sitting out there in the desert? I think that would be really ugly.

I am for solar energy. I am concerned at the location because of the cultural resources. The area that has been selected actually impacts two areas on the National Register. You have the shoreline for Lake Kuwae. We are in the middle of a desert, but we used to have a great big huge lake here, which basically ran from one side of the ag field to the other side of the ag fields. And you have the shoreline for Lake Kuwae.

You also have the discontinuous district for the Yuha Intaglios, which are both out there. So you have impacts to that. There's also a number of cremations that are out in that general area, too.

I personally believe that there are other areas, particularly in some of the fallowed ag lands that probably would be cheaper to put it in. And from a cultural resource standpoint would be a lot more economical to put it in.

It would also put them closer to water because the west side main is the last point at which water will gravity flow. So that means that they're going to have to wind up pumping all their water out there. It's not going to be a gravity flow system like we've got in the rest of it.

And we don't have enough water out in Plaster City to wind up doing wells, because Plaster City is already having to bring in water from Aquatia from the aquifer out there. So there isn't the water.

So, those are basically my concerns. Thank you.

HEARING OFFICER RENAUD: Tim Kelly.

MR. KELLY: Tim Kelly, President and CEO of the Imperial Valley Economic Development Corporation.

First of all, thank the Commissioners for being here today. And I'd like to thank the investment already made by Stirling Energy in Imperial County. They've been a very good, I want to say resident, because it seems like we see them so often we think they live here.

But the amount of money that they've already been spending in developing the project, at lunch today I saw probably about 20 of them. And that sales tax for our community.

(Laughter.)

MR. KELLY: They attended our education workforce conference; and they gave a presentation, in addition, to our energy

conference. The hotel rooms that they stayed in were a benefit to not only the City's but the County of Imperial.

And we support this project for several different reasons. First of all, the economy, the value that it's going to bring to the economy of the Imperial Valley. And the ancillary businesses that will need to support the SES Two.

The jobs that will be created. I sit on the workforce development board. We've already had meetings with Stirling Energy. And looking at the future workforce and what the job creation is going to be, and when we start developing not only the training for those jobs, but also placement of those jobs, and looking at funding that can be available, not only through the Workforce Investment Act, but also from the employment training panel and other resources available.

In addition to that, Imperial Valley College has already had meetings with Stirling Energy to start adapting programs for renewable energy specifically for this project. It's not just one type of employee that will work the Stirling Energy Systems, probably about a half a dozen or more types of jobs. And those jobs are

going to be very high paying. And it's going to need a very diverse type of training program.

The environment, that's probably the biggest issue in Imperial Valley, PM10s. And so we talked about asthma and things like that. But this is actually going to be a dust mitigation project. That location is the dustiest area in Imperial County.

Stirling Energy Systems Two and the other project, it's going to decrease the amount of dust coming from that area.

Tourism. Just about every place I've been in the world when people talk about what is there to see, they talk about projects such as renewable energy and others. And this will be a project that will bring people from outside the area, not only to see Stirling Energy Two, but also the other projects in Imperial County such as geothermal, solar and some of the other projects such as biodiesel that are taking place in Imperial County today.

And, of course, energy. The energy that can be produced here goes onto the grid, first of all, and will reduce the amount of energy that will be needed from fossil fuels, as we mentioned

before.

But there is a demand in San Diego. And so we support it for that reason. The Imperial Irrigation District will also benefit, which will keep the rates in Imperial County lower.

Thank you.

HEARING OFFICER RENAUD: Thank you. Christina Luhn.

DR. LUHN: Good afternoon. My name's Dr. Christina Luhn. I'm with the San Diego Regional Economic Development Corporation. And I'm Project Manager for a project called the MegaRegion Initiative, which is a long-term economic development strategy partnering San Diego County, Imperial County and Baja, California for global competition.

The key to this project is to brand and market the region around targeted industries that are complementary. Clean tech, which includes renewable energy, is the key industry that we've targeted.

But the underlying rationale and the reason that we received a $225,000 economic development administration grant through the Department of Commerce is because of job

creations. And not just any kind of jobs, but jobs in industries that have a future. Not that are on the tail-end of being obsolete.

So, for that particular reason, and I'm from San Diego, for the energy, as well, we support Stirling.

Thank you.

HEARING OFFICER RENAUD: Thank you. Steve Taylor.

MR. TAYLOR: Good afternoon. My name's Steve Taylor; I work with San Diego Gas and Electric. And I am the Contract Manager for the Stirling project.

I'm speaking in fervent support of the Stirling project, since it's an integral part of our efforts to meet San Diego Gas and Electric's renewable portfolio standard.

This project is even more important given Governor Schwarzenegger's recent announcement of trying to have 33 percent of our energy met with renewable power.

And, for the record, SDG&E does believe in their technology. SDG&E also supports the Governor's efforts to clear the red tape for permitting renewable projects. And I certainly

look to all of you to move that spirit forward as soon as possible.

SDG&E currently has 6 percent of our portfolio coming from renewable energy. We have 15 percent under contract for 2010. And we have 21 percent for 2011. So we are well on our way.

SDG&E is committed to working with all the parties in this proceeding to make this project a reality. Thank you very much.

HEARING OFFICER RENAUD: Thank you. Carmen, can't really read the last name --

MS. LUCAS: Lucas.

HEARING OFFICER RENAUD: Lucas.

MS. LUCAS: Good afternoon, I guess I didn't write hard enough. My last name is Lucas, L-u-c-a-s. It's really easy.

I am a Quimay Indian from Laguna Mountain. My interest here is a bit different. I'm 73 years old and I'm reflecting, after hearing everybody speak, that you live long enough the culture is no longer yours. I think perhaps I'm at that threshold.

I would caution you all, even the audience, we're in desperate times. Nobody really knows what we're about to embark financially in

this country, as well as economic avenues.

I will only say that just because it does concern me for your future, the future of your children, the future of your grandchildren.

So when we're in desperate times we do desperate things. I probably won't live long enough to see this project through to its final conclusion. I don't know if that's a blessing or not.

But just to give you a little bit of history, as an Indian in San Diego County, you know, we lived in this environment from coast to coast. That's the Pacific Ocean to the Colorado River. Continuously for over 10,000 years without the use of electricity, without the use of cars, without the use of money.

But we did that with intellect that knew how to work with this environment and the rhythm of the environment and we moved back and forth. That evidence is still on the ground, and it's out there south of Plaster City.

I would ask you, in your process here, please make it a requirement that a Native American monitor be on the initial surveys of these projects. We are best qualified to identify

sacred landscapes. We are best qualified to identify the cultural resources. We are best qualified to identify human remains. We don't need to argue with people, we know our history.

I would like to thank BLM and your archeologist, Carrie Simmons, for making it possible for me to make a site visit out there. I would have preferred to have worked on the project. I think it's crucial that we have an understanding it's not just Imperial County, it's all of the Colorado desert region. BLM manages a big part of all of it, so we're not dealing with just solar projects, we're also dealing with geothermal projects, SDG&E.

I grew up understanding that the desert was a dangerous place. We saw mirages out there. I can still hear my father sitting at the fireplace talking about the old women burying gold because we got killed for having gold.

I can still remember that you didn't cross that desert till the evening when it was safe to do that. Today we have air conditioning and we take that all for granted, not really realizing what the consequences of that is.

So these are the things I'd like to

bring to the record and just ask you again to be very careful. I do know that in this area you have an enormous deposit of pottery which tells me that you have a sacrifice burial area.

I do know the Heritage Commission, Dave Zinkelcan (phonetic) called me and asked me to be here today because there were two human remains that were identified in that area. The Heritage Commission wants that on the record. They want to know that these resources are being protected and looked after.

I would be concerned. I know you indicated in your discussion here that these things won't have much ground disturbance, but I would also say that's probably a plus, but I don't know that it is, because you're going to have to go from someplace to get them there. There's going to be a lot of activity.

And in the past, young folks who work on these projects really don't care where they're going. So, there's a lot of things on that ground that will be impacted. So there'll have to be some way to protect those resources, particularly the human remains.

So with that thought in mind, I thank

you for the opportunity to speak. And I, again, would ask you to seriously consider those comments. Thank you.

HEARING OFFICER RENAUD: Thank you. Elias Felix.

MR. FELIX: Good afternoon, everybody. My name is Elias Felix. I'm associated with Nolte Associates, and I'm here today to express my support for this project.

I believe that it will generate growth for the community. It will also promote economic development. And I believe it's also a great opportunity for higher education to better understand the energy production alternatives and sustainable solutions for our communities.

Thank you very much.

HEARING OFFICER RENAUD: Thank you. Donna Tisdale.

MS. TISDALE: Thank you. I'm actually an elected Chairperson on the Boulevard Community Planning Group, but I was born and raised in Imperial Valley, and I own farmland here. And some of it's being explored now for geothermal energy. I just want to put that on the record, but I'm speaking for myself, as an individual.

And this project is not unrelated to the Sunrise Power Link project, which Imperial Valley supports the southern route, which actually will bulldoze its way through the eastern San Diego County area, my community. And part of that process, it downgrades -- BLM has downgraded 20,000 acres, -- resource management, to accommodate not only the Power Link, but also industrial wind turbines.

And Sunrise Power Link, SDG&E and Sempra and Cal-ISO have said there's only 80 megawatts of capacity left on the Southwest Power Link right now. Now, Stirling and others have said that the first 300 megawatts can be moved without Sunrise.

Well, my question is, who's telling the truth. You know, is there 300 megawatts capacity? Is there only 80 megawatts capacity? I know that Sempra had to amend their application for their -- permit, for their cross-border powerline at Acumba to accommodate the Cal-ISO's 80 megawatt declaration.

Also the BLM land use amendment, I hope they do it better than they did the one for Sunrise through eastern San Diego County where they amended the plan in a whole separate document

for the Sunrise Power Link, rather than a plan amendment for the updated resource management plan. They issued those things within days of each other. We're looking at the legal recourse on that.

Also we have Cumia Windfarm up there, and promises of jobs were one of the big promotions. Well, they brought in Norwegian -- people from Norway, to put up the turbines. So my concern here is not just for the project, itself, the environmental impacts, but the misrepresentation to the community. This is not a wealthy community.

And I hope they're not asking for -- and I brought this up in the preapplication, I hope they are not going to ask for tax breaks and tax credits and incentives from this community, when they should be considering building a factory here, if this is what they're really going to do. And they're really going to manage to make it a go, why don't they build a factory here and employ people here, rather than bring in people from elsewhere, ship the energy elsewhere and just, you know, make a few little side promises here and there.

Because when the rubber hits the road quite often promises fall by the wayside. And Imperial Valley has been left in the dust of quite a few of these promises.

I also wanted to say that I look at the simulation, I drive back and forth from my home in Boulevard, eastern San Diego County, to the Valley for the ranch and my family, I'm worried about the reflection of those mirrors on drivers. I mean what about public health and safety. They say it follows the sun, so if you're driving, you know, -- what is the reflection rate on that?

We also have the Navy Air Base here and I'm sure they've been brought into the loop, but it is a concern.

Also the Division of Ratepayer Advocates and the Utility Consumer Action Network have done research on the Sunrise Power Link. I, myself, have read about 10,000 pages of it. And they say this is not in the best interests of the ratepayers and cannot be justified.

And when you add in the cost of renewable energy from projects like Stirling Solar and all these industrial projects, the cost to the ratepayers are phenomenal. Where are those

figures? We're not seeing those figures.

And I'm afraid in this economy, when people are struggling to pay their bills and their mortgages, how are they going to pay for the cost of this renewable energy? That's not brought up.

Now, Imperial Valley, they have their own utility and they may be affected differently. But I pay rates in San Diego County to SDG&E and California's going to have to pay for the utility for Sunrise Power Link.

So all this needs to be taken into consideration. So, anyway, thank you very much.

Also, cumulative impacts, 2.5 million acres have been applications for right-of-way for BLM lands. So, sun, wind, solar, cumulative impacts.

Thank you.

HEARING OFFICER RENAUD: Thank you. Edie Harmon.

MS. HARMON: Edie Harmon. And I've lived out in the Ocotillo area for more than 30 years. And so when I come into the Valley I come past this area. I would argue that the area that's being proposed, almost more than 6000 acres, is not an area that's heavily impacted now,

and not a major generator of dust.

However, it is south of the Plaster City offroad vehicle open area, which is a major generator of dust and blowing sand. It is to the east of 1000 acres that were bulldozed east of New Mirage that, in times of wind, there are times you cannot tell the difference between the soil and the sky because there is so much blowing dust and sand.

And when I read proposals and I've read a lot of the details on this project, and I look at moving parts, the dish umbrellas, and I'm wondering what happens, given the fine dust -- we have what we call blow-sand, which is so fine that it ends up you can't even crank open windows because the sand affects the cranking mechanism, I'm wondering about putting 12,000, 30,000 dish collectors in an area where there are really strong quantities of blowing sand.

And I live probably less than five miles from the mountains. There are times I cannot even see the mountains from my house because the particulate matter in the air is so great.

And so I think that is a real consideration. It's not a dust mitigation area,

it's an area that's going to be very heavily impacted by dust that's being generated offsite.

And when I go back home from the Valley there are a lot of dirt roads. It's amazing how much dust is generated by a single offroad vehicle or a motorcycle or a pickup truck on a dirt road. There's really a big plume.

And I think, from reading the documents about the moveable parts and the mean time between breakdown, between failure, and I've seen figures as low as 40 hours before a unit has to be shut down for maintenance, repair. I think it was the CEC came out with a publication this year suggesting that it would be several years before they even get to the point where it's hundreds of thousands of hours between time for breakdown, whether it's hydrogen releases, problems with the seals.

But also, and none of the things that I've seen on failure deal with the problems of what happens with dust and sand when you've got moving mechanisms.

And I've seen winds come through that will break down the limbs of a 12-inch diameter tree and cause it to go down in the open desert.

I've seen eight-foot, ten-foot long two-by-sixes flying through the air, sheets of plywood flying through the air when chubascos come up from south of the border.

I don't know what these kind -- and I can be outside and five minutes later there'll be a tremendous wind come through carrying things through the air. I don't know whether these units can close fast enough, and I don't know what happens when debris, sand, dust ends up impacting these mirrors.

I think the amount, when they're talking about water for rinsing off, but what happens with peak of these. And, you know, again, at the end, if the project is not feasible you have a tremendous amount of material that has to be -- has to end up somewhere.

As earlier speakers have said, I think there's a real serious concern when you're talking about going from prototype development where you've got six units at Sandia National Laboratory in New Mexico, which is an entirely different climate, I suspect, with different vegetation, and that they don't have the same dust and wind.

And going from a prototype of six units

to suddenly you're going to have 18,000 units out here, exposed to the elements. And area with over, when I looked at the BLM report on cultural resources, I was just overwhelmed to think that there would even be a serious proposal that would have impacts in areas so culturally sensitive.

And after listening to Carmen Lucas, I hope you'll realize there are a lot of people for whom the past is very important.

And I think while we're talking about renewable energy I would be far more impressed -- when I was at the pre -- meeting I asked, if this grid-ready electricity every three units, why aren't they proposing to put these units so that they could generate electricity for Plaster City, for the Centinela State Prison, which are very close by, the hospitals, the schools.

Why aren't there proposals to generate electricity that's going to go into the IID system so that people in Imperial County, that must have some of the highest per capita energy consumption in the summer when it's 120, can have some benefit?

And the answer to the question was it wouldn't be profitable to use this technology to

generate electricity for use in Imperial County. It would only be profitable if you were going to build the Sunrise Power Link to transport that energy to San Diego.

And I've seen the studies that are coming out of San Diego and they're looking at the potential for rooftop solar, photovoltaics, distributed electricity. They've plenty of parking lots, roofs, schools. A lot of people are putting photovoltaic units on their homes, so they're getting the energy during the day.

I would be far more impressed if there were big energy proposals for Imperial County, that we're proposing rooftop solar on all the flat roofs, and to provide shade for all the parking lots in Imperial County. Because that would truly benefit the County and set an example for, you know, technology for the future.

It's being done at Death Valley; it's being done in places in Nevada. It's being done elsewhere. I don't know why we're not looking at the technologies that work rather than a technology that wants more than 6000 acres of public land with sensitive cultural resources to turn into industrial sites to export an unproven

technology to San Diego.

I have lots of questions and I'm getting them in writing. But I think there's a lot of issues that have to be looked at, a good, hard look.

And I feel like part of the reason that some of these projects are coming to public lands is because industry looks at public lands as a less expensive way of getting the land base, rather than looking at fallowed farmlands, abandoned feedlots, areas where the soil is sterile, parking lots or rooftops. Places where there wouldn't be such impacts.

When you're disturbing land that has not already been heavily impacted, you're reducing the ability of those soils to sequester carbon. And listening to Howard Wilshire, who spent 37 years with USGS, he's concerned about the impacts of some of these industrial-scale wind and solar because they go on lands that aren't disturbed, it has a negative impact on carbon sequestration on those lands.

And I haven't heard anything or seen anything on that issue related to this project. But I think it needs to be looked at.

PRESIDING MEMBER BYRON: If I may, Ms. Harmon brings up a number of issues. I'm not going to try and address all of them, but I think one merits just a brief explanation.

When we get an application from an applicant we are obligated to respond to it. So, she brought up a number of different issues which we will consider, and the staff will look at very carefully.

But we didn't create this application. We have to evaluate it. I just want to make that clear. Thank you.

HEARING OFFICER RENAUD: Thomas Topuzes.

MR. TOPUZES: Good afternoon. My name is Thomas Topuzes; I'm a local businessman from El Centro. Welcome to the Valley. I'm the past Chair of the Imperial Valley Economic Development Corporation, and also I'm the Co-Chair of the MegaRegion Initiative, which you heard about a little bit earlier, working San Diego, Imperial County and Baja, California.

I support the SES solar project. Renewable energy, if you've been here anytime after May, June, until about the end of October you realize we have a lot of radiant solar energy

here.

I think this is a good place to have the project. It's going to help California meet its needs for energy. It's certainly going to help job creation. I understand the latest unemployment rate that we have, I heard it was 27 percent, which is not good.

Also, the program provides some environmental benefits, certainly you know a lot more about reduction of carbon footprints that I'll ever know. And also greenhouse gases.

But the solar energy, it's there, we see it every year. We think it can help California. It certainly will help our people here. The location has been studied and I appreciate the fact that you're here and reviewing this. And we certainly hope that you support it.

Thank you very much.

HEARING OFFICER RENAUD: Thank you. Tom Dubose.

MR. DUBOSE: Good afternoon. My name is Tom Dubose. I am a co-owner of a local company here called Development Design and Engineering. We're a land-planning civil engineering/surveying firm here in El Centro.

I'm also the Second Vice President of the Building Industry Association, the Desert Chapter. As you can imagine, that is a crippled industry at this point.

And we need new opportunities and new stimulus with which to put our people back to work in building housing product.

I've lived here all my life. I've raised my family. This is where I do business. And I feel like that in Imperial County we've always taken the approach of being more concerned about ourselves than anyone else. And I'll give a couple examples.

At great taxpayer expense to the citizens of San Diego there was a long, drawn-out, debated analysis of which to place an airport. And at the end of the day when one of those considerations was Imperial County, our approach in Imperial County was to say that if you don't want it, we'll take it. And we asked the populace to vote on that. We didn't go to San Diego to say you really don't want that, it's not good for you.

And so I get a little concerned when I hear outside interests who say that they're interested in our welfare. I think you will find,

through these hearings, that the majority of people who are residents of Imperial County, are going to tell you what we feel like is in our best interests.

Because in the past we've been affected by what somebody else doesn't or didn't want, but you guys could take it down there.

As a business owner who built a new office building, I tried to do the environmentally right thing, and we were recognized and we appreciated the District in recognizing us for our energy efficiency in our new building.

And yet, when I get ready to solar that rooftop up, I'm going to be lucky to generate enough electricity for my office, much less someone else's at another location.

As I look at some of the agencies and I hear some of the agencies here over a period of time, I think that we have looked upon some of those agencies as a threat to our economy with some of the decisions, whether it be offroad or open-space use.

And I think this is an opportunity for some of those same agencies to come to our rescue and benefit us with this much-needed opportunity

of this new industry. This is something that I think the majority of the citizens of Imperial County want, and we're looking forward to, as we need to continue to expand and grow opportunity.

We are providing, we believe, a service to a lot of others, other than us. And, as mentioned earlier, everybody seems to want to have some of our resource. We'd like to have that resource under our terms and conditions. And we feel like the permitting through this process and the hard work that you have to do will allow us to do it.

The last thing I'll say is I'll not profess to be an expert in something I don't know. But what I do know and I'm very comfortable with, as I deal with this every day, that the environmental process that you are underway with now will, in fact, sort out all of these issues.

And so when you get to that conclusion, and we feel it will be positive, just remember that the majority of the constituents and voters and residents of Imperial County said that this is something they want.

Thank you.

HEARING OFFICER RENAUD: Thank you. Do

you want to --

PRESIDING MEMBER BYRON: Yes, I understand that's all the folks that have indicated they want to speak at this preliminary hearing or site visit, as we refer to it.

I'd like to thank you all very much. Excellent comments, all. It gives us a good sense, as Commissioners, as to what the public concerns are around this project.

But I'd like to emphasize that no decision has been made. We will be making our decision based upon facts and the evidence that's presented before us.

There's a lot of work to do. If we were to think of this as a football game, it's early in the first quarter here. We have a long way to go before we know the outcome of this proceeding.

And so I think, unless my Associate Member has any other comments -- none? I think we're ready to go take a tour. Mr. Renaud.

HEARING OFFICER RENAUD: Yes, I understand there are buses waiting. Are they out on Main, or do we know where they are? Probably if everybody just troops downstairs it'll be -- it'll be self-evident.

And we'll board those and head out as quickly as we can so we still have some daylight.

PRESIDING MEMBER BYRON: Exactly. Let's proceed post haste. Thank you, all, very much.

(Whereupon, at 4:15 p.m., the informational hearing was adjourned.)

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CERTIFICATE OF REPORTER

I, TROY A. RAY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Hearing; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 4th day of December, 2008.

APPENDIX L

TRANSCRIPT OF THE DECEMBER 18, 2008, WORKSHOP/MEETING

BUREAU OF LAND MANAGEMENT AND ENERGY COMMISSION STAFF DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT (08-AFC-5)

THURSDAY, DECEMBER 18, 2008

Imperial County
County Administration Building
Board Chambers
940 Main Street
El Centro, CA 92243

TRANSCRIPT OF PROCEEDINGS

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BUREAU OF LAND MANAGEMENT AND ENERGY COMMISSION STAFF DATA RESPONSE AND ISSUES RESOLUTION WORKSHOP/SCOPING MEETING FOR THE SES SOLAR TWO PROJECT (08-AFC-5)

TRANSCRIPT OF PROCEEDINGS, taken at Imperial County Administration Building, Board Chambers, 940 Main Street, El Centro, California, commencing at 1:00 p.m., Thursday, December 18, 2008, before Sandra Riley, CR No. 50730.

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THURSDAY, DECEMBER 18, 2008
1:15 P.M.
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MR. MEYER: Okay. While we get our access, I have a few remote staff that will be working to try to follow what we are doing over the Internet. So we are trying something a little new, so we're just getting the bugs out on the IT stuff. So while we are doing that, why don't we do some introductions on who is here.

And I'll start with the Energy Commission staff. I'm -- My name is Christopher Meyer. I'm the Energy Commission's Project Manager focusing on the CEQA side, the California side of the joint BLM and Energy Commission process.

For the Energy Commission staff I have Karen Holmes who is staff counsel, Bill Walters, who is our air quality expert. I have Mike McGuirt, who is our archeologist on this project. And I will turn it over to Jim from BLM to introduce himself and his staff.

MR. STOBAUGH: Hello. I'm Jim Stobaugh. I'm the assigned Project Manager for the Bureau of Land Management. I'm actually stationed in the -- up in Reno, but I've come down to work with Vicki Wood's staff here in the El Centro office that is the recipient of this right-of-way application under the Bureau of Land

Management.

Vicki -- Can I ask, Vicki Wood back here as the Field Manager of the El Centro Field Office here. And, Vicki, let me ask you this, let me impose upon you, if you would, to have your folks with BLM stand up and give their name, if you would. They're hear listening as well.

MS. WOOD: I'm Vicki Wood. I'm the Field Manager.

MR. ZALE: Tom Zale, Associate Field Manager.

MS. SIMMONS: Carrie Simmons, Archeologist.

MS. DREYFUSS: Karen Dreyfuss, NEPA Coordinator.

MS. HAGGER: Jeannie Hagger, Archeologist.

MR. STEWARD: Daniel Steward, Resources Branch Chief.

MR. STEIN: I'm Al Stein. I'm Chief of Resources in BLM's District Office in Moreno Valley.

MR. STOBAUGH: Did we get everyone from BLM? Thank you very much. I wanted some of you folks to see the faces with the names here. They will be involved with this project. And that's it for the Bureau of Land Management. Thank you.

In case -- Christopher is going to talk about this a little bit, but the first -- for those of you who have seen the announcement, the first part of this

meeting is the Data Response and Issues Resolution Workshop, which CEC is largely heading up with BLM assistance here. Then in the afternoon after we have a break from 5:00 to 7:00 is more geared to what BLM's requirements in running through the National Environmental Policy Act process, and that's scoping, of which this is the second scoping meeting, in fact, held in this very room; we had the first scoping meeting on November 24th. This will be the second and the final scoping meeting -- public scoping meeting we have. And you will be provided an opportunity after five o'clock to present any verbal comments you wish to have.

Let me ask anybody that's wanting to speak at that session, if you will go out front, if you haven't done so already, and please sign in one of these cards right here that's talking about Solar Two Project Forms, so we get your name, who you represent, and your contact information to follow up with. Okay. That's all I really have, Christopher.

MR. MEYER: I'll turn it over to the Applicant to introduce themselves and their staff.

MR. HARPER: Hi, I'm Kevin Harper. I'm the Project Manager for Solar Two, or for Stirling Energy Systems. We have a number of people here today to help us with the responses and all as we go through the

information at the workshop here today. And a number of them will engage you today and talk with you about some of the responses that have been provided.

I'll introduce some of them real quickly here. We have Angela Leiba who is the URS Project Manager. We have John Egan who is our Senior Director for Project Development. In the audience here we have Emily Bierman, who has been great help with public involvement. She's done the story boards you see here in the back of the room, which I hope you get to look at at some point during the meeting.

We have Julie Mitchell with Air Quality; Pat Mock with Biological Resources; Teresa Miller with Biological Resources; Brian Glenn with Cultural Resources; Bob Mutaw with Cultural Resources; Ginger Torres with Land Use; Seth Hopkins with Associated Economics and Visual Resources; Noel Casil with Traffic and Transportation; Matt Moore, Water Resources; and last but not least Tricia Winterbauer, Waste Management by phone when we actually get her, so thank you.

MR. MEYER: I think what we are going to have to do is try to hit some of the topics where we have people --

MR. FOLEY: Can I introduce myself?

MR. MEYER: Oh, I'm sorry. We have a

representative from one of the intervenors here, who will introduce himself.

MR. FOLEY: My name is Paul Foley, and I'm here on behalf of California Unions for Reliable Energy, and we've been granted intervenor status in this proceeding and will be fully participating as a party.

MR. MEYER: Okay. Can the people on the line actually hear me?

(IN UNISON): Yes.

MR. MEYER: Okay, wonderful. Okay. For those of who you who are not familiar with the kind of data response issues resolution workshops that the Energy Commission holds, what is this is is what we refer to as the discovery phase of our -- of the Energy Commission process, very similar to the BLM process, where we are trying to gather additional information that we felt was not either completely explained or staff had additional questions in reviewing the application from the applicant.

And so in the first phase of this, staff provided 52 requests in various technical areas to the Applicant. And they -- On the 9th of this month they provided responses. This is an opportunity for staff in the public forum, both Energy Commission and Bureau of Land Management staff, to ask clarifying questions of the

Applicant on any area that we weren't completely clear on what their responses were or if we had some additional follow-up issues.

So our process, you know, we try for complete transparency, and this is an opportunity for the public to see exactly what the issues are on the case very early on in the process.

The results of these data requests will help us produce our preliminary documents. It will be a joint BLM/Energy Commission document, which we will call Preliminary Staff Assessment/Draft Environmental Impact Statement. So, and the whole focus between Jim and I on this is to produce one document that everyone can review on the whole process, both on the Energy Commission side and on the BLM side.

So usually what I try to do is we have several people on the phone that have joined us. I have -- Let me just double check to see who has been able to join us. I have Joy Nashida. Who is the Energy Commission's biologist working on this case. Heather Keresztes, who is the Energy Commission's traffic expert on this case. And Negar Vahidi is doing land use on this case. And I also have Casey Weaver, who's in charge of soil and water.

And what I will tend to do, some of these

areas are fairly minor, so I would like to get through those first and then step back to some of the more complicated issues.

So I'd like to look at biology first. And that is going to be -- start with Data Request #1, and I'm going to put my mic over and see if you can hear Joy on any questions she has.

And, Joy, I'm going to turn this over to you.

MS. NASHIDA: Okay. Let's just start moving on here. I don't need anything for -- for the following Data Requests: 1, 2, and 3, 4 at this point. A lot of these things we need to work out, you know. These are documents or whatever that need to be dealt with down the line. These are things -- documents with the joint BLM documents that have to be worked out with that agency. So we can go ahead and move on. I would like to start with Data Request #5, okay. Can you guys hear me okay?

MR. MEYER: Yes, you're coming in well.

MS. NASHIDA: Okay. All right, you know what? Here I asked -- my Data Request was regarding a detailed marketing plan for the evaporation ponds. And, you know, I -- I'm not certain, where are the evaporation ponds going to be located on the project site? What are the dimensions of these evaporation ponds? You know, what slopes -- the steepness of the slopes of the evaporation

ponds? What is the free bore, what will it be lined with? All these questions here I have for the evaporation ponds. So some clarification on that would be great.

MS. LEIBA: I have Pat Mock here, our Senior Biologist, who can respond to that.

MR. MOCK: Well, I think it's really -- if, John, if you can describe where the actual ponds are going to be sited. I don't think it was clear.

MR. EGAN: The ponds are very close to the main operation building. I don't have a map available to put on the screen right now to show you, but they're quite close to the main building.

MR. MOCK: And in terms of monitoring the evaporation ponds, I think the intent was to, one, evaluate the constituencies of the evaporation pond fluids to confirm whether there was any trace elements that were being concentrated that might be harmful to the wildlife. And if we did find some accumulation of trace elements such as selenium, or things like that, that would be of concern and then we would monitor the pond constituency for at least a quarter or two to confirm that there was definitely a risk or not.

And then, also, we could be monitoring the actual use of the ponds by wildlife and see if there is

any risk at all for those ponds. And if there was a risk determined, then we would develop some kind of a covering design to exclude the wildlife from the ponds.

MR. HARPER: If I could interject, also, is there something with BLM, for instance, looking at the evaporation ponds, is there anything that we could look at as far as proactively as part of the process in managing those evaporation ponds that might be of use for us to consider now or talk about as a part of this response?

MR. STOBAUGH: Right now at this time largely we are looking at listening on what is going on between the CEC and the Applicant and gathering this information ourselves. Unless somebody, you know, is prepared to otherwise advise, no.

MR. HARPER: One thing I was thinking of is possibly some regular testing, for instance, of the water.

MR. MOCK: We recommended quarterly testing as part of our proposal.

MR. HARPER: Okay. Good.

MR. STOBAUGH: We are capturing all of this right now as far as everything that is being discussed here and as far as our own considerations as well in working toward the administrative draft EIS so.

MR. MOCK: Any other questions, Joy?

MS. NASHIDA: Yes. So any idea on dimensions of these ponds?

MR. MOCK: That's another design question. How large are the ponds?

MR. HARPER: Actually, what I would like to do is ask Ned Araujo from Stantec, if he could provide some information. He's actually been working on the design of the actual projects.

MR. ARAUJO: Good afternoon. My name is Ned Araujo. I'm with Stantec. I'm the civil engineer for the project. As far as the evaporation ponds, they're currently sited just north of the main buildings, at the main services complex.

MR. MOCK: How big are they?

MR. ARAUJO: The size hasn't been determined specifically at this point. However, the intent is to use 4:1 site slopes. And the size would be sized appropriately to basically have complete storage of the water for one year. And we were planning on having two separate ponds where we would have basically one year storage in one and switch it over to the second one.

MS. NASHIDA: Okay. Can you please repeat what did you say about the slopes of these ponds?

MR. ARAUJO: The slopes for the ponds are planned

at 4:1, all slopes.

MR. MEYER: Did you catch that?

MS. NASHIDA: Yes, I got that, 4:1. Okay, here is -- okay, as far as a wildlife standpoint goes, the steeper the slope, the better, just because you have less shoreline for wading birds to be able to -- to go through there. The steeper it is, the less attractive it is to these wading birds, and it becomes less of an issue with certain birds. So I just wanted to throw that in there right now.

MR. ARAUJO: Do you have a slope that you would like to see at this point? We were planning on lining those basins, so we could go 2:1, if you feel that that's appropriate.

MS. NASHIDA: Okay. You know what? Let me get back to you on that. And it's good to hear that you can go 2:1. But, you know, I will definitely need to find out more specific information on that. All right?

MR. ARAUJO: Great. Thank you.

MS. NASHIDA: All right. Thank you. And you said the ponds would be totally lined, correct?

MR. MOCK: Yes.

MR. NASHIDA: And will there be monitoring for any leakage from the ponds?

MR. MOCK: I think that could be accommodated by

the program.

MS. NASHIDA: All right. Great. Thank you.

MR. MEYER: Okay. Joy, does that take care of your questions?

MS. NASHIDA: Yes, for Data Request 5, yes.

MR. MEYER: Okay. For anyone that didn't hear that, she said, yes, for Data Request 5. Do you have any further data requests you need clarification on?

MS. NASHIDA: Yes. Okay, I'd like to go on to Data Request -- Okay, this has to do with closure here. So BLM has a lot of issues with abandonment on public land, and that's something that they -- they need assurances that this isn't going to happen.

One of the things we need to discuss, I guess, is regarding Data Requests 8 and 9, and it has to do with how in case -- in case the company goes belly up and there isn't any money, you have no more money for the project to be decommissioned. They essentially want assurances that this isn't going to happen -- not so much go belly up, but they want assurances that the money is going to be there to take apart the solar plant.

So anyway, one of the -- one of the responses to my question was regarding potential funding for decommissioning and restoration of the project site. This is Data Request 9. I was talking to my BLM

counterparts, and they -- I'm afraid the scrap value of metal, steel, and copper isn't going to cover the cost for decommissioning. And what the BLM really needs is a bond to deal with this. And so the Applicant needs to discuss with BLM a plan on how to get this -- get this going.

MR. HARPER: Yeah. We are planning on actually, you know, we are right now developing a closure plan for the project. And it's something that I think has even come out of the solar thermal power plant guidance for PODs, also, Joy, I'm not mistaken, that you have to have that as a part of it.

As far as with funding beyond just scrapping the equipment and all, yeah, there is a bond with BLM that we will be looking at, negotiating that with them. And, Jim, do you want to provide any more information about that?

MR. STOBAUGH: Yeah, we've talked a little bit about that, you know, this morning. Bonding would be one of those conditions or stipulations as part of the grant itself. And the determination is to be made by the BLM as a part of the condition of the grant.

And the way it has to be looked at, especially if we are talking about a, hopefully, not an insolvent situation, is what would it take the Bureau to

decommission and reclaim those lands to bring them back the way it was prior to its management. So those figures would have to be determined based upon information we have of similar types of actions such as a mining reclamation, or something of that nature, or components thereof, that we would have made available to us to see what the size or figure of the bond would be as part of the condition of the grant issuance.

MR. EGAN: Jim, just one comment on that. Our intent from the start really wasn't to rely totally on the scrap value. The idea here, we have no idea what scrap value will be 20, 40 years out. But the idea is that scrap does have value. So the hope would be to reduce the bond slightly, or some, by using scrap value. Because these pedestals can be withdrawn from the ground and quite a bit of steel can be recovered.

MR. STOBAUGH: Again, the figure at the time of issuance of grant is what would it take the Bureau at its current knowledge to reclaim that. So if there is compensation, if you would, that could be redeemed from that, maybe so; but it's not the factor that's coming up with the figure that we would be using.

MR. HARPER: Just to go a little further, I would say that if there is anything beyond just the bonding issue that, you know, can be determined later, if there

are things in the decommissioning plan that you would like the Applicant to satisfy, if there's a list of items, if those things could be forwarded to us, that would definitely help our consultant in making sure it meets, you know, what BLM and CEC require for that.

MR. STOBAUGH: Kevin, in response to that, part of what is the process is you have the application for certification, which we are using in gleaning parts of it there for our plan of development. Eventually the plan development, which has some dynamics until all parties know what is involved with this project, its plan, its construction, operation, and even decommission, we'll eventually get to that point to where we will develop a final plan of development which will be one of those other, and if not the most critical stipulation with the issuance of the grant. So we will have those established at that point.

MR. MEYER: Okay. Joy, does that cover the question on that?

MS. NASHIDA: Yes, it did. Okay. Daniel, do you have any comments to that?

MR. STEWARD: I'm good.

MR. MEYER: He's saying that he doesn't have any additional comments.

MS. NASHIDA: Okay. All right. So this takes us

right to Data Request 11, and I think this was answered with regard to the discussion regarding closure requirements. This will be need to be done sooner rather than at the time of decommissioning, so this is something that needs to be worked on, worked on with BLM and CEC. Essentially, we should get going on that soon here.

MR. HARPER: And the Applicant will make every effort to make sure that when we look at the local ordinances and in working with the County and also with the other agencies, to comply with what they provide as far as guidance in looking at decommissioning plans.

MR. MEYER: Given the construction we have for the project we have a little bit of time before we start pulling things down. Okay, thank you.

MS. NASHIDA: All right. And I think as far as any other questions, I think -- I think I don't -- I think everything is pretty much answered. I don't have anything else to add and, you know, I'll let other reports that are supposed to be -- are forthcoming later on in the first quarter of 2009, so I will be awaiting those. And I think I'm fine. Unless Jesse and Daniel have anything else to add, then I think I'm done.

MR. MEYER: Okay. I think that's all the comments we have.

MR. HARPER: So does that take care of 1

through --

MS. NASHIDA: One through fifteen.

MR. MEYER: That takes care of Data Requests 1 through 15 for biology.

MR. BAKER: Christopher?

MR. MEYER: Yes?

MR. BAKER: This is Steve Baker. I would just like to check in. I'm ready when you have time.

MR. MEYER: Okay. Steve, I think you just had one. Do you want to hit your -- you had three data requests while I have you available?

MR. BAKER: Sure.

MR. MEYER: Steve Baker is the Energy Commission specialist on several areas, including power plant efficiency. So go ahead, Steve.

MR. BAKER: Okay. In the responses to Data Requests 24 and 25, you gave a volume of hydrogen as 196 cubic feet and 200 cubic feet per year, but without the pressure that's meaningless. You know, in order to know how much hydrogen we're talking about, we have to know what pressure you're measuring that volume at.

MR. HARPER: Yeah. We'll provide that information for you.

MR. BAKER: In Data Request 26, you say that you use 24,400 thermals of natural gas. In what time period?

Is that per year per month, per day, per hour?

MR. HARPER: Yeah. We'll look at that and see. We'll try to come back to that during our time here.

MR. BAKER: That's all I had, Christopher.

MR. MEYER: Okay. Thank you, Steve. If you're not able to stay with us, I will take notes on that and get the information to you.

MR. BAKER: Thank you. Bye.

MR. MEYER: Thank you, Steve. Okay.

MR. FOLEY: Christopher?

MR. MEYER: Yes.

MR. FOLEY: Before -- If we are going to move on from biological, maybe I will just ask a few clarifying questions now.

MR. MEYER: Yes.

MR. FOLEY: I know we didn't spend any time on Data Request 1, which had to do with jurisdictional waters. I just wanted to clarify what the document that was provided is. Is this for a preliminary jurisdictional determination or is this for an approved jurisdictional determination, the application that was provided in the data response?

MR. MOCK: We filled out a jurisdictional form that the Corps requested of us, and it was filled out to be determined whether our jurisdiction was appropriate or

not.

MR. FOLEY: So it was for an approved jurisdictional and not a preliminary jurisdictional --

MR. MOCK: Yeah. We are not assuming preliminary on this.

MR. FOLEY: Okay. And the other question I had is on this page there's a box checked off concerning -- it says, "Check if other sites are associated with this action and recorded on a different JD form." And that's checked, so I just wanted to know, are there other JD forms out there that are associated with this project?

MR. MOCK: That's a mistake. That should have been unchecked. It's only one site and so the only channels that we're evaluating are the ones that are actually on the site itself.

MR. FOLEY: You're not requesting anything for the linear?

MR. MOCK: They won't be affected since there's no linears associated with the transmission line that we are going to be affecting; they will be spanning those.

MR. FOLEY: And what about the water line?

MR. MOCK: I don't believe there are any -- offsite, I don't believe there's any --

MR. FOLEY: What I'm asking is, is a jurisdictional determination being requested for either

the transmission line or the water line?

MR. MOCK: Possibly for the water line, but I don't believe there are any channels associated with the water line that are off-site. All the channels that we identified are on-site.

MR. FOLEY: And I don't know if BLM has the answer to this of whether any other jurisdictional determinations have been sought associated with this project by BLM with the Army Corps?

MR. STOBAUGH: At this time, I don't know.

MR. FOLEY: I mean, in terms of the FNZI that was issued for the geo-technical.

MR. STOBAUGH: I would have to pan back and see. I'll say this, let me just take note of that and get an answer to you.

MR. FOLEY: Okay, great. I just had a couple more questions having to do with biological. Now, is it correct that there isn't any data out that there SES has in terms of the scrap value of the metal? I understand that this is going to be part of the closure plan, and I just wanted to understand if as part of this Data Request this information will be provided in the closure plan or will there just be kind of an assumption that it has some value?

MR. EGAN: I think at this point it will have

some value. The trick is how to put a value on something that goes 20 to 40 years out. We will probably put a fair market value based on current production numbers and try to inflate it using the implicit price inflater.

MR. FOLEY: So you will provide present value?

MR. EGAN: Present value at the start, and we should also inflate it.

MR. FOLEY: And it will have a geographic weighting in terms of where the scrap metal would be headed to because I know that's a big issue?

MR. EGAN: Yeah, I understand. That's a decent thought.

MR. FOLEY: Okay. That's all I have for biological.

MR. MEYER: Thank you very much. Okay. I think at this point why don't we hit I think soil and water resources. Casey, are you available?

MR. WEAVER: Yeah, I'm here.

MR. MEYER: Are you ready to ask any questions on yours?

MR. WEAVER: Yes, sure.

MR. MEYER: Casey Weaver is the Energy Commission's staff working on soil and water resources. And this starts with Data Request 29, and I'll turn it over to you, Casey.

MR. WEAVER: Okay, thanks. Hello, everybody. Let's go right into Data Request 31. The request was to submit a draft erosion sediment control plan. And the response was that it will show up in the first quarter of 2009.

You know, we need to have the document in order to evaluate it, to perform our analysis on it, so I assume that that will be timely for the due date of our analysis. Is that an accurate statement?

MS. LEIBA: Yes. This is Angela Leiba. I thought I would just answer for Matt Moore, our water resource expert. Yeah, we're currently working with the engineers to develop the DES/SEP, so we do anticipate that in the first quarter of 2009 we will have a prepared analysis and incorporation.

MR. WEAVER: That's got to be a daunting project.

MS. LEIBA: Yes.

MR. WEAVER: Well, I'm looking very forward to seeing that. I guess it would be the same comment on Data Request 32.

MR. MOORE: Yes. This is Matt Moore with URS. It will be a combined DES/SEP and storm water pollution prevention plan.

MR. WEAVER: Right. And do you have any idea when in the first quarter of 2009 that would be?

MR. MOORE: Not at this time, we can keep you updated on our progress as we move forward.

MR. WEAVER: You know, my only concern is that I will have to review it, analyze it, digest it, all the things that we have to do with it prior to completion of our PSA.

MR. MEYER: Casey, does it give any value if there is anything in draft form for you to look at earlier or is it easier to look at all at once?

MR. WEAVER: Yes, it would. And as far as the PSA, I think, and the FSA would have to be completed. But in the PSA, I mean, really kind of seeing an outline even that, you know, you are addressing all the specifics and we are both on board with where you are going with it, I think it would be of benefit.

MS. LEIBA: I think what we could do is at least provide a table of contents for the joint DES/CEP, to make sure that we're including everything that both agencies want to have.

MR. WEAVER: I think that would be really helpful.

MR. MOORE: Casey, this is Matt Moore again. Stantec is, you know, preparing a storm water pollution prevention plan to go along with the preliminary engineering 35 percent design, which is going to be

coming out mid-January. So that may be something we could get to you in a draft format.

MR. WEAVER: Sure. That sounds good. You know, looking at the size of that, you know, that's a huge job. I'm wondering if you are going to do it, you know, individual tower level or concept, you know, procedure. You know, I'm curious to see how you are going to tackle that.

MR. MOORE: Yeah. We can work with you on that or get you an outline of how we are going to proceed.

MR. WEAVER: That sounds good. Appreciate that. Okay, in Data Request 33, the request was to provide the schedule and estimated average in maximum water use for the mirror washing. And you did a good job on discussing the average. You know, you went through all that. But we need really a description of the estimated maximum. That's kind of the hinge point of what we look at. You know, average is good so that you can kind of see what is out there, but we really need to see the maximum.

MR. HARPER: Yeah, we will get you that information.

MS. LEIBA: We have those numbers from the AFC; they are included in there. I have some of those with me, if you want me to go through those.

MR. MEYER: And just for the members of the

public, it is sort of the subsequent information we get in, you know, follow-up to questions that any of the parties may have, that will be docketed so that it's available for the public as well.

MR. WEAVER: Okay. Then Data Request 34, we asked for a description of management measures that U.S. Gypsum employs. And the response was that there is an EIS publicly available. Do you have a reference for that or an electronic version?

MR. HARPER: Yeah, we can provide you that as well.

MR. WEAVER: Okay, that would be good. One last thing is the water budget. You did a good job on the construction, but we need the operations water budget as well.

MR. HARPER: Okay. Yeah, we will work that up for them as well.

MR. MOORE: To clarify, is that -- you are referring to Data Request 36?

MR. WEAVER: Yes, that's correct.

MR. HARPER: So 35 was fine, then?

MR. WEAVER: Yes. I'm sorry, yes. Thirty-five looked pretty good.

MR. HARPER: Okay.

MR. WEAVER: Yeah, 36 and, again, the

construction looked fine. We just need an operations water budget as well.

MS. LEIBA: Yeah, again, we have that in the AFC but we can provide that again.

MR. WEAVER: I didn't hear that.

MS. LEIBA: I'm sorry, this is Angela Leiba from URS. We have that information in the Application for Certification, but we can pull that up again and make sure we provide that to you.

MR. MEYER: Okay. How do the other ones look, Casey, 37, 38?

MR. WEAVER: Yeah, just say that again, Christopher.

MR. MEYER: How do 37 and 38 look?

MS. LEIBA: Well, actually, 37 and 38, the Applicant, we've asked to have more time to respond to those.

MR. WEAVER: Okay. That's all I have.

MR. MEYER: Okay. Thank you very much, Casey. Before you go, Casey, any other questions from the parties on soil and water resources?

MR. FOLEY: I have just a few questions.

You mentioned the preparation of a slip. Is that going to be -- Is that anticipated to be for a general storm water construction permit?

MR. MOORE: That's correct.

MR. FOLEY: Has the local water control board been contacted yet in terms of what their requirements are?

MS. LEIBA: It's part of the process. The regional board and all of the agencies that would be required to view it would be part of the process to see what we are doing.

MR. FOLEY: I understand that, but they have not been contacted yet?

MS. LEIBA: Well, through the CEC process they've come on board as one of the agencies that will be reviewing all of the documents in relation to the project. And so they will be on board and they have been from the beginning.

MR. FOLEY: Okay. I mention this only because, obviously, it's their discretion whether or not to issue a general as opposed to an individual construction permit. So I was wondering if there has been any contact in terms of their analysis of the project.

MS. LEIBA: At this point I don't think we have any determination yet.

MR. FOLEY: And, also, in terms of the information that's being sought from U.S. Gypsum, is there an air permit that will be obtained that presumably

U.S. Gypsum retains?

MS. LEIBA: We should get into that with air quality. Is that okay?

MR. FOLEY: Sure. Yeah. That would be part of the dust mitigation, and my understanding is that only an EIR is only been sought at present in response to the data request.

MS. LEIBA: I'm unclear what U.S. Gypsum is doing at this time. But maybe once we get to the air quality section we can talk about dust and air emissions with respect to an air permit.

MR. FOLEY: Okay.

MR. MEYER: Does that take care of it?

MR. FOLEY: Yes.

MR. MEYER: Thank you, Casey.

MR. WEAVER: You're welcome.

MR. MEYER: Okay. We have Heather available. Heather, did you have any questions on the traffic and transportation data responses?

MS. KERESZTES: No, I'm fine. Thank you.

MR. MEYER: Okay. So staff has the data responses from the Applicant and doesn't have any additional questions on that. I can also just sort of for a little housekeeping, on the project description and socioeconomic, staff has reviewed the data responses and

doesn't have any additional questions at this point.

And on visual, I think we have the information we need on visual. There might be a very minor clarification. Staff, unfortunately, are on another project at the moment. And I think it's just they want to verify that the one KOP that was provided that the fence is not visible from any of the other KOPs.

MS. LEIBA: And I think we have at this time redone the simulation to incorporate fencing.

MR. MEYER: Okay. Great. Thank you very much. That would close out the visual at this time. Do any parties have any questions on visual?

MR. FOLEY: No.

MR. MEYER: No.

MR. HARPER: You know, I just want to make sure, again, because we ran through several resources there, just to ensure that BLM didn't have any further information requests or needs, also, for the different resource areas?

MR. STOBAUGH: Not at this time, no.

MR. MEYER: Okay. Why don't we hit land use. Negar, are you ready to ask any questions on land use which starts with Data Request number 16?

MS. VAHIDI: Yes. Can you hear me?

MR. MEYER: Yes, we can.

MS. VAHIDI: Okay. First, thank you for your responses. I just need to clarify something. I'm not sure if you have the ASP in front of you. If you could go to page 5.9-4, I know that -- the question -- the Data Request 16 asks for a little bit of clarification on the amount of project-related private land acreage which is under Imperial County jurisdiction.

I have found two numbers quoted, 360 and 480 acres. And you responded by saying 360 acres. But I was wondering if you could clarify a statement that's on page 5.9-4, which states that there's a total of approximately 720 acres of private parcels within the project boundaries, of which approximately 480 acres are included as part of the project.

And then it says, the remaining 240 acres are not part of the project. These lands are under the jurisdiction of Imperial County. I'm a little unclear on what that means.

MR. HOPKINS: That just means that they are private parcels under the jurisdiction of the County.

MS. VAHIDI: I'm sorry, I can't hear you very well.

MR. HOPKINS: That just means that they're private parcels under the jurisdiction of the County of Imperial.

MS. VAHIDI: What is, the 480 acres or the --

MR. HOPKINS: No. The portions of private lands that are not a part of the project, the remaining 240 acres that are not part of the project.

MS. VAHIDI: But they're within the project boundaries?

MR. HOPKINS: Yes.

MS. VAHIDI: So what does that mean? So, if they are within the project site boundary, are you saying that there is no activity on those 240 acres?

MR. HOPKINS: Yes.

MS. LEIBA: Yes, Negar, as clarification, it is kind of confusing. There are private parcels within the project boundary that are considered not a part of the project, and those are the numbers that Seth and Ginger have written in the land use section.

MS. VAHIDI: Okay. The reason I need to get clarification is because we need to, you know, describe the land disturbance impact accurately, which will be beneficial to everybody.

So I guess just to get confirmation, you're saying 360 acres of private land only under jurisdiction of Imperial County that are part of the proposed project.

What is odd to me is if you have a -- I guess this is what I'm confused on. Usually when you have a

project site it's considered, you know, regardless of whether you are doing anything on it or not, you are going to acquire it for the project and it's part of the project, even if you are not -- if have no activities on it.

MR. HARPER: Yeah, if I could, I think what we are trying to do here is that right now we are working with the different property owners there, looking at leases, purchases for some of those properties. But right now we are considering those not a part of the project so.

MS. VAHIDI: So you are not going to gain -- I don't understand that. Is it that you are not going to get site control over those?

MR. HARPER: Right. There is a part of the property -- There is a large block of property there that is private and then another smaller property that is 80 acres. Some of that private parcel there, it's owned by several different owners, of course, some of those we are working on an agreement that will be a part of the project. And then there's another part of it there that is not a part of the project. It's not something that we are currently seeking right now with the private landholders.

MS. VAHIDI: So, again, if it's not part of your

project and you're not going to seek site control, why would you consider it part of your project boundary?

MS. LEIBA: Well, it's just within the project boundary.

MR. MEYER: You know, I think I can -- Negar, I think I can clarify. Several of these projects, just because of their size, you know, you are drawing a big square and of that acreage there are parts in the middle that are outside. They are not part of the project but they just happened to get sort of surrounded by the rest of the project.

MS. VAHIDI: Well, that I understand. One of the reasons I asked this question, which leads me to the rest of the data requests that I'm going to ask for clarification on, is the issue of site control is pretty important to the Commission. And we are going to have to -- the Commission is going to want to see in the land use PSA what you are going to do about site control as definitively as you can. And if you can't, we are going to have to condition it. So that's why I'm bringing up this issue because it's come up on recent cases. You know, we are just trying to be proactive so we stay on schedule, you know what I mean.

So with that said, that's the reason for trying to get as specific as we can. Which goes -- takes

me to Data Request 18, which is a good segue, regarding the ownership of the non-BLM portions of project lands. And, you know, you stated that you are going to finalize the purchase or lease of the private property prior to the issuance of a final decision on this application.

We are probably going to -- I mean, I know that this is something you're working on. Could you keep us updated to the greatest extent that you can as far as the timing?

MR. HARPER: Yes, we will do that.

MS. VAHIDI: Okay, great. And regarding the Data Request number 19, this again is sort of a site control issue. The parcel merger question, and I know you are talking about, you know, you're trying to see if you're going to lease the lands or purchase them. And, obviously, if you are leasing them, it's going to be difficult to merge them.

So, again, this goes to the issue of the Subdivision Map Act compliance and trying to make sure that there is a legal parcel. And I just want to let you know that what has come up on recent projects, and I think that you kind of alluded to this in the response, if you keep the parcels separate, there are restrictions to develop -- there could potentially be restrictions to development on those parcels depending on setback

requirements, and so on and so forth.

In other words, if you have multiple parcels, each parcel will have its own setbacks, and you can't develop on top of those setbacks. So I want to give you the heads up on that because the Commission is going to want an answer on legal parcel status. So something you may want to think about, and I don't know if you want to see if there's a way to tie the lots together or look into that because it's definitely going to have to be looked at.

MR. HARPER: Yeah. We will definitely take your advice on that and look for resolution.

MS. VAHIDI: And I'm just giving you the heads up because you don't want to get to the FSA stage and, you know, have it hold it up, you know.

MR. HARPER: Definitely.

MS. VAHIDI: And I think -- oh, I think that's pretty much it. Yeah, I'm okay with the responses to the ag line questions, so I they we are clear on that. And I guess that's it. And I don't know, Christopher, do you want me to stay on for the issue resolution discussion?

MR. MEYER: If you could hold on for a little bit that would be great.

MS. VAHIDI: Sure.

MR. MEYER: Any questions from the parties on the

land use?

MR. FOLEY: I just have one question. The private lots which the project will surround, I understand why they are not presently part of the project description. But I have a question, will there be any grant of easements or other licenses to those properties as part of this project?

MS. VAHIDI: Do you want me to answer that or the Applicant?

MR. FOLEY: Anyone is fine.

MR. EGAN: I'll answer it. It's not possible to land lock someone so there will have to be access for that. If we don't acquire the parcel we will have to get them access out, so it will be set up so that they can leave the parcel, obviously.

MR. FOLEY: So those parcels will be part of the project in the sense that part of your project description will involve some kind of conveyance of easement or like rights?

MR. EGAN: If we don't acquire the parcel in the long term.

MR. FOLEY: But these are the two parcels in the map of the project plan that are designated -- not usually designated NAP, not a part of the project?

MR. EGAN: That's correct.

MR. FOLEY: But you are still making efforts to acquire those lands? I guess I misunderstood your response to the question previously, and I thought you were referring to other private lands within the project boundary.

MR. EGAN: There is actually more than one owner of the larger parcel. There are several owners of the larger parcel.

MR. FOLEY: I see.

MR. HARPER: That's why I said the multiple owners of that. Jim, did you want to talk a little about the access and what you have to do for BLM?

MR. STOBAUGH: Well, there's going to be the legal access to the parcels. So if they don't already have them, it will be part of the equation we have to take into consideration.

MR. FOLEY: And I guess the other question I had pertains to not these two parcels but the other private parcels within the project boundary. Am I correct in assuming that you at least have an option on some of these properties at present or not?

MS. LEIBA: Right now we are working toward site control, and we will have to get back to you on the specifics with each parcel.

MR. HARPER: Yeah. We will take a look at that

because we are in the middle of several, you know, trying to work through that with the private landowners. But we can try and get you that information.

MR. FOLEY: Just very general. I don't need specific parcels but just to know where you are in the process of obtaining site control.

MR. HARPER: Right.

MR. MEYER: Okay. If that closes out our questions on -- from the parties on land use, that takes us through the major issues on waste, unless I have anyone on the phone. I'm not aware of any questions on the responses we have received from the Applicant.

Jim, do you know of any questions from your staff.

MR. STOBAUGH: (Shakes head.)

MR. MEYER: Okay. So that takes us through the responses, the 52 responses to the data -- Set One, Part One of our Data Requests that the Energy Commission staff and BLM have put together.

What we have also done is there are a few areas, such as air quality and culture resource, due to their complexity and timing, they were set out as a separate -- as Data Request Set One, Part Two. And at this point we haven't had responses to those yet, but we do have staff here to talk about it and to help clarify

any questions.

So I want to open this up now to air quality. And I have Bill Walters here from Energy Commission staff to answer -- ask any questions or see if we can get any clarification on the questions the Applicant may have on the requests that were sent out.

Why don't you come up and sit at the desk and that way you can keep the podium open for anyone from the staff from the Applicant. And just to let people know, it's like generally these workshops we really focus on the data requests and data responses. In this instance, we've split up the process and they haven't had a chance to respond yet. We are just trying to use this opportunity where we have people to clarify what exactly staff, both BLM and Energy Commission, are looking for to make sure that when we get those responses in, they're as clear and complete as possible.

MR. HARPER: Yes, and if I could just make a comment. Right now we are trying to prepare these responses, and so we are going to be requesting more time to do that, just so that's understood. Thanks.

MR. MEYER: Yes. Probably the most useful thing is to ask if the Applicant has any questions on the Data Requests that they received?

MS. MITCHELL: We have had a chance to look

through the Data Requests. We have actually had a chance to have a quick phone call with Will Walters and some other CEC staff to try at least to get a handle on the general direction that the questions were going.

And I think that with regards to any very specific questions, not at this present moment do we have really specific questions; but if you have any questions that you want us to try to help answer, we can try to do that.

MR. WALTERS: Well, since I don't have any responses to go from, I guess one of the things I just want to make clear in terms of what our questions and what some of the directions some of these questions are, in particular what we're looking for is to make sure that we understand all of the mitigations to be proposed, in particular for operations.

We understand that there may be some revisions to some of the definitions or requirements for some of the maintenance actions, as well as the emission calculations for those. And we want to make sure that those are clear. And then after those are done with the remaining emissions, or at least the mitigation that you are proposing that goes along with the creation of those emission numbers, to make sure all that information is very clear on what is being proposed by the Applicant to

reduce those maintenance operating emissions.

Obviously, when we first looked at it, you know, we looked at the numbers and we were looking at what we thought was a power plant in terms of the magnitude. So, obviously, some of the emission factors, the current emission factors, don't take into account certain things like the use of higher tier engines for diesel to knock down knocks, in particular, and some of the other pollutants as well as some of the others things that you might be able to take advantage of in terms of mitigation that we would probably be imposing anyways. Since for operation we are probably going to be looking at conditions that would be very similar to what we have for construction for vehicles; in fact, maybe even higher for vehicles and for fugitive dust, probably similar again to what we normally require for construction for the life of the project.

So, you know, things like, you know, fugitive dust plans or measures, essentially, what you are going to propose to have those as clear as possible in the responses so that we can go through, match the mitigation to the Commission calculations and make sure that we feel that everything lines up. And so when we start reviewing it and making our decisions on whether additional mitigation is required, that we start from a good solid

foundation.

MR. HARPER: Sure. Just if I could add, we thought internally, because we've been looking at this at SES and going back and working with our engineers on this, and in going back and looking at it, we really looked -- it seems like we were providing basically the worst case scenario.

We've gone back and we started doing some recalculations. And things that we're going to be doing is, like, looking at the number of roads we have, reducing some of our east-west roads, potentially looking at the kind of vehicles that are being used at the site and how we are staging vehicles, larger vehicles around the site as well to, hopefully, cut down on the maintenance trips back and forth between, like, a certain area in the project.

And since it's such a large project area, having some things actually stationed out in the site and then minimizing the back and forth to the maintenance, the main building complex. So with those kinds of things we have already seen quite a bit of reduction just in the number of vehicle trips and things like that, just in considering that. So those are the kinds of things we are working on right now and looking at a range of vehicles as far as types of vehicles, what can we get by

with as far as are we going to stage things out in the different quadrants of the site. You know, how can we get people back and forth, things like that so.

MR. WALTERS: And some of our questions do relate to the description of some of those activities. So anything that would change with that description, in fact, providing more description really in terms of what maintenance activities are, how often they are required, why they are required at the frequency they are required, the exact actions that are required for them, so we understand that, okay, this requires this type of vehicle, a couple of personnel, and it takes this long to do, and this is what they are going to get it done.

MR. HARPER: Yeah. We will make that a part of our data response when we give it to you so we will give you a full picture of what it is that it's going to take.

MR. WALTERS: And I would also suggest taking a look at some of the things that are going to be proposed on some of the other solar sites, both in terms of construction equipment. Other things that I know we are considering are issues like distributed water systems that you may consider.

Obviously, the proposal is going to be yours and we will have to look at it and consider whether we think there may be other ways to reduce emissions even

further, depending on what and how well your mitigation has knocked down emissions, at least from the original proposal, which, you know, obviously from a knocks and P-10 view are higher than what we would have initially envisioned.

MR. HARPER: Right. The other thing is, too, is that we have -- I believe the BLM also has some data on recreation activities at the site, and those were part of the some of data requests, I believe. I'm not sure what numbers they are right now. But -- and we're going to be providing that information, also.

MR. WALTERS: It's 53 and 54, basically, the baseline site conditions.

MR. HARPER: Right, exactly.

MR. WALTERS: So, I mean, that's the major intent of the things that we need so that we really understand this type of project. Obviously, we have not evaluated this type of project before. We are in the process of evaluating other large solar projects, but this is a little different, and the maintenance requirements are a little different. We want to have a good understanding of what they are and what the impacts are going to be.

And with that, Keith is on the line. I would ask him if he might have any comments?

MR. MEYER: Just to let people know, Keith Golden

is the Air Quality Senior at the Energy Commission.

MR. GOLDEN: The only thing that I wanted to perhaps mention here is the conformity issue with the BLM and how that is all going to ultimately play out, whether there has been any -- we brought this up, and I think it's on some of our data requests. And I'm not really sure how the structure in which the conformity aspect of the air quality analysis is really going to be managed either with BLM or with the Applicant and BLM and ourselves.

MS. MITCHELL: With regards to the conformity issue, I think after the re-analysis of the maintenance vehicles, in not such a -- a kind of overestimation or conservative estimation of actual movement and vehicles needed, I think what we will see is that the emission levels will drop to a point where it will be below the threshold for a conformity analysis to be necessary. If it is not, then a conformity analysis will be conducted. But we have a feeling that once these are looked at in a little more detail that will be an unnecessary step.

MR. GOLDEN: Okay. All right. I don't think I have anything else. I think Will kind of pretty much touched on the issues I think we were discussing about the emissions. Was there anything as it related to the delivery of the equipment, all the equipment that's going

to have to be delivered on the site that perhaps the Applicant could elaborate or at this juncture are we just going to wait for the data responses?

MR. HARPER: I can tell you, again, just what our internal conversations have been in trying to look at this. And, you know, the things that we are considering now are looking at potentially with rail, for instance, seeing if that's a viable way to actually bring equipment into the site.

So, you know, we're right now just in the middle of our discussions and we hope to close these out soon so that we can get these data responses back to you for full review.

MR. GOLDEN: That's great. We noticed there was that rail spur out there, and we were thinking is that a possible access point for delivery of lots of materials via rail instead.

MR. HARPER: Right. Like, you know, for moving staff around the site, for instance, we're looking at using alternative fuel vehicles, looking at electric vehicles and things like that.

MR. GOLDEN: Okay, good. All right. I don't think I have anything else. We'll just await your responses and then we will go from there, I guess. Will, have you got anything else to add?

MR. WALTERS: Well, I have actually one more question, just sort of a wrap-up question. When should we expect to get the data responses or might we get the data responses in batches?

MR. HARPER: No. It will come as one set of responses. And we're looking at some point in late January, sometime in February right now, first quarter of 2009, to wrap up the responses and get those back to CEC/BLM.

MR. MEYER: And would that be air quality and cultural resources?

MR. HARPER: Yes, it will be both.

MR. MEYER: Okay, thank you. While we're on air quality, any questions from other parties?

MR. FOLEY: No.

MR. MEYER: Okay, thank you very much. I think we will jump on to cultural resources. We have Mike McGuirt with the Energy Commission. Carey, did you want to join us? And just like the situation for air quality, staff has not seen the data responses yet, and as you just heard, we will be getting them a little later. But this is just a chance for people to clarify exactly what we need and if you guys have any questions on what we are asking for.

Do you want to start off if you can clarify

any questions you might have?

MR. MUTAW: I think for the most part we are pretty clear on your requests, and we have a good idea where we are going to take the responses. I want to be clear on 111 and 112, though. They are kind of either/or is the way I'm reading them. If we are able to provide the response for the request for additional geo-archeological information based on extent data, that's 111, then we would not need to go forward with 112 where we would have to commission a geo-archeological kind of study specific to the project area.

MR. McGUIRT: Yeah, basically, we didn't want to come across as saying right off the bat that we wanted you to go out and do a geo-archeological field study. If you have access to existing literature that provides you that information that allows you to do the reconstruction of the historical geomorphology of the project site and make good arguments for why you believe it happened like it happened and that allows you to construct good physical context for the archeology there out there on the project area, then there is no need for you to go do field studies.

In the absence of that kind of information, you know, we would like for the Applicant to consider going out and doing the field work to acquire the data to

put together, you know, the basic physical context of the project area.

MR. MUTAW: Okay.

MR. MEYER: Any other questions?

MR. GLENN: No. Actually, I think we've had some good discussions so far, and we are on line.

MR. McGUIRT: Just for the public's information, we have approximately 317 cultural resources in the project area that we're trying to figure out how to dispose of between the BLM, the Energy Commission, and our Applicant. We have 254 archeological sites, 58 linear resources, most of which include prehistoric trails of one kind or another, and then five what we call built environment resources, which are buildings, structures, infrastructures, and things like that.

We submitted our Data Requests to the Applicant on the 2nd of December so they have had a little over two weeks to look at them. And we had a teleconference last week to help to clarify what were pretty lengthy data requests that we had of the Applicant. And so we wanted to be here today to see if in the interim you have had any more questions that came up and then we have a couple of comments we would like to make as well to further clarify some of the things we had said. Is there anything else you guys want to ask?

MR. GLENN: Not at this time.

MR. McGUIRT: Okay. So you all are working on responses to our data requests. And part of that response could involve, as is written in our Data Request, revisiting some of the sites to gather more inventory level data. We discussed that in our teleconference. Provisions will also need to be made to evaluate the historical significance of cultural resources the project will impact. And one of the questions we've been talking about is the schedule for that.

Ultimately, of course, data recovery will be necessary for those sites that the project will end up destroying. Data Request number 127 explicitly asks for Stirling to propose an evaluation schedule. What we were interested in was whether SES or not has had the opportunity to determine whether, and if so, when the corporation might revisit some of the arch sites to gather the additional inventory phase data. And, also, have you all had the opportunity to start fleshing out what you would like to see the timing be for the evaluation of the historical significance of the properties?

And where this is leading, ultimately, of course, is there is a lot of work to be done on these

sites. And then the question is, when -- how are we going to time that and how do you want to see that unfold in the process. So we are very interested in talking about schedule with you all and starting now instead of waiting until a later date further down the road to have that discussion.

MR. HARPER: Sure. Same here. We want to make sure that we work as closely as we can with the CEC and the BLM on this because we know how concerned the agencies are about the schedule and just that workload. I mean, it's an incredible workload beyond just what we're doing for CEQA and NEPA. So, yeah, we'll be diligent in that. And right now we are right in the middle of the responses.

If we determine things sooner than later, we will definitely get back to the agencies as far as if we need to go back out and collect more field data. If it looks like we're not going to have the literature, for instance, for the geo-archeological study, we will definitely get back to the agencies, of course, and the let them know that as soon we find that out and really try to maintain that relationship that I think we have had so far in the process.

MR. McGUIRT: I agree. We have been talking more or less informally about tiering our evaluations of the

historical sites and doing it on the basis of being able to group sites and to site types, looking at districts, looking at sites that won't fit into any groups or any districts that we will have to do individually.

One of the things that we would really like the Applicant to consider is, do they also want to tier the timing of that. Do they want to evaluate different parts of that at different times so that it might benefit both the Applicant and the Agency in getting that done at the critical junctures so that we are not hung up later down the road on that? And so we are looking, and we are hoping that the Applicant will begin to flesh out timing versus, you know, in the AFC process that we have and the NEPA process with the BLM, the joint process, your construction schedule, how you would like to see this unfold so we can start working out the nuts and bolts of how we're going to do that now.

MR. HARPER: Right. And I think it was Soil and Water Resources when we were talking about that. Someone had requested possibly if we have some draft documents or whatever. And I think that's what we will do is, you know, if we can provide something in draft form so that we can kind of make sure we're staying on the right road as we're moving through this, we'll do that if that is something you wish. I think that would help.

MR. McGUIRT: I think that would be helpful. Because as I mentioned, there may be a little work to do on inventory phase stuff, you have evaluation phase stuff, and this schedule that I'm talking about is ultimately probably going to wind its way into the agreement documents that are going to be involved for this down the road. So it would be helpful to start working on that now amongst ourselves. A draft of something like that I think would be very helpful.

MR. HARPER: Definitely. And include the schedule, too. We understand the urgency of the agencies on this.

MR. McGUIRT: Okay, great. Thank you. And in the teleconference we had last week, we came to understand that some of the prehistoric trails on the project site were identified using remote sensing and that a limited spot check by the Applicant has disproven some of those as trails. They look like it from the sky, but you got down on the ground and it didn't look like that.

The BLM and the CEC would like to have further trail verifications worked into our process. Does Stirling plan to do that?

MR. HARP: If that's something that the agencies request, definitely.

MR. McGUIRT: Basically we don't want to come across as looking silly by saying things are a bunch of trails that actually are not. So if we can verify --

MR. GLENN: That is our intent as well.

MR. McGUIRT: Great. Okay. There has been some work that has recently been done out in the field to check the correspondence between some of the archeological site records and the DPR-523 forms and the site descriptions in the technical reports.

As you all are aware, there are a number of discrepancies between the two data sets. As part of the Applicant's response to Data Request 117, the BLM and the CEC would like Stirling to ensure that the revised site descriptions are fully reflected on the site forms so that you can go back and forth between the two. Otherwise, it looks like we don't have it all together.

MR. GLENN: Absolutely.

MR. McGUIRT: So we would like to see that. Okay. Also, I misspoke a second ago. The last item I had is that there have been some site checks done on a small sample of the archeological sites to see that what is in the site descriptions and on the site records is bearing out on the ground. And the preliminary results indicate that in some cases, and I'm not saying that it's terrible or anything, but in some cases we found that

there are artifact classes that are presented on the forms for archeological sites that aren't showing up on the ground and vice versa. So we are concerned about correcting for that error.

And we realize that the time constraints and all that this has been done under and the rapidity with which it had to be done. What we asking is as part of the further inventory phase field work that we mentioned in the Data Request that may be necessary, or in the evaluation field work, or maybe as part of any spot checking that's done to verify trail locations, the BLM and the CEC would like to roll a revisit to a sample of the archeological sites out in the project area into this future field work to attempt to verify and to correct for, to provide us some kind of data as a correction for these inconsistencies that we're finding on some of these forms and to make everybody feel comfortable that what we've got is what's out there and to establish a range of error.

MR. HARPER: Is that something we can consider and have further discussions on because I know right now we are going through a lot of revisions with site records. And if some of those are taking care of those concerns through that process, then we can, working with you on that closely, convince you of that then, is that

something where we can look at maybe, you know, if we don't need to go back out and verify we can do that or --

MR. McGUIRT: As we see, there is a possibility for different phases of field work. You've got maybe some redo of some inventory stuff, you've got evaluation stuff, you've got trail verification, and we don't know yet, maybe geo-archeological field studies. So we're all into efficiency. The more there are things you can ball up into one effort, the better. We certainly don't want you guys to go out and spend a bunch of money on a bunch of separate efforts. We will be happy to work with you to pull that all together.

MR. HARP: Yeah. And maybe what we can do, also, is provide you with kind of a progress or an update since there is going to be one or two months here before we get the responses back. And then we can have, you know, at least the resource specialists or whatever work very closely with you guys to make sure that you understand where they're at and what our thoughts are.

MR. McGUIRT: Great. That's all I have. It's been a good working relationship. We're moving forward, and we're making progress, and I appreciate the Applicant's efforts. And I'm sure the BLM does as well. Anything else I can answer?

MR. MUTAW: No, thank you, Mike. I feel the same

way. It's been a great working relationship with you and the BLM. We're doing the right thing here.

MR. McGUIRT: Good deal. Thank you.

MR. MEYER: Great. Thank you all. I appreciate it. Cultural resources has been a huge issue on this project and created a lot of issues to work out. And I appreciate everyone working together to try to resolve these and keep moving forward, both on the Applicant and Energy Commission, especially the BLM. We appreciate it. Any parties have any questions on cultural resources? Okay, excellent.

At this point this is, really, this has taken up the Data Request/Data Response portion of the Workshop. And this is sort of a dual Workshop for -- at least in the Energy Commission process where we look at both the questions we had and the responses and any clarification, but also this is an opportunity for the Applicant to address any of the concerns we raised in our Issues Identification Report or even just open it up to more general questions that we may not have covered.

So at this point I'm just going to let the Applicant, if they have any issues that they want to raise as far as, you know, their address of either the Issues Identification Report or general issues that have come up so far.

MR. HARPER: I just wanted to kind of go back over. In, you know, my experience in working with BLM and other Federal agencies, just wanting to make sure that, you know, as the Applicant, our communication with you is on target, that if there is anything that -- any of the resource specialists as we're going through these different smaller planning efforts, like the decommissioning plan, things like that, if there is any guidance or things or table of contents that either the BLM or the CEC would like to see in those plans, because I know there's --

(Brief interruption because of speaker phone recording.)

MR. HARPER: But again just to --

MR. MEYER: Apparently that's not my phone. If those on the phone could check their machines or someone who walked away --

(Further speaker phone interruption.)

MR. MEYER: Well, we will mute them for a moment. I think we are done with that call. So, okay.

MR. HARPER: But mainly in just knowing that we are right now going through this process, for instance, with the solar thermal power plant, P-O-D guidance, anything like, anything that we know of that's kind of in a draft format that we think, you know, from the agencies

that would be good to share as new policy is shaped, or whatever, just that so we are providing the fullest that we can the information back to the agencies and maybe that will help as we move forward in developing these plans, looking at the PSA and the EIS and ensuring that we have met both agencies' needs for information in preparing that document. But anything like that that you could do for us as the Applicant would be appreciated so.

MR. EGAN: I would just like to say thanks from SES. I think this relationship and hard work for all parties here has been fairly incredible. And we are all breaking new ground here. This project type has never been really done before of this magnitude particularly. So, if you notice even by the size of the application, there has been maybe none in the history of the CEC that has been as large. And, again, we at SES would like to think CEC/BLM for their help and cooperation on this. We appreciate the way this is going forward.

MR. MEYER: Same here. My chiropractor is not very happy with your application.

(Laughter.)

MR. MEYER: So, one thing just to put out there to the people that are members of the public that are going to be involved in this case as we go through, Jim

and I have talked a lot about this in the past as far as public participation in trying to encourage it usually as much as possible early in the process so that as we are preparing our preliminary documents we have as clear a picture of what the concerns the public may have on the various areas because, as you have seen in the work that we have done so far today in front of you, these are just a few of the technical areas.

We basically will break the analysis into about 22 areas, and I will have different technical staff working on those, everywhere from air quality here, we have visual, traffic, land use, a lot of different areas that will look at both environmental and engineering aspects of the application that's in front of us.

And, you know, in trying to sort of flesh out what the potential problems are, a big portion of what can be helpful is if people are here on the ground in the field in the area, you know of an issue of a concern or potential something you see in the application or one of our preliminary documents that you don't think is correct, and you think we should double check it, letting us know early is very helpful.

And letting us know in writing, you know, we have a lot of information out there, like my e-mail address. Jim's e-mail. You can mail things to me if you

would prefer. Getting something in writing is the absolute best way for us to make sure that I can transfer that to, you know, the Energy Commission staff, to BLM staff, to the Applicant, to whoever we need to, to make sure that they get that answer or get that issue addressed as clearly as possible, so I'm not trying to re-interpret what your concerns are to put it into writing for someone else.

So that's something we always say, give us your comments as early as possible so that we can make sure that we carry those through the entire process and we are not trying to address an issue at the very end. And that's just sort of a general question or general comment I have.

One thing that, as you may have heard, air quality we have talked about as being one of the concerns we have an issue on this project. It wasn't identified in our Issues Identification Report because it was something that when we started looking a little closer into the project we had some questions which resulted in the Data Request that the applicant is working on right now. And operational air impact was one of them.

And I'll sort of open it up to the Applicant as far as, you know, what thoughts you have may have on ways to reduce operational air quality impacts from the

mirror washing, mainly the trucks.

MR. HARPER: One thing -- And it gets back to some earlier comments. One thing that we have been looking at is just how we stage vehicles around the site, especially larger vehicles that may be like larger tanker vehicles for holding water, then what you would have is instead of the way we've described in the EMC is basically everybody kind of going out in the morning first thing, packing their vehicle up, going out to the work site and working out there with all the different equipment that they need and then basically packing everything up at the end of the day and coming back into the main complex there.

And when we realized what we had done, I mean, basically we had created the worst case scenario as far as how the operations would occur on our project. And it only came up when we looked at the data request that it came to us that we really had that insight. And so what we are doing now is going through some different meetings internally again with our consultants, with both URS and Stantec, and looking at a strategy that will provide in our responses that will really cut those number of trips down, for instance.

Just to give you a scenario of what we are looking at is that we would basically work in quadrants

around the site, especially with the mirror washing. And from that, you would have all your larger vehicles staged out there in that quadrant, and then you would have smaller vehicles that would service from those larger vehicles within that quadrant, as well as far as like the smaller vehicles that would go up and wash the dish for each of the Sun Catchers.

Now, at the end of the day or at the beginning of the day and the end of the day, going out to that work site or that quadrant, we are looking at using electric vehicles to actually get work staff out to those locations, again trying to cut down in our emissions and also in our traffic miles going back and forth across the site.

A further detail as I mentioned earlier is also looking at just the number of east-west roads that we have. Again, when we first designed the project what we were looking at for the AFC and in describing that 750-megawatt alternative, you have in there excess roads. Going back and looking at it, we don't need all the east-west roads. In fact, having all those east-west roads and looking at it again since we received the data request, you can see where people would start doing diagonals almost across the site, and it just adds traffic miles.

You know, you forget your wrench so you go back into the main complex or whatever to get your wrench or whatever. So there's just efficiencies in looking at how we can stage our work equipment around the site in different areas and then basically just transport people out to the work area each day that cuts down on a lot of miles. We have already seen that in just preliminary studies looking at it in our meetings.

And that's pretty much the vein of it. We're going to continue doing that, looking at the different processes that we have for maintenance and seeing how we can come up with those efficiencies.

MR. MEYER: Thank you.

MR. STOBAUGH: I'd just like to say, this has been part of a learning experiment for us as well. This is -- it's my first and I believe it is for the Field Office as well venturing with the California Energy Commission's processes and we're merged with the Bureau of Land Management processing as well. So we haven't, you know, this is a first experience with it. And I think that it's one where you do see how the intent behind the Memorandum of Understanding that the CEC and BLM entered into was to try to avoid duplication, try to find efficiencies in both of our processes, share our expertise.

I mean, this has been largely, for I know for the BLM folks, this has been a learning and listening about the way the CEC may be looking at some of these issues as well and realizing there is a lot of parallel from not only the National Environmental Policy Act, which are our requirements, but the California Environmental Quality Act as well as the meaning as far as here in California.

So I think it's -- I think it's going be a very positive experience that we both learn how to do. And I think there is going to be many others, so I commend you guys for being the guinea pigs. I think you brought this all together. And, I mean, you have the Federal, you have you the State, and look here we are in the County facility right here so you can see all three levels of government at work trying to get this thing to walk down the processes, if you would, in as much of a succinct manner as we can. So thank you.

MR. MEYER: Do you have any comments on this?

MR. FOLEY: I look forward to working with everyone further. And, obviously, it's an innovative and interesting project. It's probably -- I don't know this for a fact -- but at ten square miles it's probably the largest proposed project in the country right now. So it's a learning process for everyone.

MR. EGAN: It's actually the largest solar project on the books in the world.

MR. FOLEY: I mean projects period, solar, non-solar.

MR. EGAN: Using land area, yeah.

MR. FOLEY: Project area, yeah.

MR. MEYER: Thank you. Okay. At this point we are going to have more from BLM, and I'll let Jim take the lead on our second phase when we have the BLM scoping meeting portion of this, and that will be from 5:00 to 7:00.

And to start that off here we will give you a little bit of background on the project and they'll give a couple of presentations just to refamiliarize people or give people an idea who didn't make the first informational hearing. But, although that will be really focused on giving the public a chance to speak generally about the project, since we have a little bit of extra time at this point, I would like, if there are any members of the public who would like to get up, if you have any questions on issues we have been talking about now, this would be a good time to ask them while we have staff available to answer your questions.

MS. HARMON: Edie Harmon. And I have been listening. I want you to know it took me over four hours

to download the response to the data requests, which is really --

MR. MEYER: I'm going get you a CD with some of the information. I will talk to you and I will get your address and just make sure we send you a CD.

MS. HARMON: Because I really did want to read it. But I have some questions that came up in response to things I heard today. And one question is, why would you want to store a year's worth of water on-site and the amount of surface area is really important because in this area the pan evaporation is a hundred inches a year from surface. And that translates to eight or nine feet -- you know, acre feet if you had just an acre.

So the question now is that the storage area and the depth is critically important. And if what you don't want is a lot of mineralization when you're going to be washing your mirrors, I don't understand why you would be wanting to store a year's worth of water on-site. But the fact that you didn't come close to describing the amount, the size when you were looking at 33 acre feet --

MR. MEYER: I think there might be a misunderstanding as far as what the intent of what that water storage is. And I'll let the Applicant jump into that. I think that they will be able to clarify that,

the difference between water storage for use in washing the mirrors and, you know, a waste water stream.

MR. ARAUJO: My name again is Ned Araujo. I'm with Stantec. I'm a civil engineer. The confusion may be from the different parameters. We have 33 acre feet so the water needs for the project would basically be on a continuous phase. In other words, the water would be constantly coming in. And the acre that we are talking about is only for the waste products from the water treatment process. In other words --

MS. HARMON: That was not clear.

MR. ARAUJO: Right. So to clarify, basically our water is going to come in either from well or from canal or whatever source it's coming in, it's going to be treated to a level that is suitable for several operations, for construction, for maintenance, for washing the mirrors. Some of the water that's going be processed to wash the mirrors may generate some backwater or some water that would be basically diverted to the evaporation ponds.

So the water that would go to the evaporation ponds is very limited. It's just as a result of the treatment of the water, not the overall project water. The overall project water would not be stored.

MS. HARMON: Okay. And then I have a question.

When you just stated the water from wells or IID, the water in that site, if you are looking at ground water there, is extremely high in TDS. And I saw in the data request forms the will-serve letters from IID that you were looking to get construction water from IID, and operational water from IID.

And this is extremely significant because the only well water on the western side of the County is used for the community of Ocotillo, and the water issues related to well water is the subject of litigation against the County of Imperial relating to the U.S. Gypsum EIS/EIR and that is in court. So water issues are extremely important and how well water is used -- potable quality well water is used is a very big consideration.

MR. EGAN: That's an excellent question. Let me answer that -- or help to answer that. And sorry for the laryngitis. If we did use well water, it is not the Ocotillo aquifer. There is a totally separate aquifer to the east of your -- or the Octotillo aquifer, and that is bad --

MS. HARMON: That's bad water.

MR. EGAN: It's somewhere between two and four thousand TDS. If we did that, that would be part of the treatment water that would end up in the pond that Ned was walking about, but it would definitely not interfere

with the Ocotillo aquifer.

MR. STOBAUGH: For our note takers we'll have to explain what TDS stands for.

MR. EGAN: The term TDS is total dissolved solids and it's typically looked at as salt in the water or the minerals that exist in the water.

MS. HARMON: And the water in that area I have seen TDS levels in some of the wells is up to 15,000 parts per million. If you are going have waste water stored there and it's going to be high TDS, the quality of that water could be extremely important for migratory birds and wildlife. So there are grave concerns about the surface area that is going to be exposed and what sort of sort wildlife would be.

And my understanding from BLM in terms of looking at standing water and standing gravel pits, that they don't want anything that birds could be landing on. So it's going to be important to make sure that this does not become an attraction for wildlife. And if it's got increasing TDS or whatever the mineral concentration might be, you don't want to end up with bird die-offs.

MR. MEYER: Our biological staff is working with the BLM's biological staff to address that, and that's one of the reasons we had some of the questions about the side slopes to discourage shore birds. But that's

something we're going to be looking at from a lot of different aspects, mainly from the biological to make sure that it's --

MS. HARMON: I appreciated those concerns from biologists. And then a question as to how the mirrors will be washed and what happens -- how much water is going to be used, on what frequency, and is that water just going to run off the surface of the ground. And in a letter that I saw from Public Works Department it indicated that all the roads on the area would be paved. And at one point I saw something that said 500 miles of dirt roads. But if it's 500 miles of paved roads on-site that is a tremendous amount of paving. And if you are talking about decommissioning at the end you need to look at what in the world is going to happen to 500 miles of asphalt or whatever the pavement is, where is it going to be deposited, and how it is going to be dealt with.

MR. ARAUJO: If I may address that. The paving has been described as two different options. It could be the traditional AC paving or it could be through the use of soil binders, which would be a product that is inert which is basically applied to the soil and not necessarily be a product of asphalt.

MS. HARMON: But inert, if it's going to have heavy traffic over it, it may -- portions of that may

eventually become airborne.

MR. HARPER: If I could -- actually, it's used quite a bit by the Army Corps especially at military bases, and it actually -- it holds up quite well. I mean, they use this to land large transport planes on it year after year, so I mean it is something that holds up quite well.

That's not to say that you don't have to go and reapply it at some point, just like you would have to go in and repair an asphalt road. It's actually quite durable.

MS. HARMON: And how are the mirrors going to be washed and with what frequency?

MR. ARAUJO: Do you want me to address that washing of the mirrors?

MR. HARPER: Sure.

MR. ARAUJO: The AFC currently has the washing as described using 14 gallons of water per wash cycle. And during the summer period all mirrors would be washed with what is called a scrub wash that contains up to three times that amount, so it would be 42 gallons of water. And at this point we are not anticipating any runoff from that washing. In other words, the amount of water that is used is so little for each dish that we are not anticipating water to basically accumulate underneath the

SunCatcher.

MS. HARMON: What frequency?

MR. ARAUJO: The frequency would be once a month approximately. And overall in a year we are looking at nine washes per year as described in the AFC.

MS. HARMON: You're optimistic given what I see of the dust in the desert.

Going on to concerns about the archeological sites. And some of this comes from having lived here for more than 30 years and having gone out in the field with a number of archeologists, both BLM archeologists and archeologists with the Imperial Valley College or the museum. And I realize that a lot of the -- you indicated that there was a difference between what were considered cultural resource materials that had been indicated -- so indicated by BLM staff, or by probably the local archeologists doing research for the Imperial Valley College and the Desert Museum versus people that were looking at this project. And I can tell you, I can go out in the desert many times, and I can recognize now things as cultural resources and trails that people with me don't see unless I tell them.

And I realize that some of the trails will disappear in the distance and you need to look at what's off-site and not just on-site. And sometimes I can pick

up portions of things that are trails at a great distance. Sometimes you can tell the distance a mile or more away if you know what you are looking at and if you follow the trails.

In some cases trails have been destroyed by motorcycles or other vehicles. But I think when you are looking at the cultural resources you need to consider who is looking at them and is the staff people that are familiar with the archeological and cultural resource materials of this county and this type of desert or is it people that are being brought in and coming in from elsewhere.

Because I know on several sites we have looked, and archeologists that are familiar with the area have basically said the work that was done by consultants was incorrect and unacceptable because they were not familiar enough with the resource area. And on one project the whole cultural resource evaluation had to be redone. And one of the people that had criticized it happened to be someone that has worked with one of the co-authors on other papers and said he felt it very difficult to stand up in public and say that one of his colleagues had done a cultural resource evaluation which was unacceptable because it was not, you know, didn't really look that carefully.

So I would urge when you're saying that there is a discrepancy between what BLM and the local people think of as cultural resources, trails, or anything else, that you really need to give a lot of deference to the people that have spent a lot of time and work in the area. And you really need to consider the views and values of the Native Americans that are familiar with the area.

And I think that we make a mistake if we think that people that come in from the outside know better what's here than the people who have spent decades, you know, looking at the resources. And, again, it's like even looking at an individual rock and being able to tell whether something has had strikes or blows and it's representative of a tool that's many thousands of years old or whether it's just another rock. But it depends upon how familiar you are with the area.

MR. MEYER: And I can answer that a little bit as both the project manager and an archeologist. You know, I have worked on sites, you know, all over. I have done, you know, been working around sites in this area on some projects as oversight. But I recognize that my specialty is as coastal an island archeologist, so one of the reasons that the MOU between the Energy Commission and the BLM really puts a lot of the authority, sort of the

final call on the archeology in the BLM's hands, is that we recognize they have district offices and field offices all around the areas in California where these projects may be proposed.

And our idea on that is to rely on the archeologists who their career is in protecting the resources of the area that these various projects are in. So we have an invaluable resource in the archeologists for the BLM that work here.

And also one thing that our staff and the BLM staff look at is the resume, sort of the curriculum vitae of the archeologist from the Applicant and where their specialties are. And we recognize that, you know, someone may be a premier Peruvian archeologist but we really want someone who understands the very unique situation of desert archeology and how sites are formed and eroded and what to look for. So that's something we are very cognizant of. And any time we have any sort of discrepancy between the parties, we are going to run that down and not just leave it as an open issue. So that's something we will be looking at.

And we also, to answer the issue on the Native American process, both the Energy Commission and the BLM have very explicit directions and procedures to make sure that the Native American issues are addressed

and that they have a full opportunity to express their concerns to us so that we can evaluate that throughout the process.

MS. HARMON: I would just encourage that maybe BLM be a little more careful than you were on the Glamis Imperial Mine Project because that was one that had to go back for cultural resources, and ultimately BLM denied the mine project. It was the first time anywhere in the nation that a mine project under the 1872 Mining Law was denied and it was because of the significance of cultural resources in the area and the visual resource impact related to those cultural and historical resources. And the first draft that came out of the project the cultural resources review was not adequate.

So, you know, for whatever, you know, to get the message across to BLM and the State, sometimes you really need to double check and maybe you want to send some of the comments out for review before you actually put a draft document up into the public arena for public comment just to be sure the same thing doesn't happen.

Because I was very much impressed with the sincerity of Carmen Lucas at the last meeting and the fact that she had been asked to come down from the State, which indicates, I think, a tremendous concern of some people about the significance of the cultural resources

in the area.

And, you know, there are some places that just aren't right for a project. I just wanted to put those concerns out because of what I heard this morning.

MR. HARPER: Before you sit down, just so you know my background. I think we have more qualified archeologists on this project than any other project. Well, this is the largest project as far as a solar thermal power plant. But I'm not sure any of the other ones in the future will have as many archeologists working on it. You know, you have Chris here, myself. I have a Master's in Anthropology. Most of my career has been archeology and doing ethnicity work for tribes. I'm very respectful of Carmen's concerns, and we extended a hand to her as far as just making sure that she fully understands the technology that's going to be going on on the ground.

We have also invited her out now, since I came onto the project. There were some things that needed to be corrected; I'm not saying that. But we are diligent in our work with BLM and the CEC to make sure that we respond to their requests for either further investigation, revision of any of the sections of the document, all of that. We are very diligent in making sure that we meet what their requests are.

MS. HARMON: I just want to add, if this is the project that has the most archeologists involved, maybe it's the wrong site because if you need that many specialists dealing with cultural resources, there are probably a lot of places that could have been selected where there would have been fewer impacts, like the Mesquite Lake area of the central part of Imperial County, which is a very large acreage which is already zoned for industrial.

But in the 30 years I have been here there hasn't been anything going on there and that area is disturbed and wouldn't have the same kind of impact.

I want to get back on one thing that nobody asked on the air quality issues. And I apologize, but my recreational reading is pretty much epidemiology. And one of the issues, and I raised this concern with U.S. Gypsum, but it's far more significant with this project, is you have a state prison with an involuntary population of more than five thousand, which is more than double the capacity. So it's crowding and stress and a lot of people being brought in from urban areas, and it's only a few miles to the northeast of the project site.

And one of the real concerns in state prisons in California and that is a concern in Arizona now, is a problem of coccidioides and coccidioidomycosis. It's a

fungus that lives in desert soil. It encapsulates and survives very well during periods that are dry. It becomes a real serious problem after you have a year of growth situation with heavy rainfall and water.

And in Arizona I think right now the number of cases are over six thousand a year, and in some of the state prisons it's a real serious problem. And I think given the fact that exposure to dust, construction, agriculture, and what not, is what puts people at risk, especially if people are coming into the area from outside and are not familiar. And those people that are in archeology probably know, you've probably seen the warnings that archeologists are at risk.

But I think you really need to evaluate the kinds of soil disturbances on this kind of acreage and what it means in terms of public health for people, the involuntarily population of the state prisons that can't go anywhere, but their health issues are a public concern because it's the public that's paying for that and other people.

So I just want to be sure because I didn't see all the questions on your questions related to air quality. I don't know whether that's one that's already been raised or not.

MR. MEYER: Actually, we'll address that in

public health, and I will pass that concern on to our public health specialist at the Energy Commission to make sure that he takes a look at that issue.

MS. HARMON: And I've got some articles that I can submit on concerns with the public health issue and as an issue in the California state prisons.

MR. STOBAUGH: That would be good because, I mean, spelling of some of these spores and what not; I can't even pronounce them.

MS. LEIBA: Well, actually, this is Angela Leiba again, and maybe Julie Mitchell could speak to this. We did actually analyze this in our public health section, and maybe Julie can give a quick recap.

MS. MITCHELL: Well, one of the things that we do when we look at that, we understand that when you do disturb the soil, a more common term for that is Valley Fever, which is a little easier to pronounce for everyone.

And the mitigation factors that go on with the construction on the site, such as watering the soils and watering while you're doing any soil disturbances, knock down the dust that could potentially come off-site significantly. And that's one of the best mitigation factors for reducing any potential impact from Valley Fever because it is essentially dust-born.

And so all the mitigation factors that go along with the construction activities, primarily the watering, will -- and reduction in any trips that you can -- will reduce any possible impact.

MS. LEIBA: And, Julie, I know that you looked at the prisons specifically.

MS. MITCHELL: Uh-huh. The prison was specifically put in as one of our sensitive receptors to ensure that no negative health risk impacts occur at that particular location.

MS. LEIBA: So there aren't any?

MS. MITCHELL: From our -- the models that we ran we did not predict any negative health impacts there.

MR. MEYER: And our staff will be addressing that as well, and we'll, you know, look at their analysis and we'll make any conclusions on that or any additional questions that we need.

And, Ms. Harmon, I thank you for your questions on that, and we will get that off to the appropriate staff.

MS. HARMON: And I just want to add, the question on coccidioides and coccidioidomycosis is from the first EIR I ever read in Imperial County it was on a transmission line, and it raised the very serious concern of health impacts by putting the electrical transmission

line through the desert areas in this part of the county. So the question was actually triggered by an EIR.

MS. EGAN: And, Edie, as you heard earlier, we are going to get you a CD.

MR. MEYER: Thank you.

MS. TISDALE: Donna Tisdale. I'm actually a resident of Boulevard, but I'm a property owner in Imperial Valley, and I was raised down here. I haven't had the opportunity to read through all this in depth, but from what I'm hearing and from what I have seen earlier, I'm concerned that there is some reliance on the U.S. Gypsum EIR, especially in relation to air. And I did -- while I heard references to we are going to look at the U.S. Gypsum EIR, who was talking about that?

MS. LEIBA: I think there was a request in with them -- they asked us if we had it so that we could supply it to them, but we do your own analyses. We do not use --

MS. TISDALE: Well, good. I want the CEC, then, to understand that the U.S. Gypsum EIR, I was involved in studying that. And I'll tell you what, that's a very inadequate document, and I found quite a few things that were wrong. I focused mostly on water issues there, and we were able to turn that around. And in the litigation they are now supposed to be using imported rock water

rather than the well water. But I'll tell you, when I read the air quality, too, that was -- so many things were left out.

And also in the traffic, they hadn't included all the truck traffic from the sand mines, aggregate mines that are out there. But you see the traffic is incredible from the trucks. So I don't know if that has been addressed or not.

And all the talk about all these people involved in this, my personal opinion and my experience is, there is a lot of political influence on government employees, and so I do not rely on what they do. They may have the best intentions and the best education, but there's a lot of political influence and we're just as subject to that.

And my little nonprofit group is getting ready to sue the BLM over their Eastern San Diego Resource Management Plan and their Downgrading and Visual Resource Management classifications there. So there are a lot of concerns from the public. Thank you.

MR. MEYER: Thank you very much. Any other members of the public that would like to step toward?

MS. WEINER: Hello. My name is Teri Weiner. I'm staff for the Desert Protective Council, which is a nonprofit desert education and advocacy group. I'm the

Imperial County Conservation and Projects Coordinator. I would like to receive a copy of this binder, which I borrowed from the gal at the front desk. And I have been reviewing it in between people's comments.

I'm interested in the area of the three little paragraphs on power plant efficiency. I'd like to understand how this works. You talk about each engine -- Stirling engine requiring -- there's thirty thousand Stirling engines, and each one is going to require certain amount of cubic feet of hydrogen gas, and there will be storage for it with each engine. And that this hydrogen gas will come from natural gas?

MR. MEYER: Well, actually, I'll let the Applicant explain that from their engineering standpoint.

MR. ARAUJO: My name, again, is Ned Araujo. Each engine will produce their own electricity. The gas is used as a fluid to transfer the heat from the sun to the cylinder of the engine, so the gas is not going to be consumed. It's a transfer fluid, a transfer of gas that is basically going to be used circulating within the engine. Very little is going to be lost, so it's --

MS. WEINER: So I guess my question is, how much -- is this amount of gas that's mentioned in here, natural gas, would that be the total amount that would be used or is this an annual requirement for natural gas?

MR. HARPER: It's not a natural gas.

MR. ARAUJO: The gas is regular hydrogen, and the gas will be basically stored within the engine and on the other tank for supplement.

MR. MEYER: Yeah, I think that I can actually get to part of the question. That was actually in one -- my efficiency expert who was on the phone was asking that very same question. They said they'd have to get back to us on whether the 24,000 therms was the amount of energy, you know, natural gas that they have to put in to break the hydrogen free.

MS. WEINER: Right. Right. That's --

MR. MEYER: We're still trying to find out if it's in an annual operation, how long. So the Applicant will have to get back to us on that with an answer.

MS. WEINER: So it's leading me to think that you may have to transport some source of this fuel to the project site, transport by pipeline or --

MR. ARAUJO: At this point we are considering either having the gas produced on-site or transported to the site, yes.

MS. WEINER: Okay, thank you. And I'm also interested in the biological impacts. There's not very much information in response with data requests on the burrowing owl and the flat-tailed horned lizard. You

mentioned burrowing owls on the east side of the site and probably some on the sides of the washes on the site and that you will not disturb the site during their -- during the first part of the year when they're nesting.

But your schedule, your timetable, mentions that you are going to begin construction in the first quarter of 2010, which would be the first part of the year.

MR. MOCK: Well, the guidelines for dealing with burrowing owls and other nesting birds is before February 1st you do an exclusionary program, you do a pre-construction survey. If you do find an occupied burrow, you would exclude them from that burrow and displace them and relocate them off-site so they're physically -- they are not killed in the burrow, and you also exclude them from the site prior to them laying eggs.

So, basically, it would be a fairly tight schedule. If they were planning to start in the first quarter, so we would be doing a December-January type of effort to assure that there is no direct mortality of owls.

Right now, currently, the owls that are known to occur in the vicinity are off-site. They won't be -- the ones that we know about don't occur in the area for

possible disturbance. But there are some potential burrows on-site that could be occupied between now and when the construction starts. So we will be doing pre-construction surveys to verify that there are no owls on-site.

MS. WEINER: Thank you. What about the flat-tailed horned lizard? Are you planning to translocate the flat-tailed horned lizard?

MR. MOCK: Basically there's a fairly low density population on-site and so we --

MS. WEINER: You've already done surveys for the flat-tailed horned lizard?

MR. MOCK: Two years worth of surveys, and I think we've -- there are two species on-site, the desert as well as the flat-tailed. So we -- presumably we will be doing pre-construction surveys trying to find as many as we can to relocate and then we'll have ongoing construction monitoring to detect them and try to minimize any mortality to those individuals as well.

MS. WEINER: Thank you. And I need to do a lot more studying on this, but I understand that you have to get a stream alteration permit from the --

MR. MEYER: Just to clarify that we -- Jim and I represent the agencies overseeing it.

MS. WEINER: So I'm not looking at the right

person. I'm a little cross-eyed anyway.

MR. MOCK: We've contacted the Fish and Game. And they've expressed the opinion that a stream bed alteration agreement would be required if any of the jurisdictional channels are modified.

MS. WEINER: And they said that would be on public or private land?

MR. MOCK: Correct.

MS. WEINER: And that you will be disturbing some of those channels?

MR. MOCK: Presumably there will be some road crossings of the channels that will require some kind of permit or agreement.

MS. WEINER: And you have to get that permit before you begin construction?

MR. MOCK: Yes.

MS. WEINER: Whew. You guys have a lot of work to do. Thank you.

MR. MEYER: Thank you very much.

MR. STOBAUGH: Again, we would like to encourage everyone who has offered comments to, if you can, provide us in writing as much as what you have, or even copies of what you have used in there, so we can pull this information together in walking forward with this analysis.

So, it's always more accurate to get it in writing so we're not guessing what you may have said, you know, or from the comments being taken down from the verbal stance.

MR. MEYER: The Applicant has informed me that they have extra copies of the document that they will be providing to the three individuals who have requested them. So thank you very much.

Okay, are any other members of either the public or any agencies that might be represented? I usually ask that in the beginning, but with my little technical issues I was so focused on my computer, that I forgot to ask if there are any members of State or local government that are here who would like to introduce themselves?

And since there aren't, I will open up to anyone else who would like to make a comment at this point. Okay. And I will ask any of the other parties if you have anything else?

MR. STOBAUGH: Again, we are going to have an actual scoping period from the BLM's process that we do want to meet as far as the requirement beginning at 5:00 and there will be an opportunity provided there in case any others have come in or those that have been invited to at this point in time generate some comments they want

to make at that point in time of which they will be captured.

The scoping, again, is BLM's process to where we solicit this external input that we can over what would be the issues or the impacts or potential alternatives that may be suggested or looked at. And we take those down as part of our National Environmental Policy Act requirements to develop and prepare an environmental impact statement.

So this is, if you will, BLM's gathering mechanism of information. And like you have been discussing for this portion here with CEC, you may make verbal comments. But, again, we want to stress for accuracy sake, please provide us those in writing so we are not -- so we are getting it right.

Again, if you wish to speak, on the break here there is a form out front, Solar Two Project Comment form which gives us your name, who you represent, and the contact information so we know who we can expect to come up and speak. Otherwise, a lot -- that will be -- there will be a presentation by the Applicant as well as explaining the process by California Energy Commission and BLM's processes. And then with the public comment period we will then move into the -- what is kind of an open house and you may walk around and view the placards

that -- really nice placards that provide a lot of information as far as if you need additional -- additional information to understand what this project is all about and the lands involved.

MS. HARMON: Am I correct in understanding that we have until January 2nd to get our written scoping comments in?

MR. STOBAUGH: Very good point. The actual formal scoping period for BLM's part of this process is 15 days after the last meeting, which is today, which falls on January 2nd.

With that said, as the notice came out, on the website in here you will be seeing during the presentation show BLM's website. They will all be funneled to the California Energy Commission who is the primary lead on developing the document that is, again, their staff assessment and our environmental impact statement, so you will have the information of where to send your comments to.

MR. MEYER: I will basically just be acting as a clearinghouse. If it's like a BLM-specific issue I will make sure it's on the overall record of our joint process and then I will funnel it. And Jim will, you know, take the lead in, you know, making sure any BLM specific issues are addressed.

MR. STOBAUGH: I'm glad you asked the question, Edie. And we were going to talk about it a little later. But, yes, if you haven't stated it or provided it at this meeting today, you do have until January 2nd to provide it to us. Again, we encourage you to always put it in writing.

MR. MEYER: I think we have wrapped it up a little early. And as Jim said, we will be reconvening at five o'clock to start the BLM scoping process. Thank you very much everyone, and I will see a lot of you in just about an hour and a half.

(Workshop recessed at 3:30 p.m. to be resumed at 5:04 p.m.)

MR. STOBAUGH: I'd like to welcome everybody. This is the second half, I guess, of the show today. The first part was the Workshop. It was a Data Response and Issues Resolution Workshop we held from, basically, 1:00 to 3:30 is what it went to, which was the discovery aspect of the California Energy Commission's process.

This process, this part of the -- the program, if you would, is BLM's scoping meeting, which will be looking at offering the public an opportunity to -- we solicit to the public an opportunity to come and give us its input, if any, on the types of issues, and possibly considerations, that we would want to -- you

would wish for us to have as we begin moving through our National Environmental Policy Act requirements in preparing an Environmental Impact Statement.

So this is the second scoping meeting as far as the Environmental Impact Statement requirements under NEPA. And the way it's going to work is we are going to do -- have a presentation by the Applicant, Stirling Energy Systems, about the Solar Two Project. They have a Power Point presentation. And then we were going to do -- show you, if you want, the processes of how BLM walks through the -- both BLM and the California Energy Commission walks through its processes and how you may participate in providing any type of input with a contact and information.

Okay, so we're going to do ours first?

MR. MEYER: Why don't we.

MR. STOBAUGH: Okay, to show you how flexible and dynamic we are going to be, we're actually going to do the Bureau of Land Management and California Energy Commission. So those handouts I was talking about are immediately of need right now.

Again, I'm just going to introduce myself before we get started. I'm Jim Stobaugh, the assigned Project Manager for the Bureau of Land Management with this project. It's actually being processed through the

El Centro Field Office, which is a part of the California Desert District.

We have some BLM folks out there in the audience with us, and I'm going to ask you, if you would, to introduce yourselves and let us know whether you are with the Field Office or the District so folks see who the BLMers are in attendance. Al, starting with you.

MR. STEIN: I'm Al Stein. I'm the Deputy District Manager for Resources at the District Office in Moreno Valley.

MR. MEYER: Thank you.

MS. PEREZ: I'm Mary Perez. I work at the El Centro Field Office. I'm the archeologist.

MR. ZALE: I'm Tom Zale. I'm the Associate Field Manager for BLM's El Centro Office.

MR. STOBAUGH: I think that's it for BLM here tonight. All right. I'm going to turn to Christopher Meyer.

MR. MEYER: Hello. I'm Christopher Meyer. I'm Jim's counterpart over at the Energy Commission doing sort of our part of the dual process and working as a project manager there. So I have --

MEMBER OF THE AUDIENCE: A staff of one.

MR. MEYER: I have two because actually I do count my staff attorney, Karen Holmes, in the back. And

I also have Mike McGuirt who is the archeologist for the Energy Commission working on this project. I'll turn it over to the Applicant.

MR. HARPER: My name is Kevin Harper. I'm the Project Manager for Solar Two. We have a number of staff here from URS, and I'll just go through their names now. Angela Leiba, URS Project Manager; Corinne Lytle, URS Project Manger; Emily Bierman, Public Involvement Specialist; Julie Mitchell, Air Quality; Pat Mock, Biological Resources; Teresa Miller, Biological Resources; Brian Glenn, Cultural Resources; Bob Mutaw, Cultural Resources; Ginger Torres, Land Use; Seth Hopkins, Socioeconomics and Visual Resources; Noel Casil, Traffic and Transportation; Matt Moore, Water Resources; and last Tricia Winterbauer, Waste Management. Okay, she's on the phone. Do we have her on the phone?

MR. MEYER: We can probably have someone call in if we need her. And, also, just to mention we'll get into this a little bit in our presentation, but an integral part of the Energy Commission's process is opening it up to parties who want to participate more fully.

And one of the options is to become a formal intervenor in our process where you have additional rights. You have a seat at the table. You can provide

testimony. There are a lot of -- There are advantages, disadvantages. You have to serve all the parties when you're producing information and you get to be cross-examined just like the rest of us when anyone disagrees with you.

So, speaking of that, I will introduce -- we have an Intervenor, which is California Unions for Reliable Energy.

MR. FOLEY: And my name is Paul Foley. I'm here on behalf of the California Unions for Reliable Energy. And we have petitioned to intervene in this proceeding, and the petition has been granted.

MR. MEYER: Thank you, Paul. Back to you, Jim.

MR. STOBAUGH: Again, thank you. Again, I want to extend a welcome especially to those folks in the public here. I have what are the, as requested prior to the meeting, I have four people that have signed up to provide public comment. I'll ask you to come forward here. We do have a couple of folks recording what is being spoken. But I always, as Christopher talked about in the prior meeting between 1:00 and 3:30, and we also mentioned at our first meeting on November 24th in these same chambers, we really want to encourage you to provide your comments in writing so that we aren't missing anything through our capturing it, if you would,

verbally. So I always just want to stress that.

That way we make sure we are getting verbatim the issues you wish raised or wished placed into the -- as part of the scoping process. So I just can't emphasize that too much. I'll tell you what, I'm going to, as I said, we will go through this presentation of BLM and the California Energy Commission's processes and request for public input. And then we will turn to the Applicant about the project itself before beginning the public comment period. Okay? Any questions on the process so far? Okay.

Just kind of as an overview of what we are doing, at least from BLM's scoping requirements, under Federal law BLM is responsible for processing Stirling Energy Systems application for rights-of-way and to authorize this proposed project and associated transmission lines and other facilities to be constructed on the lands that BLM manages.

We have to look at processing those applications and to comply with the requirements of the National Environmental Policy Act, which I may say NEPA later on, which, of course, requires the Federal agencies to consider the environmental impacts associated with such a project.

If I could put in what is actually the

purpose of the action in front of BLM, the purpose of the BLM action is to provide the Applicant a decision in processing its application for right-of-way grant for the legal use and access of the public lands in Imperial County, California, managed by BLM.

The need for BLM action is established by BLM's responsibility under the Federal Land and Policy Management Act. That's the granting authority that would be used for rights-of-way, NEPA, as well as other environmental laws, such as National Historic Preservation Act, as we go through to reach a decision to approve or deny or modify, if you would, what is being proposed in front of BLM to construct, operate, and even decommission this proposed concentrated solar thermal generation plant and related facilities.

So kind of in a nutshell, the decision to be made is whether or not to grant the right-of-way, and if so, under what terms and conditions would we issue such a grant. The other thing that's happening with this proposal is that it triggers the need for a land use plan amendment under the current BLM/California Desert Conservation Area Plan that was at first established in 1980 and has been amended. And then the purpose of the Plan Amendment is to ensure that the multiple use identified in FLPMA, while managing the valid existing

rights and resource demands as well as the technological developments is being met on the public lands.

So if we look at that part of the plan amendment requirement on there, what really is triggering this is the statement in the plan that says: Sites associated with power generation or transmission not identified in the plan, as in this case, will be considered through the plan amendment process.

So we are able to merge, if you would, both our land use planning, which would require amendment, which would require an environmental impact statement in this case, along with this environmental impact statement to process this decision under FLPMA.

The beauty of what we are doing as we have kind of learned from today is through a memorandum of understanding, BLM and the California Energy Commission are conducting dual processes here, which we are about to cover. But the beauty of that is, really, for us to avoid duplication and to share our expertise, you know, as far as the information we have, and to promote what is intergovernmental coordination at the local, state, as well as federal levels.

I think it is being manifested here today by you have the Federal government, you have the State government, and here we are meeting in the County

facilities to exercise and walk through this process. And, of course, you importantly with the scoping of this as well as discovery from earlier, is what is the public's input as far as we walk through this public participatory process. And that's what we are providing in this opportunity.

So the first part of it is kind of formal in that sense, but after the public comment it will basically become an open house to where there won't be any further statements, and you can walk around. And if you provide us any questions or comments, we ask it be done in writing and submitted so, again, the accuracy of what you are asking us to consider is captured by your own language. Okay. Any questions?

Okay. I guess I'm ready to start walking through. Is somebody going to flip the slides for me as I start walking through here? Thank you. That's good. I'm not sure I can do both at the same time.

Okay, again, as this initial slide shows here, it kind of explains the Data Response and Issues Resolution Workshop and Scoping Meeting.

BLM's role. Basically, as I said, you can see it there is we administer the public lands through the Federal Land Policy Management Act, FLPMA. We have to review all of our land use planning and process, in

this case, the Land Use Plan Amendment. And that Plan Amendment pertains to the California Desert Conservation Area Plan initially passed in 1980 but has been amended since then.

The issuance of a right-of-way grant is what is, if you would, the product in the end or the instrument that will be used to authorize such uses on the public lands if approved. We are, the BLM, the Bureau of Land Management, the lead Federal agency for the National Environmental Policy Act compliance as well as the National Historic Preservation Act and other Federal laws.

MR. MEYER: And on our side, the Energy Commission, when we talk about NEPA and CEQA, the Energy Commission's role, the BLM's role, we are doing anything but working in a vacuum, as Jim has explained. Jim and I have a lot of discussions, BLM staff, Energy Commission staff do a lot of work together to make sure that we are proceeding in tandem working together and basically relying on each other, depending on who has the, you know, the greatest expertise in each area.

Our -- the authority of the Energy Commission is for thermal power plants over 50-megawatts. And when we talk about thermal, for people who really aren't familiar with what we're talking about, it's any plant

that produces energy based on heat, whether it's geothermal, you know, natural gas fired, something of that nature. Or in this case a solar project that gets its energy through heat. If it's something like a photovoltaic plant, it doesn't use heat and therefore it's not considered a thermal project. Wind, by the same matter, is not considered a thermal project and those aren't under our jurisdiction. But a lot of these large solar plants you'll see coming up do fall under the Commission's jurisdiction.

And we also look at related facilities, such as the transmission lines, any of the related facilities that are part of the project. You will have some projects where the transmission line is not actually a part of the project. We look up to the first point where it interconnects into the grid system run by the utility, and then after that we just look at it as, if it's necessary for the project, we look at it as a reasonably foreseeable impact and look at it from that aspect. But we don't actually include it as part of the project permit.

And from our aspect, we are the lead state agency for CEQA, which is the California Environmental Quality Act. And as part of, you know, what Jim and I will be working on is to make sure that we work with

both, you know, other Federal agencies, other State agencies as well as local government to make sure that, you know, where we can, we use their expertise in specific issues that they look at in their normal process to incorporate those into our review.

MR. STOBAUGH: By the way, this list that we have on the handout, the State and Federal agencies, isn't necessarily the fully exhaustive list. There may be others as well as we brought up earlier the Army Corps of Engineers.

MR. MEYER: The Energy Commission's process, you know, has three major steps. The data adequacy process we have already gone through, which is basically it's our initial very quick, we have 30 days to do a review of the application we get and see if it has the basic pieces that our regulations require. We have very specific regulations that say that each application that comes before us has to have certain key issues in the application to be complete just for us to look at it and start our review process.

This process we already went through that. They made a few corrections, a few additions. They were deemed data adequate. And that starts the official review process which brings us into the discovery and analysis. This is where we are now. The data requests

have gone out. There may be additional ones. It depends on what questions we have after looking at all the data responses that are coming in shortly for air quality and cultural, but we will have things of this nature where we get the data responses and we work in meetings such as this to ask any additional questions.

The issues identification is -- it's a general report we put out very early, and we did that back before the November 24th meeting, where it says: In our very early review of the process working with BLM, the Energy Commission identified certain areas that we think are going to possibly take additional time and possibly complicate the process.

So we know up front both the Energy Commission agencies and the public need to pay particular attention to certain areas. And I won't put everyone to sleep by reading every slide verbatim. But, really, the third portion is where after staff has worked with the BLM, we put our draft document together, it's reviewed. Then from our standpoint, I step back, turn it over to a committee which is two of our commissioners and they put out a proposed decision. And we will be working to meld that process into the BLM's process.

So -- and I think we can go through these. I covered them verbally, but in the handout that Jim

provided you'll have a record as you go through this process of what the different steps are. And these are really good handouts to have because they also have contact information. And this gives you just a little bit more detail.

When we are referring to the PMPD, it's the Presiding Members Proposed Decision, and that is that deciding committee, which have two of the commissioners from the Energy Commission have been assigned to this case in particular. And they will be following it and making recommendations towards the end to get a decision, a proposed decision, that will then go to the full Commission.

And one thing we talked about here is the Energy Commission monitors compliance with all conditions of certification. We have a special unit that their sole job is to watch these projects. If they're approved by the Energy Commission to make sure that any conditions that are imposed in the decision phase in the siting phase, are carried out through the construction and the operations phase right up until closure.

And, fortunately, in a project of this nature, we are going to have the assistance of the BLM as well, so it will be both the BLM staff and the Energy Commission staff if the project is approved that will be

working throughout the life of the project to make sure its constructed and operated in accordance with any requirements that are made, you know, as I say, if the project is approved.

MR. STOBAUGH: And what we have is the Bureau of Land Management's Solar Energy Development Policy, which is -- WO means Washington Office, Instruction Memorandum, and this is the number 2007-097 that was issued in April 2004. It just kind of lays out in gist what's below, that the policy there is to facilitate environmentally responsible commercial development of solar energy projects on public lands. And that the right-of-way applications for solar energy are high priority and will be processed in a timely manner.

Again, I have already talked about FLPMA, which you can see is that bullet and there's the actual title under FLPMA that this would -- a decision would be made under. And, of course, with this one actually with rental and being a site area, it's going to be developed through appraisals.

If you want, on technology, solar technology, there's a couple of websites for you there. The second one if you see in there. One is the Department of Energy, and the other one is, as you can see, the National Renewable Energy Lab. That's what NREL stands

for. And it also provides you maps where you can see where most of these projects are, which, of course, deal primarily with the southwestern United States.

So, I don't have, and I apologize, I don't actually have the Washington Office Instruction Memorandum right there. But if you go to the next slide I can show you where you can get it. Or if you want it, you can write me an e-mail which you will see how to contact me. I will see that they give you an electronic version of what that policy is if you want the full description of what that is.

But here is it right there. This all would be processed or administered, if you would, under our regulations found at 43 CFR 2800. And the toolkit is basically the two general rights-of-way websites you can use to find out information in general about BLM rights-of-way and more specifically, as you can see, solar rights-of-way at that particular site.

So, in any case, that's -- and, again, if you want handouts so that you can go back and plug these into your Internet address so that's what they are for.

MR. MEYER: Just a note, that if you later in the process discover this would have been a really handy handout, I have a pdf version of this that I can e-mail anyone if you contact me.

MR. STOBAUGH: As far as just kind of capturing real quick of what the BLM authorizing officer making this decision is responding to the proposal, we're running through this pre-application screening, and that's a little bit of what's been going on up to this point, along with the discovery and working with the California Energy Commission.

And the application has been accepted at this point, so we are processing it. And as you can see from the green little stars, processing the application which also triggers, as I mentioned earlier, land use plan amendment under the current plan.

As you can see where we are in the process, we are conducting the scoping. This is the second of two scoping meetings. There will be BLM scoping. Formal scoping will continue through 15 days after today, which is basically January 2nd. So if you don't have your comments put in to us in writing today, you through the websites previously shown and contact information here in a moment, you will see where you can submit those comments to us.

Again, what we will do is what the whole purpose of scoping is, is for us to solicit to the public the opportunity to provide us their input so that we can take this into consideration as we prepare this

environmental impact statement and land use plan amendment. And as Christopher referred to a littler earlier, in concert, if you would, with California Energy Commission's staff assessment of this proposal as well.

So you are living with us this trial effort to walk down and do both these processes to gain efficiency both across Federal and State governments as we walk through in trying to figure out ways to complement each other's efforts, not duplicate them, use -- share each other's expertise and staffs to be able to do that and to streamline the processes as best we can.

And, you know, frankly, from a principle standpoint I think it's just good, since it obviously takes the review and the issuance of such a decision at the Federal as well as the State level, why not have the two processes married together and walk through and have the open and transparent discussions at both levels, including local governments as well.

And so, in essence, there's -- In fact, as it says on the last bullet on there: We look at making this decision and consideration all the way through the termination of the project. So there is the cradle-to-grave viewpoint. Next slide.

If you want a kind of a quick snapshot of how the NEPA Environmental Impact Statement, Land Use Plan,

that's what LUP Amendment process goes, we have already published on October 17th a Notice of Intent that we're going to prepare an environmental impact statement. We are on that second bullet as you see there, involving the public scoping that will run through January 2nd.

And then we're going to look from that at developing whatever alternatives may come out of this process before the department of the draft EIS and draft Land Use Plan Amendment. There will be the notice of availability. There will be a 90-day comment period afforded the public on the draft EIS.

As we take those comments and assimilate them into what is the preparing of the final environmental impact statement, as well as proposed land use plan amendment, the first one was the land use plan amendment, and then it becomes the proposed, there is a 30-day review availability period as well as protest made at that time following the publication of the notice of availability in the Federal Register.

So, and then after that point there we look at whether or not there is a decision, a record of decision that will be made as well as the approved land use plan amendment. And then we -- The other way we deal with the mechanism is not only is there approval -- if there is an approval, then there actually is a notice to

proceed in which we have laid out the monitoring of the project and all the plans for monitoring what we are about to approve.

MR. MEYER: Basically, as we talked about before, this is just a good reference. When I was talking about the committee assigned, the two commissioners, Jeffery Byron is the presiding member. Right now Jacqueline Pfannenstiel, the Chair, is the associate member but she's actually leaving the Energy Commission, so we will be finding out who our replacement is on the Committee shortly.

And then that will go up on to the Energy Commission's website. But the other players will remain the same. Raul is our hearing officer, and this just gives you general information. So I recommend if you have a copy of this it's a good reference throughout the process.

MR. STOBAUGH: And there is BLM's contact and comment website information. My name is there at the top. Again, you can see the phone number. You have my e-mail address there as well. We have that web page. It's right here, and it gets to where it's specific to this particular project itself.

One thing to point out here is that the scoping comments are actually being right now largely

filtered through or directed through Christopher there as the project manager, California Energy Commission. So we are trying to, if you would, narrow the avenues, if you would, where to submit these comments so you make sure you are getting them to the right source.

And you can see Christopher's e-mail address right there, and it's suggested, attention Solar Two because Christopher has a few items under his wing right now, as well as I do. And I really want to thank Christopher right now for being able to put his e-mail address up there.

(Laughter.)

MR. STOBAUGH: But you can see mine is up there, too, if you have comments you want to get to me. I'll make sure Christopher gets them.

Again, this is kind of a dual slide we can look at. But it's an open public process. We have both these workshops, we have hearings, and I think I'm actually eating into your slide on this, Christopher.

MR. MEYER: It's really a joint slide. It's just additional information as I talked about before as far as people participating in the process. We have different ways you can get on mailing lists, get on the list server, also talk to our public adviser's office to get information. But there's also copies, hard copies of the

application for certification in libraries around the area. So if you really want to see a hard copy, very large document, you can go to the library and view it. And usually they will have it in their reference room.

And just as we said before, Jim has said several times as well, written comments are great. It really affords us the opportunity to make sure that we don't misinterpret any of the issues that you may have and we can get them to the appropriate staff so we can fully address your issues.

Forms of this nature, you know, you can give oral comments, actually, can also be very helpful because it allows other people in the community to understand what your issues are. So sometimes that will help them focus their thoughts as well. And, you know, that's why your participation is really ideal as early as possible.

And we talked about briefly the issues ID report, issues identification. And in the Issues Identification Report really we focused on cultural land use, visual resources, and then the cumulative effects, which is really this project, but if you're looking at the push towards renewable energy, everywhere in the Southwest when you get, you know, a million acres of public land that people will have applications out on, and it's probably well in excess of that at this point.

If all of that, or even a good portion of that got built out, your cumulative impacts would be much greater than just this project alone or a bunch of little projects here and there.

Their full impact on the environment when added together can actually be greater than the pieces. And, you know, these are just -- it gives you some of the ideas, something just to keep in mind as you are reading these. These are just from an initial look early in the process, things that we want to focus on when we are doing our analysis.

You know, land use, it's just -- you know, this is over 6,000 acres of public land that would be used for the production of power. And we just have to look at that as a significant change in its accessibility.

Air quality, as I said, we didn't identify it early. It's just as we started delving deeper into the project we started looking at just fugitive dust from the site of this area and then just the operations impacts of trying to clean, you know, well, 81 mirrors on 30,000 units. It's a lot of work, and it takes a lot of people driving around, moving water, things of that nature.

So when you think of these projects you don't think of air quality impact, but our staff, our job is to

work with the BLM and to really look at, you know, down to a very minute level to make sure that we have identified as many issues as we can in our initial documents.

And visual resources, it's just sort of the general, if you have 30,000 of these 40-foot tall units on 6,500 acres, you know, it's not going to be an invisible project. And Jim can probably talk a little bit -- you know the VRM classification, that's a BLM specific issue.

MR. STOBAUGH: Yeah. There are certain areas there where you look at part of the process of developing what would be the VRM classification for certain areas of the proposal. They really -- that are being established with this project.

MR. MEYER: Yeah. And as I said, there are cumulative impacts, you know, that affect both CEQA and NEPA analysis, so we will be working together on developing one section on that. And that is our little presentation.

MR. STOBAUGH: That was it. That was basically an overview. Any questions about what we presented as far as the proposal -- well, CEC and BLM's authorities as well as the process that we are going to be using and how we will be walking through this jointly before we turn

this to the Applicant and the proposal? Yes, it's about the process? Okay. Come on up if you're going to speak at all. Edie, we actually have a segment where public comment can be taken.

MS. HARMON: You asked if we have questions on the process, and I do. I have a very specific question on the process. And this stems from reviewing other BLM documents.

You said that there was going to be a real estate appraisal, that rental value would be based on real estate appraisal. And I'm going to ask right now that that real estate appraisal be public so that we can look at how you have done it.

And I ask this from having challenged a BLM real estate appraisal before. It went to court, and my understanding is that BLM has changed the procedures. But I definitely would like to see that and to make sure that when you are doing appraisals, you are actually comparing the potential value of land that is zoned for industrial with all the infrastructure and not just looking at the value of blank land.

MR. STOBAUGH: Well, first of all, I'm not an appraiser, but that will be done by our sister agency Appraisal Directorate Services, and they will be looking at the highest and best use for the lands. And they will

determine that through comparables that fit this scenario.

MS. HARMON: That's why I would like it public. I would like to be able to look at what your comparables are that you're comparing it to.

MR. STOBAUGH: Right. So, any process questions?

MS. WEINER: Just one simple question. What is your proposed date of release of your draft Land Use Plan Amendment?

MR. STOBAUGH: Right now that is very fluid. We have a lot -- this scoping is retrieving or requiring retrieval of a lot more data, so I can't really tell you. It's speculative at this point.

MS. WEINER: So that prompts a follow-up question, which is the schedule for beginning of construction will be according to the rest -- that other process has to be finished before they put a bulldozer on it.

MR. STOBAUGH: Sure. It actually has to be granted.

MS. WEINER: Okay.

MR. STOBAUGH: At least as far as the public lands go, yes.

MR. MEYER: If I can answer that as far as the private. This is in no way a pre-approved type

situation. We have a long process to go forward before we would even offer the Energy Commission side have approval or recommendations for either approval or denial of the application just to build the facility. So there are two parts.

They have to get approval from the BLM to have, basically, access to the land, and then approval from the Energy Commission to actually build the facility. And so that's -- there are several steps that they have to go through.

So, no, there's no way that they can actually do any work without approval from both of our agencies.

MR. STOBAUGH: So any other questions? Okay. I'd like, if we can, move now so you can hear from the Applicant, Stirling Energy Systems, of what the proposal actually is, the technologies involved as well as the thoughts already behind it there. And they have been working on this a lot longer than just Christopher and I have. John, should I hand it to you at this point?

MR. EGAN: Thanks a lot, Jim. My name is John Egan. I'm in charge of project development for Stirling Energy. And this is not the only project we have. We have another project even larger up near Barstow.

The picture you see on the screen is an actual picture of what a SunCatcher looks like, and this

is a model power plant that exists in Albuquerque, New Mexico at a placed called Sandia.

In the presentation today I'm going to tell you first what I'm going to tell you and that's -- the agenda is I'm going to tell you about Stirling Energy Systems. I'm going to tell you about the purpose of Solar Two, the SunCatcher technology, how this thing works, the overview of it, a project description, talk about the different resource areas, the Solar Two Project benefits, some common questions that come up on our project.

First about Stirling Energy. Stirling Energy has come up with what we consider to be a very unique SunCatcher technology that combines a mirrored concentrator disk that you saw in the early pictures with a very high efficient Stirling engine specifically designed to convert sunlight into electricity.

This is not a new technology. The original technology goes clear back to about 1816. And it was invented by a Scottish minister in the days of steam engines. When the steam engines were blowing up and killing people, the guy came out with a new model of the heat engine that converted heat to mechanical energy.

Our technology has been on the ground since 1984. We currently hold one of the world's records for

efficiency in converting energy into electricity. And it's at 31.25 percent. And what that means is of a hundred percent of the light that hits our mirrors, 31.25 percent of that gets converted into electricity that goes into the grid.

We are a United States company. We are headquartered in Phoenix, Arizona. We also have offices in Tustin, California, Albuquerque, which is at Sandia National Labs in New Mexico. The purpose of the Solar Two Project is to provide 750-megawatts of renewable electrical capacity under a 20-year power purchase agreement, better known as a DBA, San Diego Gas & Electric, also known as SDG&E.

We are trying to develop renewable solar electricity to help California achieve its Renewable Portfolio Status, known as RPS, which was raised recently by Governor Schwarzenegger to 33 percent renewables by 2020 when he signed the Executive Order in November 17th of this year.

What we would like to do is help protect the environment by delivering clean renewable solar energy to the grid. And we would also like to assist the State of California in meeting its goal of reducing greenhouse gas emissions to the 1990 levels by 2020, which is known as Assembly Bill 32.

Overview of the technology. It's basically somewhat simple. It just uses sunlight. The sunlight comes in, hits the mirror surface. The mirror surface is about 40 feet tall and 38 feet wide. That sunlight then is reflected back into the back of an engine. That engine converts the sunlight into mechanical energy which drives the generator. And the generator, you can see up here at the top of the unit, it's called a power conversion unit. The light enters the back of the engine and by using hydrogen gas in an enclosed system, it drives a four-cylinder engine that produces 25,000 watts of power for each unit.

Each unit only touches the ground, as you see here at the bottom, in about a two-foot circle. The rest of the ground is not touched by the unit. We get approximately seven of these per acre. One of the interesting things about the technology is it's probably the only solar technology that has the potential for putting some of the U.S. auto plants back to work.

The engine is not unlike a car engine. It works quite -- very similar to a car engine. So these engines could actually be built in shut down car manufacturing plants and help put Americans back to work to help us get off foreign oil.

We are designed to produce power during the

peak generation periods. Obviously, we only generate power when the sun shines. During that time period is when the bulk of us use the bulk of our power. The engine's about the size of an oil drum, so it's not very large. It has no combustion products, it has no air emissions, it doesn't use hazardous heat transfer fluids, and it doesn't use any fossil fuel infrastructure on-site. It's cost competitive, can be mass produced very similar to what Ford did with the Model T. We can produce them by the thousands. It has zero pollution and it provides peak power when we need it the most.

So the Solar Two Project, most of you in the area are familiar with the area, and it's basically located just south of Plaster City due west of town. We have got it divided into two phases. Phase One at 300-megawatts, Phase Two at 450-megawatts.

Phase One does not rely on the Sunrise Power Link. Phase Two and the combined project does. For those of you who haven't heard, the Sunrise Power Link was passed today at a vote of four to one.

The Solar Two will be one of the world's largest solar projects. Our other project we have near Barstow is actually a little larger than this, but this is 750 net megawatts of solar power located on approximately 6,140 acres of Federal land, administered

by BLM, as you have heard today. There's also 360 acres of private land interspersed inside the area, which equates to about ten square miles of total land.

We tried very hard to site this project to avoid or minimize impacts to the ORV areas and environmentally sensitive areas. Solar Two would consist of approximately 30,000 of these units, including the power conversion units, associated equipment and support. An interesting thing about the technology is we use very, very little water in the power conduction process, 32.7 acre feet at 750 megawatts. An acre foot, for reference, is about what a four-bedroom home uses in San Diego. So our water consumption is very minimal and that is used mostly to wash the mirrors.

The project, again, will be in two phases. Phase One is 12,000 SunCatchers, up to 300 megawatts. It would fill the existing transmission lines. Phase Two will expand out with another 18,000 SunCatchers and produce 450 additional megawatts.

Subject to receiving the necessary approvals that you have heard here tonight, we would like to start construction about 2010, with the project going commercial operation later that year. One interesting thing about our technology compared to practically everybody else is as soon as you put one SunCatcher in

the ground, you can turn it on and start generating power.

What does it look like? Well, it's hard to hide 30,000 SunCatchers. It will be visible. I would expect it to be a -- something that would actually attract people to come look at it because renewable energy is becoming such a focus of this country, and we need to get off of foreign oil so bad.

But this bottom picture is kind of what it would look like if you're coming down the freeway. The other picture is sort of like a semi-aerial view of looking down on the site.

The project schedule, depending on permitting, looks something like this. In the second quarter of this year we filed the AFC, or Application for Certification. In the fourth quarter of this year we received certification of that AFC. We would like to start construction about the first quarter of 2010. Through the third quarter of Phase One, we would like to get the first units on-line. 2012, we would like to start Phase Two, with the first units coming on-line also in 2012. 2014, we would like to complete the entire project up through 750 megawatts.

The resource areas you have heard quite a bit about tonight. Cultural resources, we've done a

tremendous amount of work to try to avoid as much as possible the archeological and historic architecture. We conducted pedestrian surveys. And we are doing our best to avoid potential adverse cultural effects of the project. We actually chopped off a large portion of our project to avoid a very high density archeological area at an extreme cost to the company.

Visual resource surveys were conducted, including the preparation of visual simulations from various points in the area. One of those -- actually, two of those you just saw. It will change the visual character of the area. Again, we can't hide this. The land use, we intentionally tried to avoid areas, again, that avoided the sensitive ORV issue of the area. And it will require the approval of the land use amendment and issuance of a right-of-way grant from the BLM in order go toward.

Now, what are the project benefits of this? Solar Two will develop renewable solar energy to help California achieve the RPS goal, which have you heard so much about and assist California in meeting its goal to reduce greenhouse gas emissions to 1990 levels by 2020. Jobs, approximately 160 permanent jobs in the area. And if you put a three-oh multiplier on that, which is pretty common, you get almost 500 permanent jobs this will

generate in the area. It will lead to increased sales revenue, people coming in to construct, operational employees, and jobs for local people during construction as well. We would expect a payroll of approximately $60 million in construction payroll and an average construction workforce of approximately 360 jobs, for a total project value of about a billion dollars.

Education benefits we have already started. We have been working with local schools in trying to help as much as possible to bring people from the local area into our project to work on it. I would expect potential boost in tourism, too, because most people certainly would like to see the world's largest solar plant.

Other resource areas, biological. Solar Two is sited outside critical habitat areas. We have conducted two years of extensive biological surveys. We have three potential sources of water, including the IID, westside main canal, ground water. There is also potential for reclaimed waste water as well.

Water quantity, again, about 32.7 acre feet of water a year to generate 750 megawatts. And as an example there of what a natural gas fired power plant of comparable size would use, you can see it's considerably more in acre feet.

Socioeconomic benefits include increase

revenue from sales tax, job creation, and the potential boost to tourism. The cumulative effects, the most notable potential effects, is that several renewable energy project applications near the project site are being processed so that we are not the only ones that are interested in Imperial County. There are other projects, also, that you have also heard a little bit about tonight. And we're working with the agencies that are here at the table to define appropriate mitigation for our impacts.

Alternatives. This project was selected as superior to meeting overall objectives while avoiding significant impacts. And we did look at several -- quite a few other areas as well.

Some of the common questions we get on this is this is not a proven technology. I have heard this a lot. The key thing here is this is not a new idea. It goes clear back to 1816. It's been used as an engine to propel submarines both in Sweden and in France. In our testing it has proven itself to be extremely reliable. And we have tested this motor and dish in a team relationship with the DOE at Sandia National Labs for over ten years. This is not a new technology, and we would not proceed on a billion dollar project without a reliable engine and system.

So right now we are one of the world's leading technologies, at least on efficiency. We have over 165,000 hours of testing on the motor. We have over 100,000 hours testing on the concentrator, and over 40,000 hours on the combined unit, on what we call on-sun, or where it is an actually in operation.

Another question that comes up is, well, will SDG&E really need the power until 2014? And the key thing here is back to the RPS standard. The RPS standard is needed now and will continue with the new requirement to go to 33 percent by 2020. Another key point is we need to switch from fossil fuel power generation to renewables as soon as we can in this country. We need to reduce or stop CO_2 production and to assist the State of California in meeting its goal of reducing its greenhouse gas emissions to 1990 levels by 2020.

There are some addresses here, and if you would like, I could leave this up for those of you who would like to take notes on it. Again, this is what the units look like when in operation. So I will leave this on the screen for those of you who would like to take notes on it. Thank you very much.

MR. MEYER: Thank you. I'm going to bow out and I'm going to turn this over to Jim. Unfortunately, I have a flight to catch so I can get up for the work on

actually the Solar One Project I have to get working on tomorrow morning. So I didn't get to use my gavel, so I'm going to pass this over to Jim.

MR. STOBAUGH: Go ahead and rap it once.

MR. MEYER: Thank you very much, everyone. And there will be a record of the rest of this, the public comments, and I will be reading through those to see if there are any issues that directly impact our staff. And I'm thinking some of the people might remain here. So I will be hearing all your comments, I'm sure, from a lot of sources. But thank you everyone for coming out and we look forward to seeing you at future meetings. Thank you.

MR. STOBAUGH: Christopher, I appreciate your help on the earlier session we had which was quite informative for, I think, everybody involved here with all your coordination. It's been a pleasure working with Christopher and his highly organized fashion of doing things, and the CEC folks which was manifested today as well. So thank you, Christopher, for all the CEC's help on this.

(Applause.)

MR. STOBAUGH: I would also like to say thank you for that presentation there by John Egan there with Stirling Energy Systems because I think it does help give

you a better idea about what is this proposal, its scale, the various resources that may be used. Drive safe, Christopher. And then the various resources that may be used involving this project itself.

So at this point in time, that's kind of all the presentations, if you would. And what I have here is so far five people that have signed up to provide public comments for this session. And I'm going to just -- I'm going to name them in the order that I was given them. If I get your name mispronounced, please correct us. I'm going to ask you to come up here and speak so we can get it captured as far as what your comment may be.

We have this room until one hour, basically, from now, until seven o'clock. And so I'm going to ask that we finish at least I'm going to say ten minutes before then as far as the comment period goes to kind of work in the last-minute considerations, if you would.

So with that being said, roughly that provides everyone with that's given me the five, count them, five cards here, roughly about ten minutes maximum to discuss. So I'm going to reserve the right to kind of, you know, for you to go roughly about that time period and ask that we move at least and provide everybody equal time to speak.

So right now I have five cards and five

people that wish to comment here. I will just start off with Teri Weiner. Teri represents the Desert Protective Council. So, if you would, state your name and who you represent and then provide us your comment.

MS. WEINER: Good evening. Teri Weiner, W-e-i-n-e-r, I'm Desert Protective Council, resident of San Diego, California. I'm trying to put in my mind what is being asked of us here. I'm trying to verbalize that we, the people of Southern California and of the desert areas, people that care about the desert, are being asked to, essentially, sacrifice ten square miles of our public lands for the higher good of the needs of California to have renewable energy and reduce our carbon footprint.

What I would like to see addressed in the draft EIS is an economic analysis comparing, you know, the cost of putting up this project as compared with developing renewable energy in the cities on rooftops, on parking lots, on government buildings.

You know, it's just assumed that this is the way to go, when we have been working with engineers and people and different energy groups have shown that there are viable alternatives to taking large pieces of public land to do this. We can do this in the city.

So I'm trying to figure out how the BLM and the CEC needs to address the fact that we should, you

know, for the sake of our public lands, which are of finite -- they are being -- they are being barraged with requests for projects, not just energy but military base expansions and housing projects and sucking dry aquifers and everything else, that we somehow look at the alternatives to this project which aren't in the desert. I think this is important. And I think the people of California are ready to engage themselves and not be relying on huge companies to bring them energy and transmit it from their public lands.

The desert looks like a wasteland to a lot of people that don't spend time here. It's a habitat of fabulous value, and the visual -- the visual resources is, you know, kind of looked at as a non-issue. It isn't. Our visual resources that are untrammeled by human infrastructure, industrial infrastructure, are becoming, you know, very scarce out here. So, there's that point.

Nobody has mentioned the view, you know, as you were coming down from Hill Cumba, you know, looking on this, it will totally change the character of the desert. It has been mentioned but I would like to see the community character of Ocotillo being addressed. Economic benefits are being touted, but what about economic impacts? You know, maybe say what are those.

Well, I think we ought to think about what those are because they are there.

And what about airplanes flying overhead? What kind of flash in our eyes are going to be coming off these mirrors? Has anybody considered the air space above this? And I urge you, I urge you to engage Native American tribes, not just the leaders of the tribes and the bureaucracy of the tribes, but some of the Native American elders of the tribes and engage them immediately and have them take you out there and identify what's out there and talk to you about it's not just a matter of this site or that site or that area; it's a matter of the integrity of the cultural heritage of the whole that needs to be addressed.

And the water usage, you know, again, we have a desert. We have a water crisis in California that is probably going to be the most -- the most important thing that we are going to deal with in the next ten years. Can we justify this use of water to wash mirrors when we are wondering if we are going to have enough to drink pretty soon? So I will be, hopefully, be able to submit a few more comments before the day after New Year's. Thank you very much.

MR. STOBAUGH: Thank you, Teri. And, again, I just want to encourage you, as Christopher has done, if

you could provide whatever you have in writing. That just helps us get with our accuracy. So, thank you very much for your comments.

Next I have just again the next card up is Edie Harmon. I'll ask you to state your name and who you may represent and start with your public comments.

MS. HARMON: Edie Harmon. I'm from Ocotillo. At this point I'm just representing myself. That may change, but for right now.

I have a number of questions. I couldn't find what I had typed up and had written, but I wanted to let you know that I will be making a formal request that you look under alternatives for considering an alternative site, including the Mesquite Lake site in the central part of Imperial County that is already appropriately zoned land. And I have been here for more than 30 years, and I have not seen development go in there. And that is certainly the County's intent as to a place where there should be industrial and commercial development. And I will get pages and maps from the County's General Plan to you on that.

As an alternative to the Mesquite Lake site, I would request as a second alternative to consider other lands that are already disturbed, whether it's lands that have been used for agricultural projects, feed lots, or

failed construction projects, whatever, where we don't have the same kind of significant biological and cultural resources that exist on public lands that are managed by BLM.

And I know there are areas that have been disturbed and I know there are other areas that have been -- when I looked at one of the BLM sites, it looked to me like there were 65,000 acres of public lands that were being proposed in Imperial County for solar projects alone. That is an extraordinary amount of public land. So the cumulative impacts would be very considerable.

And as a third alternative, other than sites that we may additionally identify, as Teri said, we need to look at in-base and rooftop solar. I know that there have been a number of studies by engineers in San Diego that indicate that Stirling Solar Two is not an essential provider for San Diego Gas & Electric to be able to meet the electrical needs of San Diego.

And having most recently read several books on climate change and sea level rise, and all kinds of things, water shortages, I think that the population of San Diego and what happens in San Diego in the future may be very different, especially with the reduction in availability of water resources to support development in the future. San Diego may rather than see a large

population increase may find that it's going to have to have a population decrease because of climate change. And that needs to be addressed, looking at information on climate change, because some of the information I've seen recently is quite shocking. And the time frames in which these climate changes and water shortages may take place are a lot shorter than we have been led to believe. So I think that's an important concern.

Earlier it was mentioned by Stirling that -- representatives for Stirling -- that a single unit can produce grid-ready electricity. If that's the case, I ask that you look at an alternative of rather than putting these units in concentrated area on public lands to provide energy for San Diego Gas & Electric, that there be looked at a dispersal of these units to provide electricity for the State prisons that are located in Imperial County where there is already disturbed land. There are hospitals, there are schools, there are shopping centers and malls, all of which have considerable energy uses when combined.

So rather than having 30,000 units on 6,500 acres of relatively undisturbed land, the units could be dispersed throughout Imperial County and provide energy locally for IID or for high daytime energy consumption in the county. And I think that's an alternative that has

to be considered. If we are talking about California energy needs, we need not to talk about just the use of public lands for providing, quote, profitable energy for a distant source.

And at a pre-app meeting you mentioned earlier that we were told that wasn't feasible because it wouldn't be profitable. If we're talking about energy, we need to take the profit issue out and look at who are you producing energy for and where is that energy going, not whether it's profitable. And if it's not profitable to provide it for use locally, then maybe it's the wrong project in the wrong place.

I would ask that visual resource issues be consistent with BLM's VRM management site on the BLM web site and that all of the visual inventory information be available to the public at the BLM office in El Centro, which is mandated by the BLM's VRM management guidelines on the Internet. And there is some very specific information, and BLM does not have the discretion to reinterpret according to its guidelines that are on the website.

And I would ask, also, if the planned amendment is going to be done in similar -- in ways that were similar to what BLM has done in the past, which is putting out a plan amendment, with plan amendments rather

than a project -- a single project issue, BLM used to put out draft plan amendments every year, or every couple of years, and consider plan amendments for the entire CDCA rather than just responding to a project. And I have many of the plan amendments in the past, and they have gone out, they have public comments, and sometimes it takes a couple of years before BLM gets around to making decisions.

And, again, as I asked before, where is the funding coming from? When we were on the bus the last time, we were told that it looked like there were going to be requests for federally subsidized funding, you know, federal funding and loans for this project. I mean, I don't understand taxpayer subsidized things for private profit. I have a problem if that's the way this is going, is looking at taxpayer money on public lands for private profit. Again, that's an issue that I think has to be addressed.

And I would ask -- I have just looked at Dr. Butler's comments on Stirling dish technology that were submitted for the Sunrise Power Link Project, and it looks as if there is still a problem with mean time between failures and downtime on these units. And he suggested that unless the mean time between failure is substantially increased, that this is not viable

technology. And Dr. Butler is someone who has worked on this technology before.

So I think that, you know, that the reliability of the project needs to be addressed. And when we were on the bus, again, we were told that the six units that exist at Sandia, which is the only six units in the world, were all handmade. So if we are going from six handmade units that are in existence at Sandia National Laboratory, which is at a much higher elevation and much colder climate, and I was told by a friend who just went there that things are more efficient, the solar technology is more efficient at that climate and elevation and temperature than it would be here, then we need to look at how it compares. And if it's only handmade units now, where it sounds like -- and we were told on the bus that they would be looking for funding for R&D, it looks like we're a long way away from manufacturing thousands, tens of thousands of Stirling Energy at some factory in Wisconsin -- I mean, not Wisconsin, Michigan, which was unidentified, in the hopes of producing the mirrors, the tens of thousands of mirrors that are going to be someplace in Arizona. It still sounds pretty iffy to me that we're not near having units that are going to be reliable.

And I don't know if we have a fairly short

mean time between failure, which means a large requirement for maintenance and potential problems with the unit, if we don't have manufactured units how can we say that this technology is going to be really reliable and how much transportation is going to be involved to do the maintenance and repairs in addition to the washing of the mirrors. Because if it is still sort of an infant technology, then we may need to look at potentially increased emissions and impacts in terms of maintenance. And I don't know. I haven't seen anything from Sandia looking at what the current status -- unless you can tell me -- what the current estimate of mean time between failure on the units is, especially if you've only got six units.

And my guess is on a lot of things if you are doing them handmade or custom built, you can sort of tweak out problems as you go, whereas if you start going to factory manufactured units, there may be a longer period of time to work out the bugs. I mean, goodness only knows, Detroit has had enough problems with some of the automobiles that have come out. And when I look at the recall list in Consumer's Union, it's not exactly something that inspires me to think that there is going to be trouble-free if that's where Stirling Solar is planning on getting its engines from.

And when I was briefly looking through the documents this morning, it looked like there were some fairly large scale engines and diesel operated engines and facilities that would be on the project site and I did not have time to ascertain what these diesel operated energy and pumps would be.

I also have concerns with climate change where, as I earlier mentioned, the pan evaporation rate in Imperial County is over a hundred inches of water per year. I don't know how the pan evaporation rates or increased evaporation of water is likely to be with increased winds and increased temperature. But, certainly, the evaporation rate would be higher. And if your water facilities are for waste water, I would think that a higher evaporation rate might lead to a higher accumulation of minerals of some types.

So I would ask that you need to look at potential mitigation on here at covering anything so that it's not going to be attractive to birds and it's also not going to be attractive to other insects as an insect breeding place.

We also need to look if you have water stored on-site at reducing the possibility of tamarisk, or an invasive species there, although I must admit from the photographs it looked like from what you showed of the

photographs of Sandia was that the area had been scraped -- or what your proposal for the area was, it looked like it was without any vegetation at all. And I don't know if that's the case because that would mean clearly that the land has no use for anything else, the cultural and archeological resource -- cultural values would be destroyed, archeological resources would be destroyed. And if there's no vegetation, there's no habitat for much of anything. And --

MR. STOBAUGH: You have actually had your ten minutes. Can I ask you if there is something you can --

MS. HARMON: One more question. I would like BLM to consider this, the potential evaluation of this, as an area of additional cultural concern in terms of working together with Native Americans, just as you looked at the area over by the Glamis Imperial Mine Project. I think that's something that needs to be dealt with up front as to whether that is an appropriate designation. And, if so, then is it an appropriate project at that site. Thank you.

MR. STOBAUGH: Thank you. Appreciate that. Thank you. I have up next Donna Tisdale. And if you would, come up and state your name and who you represent.

MS. TISDALE: Donna Tisdale, T-i-s-d-a-l-e. I'm actually elected to represent the community of Boulevard

in the land use planning area, but I'm here today as an individual.

And the Sunrise Power Link was mentioned today and it was approved, but I wanted people here that may not be aware that the assigned administrative law judges for the Public Utilities Commission in their proposed decision had found that the project was too expensive, it was not needed, and it was too damaging environmentally regardless of which route was chosen.

Well, today the southern route was chosen without conditions for rural energy, and that route will go right through the community of Boulevard.

Also, Mr. Egan's presentation was very -- it sounded like Stirling Energy Systems was very magnanimous in doing this out of the goodness of their heart, which I really don't think is the actuality.

I do have a question that was raised at the last meeting I was here and they talked about the SunCatchers will fold up like sunflowers, although sunflowers don't fold up, when the wind comes. And I have not seen an anemometer on-site. And I was wondering if there was going to be an anemometer on-site to determine the types and frequencies of wind storms that are involved that you will have to deal with, with these fragile and expensive units.

I also want to bring up cumulative visual impacts. Not only with the existing Southwest Power Link, there will now be potential for the new Sunrise Power Link and, also, the addition of the line back to tap in for Stirling Solar to existing Imperial Valley substation. But also on the simulation of all the 30,000 SunCatchers, the ridge to the west, I want people to be aware that that is actually the target for Industrial Wind Turbines in McCain Valley. There are over 130 of them proposed at this moment. They're about 500 feet tall, unless they go to three megawatts which is approaching closer to 600 feet tall.

There is also the Wind Hunter Project to the west here and there is also, I don't even know how many projects proposed from the border south to the Sierra Juarez Mountains, and that's also connected into the Sunrise Power Link. There was a new party involved, a new intervenor in the Sunrise Power Link Project, and their name escapes me right now. It's another, I think, Spanish company and they're talking about thousands of megawatts of wind energy on the Sierra Juarez that they want to tap into the Sunrise Power Link.

So that brings me also to another question. Like Edie, I was on the bus tour on November 24th, the site visit to the project site. And Mr. Lyden from

Stirling Solar had brought up that they just had the equity funding for the pilot project and it was just for the manufacturing. And actually they've got four other handmade units that they are going to put into -- install at Sandia to incorporate some changes in engineering for mass production.

So they are still in the early phases here. And he also at that point told us they were looking at manufacturing projects -- the engines, back in Michigan, I believe it was. But I saw an article in the Union Tribute, San Diego Union recently, and they're talking about Canadian. So there aren't that many jobs in Canada that are American jobs. So these details need to be worked out and vetted.

Also, I had another question on the -- Mr. Lyden said it was going to cost a few million dollars in substation upgrades but that Stirling Solar was number one in line, the Cal-Iso line for the 300 megawatts, but for Phase Two, they're number four in line. So if they are number four in line to get into the expanded substation for Sunrise Power Link, who's in front of them and how many megawatts are involved and is there even going to be any capacity on Sunrise Power Link or Southwest Power Link for Phase Two?

These are important questions and I haven't

really heard these questions being asked, and I haven't seen any information being provided on this. So I, too, will try and submit my comments in writing. I would like to say them publicly in case there is anybody listening, it will maybe raise some awareness and, you know, spark some curiosity and, hopefully, get some legitimate responses.

MR. STOBAUGH: Thank you. I appreciate you kind of reminding us -- I forgot to mention this to Ms. Harmon, just follow up your comments in writing, again, so we get the accuracy made well in that regard. So thank you, Donna. I appreciate your comments.

I have up next, and tell me if I'm mispronouncing this, Marilyn Moskowitz.

MS. MOSKOWITZ: Hi. I'm Marilyn Moskowitz. I'm representing myself. I'm a -- well, I live in Holtville, which is in Imperial County.

I'll try and be concise about this. Air quality here tends to be very poor. The American Lung Association I think on their last kind of report card, Imperial County was doing very poorly. One of the points they made was that 40 percent of our elementary school children have asthma. On the coast it's 15 percent to 18 percent. So air quality is something I'm real concerned about. I anticipate that a project of this magnitude

would, you know, issue forth quite of lot of dust and other pollutants.

The other thing I'm concerned about is that Ocotillo is served by an aquifer. Plaster City has tapped into that. That was one of the designated water suppliers of the project. And I think that would be a bad call. I think that aquifer, considering it's good quality water, which is rare in Imperial Valley really needs to be preserved as drinking water, paying attention to re-charge rates, et cetera, et cetera.

The other thing I want to talk about is there's another paradigm for solar. The technology is changing very, very rapidly. Southern California Edison is having, I guess, they are planning to have a 250-megawatt project in terms of commercial rooftops. Commercial rooftops, residential rooftops, are basically there waiting. And the whole point is that, you know, we are kind of waiting for the technology to make it really feasible and it's around the corner.

So what that says to me, anyway, is at some point if you go ahead with this kind of a project it's going to be obsolete in a number of years. This is a limited liability company, which means that once the money is spent you can't go after the principals in terms of cleanups, in terms of anything.

I think there needs to be a huge -- if it's decided to go ahead with this project, there needs to be is sufficient bond posted that's basically only for the purpose of cleanup and restoration of this area. Because Imperial County is a poor place. We are going to get stuck. We're stuck with the new river. We're stuck with the mess -- this whole area is stuck with the mess that is going to be the Salton Sea or is becoming the Salton Sea. We've got some environmental problems right now. We don't need a huge 6,000- to 8,000-acre junkyard, you know, of obsolete technology because I believe that the solar technologies are changing fast enough with the thin film PV, that sooner or later it is going to go decentralized and localized, and then it's not going to be feasible anymore, and where is the money going to come from? So that's a real concern.

I think I'm just going to stay with those things. But I think it's really important to realize that there is this shifting paradigm in terms of PV from huge mega stations to decentralized, localized, thin film PV, and we kind of need to look at that. You know, they're talking about 2014. The technology may have innovated enough that the other paradigm is paramount at that point. So I guess that's all. Thank you.

MR. STOBAUGH: Thank you. Okay. Unless anyone

else has signed up I have one more, Steve Taylor, to come and speak. Steve, you represent San Diego Gas & Electric?

MR. TAYLOR: Yes, I do.

MR. STOBAUGH: Okay.

MR. TAYLOR: My name is Steve Taylor. I work for San Diego Gas & Electric. I'm here to support the project, this project. And I would echo that this project is being supported at the previous meeting that we had here by numerous public agencies right here in the valley. And I think it's very important to recognize that there is a large amount of support in the community for this project.

The Solar Two Project is a very important part of SDG&E's strategy to meet its renewable goals into the future, especially in light of the recent announcement by Governor Schwarzenegger of increasing the goal to 33 percent. This is something that will benefit all Californians.

Today's approval by the California Public Utilities Commission of the Sunrise Power Link is an important first step in allowing the full build-out of this project. We do encourage the agencies to meet their NEPA and CEQA requirements. It's very important that compliance is followed and that we follow the letter of

the law. I would also encourage the agencies to consider expediting these projects based on Governor Schwarzenegger's Executive Order because we need to move forward with these types of projects in order to meet these renewable goals.

With that, I say thank you very much.

MR. STOBAUGH: Thank you. I appreciate your comments. I appreciate everyone's comments. That's the five speakers I have had requested sign up. Is there anybody else? Speak now or forever hold your peace. We are going to turn it into an open house at this point in time. You can mill around. Yes, Edie?

MS. HARMON: I would just like to add one more comment. Edie Harmon. In response to the request that you expedite, I think BLM has to follow the NEPA requirements. You have to follow the timeline. You cannot cut them short. There is nothing in any of the directives of legislation that I have seen that authorizes any Federal or State agency to circumvent the NEPA or CEQA process by shortchanging the public's opportunity to review and comment.

And I would add that when people talk about expediting a project, remember that the project applicant has had many months or years to come up with this. When you come up with thousands of pages of documents and give

the public only a very short period of time to comment, it's the public that gets cut out and it's the public that has to deal with -- live with the consequences, both financially and environmentally and in terms of health with the kinds of decisions that are being made.

So I would urge you not to even consider shortchanging in speeding up the process. In fact, if anything, give us more time because there is so much to look at.

MR. STOBAUGH: Okay. Right now we will consider those comments offered in this public arena, okay? No position established one way or the other. But that is the purpose of public scoping is to simply provide and solicit, if you would, an opportunity for the public to come forward at this time and offer us their thoughts on whatever issues, potential impacts they may see, possible alternatives. That is exactly what the scoping purpose is. And right now I think it's the system and the processes are all working.

MS. HARMON: Can we send scanned documents if we don't --

MR. STOBAUGH: If you, for example, under scanned documents a pdf, BLM as well I'm sure the California Energy Commission can receive those.

MS. HARMON: I have some exhibits that I would

like to be able to send you, but I don't have anything other than something -- I could scan it, but I don't have it on the computer and I realize from having to scan 20,000 pages of documents, scanned documents take up a lot of space. So is it okay if I can't or would you rather have paper copies if I can't -- if I don't have it on --

MR. STOBAUGH: We would ask for you to submit it in whatever form you can submit it in that regard. We can look at making copies, if you would, from what we have received. But it's the manner you wish us to receive it in.

MS. HARMON: I can send some things scanned as exhibits, but being aware that they take up many, many times the amount of computer space.

MR. STOBAUGH: Right.

MS. HARMON: Okay, thank you.

MR. STOBAUGH: That's all we have. It's roughly about 20 minutes -- well, actually, about 15 minutes left. But as far as the full scoping meeting, it runs to 7:00 p.m. as we advertised. I encourage folks to again walk around and take a look at what these placards show us. There are other pieces of information around as well. And I want to thank the folks coming here and participating in this, the Applicant, of course, Stirling

Energy folks here, providing us with the input so we get a better idea what we are scoping on, and the California Energy Commission with helping us walk through this process together.

Again, I appreciate the public's interest in this project. One of the reasons why this second scoping meeting was held at this hour, 5:00 to 7:00, was to provide those an after-work time to come and speak as well. The last one was held in the afternoon at 2:00 in the afternoon. So we wanted to make sure we have the opportunity for those working as well as those that couldn't get off work providing an opportunity.

So if there's nothing else, thank you very much. Again, I will be here until 7:00 p.m. as well so I'm not going to obligate anyone else to be here until 7:00 p.m. So it's up to you at this point in time. Thank you.

(End of proceeding at 6:34 p.m.)

REPORTER'S CERTIFICATE.

I, SANDRA RILEY, CSR No. 8026 (CA), and CR No. 50730 (AZ), Certified Reporter, certify:

That the foregoing public hearing proceedings were taken before me at the time and place therein set forth.

That the presentation of all parties, the questions propounded, and all comments and statements made at the time of the public hearing were recorded stenographically by me and were thereafter transcribed;

That the foregoing is a true and correct transcript of my shorthand notes so taken.

I further certify that I am not a relative or employee of any of the parties, nor financially interested in the action.

I declare under penalty of perjury under the laws of Arizona that the foregoing is true and correct.

Dated this 19th day of December, 2008.

SANDRA RILEY, CR No. 50730 (AZ)
CSR No. 8026 (CA)

APPENDIX M

WRITTEN COMMENT LETTERS RECEIVED BY THE CEC

This appendix contains written comment letters received by the CEC from public agencies, groups and organizations, and members of the general public.

WRITTEN COMMENTS RECEIVED FROM PUBLIC AGENCIES

- United States Environmental Protection Agency (10 pages)
- Imperial Irrigation District (1 page)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

November 14, 2008

Christopher Meyer
Project Manager - Systems Assessment & Facility Siting Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

Subject: Notice of Intent to Prepare an Environmental Impact Statement/Staff Assessment and Proposed Land Use Plan Amendment for the SES Solar Two project, Imperial County, CA

Dear Mr. Meyer:

The U.S. Environmental Protection Agency (EPA) has reviewed the October 17, 2008 Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS)/Staff Assessment for the Stirling Energy Systems (SES) Solar Two Project in Imperial County, California. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

EPA supports increasing the development of renewable energy resources, as recommended in the National Energy Policy. Using renewable energy resources such as solar power can help the nation meet its energy requirements without generating greenhouse gas emissions. To assist in the scoping process for the project, we have identified several issues for your attention in the preparation of the EIS. These issues are discussed in our detailed comments.

We appreciate the opportunity to review this NOI and are available to discuss our comments. Please send one hard copy of the Draft EIS and two CD ROM copies to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 972-3545 or at mcpherson.ann@epa.gov.

Sincerely,

Ann McPherson
Environmental Review Office

Enclosures: Detailed Comments

cc: Lynda Kastoll, Bureau of Land Management

US EPA DETAILED COMMENTS ON THE SCOPING NOTICE FOR THE ENVIRONMENTAL IMPACT STATEMENT (EIS)/STAFF ASSESSMENT AND PROPOSED LAND USE PLAN AMENDMENT FOR THE PROPOSED STIRLING ENERGY SYSTEM (SES) SOLAR TWO PROJECT, IMPERIAL COUNTY, CALIFORNIA, NOVEMBER 14, 2008

Project Description

The Stirling Energy System (SES) Solar Two Project would consist of a solar thermal power plant facility approximately 14 miles west of El Centro, California in Imperial County. The proposed project would be constructed in two phases utilizing SunCatcher technology, and would include approximately 30,000 250 kilowatt (kw) solar power dishes with a generating capacity of approximately 750 megawatts (MW). The first phase would consist of up to 12,000 SunCatchers configured in arrays of 200 1.5 MW solar groups (60 SunCatchers/1.5 MW group) with a generating capacity of about 300 MW. The second phase would consist of approximately 18,000 SunCatchers configured in 500 1.5 MW groups (60 SunCatchers/1.5 MW group) with a net generating capacity of 450 MW. Each SunCatcher system consists of a 38x40 foot wide solar concentrator dish that supports an array of curved glass mirror facets designed to automatically track the sun and focus solar energy onto a Power Conversion Unit which generates electricity. Related structures include a main services complex, assembly buildings, a 230-kilovolts (kV) electrical substation, a 10-mile transmission line, access roads, supply water line, and a 10-mile 230kV transmission line from the project site to the existing substation. The project would be located on approximately 6,500 acres of land, including 6,140 acres of BLM-administered public land and approximately 360 acres of privately owned land.

1. Statement of Purpose and Need

The Draft Environmental Impact Statement (DEIS) should clearly identify the underlying purpose and need to which the Bureau of Land Management (BLM) is responding in proposing the alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

Recommendation:
The purpose and need should be a clear, objective statement of the rationale for the proposed project. The DEIS should discuss the proposed project in the context of the larger energy market that this project would serve; identify potential purchasers of the power produced; and discuss how the project will assist the state in meeting its renewable energy portfolio standards and goals.

2. Alternatives Analysis

EPA urges a creative and flexible approach be taken in the development of potential alternatives. Note that the National Environmental Policy Act (NEPA) requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should provide a clear discussion of the reasons for

the elimination of alternatives which are not evaluated in detail. Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts. The alternatives analysis should describe the approach used to identify environmentally sensitive areas and describe the process that was used to designate them in terms of sensitivity (low, medium, and high).

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g., acres of wetlands impacted, tons per year of emissions produced, etc.).

Recommendation:
The DEIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

3. Biological Resources

The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the Endangered Species Act (ESA). We recommend that the DEIS include a biological assessment, as well as a description of the outcome of consultation with the U.S. Fish and Wildlife Service under Section 7 of the ESA. Analysis of impacts and mitigation on covered species should include:

- Baseline conditions of habitats and populations of the covered species;
- A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area;
- Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.

The DEIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species.

4. Air Quality

The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

The DEIS should describe and estimate air emissions from potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions. EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

Recommendations:

- *Existing Conditions* – The DEIS should provide a detailed discussion of ambient air conditions, NAAQS, and criteria pollutant nonattainment areas in all areas considered for solar development.

- *Quantify Emissions* – The DEIS should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The DEIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.

- *Specify Emission Sources* – The DEIS should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

- *Equipment Emissions Mitigation Plan (EEMP)* – The DEIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, carbon monoxide, hydrocarbons, and NOx associated with construction activities. We recommend that the EEMP require that all construction-related engines:

    - are tuned to the engine manufacturer's specification in accordance with an appropriate time frame;
    - do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
    - are not tampered with in order to increase engine horsepower;
    - include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the project site;
    - use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and

- include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.

- *Fugitive Dust Control Plan* - The DEIS should identify the need for *Fugitive Dust Control Plan.* We offer these general recommendations:

  - Stabilize open storage piles and by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
  - Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
  - When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

5. Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. Global warming can affect weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates, resulting in climate change.

Recommendation:
We recommend the DEIS include a discussion of climate change and how climate change could potentially influence the proposed project, especially within sensitive areas. We recommend this discussion include a short summary of any applicable climate change studies, including their findings on potential environmental impacts and their recommendations for addressing these effects.

Recommendation:
We recommend the DEIS quantify and disclose the anticipated climate change *benefits* of solar energy. We suggest quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values.

6. Indirect and Cumulative Impacts

The cumulative impacts analysis should provide the context for understanding the magnitude of the impacts of the alternatives by analyzing the impacts of other past, present, and reasonably foreseeable projects or actions and then considering those cumulative impacts in their

entirety (CEQ's Forty Questions, #18). The DEIS should clearly identify the resources that may be cumulatively impacted, the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed project. The DEIS should focus on resources of concern – those resources that are "at risk" and/or are significantly impacted by the proposed project, before mitigation. In the introduction to the *Cumulative Impacts Section*, identify which resources are analyzed, which ones are not, and why. For each resource analyzed, the DEIS should:

- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
- Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts.
- Identify the future condition of the resource based on an analysis of impacts from reasonably foreseeable projects or actions added to existing conditions and current trends.
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
- Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts.
- Identify opportunities to avoid and minimize impacts, including working with other entities.

7. Water Resources

Water Supply and Water Quality

The DEIS should estimate the quantity of water the project will require and describe the source of this water and potential effects on other water users and natural resources in the project's area of influence. Assuming groundwater is used, the DEIS should clearly depict reasonably foreseeable direct, indirect and cumulative impacts to this resource. Specifically, the potentially-affected groundwater basin should be identified and any potential for subsidence and impacts to springs or other open water bodies and biologic resources should be analyzed. At a minimum, the DEIS should include:

- An analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats;
- A discussion of compliance with Clean Water Act Section 404(b)(1) Guidelines (40 CFR 230) if alternatives propose to place fill in waters of the U.S. (WOUS);
- A detailed discussion of cumulative impacts to groundwater supply within the hydrographic basins that would support the alternatives; and
- A description of the water right permitting process, including whether water right permits contain special conditions; measures to mitigate direct, indirect, and cumulative impacts; and provisions for monitoring and adaptive management.

The DEIS should address the potential effects of project discharges, if any, on surface water quality. The specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. If the facility is a zero discharge facility, the DEIS should disclose the amount of process water that would be disposed of onsite and explain methods of onsite containment. The DEIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations, and identify whether any components of the proposed project are within a 50 or 100-year floodplain. We also recommend the DEIS include information on the functions and locations of ephemeral washes in the project area, because of the important hydrologic and biogeochemical role these washes play in direct relationship to higher-order waters downstream.

Clean Water Act Section 404

The project applicant should coordinate with the U.S. Army Corps of Engineers to determine if the proposed project requires a Section 404 permit under the Clean Water Act. Section 404 regulates the discharge of dredged or fill material into waters of the United States (WOUS), including wetlands and other *special aquatic sites*. The DEIS should describe all WOUS that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters. If a permit is required, EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA ("404(b)(1) Guidelines"). Pursuant to 40 CFR 230, any permitted discharge into WOUS must be the least environmentally damaging practicable alternative (LEDPA) available to achieve the project purpose.

Clean Water Act Section 303(d)

The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality. The DEIS should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs.

8. Coordination with Tribal Governments

Executive Order 13175

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes.

Recommendation:
We recommend the DEIS describe the process and outcome of government-to-government consultation between the BLM and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

National Historic Preservation Act and Executive Order 13007

Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the National Historic Preservation Act (NHPA) are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.

Executive Order 13007, *Indian Sacred Sites* (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.

Recommendation:
The DEIS should address the existence of Indian sacred sites in the project area and discuss how the BLM will avoid adversely affecting the physical integrity of sacred sites, if they exist. The DEIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHP eligible sites; and development of a Cultural Resource Management Plan.

9. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance[1] by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

[1]Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

Recommendation:
The DEIS should include an evaluation of environmental justice populations within the geographic scope of the project. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.

10. Recreational Use

BLM is entrusted with the multiple-use management of natural resources on public land, and that public land must be managed for outdoor recreation and natural, scenic, scientific, and historical values. The development of solar resources could restrict or reduce the opportunities for recreational use, including off-highway vehicles (OHV) that may access areas that may have been designated as open for recreational use.

Recommendation:
EPA recommends that there be full disclosure of the impacts to recreational users in the project area. The DEIS should clarify what general measures will be incorporated to ensure that OHV and other recreational users are not injured due to hazards associated with exposed solar collectors, piping, and transmission lines. It would be reasonable to assume that OHV users do not always stay on designated trails or may not know which trails are in fact designated. Some precautions regarding safety should be implemented.

11. Invasive Species

Executive Order 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. The DEIS should include a project design feature that calls for the development of an invasive plant management plan to monitor and control noxious weeds. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112.

12. Hazardous Materials and Hazardous Waste

The DEIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirements. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less toxic materials should be

evaluated as mitigation. This potentially reduces the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.

13. Coordination with Land Use Planning Activities

The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project area. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).

DOCKET
08-AFC-5

John Pierre Menvielle's Prepared Remarks
November 24, 2008

Good afternoon, I am John Pierre Menvielle, president of the Imperial Irrigation District Board of Directors, and I am here to speak in favor of the Stirling Energy Systems solar project in the Imperial Valley.

IID is the third largest public power provider in the state of California and is a staunch supporter of the development of renewable energy resources within its service area. We view projects like this one as being essential to spurring the growth and development of this emerging segment of the regional economy, and the district has committed its own resources to upgrading its transmission system to promote that growth and development in the coming years.

As an energy balancing authority, we applaud Stirling's innovative technology; as an irrigation district, we are greatly encouraged by the efficiency measures it will employ to conserve water.

And, as a leading public sector employer and corporate citizen with an obvious stake in the economic progress of the communities we serve, we look forward to the hundreds of jobs the company will create in the future.

If IID can be of any further assistance in moving this project forward through the scoping process, you may be assured that we stand ready to do so.

Thank you.

WRITTEN COMMENTS RECEIVED FROM GROUPS AND ORGANIZATIONS

- El Centro Chamber of Commerce and Visitors Bureau (1 page)
- Desert Protective Council (3 pages)
- The Wilderness Society and the Natural Resources Defense Council (6 pages)
- Sierra Club, San Diego Chapter (17 pages)
- Mussey Grade Road Alliance (121 pages)

El Centro
Chamber of Commerce
& VISITORS BUREAU

1095 South 4th Street
Post Office Box 3006
El Centro, CA 92244 - 3006
(760) 352-3681
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DOCKET
08-AFC-5

Proposed SES Solar Two Power Project 11/24/08

The El Centro Chamber of Commerce and Visitors Bureau is on record with a policy statement that says in part:

* We support policies that encourage the generation of additional local energy , including production of renewable energy resources for export and local consumption , provided that renewable energy projects are consistant with land use policies and environmental impacts are fully mitigated.

  Additionally , The El Centro Chamber of Commerce supports projects that will be beneficial to the local economy. The SES Solar Two project as proposed , will create a significant number of construction jobs. With the completion of the project an estimated 200 permanent jobs will have been created. Stirling Energy Systems Solar Two Project should be a key part of Imperial County's goal of becoming the leader in "Green Energy " production not only in California but in the world. Solar , wind and geothermal eneergy development are all available within this county and plans are already underway to provide the means to transfer this electricity to other parts of the state, additionally, programs have been developed with in the county to provide the skilled workforce for these facilities.

The El Centro Chamber of Commerce supports Stirling Energy Systems Solar Two Project as stated in the Policy Statement.

DESERT PROTECTIVE COUNCIL

Christopher Meyer
Project Manager
California Energy Commission
1516 9th Street MS-15
Sacramento, CA 95814
cmeyer@energy.state.ca.us

December 30 2008

Re: Stirling Two Scoping Comments

Dear Mr. Meyer,

On behalf of the Desert Protective Council, I would like to submit these scoping comments for your consideration as an addition to the verbal comments I made in person at the December 18 2008 El Centro Public Scoping meeting.

The Desert Protective Council (DPC) is a 54-year-old non-profit membership organization whose mission is to preserve the unique natural, cultural, historic, recreational, scientific and visual resources of the American southwest deserts; and to educate children and adults to the wonder of the deserts.

The DPC represents members in San Diego and Imperial Counties who are knowledgeable about the area of BLM public lands in western Imperial County on which this proposed Solar Two project is located. We are concerned about the potential mitigable and immitigable impacts from this massive project.

- Cultural Resource Impacts- complete surveys of cultural artifacts, sites and areas within the project area are needed. Archaeologists who have experience in the Imperial County area should be employed. Consultation with local Native American Tribes, including representatives of the Quechan and Kumeyyay Tribes should be done as well as consultation with the Native American Lands Conservancy. Cumulative impacts to the cultural heritage of the entire Yuha Desert Cultural area must be analyzed. Local archaeologist Jay Von Werlhof of Ocotillo should be consulted as well as Russell Kaldenburg.

- Land Use Impacts- the loss of 6,500 acres of public land to other uses must be analyzed in the context of cumulative losses of Imperial County public land to other energy-development-related projects, including the loss of land to proposed transmission lines

- Impacts to sensitive plant and animal species- surveys of the Flat-Tailed Horned Lizard must be conducted during the summer months and surveys of burrowing owls must be conducted during the appropriate season as well so as not to disturb the nesting activities.
    - Efforts to relocate burrowing owl nests have been met with limited success- this is impact must be considered.

- Impacts to Soils- The scraping of the desert for construction roads will not only cause soils to become airborne, it will also allow for introduction of invasive non-native plants such as Brassica tournefortii. Watering the soil during springtime construction, will also promote the propagation and proliferation of this deadly plant. How will the germination and propagation of this deadly, prolific non-native plant be prevented?
    - The scraping of the ground for 500 or so miles of roads has the potential for obliterating habitat for the sensitive and rare plant and animal species

- Imperial County is in non-attainment for particulates (PM10) and for ozone. How will the developers of this project prevent additional particulates from vehicles being added to the already impaired air quality during construction and during operations?

- The Ocotillo/Nomirage aquifer is a sole-source federally protected aquifer and must not be employed for industrial uses. The Colorado River is already over-allocated. This is an issue that must be thoroughly vetted with all appropriate agencies. What will be the impacts of taking water from an already hard-pressed source?

- Impacts to the Community Character of the Ocotillo/Nomirage communities, including impacts to dark skies and quiet must be addressed. How will this affect property values as well as the impairment of the desert character which many folks moved there to enjoy?

- Impacts to the air space must be analyzed. What kind of glare will the Sun Catchers send into the flight paths above the proposed project area?

- Impacts to the recreational quality and experience of nearby Plaster City Open Area, the Superstition Hills recreation area and to Painted Gorge Recreation Area must be analyzed.

- Impacts to the resources and recreational experience of Anza-Borrego Desert State Park must be analyzed.

There are many more issues involved in this massive solar project that the Desert Protective Council does not have the expertise to address, but we are confident that the Project managers, the CEC and the BLM have taken pains to inform all possible concerned agencies, local citizens, Anza-Borrego State Park officials, wildlife biologists and soil scientists of this project in order to receive the most complete list of issues possible.

Thank you very much for this opportunity to comment and participate in the public process for the Stirling Energy Systems Solar Two project.

Happy New Year!

Sincerely,

Terry Weiner
Imperial County Projects and Conservation Coordinator
Desert Protective Council
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December 31, 2008

Delivered via electronic mail (jim_stobaugh@blm.gov and christopher.meyer@energy.state.ca.us)

Jim Stobaugh, Project Manager
Bureau of Land Management

Christopher Meyer, Project Manager
California Energy Commission

Re: Scoping comments on the Stirling Energy Systems Solar Two Project

Dear Mr. Stobaugh and Mr. Meyer,

Please accept and fully consider these comments on the Stirling Energy Systems Solar Two Project (SES Solar Two) on behalf of The Wilderness Society and the Natural Resources Defense Council (NRDC).

The Wilderness Society has worked for more than 70 years to maintain the integrity of America's wilderness and public lands and the biodiversity these lands support. With over 300,000 members and supporters nation-wide, TWS represents a diverse range of citizens. Our goal at TWS is to protect public lands as wilderness and to ensure that land management practices are sustainable and based on sound science to ensure that the ecological integrity of the land is maintained.

NRDC is a non-profit environmental organization with over 650,000 members nationwide. NRDC uses law, science and the support of its members and activists to protect the planet's wildlife and wild places and to ensure a safe and healthy environment for all living things. NRDC has worked to protect wildlands and natural values on public lands for many years.

It is clear that the nation's growing addiction to fossil fuels, coupled with the unprecedented threats brought about by global warming, imperil the integrity of our wildlands as never before. To sustain both our wildlands and our human communities, we need to transition away from fossil fuels. Our public lands harbor substantial wind, solar, and geothermal resources. Developing some of these resources will be important to creating a sustainable energy economy and combating climate change, and The Wilderness Society and NRDC support such responsible development of renewable energy. Renewable resource development is not appropriate everywhere on the public lands, however, and development that does occur on the public lands should take place in a responsible manner.

As the Bureau of Land Management (BLM) processes applications for solar development on public lands, they should continue to improve the process, including incorporating additional Best Management Practices (BMPs), refining their Right of Way (ROW) application process to properly address the differences between solar development and other uses of ROWs, and incorporating recommendations from ongoing transmission

planning. In general, BLM should prioritize development on already disturbed lands which are close to existing transmission and do not contain significant other values and resources.

The scoping comments below are organized under two topics: the relative suitability of the proposed site for a large-scale commercial solar energy development, and the specific issues pertaining to the SES Solar Two proposal and the SunCatcher technology.

I. Relative Suitability of Project Proposal Site

Based on the information gathered to date, the SES Solar Two site appears to have potential for developing commercial scale solar energy with fewer impacts to other resources than some other areas with high solar potential managed by the BLM. The absence of sensitive and protected areas such as Areas of Critical Environmental Concern and Citizens' Proposed Wilderness, the relatively limited use of the site for other activities such as recreation, the limited number of sensitive wildlife species in the area, and the presence of existing transmission to support Phase I of the project all contribute to the possibility that development of a commercial scale solar facility on this site could result in an overall benefit to the public lands and the American people who own them.

However, any industrial use of our public lands entails impacts, and development of a commercial scale solar energy facility would exclude all other uses of these lands. Because of the intensive nature of such development, in general we urge the BLM to prioritize permitting solar energy developments on already disturbed lands which are close to existing transmission and do not contain other resources and values which would be impacted by development. The undisturbed nature of the SES Solar Two project site requires further study to ensure that other values will not be unacceptably impacted, as well as careful consideration of other alternative sites that might be better for the proposed purpose. In addition, special care must be taken to ensure that any unavoidable impacts to other resources and values in the project area are minimized and mitigated.

A. Cultural Resources

The California Energy Commission's (CEC) Issues Identification Report (IIR) identifies cultural resources as a technical subject area where critical or significant issues have been identified. The IIR states that,

> "Due to the undisturbed nature of the area, the extremely high frequency of identified cultural resources on or adjacent to the proposed project site, and the potential for unidentified cultural resources sites, the BLM and Energy Commission staff are engaged in developing resolutions to the impacts that the proposed SES Solar Two Project would have on cultural resources. It is the intent of the BLM and Energy Commission to gather the additional information necessary to construct an adequate picture of the cultural environment of the project area, and to enable the BLM and the Energy Commission to formulate substantive resolutions to the issues identified." (IIR p. 6)

With 254 known archaeological sites in the project area (IIR p. 6), we are encouraged that the agencies have identified the study and protection of cultural resources as a priority, and recommend the ongoing commitment to protection of these resources.

Recommendation: The BLM should prioritize protection of the area's outstanding cultural resources, including study of the area's resources, development of strategies to minimize and mitigate impacts, and ongoing engagement in consultation with local Native American tribes.

B. Biological Resources

The project applicant's Response to CEC and BLM Data Requests 1-52 Set 1, Part 1 (Data Response) states that potential impacts to burrowing owl habitat and flat-tailed horned lizards may occur (Data Request p. BIO-4). The Data Response outlines steps to be taken to reduce impacts to these species, including a proposed translocation program for flat-tailed horned lizards and preconstruction surveys for burrowing owls. These and other steps to protect these and other species in the area will be important to minimize impacts of the proposed development.

Recommendation: The agencies should prioritize protection of species in the project proposal area by further analyzing potential impacts and developing Best Management Practices and steps to minimize and mitigate any unavoidable impacts.

C. Water

Water is a limited resource in the desert southwest, and any project proposal should fully analyze the water needs and identify sources to meet those needs. The IIR states that the SES Solar Two project would require a total of approximately 32.7 acre-feet of raw water per year (IIR p. 3). The IIR further states that water for the project would be provided by the Imperial Irrigation District (IID) via the existing Westside Main Canal. However, in response to a request for detailed information regarding the reliability of the IID for providing the required water, the Data Response simply states that the applicant submitted a letter for additional time to respond to this data request. It is critical that this information be gathered before the ROW is granted.

Recommendation: The agencies should gather additional information to confirm that the water needed for the SES Solar Two project will be available as well as that the source of the needed water will conform to existing CEC policy.

II. Issues Specific to SES Solar Two Proposal and SunCatcher Technology

The SES Solar Two proposal and SunCatcher technology include promising elements, including high thermal efficiency and relatively low water use compared to other power generation sources. However, there are some issues that the agencies should analyze

further in the development of their Preliminary Staff Assessment/Draft Environmental Impact Statement.

The SunCatcher technology has been successfully demonstrated in a prototype six dish model power plant at the Solar Thermal Test Facility at Sandia National Laboratory in New Mexico. This model power plant set a new record for solar-to-grid conversion efficiency in February, 2008 with a 31.25 percent efficiency rate. However, SunCatcher technology has never been produced at commercial scale, and it remains to be seen what technological and economic challenges will face the buildout of 30,000 units proposed for the SES Solar Two project.

Because this technology has not been developed at a commercial scale, and based on the need for additional information regarding certain elements of the technology and project proposal, the agencies should consider the issues below.

A. Phased Development

1. Limiting development to areas with viable transmission

The SES Solar Two project proposal consists of two phases. Phase I would consist of 12,000 SunCatchers, with a nominal generating capacity of 300 MW and requiring approximately 2,600 acres. Other than the construction of a new 230-kV substation and a 10.3-mile, double-circuit, 230-kV interconnection transmission line, no new transmission lines or off-site substations would be required for the 300-MW Phase I construction.

Phase II would consist of 18,000 additional SunCatchers with a nominal generating capacity of 450 MW and requiring approximately 3,500 acres. Phase II of the project is dependent on the approval and construction of the 500-kV Sunrise Powerlink transmission line project proposed by San Diego Gas and Electric. Although the Sunrise project was recently approved by the California Public Utility Commission, that approval was highly controversial and may be the subject of litigation. Accordingly, serious questions remain as to whether and if so when this transmission line will be constructed, making the granting of a ROW for the Phase II project area premature.

Recommendation: Because of the uncertainty regarding the approval and construction of the Sunrise Powerlink, BLM should consider only granting a ROW for the Phase I project area until such time that the approval of the Sunrise Powerlink has been finalized. Only after that time should BLM consider granting a ROW for the Phase II project area and then only after consideration has been given to the issues identified immediately below.

2. Initial testing and development phase

Because the SunCatcher technology has not been built at a commercial scale, there are important questions regarding the technological and economic viability of the SES Solar

Two proposal. The proposal site has high value solar resources, as well as significant other values and resources.

Granting a ROW for the SES Solar Two project will prevent any other use of these lands and resources for the duration of the ROW. Because of the presence of solar resources and other values and the uncertainty of the SES Solar Two proposal, the agencies should consider granting an initial testing and development ROW with for a limited time frame and establishing requirements for demonstrating the economic and technological viability of the proposal before extending the ROW. To prevent undue impacts on extensive areas before testing and development is completed, the agencies should limit the acreage of the initial testing and development to the minimum amount necessary for such development.

If SES Solar Two is unable to demonstrate adequate technological and economic viability by the deadline, such an agreement would allow the land to become available for other uses, including the development of a commercial scale solar power facility using technologies which have been successfully constructed at a commercial scale.

Recommendation: BLM should consider establishing requirements for demonstration of technological and economic viability of the SES Solar Two project proposal within the first 3-5 years after the ROW is granted before extending the length of the ROW.

B. Hydrogen

1. Hydrogen production

The Data Response states that the SES Solar Two project will procure hydrogen through a competitive bidding process with suppliers of industrial gasses (Data Response p. PPE-3). The efficiency conversion is stated to be between sixty-five and seventy-five percent; assuming 65 percent, approximately 24,400 therms of natural gas would be utilized in the production process (Data Response p. PPE-3).

Recommendation: The agencies should do an analysis of the energy return on investment to determine the net energy production value of the project.

2. Hydrogen leakage

The Data Response states that the initial buildout of the SES Solar Two facility will require 6.3 million cubic feet of hydrogen (Data Response p. PPE-1). The Data Response states further that the annual leak replenishment consumption of hydrogen for the project is approximately 6.0 million cubic feet of hydrogen, meaning nearly the entire system must be replenished each year.

Recommendation: The agencies should analyze the environmental impacts of the leakage of 6.0 million cubic feet of hydrogen per year and develop strategies to minimize and mitigate any impacts.

C. Bonding

The Data Response states that the plant is expected to have an operational lifetime of at least 40 years, and that when the project is decommissioned at the end of its lifetime, the scrap value of the metal steel and copper alone will cover decommissioning costs of the entire facility including buildings and associated facilities (Data Request p. BIO-10). To ensure that the costs of decommissioning and restoration of the project site are covered, it is critical for the agencies to have an estimate of the anticipated costs as well as a secure mechanism for covering those costs.

The normal accepted bonding method for development on public lands requires the purchase of actual cash bonds prior to development. The ROW could stipulate that the bond will be held in reserve, and the returns from selling scrap metal will be used first for decommissioning and reclamation costs, but the purchase of bonds before development is critical to guarantee protection of our public lands.

To prevent undue financial impacts to the project proponent while guaranteeing full funding for complete decommissioning and reclamation, bonding should be phased in parallel with the project, with bond requirements for each phase based on the amount of development associated with that phase.

Recommendation: The agencies should analyze the anticipated costs of decommissioning and restoring the project site. The agencies should also require actual cash bonds be purchased prior to development. Bonding should be phased in parallel with development, with bond requirements for each phase based on the amount of development associated with that phase.

Thank you for your consideration of these comments.

Sincerely,

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Date: January 2, 2009

Re: **Stirling Solar Two – Sierra Club Scoping Comments/Questions for CEC/BLM - EIR/EIS**

These Sierra Club Scoping Comments are in addition to any other Scoping comments or concerns submitted by any other subcommittee of the Sierra Club San Diego Chapter for the Stirling Solar Two Project. My apologies for the internet connections that seemed not to correctly link to the sites from which the internet address was copied.

Please continue to address all responses and primary written documents, information, CDs and electronic communications to Edie Harmon in Imperial County, with additional notices and documents/CDs to the Sierra Club San Diego Chapter's office in San Diego.

Concerns addressed in these comments are based on information from SES Executive Summary, Data Request Information and Responses, Public meetings, and materials and information from the 2008-07-24 Pre-application meeting at Imperial County Planning Dept. and information from Bill Powers and various internet sources.

These comments and questions are in addition to those raised by the public, CEC and BLM earlier , both in writing and at public meetings. Project descriptions are in the documents provided by CEC for the Stirling Solar Two Proposal located on approximately 6,500 acres of lands between Interstate 8 and Old Hwy 80 south of the Us Gypsum factory in SW Imperial County. Accordingly, details will not be recited in this letter listing Scoping issues concerns .

Alternatives
The EIR/EIS should discuss a wide range of alternatives which would or could achieve the ultimate goal of reducing usage of fossil fuels in the SDG&E service area. Because IID is a publicly owned utility and not subject to the same requirements as SDG&E, it would be reasonable to consider the combined electrical usage and reduce the reliance on fossil fuels for the combined service area of SDG&E and IID as suggested by Alternatives 1 , 2, and 4. All identified Alternatives should reduce or eliminate the irreparable adverse impacts on public lands at the proposed site with its abundant cultural resource values and remove any need for the proposed SDG&E Sunrise Powerlink with its associated environmental impacts on public lands in both Imperial and San Diego Counties.

1. No Project Alternative: In-basin or In County generation for San Diego Gas & Electric with PV units installed on large roof-tops and as shading for large parking areas etc. (See "San Diego Smart Energy 2020 - The 21st Century Alternative" by Bill Powers, 2007, second printing May 2008, available on the E-Tech International website : www.etechinternational.org. Under the heading smart energy.) http://www.etechinternational.org/new_pdfs/smartenergy/52008_SmE2020_2nd.pdf.

2. Use the $1.4 billion for the Solar Two project and the estimated $1.9 billion for the Sunrise Powerlink for projects to reduce electrical demand through conservation and improved weatherization of

buildings in both San Diego and Imperial Counties. See 12/31/2008 article about efforts in Texas to increase efficiency and reduce electricity demand: "Electricity study embraces energy efficiency for state" by Tom Fowler Houston Chronicle, Dec. 31, 2008, 10:34PM at: http://www.chron.com/disp/story.mpl/headline/biz/6189695.html.

3. Stirling SES to install units near source of use in San Diego County close to sources of use such as prisons, factories, industrial parks, etc., and/or similar sites in Imperial County.

4. Stirling Solar Two to provide electricity at dispersed locations in Imperial County because each unit produces grid-ready electricity according to SES.

5. Alternative site at "Mesquite Lake" in the central portion of Imperial County or other sites in Imperial County where soil has already been disturbed. It need not be a single large site but could be several sites because units are purported to be stand alone units or capable of operating in small units according to SES.

6. Use Stirling Dish solar installed at site of existing natural gas or coal fired power plant to provide peaking energy at the existing power plant site thus creating a hybrid electrical generating plant at a single site. Such projects are being studied and referenced in an article entitled "EPRI to Evaluate Adding Solar Thermal Energy to Natural Gas and Coal Power Plants" 10 November 2008 http://www.greencarcongress.com/2008/11/epri-to-evaluat.html. Because of the purported stand alone capability and ability to link together a small number of Stirling dish solar units, this might be the most space conserving hybrid solar/fossil fuel power plant design, since there must be some sort of storage or backup power for times when sun is not shining. Money saved by not constructing the Sunrise Powerline transmiaaion line could be used for maintenance at dispersed sites.

Why no electricity proposed for local use in Imperial County?

Why is there no energy from Solar Two which proposes to locate in Imperial County intended for use by Imperial Irrigation District (IID) which provides electricity for residents of Imperial County? According to the December 2008 insert "IID Energy Circuit" which was included with the December 2008 bill, the energy resources used by IID include 52% natural gas, and 24% coal, and less than 1% geothermal and less than 1% solar. If the Stirling Solar Two technology can purportedly produce up to 900 MW of electricity from solar in Imperial County, why is this project not intended to produce electricity for Imperial Irrigation District? Providing electrical power for local IID use should be considered as a mitigation measure to offset all the adverse impacts.

High winds and wind blown debris, sand and dust and MTBF issues

How are the moveable parts of the solar dish or "sun-catcher" assembly affected by high winds and wind blown sand and extremely fine blown dust? What measures will be taken to deal with the effects of wind blown sand and dust on the moveable tracking system that follows the sun and the system for reclining the sun-catchers in the event of extremely high winds and blowing debris/e.g. from chubascos.

To what extent or how much more than at other sites where technology has been tested in CA, NV and NM will high winds and wind-blown sand and dust decrease the "mean time between failure" (MTBF) or increase the need for and frequency of washing of the mirrors? Will mirror wash schedules be on a specific time frame, or will washing become more frequent during times when there is a lot of blowing sand and dust.

Has monitoring of the particulates from blowing sand and dust from the desert, and gypsum dust from the US Gypsum (USG) Plaster City factory been done already? If so what are the results? Will gypsum dust be more or less difficult to remove from mirrors than desert sand and dust? What is the current expected MTBF at the Sandia site, and what is the expected MTBF for the Solar Two site in the lower elevation and much higher summertime ambient temperatures and with much higher air borne particulates? What factors contribute to increasing or decreasing MTBF at the proposed Imperial County site?

Low MTBF make the system:

(a) less reliable, (See 2007-06-01testimony of Barry Butler, Ph.D. on dish/Stirling Solar Technology before the CPUC at p.3 where he cites MTBF as little as 40 hours requiring shutdown and maintenance)

(b) increasing the down time for maintenance to keep the system "available" to generate electricity.

A December 2008 article includes continuing concerns of Dr. Butler and others about current feasibility of technology to meet Stirling's contract with SDG&E by the end of 2010. Soto, Onell R. 2008-12-14. "From prototype to powerhouse" San Diego Union at SignOnSanDiego.com, at: http://www3.signonsandiego.com/stories/2008/dec/14/mz1b14sdge91643-prototype-powerhouse/?zIndex=22515.

What is the current estimated MTBF at the Sandia site at present and how do the winds and potential for wind-blown sand at the Solar Two site compare with the test site at Sandia or other test sites tested in CA? (Butler estimated that MTBF was currently "a few hundred hours" in his 2007 testimony (at p. 5)

How will equipment be protected from damage from sand blasting associated with high winds or sudden chubascos coming up from the south with their wind blown debris? Note the potential for very sudden onset of chubasco winds from the south.

Jobs for whom and where? And with what requirements for technical expertise?
SES estimated 700 construction jobs and 160 permanent jobs. What are the skill levels necessary for these jobs? How many of the employees are expected to be from the local Imperial County residents? How many of the jobs will be for employees brought in from other states? What is the infrastructure necessary for the "almost continuous maintenance" related to the existing "technical deficiencies" associated with the dish solar technology?

Risks and problems associated with going from proto-type technology to industrial scale installation without some smaller scale or intermediate demonstration project first
What are the anticipated problems associated with going form a prototype technology (6 dishes at Sandia) to a utility scale, commercial installation with 12,000 dishes in Phase I and an additional 18,000 dishes for Phase II? How will this affect the ability of Solar Two to meet the SDG&E contract deadline of 2010? Who, or what agency or entity will bear the risks, both financial and in terms of equipment failures and associated operations and maintenance problems at the proposed Imperial County site?

Will there be a slow, experimental step up from prototype dish solar units to the proposed 12,000 and then 18,000 additional dish units installed? Are there criteria associated with costs for installation and production, reliability and maintenance costs, or a level of MTBF which might trigger a reassessment of the advisability of continued installation of additional dish solar units?

Earlier concerns about the Stirling solar projects and the issues associated with going from prototype to full scale industrial solar projects with thousands of units were raised in a 2005 article in MIT's Technology Review, and many appear not to have been resolved in the more than three years since the article appeared . Why? The article titled "a Sunshine Deal" is appended at the end of these comments and is found at: http://www.technologyreview.com/energy/14781/page1/.

Mean Time Between Failure (MTBF)
What are the other factors related to low MTBF and the need for continued maintenance? Butler (2007 at p. 3) cites reliability problems including "hydrogen leakage through joints and seals, internal engine seal leakage, swashplate actuator stalls, and heater head braze joint hydrogen leaks" requiring down time for maintenance. How difficult is it to detect the source of leaks, what technology or skills are required to repair the leaks or replace leaking seals? How much time is required for this maintenance. A MTBF of 40 (Butler) or even 200

hours (DOE, 2008 at p. 117) suggests that this technology is still not ready for industrial/commercial scale installation at this time. How does the low end MTBF or any MTBF less than 4000 hours impact the "annual solar -to-electric efficiency of 24%" as cited by DOE in its 2008-4-15 Solar Energy Technologies Program - Multi Year Program Plan 2008-2012 at p. 107? DOE indicates that "Complete design of dish-engine system capable of 4000 hrs MTBF' was not "due" until 6/20/2011 (DOE at p. 107), or after the SDG&E contract delivery date., thus voiding the contract. What is the anticipated MTBF at the time of proposed installation in Imperial County? Is the solar-to-electric efficiency expected to be the same, less than the efficiency of the 6 units at Sandia? What are the primary factors affecting efficiency? How is efficiency related to daytime ambient temperatures? Is it expected that there will be seasonal variations in efficiency based on daytime ambient temperatures.? There could be about an 80 degree difference between daytime temperatures in the winter and summer.

Where are the facilities to be located for construction, testing, and to provide materials for maintenance of the dish solar units? How will component parts, structural material, mirrors and Stirling engines be transported to the site, and over what time frame? What are the energy requirements for such transport?

How much hydrogen will be stored on site and where? What risks are associated with the storage of hydrogen needed for this project?

Financial: Money from where and how much

Have the Irish financial backers for this project ever financed or participated in any other dish solar project anywhere in the world? If so, where? These are risky financial times. Is the financial backing available to fund construction through completion of Phase I and to cover operating and maintenance costs? What other renewable technologies has the Irish National Toll Road Company (NTR plc) developed and operated? What is the scale of those projects and the energy production capability and reliability?

At the 2008-07-24 Pre App meeting we were told by SES's consultant that the project cost is $1.4 billion, but that funding has been secured for only $100 million. What is the source for the needed $1.3 billion that was not yet then secured? How much funding is necessary prior to construction and installation of this still prototype technology in Imperial County?

How realistic is it that the financial resources necessary for this proposed project going from prototype to fully functional will be available in these financially troubled times? Please note the following in the 2009-01-01 Houston Chronicle entitled "Lending woes push alternative energy to back burner" by Kristen Hays:

> But access to credit, particularly for ventures that require years of patience before providing returns on high startup costs, fueled the momentum more than record crude prices, said Joseph Stanislaw, a former economist at the Paris-based International Energy Agency and founder of the Boston-based energy advisory firm JA Stanislaw Group.
>
> Several months into the credit crisis, the alternatives and renewables sector faces a difficult road ahead until banks, venture capitalists and private equity firms start lending and investing again.
>
> "A lot of companies — solar, wind or others — found their credit lines were just cut. They need access to credit. A lot of these things aren't going to be economic tomorrow morning even if we have $140 oil," Stanislaw said. at http://www.chron.com/disp/story.mpl/headline/biz/6190611.html

Financial assurances and bonding for dismantling, cleanup and removal after operations cease

Who pays for disassembly and how are disassembly and removal costs of units and materials after operations cease calculated and or recalculated as times and economics change? Will all components have resale or recycle value? If so, by whom and at what distance? Are there some components for which there is no anticipated salvage value and which might require transport to s special waste facility? What is the anticipated cubic volume of materials that would need to go to a waste facility after facility operations cease? How will costs and energy requirements for cleanup and removal be calculated and periodically updated? Will bonding up-front be adequate? Where will salvage metal go, at what cost? Are the mirrors recyclable? If not what is

their ultimate disposal site, what volume will mirrors occupy when removed, and what is the ultimate anticipated destination of the mirrors? What hazards are anticipated associated with dismanteling the units, dangers associated with the hydrogen in the engines, or plastics coatings, and mirrors. What was the estimated cost and time needed for disassembly and moving of the dish solar units from Huntington Beach CA to Sandia? Costs/unit and costs/mile? Were units or portions thereof moved by truck or train?

Will the project applicant be responsible for the entire bond or will San Diego Gas and Electric be responsible for some or all in the event that cleanup and dismantling are more than what is covered by bonding?

Other test sites and reliability issues

There are 6 test units at Sandia, but the SES Executive Summary at p.1-2 suggests that this technology has been "operating in a variety of locations including Huntington Beach and Daggett, California" ... for more than 20 years. What are the MTBF figures, environmental conditions including wind, and what have been the most significant and most frequently recurring maintenance problems at each site, Huntington Beach and Daggett, CA? What are the differences in MTBF between sites where tests were done in CA and at the much higher and colder site at Sandia? What do these differences in MTBF suggest about operational problems in the low hot dry desert of Imperial County CA? What is the length of down time for maintenance and repairs when units are down and not generating electricity? Are the problems related more to technology or to site locations? Is it possible to see dish solar units at those sites, and who operates the sites?

It is expected that "about 10% [may be down or] not being used" because they need maintenance and repairs (CEC Final Staff Report 2007-12 Attachment 3 at p. 50). If there are 18,000 units at the Solar Two Phase I site, this would mean that at any given time 180 dish solar units would be in need of repair! How long are repairs expected to take, and how many employees are needed to safely work on each unit needing maintenance and repairs. Is maintenance expected to be on an on-going basis or only when equipment fails? Is it expected that the repairs will be able to be done by local residents from Imperial county, or will the maintenance and repairs be done by technical specialists brought in from outside Imperial County?

If "Construction of the Project is expected to begin in late 2009 or early 2010 and will take approximately 40 months for full Project completion" (SES ES at p. 1-3) how will this meet the SDG&E deadline?

What does "overall availability of approximately 99 percent" (SES ES at p.1-3) mean for this project with a 10% down time at a minimum?

Lowered efficiency issues in hot summer temperatures of desert in W Imperial County vs Sandia NM

Since the SES Issue Identification Report at p. 3 in process description states that: "Waste heat from the engine is transferred to the ambient air via a radiator system similar to those used in automobiles." If the system operates like automobile radiator systems, it there a chance that the system will "overheat" as radiators do in the hot summer months? How is the efficiency of the system impacted by operation at the high 120 degree summer temperatures in Imperial County desert rather then the cooler summer ambient temperatures of the high elevation Sandia NM location? What is the reduction in anticipated efficiency because heat loss year round will be to a much warmer ambient temperature?

Water issues

What is meant by the phrase "raw water per minute" when referring to washing the mirrors and engine? How much water is anticipated to be used to wash each unit per wash cycle or per year? How much evaporates, and how much runs off the mirrors to the ground? What precautions will be taken to prevent or control invasive species that might germinate and grow as the result of additional wash water run-off associated with the washing of each mirror assembly? " Invasive species observed on the Project site include red brome (*Bromus madritensis*), Bermuda grass (*Cynodon dactylon*), crystalline iceplant (*Mesembryanthemum crystallinum*), Saharan mustard (*Brassica tournefortii*), and various species of tamarisk (*Tamarix* spps.)" according to the Data Request document. All of these species would appear to present potentially serious problems with the addition of washwater runoff. And all have the potential to out compete native species in the area. It is recommended

that herbicides not be used, but that invasives be removed manually as they start growing.

Wastewater impoundment and liner issues
What precautions or mitigation measures would be needed to prevent the establishment of invasive species, especially tamarisk near the wastewater impoundment? Will the high TDS materials be evaporated or dried in a 3 million gallon wastewater pond within a year before moving to a hazardous waste facility? If so would the second storage unit for use while the salts are drying in the first be of the same size and depth? 3 million gallons is more than 9 acre feet. Pan evaporation rate in Imperial County is approximately 100 inches/year. Where is the Hazardous waste facility, and what precautions will be taken to prevent the waste solids from moving from the hazardous waste site, either in the form of run-off or as windblown particulates? What is the size (surface area and maximum depth) of the wastewater impoundment(s)?

How will the evaporites be removed from the double lined wastewater evaporation ponds? What precautions will be employed to prevent punctures or tears of the liners? What methods will be used to monitor and detect, and repair any leakage in the liners? Will the liners become more brittle over time as they are exposed to salts of increasing concentration and exposure to dry hot air and sunshine in summer months and changes from day to night time temperatures in the winter months? With what frequency will the liner systems be replaced and how and where will be the ultimate disposition of the liner system materials when they need replacing or at the end of the project? What is the anticipated volume of the liner system materials at time of disposal? Costs of disposal? Will they classify as hazardous waste or is there any facility currently that has a process for recycling the liner materials? If so where? All plastic or liner materials must be removed so that they do not break up and get dispersed and ingested by unsuspecting wildlife or birds mistaking them as food. Plastics and food wrappers have been found in desert wildlife scat throughout Imperial County. These "decommissioning" issues must be addressed based on present technology rather than speculations about availability of some unknown future technology.

What precautions would be taken to prevent such a wastewater storage facility from attracting migratory birds or birds that would otherwise be seeking less saline water sources or the shores at Salton Sea or along the waterways of Imperial County? This is of special concern as the salinity and toxicity of the wastewater evaporation ponds increases prior to removal of evaporites to a hazardous waste facility. What processes would be employed to attempt to reclaim the totally denuded and disturbed lands beneath the evaporation ponds so that they don't just become additional sources of windblown dust and sand. If reclamation is contemplated, how will it be done?

Cultural Resources and the possibility of the designation of the site as an ATCC to protect cultural resource values
The issues identification documents indicated that there is an unusually high concentration of cultural resources in the proposed project site and vicinity and that such resources are very important, as was attested to by the statements of Carmen Lucas at the November 24, 2008 meeting and her presence at the request of the State Historic Preservation Office.

Accordingly, it is recommended that all archeological and cultural resource studies be evaluated by several outside consultants familiar with the archeology and cultural resources of this part of the desert before being released for inclusion in the Draft EIR/EIS. (This might avoid some of the problems that were experienced with the studies on cultural resources for the Glamis Imperial Mine Project many years ago. At the proposed Glamis Imperial Mine Project site, a significant area was ultimately designated as an Area of Traditional Cultural Concern (ATCC) because of the cultural significance to many Native American peoples and the proposed mine project was denied by the BLM under the Clinton Administration.) After hearing Carmen Lucas and reading of the concerns of BLM and the CEC staff, it seems prudent up front to consider whether the proposed Stirling Solar Two site or portions thereof should be considered for designation as an **Area of Traditional Cultural Concern** and protected from the kinds of massive destruction that would inevitably accompany the construction of the proposed solar project. Input and concerns about this general area and site should be sought from Native American groups and SHPO .

Visual resources and views in the eyes of the beholders
Visual resources are an important component of cultural resource values and the proposed project would destroy any visual resource values associated with this site in addition to physically destroying the resources on the ground. Not all agree with SES's assertion that the dish solar units would constitute a Tourist attraction, many would see them as a visual blight or an "eyesore". It is suspected that SES's views may be influenced by the sight of dollar signs. The visual resource impacts must be evaluated not just for this project alone, but in the cumulative impacts evaluations including all wind, solar and geothermal energy developments proposed for public lands in SW Imperial County. The proposed project will contribute to the more rapid creation of a rural sacrifice area with the communities of Ocotillo and Nomirage at the center of the sacrifice area.

Traffic
Any traffic analysis should include the traffic traveling to the Centinela State Prison, both for staffing and for visitors using Dunaway Road because the State Prison is the nearest and largest population center to the Solar Two Project site. The State Prison has a work force of more than 1,000 employees and an involuntary resident population that exceeds 5,000. Centinela State Prison is the nearest residential community of any size and should be identified by name on all maps of the project vicinity.

Health
Earlier transmission projects across public lands in Imperial County identified the fungus that causes Valley Fever as a serious health threat when soils are disturbed. Coccidioidomycosis is considered to be a health epidemic in parts of SW Arizona and the potential impacts of surface disturbing activities on both employees of the site and the involuntary population at Centinela State Prison must be considered. See http://en.wikipedia.org/wiki/Centinela_State_Prison. for information about the number of staff and prison population as of 9/2007. This is especially true as relates to the population of the State Prison where inmates coming to the prison are most likely t to be from areas where they have not previously been exposed to the fungal spores. (See: "Infection hits a California prison hard" in New York Times 2008-12-30 at http://www.nytimes.com/2007/12/30/us/30inmates.html. Internet copy no longer available, scanned copy submitted as Exhibit 215 in support of comments on the US Gypsum FEIR/EIS will be sent separately.) Inmate health is an issue for local health care and paid for by taxpayers. Additional information on Valley Fever can be found at http://www.valley-fever.org.

Cumulative Impacts
In addition to any other project considerations, the Stirling Solar Two project must include discussion of the cumulative impacts of its project in addition to the impacts from the closest major project proposed on the west side of Imperial County, the proposal by Wind-Zero to develop almost 1000 acres immediately adjacent to the eastern boundary of residential community of Nomirage in a site located to the south of Interstate 8 and N of State Hwy 98 and bordered on the east by the BLM's Yuha Desert Area of Environmental Concern. Details of the project can be found in a multi page listing by Wind Zero on the internet at www.wind-zero.com.

This proposal has generated major concerns and opposition from residents in the groundwater dependent communities in the Ocotillo Nomirage Community Planning Area. For issues raised by those opposed to the Proposed Wind Zero project see www.wind-zero-ocotillo.org and "Wind Zero Uncovered" at: http://www.wind-zero-ocotillo.org/Home_Page.html.

Cumulative impacts discussion must also include air quality impacts associated with ORV activities at the BLM Plaster City OHV Open Area to the west and north of Plaster City and the impacts fo Plaster City activities, and the impacts of all air quality issues on the involuntary population at the nearby Centinela State Prison.

Another nearby Green Hunter Wind Energy proposal on 6,300 acres of public lands that has the potential for adverse impacts to both public lands managed by BLM and to the community of Ocotillo is the proposed wind energy project which is located to the north, east and west of private lands in the community of Ocotillo. From maps, it appears that the eastern boundary of the proposed wind energy project would be very close to the

western boundary of the Solar Two project. See: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/2005.Par.11648.File.dat/FONSI_DR_EA_GreenHunter.pdf. In addition, there are two other wind energy proposals on BLM lands in the Ocotillo area.

The Cumulative Impacts discussion should discussion of the vast biological, cultural, environmental justice, and air impacts of **all the energy projects** and include a list giving location and acreages and status of **all renewable energy projects** (including both wind and solar) in Imperial County. It appears that the communities of Ocotillo and Nomirage are being designated as rural sacrifice areas to be blighted and surrounded by industrial energy projects that will do nothing for local energy costs. The cumulative impacts associated with visual resources and subject of BLM's Visual Resources Management Handbooks and instructions to be found at BLM's VRM website. For a list of other proposed Solar energy projects in Imperial County see BLM's Renewable energy projects tables at: http://www.blm.gov/pgdata/content/ca/en/fo/cdd/alternative_energy/SolarEnergy.html. Solar Energy Projects site for the BLM CA Desert District website includes the table of both solar and wind energy proposals for the BLm El Centro Field Office in Imperial County. This BLM table indicates six (6) wind energy projects proposed for 24,214 acres and eleven (11) solar energy projects proposed for about 64,000 acres. Of these 3 of the wind energy projects are proposed for 9,686 acres of public lands in the Ocotillo area in addition to the Stirling Solar Two project. Portions of the BLM Renewable energy table at pages 4,5, 15,16 listing proposals in the BLM EL Centro Resource Area Imperial County sector follow the list of references.

The cumulative impacts of energy production should also include the nonrenewable energy source of geothermal energy projects on both public and private lands in Imperial County. Geothermal energy resources are classified by BLM as a "leasable mineral".

Elsinore/Laguna Salada Earthquake Fault

The project will be located adjacent to and east of the Elsinore/Laguna Salada Fault. There was an earthquake of magnitude 7.2 in the 1890s which resulted in vertical displacement, still visible today further south and damage as far away as San Diego. Is the proposed design of the dish solar units on a single structure capable of withstanding an earthquake of that magnitude when the fault is so close? What features are incorporated into the design and siting structures to prevent damage from a magnitude 7+ earthquake. Have there been simulated shake or vibration studies to determine the functioning of mirrors at the outer margins of the dish and whether or not there might be significant distortions of the framework supporting the mirrors? Remember that it was the Public Works Department with the County engineer's office that sustained the greatest damage in the County's Administration building which had to be demolished after that "earthquake proof" building was severely damaged by the 1979 earthquake with its epicenter east of Calexico CA!

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http://www.valley-fever.org. Discussion of Cocidioidomycosis and links to other medical sites for valley fever.

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http://en.wikipedia.org/wiki/Centinela_State_Prison. Numbers of staff and inmates at state prison

www.wind-zero-ocotillo.org Information about local opposition to Wind Zero Proposed project.

http://www.wind-zero-ocotillo.org/Home_Page.html. Wind Zero website

http://www.desertreport.org/media/R_Spring2008.pdf Powers, Bill, "Let's build only what is necessary" at p. 1, 8-9.

http://www.renewablesg.org/docs/Web/AppendixE.pdf See p. 2 for discussion of Stirling engines and use in dish solar.

Reference re Cumulative Impacts related to energy projects in Imperial County

BLM 2008
http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/energy.Par.44006.File.dat/Renewable_Energy_10_08.pdf. At BLM's: http://www.blm.gov/pgdata/content/ca/en/fo/cdd/alternative_energy/SolarEnergy.html Solar Energy Projects site for the BLM CA Desert District website. This BLM table indicates 6 wind energy projects proposed for 24,214 acres and eleven solar energy projects proposed for about 64,000 acres. Portions of pages 4,5 and 15-16 follow these scoping concerns..

BLM CA Desert District Renewable Energy Project Proposals 2008

Serial Number CACA	Applicant	Date Application Received & ROW Granted	Acres	Megawatts (Mw)	Project Type	Geographic Area	Statu
CACA 49588	Bull Frog Green Energy, LLC	12/20/07	11,523	300	Solar: pending parabolic trough	(Silver Mtn Vista) T7N, R3W, T6N, R4W &T8N, R4W	Application received. neede
CACA 50227	LSR Pisgah, LLC	8/25/08	10,044	300	Solar: pending parabolic trough	(Pisgah) T7N,R7E & T7N,R8E	App. Rec. POD ne behind solar 8 ** pos
CACA 49443	DBK Solar Utilities of California	5/3/07	720	200	Solar: pending other/ unknown technology	T29N, R16E	Application not com mailed 2/12/08. Allo POD letter o
CACA 47740	Stirling Energy Systems, Inc. (SES) Solar Two LLC	1/16/06	7,000	750	Solar: pending Stirling engine	Imperial County T16S Rgs. 10 and 11 E	5101 funds receive CEQA lead. AFC file July 30 CEC issued ar
CACA 48273	BioRenewable Projects LLC	7/31/06	609	20	Solar: pending photovoltaic	Imperial County T. 11 S., R. 15 E., sec.6	No monies or POD POD ltr sent
CACA 49150	BCL & Associates	7/17/07	5,587	500	Solar: pending photovoltaic	Imperial County T13S, R12E	Recei PC
CACA 49513	SkyGen Solar LLC, c/o Invenergy	12/10/07	1,040	50	Solar: pending other/ unknown technology	Imperial County T12S, R1 1 E, Sec 6 & 8	5101 monies receivec appli
CACA 49613	OptiSolar, Inc.	12/3/07	2,560	500	Solar: pending photovoltaic	Imperial County T13S, R9E; T12S, R9E	Inadequate POD subr needs to be refined. issues. Cost Recover c
CACA 49615	Pacific Solar Investments, Inc. (Iberdrola)	9/5/07	28,000	1,500	Solar: pending parabolic trough	Imperial County Ts 14S & 15 S, Rs.19 & 20 E	Inadequate POD subr needs to be refined. issues. Cost Recove 7/31/08. Submit

	Serial Number CACA	Applicant	Date Application Received & ROW Granted	Acres	Megawatts (Mw)	Project Type	Geographic Area	Statu
	CACA 49884	SolarReserve, LLC	4/24/08	4,000	120	Solar: pending power tower	Imperial County T16S, R17E, Sec 21, 22, 23, 26, 27, 28, 33, 34, 35	5101 monies rcvd. recovery & POD I
	CACA 50012	Bull Frog Green Energy LLC	2/27/08	2,600	max 250	Solar: pending photovoltaic	Imperial County T. 10 & 11 S., R15 E.	Application denied/
	CACA 50013	Power Partners Southwest LLC, c/o enXco	4/7/08	540	300	Solar: pending parabolic trough	Imperial County T. 10 S., R. 14 E, sec.22, 26.	Partial rejection Sec 5101 monies rcvd. recovery & POD I
	CACA 50113	Sempra Generation	7/21/08	11,000	500	Solar: pending photovoltaic	Imperial County T. 10 S., R. 14 E, sec.22, [26.]	No monies or POD s POD ltr sent. 2 sec where overla
	CACA 50174	LightSource Renewables LLC	8/11/08	3,020	400	Solar: pending parabolic trough	Imperial County T16/1 7S, R1 7/18 E., South of I-8, North of State Hwy 98.	No monies or POD s POD ltr pending. T
	CACA 48668	Solar Partners Ivanpah SEGS (DPT Ivanpah LLC)	11/17/06	6,720	400	Solar: pending power tower	Ivanpah, S of the CA/NV line T16N/R14E, T17N/R14E	CACA 49502, 4950 twice to increase acre ($42,280). Drat
	CACA 48669	OptiSolar, Inc.	12/14/06	4,160	350	Solar: pending photovoltaic	Ivanpah Valley T17N/R14E	1/4 cost recovery rece 7/31/08. F
	CACA 48758	Cogentrix/ Solar Investments VIII LLC	1/18/07	8,000	1,000	Solar: pending parabolic trough	Mesquite Hills T1 6N/R8E, T11 N/R1 [7E]	1/4 cost recovery re Amended Decision conflict w CA 49
	CACA 48759	Cogentrix/ Solar Investments XIII LLC	1/18/07	8,960	1,000	Solar: pending parabolic trough	New York Mtns. T13N/R17E, T14N/R17E	1/4 cost recovery rece POD letter sent 7/23

	Serial Number CACA	Applicant	Date Application Received & ROW Granted	Acres	Megawatts (Mw)	Project Type	Geographic Area	Statu
	CACA 47957	Distribution Generation Systems	2/23/2006 11/01/2006	5,542		Wind: testing	Lassen County Snowstorm West T34N, R13E; T33&34N R14E	Al
	CACA 48696	Invenergy LLC	11/7/2006 4/30/2007	93,919		Wind: testing	Lassen County Horse Lake Mtn. T33&34N, R11E T31&34N, R12E T31&34, R13E; T33&34N, R14E	AUTHORIZED: some 6 addi
	CACA 48921	William Butler	3/29/07	640		Wind: pending for testing	Skedaddle Mountains T29&30N, R16E	PENDING; de
	CACA 48927	Horizon Wind Energy	12/24/2006 10/18/2007	3		Wind: testing	Lassen County Horse Lake Mtn. T33&34N, R11E T31&34N, R12E T31&34, R13E; T33&34N, R14E	AUTHORIZED Applic 5/2/07 Applicant
	CACA 49765	BP Wind Energy North America	3/21/08	5,937		Wind: pending for testing	Lassen County Spanish Springs Pk Area T33N, R15E	Original ROW 4502 more infc
	CACA 45248	Pacific Wind (Iberdrola)	4/3/03	16,355		Wind: testing	McCain Valley, Eastern SD Cnty	ROW issued 9/1 5, submission of POD (to install add'l MET they must prepare E
	CACA 46618	Clipper Windpower, Inc.	10/1/04	1,318		Wind: pending for testing	NECO Southeastern Imperial County T15S, R23E	Applicant was advise due to staff workload wi
	CACA 47518	GreenHunter Wind Energy	9/1/05	6,280		Wind: pending for testing	Tocotillo W. Imperial County T16S/R9E T16S/R10E	EA out for 30 day p FONSI and Decision American consult Consultation complet poste

Serial Number CACA	Applicant	Date Application Received & ROW Granted	Acres	Megawatts (Mw)	Project Type	Geographic Area	Statu
CACA 47751	Renewergy, LLC	12/26/2005 1/23/2007	11,187		Wind: testing	Eastern Imperial County T12S/R20E T13S/R20E	Testing & monitorir tower installed. Du expir
CACA 48004	Renewergy, LLC	4/26/06	3,219		Wind: pending for testing	Ocotillo, Western Imperial County T1 6S/R1 0E	EA nearing comple
CACA 48136	Superior Renewable	6/6/06	187		Wind: pending for testing	Ocotillo, Western Imperial County T16S/R19E	Applicant was advis due to staff workload w
CACA 48272	Imperial Wind	7/31/06	1,960		Wind: pending for testing	Black Mountain Eastern Imperial County T12S/R20E T13S/R20E	Pending NEPA (consultation, as requ previously authorize wa
CACA 49698	Pacific Wind (Iberdrola)	POD 12/26/07	9,000	200	Wind: developing	McCain Valley, Eastern SD Cnty	Cost recovery & POI Eastern
CACA 48630	Horizon Wind Energy	11/24/2006 6/1 2/2007	1		Wind: testing	Fresno & Kings Co. Kettleman Hills T22S, R17E	AUTHORIZED, Ex Bakersfield and Hollis
CACA 44988	PPM Energy (Iberdrola)	10/15/2002 8/7/2003 8/4/2006	2,330	75	Wind: testing	Mountain Pass T15N/R14E T1 51 /2N/R1 4E	Cost recovery finalize being done internally exp
CACA 47539	First Wind	8/11/05	10,720		Wind: pending for testing	Bristol Mountains T7N/R1 0E T7N/R1 1 E	Pending - perfecting POD rec'd 9/2
CACA 48287	Renewergy, LLC	7/26/2006	7,760		Wind: pending for testing	Bristol Mtns T7N/R10E T7N/R1 1 E	Pending -
CACA 48663	Renewergy, LLC	8/2/06	2,080		Wind: pending for testing	Iron Mtn T1N/R17E, T1N/R18E	Pendi
CACA 48664	Renewergy, LLC	8/7/06	17,320		Wind: pending for testing	Homer Mtn T10N/R19E, T11N/R19E, T10N/R20E	Pendi

September 6, 2005 **MIT Technology Review**

A Sunshine Deal

By 2010, thousands of homes in southern California may be getting energy from a giant solar farm.

By Tim Gnatek at http://www.technologyreview.com/energy/14781/page1/

For years now, electricity shortages have encouraged power companies to look for alternative sources of energy. And state governments are getting onboard as well. So far, 20 states, including Colorado, Massachusetts, New Jersey, and New Mexico, have established renewable energy production standards.

Add in the current sky-rocketing oil prices, and energy providers will be pushed even more to develop alternative energy sources.

Nowhere is this trend more apparent than in California, where rolling blackouts still affect a power-hungry population. It's not surprisingly, then, that California may host the largest solar-energy project in history. Southern California Edison (SCE), with 13 million customers, has just announced a deal with Phoenix-based Stirling Energy Systems that could result in a huge solar farm.

The California utility is already the nation's largest purchaser of renewable energy, providing its customer with more than 2,500 megawatts of wind, geothermal, solar, biomass, and small hydroelectric-derived energy, or around 18 percent of its total power load.

Now SCE has agreed to purchase upwards of 500 megawatts of electricity from Stirling Energy Systems -- enough to provide all the energy needs to 278,000 homes -- or more than all other U.S. solar projects combined. While neither company has disclosed the financial details, SCE said the system will not require state subsidies.

The effort will begin with a pilot project: a proof-of-concept facility with 40 solar dishes producing one megawatt of energy. The test will take place over the next 18 months, and, if successful, Stirling Energy Systems will construct a 20,000-dish array over four years, covering 4,500 acres -- more than four times the size of the National Mall in DC -- in the desert northwest of Los Angeles.

"From our perspective, Stirling has established the viability of this at a laboratory level," says SCE spokesperson Gil Alexander. "This could be a turnaround point for solar."

Stirling's dish technology, which was first developed by McDonnell-Douglas in the mid-1980s, makes use of a heat-driven engine, rather than photovoltaic panels. The company's deal with SCE marks its first utility-scaled energy application.

In the Stirling solar system, each dish is a round, mirrored surface measuring 37 feet in diameter that reflects and focuses light into the receiving end of a Stirling engine. The engine itself, which was actually invented in 1816 by a Scotsman, Robert Stirling, is driven by the heating and cooling of a closed gas (see Notebook).

To date, Stirling engines -- with their minimal emissions, long life spans, and quiet operation -- have produced refrigeration and even powered submarines. In the solar version, the dishes concentrate heat, which can rise to more than 720 degrees Celsius, causing hydrogen gas to expand, which in turn drives pistons and an electricity generator.

Stirling Energy Systems has been operating a six-dish system since January at the Sandia National Laboratories test facility in New Mexico. There, the company converted its centuries-old technology into an efficient means of energy generation by using modern materials and programming that tracks solar progression and accounts for cloudiness and winds. The six dishes generate enough power for six homes, with their peak energy flow coming at the hottest parts of the day -- when utility needs are greatest.

"Our systems have peak efficiency of 29.4 percent -- that's the record for converting solar to grid-quality energy," says Stirling CEO Bruce Osborn.

A neutral observer has also given the Stirling solar design a good review. "This is a very high efficiency system," says Frank Wilkins, solar thermal team leader in the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy. "It's modular and has low water consumption, which is critical in desert areas. Of all the solar energies of the moment, this is at the top...You have to figure, this exercise is going to get [Stirling Energy Systems] more competitive in the energy market," Wilkins says.

Despite his optimism, though, Wilkins also wonders how easily the system would translate into a utility-sized operation.

"Even 40-dish systems haven't been built before, so there's a lot that hasn't been scaled to large systems," says Wilkins. In particular, he points to unknown operation and maintenance demands, as well as cost limitations.

"[Cost] been a sticking point with the other thermal technologies I work on that use solar heat to produce electricity [like heliostats]," Wilkins says. "The cost has to come down, whether through research breakthroughs or industries deploying the system."

Producing enough energy to offset the cost is what Stirling Energy Systems hopes to accomplish with its SCE deal, since high-volume fabrication should drop costs. The Department of Energy has stated that the prototype dishes at Sandia cost $150,000 to build; Stirling has estimated that large-scale production could bring down the cost to under $50,000 per dish.

Although it will provide environmentally friendly energy, the Stirling project will still make a mark on the Mojave landscape, covering as much as 4,500 acres when completed. Daniel Patterson, a desert ecologist with the Center for Biological Diversity, wants to be sure concerns for nativen wildlife are also addressed as planning proceeds. Parts of the desert are home to endangered animals like the desert tortoise, whose habitat has become encroached upon by mining, development and livestock grazing.

"We want to be very supportive of curbing fossil fuels," Patterson says, "but citing the actual location of the projects is important."

Stirling CEO Bruce Osborn says that their concerns will be addressed. "We're looking at a combination of Bureau of Land Management and private land, and we will certainly have to go through environmental studies to be sure it's good with the flora and fauna," Osborn says.

Osborn also reiterates that the system should bear less impact on the environment than other existing energy production methods: "the Stirling system takes less land than other solar systems, and requires minimal land grading. Plus, there are no toxic chemicals, and we use minimal water -- only a little to wash the mirrors every month...From our standpoint, we're very enviro-friendly."

In April at a DOE workshop (see links in Notebook), top solar scientists from academia and industry assessed the state of solar research. According to their findings, while solar power is improving, significant technological breakthroughs are still needed before it makes a dent in carbon-based fuel consumption.

"We need to double worldwide energy production by 2050," said Dr. George Crabtree, the Director of Materials Science at the Argonne National Laboratory in Illinois, who co-chaired the meeting, adding that in the long run, though, our society will "need something other than fossil."

To Crabtree, Solar is the most promising energy source because of its sheer volume: the sun provides more energy to the Earth in one hour than all the energy consumed by the planet in a year. Nevertheless, solar remains largely untapped, making up around one millionth of the world's total electrical supply, according to the report.

"If you want to have solar 50 years from now, you have to invest in doing it dramatically better," says Crabtree, "because the learning curve [for scientists and engineers] is steep."

Crabtree hesitates to put a figure on how much he thinks federal funding should increase, but asserts that current levels are not nearly enough. Current estimates put federal funding for solar research at approximately $10 million, while industry experts estimate the need for at least $30 million annually to support research.

Although Crabtree doesn't see Stirling Energy Systems' dish technology as necessarily a technological revolution, he does think it's encouraging to see industry players adopting solar energy.

"Making it work, putting it out in the field -- you might call that a cultural advance," says Crabtree.

End of article from September 6, 2005 **MIT Technology Review**

MUSSEY GRADE ROAD ALLIANCE

"Preserving Historic Mussey Grade"

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January 2, 2009

BY EMAIL

Christopher Meyer
Project Manager
California Energy Commission
1516 9th Street MS-15
Sacramento, CA 95814

Mr. Jim Stobaugh, BLM Project Manager

Re: **Scoping Comments on Stirling Energy Systems Solar Two Project, Application for Certification, Stirling Energy Systems Solar Two, LLC, 08-AFC-05**

Dear Messrs. Meyer and Stobaugh,

The Mussey Grade Road Alliance ("Alliance") requests that the comments contained in this letter be included in the scoping of the above-mentioned project and fully incorporated into the review of this project under the National Environmental Protection Act ("NEPA") and the California Environmental Protection Act ('CEQA").

The Alliance intervened in the A.06-08-010 application proceeding of the California Public Utilities Commission and opposed San Diego Gas & Electric Company's application to build the so-called "Sunrise Powerlink" transmission line in San Diego County. The Alliance intervened on the basis of both the threat of wildland fire ignition by the proposed project over the life of the line and the negative impacts of the project on backcountry communities. The briefs and testimony of the Alliance can be accessed at www.musseygraderoad.org and www.mbartek.com

The Alliance requests that all findings of the Final EIR in A.06-08-010 [1] regarding impacts of this Stirling Two project,[2] including all mitigation measures,[3] be incorporated into the record for this project and used to scope the project.

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[1] See http://www.cpuc.ca.gov/environment/info/aspen/sunrise/toc-feir.htm
[2] See Sections D.2 – D.15
[3] Ibid at D.2.19 through D.2.20; pp.D.2-201 - D.2-269.

We have serious concerns about the viability of the Stirling Energy Systems ("SES") technology and whether this technology will work. We are especially concerned in light of the testimony of Dr. Barry Butler, [4] who testified in the Sunrise Powerlink proceedings. Dr. Butler, who ran the United States Department of Energy Dish/Stirling Joint Venture Program, stated that the dish/Sterling technology needed continuous maintenance to work:

I was the SAIC project manager for a dish/Stirling design that was in competition with the SES design. By 2002, SAIC had also demonstrated relatively high availability of the system for periods of time. However, the "mean time between failure" was approximately 40 hours. Major reliability problems with the SAIC Stirling engine included hydrogen leakage through joints and seals, internal engine seal leakage, swash plate actuator stalls, and heater head braze joint hydrogen leaks. That means that on average once every 40 hours a problem of some type required shut down and maintenance. Nearly continuous maintenance was necessary to keep the system "available" to generate electricity. SES has also demonstrated very high availability, though this has been achieved by a program of continuous maintenance. In 2002, SES and SAIC both had dish/Stirling units operating at the University of Nevada – Las Vegas. Power output was greater for SES than SAIC. Both SAIC and SES conducted maintenance on a nearly continuous basis to keep the units available for electricity production.[5]

Dr. Butler also testified that dish/Stirling is not cost-competitive at this time with conventional power generation or other forms of renewable power generation such as wind and solar. He said that wind and geothermal are fully commercial renewable energy technologies with a cost of energy of approximately 5¢ US/kWhr each.[6] He also said that the commercial viability of the Stirling system is unproven at this time.[7]

It is incumbent on the agencies reviewing this project to determine that the technology works. Otherwise, public land, owned by all Americans, would be sacrificed and the Bureau of Land Management's stated policy to facilitate ***environmentally responsible commercial*** development of solar energy projects ***on public lands*** [8] (emphasis added) would be ignored. The agency review demands that chimeras in the desert do not destroy either our public lands or our belief in government to protect them.

Sincerely,

/s/ Diane Conklin

[4] A. 06-08-010 Phase 1 Direct Testimony of Dr. Barry Butler on Behalf of Conservation Groups, July 1, 2007. Attached here as Attachment A.
[5] Ibid at pp. 3-4.
[6] Ibid at p 4.
[7] Ibid at p. 5.
[8] SES Solar Two Info Hearing Presentation Final Draft with BLM Edits 11-24-08.pdf; Bureau of Land Management and California Energy Commission, Informational Hearing and Scoping Meeting, November 24, 2008, p.6.

ATTACHMENT A

Butler_Testimony_fo
r_Conservation_Grou

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902-E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project	Application 06-08-010 (Filed August 4, 2006)

PHASE I DIRECT TESTIMONY OF DR. BARRY BUTLER ON BEHALF OF CONSERVATION GROUPS

Justin Augustine
Steven Siegel
Center for Biological Diversity
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E-Mail: jaugustine@biologicaldiversity.org

Dated: June 1, 2007

Testimony of Dr. Barry Butler on Dish/Stirling Solar Technology

1. INTRODUCTION

My name is Barry L. Butler, PhD. As more fully outlined in my resume, Appendix A, I have a PhD in Materials Science and am the former vice president and manager of SAIC's Solar Energy Products Division. I joined the Solar Energy Research Institute, the predecessor to the National Renewable Energy Laboratory, in 1978, soon after it began operations. Prior to that time I worked at Sandia National Laboratory specializing in solar optical materials. I wrote the chapter on cooperative solar thermal commercialization activities in the book "Implementation of Solar Thermal Technology" published by MIT Press in 1996. I have written or co-authored over 10 technical papers on all aspects of dish/Stirling solar technology development. I was the president of the Concentrating Solar Power Division of the Solar Energy Industries Association from 1998 to 2002, and I am the owner of Butler Sun Solutions, a firm specializing in the design and sales of solar hot water heating systems.

2. BACKGROUND

San Diego Gas and Electric (SDG&E), a company owned by Sempra Energy, has filed an application to the CPUC claiming a 150 mile, 1000 MW transmission line is needed to import energy into San Diego County to ensure the reliability of the regional transmission system on peak demand days, and has further suggested the transmission line is needed to encourage the development of renewable power in Imperial Valley. SDG&E has signed a power purchase agreement (PPA) with Stirling Energy Systems (SES), Phase I of which is for a 300 MW dish/Stirling array, a total of 12,000 of their 25

kW dish/Stirling systems, in Imperial County that must be delivered in increments between 2008 and 2010, as is stated in the CPCN (p. III-11):

> The Agreement with SES contemplates the purchase by SDG&E of up to 900 MW of new solar related energy from SES in three phases. Phase 1 consists of 300 MW scheduled for delivery in the 2008 to 2010 timeframe. While the first phase will provide 300 MW when all construction is completed, the capacity will be added in increments over the 2008 through 2010 period. Phase 2 project consists of an additional 300 MW in the 2011 to 2012 timeframe. SDG&E also has a right of first refusal for a third phase for another 300 MW phase.

According to the SDG&E, commercial production is expected to begin in 2008. The economic terms of the contract, specifically the $/kwh price that SDG&E will pay SES for the power, is unknown.

There are currently six prototype 25 kW Stirling dishes in operation at Sandia National Laboratory. I have been asked to opine on the reliability and cost of SES dish technology and whether it is feasible or realistic to expect that SES can meet the contract schedule defined by SDG&E.

3. DEVELOPMENT HISTORY OF DISH STIRLING TECHNOLOGY

I co-authored a 2003 paper that includes a brief history of the development of dish Stirling technology.[1] I have excerpted the following summary of dish Stirling technology from that paper.

> Over the last 20 years, eight different Dish-Stirling systems ranging in size from 2 to 50 kW have been built by companies in the United States, Germany, Japan, and Russia. The first of the historical systems, the 25-kW Vanguard system built by ADVANCO in Southern California, achieved a reported world record net solar-to-electric conversion efficiency of 29.4%. In 1984, two 50-kW Dish-

[1] T. Mancini, P. Heller, B. Butler, B. Osborn, W. Schiel, V. Goldberg, R. Buck, R. Diver, C. Andraka, J. Moreno, *Dish-Stirling Systems: An Overview of Development and Status*, Journal of Solar Energy Engineering, Vol. 125, pp. 135-151, May 2003.

Stirling systems were built, installed, and operated in Riyadh, Saudi Arabia, by Schlaich-Bergermann und Partner of Stuttgart, Germany.

A third Dish-Stirling system was built by McDonnell Douglas Aerospace Corporation (MDAC) in the mid 1980s and, when MDAC discontinued development of the technology, the rights to the system were acquired by the Southern California Edison Company (SCE). SCE operated the system from 1985 to 1988. Stirling Energy Systems (SES) of Phoenix, Arizona, acquired the technology rights and system hardware in 1996 and have continued development of the system. In 1991, Cummins Power Generation, working under costshared agreements with the U.S. Department of Energy and Sandia National Laboratories, started development of two Dish-Stirling systems: a 7-kW system for remote applications and a 25-kW system for grid-connected power generation. Cummins was innovative in its Dish-Stirling systems, incorporating advanced technologies into the designs. . . The two Cummins programs made progress, but were terminated in 1996 when Cummins' parent company, Cummins Engine Company, realigned business along its core area of diesel engine development.

Dish-Stirling systems have demonstrated that they are capable of producing electricity for the grid and for remote power applications. Technology development needs are for low-cost components and systems that can operate unattended at very high levels of reliability.

SES acquired the intellectual and technology rights to the McDonnell Douglas concentrator and the license to manufacture the USAB (now Kockums) 4-95 Stirling engine based power conversion unit (PCU) in 1996.

The (SES) systems are continuously monitored and repaired whenever a problem occurs. Consequently, they have demonstrated excellent availability, greater than 98%, during the most recent 1,000 hr of operation.

I was the SAIC project manager for a dish/Stirling design that was in competition with the SES design. By 2002, SAIC had also demonstrated relatively high availability of the system for periods of time. However, the "mean time between failure" was approximately 40 hours. Major reliability problems with the SAIC Stirling engine included hydrogen leakage through joints and seals, internal engine seal leakage, swashplate actuator stalls, and heater head braze joint hydrogen leaks. That means that

on average once every 40 hours a problem of some type required shut down and maintenance. Nearly continuous maintenance was necessary to keep the system "available" to generate electricity. SES has also demonstrated very high availability, though this has been achieved by a program of continuous maintenance. In 2002, SES and SAIC both had dish/Stirling units operating at the University of Nevada – Las Vegas. Power output was greater for SES than SAIC. Both SAIC and SES conducted maintenance on a nearly continuous basis to keep the units available for electricity production.

Dish/Stirling is not cost-competitive with conventional power generation, or other forms of renewable power generation such as wind and solar, at this time. Wind and geothermal are fully commercial renewable energy technologies with a cost of energy of approximately 5¢ US/kWhr each.[2] As noted in the 2003 Journal of Solar Energy Engineering paper I co-authored:[3]

> In the U.S., niche markets for Dish-Stirling power generation depend on federal or state government subsidies, required to close the gap between the current cost of power from these systems (~30¢ US/kWhr) and the price that the market is willing to pay (~6¢ US/kWhr), a difference of 24¢ US/kWhr.
>
> Even at the relatively low production rate of 50 MW/yr (~2,000 25-kW systems or 5,000 10-kW systems) and at an O&M cost of 1–2¢/kWhr, the cost of electricity from Dish-Stirling systems will be 15–20¢/kWhr enabling entry into some village and remote-power markets. As system costs fall and reliability improves, it is reasonable to expect levelized energy costs of less than 10¢

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[2] R. Caputo, B. Butler, *Solar 2007: The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Regio*n, accepted for publication, American Solar Energy Society, 2007 Annual Conference, Cleveland, July 2007.

[3] T. Mancini, P. Heller, B. Butler, B. Osborn, W. Schiel, V. Goldberg, R. Buck, R. Diver, C. Andraka, J. Moreno, *Dish-Stirling Systems: An Overview of Development and Status*, Journal of Solar Energy Engineering, Vol. 125, pp. 135-151, May 2003., p. 139.

US/kWhr, which will expand the markets to distributed generation and demand-side applications.

A "mean time between failure" between 2,000 and 10,000 hours must be proven before dish/Stirling can be incorporated into utility-scale installations.[4] The current "mean time between failure" is a few hundred hours. This means a great deal of time, effort, and money must be spent on maintenance. This drives up the cost of operating a dish/Stirling unit. The commercial viability of the Stirling system is unproven at this time.

4. PILOT INSTALLATION IS NEXT LOGICAL STEP IN DISH/STIRLING DEVELOPMENTAL PROGRESSION

The 1 MW pilot project being developed by SES for SCE is a good example of a necessary and prudent incremental step to ensure all the technical deficiencies in the first generation production model are worked-out before scaling-up to arrays involving many 1,000s of individual dishes. It is also instructive that SCE, a company with extensive experience with dish/Stirling technology and the company that sold the technology to SES, is requiring the successful deployment of a 1 MW pilot project before scaling-up to a utility-scale installation.

SDG&E has no experience with the operation of dish/Stirling technology, and is proposing to go straight from the prototype to a utility-scale installation. Few or none of the benefits of the 1 MW pilot test will be available to SES as it moves to full commercial scale production to satisfy the SDG&E contract(s), as the 1 MW pilot has not yet begun operation and full commercial production must begin in a matter of months if SES hopes

[4] R. Caputo, B. Butler, *Solar 2007: The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Regio*n, accepted for publication, American Solar Energy Society, 2007 Annual Conference, Cleveland, July 2007.

to meet the 2010 deadline established in the SDG&E contract. This is neither prudent nor possible unless the technical risks of the operation and maintenance are quantified and then apportioned between the federal government, investors, SES and SDG&E. The SCE 1MW project is the way to quantify the risks, before moving to 10MW then on to 100MW. Without these risks quantified and apportioned, investors who are willing to shoulder all of the risks for a meager reward must be found.

5. DISH/STIRLING IS A PRE-COMMERCIAL TECHNOLOGY

The San Diego Regional Renewable Energy Study Group addressed dish/Stirling in its August 2005 *Potential for Renewable Energy in the San Diego Region.*[5] Several of the co-authors of this report are SDG&E staff. Dish/Stirling is identified as pre-commercial in this study, based primarily on analyses conducted by the National Renewable Energy Laboratory and Black & Veatch.

I concur with this assessment in the *Potential for Renewable Energy in the San Diego Region*. My opinion is that dish/Stirling technology holds much promise. By 2020, the technology could be a significant player on a commercial scale in the concentrated solar power category. However, there is no possible way that dish/Stirling solar can move from high cost prototype models with substantive reliability concerns to large-scale production of high reliability low-cost commercial models by 2008 and full operation of a 12,000 dish, 300 MW array by the end of 2010. An entire step wise development 1MW, 10MW, 100MW with installed cost, reliability and operation & maintenance costs assessed over a year of operation at each step is necessary to move

from current prototypes to the large-scale commercial plants contemplated in the power purchase agreements between SDG&E and SES.

I declare under penalty of perjury this testimony and attachment are, to the best of my knowledge, true and correct.

Signed: Barry L. Butler Date: 5/31/2007

Barry L. Butler, PhD
811 Academy Dr.
Solana Beach, CA 92075
858-259-8895

[5] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region,* August 2005 (www.renewablesg.org).

APPENDIX A

BARRY L. BUTLER, Ph. D.

EDUCATION

B.S. Ceramic Engineering, 1965, Alfred University
M.S. Materials Science, 1967, Rensselaer Polytechnic Institute
Ph.D. Materials Science, 1969, Rensselaer Polytechnic Institute

MANAGEMENT TRAINING

1980 Experience Compression Lab/Interpersonal skills training
1981 Technical Writing, short course, University of Denver
1982 Management Action Program/Management Methods
1983 Personal Management Skills, University of Denver

PROFESSIONAL SUMMARY

Dr. Butler has lead nationally recognized teams in solar materials technology for US/DOE, and solid rocket motor propellant to case bonding for NASA. In addition to guiding the national teams and managing the work, he also represented the teams' work to the legislature and Executive branches of government to illustrate their importance.

Dr. Butler is a material scientist with training in the structure property relationships of metals, ceramics and polymers. Dr. Butler has contributed to the basic understanding of carbon/carbon and carbon/polymer composite materials. His research on the optical properties of low cost, lightweight optical structures has helped to relate material properties to system performance. Dr. Butler developed the laser ray trace optical evaluation technique for determining the slope errors of new and available solar concentrators. He guided the development of the solar thermal technology at Solar Energy Research Institute (SERI) which included major advances in stressed membrane heliostats and direct absorption thermal receivers.

As manager of SAIC's Energy Products Division he has managed the design, fabrication and deployment of five 25 kWe dish/engine power systems. Each 114m^2 reflector weighs 18,000 lbs., and are capable of self-deployment. Dr. Butler holds nine patents and has one pending patent application for the self-deploying advanced drive.

As the manager of the NASA Solid Propulsion Integrity Program (SPIP) Bondline work package of Science Applications International Corporation (SAIC), he was responsible for evaluation of materials and processes to improve the reliability of space shuttle solid rocket motors. Large composite glass/graphite epoxy solid rocket motor cases were health monitored and verified during manufacture, cure and pressure test. He was responsible for managing research and development and enhancing innovation and engineering applications of activities. The NASA SPIP program's $70M effort was documented on a CD-ROM database a first for NASA. He is active in both the Solar Energy Industries Association (SEIA) and congressional liaison work for solar and aerospace activities.

As the manager of the Energy Projects Division at SAIC, he has played a major role in the development of electro-chemical battery systems and membrane heliostat technology. He has planned and expanded SAIC's battery systems development to include sodium sulfur cells for utility load-leveling and electric vehicle applications and other advanced cells and systems for aerospace applications. He planned and expanded SAIC's advanced solar concentrator area to include design, fabrication and testing of advanced heliostat and dish systems to meet customer needs. He has moved to extend both heliostat and dish technology into small, lightweight modular systems capable of acquisition by a broader range of customers. As Vice President of the Solar Energy Industries Association (SEIA) during 1995 and President during 1996, he drafted the SEIA Strategic Plan and prepared congressional testimony on solar thermal technology representing the industry to congressional committees. He supported the Department of Energy (DOE) solar Thermal Five Year Plan and represented industry to the Office of Management and Budget (OMB) on solar funding issues.

As a research manager at SERI, he guided the research of 90 scientists ($15 million annually) on solar materials, heat and mass transfer, and thermal systems. Building heating and cooling, ocean thermal energy conversion, solar thermal electric and industrial process heat programs have also been under his direction. Dr. Butler has set the pace in advanced lightweight solar collectors with two patentable concepts. He has also recognized and supported significant advancements in materials and designs from his research staff. He has defined, packaged and sold research programs based on these concepts. Several programs have resulted in commercial products.

He has developed research management skills which allow creativity and technical freedom, while maintaining tight cost and schedule control to ensure quality and timely technical outputs. He is multilingual, has traveled internationally for the Fulbright Foundation, and has lectured on solar materials.

EXPERIENCE

Started Butler Sun Solutions-2002-Present

He runs the solar manufacturing operation for patented solar assisted hot water system. They also perform contracted services to support large 160 m^2 advanced tracker drives for commercial solar companies. They also are doing engineering management and configuration control for the 250,000 gallon per day desalination plant for the City of Avalon, on Catalina Island, CA, in conjunction with Southern California Edison.

Manager, Energy Products Division for SAIC, 1996- 2002

Dr. Butler ran the United States Department of Energy Dish/Stirling Joint Venture Program. A $36 million 50/50 government industry cost share program to develop and deploy dish/engine systems. To date, three systems have been deployed and are operating at design levels.

Manager, NASA Solid Propulsion Integrity Program Bondline Division for SAIC, 1989-1996

He was a major contributor to the SAIC proposal and designated as the program manager for the $40 million, seven year effort. He staffed and set up the Bondline Program offices in San Diego, California, and Huntsville, Alabama. He managed ten SAIC staff and $5 million annually. He managed the Bondline team consisting of six major subcontractors; Thiokol, Hercules, United Technologies (CSD), ARC, Lockheed Martin, and Aerojet. His division managed the cost, schedule, and technical content of the program. He was responsible for overall customer (NASA) satisfaction.

Manager, Energy Projects Division, Science Applications International Corporation, 1984 – 1988
He started the energy Projects Division which has grown to include 10 staff members and $1.2 million in annual sales while meeting both growth and profit objectives. The division performs research on point and line focus solar collectors, advanced electrochemical storage batteries and chemical conversion of phosphogypsum to sulfur. He managed systems research and simulations as well as hardware development and testing. He has motivated his division staff to be creative and achievement-oriented, which has enabled business growth.

Manager, Solar Thermal and Materials Research Division, Solar Energy Research Institute, 1982 – 1984
As the manager of the Solar Thermal and Materials Research Division, he directed the activities of the division and developed new technical initiatives, management policies, and operating procedures. He was responsible for managing the Solar Thermal, Passive, Active, Buildings, Conservation and Ocean Programs. Specifically, he managed four research branches: Thermal Research, Materials Research, Thermal Systems and Engineering Research, and Buildings System Research. The division totaled 90 people and $15 million in research funds annually.

Manager, General Research Division, Solar Energy Research Institute, 1980 – 1982
Dr. Butler managed the General Research Program ($10 million and 60 staff) which included basic research tasks in photochemistry, photoelectrochemistry, remote sensing of solar resources, university grants (26), sabbatical and summer intern programs, nondestructive evaluation, optical materials and containment materials research. He instituted research reporting of technical progress and cost control on a monthly basis

Chief, Materials Branch, Solar Energy Research Institute, 1978 – 1980
Dr. Butler built and managed the Materials Branch from a staff of four to thirty people supported by a budget of $3 million annually. He developed the facilities and equipment needs of the branch. He conceived and implemented the Solar Optical Materials Planning Committee composed of representatives of Sandia Lab Albuquerque, Sandia Lab Livermore, Jet Propulsion Lab, Los Alamos National Lab, Battelle Pacific Northwest Lab, Lawrence Berkeley Lab, National Bureau of Standards, and SERI. The committee publishes a set of National Solar Materials Planning Recommendations in five reports which have been followed by the DOE research program.

Solar Materials Coordinator, Sandia National Laboratory, 1975 – 1978
Dr. Butler coordinated the materials and process support of Solar Total Energy, Central Receiver and Photovoltaic projects. This included development of advanced collector testing based on laser ray tracing, materials research on the outdoor durability of wood and composites and life testing of this glass, wood, and composites. Large-scale materials field testing and hail damage test facilities were also part of his responsibility.

Member, Technical Staff, Sandia National Laboratory, 1969 – 1975
He conducted research and published work on advanced carbon/carbon structure property relationships. This research formed the basis for process changes which supported five successful test flights of

carbon/carbon heat shields. Thermally induced strains and stresses up to 2800°C were studied and modeled to determine composite behavior under transient thermal loading. Carbon fiber felts and filament would performs were densified by chemical vapor deposition and carbonized pitch matrix methods. Nose tips heat shields and thermal insulation systems were fabricated and studied. Dr. Butler taught the bell Lab Composite Materials course and was the lab expert on glass carbon and aramid fiber interfaces with epoxy, polyester, metals and ceramics.

TECHNICAL EXPERTISE INCLUDES:

Business management to meet profit and revenue goals
Technical management of large research groups and projects $10 - $15 million and 100 staff members
Structural design, analysis, and fabrication of fiber/matrix composites
Composite materials design, fabrication technology, and tooling expertise

PROFESSIONAL ACTIVITIES

American Ceramic Society (ACS), 1962 – present
American Society of Metals (ASM), 1975 – present
American Carbon Society (ACS), 1965 – 1977
Keramos, Ceramic Engineering Honorary
Alpha Sigma Mu, Metallurgical Honorary
Society for the advancement of Materials and Process Engineering (SAMPE), 1978 – present
American Solar Energy Society (ASES), 1975 – present, Chairman of Solar Thermal Division
Solar Energy Industries Association 1984- Present, Board Chairman 1990-1994
Solar Energy Industries Association, Concentrating Solar Power Division Chairman 1998-2002
Member of SANDAG renewable energy working group 2005-present.
Supporting the California Solar Initiative at the California Center For Sustainable Development 2006-Present

HONORS/AWARDS

American Men and women in Science
Who's Who in America
Materials Associate Editor, *ASME Journal of Solar Energy Engineering,* 1979 – 1981
Fulbright Lectureship, Yugoslavia, 1983
International Energy Agency, Solar Design Team for Alberia, Spain, 1978
NASA Distinguished Service Award for Solid Rocket Motor Integrity Imporvement.

PATENTS (9 Issued)

January 17, 1984	#4,425, 904	Tracking System for Solar Collector
April 16, 1985	#4,511,215	Lightweight Diaphragm Mirror Module System for Solar Collectors
December 24, 1985	#4, 559, 926	Centerless Drive Solar Collector System

February 17, 1987	#4,643,168	Liquid Cooled Fiber Thermal Radiation Receiver
October 3, 1989	#4,870,949	Wind Resistant Two-Axis Tracker for Energy or Radiation Concentrators
May 10, 1991	#5,016,998	Focus Control System for Stretched Membrane Mirror Module
April 6, 1993	#5,199,499	Oil Well Fire Capper/Snuffer
April 24, 1995	#8,393,472	Long-life Self Renewing Solar Reflector Stack
January 4, 2005	#6,837,303 B2	Internal, Water Tank Solar Heat Exchanger

SECURITY CLEARANCE: DISCO/Secret/SAIC Terminated in 2002 on retirement from SAIC

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Thomas Mancini, Peter Heller, Plus Barry Butler, Bruce Osborn, Wolfgang Schiel, Richard Diver, Vernon Goldberg, Reiner Buck, Charles Andraka, James Moreno, *Dish-Stirling Systems: An Overview of Development and Status,* Journal of Solar Energy Engineering, Copyright © 2003 by ASME MAY 2003, Vol. 125.

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Butler, B.L. *Encyclopedia of Materials Science and Engineering,* Pergamon Press, May, 1986.

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to the Assigned Commissioner and Administrative Law Judge's Scoping Memo and Ruling, I have served a true copy of "Phase I Direct Testimony of Dr. Barry Butler" to all parties on the most recently updated service list for Application No. 06-08-010.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 1st day of June, 2007, at San Francisco, California.

Justin Augustine
Center for Biological Diversity
1095 Market St., Suite 511
San Francisco, CA 94103
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Facsimile: 415-436-9683
E-mail: justinaugustine@biologicaldiversity.org

WRITTEN COMMENTS RECEIVED FROM MEMBERS OF THE GENERAL PUBLIC

- Marilyn Moskowitz (1 page)
- Richard A. Ayers (2 pages)
- Cheryl Lenz (1 page)
- Charlene Ayers (6 pages)
- Donna Tisdale (47 pages)
- Denis Trafecanty (149 pages)

From: marilyn moskowitz <marilynam1948@hotmail.com>
To: <christopher.meyer@energy.state.ca.us>
Date: 12/23/2008 3:32 PM
Subject: Attention Solar Two

I want to go on record as being opposed to the Solar Two Project being sited in Imperial county,Ca..

Reasons:

Air Quality, We have terrible air quality, one of the big problems is dust, This project would put alot of additional dust in the air. We have a high rate of asthma-, elementary school children have a 40% rate of asthma compared to the coast with a rate of 15-18%. (info. from American Lung Assoc.)

Water Use
Octillo Sit on a aquifer that contains drinkable water. This water has already been used alot by Plaster City for the manufacture of wallboard. To allow this water to be user for industrial purposes is crazy as drinkable water is a iincreasingly scarce resource.

Clean up Costs
Sterling Energy Systems is a LLC, A bond for clean Up and restoration of the site needs to be posted, or else Imperial County is going to be stuck with a clean up bill or a junkyard that extends for 6000 acres. The amount of the bond needs to be established after aprocess that names a accurate figure for this. Also the amount of financing currently promised is woefully inadequate for this project. We currently are in a increasingly unstable economic era worldwide where all bets are off.

New Technology
Thin-film PV is becoming more competitive has the technology is rapidly improving. I think its going to go like computers have with expotential growth and innovation. This will enable a localized and decentralized solar power plants making the Solar Two Project obsolete.

Thank you,
Marilyn Moskowitz
PO Box 1209
El Centro,Ca.92244

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

SUBJECT: PUBLIC INPUT AND COMMENTS ON SES SOLAR TWO (08-AFC-5)

Since the main thrust for the permitting of this project seems to be directed at environmental, cultural and land use issues, I will address my concerns here with follow-up on the reason for these concerns based on the non viability of implementing this mega scale project as proposed by SES. Please enter these concerns with their backup information as public inputs to be addressed by the California Energy Commission.

1. Since thousands of acres of public land are going to be dedicated to this solar energy project, what are the implications of taxpayer responsibility for SunCatchers removal and remediation of the land should a failure of the technology implementation occur? Such a cleanup effort even in the first phase would cost hundreds of millions of dollars, while SES Solar Two, LLC would declare bankruptcy and abandon the site.

2. As I understand it, the justification for the Southwest Power Link is to carry several hundreds of MW from the SES Solar Two Project to the San Diego region. If SES Solar Two fails, as it now stands Sempra Energy is under no commitment to carry other renewable energy sources and is free to carry energy from coal or gas fired plants in Mexico. This appears to have been an ulterior motive in Sempra's pushing for the Southwest corridor while demanding approval without a definite commitment to use this line for renewable sources of energy.

PROBLEMS FACING SUCCESSFUL IMPLEMENTATION OF SES SOLAR TWO "SUNCATCHERS"

1. Stirling Cycle engines have been around for something like 175 years with only a few actually placed in useful operation. The concept is proven, the realization isn't!
2. Philips, auto manufacturers and others have spent millions of dollars trying to adapt Stirling Cycle engines for commercial markets, but without success.
3. SES Solar Two engines operate at very high temperatures, pressures and rotary speeds using hydrogen gas as the transfer medium, all creating long term problems with metal creep, metal fatigue and seal integrity.
4. The SunCatchers have not been tested in the actual harsh environment of the desert with only six units being run by Sandia Labs at their Albuquerque, NM site, with a few others being run by Boeing in the Los Angeles area.
5. As I understand the status of the SunCatchers, the final design is nearing completion with release in early 2009. So none of these units has been built yet, and certainly will not be tested until late in 2009. How can any rational decision be made at this time to site 12,000-30,000 of these units on public land based on current evaluation data?

6. I do not know of any other successful project of this magnitude that has advanced from several units to tens of thousands of units in a single step.

PLAN FOR SUCCESSFUL IMPLEMENTATION OF SES SUNCATCHERS

1. Permit SES Solar Two, LLC to construct and test a 1 MW setup comprising 40 SunCatchers on their privately held lands near Plaster City, CA. Run these units for six months to a year, tabulating collected energy, operational availability and operating costs to determine project viability before proceeding to a larger model to be sited on public lands.
2. This approach will in the long run be beneficial to both the U.S. taxpayer and to SES Solar Two, LLC.
3. Defer construction of the Southwest Power Link until a legitimate need is established for its use based on bringing renewable energy from Imperial County to San Diego..

Richard A. Ayers
BSc Engineering Physics 53, Lehigh University
R_A_A@att.net

12/27/08

January 2, 2009

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

SUBJECT: PUBLIC INPUT AND COMMENTS ON SES SOLAR TWO (08-AFC-5)

I fully agree with the concerns of fellow San Diego County resident Mr. Richard A. Ayers, engineer, when he asks "since thousands of acres of public land are going to be dedicated to this solar energy project, what are the implications of taxpayer responsibility for SunCatchers removal and remediation of the land should a failure of the technology implementation occur? Such a cleanup effort even in the first phase would cost hundreds of millions of dollars, while SES Solar Two, LLC would declare bankruptcy and abandon the site.

The SunCatchers final design is nearing completion with release in early 2009. This means that none of these units have been built yet, and certainly will not be tested until late in 2009. How can any rational decision be made at this time to site 12,000-30,000 of these units on public land based on current evaluation data?"

The current economy in the United States dictates that large financial commitments are looked at with a "common sense" point of view. The bottom line should be to make sure that a product's final design is first completed – and then tested in the environment it is planned to be used – that of sand storms and the "white ground fog" from Plaster City. These tests, of course, should be conducted on privately owned property – not public lands.

I add my voice with Mr. Ayers' when he requests that these units be "run for six months to a year, tabulating collected energy, operational availability and operating costs to determine project viability before proceeding to a larger model to be sited on public lands."

Regards,

Cheryl Lenz
2040 Ross Avenue
Boulevard, CA 91905

January 2, 2008

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814
Via email: cmeyer@energy.state.ca.gov

Re: 08-AFC-5: SES Solar Two

Mr. Meyer,

As I understand it, this process is to decide whether to site the Stirling Energy Systems (SES) Solar Two Suncatcher project on over 6000 acres of public lands in the El Centro area.

The involvement of public lands makes the evaluation of the viability of this unproven technology the major sticking point of this proposal. Six thousand acres will be permanently "disturbed."

I tried to find current technical information online for the Solar Two Suncatcher project at Sandia Labs. The only information available was produced by SES.

I thought that as a public-private partnership the technical reports and studies of this ongoing research and development would be public documents. I was wrong.

Dr. Tom Mancini, Program Manager, Concentrating Solar Power, Sandia National Labs, told me that since SES was providing the larger share of money for this project ($100 million (SES) to $1 million (Federal)), SES controls the information. None of the work done on the most recent research and development of the Solar Two Suncatcher (2001 to present) was available to the public.

This is a BIG problem in attempting to assess the viability of this technology.

I don't think the Energy Commission can make an informed decision on this without an independent assessment of the technology. There is no way to do that with SES as the sole source of information.

At the November 24, 2008, CEC hearing there were concerns about how the mechanical parts, mirrors, and seals would perform in the sand blown environment of Plaster City. The SES representatives were quick to reassure everyone that those issues had been successfully addressed and resolved. They expected that to suffice. It doesn't.

When Dr. Mancini and I talked on the phone, he expressed surprise that SES was promising such a rapid deployment of the Solar Two Suncatchers from 6 units at Sandia

to 12,000 in the field by 2010-2011. He stated that the latest iteration, the final design, of the technology was just being installed; the new pedestals for the four units going in as we spoke. He predicted that it would be three years before the technology would be commercially available.

I'm pretty sure that SES made some sweeping promises at the November 24, 2008, hearing about getting 12,000 Solar Two Suncatchers up and running at Plaster City by 2010-2011.

As nice as the SES folks might be there is no reason to trust them to tell the truth about the Solar Two Suncatcher technology. It's a business. They need investors with large amounts of cash and they need a place to put the Solar Two Suncatchers.

Sandia Labs, no matter how righteous and above reproach they might be, cannot provide a stand alone independent analysis for two reasons: (1) contractually they can't; and (2) there is the $100 million that they are being paid which may skew their view of things.

I am including the email string between Dr. Mancini and I which may suggest other and/or clarify some issues. It starts with my request for public information. There is a telephone conversation between us and two follow up emails regarding that phone call.

Sincerely,

Charlene Ayers
10801 Dewitt Court
El Cajon, CA 92020
619-442-8046
char.ayers@att.net

Dr. Mancini string of emails:

From:	"Mancini, Thomas R" <trmanci@sandia.gov **Save Address** **Reminder**
To:	"'char.ayers@att.net'" <char.ayers@att.net>
Cc:	"Gilpin, Wendy" <wfalls@sandia.gov>,"Valdez, Salli" <svaldez@sandia.gov>,"Tallant, Joann M" <jmtalla@sandia.gov>,"Marchand, Deborah Ann" <damarch@sandia.gov>,"Marchand, Deborah Ann" <damarch@sandia.gov>,"Hurst, Kathleen T" <kthurst@sandia.gov>,"Nelson, Jennifer" <jenelso@sandia.gov>,"Shephard, Les E" <lesheph@sandia.gov>
Subject:	RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK
Date:	Thursday, December 18, 2008 6:07:42 AM [View Source]

Hello Mrs. Ayers,

Thanks for the kind comments. I enjoyed visiting with you as well.

I would like to clarify a couple of points.

First, when I made a presentation to the group reviewing the Sunrise Power Link project, it was clear that SDG&E and the environmentalists and the NGO community had already had major issues. During our meeting, they did not seem to me to be at all receptive to discussions on several issues raised by the remaining groups.

Second, my comment related to the Solar 2 Project, was that I believed, based on information provided by several different parties, that there was sufficient existing transmission capacity for the initial phase of the project (~300 MW). However, as I explained, I've also heard that SDG&E plans to develop more of the geothermal resources in the Imperial Valley, which would require additional transmission capacity.

Last, while we do share a lot of information with SES, they do not keep us informed of their deployment plans and strategies. Over the course of the past year, their strategy has changed several times and, while I may have been surprised that they intend to deploy 12,000 systems during the next year, it is not at all unreasonable to think that they could do it.

Again, I very much appreciate folks like you and your husband, activist citizens who track civic activities and make sure that things are being done for the right reasons.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager *TEL (505) 844-8643*
Concentrating Solar Power *FAX (505) 845-3366*
Sandia National Laboratories *Cell (505) 264-0614*
P. O. Box 5800, MS 1127 *Email: trmanci@sandia.gov*
Albuquerque, NM 87123

From: char.ayers@att.net [mailto:char.ayers@att.net]
Sent: Wednesday, December 17, 2008 1:37 PM
To: Mancini, Thomas R
Cc: Gilpin, Wendy; Valdez, Salli; Tallant, Joann M; Marchand, Deborah Ann; Marchand, Deborah Ann; Hurst, Kathleen T; Nelson, Jennifer; Shephard, Les E
Subject: RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK

Dr. Mancini...

I was pleasantly surprised by our conversation yesterday. I am glad that you insisted on it.

As you surmised, my attempts to get information on the SES Solar Two Suncatcher technology were motivated by SDG&E's plans for the Sunrise Powerlink. They are

citing the SES Solar 2 project as the reason for it all.

I was interested in your comments about their involvement. It sounded like the SES Solar Two Suncatcher technology could do very well by itself without any help by SDG&E.

I believe your comment was that when you came out to make a technical presentation on this technology, you were putoff by SDG&E's hijacking of the SES Solar Two Suncatcher technology, adding that they drove all the NGOs off.

Although, not a transmission expert, you thought that SDG&E could handle the all the energy produced by SES Solar 2 project by expanding their existing lines.

After my husband (Lehigh-Engineering Physics '53) and I attended the last California Energy Commission's hearing (Nov. 24, 2008) on the SES Solar Two, we thought that a test group of 100 units sited at Plaster City would be a good research strategy.

According to SES's presentation at the hearing, they intend to go from the 6 units at Sandia Labs to 12,000 in the first phase. That doesn't sound very scientific to us.

In our conversation yesterday, it sounded like this was the first time you had heard of these plans, and you were a bit skeptical of that timeline.

SES also stated at that hearing that they would have those first 12,000 units at Plaster City up and running by 2010. I think that you said that it would take 3 years more to make the technology commercially ready, and that would be with the new design (4 units) being set up for evaluation as we speak.

Mr. Liden, VP SES, stated to us directly as he was working the room before the November 24, 2008 hearing that the investment breakdown was government $1 to SES's $5. He urged us to see what a good value that was.

As per our conversation, the investment breakdown is government $1 million and SES $100 million and whenever the commerical partner puts in more money than the government, the commercial enterprise controls all the information because of the proprietary issues. That would be why there are no public documents available, and why all the news releases have that SES spin.

The once-in-a-blue-moon conditions under which the award winning "Popular Mechanics" test was conducted was a media event orchestrated by SES. You reported that the actual annual overall performance of the Solar Two Suncatcher technology is 24% which is still pretty good. You pointed out that a single solar cell has 38.1% efficiency but when put into an array the efficiency drops to 20%.

Here's the link to the report "Status of the Boeing Dish Engine Critical Component Project (Jan 1999)" that my husband found online:

http://www.osti.gov/bridge/product.biblio.jsp?osti_id=3273

Thank you for the "SCE Dish Report" from 1993. It looks to be very comprehensive.

Charlene Ayers

---------- Original message from "Mancini, Thomas R" <trmanci@sandia.gov>: ----------

Hello Mrs. Ayers,

I enjoyed visiting with you earlier today. As I noted in our discussion, there are a number of issues around the Sunrise Power Link transmission line with which I do not necessarily agree. Also, as your husband rightfully noted, defining a point performance metric under "best conditions" is not really a fair way of characterizing the annual performance of a system. But, of course, we weren't trying to characterize this as anything other than what it is – a high level of performance under best conditions.

Attached to this message is the early performance paper for the pre-cursor to the SES system. To a first order, the performance reported in this paper fairly represents that of the current design.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager
Concentrating Solar Power
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P. O. Box 5800, MS 1127
Albuquerque, NM 87123
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FAX (505) 845-3366
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Email: trmanci@sandia.gov

From: char.ayers@att.net [mailto:char.ayers@att.net]
Sent: Tuesday, December 16, 2008 11:43 AM
To: Mancini, Thomas R
Cc: Gilpin, Wendy; Valdez, Salli; Tallant, Joann M; Marchand, Deborah Ann; Marchand, Deborah Ann; Hurst, Kathleen T; Nelson, Jennifer; Shephard, Les E
Subject: RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK

Dr. Mancini...

I, too, am sorry for the mix up. I'm not looking for a chat on this technology (SES-Solar Two Suncatcher).

I am looking for public documents on the testing and research that describe the methods and conclusions.

Please direct me to where I can view those technical documents.

Charlene Ayers

---------- Original message from "Mancini, Thomas R" <trmanci@sandia.gov>: ----------

Hello Ms. Ayers,

Your note to Tom Hunter was forwarded to me for response.

I apologize for the misunderstanding. Unfortunately, I never received your original email message because Mr. Sanchez must have forgotten that my email address includes my middle initial (i.e, trmanci@sandia.gov). I would very much like to visit with you about Stirling Energy Systems' development work and our support of it here at Sandia. Our group is very excited about the expansion of Concentrating Solar energy projects in Southwest and we are working hard to support them all.

I have your telephone number and will call you later today to schedule a time when we can have a more extended discussion.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager
Concentrating Solar Power
Sandia National Laboratories
P. O. Box 5800, MS 1127
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DONNA TISDALE
P.O. BOX 1275
BOULEVARD, CA 91905

California Energy Commission
Christopher Meyer, Project Manager
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

January 2, 2009

SCOPING COMMENTS: SES SOLAR TWO PROJECT, DOCKET NO. 08-AFC-5

Dear Mr. Meyer,

For the record, I have attended the July 24, 2008 Imperial County Planning and Development Services Pre-Application Meeting for Stirling Energy Systems, the November 24th CEC/BLM Informational Hearing and Scoping Meeting and site-visit, and the December 18th CEC/BLM Data Response and Issues Resolution Workshop and Scoping meeting. SES/URS also provided me with a DVD and hard copy of the Response to CEC & BLM Data Requests 1-52. As requested at the December 18th meeting, these comments are being sent directly to you and not to the BLM. Even though I am an elected land use representative for the rural Eastern San Diego County community of Boulevard, and the President of the public benefit non-profit group, Backcountry Against Dumps, these comments are my own. I am a property owner and taxpayer in both San Diego and Imperial Counties and a ratepayer that will be impacted by the massive and wrong headed SES Solar Two Project, the Sunrise Powerlink (deemed unnecessary and too environmentally and fiscally expensive by the CPUC's assigned Administrative Law Judge) , Iberdrola Renewables 200 MW Tule Wind Project on approximately 20,000 acres of BLM land in Boulevard's McCain Valley Land Cooperative and Wildlife Management Area, and other questionable industrial scale renewable energy projects and related infrastructure–*if* they manage to come to fruition.

Large scale urban PV is more cost effective than remote solar and wind projects and the related Sunrise Powerlink

The CEC and BLM should reject the Solar Two Project and other such controversial behemoths as they do not represent the best and highest use of our public lands or the best interest of ratepayers and tax payers who will be forced to bear the economic burden of the resulting exorbitant rate increases and inflated taxpayer funded subsidies—not to mention the extensive and cumulative loss of use of our public lands and recreation areas to unnecessary energy and transmission projects. It is especially troubling and irksome when foreign entities will be reaping the rewards at our expense, with much of that tax and rate payer funded booty being spent outside the US and very little being spent within the impacted communities.

On-site and close to point of use renewable energy projects are far less destructive, expensive, and time consuming in regards to approval and litigation, and they do not require the destruction of public lands or extensive and vulnerable transmission lines. Bill Powers, PE, Powers Engineering, an intervener in the CPUC/BLM CPCN case for the Sunrise Powerlink (App. 06-08-010) provided some compelling research and backup documentation in a December 12, 2008 Ex Parte Communication. Powers' research shows that it would be cheaper to build 1,000 MW AC of thin-film PV in the urban core than to build the 1,000 MW Sunrise Powerlink. With a few adjustments, the same applies to the $1.4 billion 750 MW SES Solar Two Project, especially when you add in the projected $1.9 billion cost of Sunrise Powerlink and the necessary IV Substation upgrades and expansions for both Phase I and II of Solar Two. I have attached the 44-page Powers Ex Parte Communication (12-12-08) and hereby incorporate his information into the record.

I am also incorporating, by reference, the entire record for the Sunrise Powerlink case noted above, and all of the commentary, criticism, research and testimony that relates to the SES Solar Two Project contained within that record. That extensive record includes much more from Bill Powers along with especially relevant comments from the Utilities Consumer Action Network (UCAN), the Conservation Groups (CBD & Sierra Club) represented by attorney Steven Siegel, and all of their witnesses. I also hereby incorporate by reference Bill Powers Smart Energy 2020 plan (October 2007) which is also part of the Sunrise Powerlink CPUC/BLM project record. UCAN has already announced that they will appeal the CPUC's controversial December 18th approval of the Sunrise Powerlink using the extensive record and the Assigned ALJ's denial of the project based on that record. A similar suit is expected from the Conservation Groups.

SES's troubling responses to questions about their Solar Two Project

During the bus ride for the November 24th Solar Two Project site visit, SES's Robert Liden provided the following answers to questions posed by myself and others:

- Stirling Energy Systems has just $100 million of the $1.4 billion needed for the Solar Two Project.
  (NTR is proposing to invest another $100 million but that is still a mere fraction of what is needed)

- Equity funding is for the pilot project and manufacturing only. Their Imperial Valley Solar Two project is not funded.

- The 5-year accelerated depreciation rate is attractive to investors as are the renewable energy credits. Yet, when they talked to investors in San Diego prior to the November 24th hearing, none signed on.

- The SES solar engines are still in the research and development stage and they are *looking at* federal loan guarantees for innovative renewable energy concepts.

- SES will be adding another 4 *hand made* units at Sandia Labs to incorporate some changes in engineering needed for mass production. Their 6 existing units were installed at Sandia 3 years ago.

- They are still working with a Michigan plant on potential manufacturing of the solar engines. (An article in the San Diego UT on 12-14-08, reported that SES plans to have Linamar, a Canadian automotive products company produce the first engine mid-January, test it, and then enter full production by the end of next year).

- They may have a portable factory on-site for assembly of Sun Catcher units. (If so, where will it be located, how big will it be, and what are the impacts associated with that facility?)

- In response to a direct question about how they will deal with and mitigate the fact that the BLM project site is currently designated as a Limited Use (protected) Area with traffic restricted to the few existing routes of travel, *Liden ignorantly stated that the Limited Use designation meant the land had limited uses and was not good for much.* A corporate executive, looking for public support and the virtual gift of 10-square miles of public land, should have better knowledge of and respect for the land that belongs to the American people.

- They had to move their Solar Two Project boundaries due to significant cultural and historic resources and more may be found. (most associated with the Ancient Lake Cahuilla shoreline, artifacts, cremation sites, and sacrifice areas as noted by Carmen Lucas and the archeologist with Imperial Valley Museum).

- The entire project perimeter area (10-square miles) will be fenced off, as phases progress. OHV trails will be closed and motion activated lighting will be installed. (These impacts, alone, are significant and will completely alter the existing character and appeal of the desert landscape and habitat.)

- The SunCatcher units reportedly close automatically when winds exceed 35 mph. So, where are the onsite anemometers (MET towers)? It generally takes a minimum of three years to properly analyze the average wind speed and the frequency and intensity of wind storms. To a rational person, legitimate site specific wind information would to seem to be necessary in order to determine the amount of down time for the SunCatcher units related to wind and dust storm events. Too much wind would translate into too much down time, the potential for sand damaged equipment (mirrors, gears and engines), and reduced power generation–all critical information.

Transmission / Sunrise Powerlink / IV Substation connection Phase I and II

During the same site visit bus trip, Liden provided the following information in response to

questions:

- The Solar Two Project is # 1 in the CALISO queue to connect to the Imperial Valley Substation for the 300 MW proposed for Phase I.

- Several hundred million dollars will be needed to upgrade the IV Substation for Phase I.

- For the 450 MW Phase II, they are # 4 in the CALISO queue for the inter-tie to the proposed IV Substation expansion and the yet-to-be-built Sunrise Powerlink transmission line.

The three big transmission questions are:

- Is there really any remaining capacity on the existing Southwest Powerlink to accommodate the proposed 300 MW of Phase I of Solar Two , beyond the current 80 MW of capacity reported by CALISO and as claimed by Sempra Energy in their April 2008 amendment to their DOE Presidential Permit Application (PP-334) for a new 500 kV transmission line at Jacumba in Eastern San Diego County? Sempra alleges that their new cross-border line is needed to accommodate their 1,250 MW La Rumorosa Wind project, and to connect it to the Sunrise Powerlink. The La Rumorosa project has also been referred to as Baja Wind and more recently as Energia Sierra Juarez. (See Sempra project information at: http://www.semprageneration.com/esj.htm).

- What are projects # 1, 2 & 3, which are ahead of Solar Two Phase II, in queue for the expanded IV Substation and Sunrise Powerlink transmission project, and what capacity, if any, will be left on the Sunrise Powerlink for the proposed 450 MW of Phase II of Solar Two?

- What are the alternative means of transmission in the event there is no available capacity on the existing Southwest Powerlink for Phase I, and /or legal challenges overturn the CPUC approval of SDG&E's highly controversial Sunrise Powerlink project?

American and local jobs

SES representatives repeatedly use the lure of jobs for American and Imperial Valley workers as a reason to approve their Solar Two project. At public hearings in the Valley they talk about all the green collar jobs that will be generated. Unfortunately, the reality will be the importation of already trained workers from elsewhere in the country with very few high paying jobs going to local Valley workers. There is also the very real potential for skilled and unskilled Green Card workers to be brought in from both Mexico and foreign countries to fill the few jobs that will be available. SES has also promoted the project by talking about the American auto workers that will be put back to work building Stirling Solar engines, *but* the San Diego UT just reported their deal with Linamar, a *Canadian* automotive products company.

Visual Resources

It was reported that there will be virtually no reflection impacts to passing motorists on I-8 and Navy, US Border Patrol, other air traffic flying in the designated corridor overhead, from the 30,000 mirrored dishes as all light will be deflected. Pilots will reportedly see a gray area. This is rather hard to believe and needs to be verified, especially with the number of potentially impacted drivers on both east and west bound I-8, Dunaway Road, and Evan Hews Hwy, along with the heavy air traffic associated with the Navy Air Station located several miles to the east at Seeley, and the frequent low level Border Patrol helicopter and other Homeland Security related flights in the area.

The complete landscape and character alteration that this project represents is significant, massive and cumulative in nature all on its own. The impacts are off the charts when you add in the many other projects that will be highly visible in the same area like Iberdrola Renewables 200 MW Tule Wind project on approximately 20,000 BLM acres located on the ridgeline to the west, Greenhunter Wind Energy LLC (formerly Windhunter) on their 6,250 acres of BLM land just west of Solar Two, and pending applications for up to 5 more MET towers , in the same general area , with potential industrial wind turbine projects to follow, as noted by BLM in their November 2008 FONSI and Decision Record for Greenhunter's 197 foot tall MET Tower ROW.

Add in Sempra's Energia Sierra Juarez (AKA La Rumorosa Wind and Baja Wind) which will cover approximately 60 miles of highly visible ridgeline to the southwest starting at the US Mexico border and Imperial County line, and the Union Fenosa's Zemer Energia's 1,000 MW wind energy project, proposed for the same highly visible La Rumorosa area, with the first 500 MW planned for export to the US via the Imperial Valley Substation and local transmission lines. The attached December 9,2008 'Motion of Zemer Energia for Party Status" in the CPUC/BLM Sunrise Powerlink proceedings confirms their intent and the fact that they have paid their fees to CALISO. Their motion was granted.

Wind-Zero, another highly visible large-scale community character altering project is proposed on about 1,000 acres of private land between Solar Two and the communities of NoMirage and Ocotillo to the west

Go to pages 17 & 18 of Sempra's September 18,2008 Power Point presentation link below, which includes maps and references to the 60 miles of Sierra Juarez (La Rumorosa) ridgeline where Sempra and the Union plan to install industrial scale turbines over 400 feet tall:

http://www.heco.com/vcmcontent/EnergyServices/EnergyExpo/2008Presentations/AllmanAndGuiles.pdf

For Greenhunter location details, maps and aerial photos go to: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/2005.Par.11648.File.dat/FONSI_DR_EA_GreenHunter.pdf

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Cultural Resources

Carmen Lucas, a well respected Native American of Kumeyaay decent, spoke passionately about the extensive and highly valued cultural resources placed at risk by the Stirling Solar Two project. Lucas said that she was there at the request of the State Office of Heritage Protection. An archeologist with the Imperial Valley College museum also spoke about significant concerns with the cultural and historical resources at risk and the viability of the project site. When you add the impacts from this one project to all the other proposed and existing projects and the approved and illegal uses, in the El Centro Field Office planning area, the CDCA, and other BLM lands in the region, especially for so-called renewable energy and transmission projects, the cumulative impacts are massive and virtually incalculable.

Air Quality Impacts / Dust & Fugitive emissions / Cumulative impacts

The 10-square mile project site and the extent of disturbance to fragile, fine, and sandy desert soils, and the need to run back and forth in vehicles to repeatedly wash the mirrors on 30,000 SunCatcher units, the potential on-site generation and leakage of hydrogen gas, diesel trucks and trains used to deliver equipment, all represent an increased threat of negative impacts to air quality. Add to that the industrial mining and plaster board processing plant at Plaster City, idling diesel train engines and truck, sand mine truck traffic from multiple operations in the area, Plaster City OHV Park and the related OHV traffic and activities, and you have a major problem. It is important to note that disturbed desert soils no longer serve as a carbon sink.

Water Resources / flood plains / Erosion control

SES keeps talking about using approximately 32 acre feet per year of IID water for their project but it is unclear if an agreement has been formally secured and what amount of water delivery is guaranteed over the life of the project. Various maps show numerous channels, desert washes, and flood plains through out the project area. Along with concerns for any alterations of the natural flow patterns on wildlife, habitat and groundwater recharge, there are concerns with the potential for inundation of numerous SunCatchers, and on-site infrastructure during El Nino years and significant storm events like Hurricane Kathleen that roared through the area (1977-78?). I experienced that hurricane first hand. It washed out sections of I-8, the rail road, and a wide swath of the community of Ocotillo all near the Solar Two project area. Several maps provided in the Response to CEC/BLM Data Requests 1-52 show numerous Suncatchers, roads, and more, situated within the identified flood plains. Maps also show "debris basins" located in flood plains. All floodplains and natural drainage channels and washes should be off-limits for any project related installations or alterations. Don't ever underestimate the amount of water that flows in the desert and the destruction it can cause. There are also concerns with the lack of detailed information on the evaporation ponds and the chemical make up and ultimate disposal destination of the resulting waste.

Loss of Use /Quiet enjoyment and recreation/ OHV

The cumulative scale and scope of the loss of use, the loss of recreational opportunities, and the quiet enjoyment of our public lands when millions of acres are practically given away, fenced off, altered and transformed into private profit factories, is virtually off the charts and totally unconscionable. This also applies to the loss of and intrusion into designated OHV parks and routes.

Significant and Cumulative Impacts

Multiple renewable energy, transmission, and other projects, including SES Solar Two, high profile industrial wind turbines over 40 stories tall along western ridgelines on both sides of the US/Mexico border, and more potential wind turbines on BLM lands between Solar Two and the more elevated ridgeline projects, transmission and related infrastructure for renewable energy projects, mining projects, quasi military projects, and more, are currently proposed for over 2 million acres of BLM lands in the California Desert District and Eastern San Diego County, some private lands, and hundreds of thousands of acres in Northern Baja, mostly on communal Ejido lands. Separately and together, these projects will result in the following significant and cumulative impacts and more:

- Community Character and Values
- Loss of recreational and public use
- Loss of quiet enjoyment and sense of time and space
- Industrialization of rural communities and open spaces
- Loss of and damage to Cultural and Historical Resources
- Staggering Visual Resource and skylining impacts
- Landscape transformations and alterations
- Wildlife
- Habitat fragmentation and destruction
- Air quality, dust, and fugitive emissions
- Loss of dark skies (light pollution) and scientific resource value
- Increased traffic during construction, operation and maintenance
- Water resources including groundwater, imported water, and recycled water
- Increase soil erosion
- Diverted and denied recharge to fragile aquifers and sensitive habitat
- Disproportionate social and economic burdens to rural and low-income communities
- Environmental Justice issues
- Loss of carbon sink value of undisturbed desert soils
- Green House Gas emissions from increased project activities and manufacturing processes
- Infrastructure
- Traffic
- Utility rates
- Property Values
- Eminent Domain

BLM Land Appraisal /Rent monies paid to BLM / What are local benefits from rent payments

The appraisal of the BLM land to be used for this project needs to be an open and transparent process, with documents and assessments included in the public review process. The land value needs to include the project sites readily available access to utility transmission lines (both low and high-voltage) and substations, public roads and interstate highway, active rail line access, access to imported water from IID through a minimal pipeline extension (7 miles) from the West Side Main canal, existing industrial uses, US Gypsum's Plaster City, on adjacent land. All of these aspects

make the proposed land much more valuable than other more remote public lands. The lease price should properly reflect those values. What amount of rent money paid to BLM will go to benefit the local BLM lands and/or impacted communities? Or, will all the money go to the general fund as the community of Boulevard was informed when similar questions were asked about the rent monies from Iberdrola's proposed Tule Wind project on BLM land?

Bonding and decommissioning

I agree with the CEC and BLM staff concerns regarding the lack of adequate SES planning and response to questions regarding the funding for decommissioning the project site in the event of bankruptcy or other form of abandonment by the Applicant/Investors. The recent crash in prices for scrap metal and other commodities is part of the cyclical rise and fall of prices over time, and cannot be counted on to pay for the costs of decommissioning, or even to defray the costs. A legitimate and binding bond needs to be secured prior to any project approval or commencement of project activities that will cover any and all decommissioning costs. The tax payers do not need to foot yet another bill for this or any other projects built on public land.

A Better Way

There are far better ways to provide reliable renewable energy at or close to the point of use without this invasive and expensive 10-square mile project and the related and litigious Sunrise Powerlink transmission project. In addition to the previous information provided, please see the attached well researched article "The Better Way" by the Alliance for Responsible Energy Policy. It includes a comparison chart showing the disparity for impacts of point of use renewables and industrial scale wind and solar projects. There is more good information at their website at www.allianceforresponsiblenergypolicy.com.

December 5th an article was printed in the San Diego Union Tribune regarding the City of San Diego's proposal to allow residents to pay for solar panels through their property tax bills over 20 years (http://www.signonsandiego.com/uniontrib/20081013/news_1n13solar.html). The County of San Diego is considering the same policy. The County also recently supported pursuit of state legislation for feed-in-tariffs for small generators. The Imperial County and IID can and should follow the same path to renewable energy production and independence.

The combination of the new 30% tax credit, being able to pay for solar panels through our property taxes, and the potential to get paid for excess self-generated energy, which is now donated back to the utilities, is the bright future we prefer. This will allow the average citizen, school, church, small businesses, and others to become part of the solution instead of being part of the problem. If feed-in-tariffs are approved (like we enjoyed in the 80's before the utilities killed them), it will also provide a further incentive for us to install a larger solar system than our home or business needs and to conserve energy so that more will be available to sell back to the grid. This scenario could represent the jump start to the real green energy future and green jobs that most people prefer, once they are provided with the facts and the opportunities. It can also help generate much needed extra income for families, communities, and organizations during these difficult economic times.

Conclusion

The rush to embrace massive and unnecessary projects like Stirling Energy Systems Solar Two, the Sunrise Powerlink, Iberdrola Renewables Tule Wind project, Sempra's La Rumorosa Wind project (in Mexico), and others throughout the region, should be compared to the rush to deregulate the energy market, to promote massive Ethanol production from corn, and to add MTBE to our gasoline which contaminated groundwater resources. All of these poorly vetted decisions resulted in incredibly expensive debacles with far reaching and unintended consequences that even the best minds have struggled and failed to fix. The old saying *'act in haste and repent at leisure'* applies to this and other decisions before you. Please deny the Application for Certification, for SES Solar Two. This very controversial project represents yet another incredibly expensive debacle with far reaching and unintended consequences. Now is not the time to further burden struggling ratepayers with billions of dollars that will be paid for through massive rate increases–there is a *better way*, and we are counting on you to help us get there.

Sincerely,

Donna Tisdale
619-766-4170
donnatisdale@hughes.net

Attachments:
Bill Powers Ex-Parte Communication 12-08
Motion of Zemer Energia for Party Status 12-9-08

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the matter of the Application of San Diego Gas & Electric Company (U 902-E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project	Application 06-08-010 (Filed August 4, 2006)

POWERS ENGINEERING NOTICE OF EX PARTE COMMUNICATION -LATE FILING-

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September 10, 2008

POWERS ENGINEERING NOTICE OF EX PARTE COMMUNICATION

On September 4, 2008, from 10 to 11 am at the offices of Powers Engineering in San Diego, Bill Powers, P.E., principal, Powers Engineering, met with Thomas Del Monte, intern to Commissioner Bohn. Communication was oral and written.

Mr. Powers addressed the rapid evolution of thin-film PV and the fact that thin-film PV is now demonstrably the lowest cost, on a $/MWh basis, of any commercially available solar energy technology. He noted that Sempra Energy had announced plans to install 100s of MW of thin-film PV at its power plants in Nevada and Arizona. He also addressed the pre-commercial nature of dish Stirling technology. Mr. Powers expressed the opinion that the considerably higher $/kWh rate by the utilities for on-peak point-of-use PV compared to the market price referent (MPR), and the: 1) lack of need in urban/suburban locations for new transmission to serve this generation, 2) lack of significant T&D losses, up to 14% at peak, associated with remote generation, 3) the presumed CEQA exemption for PV arrays on existing rooftops and in existing parking areas, and 4) the lack of need to dedicate any new urban or suburban land to develop the PV capacity (as it would on existing rooftops and parking areas), makes saturation deployment of PV in the urban/suburban core the most financially sound strategy for PV development, not large-scale development of PV (or any other solar technology) at remote sites dependent on new transmission to serve load centers. Mr. Powers also provided Mr. Del Monte with the following documents:

1. June 26, 2008 ex parte meeting notification of meeting between Bill Powers and Commissioner Bohn staff in San Francisco (with attachments). This notification with attachments was served on all parties to the A.06-08-010 proceeding on June 26, 2008.
2. June 27, 2008 ex parte meeting notification of meeting between Bill Powers and Commissioner Bohn staff in San Francisco. This notification includes additional documents provided to Commissioner Bohn staff at the ex parte meeting. attachments). This notification with attachments was served on all parties to the A.06-08-010 proceeding on June 27, 2008.

3. August 11, 2008 UCAN protest submitted in proceeding A.08-07-017, Application of San Diego Gas & Electric Company (U 902 E) for Approval of the SDG&E Solar Energy Project.
4. June 1, 2007 A.06-08-010 Phase I direct testimony of Dr. Barry Butler.
5. E-mail print-out summarizing Sempra Energy plans to add 100s of MW of thin-film PV at Sempra power plants in Nevada and Arizona, and Renewable Energy World August 20, 2008 article titled "Creating Realistic Expectations for Renewable Energy". The article includes a case study of dish Stirling solar technology.
6. Summary of transmission capacity serving California and U.S. and California transmission maps.
7. Sept. 4, 2008 e-mail from Bill Powers to Thomas Del Monte with links to the Renewable Energy Transmission Initiative draft Phase 1B report and the 2007 Integrated Energy Policy Report.

The last three documents are included as attachments to this notice. In addition, Mr. Powers committed to provided Mr. Del Monte with a hardcopy of *San Diego Smart Energy 2020*. *San Diego Smart Energy 2020* describes a distributed generation alternative to the Sunrise Powerlink and is a part of the A.06-08-010 record.

For a copy of this notice, please contact Bill Powers, P.E. at (619) 295-2072 or by e-mail at bpowers@powersengineering.com.

Respectfully submitted,

/s/_____

Dated: September 10, 2008

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing ex parte notification on all parties identified in A.06-08-010 on the attached service list by electronic mail and to the assigned Commissioner(s) and Administrative Law Judge(s). Dated at San Diego, California, this 10th day of September, 2008.

Respectfully submitted,

/s/

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SDG&E parent Sempra just committed to a legitimately low-cost commercially proven solar technology, 10 MW of First Solar thin-film PV at the Boulder City, NV site of Sempra's 480 MW El Dorado combined-cycle plant. The project is supposed to be operational by the end of the year. Sempra says it will add 40 to 50 MW of thin-film PV to the project next year. Sempra criticizes solar thermal in the attached Reuters article, saying thin-film PV is the way to go. Sempra indicates it also wants to build 300 to 400 MW of thin-film PV in Arizona. There is no mention of dish Stirling anywhere in the article.

SDG&E says it will add 35 MW of high cost tracking PV in the San Diego area over 5 years under the solar project the company proposed to the CPUC in July 2008. Why is SDG&E implying it is a stretch to add 6 or 7 MW of PV per year when parent Sempra is committing to 10x as much solar per year now at one site using a much lower cost PV technology (fixed plate thin-film PV)? The 300 to 400 MW of thin-film PV in Arizona mentioned by Sempra implies the company sees no hurdles to installing cost-effective PV at a rate of 100s of MW per year.

Sempra also states there is a land rush going on and it is getting tougher to find good sites on transmission lines. What Sempra does not say is that there is an almost unlimited amount of disturbed land, aka commercial rooftops and parking lots, in California and Arizona urban areas where thin-film PV could be sited with no transmission requirements and no land acquisition costs (or CEQA issues) along the lines of the SCE commercial rooftop PV project in San Bernardino and Riverside.

I know I have already sent this, but it is a wonderful juxtaposition to Sempra's born-again commitment to thin-film PV as the solar energy technology of choice. About the last quarter of the Renewable Energy World article (link below) looks at SES dish Stirling as a company creating unrealistic expectations based on untested assumptions about cost and performance.

Bill

RenewableEnergyWorld.com

http://www.renewableenergyworld.com/rea/news/story?id=53361

Creating Realistic Expectations for Renewable Energy

by Stephen Lacey, Staff Writer

August 20, 2008 - New Hampshire, United States

It's a delicate time for the renewable energy industry. Now that the public eye is focused more intensely on clean energy technologies, there are a lot of high expectations about their potential. Properly educating consumers, investors and journalists about what each technology can realistically offer will be one of the most important factors in moving renewables forward, say industry professionals.

At the consumer level, that means encouraging buyers to do the necessary research about the product they're purchasing and the company they're working with. If buyers don't really know what they are getting, that could make for a less-than-satisfactory experience ‹ or even worse, a situation where the customer gets scammed.

Sue Kateley, Executive Director of theCalifornia Solar Energy Industries Association, says she sees a growing number of scammers getting into the solar industry who are making overblown claims about energy output and estimated return on investment. In the last few months, she has received three different calls from consumers in California who had large deposits taken from them by sketchy installers who made promises they couldn't deliver.

In two cases, customers put down US $40,000 for a deposit and never got the system installed. In one case, a customer put down US $105,840 for a deposit on a system even though they were unsure about the relationship. By the time they had second thoughts about the installer, the contract was signed and the check was cashed.

"In doing some further investigation, it doesn't really look like these are solar companies. It looks like these are opportunists...that are setting up websites and opening an office...and they're just going around and taking advantage of unsuspecting people," says Kateley.

With aggressive solar targets and a robust incentive structure in California, scammers see a big opportunity to take advantage of uneducated consumers, she says. And as other states continue to increase their support for solar, the problem will undoubtedly spread to other states. The only way to stop this from happening, says Kateley, is to teach people how to make smart decisions when purchasing solar or other renewables. That means knowing how to find a licensed contractor, understanding what's in a contract, and most importantly, knowing how solar works.

"I think that anytime you have a lot of government and public attention on going green, people don't know really what that means. And since customers don't tend to do a lot of due diligence themselves, they really are taking on faith that the person who's selling them this product will treat them well. I think that's the problem that I see picking up - the green movement has brought in some snake oil-type practices and that's very sad."

The situation is similar to that of the late 1970's and early 1980's when the booming solar hot water industry attracted a number of scammers who put up shoddy systems. Many Americans lost confidence in the technology and the solar hot water industry still hasn't fully recovered. This time around, scammers in the solar-photovoltaic industry have gotten more hi-tech. The internet has made it easier for people to set up a professional looking website and lure consumers with flashy promotions and complicated jargon.

The residential wind industry is experiencing a very similar issue, says Wind Energy Expert Mick Sagrillo. He sees the same type of scammers setting up websites promoting new vertical axis turbines and publishing theoretical

performance data that has no relevance to the actual output of a system. Many of these devices are untested and are being promoted by people who know
they have a questionable technology, he says. If someone buys a poorly-made turbine and it malfunctions, the consumer's problem turns into a public problem.

"When you put a solar system on your roof and it doesn't work, nobody will be able to tell. When you put a small wind turbine on your roof or in your backyard and it doesn't work, the whole neighborhood knows. That could have a lasting effect on someone's opinion about wind. We have to make sure people are making smart purchases so that we maintain confidence in these technologies," says Sagrillo.

The main reason that sham companies are able to thrive, he says, is that people don't really understand energy. If someone doesn't know what type of performance data to look for, the potential for them to get dazzled by overblown or false claims about a technology increases. As founder of the wind-installation company Lake Michigan Wind and Sun, Sagrillo gets a large number of people looking into wind generators because of the rising cost of gasoline. The fact that people equate electricity generation with gasoline shows how uneducated many Americans are about energy, he says.

"It's great that people are looking for alternatives, but it's amazing how little people know when they seek them out. That leaves people open to purchasing a product that is less-than-reliable. We are a very gullible culture, we're always looking for the magic bullet," says Sagrillo.

That magic bullet thinking is spread by the mainstream media, Sagrillo says. Too many journalists take company claims about cost, performance, and project timelines at face value. He believes that lack of critical analysis is passed on to consumers.

Technology Journalist Peter Fairley agrees. If companies are allowed to make claims they can't deliver on, that may damage public confidence in certain technologies, he says. Too often, companies don't release enough information to properly evaluate claims about the economics or energy output of a product.

"It's critical for us to point out when companies are not answering questions. There's a lot of hype around certain companies that are being very secretive and where there's real potential for not only investors to get hurt, but also for the image of the industry...to be hurt."

One of the more secretive companies in the industry has been Arizona-basedStirling Energy Systems (SES). The company plans to roll out

300 megawatts (MW) of its Dish/Stirling systems in Southern California by 2010 for around US $1.50 per watt. After that, the company says it will scale up to 900 MW, but it has not issued a timeline for the expansion. There are plans for another project which could eventually bring the total installed capacity of Dish/Stirling systems in California to 1,750 MW.

But Barry Butler, an engineer with 30 years of experience with solar thermal electric technologies, says that SES is not being honest about the realities of its proposal. He's worked with Dish/Stirling devices and believes they have a lot of potential. But "to claim that you could do it for $1.50 a watt, which is just a little more than a gas turbine, it isn't physically possible. You can't buy the materials and assemble a 16,000 pound dish for that. It defies the laws of physics, materials procurement and materials costs," he says.

In addition, says Butler, rolling out 12,000 Stirling Dishes by 2010 is theoretically possible, but it doesn't take into account any of the reliability issues that the company may face. Right now, there are only six dishes operating today. A more realistic timeline would be to roll out 1 MW (40 dishes) for a year of testing, then move to 10 MW and eventually to 300 MW. Even at such a large scale, SES may be looking at an installed cost of around US $7.00 per watt, he says.

"They're going to buy 12,000 engines that they've never bought before and put them on dishes and expect to generate power. It's just highly unlikely. They're probably looking at 2020," Butler predicts.

SES declined three interview requests for this story.

There have been a number of stories in the media hailing the SES projects as the next big thing for solar. Butler says that none of them have critically evaluated the issues associated with cost, reliability and timeframe for development.

That type of unchecked enthusiasm is not the way to build a sustainable industry, says Fairley, the journalist. The best way to educate people about the potential of renewable energy is to be realistic about what the technologies can offer.

"One of the failings of technology journalism over the years has often been a tendency to focus on the technical potential of new products to the exclusion of the present technical challenges that need to be overcome. It's important for us to always be flagging those challenges," says Fairley.

Import Capacity of Transmission Lines Serving Southern California

The alternating current transmission import capacity currently serving Southern California, via Path 46 and Path 26, is approximately 14,000 MW. The direct current transmission import capacity currently serving Southern California, via the Pacific Intertie and the Intermountain DC transmission lines, is approximately 5,000 MW. Total import capacity is approximately 19,000 MW.

The three Southern California utilities that utilize this import capacity are Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and the Los Angeles Department of Water and Power (LADWP). These three utilities have collective average annual electricity retail sales of approximately 14,000 MW, and a collective peak demand of approximately 33,000 MW.[1] The peak demand and annual retail sales for each utility are shown in the table below.

Utility	SCE[2]	LADWP[3]	SDG&E[4]	Totals
2007 peak demand, megawatt (MW)	23,000	5,700	4,600	33,000
2006 annual retail electricity sales, gigawatt-hr, (GWh)	79,000	23,000	17,000	119,000

1 GWh = 1,000 MWh

I. Path 46, Southern NV and Western AZ to SoCal, capacity: 10,100 NW

Source: http://www.nationmaster.com/encyclopedia/Path-46#Map_of_all_the_500_kV_wires

The entire Path 46 system has a capacity of transmitting 10,100 MW of electrical power to the population centers of Southern California. The source of the electricity is hydroelectric dams like Hoover Dam on the Colorado River, fossil fuel plants like the clusters of natural gas-fired plants in the Las Vegas area and western Arizona and coal plants in various western states, and nuclear power from the Palo Verde Nuclear Plant in western Arizona.

II. Path 26: Northern CA to Southern CA, capacity: 3,700 MW

Path 26 is a set of three 500 kV transmission lines that is the SCE intertie with Pacific Gas & Electric (PG&E) to the north. The Path is located in the southern Central Valley of California (San Joaquin Valley), the Tehachapi and Transverse Ranges, and the High Desert area. The three Path 26 500 kV lines can transmit 3,700 MW north to south (http://en.wikipedia.org/wiki/Path_26).

III. Pacific DC Intertie: Oregon to LA, capacity: 3,100 MW

The Pacific DC Intertie (also called Path 65) is a transmission line from the Pacific Northwest to the Los Angeles area using high voltage direct current (HVDC). The line capacity is 3,100 MW, which is enough to serve two to three million Los Angeles households.

IV. Intermountain DC Line: Utah to LA, capacity: 1,920 MW

Intermountain is the designation of a HVDC transmission line between the Intermountain Power Plant in Utah and Los Angeles. The Intermountain is an overhead line with a length of 785 km that can transfer up to 1,920 MW at 500kV.

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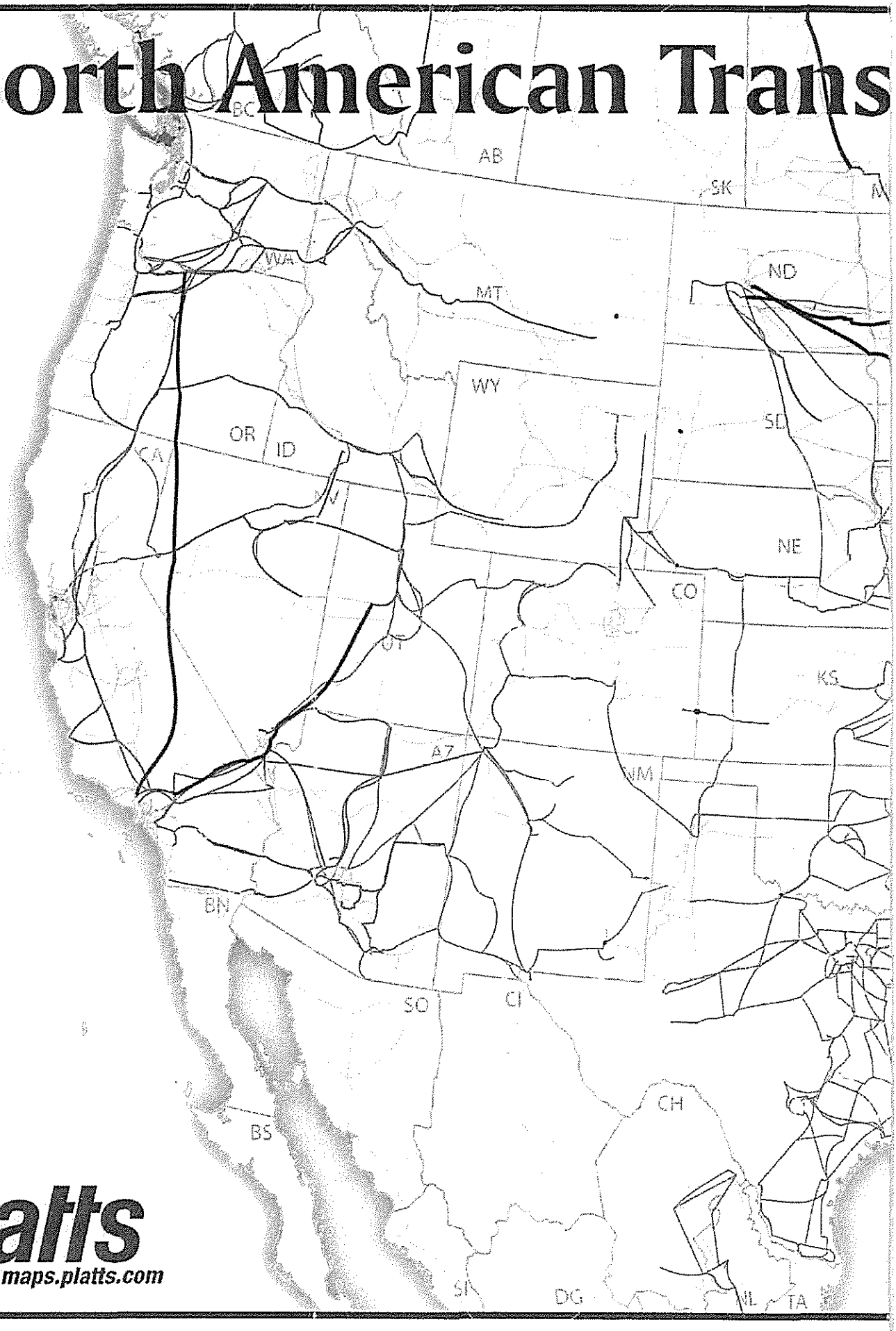
[1] The combined annual average retail sales of the three utilities is calculated by dividing the annual retail sales of 119,000,000 MW-hr by 8,760 hours in a year. 119,000,000 MWh/yr ÷ 8,760 hr/yr = 13,600 MW.

[2] SCE peak demand: Business Wire, *SCE customers use record amount of electricity today*, August 31, 2007. SCE annual retail electricity sales: CEC, *2007 Integrated Energy Policy Report*, January 2008, p. 128.

[3] E. Martinez – COO LADWP, *Planning to meet the challenge*, PowerPoint presentation, January 19, 2006. The 2005 peak demand of 5,667 MW identified in this presentation is higher than the 2007 peak demand projection of 5,400 MW.

[4] SDG&E peak demand: US News, *Southern California sets power records*, September 4, 2007. SDG&E annual retail electricity sales: CEC, *2007 Integrated Energy Policy Report*, January 2008, p. 128.

North American Trans



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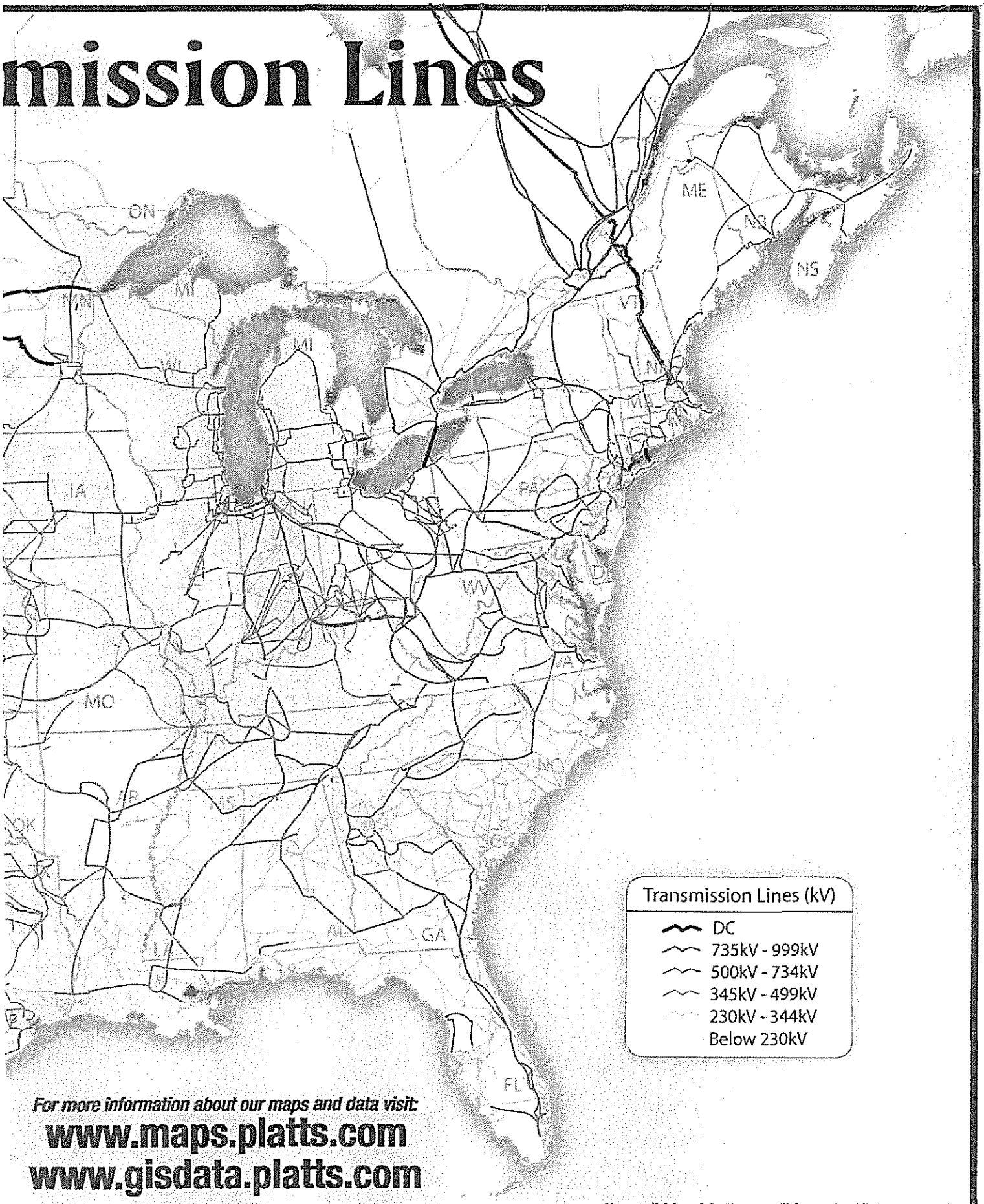
mission Lines



Transmission Lines (kV)

- DC
- 735kV - 999kV
- 500kV - 734kV
- 345kV - 499kV
- 230kV - 344kV
- Below 230kV

For more information about our maps and data visit:

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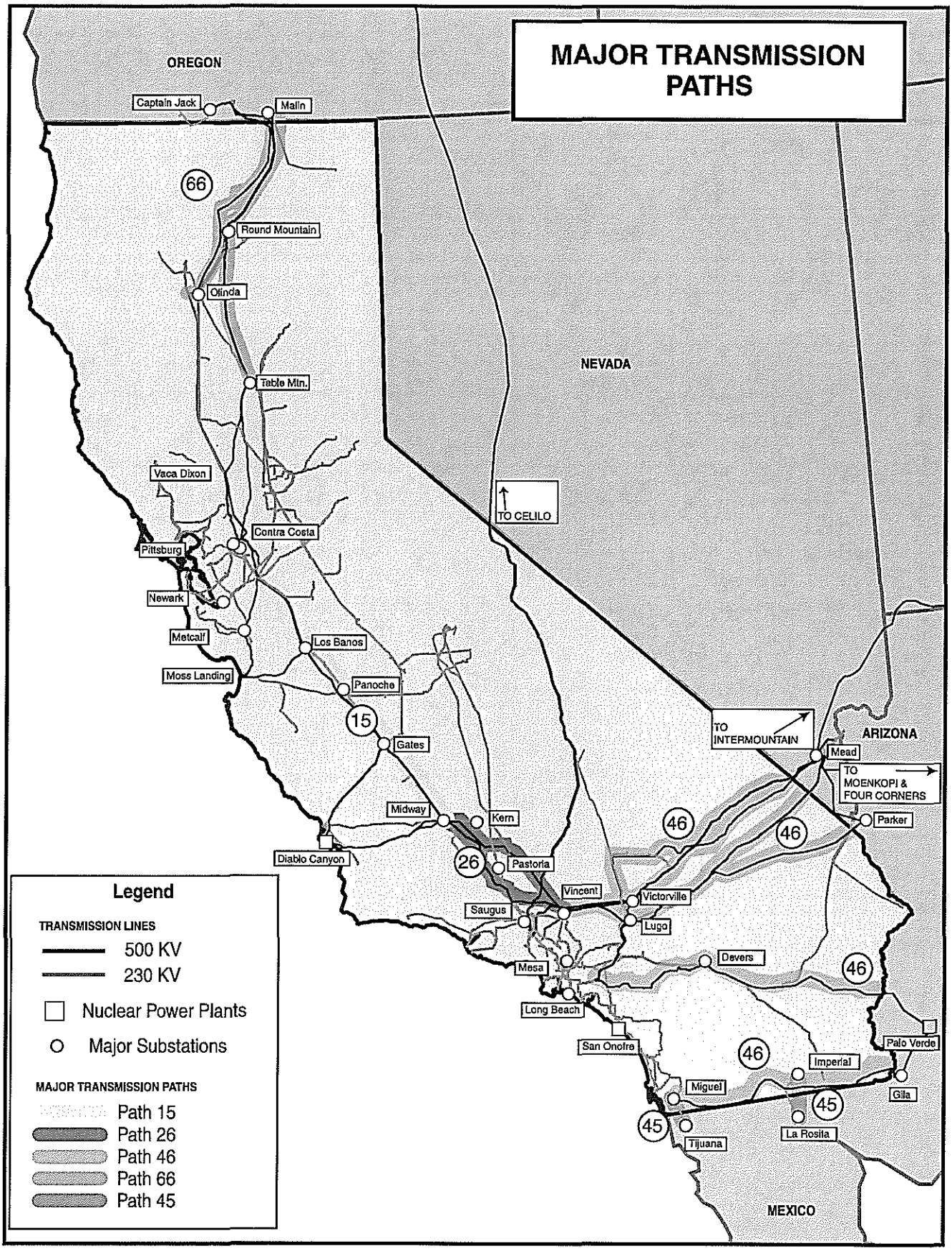
www.gisdata.platts.com

FIGURE 1
Major Transmission Paths (230 kV to 500 kV)



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2005
SOURCE: CEC Staff

CALIFORNIA
ENERGY
COMMISSION

STRATEGIC TRANSMISSION INVESTMENT PLAN

COMMISSION REPORT

Prepared in Support of the *2005 Integrated Energy Policy Report* Proceeding (04-IEP-1K)

NOVEMBER 2005
CEC 100-2005-006-CMF

Arnold Schwarzenegger, *Governor*

Bill Powers

From: Bill Powers [bpowers@powersengineering.com]
Sent: Thursday, September 04, 2008 11:19 AM
To: 'Thomas Del Monte'
Subject: additional information

Thomas,

Polycrystalline silicon PV and thin-film PV cost estimates are included on pdf p. 63 (p. 6-7) of the August 2008 RETI Phase 1B draft report: See:
http://www.energy.ca.gov/reti/documents/2008-08-16_PHASE_1B_DRAFT_RESOURCE_REPORT.PDF

Also, the CEC 2007 IEPR notes (p. 143) the much higher value of on-peak point-of-use PV compared to the market price referent (MPR). The 2007 IEPR notes that SCE pays 3.28 times the MPR for on-peak commercial PV. Slightly higher installed capital costs for thin-film PV systems spread over many commercial buildings and parking lots, compared to putting 500 MW or 1,000 MW on one contiguous utility-scale site in a remote area, would be more than offset by the much higher composite value (of on-peak and off-peak hours) of point-of-use PV within the load center. See: http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF

I will include this e-mail as an attachment to the ex parte notification I file on today's meeting.

Regards,

Bill Powers
Powers Engineering
619-295-2072

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project.	Application 06-08-010 (Filed August 4, 2006)

MOTION OF ZEMER ENERGIA FOR PARTY STATUS

December 9, 2008

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project.	Application 06-08-010 (Filed August 4, 2006)

MOTION OF THE ZEMER ENERGIA FOR PARTY STATUS

Zemer Energia (ZEMER) respectfully moves for party status in this proceeding, Application (A.) 06-08-010. This Motion is filed pursuant to Rule 1.4 of the Commission's Rules of Practice and Procedure.[1]

I. DESCRIPTION OF ZEMER ENERGIA

Zemer Energia (ZEMER) is a subsidiary of Unión Fenosa , a leading international energy company, and the third largest electric utility in Spain. In México, Unión Fenosa currently owns and operates 1,550 MW of natural gas combined cycle generation with another 450 MW combined cycle generation facility currently under construction. ZEMER was established to develop renewable energy generation projects for the Mexican and California electricity markets. Union Fenosa currently has approximately 1,230 MW of wind power under development in México, of which 1,000 MW are located in northern Baja California, in an area adjacent to the border with California known as "La Rumorosa".

The wind projects at La Rumorosa are part of Union Fenosa's €9,000 million Euro global strategic investment plan "BIGGER", of which €1,500 million Euros are specifically earmarked

[1] Rule 1.4 of the Commission's Rules of Practice and Procedure permits a person to become a party to a proceeding by, among other things, filing a motion to become a party. A person filing such a motion must disclose the identity of the persons or entities in whose behalf the motion is made and the interest of such persons or entities in the proceeding. The

for projects in México. Union Fenosa plans to build the projects with its own resources without seeking external sources of financing. The initial 500 MW of La Rumorosa wind electric generation were bid in the 2008 RPS solicitations and are currently in contract negotiations. ZEMER is actively seeking additional off-takers among California utilities for the remaining 500 MW output of its La Rumorosa wind project.

ZEMER has considered various transmission routes for the energy output of its proposed La Rumorosa wind generation facilities. To this end, a Union Fenosa subsidiary submitted two separate interconnection applications to the CAISO with interconnection points at the Miguel and Imperial Valley substations. One of these applications, for interconnection to Imperial Valley Substation (IVSS) is now part of the CAISO transition cluster, having paid all earnest fees due and having demonstrated proof of land control to CAISO's satisfaction.

Pending the outcome of CAISO's transition cluster study, ZEMER will build the necessary transmission infrastructure between its La Rumorosa wind farm and the first interconnection point to the WECC system. The current plan for interconnecting the first 500 MW of the project, calls for the construction of a 230-kV transmission line from its La Rumorosa to a point due south of the Imperial Valley Substation, and for the use of an existing cross-border line to IVSS. The schedule calls for the completion the first 500 MW and associated infrastructure by late-2011, in time for delivery under its RPS. The second 500 MW of wind capacity will require the construction of a new cross-border line to interconnect to IVSS or to a less distant interconnection point to be identified upon completion of the CAISO clustering study.

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motion must also show that the party's contentions will be reasonably pertinent to the issues already presented.

II.

ZEMER'S INTEREST IN THIS PROCEEDING

On October 31, 2008, the Commission mailed a Proposed Decision and an Alternate Proposed Decision in this proceeding. The Proposed Decision denies San Diego Gas and Electric Company's (SDG&E's) request for a CPCN to build the Sunrise Powerlink Transmission Project (Sunrise). The Alternate Proposed Decision approves the CPCN, but adds conditions to that approval. Specifically, the Alternate Proposed Decision requires SDG&E to file a compliance plan that, among other things, must "specify the renewable generation that will be developed and delivered on Sunrise."[2] In meeting this condition, SDG&E is required to provide significant detail about these projects, including expected binding commitments, project descriptions, and project construction schedules.[3]

As ZEMER's wind generation project in La Rumorosa will need sufficient transmission capacity from IVSS, or another point, to reach the California offtakers, ZEMER has a direct interest in these conditions and believes it can provide valuable input through comments and reply comments on the Alternate Proposed Decision and the Proposed Decision and the further rulings and additional Alternate Proposed Decision (President Peevey) that have now been issued in this proceeding. Further, only when this Alternate Proposed Decision was issued and became the subject of an oral argument and an all-party meeting over the last few weeks did ZEMER became fully aware of the impact of conditions that may be imposed by the Commission in authorizing the Sunrise Powerlink transmission line.

ZEMER, therefore, seeks party status to provide these written comments and participate on any further all-party meetings or oral argument on these proposed decisions, as well as any and all other related Commission actions and future phases of this proceeding. Because ZEMER's interest in this proceeding has emerged as a result of the conditions proposed by the

[2] Alternative Proposed Decision, Ordering Paragraph 2, at p. 284.

Alternate Proposed Decision, ZEMER's motion is timely and its contentions will be reasonably pertinent to the issues already presented in this proceeding. Finally, ZEMER's participation in this proceeding will not prejudice any existing party.

III.
CONTACT INFORMATION

On behalf of ZEMER, the following name and information should be included in the "Party" portion of the service list for A.06-08-010:

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[3] Alternative Proposed Decision, Ordering Paragraph 2, subparts (a) – (c), at pp. 284-285.

IV.
CONCLUSION

ZEMER clearly has a pertinent and substantial interest in, and would be affected by, the Proposed Decision and Alternate Proposed Decision mailed in this application on October 31, 2008, and the further Alternate Proposed Decision mailed on November 18, 2008. Until the first Alternate Proposed Decision was issued, ZEMER did not know that conditions would be imposed that would directly affect its interests. ZEMER has, therefore, timely sought to become a party to this application and respectfully moves the Commission to grant ZEMER party status in A.06-08-010 to permit ZEMER to submit written comments on these proposed decisions and the further Alternate Proposed Decision and fully participate in all aspects of this proceeding from this date forward.

Respectfully submitted,

December 9, 2008

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CERTIFICATE OF SERVICE

I, J. Nicolas Puga, am over the age of 18 years and employed in the Washington, in the District of Colombia. My business address is 1300 Eye Street NW, suite 600, Washington, DC 20005.

On December 9, 2008, I served the within document **MOTION OF ZEMER ENERGIA,** in A.06-08-010 (Sunrise Powerlink), with service on the A.06-08-010 service list in the manner prescribed by the Commission's Rules of Practice and Procedure and with additional and separate delivery of paper copies by U.S. Mail to Assigned Commissioner Grueneich and Assigned ALJ Vieth, at Sonoma, California.

Executed on December 9, 2008, at Washington, District of Colombia.

/s/ NICOLAS PUGA
Nicolas Puga

Electronic and U.S. Mail Service List
A.06-08-010 (Sunrise Powerlink)
December 2, 2008

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8801 FOLSOM BLVD., SUITE 290
SACRAMENTO, CA 95826

From: "Denis Trafecanty" <denis@vitalityweb.com>
To: <christopher.meyer@energy.state.ca.us>
Date: 1/3/2009 2:50 PM
Subject: STIRLING Solar Two - 08-AFC-5
Attachments: SD Smart Energy 2020_report_complete_FINAL1.pdf

Mr. Meyer,

I tried to get this out to you last night, but my internet was down, so I drove to the city to be able to email this to you today.

The Stirling Solar Project was well vetted in connection with the Proposed Sunrise Powerlink Project (SPL). The ALJ Steve Weissman worked on SPL for almost three years and his conclusion was that SPL should not be constructed at all. No conditions. I went to about every public meeting about SPL and I heard the pros and cons about the Stirling Energy Systems Project (SES). At best it is a prototype that is having extreme difficulty getting to the level of any production at all. You can't set aside 10 square miles of our public lands when the commercial production of these dishes is unproven. And even if it is proven in five or ten years, the cost for construction of the dishes and the cost for transmission required to get this energy to metro San Diego far exceeds the cost of In Basin Solar and Distributed Generation, as detailed in the San Diego Smart Energy 2020 report which was commissioned and funded by the San Diego Foundation (see attached).

We who are opposed to the construction of the SPL are equally opposed to the taking of our public lands for unproven R&D Projects such as the SES, and we will do everything we can to stop these unnecessary projects at the expense of our ratepayers and for the benefit of our corporate public utilities.

The Sun Does Shine in San Diego!

Denis Trafecanty

PO Box 305

Santa Ysabel, CA 92070

Cell 760-703-1149

<denis@vitalityweb.com>

San Diego
Smart Energy 2020

THE 21ST CENTURY ALTERNATIVE

PREPARED BY

E-TECH INTERNATIONAL, SANTA FE, NEW MEXICO

AUTHOR

BILL POWERS, P.E.

OCTOBER 2007

Cover photo: San Diego Education Center equipped with a high efficiency cool roof and 100 kW of rooftop solar photovoltaic panels (photo provided by Solar Integrated Technologies)

WRITTEN COMMENTS RECEIVED FROM MEMBERS OF THE GENERAL PUBLIC

- Marilyn Moskowitz (1 page)
- Richard A. Ayers (2 pages)
- Cheryl Lenz (1 page)
- Charlene Ayers (6 pages)
- Donna Tisdale (47 pages)
- Denis Trafecanty (149 pages)

From: marilyn moskowitz <marilynam1948@hotmail.com>
To: <christopher.meyer@energy.state.ca.us>
Date: 12/23/2008 3:32 PM
Subject: Attention Solar Two

I want to go on record as being opposed to the Solar Two Project being sited in Imperial county,Ca..

Reasons:

Air Quality, We have terrible air quality, one of the big problems is dust, This project would put alot of additional dust in the air. We have a high rate of asthma-, elementary school children have a 40% rate of asthma compared to the coast with a rate of 15-18%. (info. from American Lung Assoc.)

Water Use
Octillo Sit on a aquifer that contains drinkable water. This water has already been used alot by Plaster City for the manufacture of wallboard. To allow this water to be user for industrial purposes is crazy as drinkable water is a iincreasingly scarce resource.

Clean up Costs
Sterling Energy Systems is a LLC, A bond for clean Up and restoration of the site needs to be posted, or else Imperial County is going to be stuck with a clean up bill or a junkyard that extends for 6000 acres. The amount of the bond needs to be established after aprocess that names a accurate figure for this. Also the amount of financing currently promised is woefully inadequate for this project. We currently are in a increasingly unstable economic era worldwide where all bets are off.

New Technology
Thin-film PV is becoming more competitive has the technology is rapidly improving. I think its going to go like computers have with expotential growth and innovation. This will enable a localized and decentralized solar power plants making the Solar Two Project obsolete.

Thank you,
Marilyn Moskowitz
PO Box 1209
El Centro,Ca.92244

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

SUBJECT: PUBLIC INPUT AND COMMENTS ON SES SOLAR TWO (08-AFC-5)

Since the main thrust for the permitting of this project seems to be directed at environmental, cultural and land use issues, I will address my concerns here with follow-up on the reason for these concerns based on the non viability of implementing this mega scale project as proposed by SES. Please enter these concerns with their backup information as public inputs to be addressed by the California Energy Commission.

1. Since thousands of acres of public land are going to be dedicated to this solar energy project, what are the implications of taxpayer responsibility for SunCatchers removal and remediation of the land should a failure of the technology implementation occur? Such a cleanup effort even in the first phase would cost hundreds of millions of dollars, while SES Solar Two, LLC would declare bankruptcy and abandon the site.

2. As I understand it, the justification for the Southwest Power Link is to carry several hundreds of MW from the SES Solar Two Project to the San Diego region. If SES Solar Two fails, as it now stands Sempra Energy is under no commitment to carry other renewable energy sources and is free to carry energy from coal or gas fired plants in Mexico. This appears to have been an ulterior motive in Sempra's pushing for the Southwest corridor while demanding approval without a definite commitment to use this line for renewable sources of energy.

PROBLEMS FACING SUCCESSFUL IMPLEMENTATION OF SES SOLAR TWO "SUNCATCHERS"

1. Stirling Cycle engines have been around for something like 175 years with only a few actually placed in useful operation. The concept is proven, the realization isn't!
2. Philips, auto manufacturers and others have spent millions of dollars trying to adapt Stirling Cycle engines for commercial markets, but without success.
3. SES Solar Two engines operate at very high temperatures, pressures and rotary speeds using hydrogen gas as the transfer medium, all creating long term problems with metal creep, metal fatigue and seal integrity.
4. The SunCatchers have not been tested in the actual harsh environment of the desert with only six units being run by Sandia Labs at their Albuquerque, NM site, with a few others being run by Boeing in the Los Angeles area.
5. As I understand the status of the SunCatchers, the final design is nearing completion with release in early 2009. So none of these units has been built yet, and certainly will not be tested until late in 2009. How can any rational decision be made at this time to site 12,000-30,000 of these units on public land based on current evaluation data?

6. I do not know of any other successful project of this magnitude that has advanced from several units to tens of thousands of units in a single step.

PLAN FOR SUCCESSFUL IMPLEMENTATION OF SES SUNCATCHERS

1. Permit SES Solar Two, LLC to construct and test a 1 MW setup comprising 40 SunCatchers on their privately held lands near Plaster City, CA. Run these units for six months to a year, tabulating collected energy, operational availability and operating costs to determine project viability before proceeding to a larger model to be sited on public lands.
2. This approach will in the long run be beneficial to both the U.S. taxpayer and to SES Solar Two, LLC.
3. Defer construction of the Southwest Power Link until a legitimate need is established for its use based on bringing renewable energy from Imperial County to San Diego..

Richard A. Ayers
BSc Engineering Physics 53, Lehigh University
R_A_A@att.net

12/27/08

January 2, 2009

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

SUBJECT: PUBLIC INPUT AND COMMENTS ON SES SOLAR TWO (08-AFC-5)

I fully agree with the concerns of fellow San Diego County resident Mr. Richard A. Ayers, engineer, when he asks "since thousands of acres of public land are going to be dedicated to this solar energy project, what are the implications of taxpayer responsibility for SunCatchers removal and remediation of the land should a failure of the technology implementation occur? Such a cleanup effort even in the first phase would cost hundreds of millions of dollars, while SES Solar Two, LLC would declare bankruptcy and abandon the site.

The SunCatchers final design is nearing completion with release in early 2009. This means that none of these units have been built yet, and certainly will not be tested until late in 2009. How can any rational decision be made at this time to site 12,000-30,000 of these units on public land based on current evaluation data?"

The current economy in the United States dictates that large financial commitments are looked at with a "common sense" point of view. The bottom line should be to make sure that a product's final design is first completed – and then tested in the environment it is planned to be used – that of sand storms and the "white ground fog" from Plaster City. These tests, of course, should be conducted on privately owned property – not public lands.

I add my voice with Mr. Ayers' when he requests that these units be "run for six months to a year, tabulating collected energy, operational availability and operating costs to determine project viability before proceeding to a larger model to be sited on public lands."

Regards,

Cheryl Lenz
2040 Ross Avenue
Boulevard, CA 91905

January 2, 2008

Christopher Meyer, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814
Via email: cmeyer@energy.state.ca.gov

Re: 08-AFC-5: SES Solar Two

Mr. Meyer,

As I understand it, this process is to decide whether to site the Stirling Energy Systems (SES) Solar Two Suncatcher project on over 6000 acres of public lands in the El Centro area.

The involvement of public lands makes the evaluation of the viability of this unproven technology the major sticking point of this proposal. Six thousand acres will be permanently "disturbed."

I tried to find current technical information online for the Solar Two Suncatcher project at Sandia Labs. The only information available was produced by SES.

I thought that as a public-private partnership the technical reports and studies of this ongoing research and development would be public documents. I was wrong.

Dr. Tom Mancini, Program Manager, Concentrating Solar Power, Sandia National Labs, told me that since SES was providing the larger share of money for this project ($100 million (SES) to $1 million (Federal)), SES controls the information. None of the work done on the most recent research and development of the Solar Two Suncatcher (2001 to present) was available to the public.

This is a BIG problem in attempting to assess the viability of this technology.

I don't think the Energy Commission can make an informed decision on this without an independent assessment of the technology. There is no way to do that with SES as the sole source of information.

At the November 24, 2008, CEC hearing there were concerns about how the mechanical parts, mirrors, and seals would perform in the sand blown environment of Plaster City. The SES representatives were quick to reassure everyone that those issues had been successfully addressed and resolved. They expected that to suffice. It doesn't.

When Dr. Mancini and I talked on the phone, he expressed surprise that SES was promising such a rapid deployment of the Solar Two Suncatchers from 6 units at Sandia

to 12,000 in the field by 2010-2011. He stated that the latest iteration, the final design, of the technology was just being installed; the new pedestals for the four units going in as we spoke. He predicted that it would be three years before the technology would be commercially available.

I'm pretty sure that SES made some sweeping promises at the November 24, 2008, hearing about getting 12,000 Solar Two Suncatchers up and running at Plaster City by 2010-2011.

As nice as the SES folks might be there is no reason to trust them to tell the truth about the Solar Two Suncatcher technology. It's a business. They need investors with large amounts of cash and they need a place to put the Solar Two Suncatchers.

Sandia Labs, no matter how righteous and above reproach they might be, cannot provide a stand alone independent analysis for two reasons: (1) contractually they can't; and (2) there is the $100 million that they are being paid which may skew their view of things.

I am including the email string between Dr. Mancini and I which may suggest other and/or clarify some issues. It starts with my request for public information. There is a telephone conversation between us and two follow up emails regarding that phone call.

Sincerely,

Charlene Ayers
10801 Dewitt Court
El Cajon, CA 92020
619-442-8046
char.ayers@att.net

Dr. Mancini string of emails:

From:	"Mancini, Thomas R" <trmanci@sandia.gov **Save Address** **Reminder**
To:	"'char.ayers@att.net'" <char.ayers@att.net>
Cc:	"Gilpin, Wendy" <wfalls@sandia.gov>,"Valdez, Salli" <svaldez@sandia.gov>,"Tallant, Joann M" <jmtalla@sandia.gov>,"Marchand, Deborah Ann" <damarch@sandia.gov>,"Marchand, Deborah Ann" <damarch@sandia.gov>,"Hurst, Kathleen T" <kthurst@sandia.gov>,"Nelson, Jennifer" <jenelso@sandia.gov>,"Shephard, Les E" <lesheph@sandia.gov>
Subject:	RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK
Date:	Thursday, December 18, 2008 6:07:42 AM [View Source]

Hello Mrs. Ayers,

Thanks for the kind comments. I enjoyed visiting with you as well.

I would like to clarify a couple of points.

First, when I made a presentation to the group reviewing the Sunrise Power Link project, it was clear that SDG&E and the environmentalists and the NGO community had already had major issues. During our meeting, they did not seem to me to be at all receptive to discussions on several issues raised by the remaining groups.

Second, my comment related to the Solar 2 Project, was that I believed, based on information provided by several different parties, that there was sufficient existing transmission capacity for the initial phase of the project (~300 MW). However, as I explained, I've also heard that SDG&E plans to develop more of the geothermal resources in the Imperial Valley, which would require additional transmission capacity.

Last, while we do share a lot of information with SES, they do not keep us informed of their deployment plans and strategies. Over the course of the past year, their strategy has changed several times and, while I may have been surprised that they intend to deploy 12,000 systems during the next year, it is not at all unreasonable to think that they could do it.

Again, I very much appreciate folks like you and your husband, activist citizens who track civic activities and make sure that things are being done for the right reasons.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager *TEL (505) 844-8643*
Concentrating Solar Power *FAX (505) 845-3366*
Sandia National Laboratories *Cell (505) 264-0614*
P. O. Box 5800, MS 1127 *Email: trmanci@sandia.gov*
Albuquerque, NM 87123

From: char.ayers@att.net [mailto:char.ayers@att.net]
Sent: Wednesday, December 17, 2008 1:37 PM
To: Mancini, Thomas R
Cc: Gilpin, Wendy; Valdez, Salli; Tallant, Joann M; Marchand, Deborah Ann; Marchand, Deborah Ann; Hurst, Kathleen T; Nelson, Jennifer; Shephard, Les E
Subject: RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK

Dr. Mancini...

I was pleasantly surprised by our conversation yesterday. I am glad that you insisted on it.

As you surmised, my attempts to get information on the SES Solar Two Suncatcher technology were motivated by SDG&E's plans for the Sunrise Powerlink. They are

citing the SES Solar 2 project as the reason for it all.

I was interested in your comments about their involvement. It sounded like the SES Solar Two Suncatcher technology could do very well by itself without any help by SDG&E.

I believe your comment was that when you came out to make a technical presentation on this technology, you were putoff by SDG&E's hijacking of the SES Solar Two Suncatcher technology, adding that they drove all the NGOs off.

Although, not a transmission expert, you thought that SDG&E could handle the all the energy produced by SES Solar 2 project by expanding their existing lines.

After my husband (Lehigh-Engineering Physics '53) and I attended the last California Energy Commission's hearing (Nov. 24, 2008) on the SES Solar Two, we thought that a test group of 100 units sited at Plaster City would be a good research strategy.

According to SES's presentation at the hearing, they intend to go from the 6 units at Sandia Labs to 12,000 in the first phase. That doesn't sound very scientific to us.

In our conversation yesterday, it sounded like this was the first time you had heard of these plans, and you were a bit skeptical of that timeline.

SES also stated at that hearing that they would have those first 12,000 units at Plaster City up and running by 2010. I think that you said that it would take 3 years more to make the technology commercially ready, and that would be with the new design (4 units) being set up for evaluation as we speak.

Mr. Liden, VP SES, stated to us directly as he was working the room before the November 24, 2008 hearing that the investment breakdown was government $1 to SES's $5. He urged us to see what a good value that was.

As per our conversation, the investment breakdown is government $1 million and SES $100 million and whenever the commerical partner puts in more money than the government, the commercial enterprise controls all the information because of the proprietary issues. That would be why there are no public documents available, and why all the news releases have that SES spin.

The once-in-a-blue-moon conditions under which the award winning "Popular Mechanics" test was conducted was a media event orchestrated by SES. You reported that the actual annual overall performance of the Solar Two Suncatcher technology is 24% which is still pretty good. You pointed out that a single solar cell has 38.1% efficiency but when put into an array the efficiency drops to 20%.

Here's the link to the report "Status of the Boeing Dish Engine Critical Component Project (Jan 1999)" that my husband found online:

http://www.osti.gov/bridge/product.biblio.jsp?osti_id=3273

Thank you for the "SCE Dish Report" from 1993. It looks to be very comprehensive.

Charlene Ayers

---------- Original message from "Mancini, Thomas R" <trmanci@sandia.gov>: ----------

Hello Mrs. Ayers,

I enjoyed visiting with you earlier today. As I noted in our discussion, there are a number of issues around the Sunrise Power Link transmission line with which I do not necessarily agree. Also, as your husband rightfully noted, defining a point performance metric under "best conditions" is not really a fair way of characterizing the annual performance of a system. But, of course, we weren't trying to characterize this as anything other than what it is – a high level of performance under best conditions.

Attached to this message is the early performance paper for the pre-cursor to the SES system. To a first order, the performance reported in this paper fairly represents that of the current design.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager
Concentrating Solar Power
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P. O. Box 5800, MS 1127
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Email: trmanci@sandia.gov

From: char.ayers@att.net [mailto:char.ayers@att.net]
Sent: Tuesday, December 16, 2008 11:43 AM
To: Mancini, Thomas R
Cc: Gilpin, Wendy; Valdez, Salli; Tallant, Joann M; Marchand, Deborah Ann; Marchand, Deborah Ann; Hurst, Kathleen T; Nelson, Jennifer; Shephard, Les E
Subject: RE: STIRLING ENERGY SYSTEMS DEVELOPMENT WORK

Dr. Mancini...

I, too, am sorry for the mix up. I'm not looking for a chat on this technology (SES-Solar Two Suncatcher).

I am looking for public documents on the testing and research that describe the methods and conclusions.

Please direct me to where I can view those technical documents.

Charlene Ayers

---------- Original message from "Mancini, Thomas R" <trmanci@sandia.gov>: ----------

Hello Ms. Ayers,

Your note to Tom Hunter was forwarded to me for response.

I apologize for the misunderstanding. Unfortunately, I never received your original email message because Mr. Sanchez must have forgotten that my email address includes my middle initial (i.e, trmanci@sandia.gov). I would very much like to visit with you about Stirling Energy Systems' development work and our support of it here at Sandia. Our group is very excited about the expansion of Concentrating Solar energy projects in Southwest and we are working hard to support them all.

I have your telephone number and will call you later today to schedule a time when we can have a more extended discussion.

Best Regards,

Tom

Dr. Thomas R. Mancini
Program Manager
Concentrating Solar Power
Sandia National Laboratories
P. O. Box 5800, MS 1127
Albuquerque, NM 87123
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Email: trmanci@sandia.gov

 

DONNA TISDALE
P.O. BOX 1275
BOULEVARD, CA 91905

California Energy Commission
Christopher Meyer, Project Manager
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

January 2, 2009

SCOPING COMMENTS: SES SOLAR TWO PROJECT, DOCKET NO. 08-AFC-5

Dear Mr. Meyer,

For the record, I have attended the July 24, 2008 Imperial County Planning and Development Services Pre-Application Meeting for Stirling Energy Systems, the November 24th CEC/BLM Informational Hearing and Scoping Meeting and site-visit, and the December 18th CEC/BLM Data Response and Issues Resolution Workshop and Scoping meeting. SES/URS also provided me with a DVD and hard copy of the Response to CEC & BLM Data Requests 1-52. As requested at the December 18th meeting, these comments are being sent directly to you and not to the BLM. Even though I am an elected land use representative for the rural Eastern San Diego County community of Boulevard, and the President of the public benefit non-profit group, Backcountry Against Dumps, these comments are my own. I am a property owner and taxpayer in both San Diego and Imperial Counties and a ratepayer that will be impacted by the massive and wrong headed SES Solar Two Project, the Sunrise Powerlink (deemed unnecessary and too environmentally and fiscally expensive by the CPUC's assigned Administrative Law Judge) , Iberdrola Renewables 200 MW Tule Wind Project on approximately 20,000 acres of BLM land in Boulevard's McCain Valley Land Cooperative and Wildlife Management Area, and other questionable industrial scale renewable energy projects and related infrastructure–*if* they manage to come to fruition.

Large scale urban PV is more cost effective than remote solar and wind projects and the related Sunrise Powerlink

The CEC and BLM should reject the Solar Two Project and other such controversial behemoths as they do not represent the best and highest use of our public lands or the best interest of ratepayers and tax payers who will be forced to bear the economic burden of the resulting exorbitant rate increases and inflated taxpayer funded subsidies—not to mention the extensive and cumulative loss of use of our public lands and recreation areas to unnecessary energy and transmission projects. It is especially troubling and irksome when foreign entities will be reaping the rewards at our expense, with much of that tax and rate payer funded booty being spent outside the US and very little being spent within the impacted communities.

On-site and close to point of use renewable energy projects are far less destructive, expensive, and time consuming in regards to approval and litigation, and they do not require the destruction of public lands or extensive and vulnerable transmission lines. Bill Powers, PE, Powers Engineering, an intervener in the CPUC/BLM CPCN case for the Sunrise Powerlink (App. 06-08-010) provided some compelling research and backup documentation in a December 12, 2008 Ex Parte Communication. Powers' research shows that it would be cheaper to build 1,000 MW AC of thin-film PV in the urban core than to build the 1,000 MW Sunrise Powerlink. With a few adjustments, the same applies to the $1.4 billion 750 MW SES Solar Two Project, especially when you add in the projected $1.9 billion cost of Sunrise Powerlink and the necessary IV Substation upgrades and expansions for both Phase I and II of Solar Two. I have attached the 44-page Powers Ex Parte Communication (12-12-08) and hereby incorporate his information into the record.

I am also incorporating, by reference, the entire record for the Sunrise Powerlink case noted above, and all of the commentary, criticism, research and testimony that relates to the SES Solar Two Project contained within that record. That extensive record includes much more from Bill Powers along with especially relevant comments from the Utilities Consumer Action Network (UCAN), the Conservation Groups (CBD & Sierra Club) represented by attorney Steven Siegel, and all of their witnesses. I also hereby incorporate by reference Bill Powers Smart Energy 2020 plan (October 2007) which is also part of the Sunrise Powerlink CPUC/BLM project record. UCAN has already announced that they will appeal the CPUC's controversial December 18th approval of the Sunrise Powerlink using the extensive record and the Assigned ALJ's denial of the project based on that record. A similar suit is expected from the Conservation Groups.

SES's troubling responses to questions about their Solar Two Project

During the bus ride for the November 24th Solar Two Project site visit, SES's Robert Liden provided the following answers to questions posed by myself and others:

- Stirling Energy Systems has just $100 million of the $1.4 billion needed for the Solar Two Project.
  (NTR is proposing to invest another $100 million but that is still a mere fraction of what is needed)

- Equity funding is for the pilot project and manufacturing only. Their Imperial Valley Solar Two project is not funded.

- The 5-year accelerated depreciation rate is attractive to investors as are the renewable energy credits. Yet, when they talked to investors in San Diego prior to the November 24th hearing, none signed on.

- The SES solar engines are still in the research and development stage and they are *looking at* federal loan guarantees for innovative renewable energy concepts.

- SES will be adding another 4 *hand made* units at Sandia Labs to incorporate some changes in engineering needed for mass production. Their 6 existing units were installed at Sandia 3 years ago.

- They are still working with a Michigan plant on potential manufacturing of the solar engines. (An article in the San Diego UT on 12-14-08, reported that SES plans to have Linamar, a Canadian automotive products company produce the first engine mid-January, test it, and then enter full production by the end of next year).

- They may have a portable factory on-site for assembly of Sun Catcher units. (If so, where will it be located, how big will it be, and what are the impacts associated with that facility?)

- In response to a direct question about how they will deal with and mitigate the fact that the BLM project site is currently designated as a Limited Use (protected) Area with traffic restricted to the few existing routes of travel, *Liden ignorantly stated that the Limited Use designation meant the land had limited uses and was not good for much.* A corporate executive, looking for public support and the virtual gift of 10-square miles of public land, should have better knowledge of and respect for the land that belongs to the American people.

- They had to move their Solar Two Project boundaries due to significant cultural and historic resources and more may be found. (most associated with the Ancient Lake Cahuilla shoreline, artifacts, cremation sites, and sacrifice areas as noted by Carmen Lucas and the archeologist with Imperial Valley Museum).

- The entire project perimeter area (10-square miles) will be fenced off, as phases progress. OHV trails will be closed and motion activated lighting will be installed. (These impacts, alone, are significant and will completely alter the existing character and appeal of the desert landscape and habitat.)

- The SunCatcher units reportedly close automatically when winds exceed 35 mph. So, where are the onsite anemometers (MET towers)? It generally takes a minimum of three years to properly analyze the average wind speed and the frequency and intensity of wind storms. To a rational person, legitimate site specific wind information would to seem to be necessary in order to determine the amount of down time for the SunCatcher units related to wind and dust storm events. Too much wind would translate into too much down time, the potential for sand damaged equipment (mirrors, gears and engines), and reduced power generation–all critical information.

Transmission / Sunrise Powerlink / IV Substation connection Phase I and II

During the same site visit bus trip, Liden provided the following information in response to

questions:

- The Solar Two Project is # 1 in the CALISO queue to connect to the Imperial Valley Substation for the 300 MW proposed for Phase I.

- Several hundred million dollars will be needed to upgrade the IV Substation for Phase I.

- For the 450 MW Phase II, they are # 4 in the CALISO queue for the inter-tie to the proposed IV Substation expansion and the yet-to-be-built Sunrise Powerlink transmission line.

The three big transmission questions are:

- Is there really any remaining capacity on the existing Southwest Powerlink to accommodate the proposed 300 MW of Phase I of Solar Two , beyond the current 80 MW of capacity reported by CALISO and as claimed by Sempra Energy in their April 2008 amendment to their DOE Presidential Permit Application (PP-334) for a new 500 kV transmission line at Jacumba in Eastern San Diego County? Sempra alleges that their new cross-border line is needed to accommodate their 1,250 MW La Rumorosa Wind project, and to connect it to the Sunrise Powerlink. The La Rumorosa project has also been referred to as Baja Wind and more recently as Energia Sierra Juarez. (See Sempra project information at: http://www.semprageneration.com/esj.htm).

- What are projects # 1, 2 & 3, which are ahead of Solar Two Phase II, in queue for the expanded IV Substation and Sunrise Powerlink transmission project, and what capacity, if any, will be left on the Sunrise Powerlink for the proposed 450 MW of Phase II of Solar Two?

- What are the alternative means of transmission in the event there is no available capacity on the existing Southwest Powerlink for Phase I, and /or legal challenges overturn the CPUC approval of SDG&E's highly controversial Sunrise Powerlink project?

American and local jobs

SES representatives repeatedly use the lure of jobs for American and Imperial Valley workers as a reason to approve their Solar Two project. At public hearings in the Valley they talk about all the green collar jobs that will be generated. Unfortunately, the reality will be the importation of already trained workers from elsewhere in the country with very few high paying jobs going to local Valley workers. There is also the very real potential for skilled and unskilled Green Card workers to be brought in from both Mexico and foreign countries to fill the few jobs that will be available. SES has also promoted the project by talking about the American auto workers that will be put back to work building Stirling Solar engines, *but* the San Diego UT just reported their deal with Linamar, a *Canadian* automotive products company.

Visual Resources

It was reported that there will be virtually no reflection impacts to passing motorists on I-8 and Navy, US Border Patrol, other air traffic flying in the designated corridor overhead, from the 30,000 mirrored dishes as all light will be deflected. Pilots will reportedly see a gray area. This is rather hard to believe and needs to be verified, especially with the number of potentially impacted drivers on both east and west bound I-8, Dunaway Road, and Evan Hews Hwy, along with the heavy air traffic associated with the Navy Air Station located several miles to the east at Seeley, and the frequent low level Border Patrol helicopter and other Homeland Security related flights in the area.

The complete landscape and character alteration that this project represents is significant, massive and cumulative in nature all on its own. The impacts are off the charts when you add in the many other projects that will be highly visible in the same area like Iberdrola Renewables 200 MW Tule Wind project on approximately 20,000 BLM acres located on the ridgeline to the west, Greenhunter Wind Energy LLC (formerly Windhunter) on their 6,250 acres of BLM land just west of Solar Two, and pending applications for up to 5 more MET towers , in the same general area , with potential industrial wind turbine projects to follow, as noted by BLM in their November 2008 FONSI and Decision Record for Greenhunter's 197 foot tall MET Tower ROW.

Add in Sempra's Energia Sierra Juarez (AKA La Rumorosa Wind and Baja Wind) which will cover approximately 60 miles of highly visible ridgeline to the southwest starting at the US Mexico border and Imperial County line, and the Union Fenosa's Zemer Energia's 1,000 MW wind energy project, proposed for the same highly visible La Rumorosa area, with the first 500 MW planned for export to the US via the Imperial Valley Substation and local transmission lines. The attached December 9,2008 'Motion of Zemer Energia for Party Status" in the CPUC/BLM Sunrise Powerlink proceedings confirms their intent and the fact that they have paid their fees to CALISO. Their motion was granted.

Wind-Zero, another highly visible large-scale community character altering project is proposed on about 1,000 acres of private land between Solar Two and the communities of NoMirage and Ocotillo to the west

Go to pages 17 & 18 of Sempra's September 18,2008 Power Point presentation link below, which includes maps and references to the 60 miles of Sierra Juarez (La Rumorosa) ridgeline where Sempra and the Union plan to install industrial scale turbines over 400 feet tall:

http://www.heco.com/vcmcontent/EnergyServices/EnergyExpo/2008Presentations/AllmanAndGuiles.pdf

For Greenhunter location details, maps and aerial photos go to: http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/2005.Par.11648.File.dat/FONSI_DR_EA_GreenHunter.pdf

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Cultural Resources

Carmen Lucas, a well respected Native American of Kumeyaay decent, spoke passionately about the extensive and highly valued cultural resources placed at risk by the Stirling Solar Two project. Lucas said that she was there at the request of the State Office of Heritage Protection. An archeologist with the Imperial Valley College museum also spoke about significant concerns with the cultural and historical resources at risk and the viability of the project site. When you add the impacts from this one project to all the other proposed and existing projects and the approved and illegal uses, in the El Centro Field Office planning area, the CDCA, and other BLM lands in the region, especially for so-called renewable energy and transmission projects, the cumulative impacts are massive and virtually incalculable.

Air Quality Impacts / Dust & Fugitive emissions / Cumulative impacts

The 10-square mile project site and the extent of disturbance to fragile, fine, and sandy desert soils, and the need to run back and forth in vehicles to repeatedly wash the mirrors on 30,000 SunCatcher units, the potential on-site generation and leakage of hydrogen gas, diesel trucks and trains used to deliver equipment, all represent an increased threat of negative impacts to air quality. Add to that the industrial mining and plaster board processing plant at Plaster City, idling diesel train engines and truck, sand mine truck traffic from multiple operations in the area, Plaster City OHV Park and the related OHV traffic and activities, and you have a major problem. It is important to note that disturbed desert soils no longer serve as a carbon sink.

Water Resources / flood plains / Erosion control

SES keeps talking about using approximately 32 acre feet per year of IID water for their project but it is unclear if an agreement has been formally secured and what amount of water delivery is guaranteed over the life of the project. Various maps show numerous channels, desert washes, and flood plains through out the project area. Along with concerns for any alterations of the natural flow patterns on wildlife, habitat and groundwater recharge, there are concerns with the potential for inundation of numerous SunCatchers, and on-site infrastructure during El Nino years and significant storm events like Hurricane Kathleen that roared through the area (1977-78?). I experienced that hurricane first hand. It washed out sections of I-8, the rail road, and a wide swath of the community of Ocotillo all near the Solar Two project area. Several maps provided in the Response to CEC/BLM Data Requests 1-52 show numerous Suncatchers, roads, and more, situated within the identified flood plains. Maps also show "debris basins" located in flood plains. All floodplains and natural drainage channels and washes should be off-limits for any project related installations or alterations. Don't ever underestimate the amount of water that flows in the desert and the destruction it can cause. There are also concerns with the lack of detailed information on the evaporation ponds and the chemical make up and ultimate disposal destination of the resulting waste.

Loss of Use /Quiet enjoyment and recreation/ OHV

The cumulative scale and scope of the loss of use, the loss of recreational opportunities, and the quiet enjoyment of our public lands when millions of acres are practically given away, fenced off, altered and transformed into private profit factories, is virtually off the charts and totally unconscionable. This also applies to the loss of and intrusion into designated OHV parks and routes.

Significant and Cumulative Impacts

Multiple renewable energy, transmission, and other projects, including SES Solar Two, high profile industrial wind turbines over 40 stories tall along western ridgelines on both sides of the US/Mexico border, and more potential wind turbines on BLM lands between Solar Two and the more elevated ridgeline projects, transmission and related infrastructure for renewable energy projects, mining projects, quasi military projects, and more, are currently proposed for over 2 million acres of BLM lands in the California Desert District and Eastern San Diego County, some private lands, and hundreds of thousands of acres in Northern Baja, mostly on communal Ejido lands. Separately and together, these projects will result in the following significant and cumulative impacts and more:

- Community Character and Values
- Loss of recreational and public use
- Loss of quiet enjoyment and sense of time and space
- Industrialization of rural communities and open spaces
- Loss of and damage to Cultural and Historical Resources
- Staggering Visual Resource and skylining impacts
- Landscape transformations and alterations
- Wildlife
- Habitat fragmentation and destruction
- Air quality, dust, and fugitive emissions
- Loss of dark skies (light pollution) and scientific resource value
- Increased traffic during construction, operation and maintenance
- Water resources including groundwater, imported water, and recycled water
- Increase soil erosion
- Diverted and denied recharge to fragile aquifers and sensitive habitat
- Disproportionate social and economic burdens to rural and low-income communities
- Environmental Justice issues
- Loss of carbon sink value of undisturbed desert soils
- Green House Gas emissions from increased project activities and manufacturing processes
- Infrastructure
- Traffic
- Utility rates
- Property Values
- Eminent Domain

BLM Land Appraisal /Rent monies paid to BLM / What are local benefits from rent payments

The appraisal of the BLM land to be used for this project needs to be an open and transparent process, with documents and assessments included in the public review process. The land value needs to include the project sites readily available access to utility transmission lines (both low and high-voltage) and substations, public roads and interstate highway, active rail line access, access to imported water from IID through a minimal pipeline extension (7 miles) from the West Side Main canal, existing industrial uses, US Gypsum's Plaster City, on adjacent land. All of these aspects

make the proposed land much more valuable than other more remote public lands. The lease price should properly reflect those values. What amount of rent money paid to BLM will go to benefit the local BLM lands and/or impacted communities? Or, will all the money go to the general fund as the community of Boulevard was informed when similar questions were asked about the rent monies from Iberdrola's proposed Tule Wind project on BLM land?

Bonding and decommissioning

I agree with the CEC and BLM staff concerns regarding the lack of adequate SES planning and response to questions regarding the funding for decommissioning the project site in the event of bankruptcy or other form of abandonment by the Applicant/Investors. The recent crash in prices for scrap metal and other commodities is part of the cyclical rise and fall of prices over time, and cannot be counted on to pay for the costs of decommissioning, or even to defray the costs. A legitimate and binding bond needs to be secured prior to any project approval or commencement of project activities that will cover any and all decommissioning costs. The tax payers do not need to foot yet another bill for this or any other projects built on public land.

A Better Way

There are far better ways to provide reliable renewable energy at or close to the point of use without this invasive and expensive 10-square mile project and the related and litigious Sunrise Powerlink transmission project. In addition to the previous information provided, please see the attached well researched article "The Better Way" by the Alliance for Responsible Energy Policy. It includes a comparison chart showing the disparity for impacts of point of use renewables and industrial scale wind and solar projects. There is more good information at their website at www.allianceforresponsiblenergypolicy.com.

December 5th an article was printed in the San Diego Union Tribune regarding the City of San Diego's proposal to allow residents to pay for solar panels through their property tax bills over 20 years (http://www.signonsandiego.com/uniontrib/20081013/news_1n13solar.html). The County of San Diego is considering the same policy. The County also recently supported pursuit of state legislation for feed-in-tariffs for small generators. The Imperial County and IID can and should follow the same path to renewable energy production and independence.

The combination of the new 30% tax credit, being able to pay for solar panels through our property taxes, and the potential to get paid for excess self-generated energy, which is now donated back to the utilities, is the bright future we prefer. This will allow the average citizen, school, church, small businesses, and others to become part of the solution instead of being part of the problem. If feed-in-tariffs are approved (like we enjoyed in the 80's before the utilities killed them), it will also provide a further incentive for us to install a larger solar system than our home or business needs and to conserve energy so that more will be available to sell back to the grid. This scenario could represent the jump start to the real green energy future and green jobs that most people prefer, once they are provided with the facts and the opportunities. It can also help generate much needed extra income for families, communities, and organizations during these difficult economic times.

Conclusion

The rush to embrace massive and unnecessary projects like Stirling Energy Systems Solar Two, the Sunrise Powerlink, Iberdrola Renewables Tule Wind project, Sempra's La Rumorosa Wind project (in Mexico), and others throughout the region, should be compared to the rush to deregulate the energy market, to promote massive Ethanol production from corn, and to add MTBE to our gasoline which contaminated groundwater resources. All of these poorly vetted decisions resulted in incredibly expensive debacles with far reaching and unintended consequences that even the best minds have struggled and failed to fix. The old saying *'act in haste and repent at leisure'* applies to this and other decisions before you. Please deny the Application for Certification, for SES Solar Two. This very controversial project represents yet another incredibly expensive debacle with far reaching and unintended consequences. Now is not the time to further burden struggling ratepayers with billions of dollars that will be paid for through massive rate increases–there is a *better way*, and we are counting on you to help us get there.

Sincerely,

Donna Tisdale
619-766-4170
donnatisdale@hughes.net

Attachments:
Bill Powers Ex-Parte Communication 12-08
Motion of Zemer Energia for Party Status 12-9-08

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the matter of the Application of San Diego Gas & Electric Company (U 902-E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project	Application 06-08-010 (Filed August 4, 2006)

POWERS ENGINEERING NOTICE OF EX PARTE COMMUNICATION -LATE FILING-

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September 10, 2008

POWERS ENGINEERING NOTICE OF EX PARTE COMMUNICATION

On September 4, 2008, from 10 to 11 am at the offices of Powers Engineering in San Diego, Bill Powers, P.E., principal, Powers Engineering, met with Thomas Del Monte, intern to Commissioner Bohn. Communication was oral and written.

Mr. Powers addressed the rapid evolution of thin-film PV and the fact that thin-film PV is now demonstrably the lowest cost, on a $/MWh basis, of any commercially available solar energy technology. He noted that Sempra Energy had announced plans to install 100s of MW of thin-film PV at its power plants in Nevada and Arizona. He also addressed the pre-commercial nature of dish Stirling technology. Mr. Powers expressed the opinion that the considerably higher $/kWh rate by the utilities for on-peak point-of-use PV compared to the market price referent (MPR), and the: 1) lack of need in urban/suburban locations for new transmission to serve this generation, 2) lack of significant T&D losses, up to 14% at peak, associated with remote generation, 3) the presumed CEQA exemption for PV arrays on existing rooftops and in existing parking areas, and 4) the lack of need to dedicate any new urban or suburban land to develop the PV capacity (as it would on existing rooftops and parking areas), makes saturation deployment of PV in the urban/suburban core the most financially sound strategy for PV development, not large-scale development of PV (or any other solar technology) at remote sites dependent on new transmission to serve load centers. Mr. Powers also provided Mr. Del Monte with the following documents:

1. June 26, 2008 ex parte meeting notification of meeting between Bill Powers and Commissioner Bohn staff in San Francisco (with attachments). This notification with attachments was served on all parties to the A.06-08-010 proceeding on June 26, 2008.
2. June 27, 2008 ex parte meeting notification of meeting between Bill Powers and Commissioner Bohn staff in San Francisco. This notification includes additional documents provided to Commissioner Bohn staff at the ex parte meeting. attachments). This notification with attachments was served on all parties to the A.06-08-010 proceeding on June 27, 2008.

3. August 11, 2008 UCAN protest submitted in proceeding A.08-07-017, Application of San Diego Gas & Electric Company (U 902 E) for Approval of the SDG&E Solar Energy Project.
4. June 1, 2007 A.06-08-010 Phase I direct testimony of Dr. Barry Butler.
5. E-mail print-out summarizing Sempra Energy plans to add 100s of MW of thin-film PV at Sempra power plants in Nevada and Arizona, and Renewable Energy World August 20, 2008 article titled "Creating Realistic Expectations for Renewable Energy". The article includes a case study of dish Stirling solar technology.
6. Summary of transmission capacity serving California and U.S. and California transmission maps.
7. Sept. 4, 2008 e-mail from Bill Powers to Thomas Del Monte with links to the Renewable Energy Transmission Initiative draft Phase 1B report and the 2007 Integrated Energy Policy Report.

The last three documents are included as attachments to this notice. In addition, Mr. Powers committed to provided Mr. Del Monte with a hardcopy of *San Diego Smart Energy 2020*. *San Diego Smart Energy 2020* describes a distributed generation alternative to the Sunrise Powerlink and is a part of the A.06-08-010 record.

For a copy of this notice, please contact Bill Powers, P.E. at (619) 295-2072 or by e-mail at bpowers@powersengineering.com.

Respectfully submitted,

/s/_____

Dated: September 10, 2008

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing ex parte notification on all parties identified in A.06-08-010 on the attached service list by electronic mail and to the assigned Commissioner(s) and Administrative Law Judge(s). Dated at San Diego, California, this 10th day of September, 2008.

Respectfully submitted,

/s/

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SDG&E parent Sempra just committed to a legitimately low-cost commercially proven solar technology, 10 MW of First Solar thin-film PV at the Boulder City, NV site of Sempra's 480 MW El Dorado combined-cycle plant. The project is supposed to be operational by the end of the year. Sempra says it will add 40 to 50 MW of thin-film PV to the project next year. Sempra criticizes solar thermal in the attached Reuters article, saying thin-film PV is the way to go. Sempra indicates it also wants to build 300 to 400 MW of thin-film PV in Arizona. There is no mention of dish Stirling anywhere in the article.

SDG&E says it will add 35 MW of high cost tracking PV in the San Diego area over 5 years under the solar project the company proposed to the CPUC in July 2008. Why is SDG&E implying it is a stretch to add 6 or 7 MW of PV per year when parent Sempra is committing to 10x as much solar per year now at one site using a much lower cost PV technology (fixed plate thin-film PV)? The 300 to 400 MW of thin-film PV in Arizona mentioned by Sempra implies the company sees no hurdles to installing cost-effective PV at a rate of 100s of MW per year.

Sempra also states there is a land rush going on and it is getting tougher to find good sites on transmission lines. What Sempra does not say is that there is an almost unlimited amount of disturbed land, aka commercial rooftops and parking lots, in California and Arizona urban areas where thin-film PV could be sited with no transmission requirements and no land acquisition costs (or CEQA issues) along the lines of the SCE commercial rooftop PV project in San Bernardino and Riverside.

I know I have already sent this, but it is a wonderful juxtaposition to Sempra's born-again commitment to thin-film PV as the solar energy technology of choice. About the last quarter of the Renewable Energy World article (link below) looks at SES dish Stirling as a company creating unrealistic expectations based on untested assumptions about cost and performance.

Bill

RenewableEnergyWorld.com

http://www.renewableenergyworld.com/rea/news/story?id=53361

Creating Realistic Expectations for Renewable Energy

by Stephen Lacey, Staff Writer

August 20, 2008 - New Hampshire, United States

It's a delicate time for the renewable energy industry. Now that the public eye is focused more intensely on clean energy technologies, there are a lot of high expectations about their potential. Properly educating consumers, investors and journalists about what each technology can realistically offer will be one of the most important factors in moving renewables forward, say industry professionals.

At the consumer level, that means encouraging buyers to do the necessary research about the product they're purchasing and the company they're working with. If buyers don't really know what they are getting, that could make for a less-than-satisfactory experience ‹ or even worse, a situation where the customer gets scammed.

Sue Kateley, Executive Director of theCalifornia Solar Energy Industries Association, says she sees a growing number of scammers getting into the solar industry who are making overblown claims about energy output and estimated return on investment. In the last few months, she has received three different calls from consumers in California who had large deposits taken from them by sketchy installers who made promises they couldn't deliver.

In two cases, customers put down US $40,000 for a deposit and never got the system installed. In one case, a customer put down US $105,840 for a deposit on a system even though they were unsure about the relationship. By the time they had second thoughts about the installer, the contract was signed and the check was cashed.

"In doing some further investigation, it doesn't really look like these are solar companies. It looks like these are opportunists...that are setting up websites and opening an office...and they're just going around and taking advantage of unsuspecting people," says Kateley.

With aggressive solar targets and a robust incentive structure in California, scammers see a big opportunity to take advantage of uneducated consumers, she says. And as other states continue to increase their support for solar, the problem will undoubtedly spread to other states. The only way to stop this from happening, says Kateley, is to teach people how to make smart decisions when purchasing solar or other renewables. That means knowing how to find a licensed contractor, understanding what's in a contract, and most importantly, knowing how solar works.

"I think that anytime you have a lot of government and public attention on going green, people don't know really what that means. And since customers don't tend to do a lot of due diligence themselves, they really are taking on faith that the person who's selling them this product will treat them well. I think that's the problem that I see picking up - the green movement has brought in some snake oil-type practices and that's very sad."

The situation is similar to that of the late 1970's and early 1980's when the booming solar hot water industry attracted a number of scammers who put up shoddy systems. Many Americans lost confidence in the technology and the solar hot water industry still hasn't fully recovered. This time around, scammers in the solar-photovoltaic industry have gotten more hi-tech. The internet has made it easier for people to set up a professional looking website and lure consumers with flashy promotions and complicated jargon.

The residential wind industry is experiencing a very similar issue, says Wind Energy Expert Mick Sagrillo. He sees the same type of scammers setting up websites promoting new vertical axis turbines and publishing theoretical

performance data that has no relevance to the actual output of a system. Many of these devices are untested and are being promoted by people who know
they have a questionable technology, he says. If someone buys a poorly-made turbine and it malfunctions, the consumer's problem turns into a public problem.

"When you put a solar system on your roof and it doesn't work, nobody will be able to tell. When you put a small wind turbine on your roof or in your backyard and it doesn't work, the whole neighborhood knows. That could have a lasting effect on someone's opinion about wind. We have to make sure people are making smart purchases so that we maintain confidence in these technologies," says Sagrillo.

The main reason that sham companies are able to thrive, he says, is that people don't really understand energy. If someone doesn't know what type of performance data to look for, the potential for them to get dazzled by overblown or false claims about a technology increases. As founder of the wind-installation company Lake Michigan Wind and Sun, Sagrillo gets a large number of people looking into wind generators because of the rising cost of gasoline. The fact that people equate electricity generation with gasoline shows how uneducated many Americans are about energy, he says.

"It's great that people are looking for alternatives, but it's amazing how little people know when they seek them out. That leaves people open to purchasing a product that is less-than-reliable. We are a very gullible culture, we're always looking for the magic bullet," says Sagrillo.

That magic bullet thinking is spread by the mainstream media, Sagrillo says. Too many journalists take company claims about cost, performance, and project timelines at face value. He believes that lack of critical analysis is passed on to consumers.

Technology Journalist Peter Fairley agrees. If companies are allowed to make claims they can't deliver on, that may damage public confidence in certain technologies, he says. Too often, companies don't release enough information to properly evaluate claims about the economics or energy output of a product.

"It's critical for us to point out when companies are not answering questions. There's a lot of hype around certain companies that are being very secretive and where there's real potential for not only investors to get hurt, but also for the image of the industry...to be hurt."

One of the more secretive companies in the industry has been Arizona-basedStirling Energy Systems (SES). The company plans to roll out

300 megawatts (MW) of its Dish/Stirling systems in Southern California by 2010 for around US $1.50 per watt. After that, the company says it will scale up to 900 MW, but it has not issued a timeline for the expansion. There are plans for another project which could eventually bring the total installed capacity of Dish/Stirling systems in California to 1,750 MW.

But Barry Butler, an engineer with 30 years of experience with solar thermal electric technologies, says that SES is not being honest about the realities of its proposal. He's worked with Dish/Stirling devices and believes they have a lot of potential. But "to claim that you could do it for $1.50 a watt, which is just a little more than a gas turbine, it isn't physically possible. You can't buy the materials and assemble a 16,000 pound dish for that. It defies the laws of physics, materials procurement and materials costs," he says.

In addition, says Butler, rolling out 12,000 Stirling Dishes by 2010 is theoretically possible, but it doesn't take into account any of the reliability issues that the company may face. Right now, there are only six dishes operating today. A more realistic timeline would be to roll out 1 MW (40 dishes) for a year of testing, then move to 10 MW and eventually to 300 MW. Even at such a large scale, SES may be looking at an installed cost of around US $7.00 per watt, he says.

"They're going to buy 12,000 engines that they've never bought before and put them on dishes and expect to generate power. It's just highly unlikely. They're probably looking at 2020," Butler predicts.

SES declined three interview requests for this story.

There have been a number of stories in the media hailing the SES projects as the next big thing for solar. Butler says that none of them have critically evaluated the issues associated with cost, reliability and timeframe for development.

That type of unchecked enthusiasm is not the way to build a sustainable industry, says Fairley, the journalist. The best way to educate people about the potential of renewable energy is to be realistic about what the technologies can offer.

"One of the failings of technology journalism over the years has often been a tendency to focus on the technical potential of new products to the exclusion of the present technical challenges that need to be overcome. It's important for us to always be flagging those challenges," says Fairley.

Import Capacity of Transmission Lines Serving Southern California

The alternating current transmission import capacity currently serving Southern California, via Path 46 and Path 26, is approximately 14,000 MW. The direct current transmission import capacity currently serving Southern California, via the Pacific Intertie and the Intermountain DC transmission lines, is approximately 5,000 MW. Total import capacity is approximately 19,000 MW.

The three Southern California utilities that utilize this import capacity are Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and the Los Angeles Department of Water and Power (LADWP). These three utilities have collective average annual electricity retail sales of approximately 14,000 MW, and a collective peak demand of approximately 33,000 MW.[1] The peak demand and annual retail sales for each utility are shown in the table below.

Utility	SCE[2]	LADWP[3]	SDG&E[4]	Totals
2007 peak demand, megawatt (MW)	23,000	5,700	4,600	33,000
2006 annual retail electricity sales, gigawatt-hr, (GWh)	79,000	23,000	17,000	119,000

1 GWh = 1,000 MWh

I. Path 46, Southern NV and Western AZ to SoCal, capacity: 10,100 NW

Source: http://www.nationmaster.com/encyclopedia/Path-46#Map_of_all_the_500_kV_wires

The entire Path 46 system has a capacity of transmitting 10,100 MW of electrical power to the population centers of Southern California. The source of the electricity is hydroelectric dams like Hoover Dam on the Colorado River, fossil fuel plants like the clusters of natural gas-fired plants in the Las Vegas area and western Arizona and coal plants in various western states, and nuclear power from the Palo Verde Nuclear Plant in western Arizona.

II. Path 26: Northern CA to Southern CA, capacity: 3,700 MW

Path 26 is a set of three 500 kV transmission lines that is the SCE intertie with Pacific Gas & Electric (PG&E) to the north. The Path is located in the southern Central Valley of California (San Joaquin Valley), the Tehachapi and Transverse Ranges, and the High Desert area. The three Path 26 500 kV lines can transmit 3,700 MW north to south (http://en.wikipedia.org/wiki/Path_26).

III. Pacific DC Intertie: Oregon to LA, capacity: 3,100 MW

The Pacific DC Intertie (also called Path 65) is a transmission line from the Pacific Northwest to the Los Angeles area using high voltage direct current (HVDC). The line capacity is 3,100 MW, which is enough to serve two to three million Los Angeles households.

IV. Intermountain DC Line: Utah to LA, capacity: 1,920 MW

Intermountain is the designation of a HVDC transmission line between the Intermountain Power Plant in Utah and Los Angeles. The Intermountain is an overhead line with a length of 785 km that can transfer up to 1,920 MW at 500kV.

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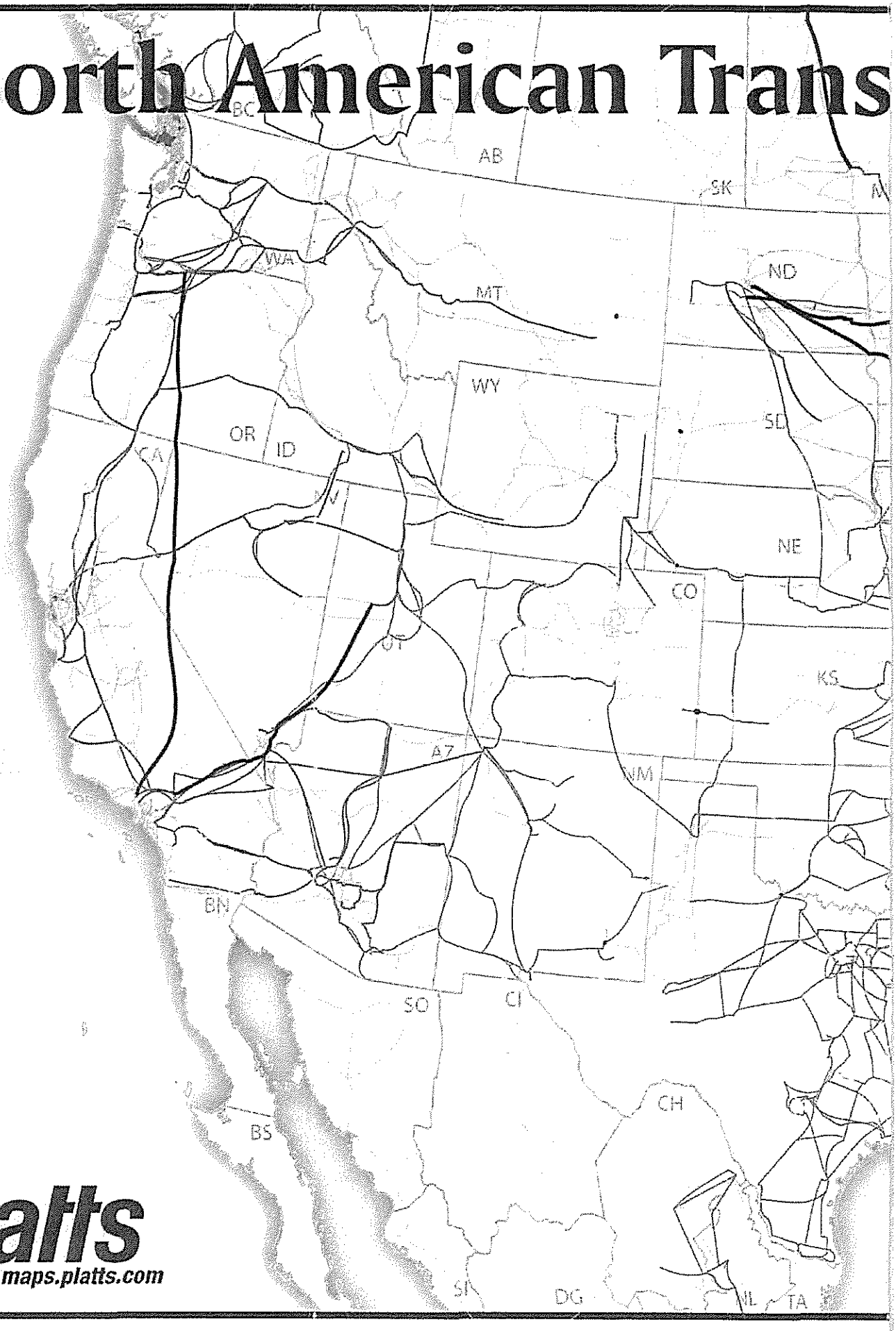
[1] The combined annual average retail sales of the three utilities is calculated by dividing the annual retail sales of 119,000,000 MW-hr by 8,760 hours in a year. 119,000,000 MWh/yr ÷ 8,760 hr/yr = 13,600 MW.

[2] SCE peak demand: Business Wire, *SCE customers use record amount of electricity today*, August 31, 2007. SCE annual retail electricity sales: CEC, *2007 Integrated Energy Policy Report*, January 2008, p. 128.

[3] E. Martinez – COO LADWP, *Planning to meet the challenge*, PowerPoint presentation, January 19, 2006. The 2005 peak demand of 5,667 MW identified in this presentation is higher than the 2007 peak demand projection of 5,400 MW.

[4] SDG&E peak demand: US News, *Southern California sets power records*, September 4, 2007. SDG&E annual retail electricity sales: CEC, *2007 Integrated Energy Policy Report*, January 2008, p. 128.

North American Trans



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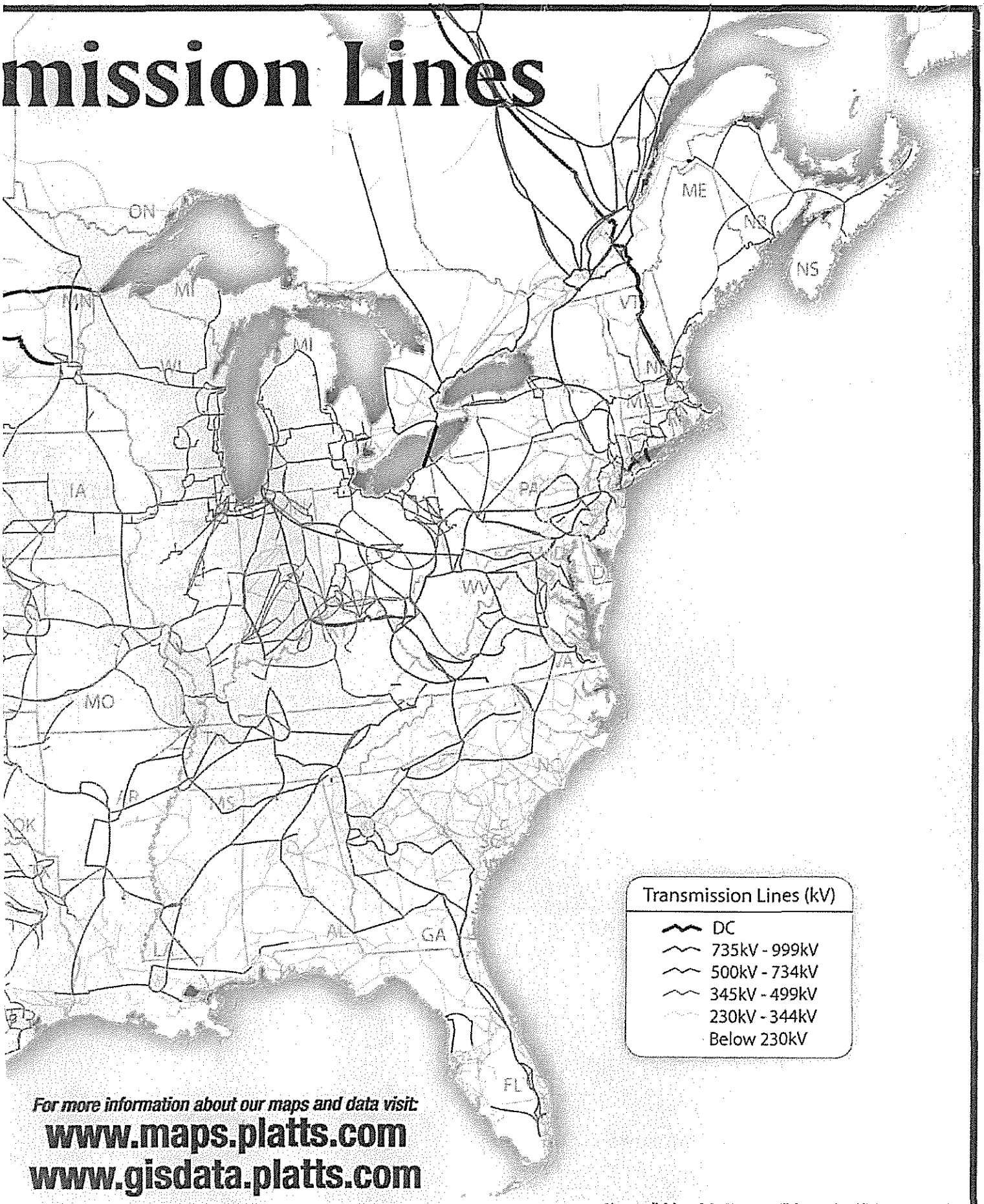
mission Lines



Transmission Lines (kV)

- DC
- 735kV - 999kV
- 500kV - 734kV
- 345kV - 499kV
- 230kV - 344kV
- Below 230kV

For more information about our maps and data visit:

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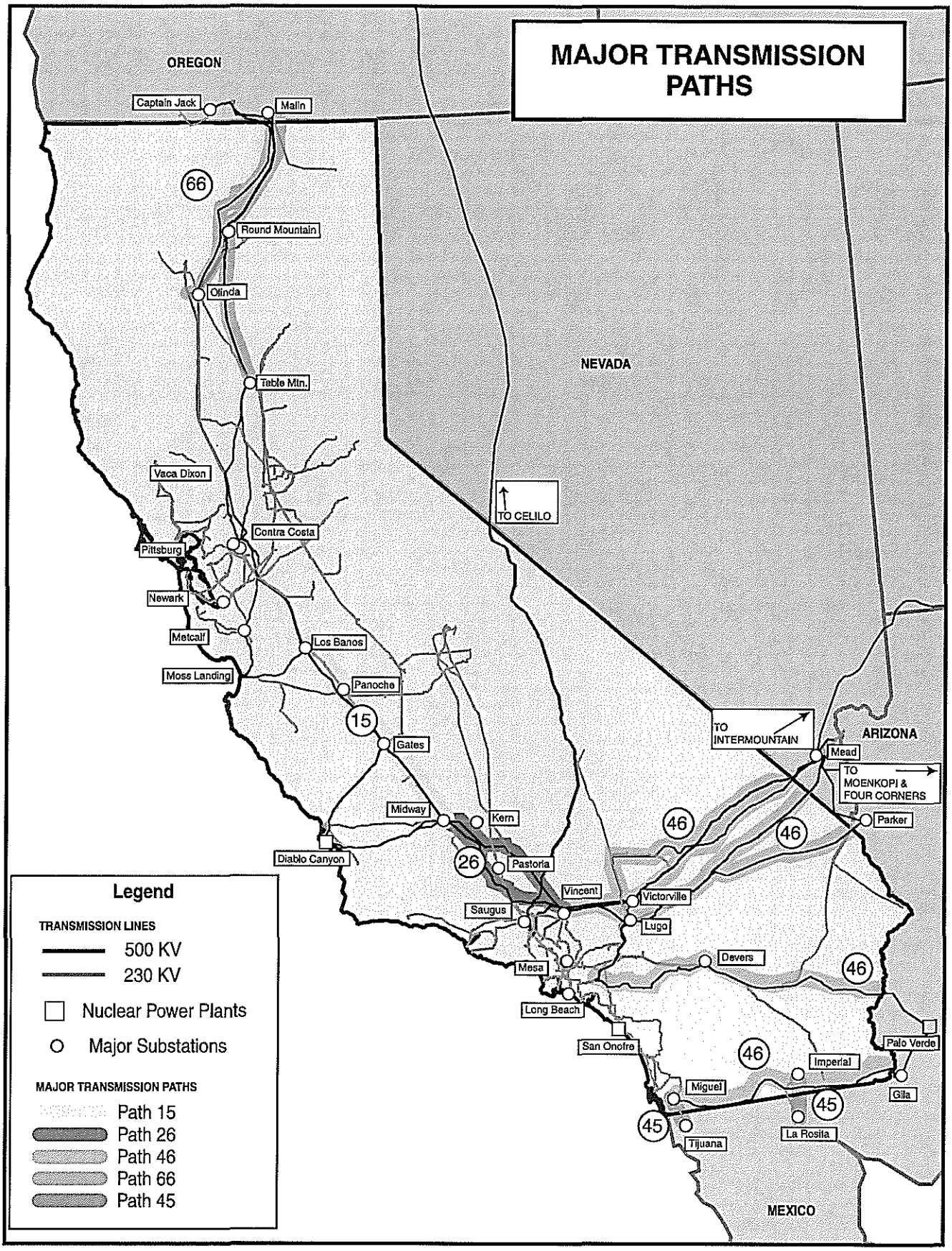
FIGURE 1
Major Transmission Paths (230 kV to 500 kV)



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, AUGUST 2005
SOURCE: CEC Staff

CALIFORNIA
ENERGY
COMMISSION

STRATEGIC TRANSMISSION INVESTMENT PLAN

COMMISSION REPORT

Prepared in Support of the *2005 Integrated Energy Policy Report* Proceeding (04-IEP-1K)

NOVEMBER 2005
CEC 100-2005-006-CMF

Arnold Schwarzenegger, *Governor*

Bill Powers

From: Bill Powers [bpowers@powersengineering.com]
Sent: Thursday, September 04, 2008 11:19 AM
To: 'Thomas Del Monte'
Subject: additional information

Thomas,

Polycrystalline silicon PV and thin-film PV cost estimates are included on pdf p. 63 (p. 6-7) of the August 2008 RETI Phase 1B draft report: See:
http://www.energy.ca.gov/reti/documents/2008-08-16_PHASE_1B_DRAFT_RESOURCE_REPORT.PDF

Also, the CEC 2007 IEPR notes (p. 143) the much higher value of on-peak point-of-use PV compared to the market price referent (MPR). The 2007 IEPR notes that SCE pays 3.28 times the MPR for on-peak commercial PV. Slightly higher installed capital costs for thin-film PV systems spread over many commercial buildings and parking lots, compared to putting 500 MW or 1,000 MW on one contiguous utility-scale site in a remote area, would be more than offset by the much higher composite value (of on-peak and off-peak hours) of point-of-use PV within the load center. See: http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF.PDF

I will include this e-mail as an attachment to the ex parte notification I file on today's meeting.

Regards,

Bill Powers
Powers Engineering
619-295-2072

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project.	Application 06-08-010 (Filed August 4, 2006)

MOTION OF ZEMER ENERGIA FOR PARTY STATUS

December 9, 2008

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

In the Matter of the Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project.	Application 06-08-010 (Filed August 4, 2006)

MOTION OF THE ZEMER ENERGIA FOR PARTY STATUS

Zemer Energia (ZEMER) respectfully moves for party status in this proceeding, Application (A.) 06-08-010. This Motion is filed pursuant to Rule 1.4 of the Commission's Rules of Practice and Procedure.[1]

I. DESCRIPTION OF ZEMER ENERGIA

Zemer Energia (ZEMER) is a subsidiary of Unión Fenosa , a leading international energy company, and the third largest electric utility in Spain. In México, Unión Fenosa currently owns and operates 1,550 MW of natural gas combined cycle generation with another 450 MW combined cycle generation facility currently under construction. ZEMER was established to develop renewable energy generation projects for the Mexican and California electricity markets. Union Fenosa currently has approximately 1,230 MW of wind power under development in México, of which 1,000 MW are located in northern Baja California, in an area adjacent to the border with California known as "La Rumorosa".

The wind projects at La Rumorosa are part of Union Fenosa's €9,000 million Euro global strategic investment plan "BIGGER", of which €1,500 million Euros are specifically earmarked

[1] Rule 1.4 of the Commission's Rules of Practice and Procedure permits a person to become a party to a proceeding by, among other things, filing a motion to become a party. A person filing such a motion must disclose the identity of the persons or entities in whose behalf the motion is made and the interest of such persons or entities in the proceeding. The

for projects in México. Union Fenosa plans to build the projects with its own resources without seeking external sources of financing. The initial 500 MW of La Rumorosa wind electric generation were bid in the 2008 RPS solicitations and are currently in contract negotiations. ZEMER is actively seeking additional off-takers among California utilities for the remaining 500 MW output of its La Rumorosa wind project.

ZEMER has considered various transmission routes for the energy output of its proposed La Rumorosa wind generation facilities. To this end, a Union Fenosa subsidiary submitted two separate interconnection applications to the CAISO with interconnection points at the Miguel and Imperial Valley substations. One of these applications, for interconnection to Imperial Valley Substation (IVSS) is now part of the CAISO transition cluster, having paid all earnest fees due and having demonstrated proof of land control to CAISO's satisfaction.

Pending the outcome of CAISO's transition cluster study, ZEMER will build the necessary transmission infrastructure between its La Rumorosa wind farm and the first interconnection point to the WECC system. The current plan for interconnecting the first 500 MW of the project, calls for the construction of a 230-kV transmission line from its La Rumorosa to a point due south of the Imperial Valley Substation, and for the use of an existing cross-border line to IVSS. The schedule calls for the completion the first 500 MW and associated infrastructure by late-2011, in time for delivery under its RPS. The second 500 MW of wind capacity will require the construction of a new cross-border line to interconnect to IVSS or to a less distant interconnection point to be identified upon completion of the CAISO clustering study.

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motion must also show that the party's contentions will be reasonably pertinent to the issues already presented.

II.

ZEMER'S INTEREST IN THIS PROCEEDING

On October 31, 2008, the Commission mailed a Proposed Decision and an Alternate Proposed Decision in this proceeding. The Proposed Decision denies San Diego Gas and Electric Company's (SDG&E's) request for a CPCN to build the Sunrise Powerlink Transmission Project (Sunrise). The Alternate Proposed Decision approves the CPCN, but adds conditions to that approval. Specifically, the Alternate Proposed Decision requires SDG&E to file a compliance plan that, among other things, must "specify the renewable generation that will be developed and delivered on Sunrise."[2] In meeting this condition, SDG&E is required to provide significant detail about these projects, including expected binding commitments, project descriptions, and project construction schedules.[3]

As ZEMER's wind generation project in La Rumorosa will need sufficient transmission capacity from IVSS, or another point, to reach the California offtakers, ZEMER has a direct interest in these conditions and believes it can provide valuable input through comments and reply comments on the Alternate Proposed Decision and the Proposed Decision and the further rulings and additional Alternate Proposed Decision (President Peevey) that have now been issued in this proceeding. Further, only when this Alternate Proposed Decision was issued and became the subject of an oral argument and an all-party meeting over the last few weeks did ZEMER became fully aware of the impact of conditions that may be imposed by the Commission in authorizing the Sunrise Powerlink transmission line.

ZEMER, therefore, seeks party status to provide these written comments and participate on any further all-party meetings or oral argument on these proposed decisions, as well as any and all other related Commission actions and future phases of this proceeding. Because ZEMER's interest in this proceeding has emerged as a result of the conditions proposed by the

[2] Alternative Proposed Decision, Ordering Paragraph 2, at p. 284.

Alternate Proposed Decision, ZEMER's motion is timely and its contentions will be reasonably pertinent to the issues already presented in this proceeding. Finally, ZEMER's participation in this proceeding will not prejudice any existing party.

III.
CONTACT INFORMATION

On behalf of ZEMER, the following name and information should be included in the "Party" portion of the service list for A.06-08-010:

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[3] Alternative Proposed Decision, Ordering Paragraph 2, subparts (a) – (c), at pp. 284-285.

IV.
CONCLUSION

ZEMER clearly has a pertinent and substantial interest in, and would be affected by, the Proposed Decision and Alternate Proposed Decision mailed in this application on October 31, 2008, and the further Alternate Proposed Decision mailed on November 18, 2008. Until the first Alternate Proposed Decision was issued, ZEMER did not know that conditions would be imposed that would directly affect its interests. ZEMER has, therefore, timely sought to become a party to this application and respectfully moves the Commission to grant ZEMER party status in A.06-08-010 to permit ZEMER to submit written comments on these proposed decisions and the further Alternate Proposed Decision and fully participate in all aspects of this proceeding from this date forward.

Respectfully submitted,

December 9, 2008

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CERTIFICATE OF SERVICE

I, J. Nicolas Puga, am over the age of 18 years and employed in the Washington, in the District of Colombia. My business address is 1300 Eye Street NW, suite 600, Washington, DC 20005.

On December 9, 2008, I served the within document **MOTION OF ZEMER ENERGIA,** in A.06-08-010 (Sunrise Powerlink), with service on the A.06-08-010 service list in the manner prescribed by the Commission's Rules of Practice and Procedure and with additional and separate delivery of paper copies by U.S. Mail to Assigned Commissioner Grueneich and Assigned ALJ Vieth, at Sonoma, California.

Executed on December 9, 2008, at Washington, District of Colombia.

/s/ NICOLAS PUGA
Nicolas Puga

Electronic and U.S. Mail Service List
A.06-08-010 (Sunrise Powerlink)
December 2, 2008

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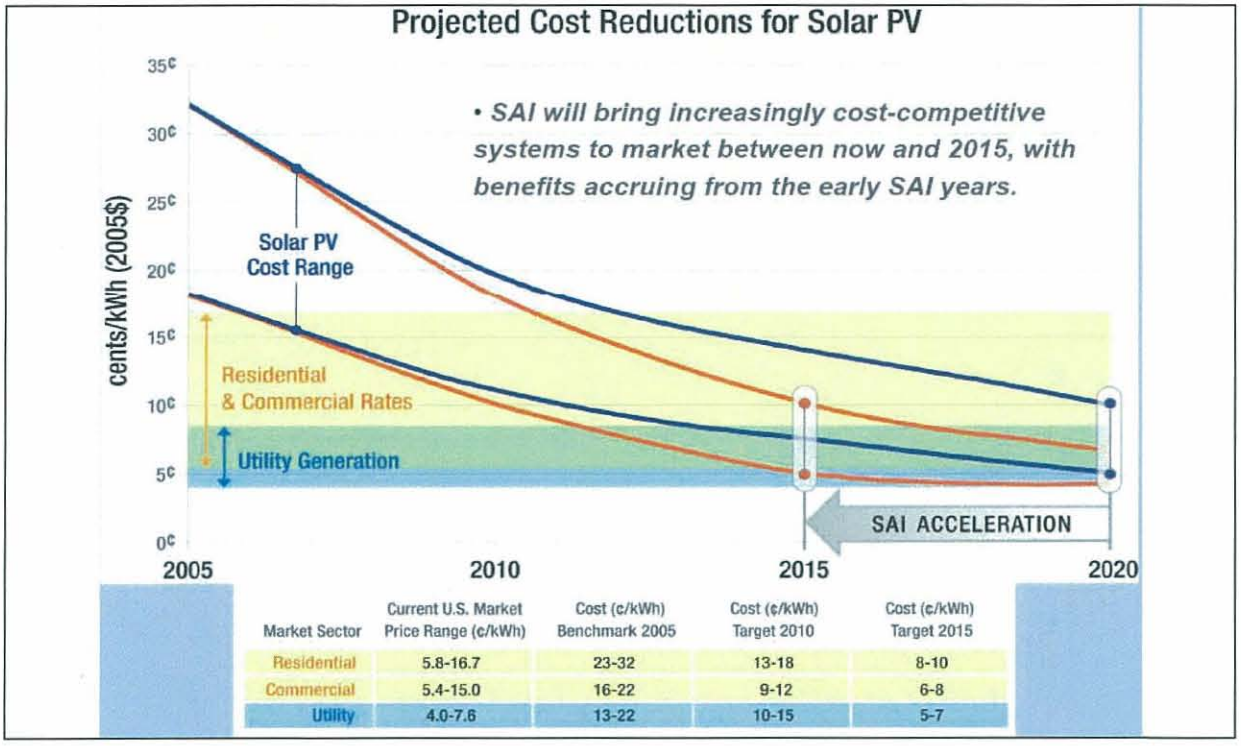
CPUC now limits utility baseload long-term power contracts to sources with a GHG footprint of a natural gas-fired combined cycle power plant. This is high-cost baseload power generation in a time when natural gas averages $7 per million Btu or more. According to DOE, cost parity will be reached by 2015 if PV is incentivized to ensure a large and growing market over the next decade. See the lower curve in Figure 10-1.

Figure 10-1. DOE Projection of Decline in PV Cost Through 2020[134]



Market Sector	Current U.S. Market Price Range (¢/kWh)	Cost (¢/kWh) Benchmark 2005	Cost (¢/kWh) Target 2010	Cost (¢/kWh) Target 2015
Residential	5.8-16.7	23-32	13-18	8-10
Commercial	5.4-15.0	16-22	9-12	6-8
Utility	4.0-7.6	13-22	10-15	5-7

There are currently limits on the availability of PV panels. However, a very rapid expansion of PV manufacturing capacity is underway. Worldwide PV manufacturing capacity expanded 41 percent in 2006. Production is currently constrained by a shortage of manufacturing capacity. However, more than a dozen companies in Europe, China, Japan, and the U.S. will bring unprecedented levels of production capacity online in the next two years, reversing manufacturing constraints. The cost of PV is expected to decline 40 percent by 2010 as a result of this tremendous expansion in PV production capacity.[135]

The 2,040 MW of PV to be added under the *San Diego Solar Initiative* would be equipped with sufficient battery storage, equivalent to 2 to 3 hours of rated capacity, to enable this PV capacity to be dispatchable during the late afternoon peak. 2,040 MW of PV capacity would meet more than half of San Diego County's project peak demand (under *San Diego Smart Energy 2020*) of 3,500 MW in 2020.

PV systems provide peak power output in the middle of the day, yet peak demand is generally later in the afternoon, typically 3 pm to 6 pm. The CEC is funding a demonstration in Southern California Edison territory of sophisticated energy management/battery systems integrated with

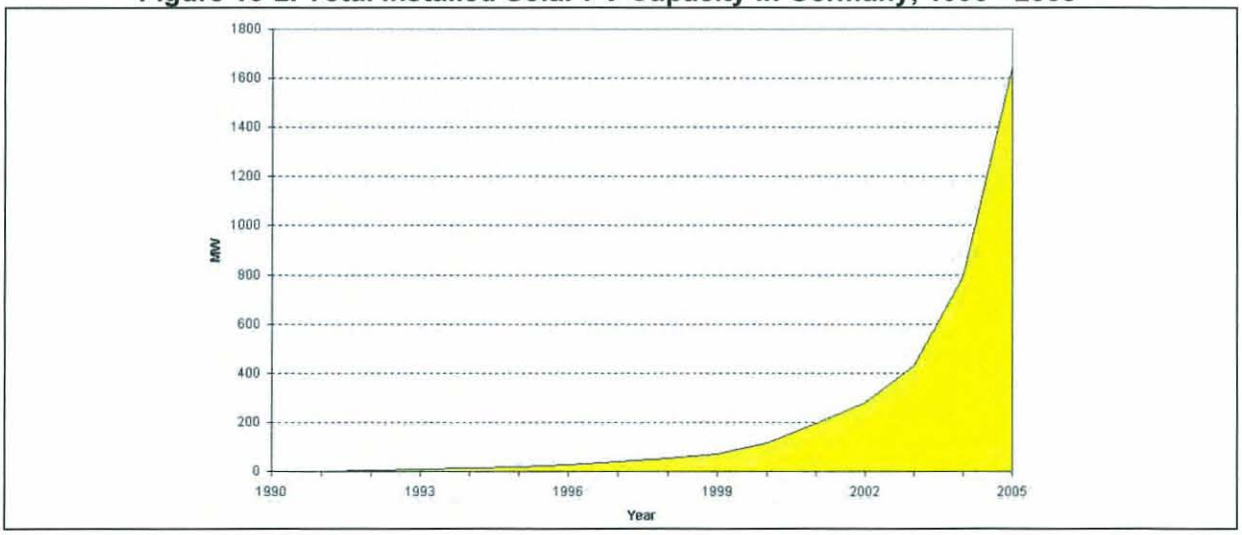
residential PV to serve as peaking units to meet the late afternoon summertime peak.[136] The energy management/battery systems are fully controllable by the utility as peaking units. The addition of energy management and battery storage allows the PV system to supply the utility grid with its peak output through the late afternoon summertime demand peak. The energy management/battery system adds approximately 10 percent to the cost of the PV system.[137]

The San Diego region is projected to have approximately 4,600 MW of PV technical potential on commercial, buildings, parking structures, and parking lots in 2010, as well as 2,800 MW of technical potential on residential structures.[138] The 2,040 MW PV target will be developed from this 7,400 MW of PV technical resource base.

The annual energy production of this PV capacity developed under the *San Diego Solar Initiative* will be approximately 25 percent of the region's annual energy demand in 2020. SDG&E is obligated by SB 107 to obtain 20 percent of its power sales from renewable energy sources by 2010. An assumption in *San Diego Smart Energy 2020* is that the energy generated by these renewable energy contracts, 3,500 GWh-year, continues to be produced at the 3,500 GWh per year level for the foreseeable future. 3,500 GWh will be approximately 22 percent of total energy demand in 2020. The 300 MW of regional PV added under SB1 will supply 3 percent of total energy demand. Combined, these renewable energy sources will provide 50 percent of the region's annual energy demand in 2020.

The *San Diego Solar Initiative* would follow a development curve, in terms of rate of growth in installed PV power, similar to the rate-of-growth demonstrated in the German PV program. The German PV program reached a growth rate of 837 MW per year in 2005. See Figure 10-2. The *San Diego Solar Initiative* would start gradually and finish fast. Approximately 40 MW would be installed in 2008-2010, the first three years of the *Initiative*. 2,040 MW would be in operation by 2020.

Figure 10-2. Total Installed Solar PV Capacity in Germany, 1990 - 2005[139]



10.2.2 Greenhouse Gas Reduction Achievable with $700 Million Photovoltaics Incentive Budget

California utilities have historically been responsible for recovering 100 percent of the cost of their transmission investments from their own ratepayers. However in 2000 the Federal Energy Regulatory Commission instituted a new cost allocation procedure for transmission projects.[140] Transmission costs for such projects are now borne proportionately by the state's three regulated utilities, SCE, PG&E, and SDG&E, regardless of the utility territory where the project is actually located. The SDG&E customer base represents approximately 10 percent of the customer base of the three utilities combined. As a result, even though the cost of SPL will be $7 billion to $8.3 billion (2010 dollars) over the financial life of the project, SDG&E customers will pay only 10 percent of this cost, $700 to $830 million, over the 40-year financial life of SPL. SDG&E customers also pay 10 percent of SCE and PG&E transmission projects.

Under the current rules of transmission line cost allocation, SDG&E customers will pay $700 to $830 million of the total cost. It is therefore of value to determine how much PV could be installed in the San Diego County area with an incentive budget of $700 to $830 million, given that is the amount that these SDG&E ratepayers will be charged for the SPL.

A $700 million budget would incentivize the installation of 1,030 MW of PV without battery storage in the San Diego region by 2020. Assuming 10 percent of the $700 million incentive budget is used for energy management/battery systems and the remaining 90 percent for PV capacity, approximately 920 MW of PV capacity would be installed that is capable of operating at rated output throughout the afternoon 3 pm to 6 pm peak summertime demand period. An $830 million budget would incentivize the installation of 1,220 MW of PV without battery storage, and 1,100 MW with battery storage to maintain rated output through the afternoon peak. The distribution of the $700 million in PV incentives is shown in the PV incentive program financing plan summary tables included in **Attachment K**.

How does this projection compare to the projection for the CSI program? The objective of the CSI $2.165 billion incentive budget is to increase installed PV capacity in California to 1,940 MW by 2017. A $700 million incentive budget is one-third the CSI incentive budget of $2.165 billion. The approximate installed PV capacity that could be expected from a $700 million incentive budget under CSI would be in the range of 650 MW (without battery storage), one-third the CSI target of 1,940 MW.

10.2.3. Displacement of PV with Concentrating Solar and Wind

The overall cost of the renewable energy portfolio to achieve 50 percent greenhouse reduction by 2020 will decline to the degree that renewable energy parks develop in the more rural areas of San Diego County, using concentrating PV or a concentrating solar technology of similar efficiency, and these parks displace a portion of the 2,040 MW of fixed PV capacity that would result from the *San Diego Solar Initiative*. These renewable energy parks are discussed in more detail in Section 13. To the degree that wind power substitutes for this fixed PV capacity, assuming no new transmission must be built to accommodate that wind power, the cost to

achieve the 50 percent greenhouse gas reduction by 2020 will drop further. Regional wind power is discussed in more detail in Section 14.

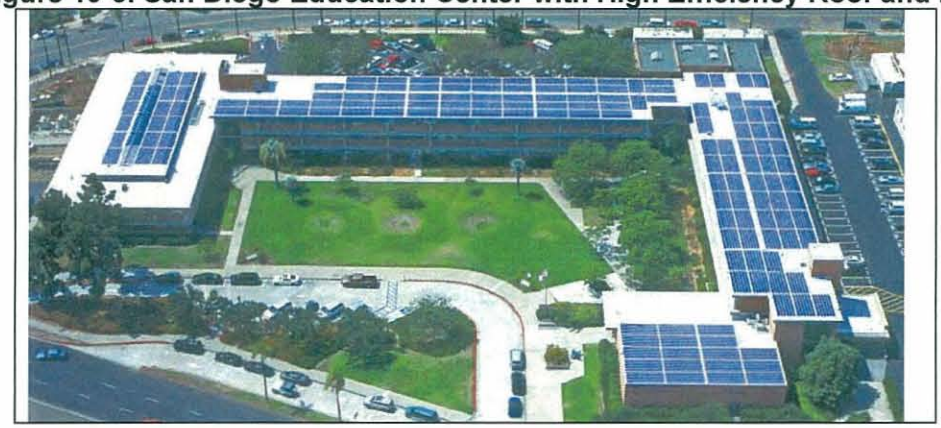
10.3 Coordinating PV Installations with Roof Replacements

Commercial and residential PV installations can be coordinated with roof replacements to maximize efficiencies. The typical service life of roofing material is 20 to 25 years. The typical guarantee period for solar panels is 25 years. Timing the PV installation with a new roof means the entire roof and PV system will have a coordinated minimum service life in the range of 25 years.

San Diego City Schools contracted the integrated re-roofing and installation of a total of 5,110 kW of PV power on fourteen schools to Solar Integrated, Inc. (Los Angeles). The contractual arrangement is a long-term power purchase agreement, where Solar Integrated owns the roofs and the PV panels. Solar Integrated manufactures the high efficiency "cool roof" (http://www.solarintegrated.com/non_pv.htm) and adds PV as a component of the roof installation.

City Schools is charged a fixed $/kWh rate for all PV power generated. This rate is significantly below the rate City Schools would otherwise pay SDG&E for utility power.[141] This is one example of a relatively painless financing and ownership model that could be employed at hundreds of commercial sites in the San Diego region if an adequate incentive budget is available. Figure 10-3 shows the San Diego Education Center equipped with a cool roof and 100 kW of rooftop PV.

Figure 10-3. San Diego Education Center with High Efficiency Roof and PV



11. Renewable Energy Tariffs: The Key is Rates that Reflect Actual Value

A fundamental assumption of SB1 and the proposed *San Diego Solar Initiative* programs is that PV costs will decline steadily over the next decade, to the point that PV will compete without

incentives against natural gas-fired generation. However, there are other proven financing mechanisms, available to achieve rapid renewable energy development. One of these mechanisms is a "standard offer" for this renewable power offered by the utilities that is sufficiently generous that the renewable energy power producer receives a fair return on the renewable power investment.

The use of standard offer prices for renewable energy projects is a proven model for assuring the financing of innovative renewable energy projects. Thousands of MW of renewable wind, solar, and geothermal projects were built in California in the 1980s as a direct result of the standard offer contract structure. This is the format that used in the San Diego region with "qualifying facilities," larger cogeneration plants that produce steam from industrial or commercial use and power primarily (though not exclusively) for export to SDG&E.

Last year 10,000 MW of wind power were installed in Europe, primarily in countries with feed-in tariffs. "Feed-in tariff" means the renewable energy producer is paid a fixed rate for the renewable power sold to the grid.

Renewable energy development in the U.S. is contingent on the federal production tax credit at present. This program has been essential in the U.S. for promoting wind power. However, it has also suffered from three principal drawbacks. First, it has been an "on again, off again" tax credit, subjecting the industry to boom and bust cycles. Second, the credit originally only applied to wind, though it was extended to other types of renewable energy in the 2005 Energy Policy Act. The two-year cycle of expiration of this tax credit creates a challenging timeframe for renewable projects other than wind. Third, it only supports projects for the first 10 years, making it less helpful than the German solar tariff which pays projects for 20 years. Twenty years is much closer to a realistic financial lifecycle for solar projects. Fourth, it only applies to commercial (private) developers who can take tax credits. Government agencies, municipal utilities like Los Angeles Department of Water and Power and Imperial Irrigation District and other non-profit entities, are ineligible.

In Europe, feed-in tariffs are set either at a fixed price, or a fixed premium above spot market prices. Price levels and premiums vary by technology, reflecting variation in technology costs. Incentives vary by country. Incentives for some technologies are scheduled to decline over time. California is currently implementing two programs with incentives similar to feed-in tariffs. As part of the California Solar Initiative, the CPUC has developed performance-based incentives with set payments per kWh for qualifying solar photovoltaic systems. The CPUC is also implementing a process to determine a tariff rate that will be offered to public water or wastewater agencies for renewable generation and whether this or a similar tariff should be used to spur additional renewable resource development.

The renewable energy payments need to be fully justifiable based upon a real mix of value factors, so it is not in fact or perception a subsidy or special handout. This is the foundation for the German feed-in tariff for solar energy. The German government calculated how much solar peak energy was worth, adding up the electric value, the social value, the environmental value, and the future risk hedge value. The feed-in tariff is not a charity payment, but a payment for real value delivered. European countries that do not set tariffs high enough have not been nearly as successful as those with fixed, long-term rates that are reasonably generous.

12. Approaching Carbon Neutral Now: Local Examples of Cutting-Edge Facilities

San Diego City Schools, 5,110 kW of PV: Photo at right is the roof of the Juarez Elementary school. The PV output from this installation is 67 kW. City Schools has a long-term power purchase agreement with Solar Integrated (Los Angeles). A total of 14 schools have been re-roofed using high efficiency "cool roofs" that serve as a platform for the PV arrays. Solar Integrated owns and maintains the roofs and the PV systems. City Schools pays a flat $/kWh rate for the power generated by the PV systems. This rate is significantly below the rate City Schools would otherwise pay SDG&E for electricity.	
City of San Diego, Alvarado Water Treatment Plant: This 945 kW PV system was built via a long-term power purchase agreement with SunEdison. The city pays SunEdison $0.12/kWh, offsetting a current utility rate of approximately $0.17/kWh.	
Qualcomm Building W Campus, Sorrento Valley: The 250 kW PV array is installed on the roof of the building and the shade structure of the parking garage. The PV output is sufficient to support all lighting requirements for the building, parking structure and onsite cogeneration plant. Efficiency improvements, including high efficiency lighting fixtures, gas absorption chillers, boilers, and water heaters, have combined to reduce electricity consumption by 30 percent.	
Solara housing complex, Poway: This housing complex is the first of its kind in the state: a green-built, government-financed, affordable-housing complex that is nearly climate neutral, constructed with minimum pollution and maximum energy efficiency. The California Energy Commission subsidized the $18.5 million Solara complex to help create a working example for developers in the public and private sectors on how to buildgreen and at low cost.	
Kyocera parking lot, Kearny Mesa: The 235 kW "solar grove" arrangement provides PV electricity to the adjacent manufacturing plant as well as shade and cover for autos in the parking lot. EnvisionSolar, a San Diego company, is now marketing solar PV systems for parking areas.	

13. Concentrating Solar and Renewable Energy Parks

San Diego County is rich in solar resources. Use of concentrating solar technologies, as opposed to fixed rooftop PV, can maximize the amount of solar energy extracted from this solar resource. There are four types of concentrating solar technologies in operation or under development at this time: 1) solar trough, 2) concentrating PV, 3) dish Stirling, and 4) concentrating towers. Although not a concentrating solar technology, tracking PV has been deployed on a large scale and is fully commercial. "Tracking" means the panel or dish is slowing pivots to follow the path of the sun over the course of the day. A tracking PV system generates significantly more power than a fixed PV system as a result.

Solar trough is the only technology that can be considered fully commercial at this time, with 354 MW of capacity in operation in California. The minimum size considered commercially viable for this technology is approximately 50 MW. A 50 MW solar trough power plant would require approximately 300 acres of flat land. As a result, solar trough technology is not a good match for the terrain or land availability realities of San Diego County.

Dish Stirling and concentrating tower technologies are still at a pre-commercial stage.[142] The San Diego Regional Renewable Energy Study Group addressed dish Stirling in its August 2005 report *Potential for Renewable Energy in the San Diego Region.*[143] Dish/Stirling is identified as pre-commercial in this study, based on analyses conducted by the National Renewable Energy Laboratory and Black & Veatch consulting engineering firm. In contrast, concentrating PV has performed well at the 1 MW pilot stage and appears ready for commercial scale-up to a 5 to 10 MW size.[144] PG&E has announced a contract for a 2 MW concentrating PV peaking power plant on 8 acres in Tracy, California.[145] Tracking PV systems are also commercial and have been built as large as 11 MW. Photos of an 11 MW tracking PV array in Portugal, and of a concentrating PV unit operating in Arizona, are provided in Figure 13-1. PG&E has also announced an agreement for 5 MW of PV on 40 acres near PG&E's Mendota substation in Fresno County.[146]

Figure 13-1. Tracking PV Array and Concentrating PV Unit

11 MW tracking PV installation, Portugal	35 kW concentrating PV unit, Arizona
	

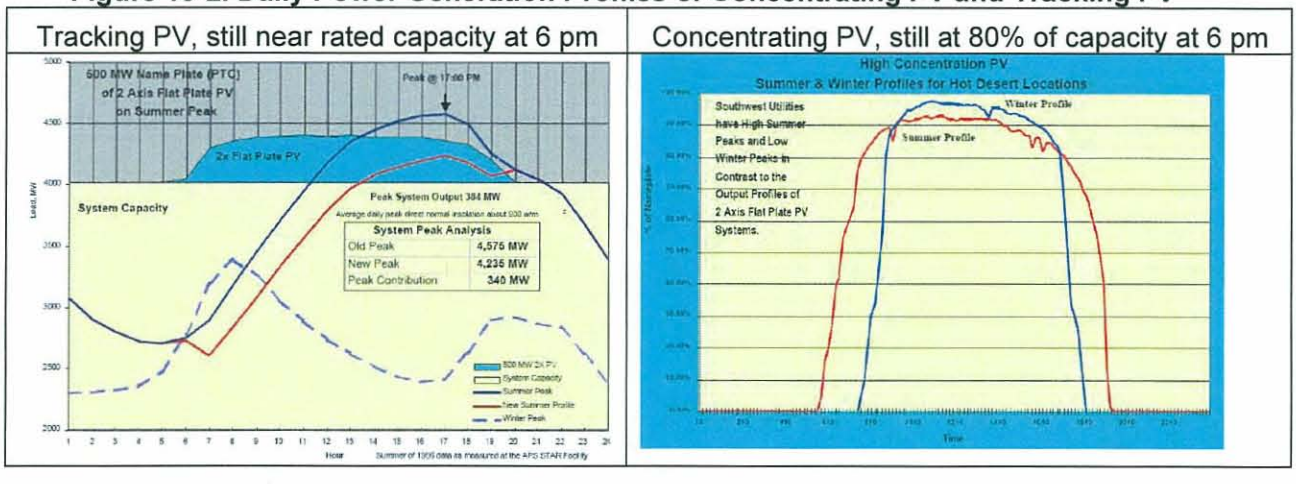
San Diego County has few areas that are amenable to the land requirements necessary for a commercial-scale solar trough power plant. To address this reality, the concept of "renewable

energy parks" has been developed to best match the topography and land use of more rural areas of San Diego County with appropriate solar options.[147] This concept entails the deployment of many smaller concentrating PV or tracking PV arrays in the 1 to 10 MW size on commercially-available land near existing SDG&E transmission lines and substations. SDG&E owns a network of 69 kV transmission lines that serve the rural areas of the county. Power from these renewable energy parks would be delivered over the 69 kV grid to developed areas of the county.

A credible and inclusive stakeholder process will be necessary to establish ground rules for identifying acceptable renewable energy park parcels. Many of the residents and landowners in the backcountry of San Diego County are there because it is rural and relatively undeveloped and would prefer that it remain that way. These are the people that will be most directly impacted by the renewable energy parks. However, many of these same residents are aware of the need to move quickly to address climate change and greatly increase renewable energy production. The inclusive stakeholder process used to develop the *RES 2030* is an example of the type of stakeholder process that could be used to cooperatively identify the most suitable sites for renewable energy parks. Without such a stakeholder process, the development of renewable energy parks in the backcountry will almost certainly experience delays and unnecessary controversy.

The power generation profile of concentrating PV and tracking PV closely match the daily power demand profile. See Figure 13-2. As a result, both of these technologies are good candidates to serve as peaking power supplies on hot summer days. The CEC recently compared the lifecycle cost of a host of power generation technologies and determined the lifecycle cost of power generation from concentrating PV is considerably lower than the cost of generation from a peaking gas turbine.[148] This further reinforces the advisability of the development of a renewable energy park using concentrating PV or tracking PV to demonstrate that such installations can serve as reliable peaking units on the hottest summer days (when the sun is always shining).

Figure 13-2. Daily Power Generation Profiles of Concentrating PV and Tracking PV

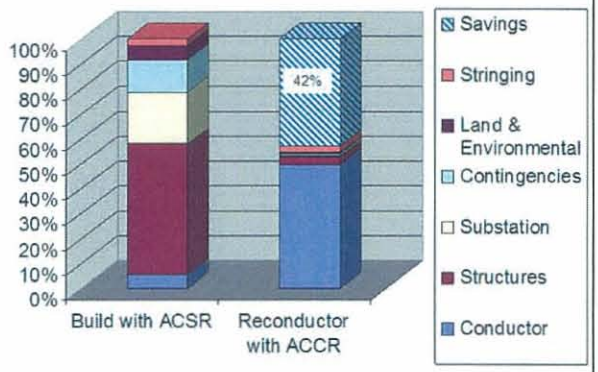


The existing 69 kV system should be capable of handling hundreds of MW of power generation from individual 1 to 10 MW solar installations in rural areas of the county. Should these renewable parks develop rapidly; the capacity of the 69 kV system can be approximately doubled by reconductoring the existing lines with commercially available high temperature, low sag

conductor technology. The location of these 69 kV lines is shown in Figure 13-3a. The capacity of the 69 kV system in East County, which consists of four separate existing 69 kV lines, could be increased to the range of up to 1,000 MW total via reconductoring and transformer substation upgrades.[149] Increasing the voltage of the 69 kV grid would also be a consideration if growth of the renewable parks began to approach the capacity of an upgraded 69 kV system. Reconductoring with high temperature, low sag conductors is also an option for transmission lines with voltages up to 230 kV.

One type of high temperature, low sag conductor is manufactured by 3M Company. SDG&E has a test section of the 3M high temperature, low sag conductor on a section of a 69 kV line.[150] According to data provided by 3M, it is significantly less expensive to replace the wire on an existing 69 kV line with this type of high temperature, low sag conductor than to build a new 69 kV line. The relative cost of reconductoring an existing 69 kV line compared to a new 69 kV line is shown in Figure 13-3b.

Figure 13-3. Existing SDG&E 69 kV Grid and Relative Cost of a New Stand-Alone Transmission Line Versus Reconductoring with Composite Line to Double Capacity[151,152]

a. Existing SDG&E transmission lines: 69 kV (blue), 230 kV (green), and 500 kV (red)	b. Reconductoring versus new conventional transmission line to achieve same capacity increase: 42 percent cost savings
	

ACSR: aluminum conductor steel reinforced (conventional); ACCR: aluminum conductor composite reinforced

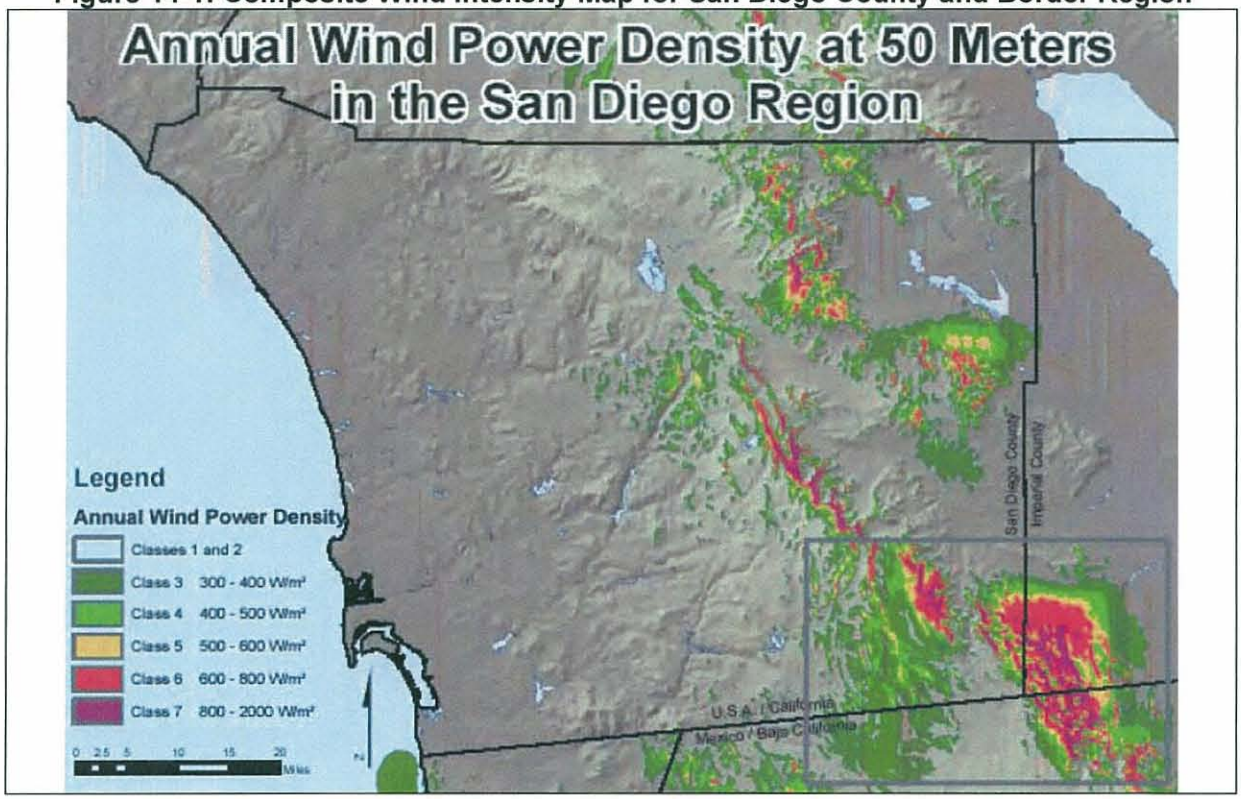
14. Utilizing the Wind Resource – What Are the Tradeoffs?

The regional wind resource is excellent, with a combined potential of 1,650 to 1,830 MW in eastern San Diego County and across the border in Baja California.[153] The high wind resource locations are shown in Figure 14-1. SDG&E has a power purchase agreement with a 50 MW wind farm located 60 miles east of San Diego. Fenosa, a Spanish firm, recently announced plans to develop a 500 MW wind farm just across the border in an area of Baja California called La Rumorosa. The power will be exported to California. Sempra Energy has announced the

company has purchased co-development rights for 250 MW of wind power in La Rumorosa as well, and that this power will be imported along SDG&E's existing 500 kV Southwest Powerlink (Southwest Powerlink is the red line along the border in Figure 13-3a).[154]

Wind power is a fully commercial technology and is cost-effective, in the range of $0.05 to $0.07/kWh.[155] However, the regional wind resource is strongest is at night and in non-summer months when electricity demand is relatively low. The wind resource tends to be weakest on summer days, when demand is highest. The high value wind resource sites also tend to be located in areas of spectacular natural beauty that are among the last large regional undisturbed habitats of a number of threatened and endangered species. This means that locating large wind farms in San Diego County will be controversial unless there is a credible preliminary process, similar to the process described above for renewable energy parks, which identifies selected areas that are suitable and other areas that should be off-limits to wind projects.

Figure 14-1: Composite Wind Intensity Map for San Diego County and Border Region



Wind power is considerably less capital intensive than PV on a MW basis. The inclusion of a significant amount of wind power to reach the 50 percent GHG reduction target by 2020 would result in lower cost to reach the goal than a strategy based exclusively on PV. In addition to the 500 MW Fenosa project just over the border, wind developers have requested transmission access for over 800 MW of wind projects in eastern San Diego County. This is a total of approximately 1,300 MW of wind capacity. If half this wind capacity gets built to serve the San Diego area, approximately 600 MW, this new wind energy will provide about 10 percent of the San Diego region's energy needs in 2020 and about 20 percent of the targeted GHG reduction.

This quantity of wind power would equal the annual energy output of approximately 1,000 MW of PV capacity.[156]

However, no peak power demand contribution can be assigned to the regional wind resource. As noted, the wind trends to be strongest in evening hours and non-summer months. Effective energy storage would be necessary for wind power to reliably contribute to meeting peak power demand. Practical solutions to this challenge are: 1) pumped storage between reservoirs of different elevations in the county, 2) utility-scale battery storage with sodium-sulfur batteries, or 3) the advent of large numbers of plug-in hybrid vehicles that would allow wind energy feeding into the grid at night to charge vehicles. These vehicles would be plugged into the grid during the day when the owner is at work and would be available to feed back into the grid to meet rising demand during the day. These energy storage options are discussed in more detail in Section 15.

15. Energy Storage – Maximizing Renewable Energy Benefits

Energy storage systems allow intermittent renewable energy to be stored and used during periods of peak demand and highest electricity rates. Energy storage also allows work to be done during periods of low demand and low electricity prices. Examples include the production of chilled water or ice for air conditioning systems in the evening for use during the peak demand period the following day, to reduce peak energy demand and avoid paying peak electricity prices. These systems are briefly described in the following paragraphs.

15.1 Battery storage for fixed rooftop PV

The electricity production from fixed rooftop PV systems typically declines by 3 pm. Yet the peak demand generally occurs in the 3 pm to 6 pm period. Therefore, only a portion of the PV system's capacity is available during the period of greatest demand. However, by adding a modest amount of battery storage to the system, 2 to 3 hours, the PV system can consistently supply power at or near its rated capacity during the afternoon peak. SCE is currently conducting a demonstration test of rooftop PV systems equipped with Gaia Power Tower energy management/battery storage systems operating as peaking power systems.[157] Adequate battery storage makes PV a much more valuable contributor to meeting peak demand than a fixed system with no battery storage.

Battery storage systems built with PV systems are eligible for the same tax credits as the PV systems.[158] These battery systems represent dependable power that can be dispatched by the utility during periods of peak demand and recharged at night when demand and prices are low. Adding limited battery storage to PV systems is today's off-the-shelf equivalent to what the plug-in hybrid automobile may be one day in the future. SDG&E is currently proposing a critical peak rate of $1.20/kWh. Battery storage will rapidly pay back in a dynamic pricing environment where battery power receives a critical peak price premium.

15.2 Large-scale utility battery storage

The Japanese are investing heavily in high-temperature, sodium-sulfur batteries for utility load-leveling applications. Approximately 150 MW of utility peak-shaving batteries are in service in Japan. American Electric Power, whose subsidiaries include electric utilities in the Indiana, Ohio, West Virginia area, is planning to install 35 MW of peak shaving sodium-sulfur batteries by 2017. Large-scale battery storage options are discussed in detail in **Attachment L**.

15.3 Thermal energy storage for air conditioning systems

Air conditioning systems that include thermal energy storage dramatically reduce the peak electrical demand of these systems. As noted above, thermal energy storage, in the form of cold water or ice, also allows work to be done during periods of low demand. This reduces peak energy demand and minimizes peak electricity prices paid by the owner. **Attachment H** includes a pair of thermal energy storage diagrams that explain how chilled water and ice thermal energy storage systems work.

15.4 Pumped hydroelectric storage for wind power

San Diego has one major pumped storage project, the Lake Olivenhain-Lake Hodges 40 MW pumped storage project. Lake Olivehain is located at a significantly higher elevation than Lake Hodges. Water will be pumped from Lake Hodges to Lake Olivenhain during periods of low electricity demand, generally at nighttime, and sent from Lake Olivenhain to Lake Hodges by gravity to drive a hydroelectric turbine during periods of high electricity demand. A description of this project is provided in **Attachment M**.

15.5 Plug-in hybrid cars as peaking power plants

Plug-in hybrids could also fill the role of peaking power plants during periods of high demand. Battery-powered cars would serve as storage for energy generated in the evening, a period of relatively low demand and low electricity prices, and would discharge the power at peak demand times from a two-way electrical connection in the parking garage.

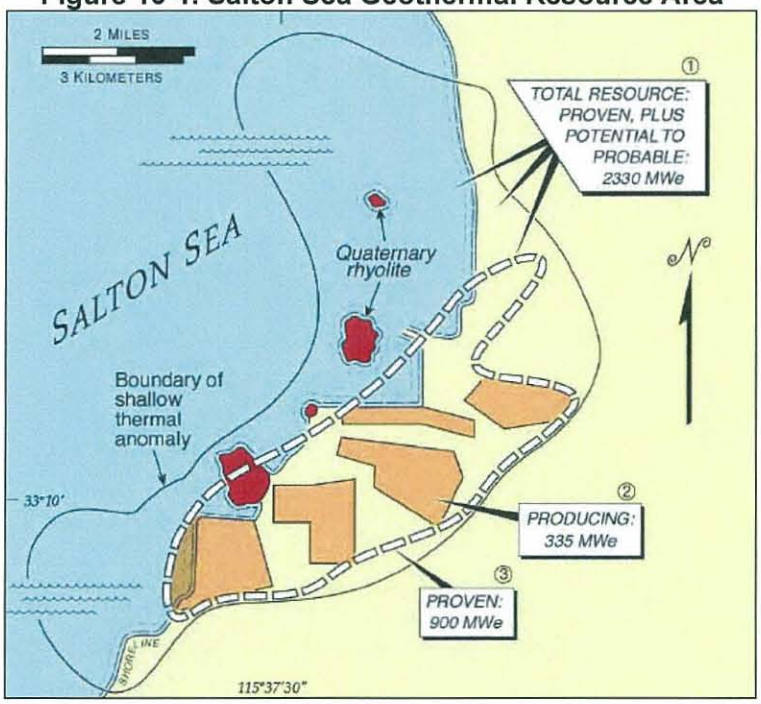
Google and PG&E will test six Toyota Prius and Ford Escape hybrid vehicles modified to run partly on electricity from the power grid.[159] One vehicle has been modified to send electricity back to PG&E. This test takes the hybrid a step further by using extra batteries to hold spare energy. PG&E will send wireless signals to the car while it is parked and plugged-in to determine its state of charge. PG&E can then recharge the batteries or draw out power. If there were thousands of such vehicles connected to the grid, the utility could store power produced in slack hours until it was needed at peak times.

The South Coast Air Quality Management District, which covers the entire greater Los Angeles-Long Beach-Riverside areas, is recommending the deployment of 100,000 plug-in hybrids by 2014 and up to 1,000,000 by 2020 in its 2007 Air Quality Management Plan.[160]

16. Geothermal Power – Is It Sustainable?

The geothermal resource in Imperial County is also significant, with a near-term potential of 800 MW.[161] Approximately 400 MW of geothermal power is already in production in Imperial County. The primary geothermal resource is located at the south end of the Salton Sea. See Figure 16-1. A major advantage of geothermal power is that it is available 24 hours a day, 7 days a week, in contrast to intermittent solar and wind resources. The cost of power production is also relatively low, in the range of $0.05 to $0.07/kwh.[162] However, the geothermal fluid in Imperial County is very high in solid content, approximately 20 percent, and these solids contain a high concentration of metals. The principal geothermal developer in Imperial County, CalEnergy, briefly experimented with refining zinc from the geothermal solids several years ago. Low zinc commodity prices made the zinc refining operation unprofitable and it was discontinued.

Figure 16-1. Salton Sea Geothermal Resource Area



Geothermal plants in the Imperial Valley are also large consumers of water. This water is primarily consumed in the evaporative cooling towers that are used to condense the geothermal steam after it passes through the power turbine. Much of the water used in the cooling tower is condensed geothermal reservoir fluid. This is geothermal fluid that does not get recycled back into the geothermal reservoir to maintain reservoir pressure. A concern with this approach is that as more and more geothermal plants are built in Imperial County, the pressure in the geothermal reservoir(s) may go into permanent decline and a potentially sustainable resource may become unsustainable.

This issue can be addressed by using a combination wet-dry cooling system that would reduce cooling tower water consumption by 80 to 90 percent. However, geothermal plants are very

expensive to build. These plants will not be built to minimize the consumption of geothermal fluid in the cooling towers without state regulations that require minimum water use in geothermal plant cooling systems. It is unclear whether geothermal power development in Imperial County can be considered sustainable given the unknowns surrounding the impact of increasing consumptive use of geothermal fluid for evaporative cooling as more geothermal plants are built.

17. Rapid Expansion of Combined Heat and Power

Distributed generation systems are any power generators that generate power at the point of use. These systems can be renewable energy, such as rooftop PV, or highly efficient natural gas-fired "combined heat and power - CHP" systems. CHP have the lowest GHG footprint of any fossil fuel power generation system (639 lb CO_2 per MWh, compared to 819 lb CO_2 per MWh for combined cycle power plants and 1,170 lb CO_2 per MWh for peaking gas turbine power plants).[163]

Another benefit of CHP and other forms of distributed generation when compared to bulk transmission or central station power plant additions is reducing the consequences of single-point failures related to the outage of large transmission lines and power plants. Reducing exposure to system failures increases the overall security of local energy supply.

CHP facilities typically produce in the range of 1 to 20 MW of electric power. The hot exhaust gases from the combustion process, a small gas turbine or stationary reciprocating engine, are used to make steam or hot water for onsite use. The steam can be used for both heating and cooling. For example, steam can be used to drive a highly efficient centrifugal chiller to provide cooling in summer. That same steam can be used as a source of heat in winter, or by onsite processes that require steam.

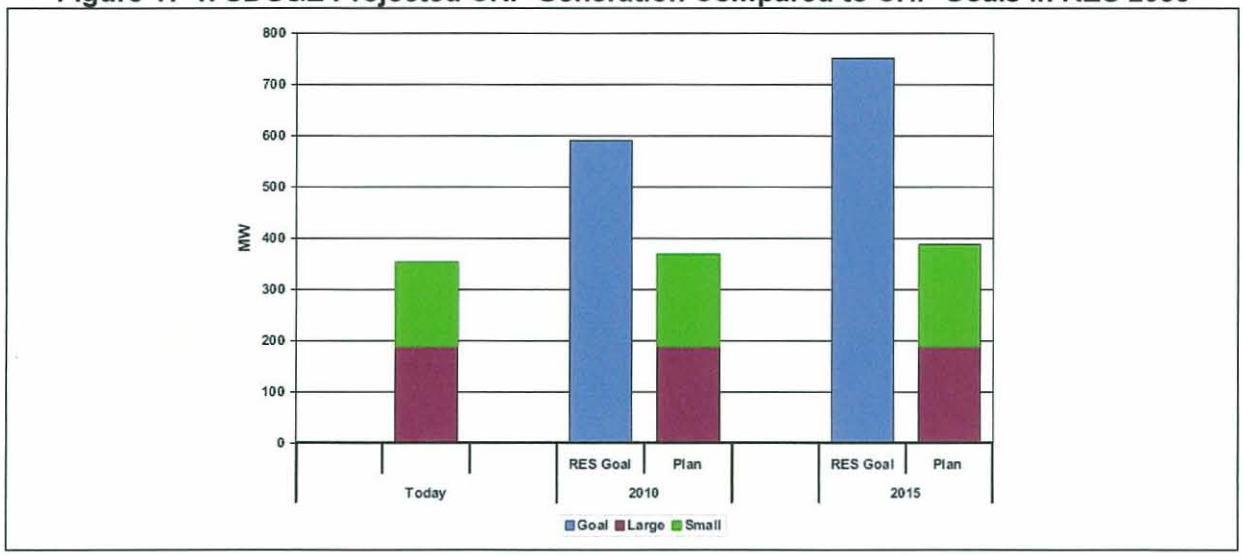
Rapid expansion of CHP power generation is a priority goal in the *Energy Action Plan*. *Energy Action Plan II* states (p. 9): "*Develop tariffs and remove barriers to encourage the development of environmentally-sound combined heat and power resources and distributed generation projects.*" The *Energy Action Plan* prioritizes CHP over large central power plants.

RES 2030 calls for 1,100 MW of CHP by 2020. There are currently less than 400 MW of CHP capacity in the San Diego region. Achieving the *RES 2030* target of 1,100 MW CHP capacity by 2020 means 700 MW of CHP must be added in the region. This is the equivalent of a "virtual" South Bay Power Plant replacement in terms of MW capacity, and would negate the need to construct another baseload power plant in the region.

The CEC "road map" for CHP development calls for CHP to provide 25 percent of peak load by 2020. SDG&E is projecting a peak load in 2016 of 5,060 MW. Twenty-five percent of 5,060 MW is 1,265 MW. Yet SDG&E projects almost no increase in CHP capacity over the next decade.[164] SDG&E estimates total large and small CHP at approximately 390 MW in 2015 as shown in Figure 17-1 (SDG&E projections are the green and purple bars labeled "Plan").[165] This

is in contrast to the *RES 2030* goals of 590 MW of CHP by 2010 and 1,100 MW of CHP by 2020.

Figure 17-1. SDG&E Projected CHP Generation Compared to CHP Goals in RES 2030



The CEC indicates that significant energy policy changes will be necessary to accelerate the development of CHP in California. The March 2007 *Distributed Generation and Cogeneration Policy Roadmap for California* report prepared by CEC staff calls for ten more years of subsidies for distributed generation technologies.[166] These include incentive payments for CHP under the CEC's self-generation program. Making such policy changes, according to the report, could turn distributed generation from a nascent technology that makes 2.5 percent of peak power to a significant provider that meets 25 percent of the state's peak power needs by 2020.
Among the changes envisioned by the CEC to generate a quarter of the state's power from off-grid distributed generation are transparent dynamic rates for electricity. The report also recommends removing institutional barriers. For instance, distributed generation has been hampered by a lack of uniform rules and standards that could speed installation of equipment.

There are approximately 240 candidate sites for conventional combined heat and power facilities in San Diego County.[167] These include large private employers, large city and county government centers, military bases, large hospitals, large hotel complexes, large shopping complexes, and large universities and colleges. Some of these sites already operate CHP plants, such as the University of California San Diego, San Diego State University, Children's Hospital, and Qualcomm.

A number of relatively large cogeneration (power and steam) plants are also located on military bases in the San Diego area and sell power to SDG&E. These plants are known as "qualifying facilities" and date from the 1980s. These plants "qualified" for a financially attractive electric rate, known as the Standard Offer 4 (SO-4) contract, which was developed in California to promote the construction of high efficiency cogeneration plants and renewable energy resources. The utilities were required to purchase all power generated by these facilities under the terms of the SO-4 contract.[168]

Utility tariffs more favorable to distributed generation are needed according to the March 2007 CEC policy roadmap. A favorable rate structure that accurately reflects the benefits of CHP is essential to expand the development of CHP in the San Diego area. SDG&E's proposed critical peak pricing tariff of $1.20/kWh is an example of a tariff that would greatly improve the economics of CHP.[169] This rate would apply for up to 126 hours per year. A CHP plant selling 2,000 kW to SDG&E for 126 hours at $1.20/kWh would receive $302,400 in revenue in return. The cost of fuel to provide this power would be in the range of $15,000 to $20,000.[170]

Applying a favorable tariff, like the PG&E A-6 tariff, to CHP in the San Diego region would also dramatically improve the financial attractiveness of CHP. The summer peak A-6 tariff is $0.319/kWh (see Table 10-2). The summer peak in SDG&E service territory is May 1 through September 30, from 11 am to 6 pm, a total of 1,071 hours per year. The total revenue from generating 2,000 kW at the A-6 rate for 1,071 hours is $683,000. The fuel cost to produce this power would be in the range of $150,000, leaving over $500,000 in net revenue. The revenue generated from power sales at the peak rate alone would nearly cover the financing of the CHP plant.[171]

SDG&E must also take all the excess power generated by CHP facilities to maximize the benefit of these plants to the region and to ensure the plants are operating at maximum efficiency. As noted, SDG&E recently established a precedent for taking excess power from CHP facilities when the company signed a contract in October 2006 to take excess power from the Children's Hospital CHP plant.

The SDG&E prohibition on CHP plants supplying power to adjacent buildings under different ownership creates an artificial barrier to CHP development in San Diego County as well. Similar facilities that individually are too small to support a dedicated conventional CHP plant, such as medium-sized hotels or commercial office buildings, are often clustered together. CHP would be significantly more cost-effective and fuel efficient if these "clusters" could be served by the same conventional CHP plant. This impediment must be addressed if the goal of adding 700 MW of CHP by 2020 is to be realized.

Smaller scale CHP options are now also available. The Sheraton Hotel and Marina on Harbor Island has a long-term agreement with Alliance Power for 1.5 MW stationary fuel cell power plant that supplies 70 percent of the hotel's electric power demand. The waste heat from the units is used to heat swimming pools and for domestic water heating. The plant consists of two fuel cells, a 1 MW unit and a second 0.5 MW unit. The 1 MW unit went online in December 2005, the 0.5 MW unit in mid-2006. A description of this project is provided in **Attachment N**.

Microturbines combined with absorption chillers are another example. United Technologies markets microturbine-absorption chiller packages under the trade name "PureComfort®." Systems are offered at 240 kW, 300 kW, and 360 kW. The hot exhaust gas is utilized in an absorption chiller/heater. The efficiency of this system can reach 90 percent. PureComfort® systems are installed at the Reagan Library in Simi Valley, California and the Ritz-Carlton Hotel in San Francisco.[172] The availability of such small CHP packages greatly expands the potential number of candidate CHP facilities in San Diego County.

18. Natural Gas-Fired Gas Turbine Generation – Where Does It Fit?

Natural gas-fired combined-cycle and peaking gas turbine capacity will be necessary to provide power at night and during periods of cloudy or inclement weather in 2020. These conventional generation assets will also be needed to provide reliability support as experience is gained in San Diego with greater and greater levels of intermittent renewable energy power. There will not be a need for new utility-scale base load generation, beyond the 542 MW Palomar Energy and 561 MW Otay Mesa combined-cycle projects, if the deployment of CHP and PV systems meet the capacity targets in *San Diego Smart Energy 2020*.

The CEC has determined that California's combined-cycle population operates with an average capacity factor between 53 and 61 percent on average.[173] SDG&E's two combined-cycle plants will be needed to provide power in the evenings in 2020. It is possible that the capacity factor of these two plants in 2020, as a result of operating in this "load following" pattern,[174] will be comparable to the average capacity factor of California combined-cycle plants today.

By 2020 the San Diego region will be exporting considerable amounts of power during the day when the PV systems and CHP plants are operating at or near capacity. The average daytime load is likely to fluctuate between 2,000 and 2,500 MW in 2020 under *San Diego Smart Energy 2020*, yet the combined capacity of the PV systems and CHP will be approximately 3,400 MW.[175] This means daytime power generation in the San Diego area from PV and CHP will exceed demand. This power will be exported to neighboring utility districts during these times on the existing transmission system. At night only the CHP plants will be operating, and output from these plants will 1,000 MW or less. Yet the average nighttime load is likely to be in the range of 1,500 to 2,000 MW. This will require that combined-cycle plants make up the difference.

The net effect of this diurnal cycling between PV and combined-cycle in 2020 will be that slightly more combined-cycle power is used in the San Diego region, approximately 500 GWh per year, than PV power is exported to neighboring utility territories.

19. Getting Maximum Benefit from the Existing Transmission Grid

19.1 Start from the Bottom Up: Modernize the Distribution Grid

The electricity distribution system is the relatively low voltage system, 12 kV and less, that directly serves neighborhoods and commercial areas. SDG&E'S electricity distribution system includes 264 distribution substations, 977 distribution circuits, 231,112 poles, 9,351 miles of underground system, 6,712 miles of overhead systems, and various other pieces of distribution equipment. SDG&E has an aging infrastructure problem across broad categories of transmission and distribution equipment.[176]

The single largest quantity of SDG&E transformers was installed in the 1950's. Many of these transformers are either approaching obsolescence or are obsolete due to excessive maintenance requirements, operational limitations, lack of spare parts, and deteriorating condition. Aging infrastructure affects not only substation transformer banks but also wood poles and underground cable. Approximately 30 percent of SDG&E's wood poles have been in service for at least 50 years, and approximately 48 percent have been in service for 40 years. Polymeric cables remain a large contributor to SDG&E's aging infrastructure problem, in particular cables installed prior to 1983. The pre-1983 vintage cables were manufactured with poorer manufacturing processes and much less quality controls and typically did not have a jacket. SDG&E continues to invest significant capital and resources to maintain these groups of cables.[177]

Aging SDG&E distribution infrastructure continues to demand more and more maintenance and repair resources. As the age of equipment increases the amount of maintenance necessary also increases. So does the probability of failure in-service. Aging equipment becomes obsolete due to wear, technology advancements, and lack of availability of replacement parts. A large amount of SDG&E'S distribution equipment is reaching the end of its useful life.

SDG&E has correctly identified that the weakness in the transmission system is at the distribution level, the interface with homes and businesses. The immediate need is a complete overhaul of the 12 kV distribution system. This is the appropriate time to invest in a revitalization of the SDG&E distribution system using "smart grid" technological innovations.

The smart grid concept was developed by the U.S. Department of Energy's Modern Grid Initiative. To address aging transmission and distribution infrastructure, the Modern Grid Initiative seeks to create a modern – or "smart" – grid that uses advanced sensing, communication, and control technologies to generate and distribute electricity more effectively, economically and securely. Smart grid integrates new innovative tools and technologies from generation, transmission and distribution to consumer appliances and equipment.

San Diego-based SAIC evaluated the benefits of implementing a smart grid in the San Diego area in 2006.[178] The benefits identified by SAIC include:

- Reduction in congestion cost.
- Reduced blackout probability.
- Reduction in forced outages/interruptions.
- Reduction in restoration time and reduced operations and maintenance.
- Reduction in peak demand.
- Other benefits due to self diagnosing and self healing.
- Increased integration of distributed generation resources and higher capacity utilization.
- Increased security and tolerance to attacks/natural disasters.
- Power quality, reliability, and system availability and capacity improvement due to improved power flow.
- Job creation and increased gross regional product.
- Increased capital investment efficiency due to tighter design limits and optimized use of
- grid assets.

- Tax savings for the utility from a depreciation increase.
- Environmental benefits gained by increased asset utilization.

If all thirteen smart grid improvement initiatives identified by SAIC for the San Diego region are implemented, the initiatives would generate $1.4 billion in utility system benefits and nearly $1.4 billion in customer benefits over 20 years.

19.2 Existing 230 kV and 500 kV Corridors: Low Cost Upgrades Buy Big Benefits

SDG&E has two major existing transmission import corridors. Each of these corridors can be upgraded economically to provide more reliability support to the SDG&E transmission system.

Five 230 kV lines, collectively known as "Path 44," provide north-south transmission from the San Onofre Nuclear Generating Station substation, on the property of Camp Pendleton Marine Corps Base, into the San Diego urban area. The emergency transmission capacity of Path 44 is 2,500 MW. Emergency capacity in this case means the capacity when the largest import transmission line into the San Diego area, the 500 kV Southwest Powerlink (SWPL) with a rated capacity of 1,900 MW, is temporarily out-of-service.

Path 44 rating plays a key role in determining SDG&E power reliability needs. The Utility Consumer's Action Network (UCAN) has proposed that SDG&E take the actions necessary to upgrade Path 44 to allow emergency import limit for Path 44 from 2,500 MW to 2,850 MW. This upgrade would reduce SDG&E's local power reliability needs by 350 MW. UCAN estimates $111 million would be necessary to upgrade the Path 44 import capability by 350 MW.[179]

SDG&E's east-west SWPL transmission line is rated at 1,900 MW, but is currently limited to 1,450 to 1,750 MW due to transformer emergency overload concerns at the Miguel substation. The Miguel substation is the western terminus of SWPL. It is located several miles to the southeast of San Diego. There are two 230 kV/500 kV transformers at the Miguel substation. SDG&E's concern is that the outage of one 230 kV/500 kV transformer at Miguel would cause the adjacent transformer to exceed its emergency rating. One simple method to avoid this risk is to plan in advance that, if imports are above the current import limit, which varies hourly between 1,450 MW and 1,750 MW, and one transformer fails, then the other transformer will automatically be shut down as well.

SDG&E forecasts that there will be 400 to1,4 00 hours per year in the 2010 to 2020 period when power imports along SWPL to Miguel will be constrained if SPL is not built. Modifying Miguel substation transformer operations in response could save millions of dollars almost immediately. This would more than cover the implementation cost of a more complex transformer operating procedure. The cost of increasing the import limit across the Miguel transformers to 1,900 MW is essentially zero using this approach. UCAN also estimates that the incremental cost to increase Miguel outlet capacity to 2,100 MW would be between $4 and $35 million. This is a situation

where significant incremental transmission benefits can be obtained for a low incremental cost.[180]

20. Staying On Track: Loading Order and Distributed Generation Policy Initiatives

The SANDAG Energy Working Group is actively promoting legislation that would: 1) direct the CPUC to refine its current utility ratebasing policies to better reflect and support the *Energy Action Plan* loading order, and 2) direct the CEC to continue incentives for CHP installations.[181] The September 20, 2007 decision in the CPUC energy efficiency proceeding has initiated the process of bringing utility financial incentives into alignment with the loading order.[182] Two bills currently moving through the Legislature, AB 1064 (Lieber), the Self Generator Incentive Program extension legislation and AB 1613 (Blakeslee), Waste Heat and Carbon Emissions Reduction Act, could impact the rate of CHP development in California if they are passed into law.

The concept of the loading order is not unique to California. This same approach, prioritizing a package of energy efficiency, demand response, and distributed renewable and CHP generation measures, is currently being advocated in Maryland by a coalition of clean energy developers, including Solar Turbines, as a cost-effective alternative to a proposed $1.8 billion transmission line. The proposed transmission line would import coal power to meet a projected demand growth of 1,800 MW. The Maryland case is addressed in this section.

20.1 Aligning Utility Incentives with Energy Action Plan

The Energy Working Group has recommended the passage of legislation directing the CPUC to open a new proceeding to review and refine its existing utility infrastructure ratebasing policies to better align its policies with the loading order in *Energy Action Plan II*. The loading order described in *Energy Action Plan II* is shown in Figure 20-1. The new legislation would direct the PUC to develop appropriate new utility shareholder penalties and revenue opportunities for failing, meeting, or exceeding *Energy Action Plan II* loading order goals and targets.

Figure 20-1. Aligning Utility Financial Incentives with Loading Order

CA Resource Loading Order	Proposed Change
Energy Efficiency	Highest ROI
Demand Response	⇑
Renewables	Sliding Scale
Distributed Generation	⇓
Fossil-Fuel Power Plants and Related New Transmission	Lowest ROI

Current CPUC ratebasing policies provide utility shareholder incentives for the bottom of the loading order, utility-scale power plants and new transmission, but offers no shareholder revenue earning opportunities for energy efficiency, demand response, renewables, and distributed generation at the top of the loading order. This runs counter to state energy priorities and needs to be revisited by the CPUC.

The September 20, 2007 CPUC decision in the energy efficiency proceeding (R.06-04-010) has restored energy efficiency program performance-based shareholder penalties and rewards that were dropped by the CPUC in 2002. However, this proceeding is not considering any changes in current ratebasing policies, and would not address the other priorities listed in the loading order. The CPUC has not reviewed or refined its current utility ratebasing policies since 2003, the year the original *Energy Action Plan* was adopted.

The legislature and the CPUC must reorient the existing utility incentives if energy efficiency, renewable energy, and distributed generation are to be prioritized over the traditional utility steel-in-the-ground approach. The financial motivators need to be realigned so that utilities profit by supporting the *Energy Action Plan* loading order, and are penalized if they do not.

20.2 Extend Incentive Program for Clean Distributed Generation

In most parts of the U.S. and the world, CHP is recognized as an efficient and environmentally advantageous technology. Clean natural gas CHP:

- Achieves combined electric and thermal efficiencies from 60 to 90 percent.
- Avoids and or defers the need to build costly electric transmission and distribution infrastructure.
- Eliminates or reduces transmission and distribution losses, reduces or eliminates grid congestion.
- Significantly decreases GHG emissions relative to any other type of natural gas combustion.

Incentives for CHP are important to accelerate projects, to offset the many institutional and utility obstacles that are still present, and to help support industry investment in low emission technology. A 2005 CEC assessment of CHP concluded that continuation of the Self Generator Incentive Program would increase CHP by more than 40 percent over the next 15-year period with natural gas engines and turbines accounting for an overwhelming share of the new capacity additions.

The current Self Generator Incentive Program expires on December 31, 2007. The proposed legislation would direct the CPUC in consultation with the CEC to administer a Self Generation Incentive Program for ultra-clean and low-emission fossil-fuel CHP technologies, and waste gas fueled generation, that would commence on January 1, 2008, and continue to January 1, 2012.

However AB 1064 (Lieber), the Self Generator Incentive Program extension legislation in the Assembly, no longer includes a continuation of incentives for CHP. The CHP component was deleted in committee.[183] Starting January 1, 2008, only fuel cell and wind technology will be eligible for incentives in statute. Unless the incentives for CHP are reincorporated in AB 1064, this legislation will not assist in accelerating the construction of CHP capacity in San Diego County.

AB 1613 (Blakeslee), Waste Heat and Carbon Emissions Reduction Act, would encourage the construction of CHP in California if it is passed into law. This legislation would establish that the conversion of waste heat to electricity or other useful energy application is an efficiency measure for purposes of the loading order. The objective of the legislation is to add 5,000 MW of new CHP by 2015 in California.[184] This bill is awaiting Governor Schwarzenegger's signature as of October 10, 2007.

20.3 Distributed Generation as Alternative to New Transmission – Maryland Case Study

The Maryland Public Service Commission is currently evaluating a proposed 290-mile transmission line that would import power from West Virginia to Maryland. A major justification for the line is a concern over transmission congestion as electricity demand increases over time. Maryland recently signed into law legislation to add 1,500 MW of solar energy over the next 15 years. A coalition of clean energy developers is advocating that the Commission undertake a thorough study of specific renewable energy, clean CHP, and demand management "smart grid" measures as an alternative to the proposed transmission line.[185]

The clean energy coalition asserts in its August 17, 2007 letter to the chairman of the Maryland Public Service Commission that:[186]

> *We believe that this accelerated, continuous development (of peak-coincident solar energy, high efficiency distributed generation, and "smart grid" technologies) could be achieved at a ratepayer cost less than the proposed $1.8 billion with significantly reduced delivery and financial risk as compared to a single massive transmission corridor. Further, these resources would bring low-emissions generation capability into Maryland. The choice is between expending ratepayer funding on low-risk, low-emissions distributed generation, or relying on a single, controversial, high risk project that will only enable the export of our energy dollars to produce air pollution upwind.*

The Maryland clean energy industry coalition letter is provided in **Attachment O**.

21. Accommodating Growth – New Construction Must Account for Its Own Energy Needs

New construction in San Diego must "carries its own weight" in terms of electric energy demand. This can be achieved by requiring that new construction meet most or all of its projected electric energy demand through use of rooftop PV. This does not mean that new construction will necessarily be burdened with additional costs. For example, the PV program described in this report would result in lower electricity costs than purchasing electricity from SDG&E.

Numerous home builders in the Central Valley are incorporating rooftop PV into all new home construction as a standard feature.[187] This should be a standard feature for new home construction in San Diego County as well. The energy demand of new and renovated buildings should also be minimized by requiring that cost-effective green building design principles be utilized. The affect of incorporating green building principles is dramatic. California's Attorney General Jerry Brown has specifically recommended that San Diego take these actions to more effectively address climate change.[188]

In it ongoing energy efficiency proceeding, the CPUC has issued a September 17, 2007 draft decision with three initiatives described as "essential": 1) all new residential construction in California will be zero net energy by 2020, 2) all new commercial construction in California will be zero net energy by 2030, and 3) the heating, ventilation, and air conditioning industry must be reshaped for maximum efficiency. The stated motivation for moving to zero net energy demand in new structures is the revolutionary impact of global warming on the global economy.[189]

22. Conclusions

1. Climate change is a critical problem and arguably the greatest single issue of our time. The *California Global Warming Solutions Act* of 2006, AB 32, mandates a 25 percent reduction in greenhouse gases by 2020 and an 80 percent reduction by 2050. Reaching these mandates will require a more rapid transition to renewable energy sources for power generation than is currently contemplated.

2. Domestic natural gas currently used in the San Diego region will be displaced by imported liquefied natural gas in 2009. Liquefied natural gas carries an additional 25 percent "lifecycle" greenhouse gas burden relative to domestic natural gas. This displacement will nullify the greenhouse gas reductions projected by SDG&E over the next decade. Accelerated deployment of energy efficiency measures and renewable energy technology would mean considerably less dependence on volatile natural gas prices and liquefied natural gas imports.

3. The San Diego region is projected to have approximately 4,600 MW of PV potential on commercial, buildings, parking structures, and parking lots in 2010, as well as 2,800 MW

of technical potential on residential structures. The 2010 technical potential for PV is in the range of 7,400 MW. A major advantage of commercial and residential PV is the relative lack of siting controversies. Also, PV equipped with adequate (2- to 3-hour) battery storage would be a dependable energy resource during peak demand periods. 2,040 MW of PV capacity, equipped with sufficient battery support to reliably provide power at or near capacity during the 3 to 6 pm peak on hot summer days, would meet more than half of the San Diego area's peak power needs under most conditions in 2020.

4. A $1.5 billion PV incentive program would be sufficient to incentivize the construction of 2,040 MW of distributed PV in the San Diego area by 2020. The incentive program would be similar to the structure of SB1 and the California Solar Initiative, where an incentive pool of $3.35 billion is expected to add 3,000 MW of PV in California by 2017. A goal of SB1 and CSI is to reduce the cost of PV to the point where PV is cost-competitive with conventional natural gas-fired generation without incentives by 2016.

5. The expansion of rooftop commercial and residential PV systems and combined heat and power projects is currently limited by: 1) the inability to sell excess power to SDG&E, and 2) the relatively low commercial electricity rates during peak demand periods that do not reflect the real value of the electricity.

6. The *Energy Action Plan* calls for a 20 percent reduction in energy consumption to be achieved in government and commercial buildings by 2015 compared to a 2003 baseline. The San Diego region's annual energy consumption over the last few years has been approximately 20,000 GWh. Setting a real 20 percent reduction in regional energy demand compared to the 2003 baseline year as the regional energy efficiency target would mean an absolute decline in energy demand of approximately 4,000 GWh, leaving a net total energy demand in 2020 of 16,000 GWh.

7. SDG&E peak demand in 2007 was 4,636 MW. Approximately 1,500 MW of this peak load was associated with residential and commercial building cooling systems. Yet little effort or money is currently being invested in reducing the demand of these cooling systems through utility energy efficiency incentive programs.

8. SDG&E will complete the installation of smart meters at all customer locations by 2011. SDG&E projects that these smart meters will reduce peak demand by 5 percent. Smart meters with thermostat control capability were demonstrated to reduce peak load by over 40 percent during a three-year California test. The advent of smart meters also offers the potential to sequentially cycle a portion of the cooling systems drawing power from the grid. The duration of the cycling would be brief enough to avoid discomfort, yet would keep hundreds of MW of cooling system load off the power grid during periods of very high demand.

9. Central air conditioning units are the predominant residential cooling system. State-of-the-art central air conditioning units use as little as one-half the power of the "average" central air conditioning unit in the San Diego area. There is a similar gap in the energy efficiency of the typical commercial building cooling system in the San Diego area and

its potential performance with a cost-effective upgrade to variable speed motors and associated controls.

10. Lighting is an area where energy efficiency measures can have a dramatic impact. Compact fluorescent bulbs reduce energy demand by 75 percent relative to a standard incandescent bulb. Currently 10 to 20 percent of bulbs are compact fluorescent bulbs. New light emitting diode lighting technologies can also significantly reduce lighting related demand even further.

11. Refrigeration has been a modest energy efficiency success story. The average energy efficiency of refrigerators in the San Diego area improved by 22 percent between 2000 and 2005. Federal "energy star" efficiency standards for refrigerators have been a factor. Consumer interest in energy efficiency has also been a factor in refrigerator purchasing decisions, supported by limited rebates offered by SDG&E.

12. Upgrading existing buildings to current Title 24 structural weatherization standards or beyond is cost-effective. The *Energy Action Plan* calls for all existing state buildings to be upgraded to meet rigorous "LEED" green building standards by 2015, and establishes the same goal for commercial buildings. SDG&E currently offers free home weatherization and energy efficient appliance replacement services to low-income customers via its "direct assistance" program. Expanding this program to include all cost-effective energy efficiency upgrades regardless of consumer income level is necessary to fully realize regional energy efficiency opportunities.

13. Rapid expansion of combined heat and power is a priority goal in the *Energy Action Plan* and *RES 2030*. The *Energy Action Plan* prioritizes combined heat and power over large central power plants. There is currently less than 400 MW of combined heat and power capacity in the San Diego area. 700 MW of combined heat and power must be added to meet the *RES 2030* target of 1,100 MW of combined heat and power capacity by 2020.

14. There will not be a need for additional utility-scale base load generation, beyond the 542 MW Palomar Energy and 561 MW Otay Mesa combined-cycle projects, if the deployment of combined heat and power meets *San Diego Smart Energy 2020* targets. If *San Diego Smart Energy 2020* milestones and targets are met, there will be no need to add additional peaking gas turbine capacity.

23. Recommendations

23.1 Greenhouse Gas Reduction

1. San Diego should reduce its greenhouse gas emissions from power generation at the maximum rate that is cost-effectively achievable. Implement a strategic energy program targeting a 50 percent reduction in greenhouse gas emissions by 2020. This target will put San Diego on par with California's two largest cities, San Francisco and Los Angeles, which have committed to 51 percent renewable energy by 2017 and 35 percent renewable energy by 2020, respectively. The 50 percent reduction in greenhouse gases will be achieved at a cost that maintains electricity rates at or below current utility rates.

2. Decouple SDG&E profit from traditional power plant and transmission line ratebase revenue streams. Couple profit to achieving: a) greenhouse gas reduction benchmarks, and b) *Energy Action Plan* loading order.

23.2 Energy Efficiency

1. Achieve an absolute 20 percent reduction in energy consumption relative to a 2003 baseline, from 20,000 GWh to 16,000 GWh.

2. Greatly expand the number and pace of energy efficiency retrofits of all non-Title 24 residential buildings and all commercial buildings in the San Diego area. Retrofits in warm and hot areas of SDG&E service territory are first priority, including Borrego Springs, El Cajon, La Mesa, Lemon Grove, Santee, Lakeside, Ramona, Poway, and Escondido.

3. The Center for Sustainable Energy, or an equivalent third party entity, should conduct the energy efficiency audit program. Expand staff as necessary to audit 10 percent of non-Title 24 residential buildings and 10 percent of commercial buildings without LEED certification per year during the 2008 through 2017 period.

4. Weatherize 10 percent of non-Title 24 residential buildings to the Title 24 standard and 10 percent of commercial buildings without LEED certification to the LEED-EB standard per year in the San Diego area beginning in 2008. Include all residential and commercial structures with a weatherization energy savings payback of ten years or less in the program. Weatherization cost should be borne by the utility or the CCA (whichever structure is in place).

23.3 Peak Demand Reduction

1. Achieve an absolute 25 percent reduction in peak demand relative to a 2006 baseline, from 4,636 MW to 3,500 MW. Twenty percent of this demand reduction would result from energy efficiency upgrades. Five percent of this demand reduction would result from use of smart meter technology and real-time dynamic pricing.

2. Maximize the demand response potential of smart meters combined with automatic thermostat controls to the degree technically feasible.

3. Establish a minimum target of 85 MW per year absolute reduction in peak demand, for a total of 1,100 MW peak demand reduction by 2020, with an emphasis on cost-effective central air conditioner and central plant upgrades. Combine cooling system upgrades, lighting retrofits, and weatherization projects to the degree possible to achieve maximum demand reduction.

24.4 Renewable Energy

1. Establish $1.5 billion capital incentive budget to add 2,040 MW of PV by 2020. Equip the PV systems with adequate battery storage to allow operation as peaking power units during summertime peak demand periods. Prioritize installation of commercial and residential PV over other forms of renewable energy for the following reasons: acceptable cost-effectiveness, minimal environmental impact, lowest potential to generate siting controversies, and production of energy when it is most needed.

2. SDG&E should establish a distributed generation rate structure that accurately reflects the peak demand benefits of renewable and combined heat and power distributed generation. The rate structure should be modeled on PG&E's A-6 tariff. This tariff has resulted in a high number of applications for commercial PV installations in PG&E service territory.

3. SDG&E should expand the policy of accepting all excess electricity generated from renewable energy and combined heat and power distributed generation provider. SDG&E established the precedent for this policy with the October 2006 contract signed with Children's Hospital of San Diego to accept excess electricity from Children's 3.5 MW combined heat and power plant.

4. Construct one 5 MW concentrating PV renewable energy park in San Diego County by 2010 to demonstrate such a unit can reliability serve as peaking capacity on hottest days.

5. Consider incorporating lower-cost renewable energy, specifically East County wind power, if candidate sites can be identified with acceptably low environmental and social impacts.

23.5 Combined Heat and Power

1. Add 700 MW of combined heat and power capacity by 2020. CHP has the lowest GHG emissions of any natural gas-fired generation option. This objective is consistent with AB 1613 target of adding 5,000 MW of CHP in California by 2015. An additional 700 MW of combined heat and power capacity in San Diego County would displace the need for a new baseload power plant in the region (beyond the 561 MW Otay Mesa project that is currently under construction).

23.6 Transmission and Distribution

1. Renovate the SDG&E12 kV distribution system. Utilize smart grid technological innovations to improve the performance of the distribution system, to reduce congestion costs and enhance the integration of PV and combined heat and power distributed generation sources.

2. Reinforce the existing north-south high voltage transmission corridor capacity (Path 44) to cost-effectively increase emergency import-export capacity from 2,500 MW to 2,850 MW. Increase the capacity of the east-west corridor (Southwest Powerlink) by upgrading transformers to increase rating from 1,900 MW to 2,100 MW of flow on a continuous basis.

23.7 New Construction

1. Require all new residential and commercial construction to be net zero energy demand. This means these structures incorporate state-of-the-art energy efficiency measures and are equipped with sufficient PV capacity to address the estimated annual energy demand of the structure.

24. Glossary

Term	Symbol	Definition
Advanced Metering Infrastructure	AMI	SDG&E $572 million project to install electronic electric and natural gas meters at all customer locations by 2011.
Baseload	--	The minimum amount of power required at most/all times in the utility service territory. In SDG&E territory the baseload power requirement is in the range of 1,500 to 2,000 megawatts.
Baseload power plant	--	A power plant that operates on a continuous basis at or near its output capacity.
California Energy Commission	CEC	California Energy Commission
California Independent System Operator	CAISO	California Independent System Operator
California Public Utilities Commission	CPUC	California Public Utilities Commission
Combined heat and power	CHP	Small natural gas-fired power plants less than 20 MW capacity that use hot exhaust gas from the combustion process to make steam for use in heating or cooling systems.
Community Choice Aggregation	CCA	Legal option available to California cities and counties to become electric power purchasers and generators independent of an investor-owned utility.
Demand response	DR	Actions that reduce electric power consumption during periods of peak demand.
Distributed generation	DG	Electric power that is generated at the point of use. This can be renewable power, such as rooftop solar panels, or small natural gas-fired combined heat and power plants serving businesses, universities, hospitals, and government facilities.
Fossil fuel	--	Natural gas, oil, and coal.
Gigawatt	GW	One million kilowatts, or one thousand megawatts. One gigawatt equals the electricity demand of ten million 100-watt incandescent light bulbs.
Gigawatt-hour	GWh	An electricity demand of one million kilowatts for one hour or one thousand megawatts for one hour.
Greenhouse gases	GHG	Gases that trap heat in the atmosphere and lead to an increase in ambient temperature. Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are prominent greenhouse gases.
Kilowatt	kW	Unit of measure of electrical output. One kilowatt equals the electricity demand of ten 100 watt incandescent light bulbs.

Kilowatt-hour	kWh	One kilowatt of usage for one hour. This is the approximate average continuous electricity demand of a typical single family home.
Imperial Irrigation District	IID	Public utility that serves Imperial County.
Investor-owned utility	IOU	Investor-owned utilities are private power monopolies that are regulated by the California Public Utilities Commission. There are three investor-owned utilities in California: Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric.
Lifecycle cost	--	Estimated levelized cost of a power generation technology over a 30-year period.
Long-Term Procurement Plan	LTPP	SDG&E's 2007-2016 strategic resource planning document submitted to the CPUC for approval in December 2006.
Los Angeles Department of Water & Power	LADWP	Public utility that serves the City of Los Angeles.
Megawatt	MW	One thousand kilowatts. One megawatt equals the electricity demand of ten thousand 100-watt light bulbs.
Pacific Gas & Electric	PG&E	Investor-owned utility that serves northern and central California.
Peak load		Peak load is the maximum electricity demand experienced during the year. Peak load occurs during hot summer afternoons when air conditioners are running at maximum rates.
Peaking power plant		A power plant that is used only during periods of peak electricity demand.
Photovoltaic	PV	Process of converting light energy into electric power.
Public utility	---	A non-profit electric utility that is a component of the public services provided by a municipal, county, or regional government.
San Diego Regional Energy Strategy 2030	RES 2030	Strategic regional energy plan adopted by SANDAG Board of Directors in July 2003.
San Diego Association of Governments	SANDAG	Regional planning agency representing all incorporated cities in San Diego as well as county government.
San Diego Gas & Electric	SDG&E	Investor-owned utility that serves San Diego County and the extreme southwestern tip of Orange County.
Southern California Edision	SCE	Investor-owned utility that serves part of central California and all of southern California with the exception of San Diego and Imperial Counties.
Sunrise Powerlink	SPL	SDG&E's proposed 500 kV, 1,000 MW transmission line.
The Utility Ratepayers Network	TURN	Utility consumer's non-profit advocacy group based in San Francisco.
Utility Consumer's Action Network	UCAN	Utility consumer non-profit advocacy group in San Diego.

[1] CPUC A.05-12-014, SDG&E Sunrise Powerlink Transmission Project Purpose and Need, December 14, 2005, p. I-13.
[2] CPUC A.05-12-014, SDG&E Sunrise Powerlink application for Certification of Public Convenience and Necessity, Vol. II, August 4, 2007, p. III-9. "*In order to achieve a 20% renewable generation mix by 2010 based* on a 2009 forecast bundled customer retail sales benchmark of 17,418 GWh, SDG&E must obtain a total of approximately 3,484 GWh of renewable energy."
[3] CPUC, *Progress of the California Renewable Portfolio Standard as Required by the Supplemental Report of the 2006 Budget Act – Report to the Legislature*, April 2007, p. 7, Table 2, footnote 6. "Contracted and short-listed RPS capacity (MW) associated with the Sunrise Powerlink could potentially be carried over the (existing) Southwest Powerlink.
[4] CPUC A.05-12-014, SDG&E Sunrise Powerlink application for Certification of Public Convenience and Necessity, Vol. II, August 4, 2007, p. IV-46. "*So, while it is reasonable to expect that the Commission's 2010 renewable resource goals could be physically achieved even if the Sunrise Powerlink were not built, . .*"
[5] SDREO PowerPoint on CSI program, presented to SANDAG EWG, March 17, 2007.
[6] http://www.gosolarcalifornia.ca.gov/csi/faqs.html
[7] K. Johnson - CPUC, *California Solar Energy Policy*, presentation given at 11th National Renewable Energy Marketing Conference, December 6, 2006.
[8] J. Clinton - CPUC, *Energy Action Plan – California Solar Initiative*, PowerPoint presentation, CPCU-CEC Joint Meeting, Sept. 18, 2006.
[9] http://www.energy.ca.gov/energy_action_plan/2005-09-21_EAP2_FINAL.PDF
[10] CPUC Decision 06-02-032, *Order Instituting Rulemaking to Promote Policy and Program Coordination and Integration in Electric Utility Resource Planning - Opinion On Procurement Incentives Framework*, Rulemaking 04-04-003, February 16, 2006.
[11] California Environmental Protection Agency, *Climate Action Team Report to Governor Schwarzenegger and the California Legislature*, March 2006, p. iv.
[12] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Volume I, 2007-2016 Long-Term Procurement Plan, p. 183.
[13] Voice of San Diego, *SDG&E Lags on Energy Efficiency Goals*, February 15, 2007.
[14] CPUC D.0709043, Published Final Decision – *Interim Opinion on Phase I Issues: Shareholder Risk/Reward Incentive Mechanism for Energy Efficiency Programs*, September 20, 2007.
[15] For example, SDG&E forecasts a total electricity demand in SDG&E service territory of 24,679 GWh in 2016, while forecasting retail sales of 19,076 GWh for that same year. The difference, 5,603 GWh, is electricity purchased by direct access customers.
[16] SDG&E and Southern California Gas Company are owned by Sempra Energy. Sempra, SDG&E, and Southern California Gas Company lobby as one entity in Sacramento.
[17] California Energy Markets, *Committee Holds 33 Percent-by-2020 RPS Bill*, April 27, 2007, p. 12. Sempra Energy lobbyist Cindy Howell said the bill (AB 94) was "premature" given that the 20 percent standard became law last year. Sempra also opposed AB 1470, the Solar Hot Water and Efficiency Act of 2007. Sempra lobbyist Cindy Howell noted that the $2.1 billion California Solar Initiative had budgeted funds for solar hot-water heaters and cautioned against a "double collection." (p. 14).
[18] Electricity is provided to Long Beach customers by SCE. However, natural gas is provided to Long Beach customers by Long Beach Energy, a public non-profit utility.
[19] E-mail correspondence from R. Freehling, Local Power, to B. Powers, May 15, 2007.
[20] California Energy Commission, *Comparative Costs of California Central Station Electricity Generation Technologies*, draft staff report, CEC-200-2007-011-SD, p. 7.
[21] E-mail correspondence from R. Freehling, Local Power, to B. Powers, May 15, 2007.
[22] Ibid.
[23] California Energy Commission, *Comparative Costs of California Central Station Electricity Generation Technologies*, draft staff report, CEC-200-2007-011-SD, p. 7.
[24] B. Powers telephone conversation with M. Johnson, Gaia Power Technologies, August 31, 2007. Suggested retail price for Gaia Power Tower for 11,000 watt PV system, with 50 kW-hr of storage, is $15,000. This price includes the inverter, storage, charge controller, and ability to grid tie. Gross cost for 11,000 watt PV system without battery storage is approximately $90,000 installed, including inverter (pro-rated from example in Table 8). The approximate retail equipment cost of inverters for this grid-tie only 11,000 watt PV system is $9,000 (source: Xantrex customer

support, Sept. 4, 2007. Three Xantrex GT4.0 inverters required for 11,000 watt system, retail price $3,130 per inverter). The net increase in gross system cost to adapt the PV system for peaking power service by substituting the grid-tie only inverter(s) with a Gaia Power Tower is less than 10 percent, from $90,000 to $96,000.

[25] Ibid, p. 7.

[26] Joseph Tomain, Richard Cudahay, *Energy Law in a Nutshell*, Thomson-West, 2004, Chapter 4, Energy Decisionmaking, pp. 130-143.

[27] Don Wood e-mail to B. Powers describing history of California IOU ratebasing policy and energy conservation efforts, June 8, 2007.

[28] 1981 CPUC Decision 93892.

[29] CPUC D.0709043, Published Final Decision – *Interim Opinion on Phase I Issues: Shareholder Risk/Reward Incentive Mechanism for Achieving Energy Efficiency Goals*, September 20, 2007.

[30] Sempra Energy press release, May 2, 2007: http://www.shareholder.com/sre/ReleaseDetail.cfm?ReleaseID=240324

[31] Sempra Energy, U.S. Department of Energy Presidential Permit No. PP-235-02 for Termoeléctrica U.S. LLC, April 18, 2001.

[32] CFE, *Generation and Transmission Expansion Plan – Baja California System, 2003-2007*, presented at CAISO Southwest Transmission Expansion Plan meeting, San Diego, March 13, 2003. http://www1.caiso.com/docs/2003/03/24/2003032411203218418.pdf

[33] CPUC proceeding A. 06-08-010, SDG&E Sunrise Powerlink application, Michael Shames/UCAN rebuttal testimony, June 15, 2007.

[34] Ibid.

[35] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Volume I, 2007-2016 Long-Term Procurement Plan, p. 207.

[36] California Energy Commission, *Natural Gas Market Assessment – Preliminary Results*, staff draft report, in support of CEC 2007 Integrated Energy Policy Report, CEC-200-2007-009-SD, May 2007, p. 3.

[37] CPUC Decision 04-09-022, *Rulemaking 04-01-025 to Establish Policies and Rules to Ensure Reliable, Long-Term Supplies of Natural Gas to California*, Phase I, Sept. 2, 2004. Findings of Fact (p. 89): 38. There is potential California customer access to LNG supplies through Otay Mesa, Ehrenberg/Blythe, Oxnard and Long Beach. 39. Designating Otay Mesa as a common receipt point for both the SoCalGas and SDG&E systems will send a signal to potential LNG suppliers that the gas they provide will have access to the utilities' systems.

[38] P. Jaramillo, Carnegie-Mellon University, *Comparative Life Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environmental Science & Technology, published online July 25, 2007, and "Supporting Information" document. All CO_2 emission factors listed in this footnote are from the "Supporting Information" document. Assume the LNG is shipped from BP liquefaction plant in Tangguh, Indonesia, 7,500-mile tanker roundtrip to Sempra LNG regasification terminal in Baja California. The raw gas feeding the Tangguh liquefaction plant contains 10 percent CO_2 which will be vented to atmosphere at the plant (source: BP Indonesia webpage http://www.bp.com/sectiongenericarticle.do?categoryId=9004748&contentId=7008786). This is equivalent to a CO2 emission rate of 12 lbs CO_2 per MMBtu, per the Carnegie-Mellon estimate of 120 lbs CO_2 per MMBtu of natural gas combusted. Assume average CO_2 generation from liquefaction (14 lb CO_2 per MMBtu without considering CO_2 content in raw gas). 7,500 miles is the same distance as Oman to the Everett, Massachusetts LNG terminal route cited in report, which generates 8 lb CO_2 per MMBtu in transport CO_2 emissions. Assume CO_2 generation from LNG regasification and storage is low due to use of seawater heating to regasify the LNG (1 lb CO_2 per MMBtu). Domestic natural gas emits a maximum of 140 lb CO_2 per MMBtu. Total additional CO_2 associated with LNG from Tangguh, Indonesia is 35 lb CO_2 per MMBtu. Incremental lifecycle CO_2 emissions associated with LNG imported from Tangguh are 35 lb CO_2 ÷ 140 lb CO_2 = 0.25, or a 25 percent increase in lifecycle CO_2 emissions.

[39] The California Energy Commission indicates that LNG from Sempra's Baja California import terminal will displace domestic natural gas from the Southwest (source: CEC Staff Draft Report, *Natural Gas Market Assessment Preliminary Results*, in support of the *2007 Integrated Energy Policy Report,* CEC-200-2007-009-SD, May 2007, p. 2. Finding: "The amount of gas produced in the Southwest, which enters California at Blythe, gradually decreases during the forecast period as natural gas imported from Mexico (Costa Azul Facility) displaces domestic production from the Southwest."). Most domestic natural gas sources serving Southern California from the Southwest, specifically the Permian Basin of West Texas and the San Juan Basin of New Mexico, have low inherent raw gas CO_2 concentrations, on the order of 1 percent CO_2 or less. The sources of natural gas used in California are shown in Attachment C, Figure 4. A number of gas fields in the Permian Basin of West Texas have elevated CO_2 concentrations. However, this CO_2 is removed at the gas processing plant and used in CO_2 enhanced oil recovery

operations. This CO_2 is sequestered permanently in the oil formation when it displaces the oil or is recycled for further use in the enhanced oil recovery operation (source: e-mail from Mark Holtz, petroleum geologist, Bureau of Economic Geology, University of Texas – Austin, to Bill Powers, September 26, 2007).

[40] New York Times, *A New Push to Regulate Power Costs*, September 4, 2007.

[41] CPUC R.06-04-09, Order Instituting Rulemaking to Implement the Commission's Procurement Incentive Framework and to Examine the Integration of Greenhouse Gas Emissions Standards into Procurement Policies. *Documentation for Emission Default Factors in Joint Staff Proposal for an Electricity Retail Provider GHG Reporting Protocol R.06-04-009 and Docket 07-OIIP-01 - Process Used to Determine Default Out-of-State Emissions factors*, June 20, 2007, p. 4.

[42] Excerpt from OLR Research Report, State of Connecticut, *Decoupling Utility Sales and Earnings*, 2005-R-0702, October 3, 2005.

[43] California Public Utilities Commission Rulemaking 06-04-10, *Rulemaking to Examine the Commission's post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification*, and Related Issues, Proposed Decision, August 9, 2007.

[44] CPUC A.05-12-014, SDG&E Sunrise Powerlink application for Certification of Public Convenience and Necessity, Vol. II, August 4, 2007, p. II-48 thru p. II-50.

[45] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Exhibits, 2007-2016 Long-Term Procurement Plan, p. 60 (of .pdf).

[46] Although San Onofre nuclear plant is physically located in San Diego County, SDG&E classifies energy from San Onofre as imported for resource planning purposes.

[47] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Volume II, 2007-2016 Long-Term Procurement Plan, p. 4.

[48] See Attachment C, Figure 1.

[49] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Volume I, 2007-2016 Long-Term Procurement Plan, p. 193-194.

[50] "Capacity factor" is the ratio of the actual power produced over time to the theoretical potential power output of a source.

[51] SDG&E 2006 statistics on residential customer demand, provided by SDREO, May 16, 2007.

[52] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region*, August 2005. www.renewablesg.org.

[53] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Exhibits, 2007-2016 Long-Term Procurement Plan, p. 193.

[54] Ibid.

[55] US News, *Southern California sets power records*, September 4, 2007.

[56] SDG&E 1999-2006 peak demand trend chart, provided by Center for Sustainable Energy, June 10, 2007.

[57] SDG&E 2007-2016 Long-Term Procurement Plan, December 11, 2006, Exhibits, p. 193.

[58] Moody's Economy.com. http://www.economy.com

[59] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Exhibits, 2007-2016 Long-Term Procurement Plan, December 11, 2006, pp. 193-194.

[60] U.S. Census Bureau, San Diego County QuickFacts.

[61] U.S. Census Bureau, Population Division, Interim State Population Projections, 2005 - Table 3:Estimate of Population Change for Counties of California and County Rankings: July 1, 2005 to July 1, 2006.

[62] U.S. Census Bureau, San Diego County QuickFacts.

[63] U.S. Census Bureau, Population Division, Interim State Population Projections, 2005 - Table 7: Interim Projections: Change in Total Population for Regions, Divisions, and States: 2000 to 2030.

[64] Economy.com. Historic population statistics through 2nd Q 2006 and forecast through 2035.

[65] San Diego Union Tribune, *July 2007 home prices*, Section D, p. 2, August 19, 2007. The sale price of resale (existing) single family detached homes in San Diego County is currently $550,000 and has averaged $550,000 to $600,000 since early 2005 per Dataquick Information Services.

[66] San Diego Union Tribune, *Job creation in county takes shape of hourglass*, September 2, 2007, p. F1.

[67] San Diego Regional Energy Office, *Strategy 2030 – The San Diego Regional Energy Strategy*, prepared for San Diego Area Governments, May 2003. http://www.energycenter.org/uploads/Regional_Energy_Strategy_Final_07_16_03.pdf

[68] Report on the Energy Working Group Assessment Process for the Sunrise Powerlink Transmission Project, November 2006, Attachment 1 to Regional Planning Committee Recommendation on the SDG&E Sunrise

Powerlink Transmission Project, agenda item No. 06-11-13, SANDAG Board of Directors meeting, November 17, 2006.

[69] SANDAG Energy Working Group meeting agenda, SDG&E 2006 Long-Term Resource Plan (LTRP), January 25, 2007, p. 36. http://www.sandag.cog.ca.us/uploads/meetingid/meetingid_1572_6487.pdf

[70] R. Caputo, B. Butler, Solar 2007: *The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Region*, American Solar Energy Society, annual conference, Cleveland, July 2007.

[71] Jim Bell, *Creating a Sustainable Economy and Future on Our Planet - San Diego/Tijuana Region Case Study*, 2nd edition, March 2007.

[72] Local Power, *Green Energy Options to Replace the South Bay Power Plant Alternative Energy Plan on the Feasibility and Cost-Effectiveness of Replacing the South Bay Power Plant by 2010 with Local, Competitively Priced Green Energy Sources,* prepared for Environmental Health Coalition, February 15, 2007.

[73] San Diego Regional Renewable Energy Study Group, www.renewablesg.org, August 2005.

[74] Jim Trauth, Envision Solar, estimate of solar parking lot potential in San Diego County, e-mail, June 13, 2007.

[75] The 25 percent estimate is expected to be quite conservative. A detailed statistical assessment would be necessary to accurately quantify the PV potential of the resource. Generally only small- or moderately-sized parking lots and parking structures that are immediately east of tall buildings would be excluded as candidates for PV installations. PV installations in parking lots immediately west of tall buildings could be oriented to maximize output during the afternoon summertime peak demand period. This would minimize or eliminate the shading effect of any building to the east.

[76] Executive Order S-20-04 by the Governor of the State of California, July 27, 2004. http://www.dot.ca.gov/hq/energy/ExecOrderS-20-04.htm

[77] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region*, August 2005. www.renewablesg.org.

[78] E-mail from Tom Blair, City of San Diego, to B. Powers, June 27, 2007.

[79] http://www.sdge.com/construction/sustainable.shtml

[80] SDG&E Sustainable Communities Program Case Study, TKG Consulting Engineers Inc. Office Building, 2004.

[81] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Exhibits, 2007-2016 Long-Term Procurement Plan, Exhibits, December 11, 2006, pp. 193-194 (of .pdf).

[82] CPUC Proceeding R.06-02-013, San Diego Gas & Electric (U 902-E), Volume I, 2007-2016 Long-Term Procurement Plan, p. 184.

[83] California Energy Circuit, *Utilities Best Efficiency Targets, are Pressured to Think Bigger*, May 11, 2007, p. 7.

[84] Itron, California Energy Efficiency Potential Study, May 24, 2006, p. ES-8, Table ES-3. Statewide technically feasible energy efficiency reductions in existing buildings combined with emerging energy efficiency technologies estimated at 58,000 GWh. Statewide economic energy efficiency reductions in existing buildings combined with emerging energy efficiency technologies estimated at 48,000 GWh.

[85] Xenergy, Inc., *California's Secret Energy Surplus – The Potential for Energy Efficiency*, Sept. 23, 2002, p. A-6.

[86] See SDG&E 2007-2016 Long-Term Procurement Plan, Volume I, December 11, 2006, p. 183, reference to 2006 Itron report.

[87] CPUC Decision 07-04-043, approval of SDG&E AMI program, April 12, 2007.

[88] SEER is relative measure of energy efficiency. A SEER 20 air conditioning unit uses one-half the energy required by a SEER 10 unit to produce the same amount of cooling.

[89] S. Okura, M. Brost, RLW Analytics, Inc., R. Rubin, SDG&E, *What Types of Appliances and Lighting Are Being Used in California Residences?*, 2005.

[90] [(21 – 10)/21] – [(13 – 10/13)] = 0.52 – 0.23 = 0.29 (29 percent)

[91] Itron, California Energy Efficiency Potential Study, May 24, 2006, Chapter 11 - Emerging Technology Energy Efficiency Potential, p. 11-5 and p. 11-6.

[92] Platts Purchasing Advisor, *HVAC: Centrifugal Chillers*, 2004.

[93] The term "kW per ton of cooling" is a measure of the electric energy necessary to operate a commercial or institutional chiller plant.

[94] One ton of cooling load is the amount of heat absorbed to melt one ton of ice in one day, which is equivalent to 12,000 Btu per hour.

[95] B. Erpelding, P.E., San Diego Regional Energy Office, *Ultraefficient All-Variable Speed Chilled-Water Plants – Improving the energy efficiency of chilled-water plants through the utilization of variable speed and the optimization of entire systems*, HPAC Engineering, March 2006, pp. 35-43

[96] B. Erpelding, P.E., San Diego Regional Energy Office, *Ultraefficient All-Variable Speed Chilled-Water Plants – Improving the energy efficiency of chilled-water plants through the utilization of variable speed and the optimization of entire systems*, HPAC Engineering, March 2006, pp. 35-43.
[97] All "number of device" and efficiency/performance estimates by device type for SDG&E service territory from S. Okura, M. Brost, RLW Analytics, Inc., R. Rubin, SDG&E, *What Types of Appliances and Lighting Are Being Used in California Residences?*, 2005.
[98] There are 1.2 million residential meters in SDG&E territory. Approximately 52 to 53 percent use central air systems based on California-wide statistics. Approximately 86 percent of these systems include central air conditioning (versus packaged HVAC systems).
[99] SEER – Seasonal Energy Efficiency Ratio.
[100] Dynamic pricing – charging customer for value of electricity at time it is used or saved. Highest prices and savings occur during summertime peak demand.
[101] CFL – Compact Fluorescent Lighting.
[102] 931 kWh/year was California average in 2000, declining to 721 kWh/year in 2005. Decline was driven by increasingly stringent federal efficiency standards.
[103] Title 24: California weatherization building standards for new residential and commercial construction.
[104] Benchmark is retrofit of TKG building in Sorrento Valley. Assumption is residential retrofits can achieve same reductions as commercial retrofits.
[105] Ibid.
[106] U.S. Green Building Council, *LEED-EB: Leadership in Energy and Environmental Design for Existing Buildings*, brochure, 2005.
[107] S. Okura, M. Brost, RLW Analytics, Inc., R. Rubin, SDG&E, *What Types of Appliances and Lighting Are Being Used in California Residences?*, 2005.
[108] Carrier product bulletin for SEER 10 model 38TKB036-34 three-ton air conditioning unit, 2004, p. 24.
[109] San Diego Union Tribune, Carrier central air conditioner advertisement on p. A-17, September 9, 2007.
[110] (4.0 kWh × 1,000 hours) –[(4.0 kWh × 1,000 hours) (10/21)] = 2,100 kWh saved. SDG&E estimates a summertime energy charge, when air conditioning units would be running, at $0.15/kWh to $0.25/kWh (source: San Diego Union Tribune, SDG&E "Stay Cool. Save Green." energy conservation announcement, August 26, 2007, p. A-17). Assuming an average summertime energy charge of $0.20/kWh, this lower electricity consumption represents a $400 annual savings.
[111] Avalanche Mechanical (Carrier installer) quote to B. Powers for 3-ton SEER 21 central air conditioning and heating unit, September 4, 2007.
[112] (4 kWh × 1,000 hr) × [(10/13) – (10/21)] = 1,172 kWh. Energy savings from selecting 3-ton SEER 21 unit over SEER 13 unit for 1,000 hours of operation.
[113] SDG&E defines the summer peak period as May 1 to September 30, 11 am to 6 pm. This is 1,071 hours per year.
[114] SDG&E presentation, *SDG&E's Time-of-Use Electric Rate Structures & Net Energy Metering*, 2007. For commercial customers SDG&E is proposing a critical peak rate of $1.20/kWh for up to 126 hours per year.
[115] The Brattle Group estimates a 40 percent reduction in peak demand is achievable with smart meters and thermostat control. May 16, 2007 report.
[116] SDG&E 2006 customer statistics – all categories. SDG&E estimates approximately 1.2 million residential customers.
[117] S. Okura, M. Brost, RLW Analytics, Inc., R. Rubin, SDG&E, *What Types of Appliances and Lighting Are Being Used in California Residences?*, 2005. In 2005, 53% of California homes had some form of cooling system.
[118] *SDG&E Low Income Energy Efficiency Programs Annual Summary and Technical Appendix – 2005 Results*, May 2006.
[119] The United States Conference of Mayors, Best Practices Guide, 2007. See: www.usmayors.org
[120] This summary is excerpted from the following two documents: California Energy Markets, *Demand Response Situation in California*, April 24, 2007, and The Brattle Group, *The Power of Five Percent – How Dynamic Pricing Can Save $35 Billion in Electricity Costs*, discussion paper, May 16, 2007.
[121] The Brattle Group, *The Power of Five Percent – How Dynamic Pricing Can Save $35 Billion in Electricity Costs*, discussion paper, May 16, 2007.
[122] CPUC A.05-12-014, SDG&E Sunrise Powerlink - Application for Public Convenience and Necessity, Vol. II, August 4, 2006, p. IV-12. AMI impacts are in support of the 4%/5% DR goals – 5% reduction in 2016.
[123] Ibid, p. II-32 and p. VI-26.

[124] June 19, 2007 and September 4, 2007 e-mail from J. Supp, California Solar Initiative program manager, Center for Sustainable Energy California, San Diego, to B. Powers.
[125] San Diego Union Tribune, SDG&E "Stay Cool. Save Green" energy conservation announcement, August 26, 2007, p. A-17. Residential energy charge varies from $0.15/kWh (low consumption rate) to $0.25/kWh (high consumption rate).
[126] J.P. Ross – Vote Solar, *Rate Design – Key to a Self-Sufficient Solar Market*, PowerPoint presentation, 2006.
[127] CPUC R07-01-047, SDG&E Phase 2 General Rate Case, proposed AL-TOU rate for commercial solar systems.
[128] J. Shaw, SunEdison, San Diego Solar Initiative financial plan - $1.5 billion incentives budget, Sept. 12, 2007.
[129] CPUC proceeding A. 06-08-010, SDG&E Sunrise Powerlink application, August 4, 2006, p. V-11. Estimated levelized cost of SPL is $174 million per year for 40 years. Total levelized cost is $174 million per year x 40 years = $6.96 billion.
[130] San Diego Union Tribune, *SDG&E could alter Powerlink plan*, September 7, 2007.
[131] PRNewswire, *Brattle Study Documents Significant Increases in Utility Construction Costs Not Yet Reflected in Current Forecasts of Retail Rate Increases*, September 6, 2007.
[132] News release, California ISO – Stage One Electrical Emergency Issued, August 29, 2007.
[133] J. Shaw, SunEdison, June 27, 2007 e-mail to B. Powers.
[134] Thomas P. Kimbis, U.S. Department of Energy, *The President's Solar America Initiative – Technology Acceptance*, August 2, 2006, p. 3.
[135] RenewableEnergyAccess.com, *PV Costs to Decrease 40% by 2010,* May 23, 2007.
[136] Press release, Gaia Power Technologies Partners with Southern California Edison to Increase Efficiency of Residential Solar Power Systems, March 27, 2007. www.gaiapowertechnologies.com/CEC_partnership.html
[137] The current gross installed cost of a residential PV system is approximately $8 per watt (see Table 8). The approximate gross cost of an 11 kW system without battery storage is $90,000. The cost of the inverter(s) for this system is approximately $9,000. Gaia Power Technologies "manufacturer's suggested retail price" for an 11 kW, 50 kWh energy management/battery system, which includes an inverter, is $15,000. The addition of the energy management/battery system adds less than 10 percent to the gross cost of the PV system.
[138] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region*, August, 2005, p. 22. www.renewablesg.org.
[139] Jonathan Lesser et al – Bates White, *Design of an Economically Efficient Feed-in Tariff*, California Energy Commission Integrated Energy Policy Report Workshop on "Feed-In" Tariffs, May 21, 2007, p. 9.
[140] e-mail communication for D. Marcus to B. Powers, September 7, 2007.
[141] B. Powers telephone conversation with Bob Martin, San Diego City Schools point-of-contact for solar roofs program, June 15, 2007.
[142] CPUC proceeding A. 06-08-010, SDG&E Sunrise Powerlink application , B. Bulter PhD testimony, June 1, 2007.
[143] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region*, August 2005. www.renewablesg.org.
[144] B. Powers telephone conversation with Scott Canada, Arizona Public Service - APS, on performance of Amonix concentrating PV at APS solar test center in Tempe, Arizona, June 27, 2007.
[145] PRNewswire, PG&E adds utility-scale solar projects to its power mix, June 27, 2007.
[146] Ibid.
[147] R. Caputo, B. Butler, Solar 2007: *The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Region*, American Solar Energy Society, annual conference, Cleveland, July 2007.
[148] CEC lifecycle power generation cost comparison study, June 12, 2007.
[149]As shown in Figure 8, there are four existing 69 kVcorridors in the eastern section of San Diego County. According to SDG&E direct testimony by Richard Sheaffer on April 14, 2006 in CPUC proceeding A.06-04-018 that the 69 kV rating of SDG&E's Escondido to Felicita 69 kV line will be increased to 137 MW using a standard steel reinforced conductor. "*Acceleration of the reconductoring of the Escondido to Felicita 69 kV line. . . The project would increase the rating of the 69 kV line from 97.5 MVA to 137 MVA using a single 1033 kCMIL aluminum conductor steel reinforced ("ACSR") conductor or equivalent.*" 137 MVA is equivalent to 137 MW. Assuming the MW capacity of a aluminum conductor composite reinforced ("ACCR") standard 69 kV line could be increased from 137 MW to at least 250 MW if it is reconductored with a high temperature, low sag line, the total capacity of the East County 69 kV grid would be increased to the range of 1,000 MW.

[150] CPUC A.05-12-014, Sunrise Powerlink, SDG&E application for Certification of Public Convenience and Necessity, SDG&E data response to Data Request Number 1, Submittal 3 of 3, November 17, 2006, p. 13. "*In July 2005, SDG&E installed three spans (total of approximately 910 ft.) of ACCR conductor on an existing 69 kV transmission line as part of this research project.*"
[151] SDG&E PowerPoint, *Transmission Constraints to Geothermal Resource Development*, CEC IEPR Committee Workshop, April 11, 2005, p 7.
[152] 3M aluminum conductor composite reinforced (ACCR) website, Benefits – Save Money, http://solutions.3m.com/wps/portal/3M/en_US/Energy-Advanced/Materials/Industry_Solutions/MMC/ACCR/Benefits/ROI
[153] San Diego Regional Renewable Energy Study Group, August 2005. www.renewablesg.org.
[154] San Diego Union Tribune, *Sempra to acquire wind farm co-rights*, June 30, 2007.
[155] R. Caputo, B. Butler, Solar 2007: *The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Region*, American Solar Energy Society, annual conference, Cleveland, July 2007..
[156] The capacity factor of the regional wind resource is ~30 percent, while it is only ~20 percent for fixed rooftop PV. This means that for the same MW capacity the wind farm is producing about 50 percent more MW-hours of energy production over the course of a year than fixed rooftop PV.
[157] Press release, *Gaia Power Technologies Partners with Southern California Edison to Increase Efficiency of Residential Solar Power Systems*, March 27, 2007. www.gaiapowertechnologies.com/CEC_partnership.html
[158]Telephone conversation between John Supp of Center for Sustainable Energy and Bill Powers, September __, 2007. The inclusion of Gaia Power Towers within the CSI incentive program is imminent.
[159] New York Times, *Google and Utility to Test Hybrids That Sell Back Power*, June 19, 2007.
[160] AQMD Advisor, Update on Plug-in Hybrid Program, Vol. 14, No. 3, May 2007.
[161] The total remaining geothermal potential in the Salton Sea area is estimated at 1,300 to 1,900 MW. However, about half of this resource is under the Salton Sea, and it is not economical to develop the under water resource with current technology. The May 2007 Salton Sea Restoration Plan envisions converting this area into dry land for geothermal development by 2025.
[162] R. Caputo, B. Butler, Solar 2007: *The Use of "Energy Parks" to Balance Renewable Energy in the San Diego Region*, American Solar Energy Society, annual conference, Cleveland, July 2007.
[163] SDG&E, 2007-2016 LTPP, Vol. 1, December 11, 2006, p. 207. Assume combined cycle heat input is 7 MMBtu/MWh, simple cycle peaking turbina is 10 MMBtu/MWh.
[164] SDG&E 2007-2016 Long-Term Procurement Plan, December 11, 2006, p. 195.
[165] Energy Working Group Meeting Notice and Agenda, *Policy Subcommittee Recommendations for Energy Working Group (EWG) Legislative Efforts*, November 16, 2006, p. 18.
http://www.sandag.cog.ca.us/uploads/meetingid/meetingid_1551_6114.pdf
[166] Excerpt from California Energy Circuit, *State Sees DG Providing 25% Peak Power*, May 11, 2007, p. 8.
[167] SANDAG SourcePoint, *Major Activity Centers in the San Diego Region*, May 2002, No. 2. Major private employers, 82 (> 500 employees); major city and county government centers, 93 (> 300 employees each); major military sites, 14 (> 3,000 employees each); major hospitals, 14 (> 200 beds); major shopping complexes, 14; large hotels, 30 (> 300 rooms); large universities and colleges, 15 (> 1,000 full time students).
[168] California Cogeneration Council, *Pre-Workshop Opening Comments of California Cogeneration Council*, June 4, 2004, CPUC R. 04-04-025, Rulemaking to Promote Consistency in Methodology and Input Assumptions in Commission Applications of Short-run and Long-run Avoided Costs, Including Pricing for Qualifying Facilities. "*The 1978 Public Utilities Regulatory Policies Act (PURPA) sought to reduce the country's dependence on oil through the development of new resources for electric generation, including renewable resources (solar, wind, biomass, geothermal, and small hydro) and the more efficient use of oil and gas in cogeneration projects. PURPA's key reforms included a requirement that the utilities must purchase the power output of qualifying cogeneration and other small power production facilities (referred to as "qualifying facilities" or "QFs") – a key step designed to encourage the development of QFs by ensuring a buyer for QF power. PURPA also required the utilities to purchase QF power at the purchasing utility's avoided cost–that is, at the cost that the utilities would have incurred themselves to produce or purchase the same energy and capacity. This avoided cost standard ensured that the utilities could not use their sole buyer power to depress the price paid to QFs In California, this Commission found that the utilities had erected barriers to QF development, including to the development of cogeneration projects. In response, the Commission took the further step of developing "standard offer" power purchase contracts, available to any QF, that governed the terms of QF power sales to the utilities. The standard offer contracts greatly reduced the barriers to QF entry, by providing QFs with access to reasonable power purchase agreements that did not require extensive negotiations with the utility. The standard offer contracts included fixed capacity payments over*

the term of the contract; these payments were based on the levelized cost of the utility's cheapest source of capacity at that time–a combustion turbine.8 Energy payments reflected the utility's operating costs that it avoided through its QF purchases (principally the costs of additional gas- or oil-fired thermal generation). Most of the state's cogeneration projects were developed and built between 1982 and 1990, under 20- to 30-year contracts which provided for the sale of excess electricity to the local utility. These long-term power purchase contracts enabled cogeneration plants to make firm commitments to supply power and steam to their host industrial and institutional facilities".

[169] SDG&E, *SDG&E's Time-of-Use Electric Rate Structures & Net Energy Metering*, PowerPoint, February 2007, p. 17. The critical peak price would apply for up to 18 events from 11 am to 6 pm (7 hours each).

[170] Assume gas turbine has a heat rate of 10,000 Btu/kWh and cost of natural gas is $7/MMBtu. Hourly fuel cost to produce 2,000 kW, assuming natural gas cost is $7/MMBtu: 2,000 kW x 10,000 Btu/kW x (1 x 10^{-6} MMBtu/Btu) x $7/MMBtu = $140 per hour fuel cost. Total fuel cost for 126 hours: $140/hr x 126 hours = $17,640.

[171] B. Powers telephone conversation with Chris Lyons, Solar Turbines. Approximate installed cost of 5,000 kW CHP plant is 1,500 per kW. If financed at 7% interest over 30 years, financing requirement is $600,000 per year.

[172] UTC webpage, PureComfort® Solution Applications. See: www.fuelcellmarkets.com/united_technologies_utc

[173] California Energy Commission, *Comparative Costs of California Central Station Electricity Generation Technologies*, draft staff report, CEC-200-2007-011-SD, p. 56.

[174] Load flowing in this case means operating near peak capacity at night and on cloudy days and at low load or offline during the day when the PV systems are operating.

[175] San Diego Solar Initiative installed PV capacity with storage – 2,040 MW; CSI installed PV capacity without storage – 300 MW; installed CHP capacity – 1,050 MW. Total is 3,390 MW.

[176] CPUC Application No. 06-12-009, SDG&E gas and electric revenue requirement and rates, prepared testimony of Caroline A. Winn on behalf of SDG&E, December 2006, p. CCAW-4 and pp. 136-142. The first three paragraphs in this section are excerpts from this testimony.

[177] Ibid.

[178] SAIC, *San Diego Smart Grid Study Final Report*, prepared for Energy Policy Initiatives Center, October 2006, pp. 1-4.

[179] SDG&E SPL application No. A. 06-08-010, *UCAN Testimony on UCAN's Alternatives and Deficiencies of SDG&E and ISO Methodologies – REDACTED VERSION*, testimony of David Marcus on behalf of UCAN, June 1, 2007, pp. 13-17.

[180] Ibid, p. 6-10.

[181] Energy Working Group Meeting Notice and Agenda, *Policy Subcommittee Recommendations for Energy Working Group (EWG) Legislative Efforts*, November 16, 2006.
http://www.sandag.cog.ca.us/uploads/meetingid/meetingid_1551_6114.pdf

[182] CPUC D.0709043, Published Final Decision – *Interim Opinion on Phase I Issues: Shareholder Risk/Reward Incentive Mechanism for Achieving Energy Efficiency Goals*, September 25, 2007.

[183] Kellie Smith, AB 1064 analysis, prepared for Senate Energy, Utilities and Communications Committee, July 2, 2007.

[184] Energy Policy Initiatives Center, summary of 2007-2008 pending California energy legislation, July 2007.

[185] J. Shaw, SunEdison LLC, F. Ramirez, Ice Energy, Richard Brent, Solar Turbines, et al, letter to chairman Steven Larsen, chairman of Maryland Public Service Commission and Karl Pfirrman, interim CEO of PJM, LLC requesting thorough study of specific renewable energy, demand management measures, and high efficiency distributed generation as alternative to proposed $1.8 billion transmission line, August 17, 2007.

[186] Ibid.

[187] Fresno Bee, *Let the sun shine: Lennar Homes plans to install solar energy systems on all its new houses*, August 22, 2007.

[188] Voice of San Diego, *AG: City's Global Warming Plan Not Tough Enough*, July 5, 2007.

[189] CPUC Commissioner Grueneich open letter on proposed decision in R.06-04-010 energy efficiency proceeding, *Interim Order on Issues Relating to Future Savings Goals and Program Planning for 2009-2011 Energy Efficiency and Beyond*, September 17, 2007.

Attachments

Attachment A: Proposed Route of Sunrise Powerlink through Anza Borrego State Park

SDG&E's preferred route for the proposed 500 kV Sunrise Powerlink transmission line will pass through the center of Anza Borrego State Park. The proposed route will follow the pathway of an existing 40-foot high, 69 kV transmission line that has been in operation since the 1920s. Anza Borrego State Park is home to the largest population in the United States of the federally-listed endangered Peninsular Bighorn Sheep. The 500 kV transmission towers will be much larger than the existing 69 kV transmission poles in the park and will potentially change the character of the wilderness landscape.

Figure A1. The numbered transmission route in the center of the map below is the preferred route proposed by SDG&E. It will pass through the park on a route that takes it along the Vallecitos Mountain Wilderness, Pinyon Ridge Wilderness, and Grapevine Mountain Wilderness.
[http://www.cpuc.ca.gov/environment/info/aspen/sunrise/sunrise.htm]

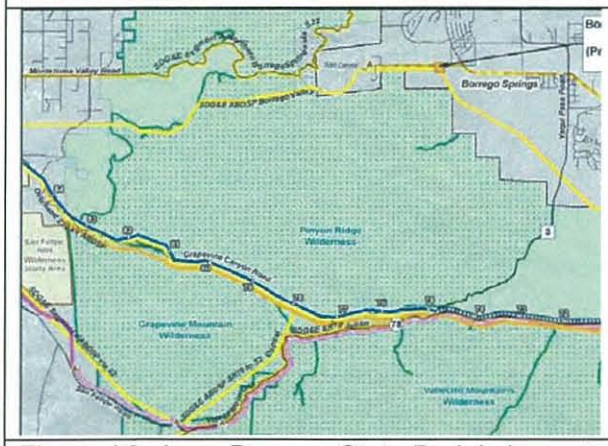


Figure A2. Anza-Borrego State Park is a World Heritage site and the largest state park in California. Two 40-foot high, 69 kV creosote pole transmission lines have been in operation in the area since the 1920s, predating the founding of the park in the 1930s.
[photo by Scot Martin]

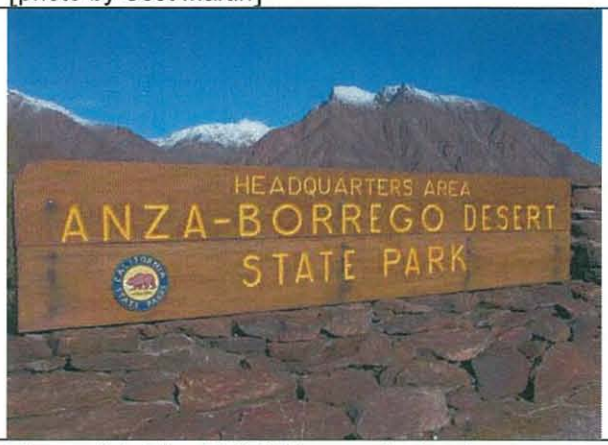


Figure A3. Anza Borrego State Park is home to the largest U.S. population of endangered Peninsular Bighorn Sheep.

[photo by Scot Martin]

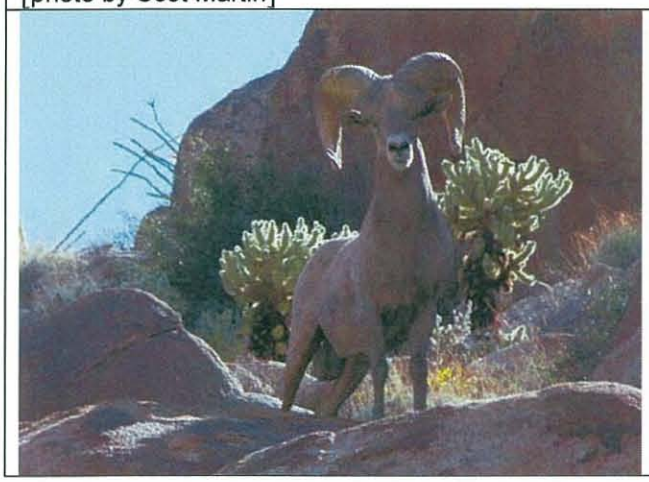
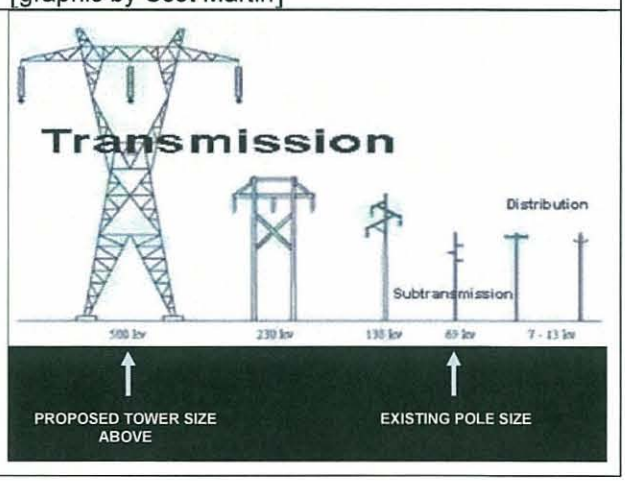


Figure A4. The 500 kV transmission towers proposed by SDG&E will be much larger than the existing 69 kV transmission poles in the park and will potentially change the character of the wilderness landscape.
[graphic by Scot Martin]



Attachment B: Regional Sempra Energy Infrastructure and Projected Sunrise Powerlink Route to Los Angeles

Figure B1. This concept map showing the Sunrise Powerlink ultimately interconnecting with the Los Angeles area transmission grid was submitted by SDG&E in its March 6, 2006 letter to the U.S. DOE requesting "national interest electric transmission corridor" status for the transmission line.

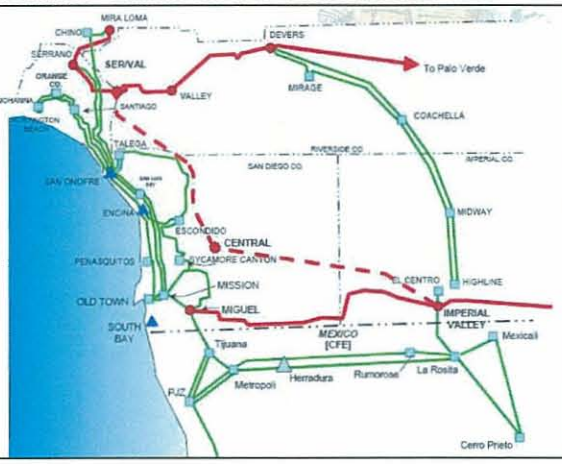


Figure B2. The transmission line will pass through the heart of Anza Borrego State Park. The 500 kV towers proposed by SDG&E will be considerably larger than the existing 69 kV transmission poles in the park. The park is home to the largest U.S. population of federally endangered peninsular bighorn sheep.

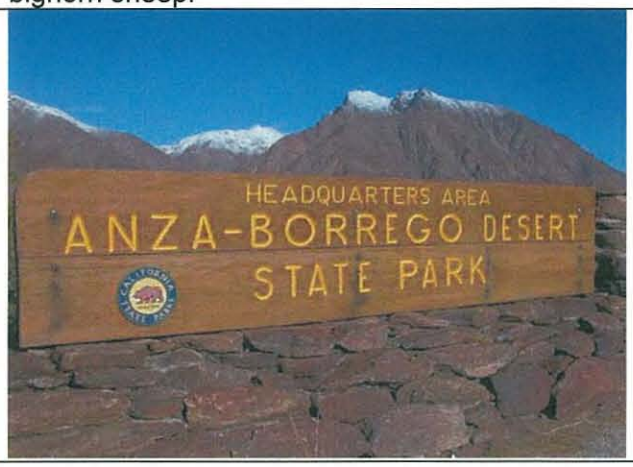
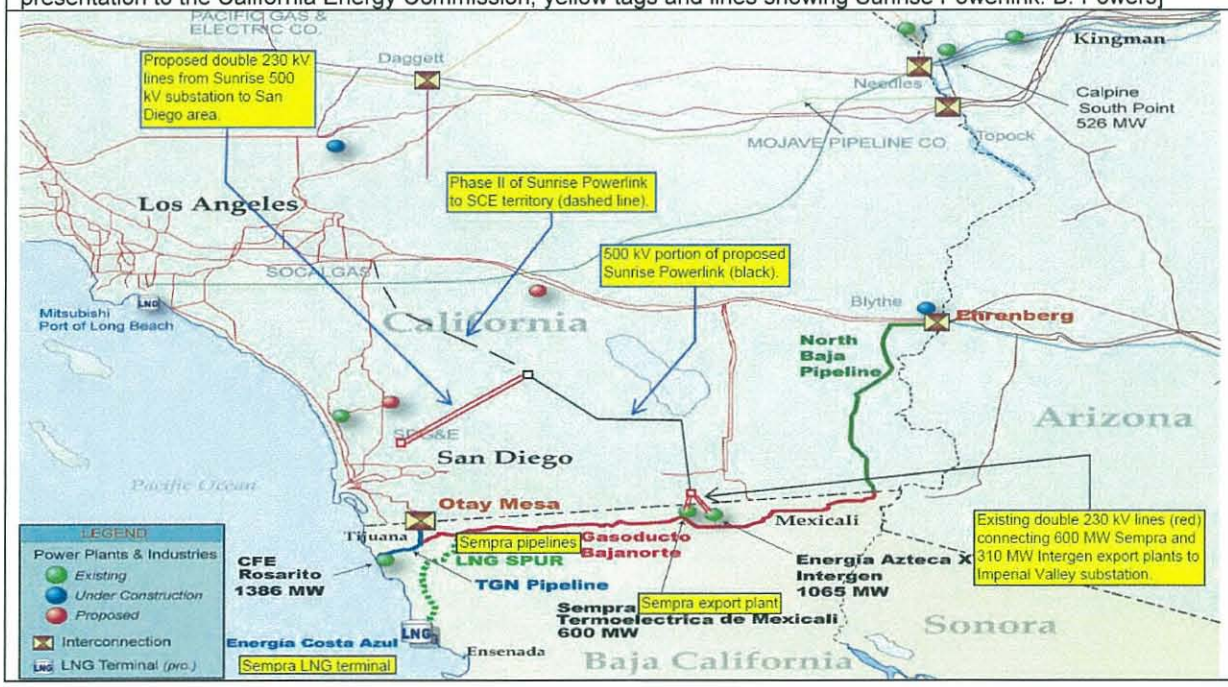


Figure B3. This map shows the interrelationship between the Sempra LNG terminal, Sempra natural gas pipelines, and the Sempra export power plant, all in Baja California, and the Sunrise Powerlink on the California side of the border. [source of base map: March 8, 2007 Sempra LNG presentation to the California Energy Commission; yellow tags and lines showing Sunrise Powerlink: B. Powers]



Attachment C: SDG&E Switch to LNG Will Negate Forecast GHG Reductions

SDG&E forecasts a 20 percent reduction in greenhouse gas (GHG) emissions between 2007 and 2016 in its Dec. 11, 2006 Long-Term Procurement Plan.[1] However, the SDG&E forecast does not account for reversal of flow on the SDG&E natural gas pipeline system in 2009 to move imported liquefied natural gas (LNG) from Sempra's LNG import terminal in Baja California to San Diego. Imported LNG carried a GHG burden that is approximately 25 percent greater than domestic natural gas.[2] The additional GHG burden is related to the high CO_2 content (10 percent) of the Indonesian raw gas that will be removed during gas processing[3] and the energy necessary to: 1) cryogenically liquefy natural gas into LNG, 2) transport the LNG across the Pacific in a specially-designed tankers, and 3) regasify the LNG back to gaseous form at Sempra's receiving terminal in Baja California.

All of the power sold by SDG&E in 2016 that produces CO_2 emissions will be generated by power plants burning natural gas.[4] See Figure 1. Approximately 50 percent of the natural gas sold by SDG&E is used in electric generation plants.[5] The remaining 50 percent is used primarily by commercial and residential customers for space heating, water heating, and cooking and related uses. All of this consumption will convert to natural gas derived from imported LNG when flow is permanently reversed on the SDG&E pipeline system in 2009. SDG&E's parent company Sempra Energy will begin operation of its 1,000 million cubic feet per day (mmcfd) Costa Azul LNG import terminal in 2008.[6] Sempra has preliminary approval from the CPUC to reverse flow on the SDG&E natural gas pipeline system to move this LNG from the Costa Azul LNG terminal directly into the San Diego market.[7] The CEC forecasts that this flow reversal will occur in 2009.[8,9]

The lifecycle GHG emissions from natural gas fired power plants in SDG&E service territory, and those served by the Baja California natural gas pipeline system which is interconnected with the Costa Azul LNG terminal, will increase by approximately 25 percent in 2009. As noted, all GHG-emitting power generation sources identified in the 2016 SDG&E forecast are natural gas-fired. Therefore, all CO_2 emissions forecast for 2016 shown in Figure 2 are from natural gas-fired sources. The result of the additional GHG associated with the lifecycle GHG burden of imported LNG will be to increase the SDG&E basecase CO_2 emission estimates for power generation shown in Figure 2 by 25 percent from 2009 forward. See the adjusted CO_2 estimate (red line) in Figure 2. This will nullify the decline in GHG emissions from 2007 to 2016 currently projected by SDG&E.

Lifecycle GHG emissions associated with imported LNG will eliminate the GHG reduction benefits of reaching 20 percent renewable energy generation by 2010 as mandated by AB 107. AB 32 requires a return to the 1990 GHG emission level by 2020. This is an estimated GHG reduction of 25 percent by 2020. The post-2020 phase of AB 32 is even more ambitious, targeting an 80 percent reduction in GHG by 2050. It is unlikely that SDG&E can achieve the 2020 AB 32 target if there is no net lifecycle reduction in GHG emissions from natural gas-fired combustion sources in SDG&E service territory in the 2007-2016 timeframe.

Sempra proposes to import LNG from British Petroleum's Tangguh, Indonesia LNG liquefaction plant. Figure 3 shows a graphic of the route from the liquefaction plant to Sempra's LNG import terminal near Ensenada.. Figure 3 also shows a breakdown of the 25 percent increase in lifecycle GHG emissions from each stage in the LNG process, from production of raw gas near Tangguh, processing and liquefaction of this gas, transport 7,500 miles to the LNG receiving terminal in Baja California, and regasification of the LNG for pipeline delivery to SDG&E service territory.

The current sources of natural gas supply to California are shown in Figure 4. The U.S. DOE domestic natural gas production forecast through 2025 is provided in Table 1. DOE is projecting a 14 percent increase in domestic natural gas production over the 2005-2025 period.

Figure 1. SDG&E Projection of Power Generation Sources to be Used to Meet Electricity Demand, 2007-2016[10]

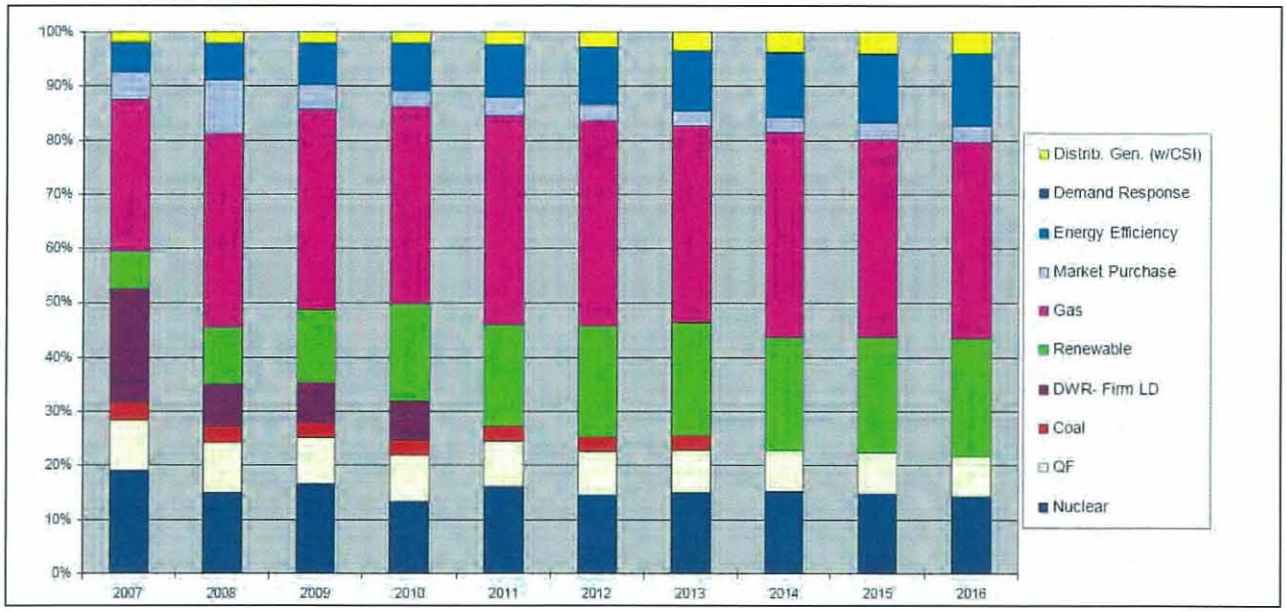


Figure 2. SDG&E Projection of Greenhouse Gas Emissions Trend, 2007-2016, and Powers Engineering Adjustment that Reflects the Lifecycle CO_2 Increase (from electric power generation only) Resulting from SDG&E Switch from Domestic Natural Gas to Imported LNG in 2009[11]

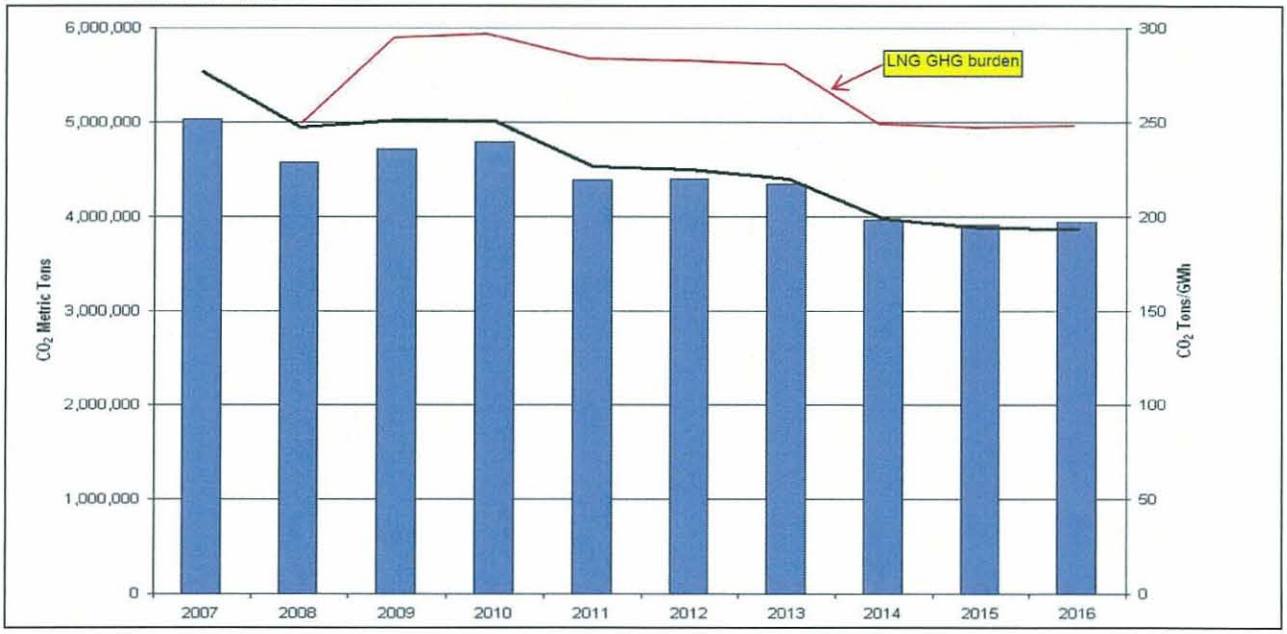
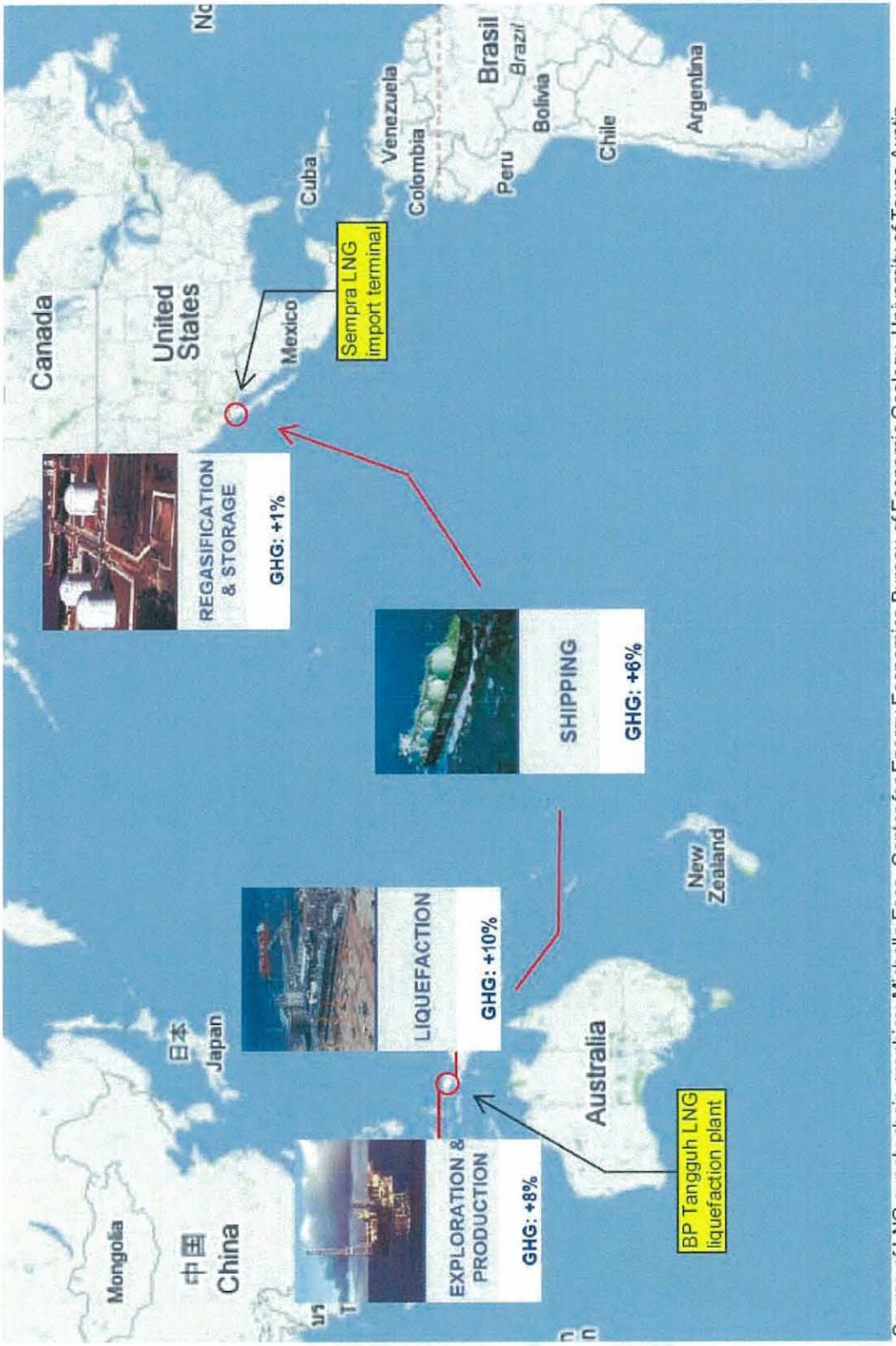
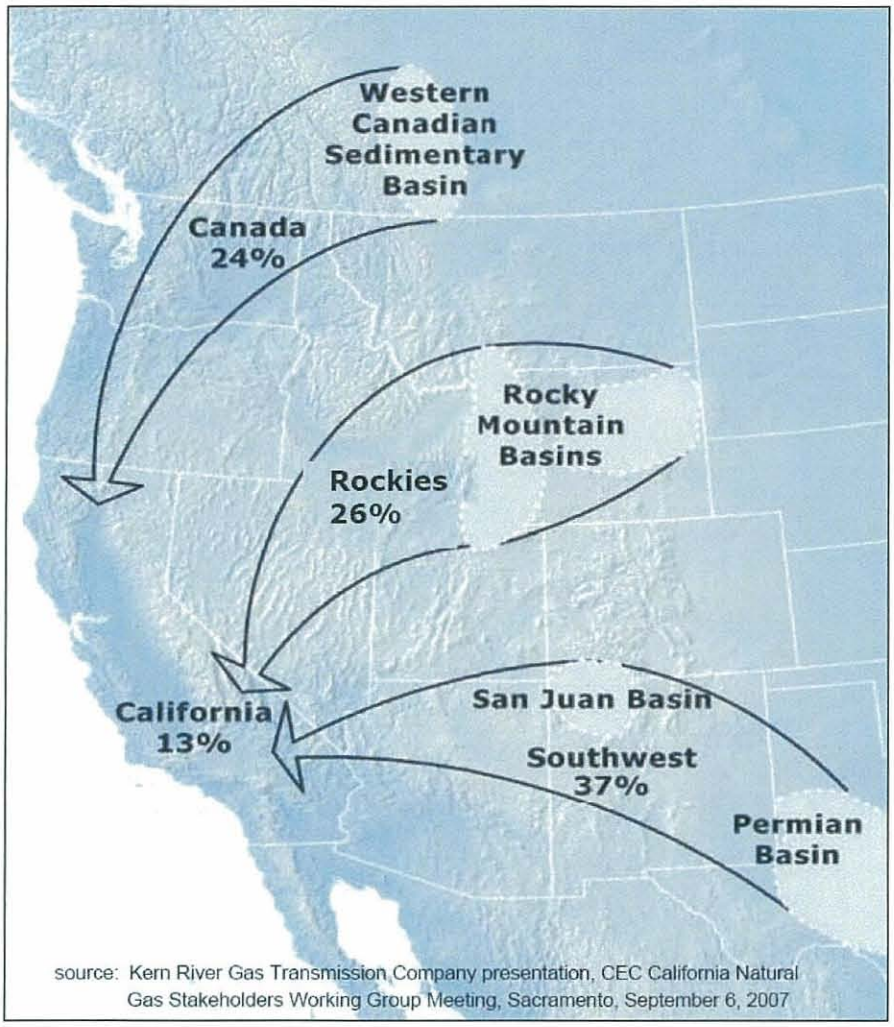


Figure 3. LNG versus Domestic Natural Gas: +25% Increase in Lifecycle Greenhouse Gas Emissions



Source of LNG supply chain graphics: Michelle Foss, Center for Energy Economics Bureau of Economic Geology, University of Texas-Austin, *LNG Access*, PowerPoint presentation, California Energy Commission LNG Access Workshop, June 1-2, 2005.
Source of Tangguh raw gas CO_2 content estimate: BP Indonesia webpage (www.bp.com) - "Greenhouse gas emissions - The natural gas in the Tangguh fields contains approximately 10% CO_2 - relatively high by industry standards."
Source of LNG supply chain greenhouse gas contribution estimates: P. Jaramillo, Carnegie-Mellon University, *Comparative Life Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environmental Science & Technology, published online July 25, 2007.

Figure 4. Sources of California Natural Gas Supplies – 2006



source: Kern River Gas Transmission Company presentation, CEC California Natural Gas Stakeholders Working Group Meeting, Sacramento, September 6, 2007

Table 1. U.S. DOE Domestic Natural Gas Production Forecast, 2005 – 2025[a]

Year	Domestic natural gas production[b] (trillion cubic feet)
2005	18.23
2010	19.35
2015	19.60
2020	20.79
2025	20.59

a) U.S. DOE Energy Information Administration, Annual Energy Outlook with Projections to 2030, Report DOE/EIA-0383, February 2007, p. 93. Tabular reference case natural gas production figures online at: http://www.eia.doe.gov/oiaf/aeo/pdf/aeotab_13.pdf

b) Reference case forecast is a 14% increase in U.S. domestic natural gas production from 2005 to 2020, from 18.23 trillion cubic feet per year to 20.79 trillion cubic feet per year.

[1] SDG&E 2007-2016 Long-Term Procurement Plan, December 11, 2006, p. 207.

[2] P. Jaramillo, Carnegie-Mellon University, *Comparative Life Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, Environmental Science & Technology, published online July 25, 2007, and "Supporting Information" document. All CO_2 emission factors listed in this footnote are from the "Supporting Information" document. Assume the LNG is shipped from BP liquefaction plant in Tangguh, Indonesia, 7,500-mile tanker roundtrip to Sempra LNG regasification terminal in Baja California. The raw gas feeding the Tangguh liquefaction plant contains 10 percent CO_2 which will be vented to atmosphere at the plant (source: BP Indonesia webpage http://www.bp.com/sectiongenericarticle.do?categoryId=9004748&contentId=7008786). This is equivalent to a CO_2 emission rate of 12 lbs CO_2 per MMBtu, per the Carnegie-Mellon estimate of 120 lbs CO_2 per MMBtu of natural gas combusted. Assume average CO_2 generation from liquefaction (14 lb CO_2 per MMBtu without considering CO_2 content in raw gas). 7,500 miles is the same distance as Oman to the Everett, Massachusetts LNG terminal route cited in report, which generates 8 lb CO_2 per MMBtu in transport CO_2 emissions. Assume CO_2 generation from LNG regasification and storage is low due to use of seawater heating to regasify the LNG (1 lb CO_2 per MMBtu). Domestic natural gas emits a maximum of 140 lb CO_2 per MMBtu. Total additional CO_2 associated with LNG from Tangguh, Indonesia is 35 lb CO_2 per MMBtu. Incremental lifecycle CO_2 emissions associated with LNG imported from Tangguh are 35 lb CO_2 ÷ 140 lb CO_2 = 0.25, or a 25 percent increase in lifecycle CO_2 emissions.

[3] BP Indonesia webpage (www.bp.com) - "*Greenhouse gas emissions - The natural gas in the Tangguh fields contains approximately 10% CO_2 - relatively high by industry standards*." This CO_2 must be removed from the raw gas before the gas is liquefied. BP has made no commitment to sequester this CO_2 following removal during gas processing.

[4] Natural gas fired sources included in the 2016 SDG&E plan are "natural gas", "QF" – these are cogeneration plants firing natural gas, "market purchase", and a portion of "distributed generation". SDG&E identifies "market purchase" as having a CO_2 emission rate (915 lb CO_2 per MWh) similar to natural gas fired combined cycle generation (819 lb CO_2 per MWh). For this reason "market purchase is assumed to be natural gas-fired. All fossil fuel-fired cogeneration in SDG&E service territory is natural gas-fired.

[5] 2006 California Natural Gas Report, SDG&E Tabular Data, pp. 98-100. In 2010, electric generation consumes 175 mmcfd of 333 mmcfd total natural gas demand. In 2015, electric generation consumes 175 mmcfd of 348 mmcfd total demand. All other non-electric power generation combustion sources will consume 173 mmcfd in 2015.

[6] Sempra LNG website, Energia Costa Azul – Project Overview. www.sempralng.com.

[7] CPUC Decision 04-09-022, *Rulemaking 04-01-025 to Establish Policies and Rules to Ensure Reliable, Long-Term Supplies of Natural Gas to California*, Phase I, Sept. 2, 2004. Findings of Fact (p. 89): 38. There is potential California customer access to LNG supplies through Otay Mesa, Ehrenberg/Blythe, Oxnard and Long Beach. 39. Designating Otay Mesa as a common receipt point for both the SoCalGas and SDG&E systems will send a signal to potential LNG suppliers that the gas they provide will have access to the utilities' systems.

[8] California Energy Commission, *Natural Gas Market Assessment – Preliminary Results*, staff draft report, in support of CEC 2007 Integrated Energy Policy Report, CEC-200-2007-009-SD, May 2007, p. 23. "*Major findings regarding natural gas supply are: Importation of LNG is expected from Mexico into San Diego through the Transportadora De Gas Natural De Baja California (TGN) pipeline beginning in 2009. Gas imported from Costa Azul is projected to grow from zero to more than 1,500 MMcf per day by 2017.*"

[9] J. Fore - CEC Natural Gas Unit, *2007 IEPR Natural Gas Forecast – Revised Reference Case*, PowerPoint presentation, August 16, 2007. Graphic on p. 26 shows natural gas from Costa Azul LNG terminal coming northward through Otay Mesa receipt point to San Diego at rate of 350 million cubic feet per day (mmcfd) in beginning in mid-2009. This flowrate is greater than the average daily natural gas demand forecast by SDG&E for 2010 of 333 mmcfd (see footnote 3). The revised August 16, 2007 LNG flow forecast shows LNG imports rising to 400 mmcfd through Otay Mesa in 2016, significantly less than the initial June 2007 reference case forecasting 1,000 mmcfd of LNG imports by 2016 (this case is also shown in the graphic on p. 26 of the PowerPoint).

[10] SDG&E summary of 2007-2016 LTPP to SANDAG Energy Working Group, January 25, 2007.

[11] The lifecycle CO_2 increase associated with the switch to LNG imports in 2009 is shown for electric power generation only. However, all stationary combustion sources using natural gas in SDG&E service territory will be using natural gas originating at the Costa Azul LNG terminal from mid-2009 onward. As a result, these sources will also see a 25 percent increase in lifecycle CO_2 emissions. Non-electric power generation natural gas consumption in SDG&E service territory will average 173 mmcfd in 2015. The CO_2 emission factor for natural gas consumption is 117 lb CO_2 per million Btu of natural gas combustion (source: SDG&E Dec. 11, 2006 Long-Term Procurement Plan , Vol. I, p. 207). The heating value of natural gas is approximately 1,000 Btu's per cubic foot. Therefore, the forecast CO_2 emissions from non-electric power generation natural gas combustion in SDG&E service territory in 2015 is [173 mmcfd × (1,000 × 10^6 Btu/mmcfd) × 117 lb CO_2/10^6 Btu]/2,000 lb/ton = 10,120 tons per day, or 3,694,000 tons per year of CO_2. An increase of 25 percent in these non-electric power generation CO_2 emissions, representing the lifecycle CO_2 emissions increase resulting from the switch from domestic natural gas to LNG, is an increase of 920,000 tons per year of CO_2.

Mnemonic:	FPOPQ.MSAN	FPOPQ.MSAN	Mnemonic:	FPOPQ.MSAN	FPOPQ.MSAN		
Description:	Total Populatio	Total Populatio	Description:	Total Populatio	Total Population, (Ths.)		
Source:	BOC; Moody's I	BOC; Moody's I	Source:	BOC; Moody's I	BOC; Moody's Economy.com		
Native Freq	QUARTERLY	QUARTERLY	Native Freque	QUARTERLY	QUARTERLY		
Geography:	San Diego-Carl	San Diego-Carl	Geography:	San Diego-Carl	San Diego-Carlsbad-San Marcos, CA Metropolitan Statistical Area		
Last Update	05/17/2007	05/17/2007	Last Updated:	05/17/2007	05/17/2007		
1970Q2	1357.85	na	Dec-1970	1367.74	na		
1970Q3	1368.35	na	Dec-1971	1396.18	2.08		
1970Q4	1377.02	na	Dec-1972	1442.52	3.32		
1971Q1	1384.62	na	Dec-1973	1503.31	4.21		
1971Q2	1391.90	2.51	Dec-1974	1551.99	3.24		
1971Q3	1399.63	2.29	Dec-1975	1618.65	4.30		
1971Q4	1408.57	2.29	Dec-1976	1652.38	2.08		
1972Q1	1419.47	2.52	Dec-1977	1723.08	4.28		
1972Q2	1433.10	2.96	Dec-1978	1782.05	3.42		
1972Q3	1449.73	3.58	Dec-1979	1833.39	2.88		
1972Q4	1467.76	4.20	Dec-1980	1881.93	2.65		
1973Q1	1485.08	4.62	Dec-1981	1932.65	2.69		
1973Q2	1499.60	4.64	Dec-1982	1978.08	2.35		
1973Q3	1510.06	4.16	Dec-1983	2023.96	2.32		
1973Q4	1518.49	3.46	Dec-1984	2073.68	2.46		
1974Q1	1527.75	2.87	Dec-1985	2134.87	2.95		
1974Q2	1540.70	2.74	Dec-1986	2206.35	3.35		
1974Q3	1559.11	3.25	Dec-1987	2286.67	3.64		
1974Q4	1580.40	4.08	Dec-1988	2374.37	3.84		
1975Q1	1600.89	4.79	Dec-1989	2453.58	3.34		
1975Q2	1616.90	4.95	Dec-1990	2517.11	2.59		
1975Q3	1626.01	4.29	Dec-1991	2559.04	1.67		
1975Q4	1630.81	3.19	Dec-1992	2593.53	1.35	0.94%	1992-2006
1976Q1	1635.13	2.14	Dec-1993	2601.93	0.32		15-yr ave.
1976Q2	1642.80	1.60	Dec-1994	2615.40	0.52		
1976Q3	1656.59	1.88	Dec-1995	2626.93	0.44		
1976Q4	1675.01	2.71	Dec-1996	2656.75	1.14		
1977Q1	1695.50	3.69	Dec-1997	2697.78	1.54		
1977Q2	1715.50	4.43	Dec-1998	2743.84	1.71		
1977Q3	1733.01	4.61	Dec-1999	2793.82	1.82		
1977Q4	1748.29	4.37	Dec-2000	2829.83	1.29		

1978Q1	1762.15	3.93	**Dec-2001**	2869.61	1.41						
1978Q2	1775.40	3.49	**Dec-2002**	2904.30	1.21						
1978Q3	1788.68	3.21	**Dec-2003**	2923.52	0.66						
1978Q4	1801.96	3.07	**Dec-2004**	2934.29	0.37						
1979Q1	1815.00	3.00	**Dec-2005**	2937.04	0.09						
1979Q2	1827.60	2.94	**Dec-2006**	2943.21	0.21	1.03%	1997-2006	0.75%	2000-2006	0.22%	
1979Q3	1839.63	2.85	**Dec-2007**	2953.07	0.34		10-yr ave.		7-yr ave.	2004-2006	
1979Q4	1851.35	2.74	**Dec-2008**	2968.65	0.53					3-yr ave.	
1980Q1	1863.11	2.65	**Dec-2009**	3003.92	1.19	0.73%	2000-2009				
1980Q2	1875.28	2.61	**Dec-2010**	3048.35	1.48		10-yr ave.				
1980Q3	1888.09	2.63	**Dec-2011**	3096.12	1.57						
1980Q4	1901.25	2.70	**Dec-2012**	3145.90	1.61						
1981Q1	1914.36	2.75	**Dec-2013**	3195.59	1.58						
1981Q2	1927.02	2.76	**Dec-2014**	3246.12	1.58						
1981Q3	1938.93	2.69	**Dec-2015**	3297.27	1.58						
1981Q4	1950.28	2.58	**Dec-2016**	3348.66	1.56	1.30%	2007-2016				
1982Q1	1961.32	2.45	**Dec-2017**	3399.61	1.52		10-yr ave.				
1982Q2	1972.36	2.35	**Dec-2018**	3450.34	1.49						
1982Q3	1983.60	2.30	**Dec-2019**	3501.83	1.49	1.55%	2010-2019				
1982Q4	1995.03	2.29	**Dec-2020**	3554.11	1.49		10-yr ave.				
1983Q1	2006.57	2.31	**Dec-2021**	3605.00	1.43						
1983Q2	2018.13	2.32	**Dec-2022**	3655.54	1.40						
1983Q3	2029.69	2.32	**Dec-2023**	3706.26	1.39						
1983Q4	2041.44	2.33	**Dec-2024**	3756.77	1.36						
1984Q1	2053.60	2.34	**Dec-2025**	3807.28	1.34						
1984Q2	2066.42	2.39	**Dec-2026**	3855.32	1.26						
1984Q3	2080.08	2.48	**Dec-2027**	3901.71	1.20						
1984Q4	2094.61	2.60	**Dec-2028**	3947.72	1.18						
1985Q1	2109.95	2.74	**Dec-2029**	3994.00	1.17						
1985Q2	2126.09	2.89	**Dec-2030**	4039.30	1.13						
1985Q3	2142.97	3.02	**Dec-2031**	4082.45	1.07						
1985Q4	2160.47	3.14	**Dec-2032**	4127.07	1.09						
1986Q1	2178.47	3.25	**Dec-2033**	4173.63	1.13						
1986Q2	2196.83	3.33	**Dec-2034**	4222.50	1.17						
1986Q3	2215.49	3.38	**Dec-2035**	4274.91	1.24						
1986Q4	2234.63	3.43	**Dec-2036**	4330.02	1.29						
1987Q1	2254.49	3.49			7.29						

1987Q2	2275.30	3.57
1987Q3	2297.19	3.69
1987Q4	2319.70	3.81
1988Q1	2342.26	3.89
1988Q2	2364.29	3.91
1988Q3	2385.36	3.84
1988Q4	2405.57	3.70
1989Q1	2425.16	3.54
1989Q2	2444.39	3.39
1989Q3	2463.33	3.27
1989Q4	2481.44	3.15
1990Q1	2498.02	3.00
1990Q2	2512.37	2.78
1990Q3	2524.07	2.47
1990Q4	2534.00	2.12
1991Q1	2543.29	1.81
1991Q2	2553.12	1.62
1991Q3	2564.21	1.59
1991Q4	2575.53	1.64
1992Q1	2585.66	1.67
1992Q2	2593.13	1.57
1992Q3	2597.00	1.28
1992Q4	2598.35	0.89
1993Q1	2598.75	0.51
1993Q2	2599.78	0.26
1993Q3	2602.58	0.21
1993Q4	2606.63	0.32
1994Q1	2610.98	0.47
1994Q2	2614.69	0.57
1994Q3	2617.11	0.56
1994Q4	2618.82	0.47
1995Q1	2620.72	0.37
1995Q2	2623.70	0.34
1995Q3	2628.43	0.43
1995Q4	2634.85	0.61
1996Q1	2642.65	0.84
1996Q2	2651.55	1.06

1996Q3	2661.27	1.25
1996Q4	2671.54	1.39
1997Q1	2682.07	1.49
1997Q2	2692.60	1.55
1997Q3	2702.97	1.57
1997Q4	2713.48	1.57
1998Q1	2724.59	1.59
1998Q2	2736.72	1.64
1998Q3	2750.08	1.74
1998Q4	2763.96	1.86
1999Q1	2777.44	1.94
1999Q2	2789.59	1.93
1999Q3	2799.77	1.81
1999Q4	2808.47	1.61
2000Q1	2816.48	1.41
2000Q2	2824.93	1.27
2000Q3	2834.04	1.22
2000Q4	2843.87	1.26
2001Q1	2854.14	1.34
2001Q2	2864.59	1.40
2001Q3	2874.93	1.44
2001Q4	2884.80	1.44
2002Q1	2893.85	1.39
2002Q2	2901.72	1.30
2002Q3	2908.17	1.16
2002Q4	2913.44	0.99
2003Q1	2917.87	0.83
2003Q2	2921.81	0.69
2003Q3	2925.52	0.60
2003Q4	2928.90	0.53
2004Q1	2931.76	0.48
2004Q2	2933.93	0.41
2004Q3	2935.35	0.34
2004Q4	2936.13	0.25
2005Q1	2936.48	0.16
2005Q2	2936.61	0.09
2005Q3	2937.18	0.06

2005Q4	2937.89	0.06		
2006Q1	2939.23	0.09		
2006Q2	2941.45	0.16	0.095%	ave. pop.
2006Q3	2944.74	0.26		Growth, last
2006Q4	2947.43	0.32		
2007Q1	2950.27	0.38		
2007Q2	2952.61	0.38	0.334%	
2007Q3	2953.61	0.30		
2007Q4	2955.80	0.28		
2008Q1	2959.97	0.33		
2008Q2	2964.80	0.41	0.332%	
2008Q3	2971.14	0.59		
2008Q4	2978.68	0.77		
2009Q1	2988.34	0.96		
2009Q2	2998.44	1.13	0.865%	
2009Q3	3009.11	1.28		
2009Q4	3019.77	1.38		
2010Q1	3030.81	1.42		
2010Q2	3042.63	1.47	1.388%	
2010Q3	3054.23	1.50		
2010Q4	3065.72	1.52		
2011Q1	3077.73	1.55		
2011Q2	3090.08	1.56	1.532%	
2011Q3	3102.16	1.57		
2011Q4	3114.51	1.59		
2012Q1	3127.02	1.60		
2012Q2	3139.62	1.60	1.591%	
2012Q3	3152.21	1.61		
2012Q4	3164.78	1.61		
2013Q1	3177.29	1.61		
2013Q2	3189.59	1.59	1.607%	
2013Q3	3201.73	1.57		
2013Q4	3213.77	1.55		
2014Q1	3226.73	1.56		
2014Q2	3239.68	1.57	1.561%	
2014Q3	3252.60	1.59		
2014Q4	3265.49	1.61		

2015Q1	3278.25	1.60	
2015Q2	3290.97	1.58	1.594%
2015Q3	3303.63	1.57	
2015Q4	3316.24	1.55	
2016Q1	3329.20	1.55	
2016Q2	3342.17	1.56	1.558%
2016Q3	3355.14	1.56	
2016Q4	3368.12	1.56	
2017Q1	3380.73	1.55	
2017Q2	3393.33	1.53	1.551%
2017Q3	3405.93	1.51	
2017Q4	3418.44	1.49	
2018Q1	3431.25	1.49	
2018Q2	3443.95	1.49	
2018Q3	3456.63	1.49	
2018Q4	3469.52	1.49	
2019Q1	3482.25	1.49	
2019Q2	3495.22	1.49	
2019Q3	3508.35	1.50	
2019Q4	3521.47	1.50	
2020Q1	3534.66	1.50	
2020Q2	3547.72	1.50	
2020Q3	3560.64	1.49	
2020Q4	3573.43	1.48	
2021Q1	3586.04	1.45	
2021Q2	3598.67	1.44	
2021Q3	3611.32	1.42	
2021Q4	3623.98	1.41	
2022Q1	3636.61	1.41	
2022Q2	3649.11	1.40	
2022Q3	3661.84	1.40	
2022Q4	3674.58	1.40	
2023Q1	3687.33	1.39	
2023Q2	3700.00	1.39	
2023Q3	3712.57	1.39	
2023Q4	3725.15	1.38	
2024Q1	3737.73	1.37	

2024Q2	3750.40	1.36
2024Q3	3763.11	1.36
2024Q4	3775.84	1.36
2025Q1	3788.54	1.36
2025Q2	3801.16	1.35
2025Q3	3813.61	1.34
2025Q4	3825.82	1.32
2026Q1	3837.79	1.30
2026Q2	3849.50	1.27
2026Q3	3861.18	1.25
2026Q4	3872.82	1.23
2027Q1	3884.44	1.22
2027Q2	3896.01	1.21
2027Q3	3907.48	1.20
2027Q4	3918.91	1.19
2028Q1	3930.42	1.18
2028Q2	3941.92	1.18
2028Q3	3953.49	1.18
2028Q4	3965.06	1.18
2029Q1	3976.62	1.18
2029Q2	3988.20	1.17
2029Q3	3999.81	1.17
2029Q4	4011.37	1.17
2030Q1	4022.87	1.16
2030Q2	4033.91	1.15
2030Q3	4044.80	1.12
2030Q4	4055.63	1.10
2031Q1	4066.38	1.08
2031Q2	4077.11	1.07
2031Q3	4087.78	1.06
2031Q4	4098.52	1.06
2032Q1	4109.80	1.07
2032Q2	4121.24	1.08
2032Q3	4132.81	1.10
2032Q4	4144.44	1.12
2033Q1	4156.09	1.13
2033Q2	4167.74	1.13

2033Q3	4179.45	1.13
2033Q4	4191.25	1.13
2034Q1	4203.32	1.14
2034Q2	4215.81	1.15
2034Q3	4228.73	1.18
2034Q4	4242.13	1.21
2035Q1	4255.12	1.23
2035Q2	4268.25	1.24
2035Q3	4281.50	1.25
2035Q4	4294.79	1.24
2036Q1	4308.84	1.26
2036Q2	4322.92	1.28
2036Q3	4337.06	1.30
2036Q4	4351.25	1.31

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September 8, 2006

File Number 3003000

Mr. William Reed
Senior Vice President, Regulatory and Strategic Planning
San Diego Gas and Electric Company
8306 Century Park Court, Suite 41D
San Diego, CA 92123-1530

Dear Mr. Reed:

SUBJECT: SANDAG Recommendations on SDG&E's Long-Term Procurement Plan

The San Diego Association of Governments Energy Working Group (SANDAG EWG), in cooperation with SDG&E, has had the opportunity to raise questions about and collaborate on future SDG&E energy resource planning and procurement policies. Following an extensive fact-finding project with stakeholders from businesses, environmental groups, and local governments, SANDAG has developed policy guidelines and recommendations for SDG&E to use in moving toward the goals of the San Diego Regional Energy Strategy 2030 (RES), which favors a balanced approach to energy policy issues. These recommendations are to offer guidance to SDG&E in its mandated Long-Term Procurement Plan (LTPP) submittal to the state.

The RES was written by a regional stakeholder group formed as a product of the Regional Energy Infrastructure Study (REIS), prepared in 2002. For over a year, these stakeholders held meetings and reached consensus on the goals for the San Diego region's energy policy. The RES's short-term quantitative assumptions were ultimately voted on and adopted by the SANDAG Board of Directors in 2003 as an energy planning tool for the region. The SANDAG Board also voiced its commitment to revisit the longer-term goals of the RES as needed.

The SDG&E LTPP serves as a roadmap for how the utility plans to address San Diego's resource needs for the next 10 years. In SDG&E's LTPP filing, SANDAG looks for carefully thought out, long-term goals that satisfy a number of concerns, rather than offering quick fixes for the region's energy shortfalls. With respect to renewables and distributed generation procurement goals, SDG&E's goals should be aggressive in the short-term, building up to more aggressive goals in subsequent years.

The following are SANDAG's policy recommendations for SDG&E to consider and implement in its long-term planning, including its upcoming LTPP filing to the California Public Utilities Commission (CPUC).

- Focus on California's preferred loading order
- Evaluate technologies' costs and benefits
- Support renewable energy technologies
- Support distributed generation technologies
- Support in-region generation

Focus on California's Preferred Loading Order

One of the RES Guiding Principles states that, "Energy efficiency and demand management programs will be preferred over the development of new fossil fuel generation resources." In its procurement activities, SDG&E must follow the state-approved loading order, which gives highest priority to energy efficiency and demand response when planning for the state's energy future. These energy-saving measures are followed in priority order by renewable energy and distributed generation, conventional large-scale generation and transmission respectively.

The state's top priorities must also be SDG&E's. The LTPP submittal should clearly demonstrate how the utility is meeting or exceeding the state-mandated energy-saving targets for energy efficiency and demand response followed by renewables and distributed generation. Information imparted to the public should be as accurate, complete, and understandable as possible.

Evaluation of Technologies' Costs and Benefits

Other RES Guiding Principles emphasize an energy supply portfolio that is diversified, cost efficient, environmentally sound, self sustaining, secure, and reliable. A planned approach for procurement should involve developing metrics for evaluation of prospective conventional and renewable technologies. Scoring criteria for each technology should include, but not be confined to, the following:

- Cost-effectiveness to ratepayers-All technologies that are selected by SDG&E for their long-term plans need to ensure the costs incurred by ratepayers on a project do not increase their bills unduly or unreasonably, if at all.

- Cost-effectiveness to systems-Projects that are selected by SDG&E should not propose higher than reasonable costs to be expended to develop needed technologies.

- Role in global warming-Projects should advance the state toward baseline GHG emission standards, e.g. the Governor's Executive Order S-3-05, which states specific reduction goals for California and Assembly Bill 32, which passed the legislature in August 2006.

- Community economic impact-A broader set of guidelines reviewing costs related to pollution mitigation, health risks, aesthetic impacts, jobs, etc.

- Sensitivity to gas supply risk-When determining the cost of a project, SDG&E should take the cost and projected price volatility of natural gas into consideration as a component of the total cost for the project.

In project evaluation, SDG&E has noted that it already favors those projects that have the least environmental impact, that have the ability to meet specific reliability timelines, and that are the most cost-effective. SANDAG's goal is to recommend enhancements to this procurement procedure to ensure a more open and transparent process. The utility's request for proposals (RFP) should

provide prospective developers with the information they need to submit relevant projects to meet San Diego's resource needs. After completion of each bid process, SDG&E could alert all bidders as to why their proposals were accepted or rejected. This could continually improve the solicitation process and quality of bids.

Support for Renewable Energy Technologies

- The RES goal #3 states, "Increase the total electricity supply from renewable resources with an emphasis on in-region installations,"[1] and includes a target of 50 percent of those renewables from in-region. Therefore, it is imperative that SDG&E supports all economically and technically feasible renewable energy technologies. This is especially true for rooftop photovoltaic systems and central plant solar, wind, and geothermal systems as mentioned in the 2005 study: Potential for Renewable Energy in the San Diego Region.

- In order to achieve the state's Renewable Portfolio Standard (RPS) goals, SANDAG supports the establishment of in-region "renewable energy parks" and the streamlining of the permitting and transmission process for access to these parks. This measure could effectively intensify interest in renewables in the region. In addition to large-scale projects, this could promote research, development and demonstration (RD&D) projects by greatly expanding the amount of renewable technologies available to study within the San Diego region. RD&D could include next generation renewable technologies as well as studies on the maturity of existing technologies, like fuel cells and combined heat and power (CHP) systems utilizing renewable fuel. These measures will produce vital information for SDG&E and other decision-making bodies that shape energy policy, and will reflect an accurate picture of the energy sources available and their associated costs.

- In addition to this goal, locally placed renewables within and outside of renewable energy parks should be incentivized prior to providing incentives for out-of-region renewables. As part of any RFP bid evaluation, SDG&E should include significant weighting for renewable projects.

- Another issue gaining importance for renewable energy development is ownership of credits that contribute to the state's RPS goals. The CPUC is currently addressing this complex issue for the entire state. Once the CPUC establishes which resources can be counted toward the utilities' RPS goals with Renewable Energy Credits (RECs) and which cannot, SANDAG can revisit how this may or may not impact our regional renewable goals.

Support for Distributed Generation Technologies

RES goal #4 addresses the desire to increase the amount of distributed generation in the San Diego region. This is an area where there has not been significant progress toward the RES goal. SANDAG supports efforts to more aggressively reach the distributed generation target of 12 percent of peak demand by 2010, and recommends that SDG&E also take additional steps to reach this goal. Measures can include supporting the continuation of the Self Generation Incentive Program (SGIP), which provides incentives for distributed generation (DG) projects. (This program is currently scheduled to sunset December 31, 2007.)

Another measure can be an assessment of any barriers in the utility's rate and tariff structures available for end-users who are interested in taking advantage of distributed generation. For

[1] Energy 2030: The San Diego Regional Energy Strategy, May 2003, www.sdenergy.org

instance, the noncoincident peak demand tariff may be cost prohibitive for clean onsite DG use. Although these measures may not directly correlate to the long-term procurement plan filing, SANDAG would appreciate added attention to be given to enhancing the role of distributed generation in the San Diego region. SANDAG, through its Energy Planning program and the EWG, is poised to work with SDG&E and regional stakeholders in this area, both on technology development and on regulatory efforts.

Support In-Region Generation

With regard to renewable and nonrenewable electric generation in the region, SANDAG requests that all cost-effective and viable large-scale in-region generation projects be considered in SDG&E's procurement plans. RES goal #2 calls for achieving and maintaining capacity to generate 65 percent of summer peak demand with in-county generation by 2010.

Sunrise Transmission Project to be Addressed Separate from these Recommendations

RES goal #5 calls for an increase in the transmission system capacity as necessary to maintain required reliability and to promote better access to renewable resources and competitively priced supply. The transmission grid provides for a number of functions, including providing access to out of region power, improving fuel diversity (in particular, renewables), providing access to broader supplies in the market that can help lower and stabilize electric prices, and improving system stability and reliability. These benefits need to be balanced with the fact that siting issues for new transmission lines are often contentious and difficult to achieve due to the large number of parties that are affected by such projects (e.g. visual impacts, potential impacts on property values, concerns for the impacts of electric and magnetic fields). Subsequent to this letter, SANDAG will review the Sunrise Powerlink as it correlates to all aspects of the RES, including the impact on in-region renewable and nonrenewable generation.

We look forward to reviewing your draft submittal of the LTPP prior to your filing with the Public Utilities Commission. We also would like to thank you for the occasion to participate in the LTPP process as a planning partner, and look forward to an ongoing collaborative relationship in this realm.

Sincerely,

MICKEY CAFAGNA
Chair, SANDAG Board of Directors

MC:RR:dd

cc: Commissioner Michael Peevey, CPUC
Administrative Law Judge Carol Brown, CPUC
Senator Christine Kehoe, Chair, Senate Energy, Utilities and Communications Committee

1. Energy Parks to Balance Renewable Energy in San Diego Region

(R. Caputo, B. Butler, July 2007)

Current regional energy goal in San Diego is 40 percent renewable electricity by 2030, and having 50 percent come from within San Diego County. In-county land availability is fractured with sizes less than 200 acres at a site. To use this in-country resource, from 50 to 150 smaller solar plants would be required to match the power of one large desert plant. The concept of "energy parks" was suggested to overcome this barrier to in-county renewables and would allow multiple plant sites to be readied for construction and placed in a renewable energy land bank.

A new 64 MW parabolic trough plant by Solargenix is under construction in the Eldorado Valley Solar Energy Park created by Boulder City, Nevada. This is the first solar energy park created in the southwest. We have used this as a model for the Renewable Energy Parks proposed for San Diego County.

Concentrating photovoltaic systems (CPV) are making significant strides. A prototype 1 MW plant was built by Amonix for Arizona Public Service has been operating for several years, and a second 1 MW plant is being built by Sharp for Nevada Power. Concentrations of 400 to 1000 suns are used and cell efficiencies of 28 to 40 percent are achieved, with solar to AC electric efficiencies of 18 to 25 percent.

Flat plate photovoltaics (PV) are used on or near buildings. This is the only distributed solar technology considered and it holds great promise especially because of the recently enacted California Solar Initiative (CSI) program. The California Energy Commission goal for all of California is that 3,000 MW on-site PV be in place in 10 years. For the San Diego region, about 10 percent of this is expected. At the present time, about 30 MW of on-building PV exist in San Diego.

The more remote eastern half of San Diego County is the suggested region for the smaller concentrating solar plants that would not require transmission lines to bring the power to the urban center. First of all, what are the characteristics of the available land?

The best match between the smaller (<200 acres) parcels of rolling land in the rural eastern part of San Diego County and the four CSP technologies, is the dish-Stirling and the CPV systems. If 10 percent of the total available land is used as the technical potential of this resource, then 20,740 acres are available. This translates to a technical potential close to 4,000 MW. This is significant since the current peak power demand of the San Diego region is 4500 MW and the peak load (air conditioning) occurs when the sun is most intense.

The major assumption that this analysis rests on is the creation and vigorous implementation of renewable energy parks with-in San Diego County. It is unlikely that solar energy plant contractors would willingly attempt to site over 1,100 MW capacity sprinkled over 50 to 150 sites. They would rather pick one or two desert sites to accomplish this and let others worry about constructing transmission lines to the city. The difficulty of about 100 sets of siting would deter all but the very strong hearted.

The energy park idea is to remove most of the initial barriers to small power plant siting. This would involve the plant site to be chosen, the land to be purchased or leased, the zoning changes arranged, the local, county, state and federal (if needed) approval process to be started along with "generic" environment impact assessment. The local grid connection and other utilities would be arranged and the site readied for start of plant construction. This site would be put in the energy land bank and thus made available for rapid plant startup when the date was established for the needed power and the local utility sought to sign a power purchase agreement with a power plant builder.

Since this 50/50 goal was generated by SANDAG which has as it members, all 19 local political entities in San Diego County. The proactive support of these separate political entities that make up the SANDAG board in streamlining their internal procedures, would make a major contribution to bringing this concept to life.

This two step approach is recommended. The first step would be taken by the local political entities (some of the 19 local jurisdictions in San Diego County) to streamline their evaluation and approval process to expedite the processing of the 100 or so small power plants. The second step to for San Diego County to contribute the up-front costs for studies and the land acquisition or lease. This second step could also be taken by SANDAG to petition the CPUC to support the renewable energy park concept and establish the procedures to authorize and allow funding of all the activities needed to create the energy park.

2. Creating a Sustainable Economy – San Diego/Tijuana Case Study
(Jim Bell, 2nd edition, March 2007)

Jim Bell is a sustainable resource planner who has been heavily involved in energy planning in the San Diego area for many years. The second edition of his book "*Creating a Sustainable Economy and Future on Our Planet - San Diego/Tijuana Region Case Study*" was published in March 2007. Mr. Bell's analysis emphasizes the development of a sustainable local energy economy through maximum use of commercial and residential PV systems. The main elements of his analysis are for achieving energy self-sufficiency are described in the following paragraphs.

> "Our region is so rich in renewable energy resources that we could easily become energy self-sufficient even without energy-use efficiency improvements. For example, even with zero efficiency improvements, San Diego County could self-sufficient for electricity through 2050 if 34 percent (48 square miles) of the 140 square miles of county land projected to be covered by roofs and parking lots in 2050 if they were covered by photovoltaic (PV) systems. For comparison in 2005, an estimated 110 square miles of county land was already covered by roofs and parking lots.
>
> With a 40 percent increase in efficiency only 20 percent (29 square miles) of the county's roofs and parking lots would need to be covered for the county to be self-sufficient for electricity through 2050. Without efficiency improvements, covering 86 percent (121 square miles) of our county's projected 140 square miles of roofs and parking lots in 2050 with PV systems would produce enough electricity to replace all the imported energy projected to be used in San Diego County in that year. With a 40 percent increase in energy use efficiency,

only 52 percent (73 square miles) of the county's roofs and parking lots, would need to be covered with PV systems for San Diego County to self-sufficient for all energy sources through 2050. Coupling a 40 percent improvement in efficient energy use with covering 100 square miles of roofs and parking lots with PV systems, the county would become a large energy exporter. An additional 37 square miles of PV production at $0.10 per kWh would bring in $1.8 billion per year of revenue.

At $0.10 per kWh, regional energy self-sufficiency in 2002 would have kept about $7 billion in San Diego/Tijuana region, $5.2 billion in San Diego County alone. According to economic multiplier theory, adding $7 billion to our local economy each year would increase local yearly economic activity by $14 billion."

3. Green Energy Options to Replace the South Bay Power Plant
(Local Power, February 2007, prepared for Environmental Health Coalition)

The Green Energy Options (GEOs) are three electric energy portfolios designed to meet three different levels of capacity replacement for the South Bay Power Plant. They address a range of possible regional needs and provide a range of investment options. The current power plant supplies electricity in the period of high demand during the day and early evenings, and the GEO portfolios are designed to meet that same requirement. Each GEO portfolio includes diverse technologies in order to avoid "putting all eggs in one basket".

The GEOs provide three levels of capacity replacement relative to the current 700 megawatt power plants. The nominal capacity of the GEO options range between 660 megawatts and 1150 megawatts, but this translates into a smaller equivalent capacity for the purposes of replacing the existing plant. This is because some renewable technologies, mainly wind power, only produce electricity part of the time. But the wind resource is given a boost relative to its otherwise intermittent nature, since one portion of the wind power is delivered to pump water uphill into a reservoir during the evening so it is available the next day to power generators when demand for electricity is high. Nearly all the rest of the portfolio's generation capacity is considered to be able to carry its weight in electrical system support, without any greater degree of help than other types of electrical generation routinely receive. This rating, called the Effective Load Carrying Capacity, is a product of the full capacity of the power generation equipment and the availability of the energy resource. In the case of wind, studies have shown that the *lowest* "carrying capacity" for actual major California wind farms is about 25 percent. We have been even more conservative, and assumed that only 20 percent would "count".

The targets are established as meeting 50 percent, 70 percent and 90 percent of the current South Bay Power Plant's capacity for supplying power during the hours of peak demand. Thus the portfolio is designed to meet the same needs and have similar functionality to the existing plant, though with a number of extended capabilities that the current plant does not have. For instance, the pumped storage plant can respond nearly instantly to changes in demand for electricity, a factor that can be critical during a power emergency. A summary of the energy replacement options for South Bay are provided in the following table:

Summary of Energy Portfolio Replacement Options for South Bay

Facility	50 percent		70 percent		90 percent	
	MW	GWh	MW	GWh	MW	GWh
Wind farm	150	460	325	990	400	1,200
Pumped water storage	60	250	90	250	150	420
Concentrating solar	160	450	160	450	160	450
Natural gas peaker	90	250	190	530	240	670
PV	20	30	20	30	20	30
Peak demand reduction	20	35	20	35	20	35
Transmission	--	--	--	--	--	--
Replacement target (MW)	350		490		630	
Electricity generation (GWh)	1,270		1,960		2,270	
Ave. peak power cost (¢/kWh)	8.7-10.4		8.4-10.8		8.5-10.3	

Community Choice Aggregation (CCA) is the best approach to eliminating the need for power generation on the South Bay. CCA would enable a full range of options, including transmission of power. If Chula Vista forms a CCA or builds a power generation facility, it may elect to obtain transmission services within or outside Chula Vista, by acquiring access to existing transmission capacity, arranging with SDG&E to provide transmission access, pursuant to Federal Energy Regulatory Commission (FERC) Order 888, or arranging to purchase transmission services from another party such as a tribal government. No option would require adding transmission lines leading outside the county, and all would make use of existing transmission pathways.

In addition, Chula Vista and a number of potential public partners may issue municipal revenue bonds ("H Bonds") to finance renewable energy and conservation facilities.

A critical facet of the GEO options is to include local power resources that require little or no transmission facilities to deliver the power to customers. Chula Vista and the San Diego County region offer opportunities to develop a variety of green energy resources. These opportunities include solar energy, energy conservation, and cogeneration, in coordination with parties interested in participating in the development of the facilities and/or the purchase of power from such facilities. Where transmission of electricity is required, the GEO options have sought to insure that existing transmission corridors can be used, to avoid most of the expense and environmental impact of any new facilities. The GEO options are also designed to reduce the need for importing renewable power, and natural gas, from outside the county.

Photovoltaics (PV) on Chula Vista rooftops, energy efficiency, demand response may be fundable with existing ratepayer revenue if a CCA is formed and would be facilitated by submitting a request to administer the funds to the California Public Utilities Commission.

Other distributed generation may be undertaken within the City under a CCA or a revenue bond funded ("H Bond") program, and Chula Vista may invest General Funds in renewable energy projects for non-CCA customers if the City wishes to operate the plant as a public enterprise.

Renewable and conservation facility assets will retain their market value and generate revenue after the revenue bonds or other financing are repaid, in some cases for decades, offering both

returns on public investment and very low cost energy for local government, residents and businesses.

4. Potential for Renewable Energy in the San Diego Region

(San Diego Regional Renewable Energy Study Group, August 2005, www.renewablesg.org)

The purpose of this study was to estimate the size of the regional renewable energy resource base and the approximate cost of renewable energy power generation. The projected regional renewable energy technical potential is summarized in the following table:

Region's Renewable Energy Technical Potential in 2020[1]

SOLAR PV - Commercial and Residential			SOLAR - Concentrating Solar Power (CSP)			WIND	
	Capacity (MW AC)	Energy (GWh)		Capacity (MW AC)	Energy (GWh)	Capacity (MW)	Energy (GWh)
SD County	4,691	10,224	SD County	2,900	5,080	SD County & Parts of Imperial County and Northern Baja California, Mexico	
			Imperial County	29,000	50,808	1,650 - 1,830	4,530 - 5,020

BIOMASS (SD County)			SMALL HYDRO			GEOTHERMAL		
	Capacity (MW)	Energy (GWh)		Capacity (MW)	Energy (GWh)		Capacity (MW)	Energy (GWh)
Landfill Gas	72	505	SD County Imperial County	8.32 86.5	15 152	Imperial County	2,500	22,000
Other Biomass	75	525	Northern Baja CA, Mexico	75	131	Northern Baja CA, Mexico	840	6,000

The SDG&E system peak demand for 2004 was 4,065 MW. Total energy requirement in the region, include customers served by SDG&E as well as other energy providers, was 20,578 GWh.

The estimated peak demand technical potential of residential and commercial PV in 2010 is 4,400 MW, with an annual energy production of approximately 6,600 GWh. The estimated peak demand technical potential of residential and commercial PV in 2020 is 4,700 MW, with an annual energy production of approximately 7,000 GWh. This PV estimate does not include the technical PV potential of parking areas and parking structures. The technology potential of CSP technology in more rural areas of San Diego County was estimated at 2,900 MW and 5,000 GWh.

Solar trough was the only concentrating solar power (CSP) technology evaluated. There are 354 MW of solar trough CSP plants in operation in California. Dish Stirling, the CSP technology that SDG&E has contracted for in Imperial Valley, was identified as a pre-commercial technology in the report and was not evaluated for that reason.

[1] San Diego Regional Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region*, August 2005, Executive Summary, p. 5.

Attachment G: California Statewide 2005 Electricity Usage During Peak Periods

WWW.ENERGY.CA.GOV / ELECTRICITY / PEAK LOADS

2005 Electricity Usage During Peak Periods

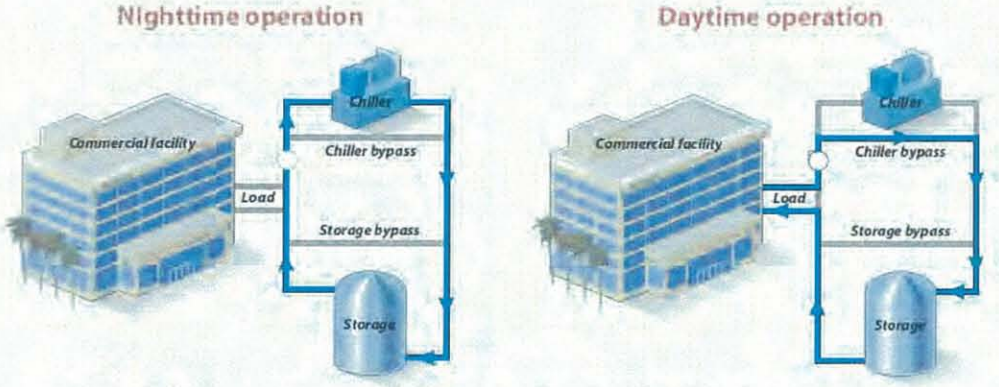
	Megawatts	Percentage of Total
Commercial Sector	**20,907**	**39%**
Air Conditioning	7,690	14%
Cooking	120	0%
Exterior Lighting	63	0%
Hot Water	153	0%
Interior Lighting	6,171	11%
Office Equipment	277	1%
Other	3,489	6%
Refrigeration	978	2%
Space Heating	-	0%
Ventilation	1,967	4%
Residential Sector	**21,765**	**40%**
Air Conditioning	11,154	21%
Cooking	1,187	2%
Dishwasher	331	1%
Domestic Hot Water*	300	1%
Dryer	1,196	2%
Freezer	377	1%
Miscellaneous**	3,568	7%
Pools & Spas***	995	2%
Refrigeration	1,827	3%
Space Heating	-	0%
Television, Video, Satellite	544	1%
Washer	135	0%
Waterbed	153	0%
Industrial Sector	**7,415**	**14%**
Assembly	3,615	7%
Process	2,906	5%
Other	893	2%
Agricultural Sector	**1,959**	**4%**
TCU & Street Lighting	**1,973**	**4%**
Statewide Total	**54,020**	**100%**

* Includes sfamdhw, mfamdhw, soldhw, and soldhwp
** Lighting, fans, electronics
*** Includes pool heat, pool pump, spa heater, spa pump, and solar pool pump

Source: Demand Analysis Office, California Energy Commission

Thermal Energy Storage

Thermal energy storage (TES) systems shift energy usage to a later period to take advantage of cheaper time-based utility rates and/or to reduce overall energy demand. In California, the primary use of thermal energy storage is for cool storage since summer air conditioning is the dominant electric load. Cooling storage mediums of choice are water, ice, and eutectic salts.



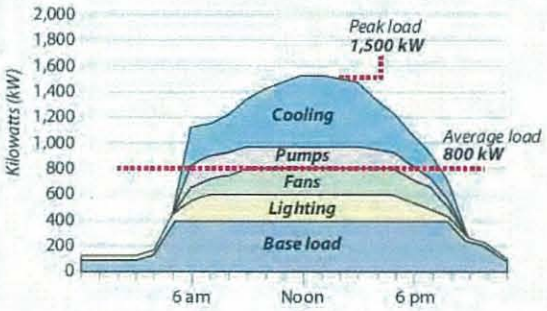
TES systems produce chilled water (or ice) during the night and store for use during the day. This allows central plant equipment to operate at night when energy is readily available, cheaper, and the chiller equipment can run more efficiently. By doing so, buildings can reduce peak demand on the electrical grid and decrease their electrical usage and demand costs.

Benefits of Thermal Energy Storage:

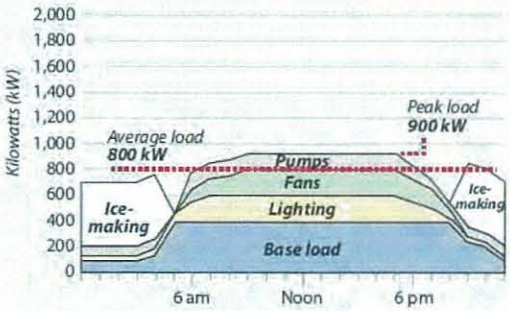
1. Reduce peak demand
2. Decreased electric usage and demand costs.
3. Increased central plant redundancy
4. Reduced emissions from inefficient peaker plants
5. Reduced chiller plant size and corresponding infrastructure

DAILY ELECTRICITY LOAD

Building without Thermal Energy Storage



Building with Thermal Energy Storage



These two graphs show electrical load profiles for similar buildings with and without Thermal Energy Storage. The graph on the left represents a building without TES. The graph on the right represents a building with TES, where all the ice making is done at night, during off-peak hours.

SDGE
A Sempra Energy utility®

2007 Energy-Efficiency Rebates for Your Home

When shopping for a new appliance or considering a home improvement, think energy efficiency. It helps you save energy for many years to come, and could contribute to lower energy bills at your home. Helping you be more energy-efficient is one of the ways SDG&E® strives to provide exceptional customer service. Here are the rebates SDG&E offers for single family homes.

ENERGY-EFFICIENT MEASURE	YOUR REBATE
Appliances	
Dishwasher ENERGY STAR®-qualified (Energy Factor of 0.65 or greater)	$30/unit
Refrigerator ENERGY STAR®-qualified	$50/unit
Refrigerator (or freezer) recycling, with free pickup	$35/unit
Recycling program run by a 3rd party, not SDG&E. For more on the recycling program call them at 1-800-599-5792.	
Cooling/Heating	
Room Air Conditioner ENERGY STAR®-qualified	$50/unit
Whole House Fan (Must have existing central air conditioning to qualify)	$50/unit
Central Natural Gas Furnace (≠ 92% AFUE)	$200/unit
Insulation	
Attic or Wall Insulation	$0.15/sq. ft.
Swimming Pool	
Pool pump and motor – single speed	$30/unit
Pool pump and motor with automatic controller- multi speed	$100/unit
Time Clock Reset	$25/pool
(Must reduce filtering time by two hours or more and filter during off-peak hours - before noon or after 6PM - daily.)	
Water Heaters *(minimum storage of 30 gallons)*	
Efficient Natural Gas (Energy Factor of 0.62 or greater)	$30/unit
Electric Water Heater (Energy Factor of 0.93 or greater)	$30/unit

Before you buy:

Please review the application for specific requirements and rebate qualifications. Applications for rebates are accepted on a first-come, first-served basis until program funds are no longer available. The amount and availability of rebates may change during the year. Rebates apply only to specific makes and models.

SDG&E and participating retailers are now making it easy for customers to receive rebates instantly. There is no need to fill out an application and wait for a check; instead, the rebate amount is taken off the purchase price at the point of sale. Only one rebate per item - items rebated at the point of sale do not qualify for a mail-in rebate.

Mail-in rebate applications and the list of participating instant rebate retailers are available at *www.sdge.com*. For more information, call the Energy Information Center at **1-800-644-6133** or e-mail *info@sdge.com*. The Energy Information Center is open Monday through Friday, 8am to 5pm.

The Energy Efficiency Rebate Program may be modified or terminated without prior notice. SDG&E is not responsible for any particular contractor selected or equipment/materials installed, or for purchases not meeting applicable qualifications. SDG&E is not responsible for any goods and services obtained by the customer from third parties. This program is funded by California utility customers and administrated by SDG&E, under the auspices of the California Public Utilities Commission.

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Attachment J: San Diego Solar Initiative $1.5 Billion Financing Plan to Achieve 50% GHG Reduction

Overview

The San Diego Solar Initiative financial plan described in this attachment, with a $1.5 billion photovoltaic (PV) incentives budget, results in the installation of 3,004 MW of direct current PV without battery storage. However, as shown on p. J9 titled "PV Installations by Month," there is some degradation in PV performance over time. This results in a net installed direct current PV capacity of 2,941 MW in 2018.

The PV panels generate direct current (DC) electricity. All buildings or residences that receive electricity from the transmission grid use alternating current (AC) electricity. The DC electricity from the PV panels must be converted to alternating current (AC) via an inverter to be compatible with the AC electricity moving over the transmission grid. About a quarter of the potential power is lost in this conversion process.

There are significant losses in converting the DC power from the panels into AC power ready for transmission over the grid. The assumption used in estimating the AC capacity that will be installed under the San Diego Solar Initiative is that only 77 percent of the maximum DC power potential of the panels is converted to AC power. The AC output from 2,941 MW of direct current PV is 0.77 x 2,941 MW = 2,265 MW. The total amount of grid-compatible AC capacity that would be installed under the San Diego Solar Initiative, if no battery storage is included, is 2,265 MW.

PV systems that are equipped with sufficient battery storage can continue to operate at rated capacity during the afternoon peak demand period. This is when electric power is most needed and most valuable. Southern California Edison began a demonstration project using rooftop PV systems as peaking plants in the summer of 2007. These demonstration units use Gaia Power Towers for storage and energy management. Use of Gaia Power Towers adds somewhat less than 10 percent to the gross PV system cost.

A basic assumption of the San Diego Solar Initiative is that all PV installed under the Initiative would be equipped with battery storage to allow this PV capacity to be available to meet afternoon peak demand. Ten (10) percent of the incentives budget is allocated to the purchase of battery storage and associated control hardware instead of PV panels. Therefore the net PV capacity is reduced 10 percent from the 2,265 MW AC figure to allow for all of these PV systems to be equipped with battery storage. The net PV capacity with battery storage is 2,265 MW – (2,265 MW × 0.10) = 2,040 MW.

The San Diego Solar Initiative with a $1.5 billion incentives budget would result in 2,040 MW AC of net rooftop PV with battery storage being added to the generation base in San Diego County.

Total - San Diego Solar Initiative, $1.5 billion incentives budget

1. Solar Electricity Production (MWh)

Initial Year of Operation*	Total Solar Electricity Produced	% of Total MWhs	Large Systems	Small Systems	Residential
2008	1,811	0.0%	1,409	201	201
2009	12,587	0.0%	9,790	1,399	1,399
2010	30,142	0.0%	23,443	3,349	3,349
2011	63,598	0.0%	49,465	7,066	7,066
2012	127,398	0.0%	99,087	14,155	14,155
2013	249,090	0.1%	193,737	27,677	27,677
2014	481,244	0.2%	374,301	53,472	53,472
2015	924,157	0.3%	718,789	102,684	102,684
2016	1,769,200	0.6%	1,376,045	196,578	196,578
2017	3,381,507	1.2%	2,630,061	375,723	375,723
2018	4,312,292	1.5%	3,354,005	479,144	479,144
2019	4,288,355	1.5%	3,335,387	476,484	476,484

INVISIBLE CALCULATIONS - DO NOT MOVE

2. Solar Electric Capacity Installed/Reserved (MW direct current - DC)

Initial Year of Operation*	*New Solar Capacity Installed*	*Cumulative Solar Capacity*	*Large Systems >100 kW*	Small Systems 20-100 kW	Residential <20 kW
2008	*4.3*	*4.3*	3.3	0.5	0.5
2009	*8.1*	*12.4*	6.3	0.9	0.9
2010	*15.5*	*28.0*	12.1	1.7	1.7
2011	*29.6*	*57.6*	23.1	3.3	3.3
2012	*56.6*	*114.2*	44.0	6.3	6.3
2013	*107.9*	*222.1*	84.0	12.0	12.0
2014	*205.9*	*428.1*	160.2	22.9	22.9
2015	*392.9*	*821.0*	305.6	43.7	43.7
2016	*749.7*	*1570.7*	583.1	83.3	83.3
2017	*1430.5*	*3001.2*	1112.6	158.9	158.9
2018	*1.3*	*3002.5*	1.0	0.1	0.1
2019	*1.3*	*3003.8*	1.0	0.1	0.1
Totals:	**3,004**		**2,336**	**334**	**334**

PV Installations (MW DC)

Initial Year of Operation*	Large Systems >100 kW	Small Systems 20-100 kW	Residential <20 kW	Total CA MWhs
2008	3.3	0.5	0.5	255,000,000
2009	6.3	0.9	0.9	257,550,000
2010	12	2	2	260,125,500
2011	23	3	3	262,726,755
2012	44	6	6	265,354,023
2013	84	12	12	268,007,563
2014	160	23	23	270,687,638
2015	306	44	44	273,394,515
2016	583	83	83	276,128,460
2017	1,113	159	159	278,889,745
2018	1	0	0	281,678,642
2019	1	0	0	290,129,001

3. Total Funding Requirement

Initial Year of Operation*	Total Direct Incentives Budget	Admin Costs (3%)	Total Annual Funding Available to Projects	Remaining Funding Rolling Forward	Direct Incentive Sub-Totals: Large Systems	Small Systems	Residential
2008	$5,589,272	$167,678	$4,589,272	$832,322	$1,728,796	$1,300,216	$1,560,259
2009	$10,433,388	$313,002	$9,433,388	$1,544,290	$4,631,146	$2,182,838	$2,619,405
2010	$18,464,795	$553,944	$17,464,795	$2,036,675	$9,465,630	$3,635,984	$4,363,181
2011	$31,479,588	$944,388	$30,479,588	$2,153,387	$17,381,669	$5,953,600	$7,144,320
2012	$52,020,385	$1,560,612	$51,020,385	$1,657,377	$30,053,502	$9,530,401	$11,436,482
2013	$81,837,799	$2,455,134	$80,837,799	$251,965	$48,106,589	$14,877,823	$17,853,388
2014	$124,752,158	$3,742,565	$123,752,158	-$2,483,041	$74,793,540	$22,253,917	$26,704,700
2015	$180,705,960	$5,421,179	$179,705,960	-$6,978,711	$111,301,134	$31,093,103	$37,311,723
2016	$241,731,577	$7,251,947	$240,731,577	-$13,440,020	$155,124,040	$38,912,517	$46,695,020
2017	$285,220,795	$8,556,624	$284,220,795	-$21,399,844	$195,856,976	$40,165,372	$48,198,446
2018	$177,075,093	$5,312,253	$176,075,093	-$26,354,092	$176,075,093	$0	$0
2019	$147,485,792	$4,424,574	$146,485,792	-$30,569,289	$146,485,792	$0	$0
2020	$106,143,713	$3,184,311	$105,143,713	-$33,670,679	$105,143,713	$0	$0
2021	$54,404,769	$1,632,143	$53,404,769	-$35,312,942	$53,404,769	$0	$0
2022	$1,000,000	$30,000	$0	-$35,402,331	$0	$0	$0
2023	$1,000,000	$30,000	$0	-$35,494,401	$0	$0	$0
2024	$1,000,000	$30,000	$0	-$35,589,233	$0	$0	$0
2025	$1,000,000	$30,000	$0	-$35,686,910	$0	$0	$0
2026	$1,000,000	$30,000	$0	-$35,787,517	$0	$0	$0
2027	$1,000,000	$30,000	$0	-$35,891,142	$0	$0	$0
2028	$1,000,000	$30,000	$0	-$35,997,877	$0	$0	$0
Subtotals:	$1,524,345,084	$45,730,353	$1,503,345,084		$1,129,552,390	$169,905,770	$203,886,924
Avg. Annual Totals	$76,217,254	$2,286,518	$75,167,254	100.0%	$56,477,619	$10,194,346	$8,495,289

$1,503,345,084 **TOTAL FUNDING REQUIREMENT (2008-2028)**

*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

San Diego Solar Initiative - Residential PV Systems

Avg. Production per kWac-real	1,410	IOU Annual Avg. Rate Increase	0.0%
In-State Bonus	0%	DC rating to AC-real rating factor	77%
Distributed Energy Bonus	0%	IOU Peak Residential Elec. Rate ($/kWh)	0.190

Assumptions < 20 kW
From Other Chart

Initial Year of Operation*	Annual PBI plus rebate expenditures	San Diego Solar Initiative Program - Residential PV Systems <20 kW								
		Solar MWhs annually eligible for PBI Program	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	Capital Rebate	Value of Electricity	Tax Credits	Net System Cost	System Cost Decline
				See Data Table on the Right						
2008	$1,560,259	201	0.5			$3.29	$2.84	$2.40	$8.00	
2009	$2,619,405	1,399	0.9			$2.89	$2.84	$2.28	$7.60	5.00%
2010	$4,363,181	3,349	1.7			$2.53	$2.84	$2.17	$7.22	5.00%
2011	$7,144,320	7,066	3.3			$2.17	$2.84	$2.06	$6.86	5.00%
2012	$11,436,482	14,155	6.3			$1.82	$2.84	$1.95	$6.52	5.00%
2013	$17,853,388	27,677	12.0			$1.49	$2.84	$1.86	$6.19	5.00%
2014	$26,704,700	53,472	22.9			$1.17	$2.84	$1.76	$5.88	5.00%
2015	$37,311,723	102,684	43.7			$0.85	$2.84	$1.68	$5.59	5.00%
2016	$46,695,020	196,578	83.3			$0.56	$2.84	$1.59	$5.31	5.00%
2017	$48,198,446	375,723	158.9			$0.30	$2.84	$1.51	$5.04	5.00%
2018	$0	479,144	0.1			$0.00	$2.84	$1.44	$4.79	5.00%
2019	$0	476,484	0.1			$0.00	$2.84	$1.42	$4.74	1.00%
2020	$0	471,719				$0.00	$2.84	$1.41	$4.69	1.00%
2021	$0	467,002				$0.00	$2.84	$1.39	$4.65	1.00%
2022	$0	462,332				$0.00	$2.84	$1.38	$4.60	1.00%
2023	$0	457,708								1.00%
2024	$0	453,131								1.00%
2025	$0	448,600								1%
2026	$0	444,114								1%
2027	$0	439,673								1%
2028	$0									1%
2029	$0									1%
2030	$0									1%
2031	$0									1%
2032	$0									1%
2033	$0									1%
2034	$0									1%
2035	$0									1%
2036	$0									1%
2037	$0									1%
Total for Program	**$203,886,924**	**5,382,211**	**334**		**Average $/Wac-cec =**	$0.61				

*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

San Diego Solar Initiative - Small Commercial PV Systems

Avg. Production per kWac-real	1,410	IOU Annual Avg. Rate Increase	0.0%	Assumptions	20 kW to 100 kW
In-State Bonus	0%	DC rating to AC-real rating factor	77%	From Other Chart	
Distributed Energy Bonus	0%	IOU Peak Residential Elec. Rate ($/kWh)	0.190		

Initial Year of Operation*	Annual PBI plus rebate expenditures	San Diego Solar Initiative Program - Small Commercial PV Systems 20 kW to 100 kW								
		Solar MWhs produced annually	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	Capital Rebate	Value of Electricity	Tax Credits	Net System Cost	System Cost Decline
			See Data Table on the Right							
2008	$1,300,216	201	0.5			$2.74	$2.84	$4.03	$7.00	
2009	$2,182,838	1,399	0.9			$2.41	$2.84	$3.83	$6.65	5.0%
2010	$3,635,984	3,349	1.7			$2.11	$2.84	$3.64	$6.32	5.0%
2011	$5,953,600	7,066	3.3			$1.81	$2.84	$3.46	$6.00	5.0%
2012	$9,530,401	14,155	6.3			$1.52	$2.84	$3.29	$5.70	5.0%
2013	$14,877,823	27,677	12.0			$1.24	$2.84	$3.12	$5.42	5.0%
2014	$22,253,917	53,472	22.9			$0.97	$2.84	$2.97	$5.15	5.0%
2015	$31,093,103	102,684	43.7			$0.71	$2.84	$2.82	$4.89	5.0%
2016	$38,912,517	196,578	83.3			$0.47	$2.84	$2.68	$4.64	5.0%
2017	$40,165,372	375,723	158.9			$0.25	$2.84	$2.54	$4.41	5.0%
2018	$0	479,144	0.1			$0.00	$2.84	$2.42	$4.19	5.0%
2019	$0	476,484	0.1			$0.00	$2.84	$2.39	$4.15	1.0%
2020	$0					$0.00	$2.84	$0.00	$4.11	1.0%
2021	$0					$0.00	$2.84	$0.00	$4.07	1.0%
2022	$0					$0.00	$2.84	$0.00	$4.03	1%
2023	$0								$3.99	1%
2024	$0								$3.95	1%
2025	$0								$3.91	1%
2026	$0								$3.87	1%
2027	$0								$3.83	1%
2028	$0								$3.79	1%
2029	$0								$3.75	1%
2030	$0								$3.71	1%
2031	$0								$3.68	1%
2032	$0								$3.64	1%
2033	$0								$3.60	1%
2034	$0								$3.57	1%
2035	$0								$3.53	1%
2036	$0								$3.50	1%
2037	$0								$3.46	1%
Total for Program	**$169,905,770**	**1,737,931**	**334**		**Average $/Wac-cec =**	$0.51				

*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

San Diego Solar Initiative - Large Commercial PV Systems

Year 1 Installation Cost ($/Wdc)	$6.25
Avg. Production per kWac-real	1,889
Performance Degradation	0.60%
AC-cec rating to AC-real rating factor	77%
Blended Avg. IOU Elec. Rate	0.120
Annual Avg. Rate Increase	1.8%

PBI Annual Decline	0%
PBI Pay-out Term (years)	5
In-State Bonus	0%
Distribution Energy Bonus	19%

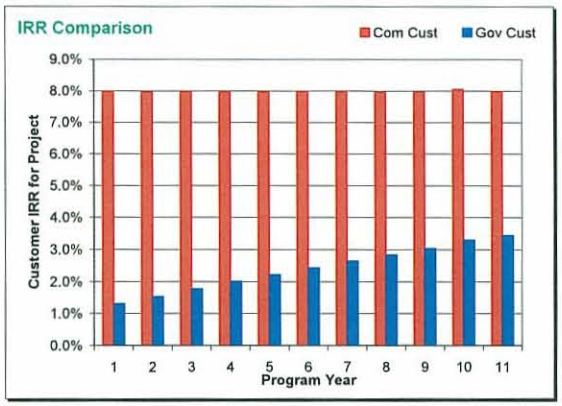
Federal Tax Rate	35.0%
State Tax Rate	7.8%
Blended Federal & State	40.1%
Discount Rate	7.0%

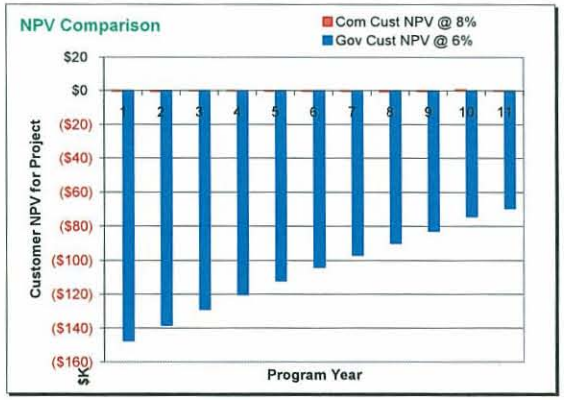
Assumptions > 100 kW
From Other Chart
Recalculate

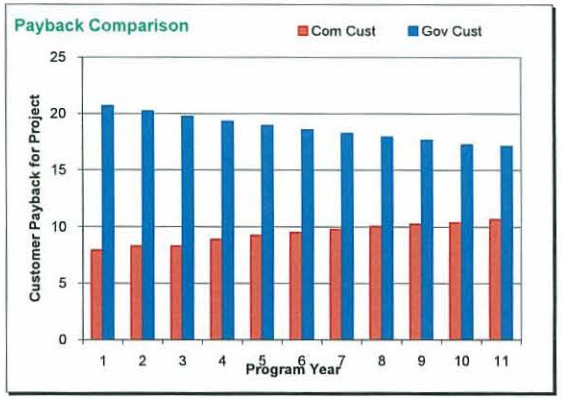
San Diego Solar Initiative Program - Large Commercial PV Systems >100 kW

Target IRR: 8.0%

Initial Year of Operation*	Annual Encumberance from PBI Program	New Solar MWhs annually eligible for PBI Program	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	CBI Equivalent using discount rate	*Fed ITC*	*CA ITC*	Value of Tax Benefits (% of Net Cost)	*Avg Install Price ($/Wdc)*	System Cost Decline	Com IRR	Gov IRR
				See Data Table on the Right									
2008	$1,728,796	1,409	3.3	358	0.120	$2.28	30%	0%	57.6%	*$6.25*		8.0%	1.3%
2009	$4,631,146	9,790	6.3	315	0.122	$2.01	30%	0%	57.6%	*$5.94*	5.0%	8.0%	1.5%
2010	$9,465,630	23,443	12.1	275	0.124	$1.75	30%	0%	57.6%	*$5.64*	5.0%	8.0%	1.8%
2011	$17,381,669	49,465	23.1	236	0.127	$1.51	30%	0%	57.6%	*$5.36*	5.0%	8.0%	2.0%
2012	$30,053,502	99,087	44.0	198	0.129	$1.26	30%	0%	57.6%	*$5.09*	5.0%	8.0%	2.2%
2013	$48,106,589	193,737	84.0	162	0.131	$1.03	30%	0%	57.6%	*$4.84*	5.0%	8.0%	2.4%
2014	$74,793,540	374,301	160.2	127	0.134	$0.81	30%	0%	57.6%	*$4.59*	5.0%	8.0%	2.6%
2015	$111,301,134	718,789	305.6	93	0.136	$0.59	30%	0%	57.6%	*$4.36*	5.0%	8.0%	2.8%
2016	$155,124,040	1,376,045	583.1	61	0.138	$0.39	30%	0%	57.6%	*$4.15*	5.0%	8.0%	3.1%
2017	$195,856,976	2,630,061	1112.6	33	0.141	$0.21	30%	0%	57.6%	*$3.94*	5.0%	8.0%	3.3%
2018	$176,075,093	3,354,005	1.0		0.143	$0.00	30%		57.6%	*$3.74*	5.0%	8.0%	3.5%
2019	$146,485,792	3,335,387	1.0		0.146	$0.00	30%		57.6%	*$3.70*	1%	8.3%	3.7%
2020	$105,143,713				0.149	$0.00				*$3.67*	1%		
2021	$53,404,769				0.151	$0.00				*$3.63*	1%		
2022	$0				0.154	$0.00				*$3.59*	1%		
2023	$0				0.157	$0.00				*$3.56*	1%		
2024	$0				0.160	$0.00				*$3.52*	1%		
2025	$0				0.163	$0.00				*$3.49*	1%		
2026	$0				0.165	$0.00				*$3.45*	1%		
2027	$0				0.168	$0.00				*$3.42*	1%		
2028	$0				0.171	$0.00				*$3.38*	1%		
2029	$0				0.175	$0.00				*$3.35*	1%		
2030	$0				0.178	$0.00				*$3.32*	1%		
2031	$0				0.181	$0.00				*$3.28*	1%		
2032	$0				0.184	$0.00				*$3.25*	1%		
2033	$0				0.187					*$3.22*	1%		
2034	$0				0.191					*$3.19*	1%		
2035	$0				0.194					*$3.15*	1%		
2036	$0				0.198					*$3.12*	1%		
2037	$0				0.201					*$3.09*	1%		
Totals for Program	**$1,129,552,390**	**12,165,519**	**2,334**			**Average $/Wac-cec =**	**$0.48**						







Commercial Customers			
Year	IRR	NPV (8%)	Payback
1	8.0%	($378)	7.9
2	8.0%	($603)	8.3
3	8.0%	($373)	8.3
4	8.0%	($346)	8.9
5	8.0%	($490)	9.3
6	8.0%	($433)	9.5
7	8.0%	($492)	9.8
8	8.0%	($641)	10.1
9	8.0%	($511)	10.3
10	8.0%	$610	10.4
11	8.0%	($354)	10.7
12	8.3%	($354)	10.7

	2008			2009			2010			2011			2012			2013		
	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New
CBI ($/W)		$2.74	$3.29		$2.41	$2.89		$2.11	$2.53		$1.81	$2.17		$1.52	$1.82		$1.24	$1.49
PBI ($/kWh) Y1	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
Y2	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
Y3	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
Y4	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
Y5	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
Y6	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y7	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y8	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y9	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y10	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
CBI Equivalent	$ 2.28			$ 2.01			$ 1.75			$ 1.51			$ 1.26			$ 1.03		

Government Customers			
Year	IRR	NPV (6%)	Payback
1	1.3%	($147,451)	20.7
2	1.5%	($138,335)	20.2
3	1.8%	($128,856)	19.7
4	2.0%	($120,146)	19.3
5	2.2%	($112,130)	18.9
6	2.4%	($104,133)	18.6
7	2.6%	($96,693)	18.2
8	2.8%	($89,746)	17.9
9	3.1%	($82,625)	17.6
10	3.3%	($74,060)	17.3
11	3.5%	($69,449)	17.1
12	3.7%	($69,449)	17.1

	2014			2015			2016			2017			2018			2019		
	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New
CBI ($/W)		$0.97	$1.17		$0.71	$0.85		$0.47	$0.56		$0.25	$0.30		$0.00	$0.00		$0.00	$0.00
PBI ($/kWh) Y1	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
Y2	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
Y3	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
Y4	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
Y5	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
Y6	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y7	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y8	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y9	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
Y10	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		

San Diego Smart Energy 2020

Capacity Based Incentive (CBI)	
CBI Rebate Cap:	100%
CBI Rebate ($/W):	
CBI Payee (1=PL, 0=Host)	0

Performance Based Incentive (PBI)	
Y1 PBI ($/kWh)	$0.36
PBI Term (years)	5
Annual Rate of Decline	0%
PBI Payee (1=PL, 0=Host)	0

System Statistics	
System Size (kWaccec):	100
Yr 1 Annual kWh:	145,453
Yr 1 Annual kWh / kWaccec:	1,455
Performance degradation	0.6%
Maintenance Y1-Y25 (% gross cost):	0.30%
Y1 Avoided Cost ($/kWh):	$0.120

Declining PBI	
Year	PBI Schedule
1	0.358
2	0.358
3	0.358
4	0.358
5	0.358
6	0.000
7	0.000
8	0.000
9	0.000
10	0.000
11	0.000
12	0.000
13	0.000
14	0.000
15	0.000
16	0.000
17	0.000
18	0.000
19	0.000
20	0.000
21	0.000
22	0.000
23	0.000
24	0.000
25	0.000

System Costs			
Gross Price ($/W):	$6.25		
Total Gross Price:	$ 625,000	100%	
CBI Incentives:	$ -	0%	
Net Price	$ 625,000		
% Downpayment:	100%		
Loan Rate (%):	5.0%		
Loan Term (yrs):	10		

Customer Assumptions	
Federal Tax Rate:	35.0%
State Tax Rate:	7.8%
Federal Tax Credit	30.0%
State Tax Credit	0.0%
Com Disc Rate	8%
Gov Disc Rate	6%
Annual Inflation:	0.0%
Elect. Inflation:	1.8%

OutPut	
Total Rebate $/	$ 257
Total Rebate $,	$ 1.03
IRR - Private S	8.0%
Payback Com	7.95
IRR - Public Se	1.3%
Payback Gov	20.68

PBI equ value	
payout	$2.57
NPV (5%)	$2.23
npv(10%)	$1.95

Year 1

Performance Incentive	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance (kWh/year)	3,386,821	145,453	144,583	143,716	142,856	142,003	141,153	140,309	139,469	138,635	137,805	136,980	136,161	135,346	134,536	133,731	132,931	132,136	131,345	130,559	129,778	129,001	128,229	127,462	126,700	125,941
Cumulative Performance		145,453	290,036	433,753	576,611	718,614	859,767	1,000,075	1,139,544	1,278,179	1,415,984	1,552,964	1,689,125	1,824,471	1,959,007	2,092,739	2,225,670	2,357,805	2,489,150	2,619,709	2,749,487	2,878,489	3,006,718	3,134,180	3,260,880	3,386,821
Average Performance to date		145,453	145,018	144,584	144,153	143,723	143,294	142,868	142,443	142,020	141,598	141,179	140,760	140,344	139,929	139,516	139,104	138,694	138,286	137,879	137,474	137,071	136,669	136,269	135,870	135,473
PBI $	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Commercial Customer

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	504,803	17,454	17,662	17,873	18,085	18,301	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Total Cost Savings:	762,066	69,527	69,423	69,323	69,228	69,138	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Expenses:																										
Maintenance	(46,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Total Expenses:		(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Financing:		$																								
% Downpayment:	100%	625,000																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(625,000)																								
Equipment Loan Principal Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(625,000)	(625,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRE-TAX CASH FLOW, NET*:	90,191	(557,348)	67,548	67,448	67,353	67,263	16,644	16,864	17,087	17,313	17,542	17,773	18,007	18,244	18,483	18,726	18,971	19,219	19,471	19,725	19,982	20,242	20,506	20,772	21,042	21,315
PRE-TAX CASH FLOW, CUMULATIVE:		(557,348)	(489,801)	(422,352)	(354,999)	(287,736)	(271,092)	(254,228)	(237,141)	(219,827)	(202,286)	(184,513)	(166,506)	(148,262)	(129,779)	(111,053)	(92,082)	(72,863)	(53,392)	(33,667)	(13,685)	6,557	27,063	47,835	68,877	90,191
Federal tax calculation (+ = refund)																										
Savings as a result of project	(715,191)	(67,652)	(67,548)	(67,448)	(67,353)	(67,263)	(16,644)	(16,864)	(17,087)	(17,313)	(17,542)	(17,773)	(18,007)	(18,244)	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
MACRS Accelerated Depr. w/yr 1 bonus (%)		20.0%	32.0%	19.2%	11.5%	11.5%	5.8%																			
Federal Depreciation	531,250	106,250	170,000	102,000	61,094	61,094	30,813	0	0	0	0	0	0	0	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State tax deduction	7,035	3,246	1,206	1,198	1,191	1,184	(2,764)	(2,747)	(2,730)	(2,712)	(2,694)	(2,676)	(2,658)	(608)	1,442	1,461	1,480	1,499	1,519	1,539	1,559	1,579	1,599	1,620	1,641	1,663
Annual taxable income	(176,905)	41,844	103,659	35,750	(5,068)	(4,985)	11,405	(19,611)	(19,617)	(20,025)	(20,236)	(20,449)	(20,665)	(18,852)	(17,042)	(17,265)	(17,491)	(17,720)	(17,952)	(18,186)	(18,423)	(18,663)	(18,906)	(19,152)	(19,401)	(19,652)
Taxes due before ITC (+ = refund)	(61,917)	14,645	36,281	12,513	(1,774)	(1,745)	3,992	(6,864)	(6,936)	(7,009)	(7,083)	(7,157)	(7,233)	(6,598)	(5,965)	(6,043)	(6,122)	(6,202)	(6,283)	(6,365)	(6,448)	(6,532)	(6,617)	(6,703)	(6,790)	(6,878)
Federal tax credit (ITC)	187,500	187,500																								
Taxes due after ITC	125,583	202,145	36,281	12,513	(1,774)	(1,745)	3,992	(6,864)	(6,936)	(7,009)	(7,083)	(7,157)	(7,233)	(6,598)	(5,965)	(6,043)	(6,122)	(6,202)	(6,283)	(6,365)	(6,448)	(6,532)	(6,617)	(6,703)	(6,790)	(6,878)
State tax calculation (+ = refund)																										
Savings as a result of project	(715,191)	(67,652)	(67,548)	(67,448)	(67,353)	(67,263)	(16,644)	(16,864)	(17,087)	(17,313)	(17,542)	(17,773)	(18,007)	(18,244)	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
State Depreciation	625,000	26,042	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	26,042	0										
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual taxable income	(90,191)	(41,610)	(15,464)	(15,365)	(15,270)	(15,179)	35,440	35,219	34,996	34,770	34,542	34,310	34,076	7,798	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
Taxes due before ITC (+ = refund)	(7,035)	(3,246)	(1,206)	(1,198)	(1,191)	(1,184)	2,764	2,747	2,730	2,712	2,694	2,676	2,658	608	(1,442)	(1,461)	(1,480)	(1,499)	(1,519)	(1,539)	(1,559)	(1,579)	(1,599)	(1,620)	(1,641)	(1,663)
State tax credit (ITC to 200 kW)	0	0																								
Taxes due after ITC	(7,035)	(3,246)	(1,206)	(1,198)	(1,191)	(1,184)	2,764	2,747	2,730	2,712	2,694	2,676	2,658	608	(1,442)	(1,461)	(1,480)	(1,499)	(1,519)	(1,539)	(1,559)	(1,579)	(1,599)	(1,620)	(1,641)	(1,663)
AFTER-TAX CASH FLOW, NET*:	208,740	(358,449)	102,622	78,763	64,388	64,334	23,400	12,747	12,881	13,016	13,153	13,292	13,432	12,254	11,077	11,222	11,369	11,518	11,669	11,821	11,975	12,131	12,289	12,449	12,610	12,774
AFTER-TAX CASH FLOW, CUMULATIVE:		(358,449)	(255,826)	(177,064)	(112,675)	(48,341)	(24,942)	(12,194)	687	13,703	26,856	40,148	53,581	65,834	76,911	88,134	99,503	111,021	122,690	134,511	146,486	158,617	170,906	183,355	195,966	208,740
		(398,337)	117,072	88,004	75,881	65,533	49,075	39,564	36,960	34,675	32,676	13,038	13,420	13,809	14,207	14,613	15,163	15,543	15,978	16,422	16,876	17,339	17,812	18,294	18,787	19,290

8.0%	Internal Rate of Return
7.95	Payback Term
(378)	NPV @ 8.0% Discount Rate

Not For Profit / Government

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	504,803	17,454	17,662	17,873	18,085	18,301	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Total Cost Savings:	762,066	69,527	69,423	69,323	69,228	69,138	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Expenses:																										
Maintenance	(46,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Total Expenses:		(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Financing:		$																								
% Downpayment:	100%	625,000																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(625,000)																								
Equipment Loan Principal Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(625,000)	(625,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH FLOW, NET*:	90,191	(557,348)	67,548	67,448	67,353	67,263	16,644	16,864	17,087	17,313	17,542	17,773	18,007	18,244	18,483	18,726	18,971	19,219	19,471	19,725	19,982	20,242	20,506	20,772	21,042	21,315
CASH FLOW, CUMULATIVE:		(557,348)	(489,801)	(422,352)	(354,999)	(287,736)	(271,092)	(254,228)	(237,141)	(219,827)	(202,286)	(184,513)	(166,506)	(148,262)	(129,779)	(111,053)	(92,082)	(72,863)	(53,392)	(33,667)	(13,685)	6,557	27,063	47,835	68,877	90,191

1.3%	Internal Rate of Return
20.68	Payback Term
($147,451)	NPV @ 6.0% Discount Rate

J7

San Diego Smart Energy 2020

Capacity Based Incentive (CBI)	
CBI Rebate Cap:	100%
CBI Rebate ($/W):	
CBI Payee (1=PL, 0=Host)	0

Performance Based Incentive (PBI)	
Y1 PBI ($/kWh)	$0.03
PBI Term (years)	5
Annual Rate of Decline	0%
PBI Payee (1=PL, 0=Host)	0

System Statistics	
System Size (kWaccec):	100
Yr 1 Annual kWh:	145,453
Yr 1 Annual kWh / kWaccec:	1,455
Performance degradation	0.6%
Maintenance Y1-Y25 (% gross cost):	0.30%
Y1 Avoided Cost ($/kWh):	$0.141

Declining PBI		
	Year	PBI Schedule
	1	0.033
	2	0.033
	3	0.033
	4	0.033
	5	0.033
	6	0.000
	7	0.000
	8	0.000
	9	0.000
	10	0.000
	11	0.000
	12	0.000
	13	0.000
	14	0.000
	15	0.000
	16	0.000
	17	0.000

System Costs		
Gross Price ($/W):	$3.94	
Total Gross Price:	$ 393,906	100%
CBI Incentives:	$ -	0%
Net Price	$ 393,906	
% Downpayment:	100%	
Loan Rate (%):	5.0%	
Loan Term (yrs):	10	

Customer Assumptions	
Federal Tax Rate:	35.0%
State Tax Rate:	7.8%
Federal Tax Credit	30.0%
State Tax Credit	0.0%
Com Disc Rate	8%
Gov Disc Rate	6%
Annual inflation:	0.0%
Elect. Inflation:	1.8%

Outputs	
Total Rebate $ $	24
Total Rebate $ $	0.09
IRR - Private $	8.0%
Payback Com	10.41
IRR - Public S	3.3%
Payback Gov	17.28

PBI equiv. value	
payout	$0.24
NPV (5%)	$0.21
npv(10%)	$0.18

Year 10

Performance Incentive	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance (kWh/year)	3,386,821	145,453	144,583	143,718	142,858	142,003	141,153	140,309	139,469	138,635	137,805	136,980	136,161	135,346	134,536	133,731	132,931	132,136	131,345	130,559	129,778	129,001	128,229	127,462	126,700	125,941
Cumulative Performance		145,453	290,036	433,753	576,611	718,614	859,767	1,000,075	1,139,544	1,278,179	1,415,984	1,552,964	1,689,125	1,824,471	1,959,007	2,092,739	2,225,670	2,357,805	2,489,150	2,619,709	2,749,487	2,878,489	3,006,718	3,134,180	3,260,880	3,386,821
Average Performance to date		145,453	145,018	144,584	144,153	143,723	143,294	142,868	142,443	142,020	141,598	141,179	140,760	140,344	139,929	139,516	139,104	138,694	138,286	137,879	137,474	137,071	136,669	136,269	135,870	135,473
PBI $	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Commercial Customer

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	592,723	20,494	20,738	20,985	21,235	21,488	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Total Cost Savings:	616,437	25,294	25,510	25,728	25,950	26,174	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Expenses:																										
Maintenance	(29,543)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Total Expenses:		(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Financing:		$																								
% Downpayment:	100%	393,906																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(393,906)																								
Equipment Loan Principal Payment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(393,906)	(393,906)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRE-TAX CASH FLOW, NET*:	192,988	(368,793)	24,328	24,546	24,768	24,993	20,562	20,821	21,083	21,348	21,617	21,888	22,163	22,441	22,722	23,007	23,295	23,587	23,882	24,180	24,482	24,788	25,097	25,410	25,727	26,047
PRE-TAX CASH FLOW, CUMULATIVE:		(369,793)	(345,465)	(320,919)	(296,151)	(271,159)	(250,596)	(229,775)	(208,692)	(187,343)	(165,726)	(143,838)	(121,675)	(99,234)	(76,512)	(53,505)	(30,210)	(6,623)	17,258	41,438	65,920	90,708	115,805	141,215	166,941	192,988
Federal tax calculation (+ = refund)																										
Savings as a result of project	(586,894)	(24,113)	(24,328)	(24,546)	(24,768)	(24,993)	(20,562)	(20,821)	(21,083)	(21,348)	(21,617)	(21,888)	(22,163)	(22,441)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
MACRS Accelerated Depr. w/yr 1 bonus (%)		20.0%	32.0%	19.2%	11.5%	11.5%	5.8%																			
Federal Depreciation	334,820	66,964	107,142	64,285	38,504	38,504	19,420	0	0	0	0	0	0	0												
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State tax deduction	15,053	601	(663)	(646)	(628)	(611)	(957)	(936)	(916)	(895)	(874)	(853)	(832)	470	1,772	1,795	1,817	1,840	1,863	1,886	1,910	1,933	1,958	1,982	2,007	2,032
Annual taxable income	(237,020)	43,452	82,152	39,094	13,108	12,901	(2,099)	(21,758)	(21,999)	(22,244)	(22,491)	(22,741)	(22,995)	(21,971)	(20,950)	(21,212)	(21,478)	(21,747)	(22,019)	(22,294)	(22,572)	(22,854)	(23,139)	(23,428)	(23,720)	(24,015)
Taxes due before ITC (+ = refund)	(82,957)	15,208	28,753	13,683	4,588	4,515	(735)	(7,615)	(7,700)	(7,785)	(7,872)	(7,959)	(8,048)	(7,690)	(7,332)	(7,424)	(7,517)	(7,611)	(7,707)	(7,803)	(7,900)	(7,999)	(8,099)	(8,200)	(8,302)	(8,405)
Federal tax credit (ITC)	118,172	118,172																								
Taxes due after ITC	35,215	133,380	28,753	13,683	4,588	4,515	(735)	(7,615)	(7,700)	(7,785)	(7,872)	(7,959)	(8,048)	(7,690)	(7,332)	(7,424)	(7,517)	(7,611)	(7,707)	(7,803)	(7,900)	(7,999)	(8,099)	(8,200)	(8,302)	(8,405)
State tax calculation (+ = refund)																										
Savings as a result of project	(586,894)	(24,113)	(24,328)	(24,546)	(24,768)	(24,993)	(20,562)	(20,821)	(21,083)	(21,348)	(21,617)	(21,888)	(22,163)	(22,441)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
State Depreciation	393,906	16,413	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	16,413	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual taxable income	(192,988)	(7,700)	8,498	8,279	8,058	7,833	12,263	12,004	11,742	11,477	11,209	10,937	10,662	(6,028)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
Taxes due before ITC (+ = refund)	(15,053)	(601)	663	646	628	611	957	936	916	895	874	853	832	(470)	(1,772)	(1,795)	(1,817)	(1,840)	(1,863)	(1,886)	(1,910)	(1,933)	(1,958)	(1,982)	(2,007)	(2,032)
State tax credit (ITC to 200 kW)	0	0																								
Taxes due after ITC	(15,053)	(601)	663	646	628	611	957	936	916	895	874	853	832	(470)	(1,772)	(1,795)	(1,817)	(1,840)	(1,863)	(1,886)	(1,910)	(1,933)	(1,958)	(1,982)	(2,007)	(2,032)
AFTER-TAX CASH FLOW, NET*:	213,150	(237,014)	53,744	38,875	29,984	30,119	20,784	14,142	14,299	14,458	14,619	14,782	14,947	14,281	13,617	13,788	13,961	14,135	14,312	14,491	14,672	14,855	15,041	15,228	15,418	15,610
AFTER-TAX CASH FLOW, CUMULATIVE:		(237,014)	(183,270)	(144,395)	(114,411)	(84,292)	(63,508)	(49,366)	(35,066)	(20,608)	(5,988)	8,793	23,740	38,021	51,639	65,427	79,387	93,523	107,835	122,326	136,998	151,853	166,894	182,122	197,540	213,150

8.0%	Internal Rate of Return
10.41	Payback Term
610	NPV @ 8.0% Discount Rate

Not For Profit / Government

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	592,723	20,494	20,738	20,985	21,235	21,488	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Total Cost Savings:	616,437	25,294	25,510	25,728	25,950	26,174	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Expenses:																										
Maintenance	(29,543)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Total Expenses:		(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Financing:		$																								
% Downpayment:	100%	393,906																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(393,906)																								
Equipment Loan Principal Payment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(393,906)	(393,906)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH FLOW, NET*:	192,988	(369,793)	24,328	24,546	24,768	24,993	20,562	20,821	21,083	21,348	21,617	21,888	22,163	22,441	22,722	23,007	23,295	23,587	23,882	24,180	24,482	24,788	25,097	25,410	25,727	26,047
CASH FLOW, CUMULATIVE:		(369,793)	(345,465)	(320,919)	(296,151)	(271,159)	(250,596)	(229,775)	(208,692)	(187,343)	(165,726)	(143,838)	(121,675)	(99,234)	(76,512)	(53,505)	(30,210)	(6,623)	17,258	41,438	65,920	90,708	115,805	141,215	166,941	192,988

3.3%	Internal Rate of Return
17.28	Payback Term
($74,060)	NPV @ 6.0% Discount Rate

J8

PV Installations by Month

year	month	Total MW solar installed by month-end	New solar MW DC installed each month	Monthly solar MWh eligible for PBI	Total solar MWh eligible for PBI by year-end	
2008	6	0.001		1		Adj.(1) --> 99.95%
2008	7	0.7	#N/A	86		to reflect assumed
2008	8	1.4	0.71	173		monthly degradation in
2008	9	2.1	0.71	259		solar output.
2008	10	2.8	0.71	345		
2008	11	3.6	0.71	431		
2008	12	4.3	0.71	517	*1811*	
2009	1	4.9	0.68	599		
2009	2	5.6	0.68	681		
2009	3	6.3	0.68	763		
2009	4	7.0	0.68	845		
2009	5	7.6	0.68	927		
2009	6	8.3	0.67	1008		
2009	7	9.0	0.67	1090		
2009	8	9.7	0.67	1172		
2009	9	10.3	0.67	1253		
2009	10	11.0	0.67	1335		
2009	11	11.7	0.67	1417		
2009	12	12.4	0.67	1498	*12587*	
2010	1	13.6	1.29	1654		
2010	2	14.9	1.29	1811		
2010	3	16.2	1.29	1967		
2010	4	17.5	1.29	2123		
2010	5	18.8	1.29	2279		
2010	6	20.1	1.29	2434		
2010	7	21.4	1.28	2590		
2010	8	22.7	1.28	2746		
2010	9	23.9	1.28	2901		
2010	10	25.2	1.28	3057		
2010	11	26.5	1.28	3212		
2010	12	27.8	1.28	3368	*30142*	
2011	1	30.2	2.46	3665		
2011	2	32.7	2.46	3963		
2011	3	35.2	2.45	4261		
2011	4	37.6	2.45	4558		
2011	5	40.1	2.45	4855		
2011	6	42.5	2.45	5152		
2011	7	45.0	2.45	5449		
2011	8	47.4	2.45	5746		
2011	9	49.9	2.45	6043		
2011	10	52.3	2.45	6339		
2011	11	54.7	2.44	6635		
2011	12	57.2	2.44	6932	*63598*	
2012	1	61.9	4.69	7499		
2012	2	66.6	4.68	8067		
2012	3	71.2	4.68	8635		
2012	4	75.9	4.68	9202		
2012	5	80.6	4.68	9768		
2012	6	85.3	4.67	10335		
2012	7	89.9	4.67	10901		
2012	8	94.6	4.67	11467		
2012	9	99.3	4.67	12033		
2012	10	103.9	4.66	12598		
2012	11	108.6	4.66	13163		
2012	12	113.3	4.66	13728	*127398*	
2013	1	122.2	8.94	14812		
2013	2	131.1	8.93	15895		
2013	3	140.1	8.93	16977		
2013	4	149.0	8.92	18059		
2013	5	157.9	8.92	19140		
2013	6	166.8	8.92	20221		
2013	7	175.7	8.91	21301		
2013	8	184.6	8.91	22380		
2013	9	193.5	8.90	23459		
2013	10	202.4	8.90	24538		
2013	11	211.3	8.89	25616		
2013	12	220.2	8.89	26693	*249090*	

Year of Operation	Solar MWh Generated & Eligible for PBI	*Cumulative MW of solar electricity installations (DC adjusted for degradation)*
2007	1,811	4.3
2008	12,587	12.4
2009	30,142	27.8
2010	63,598	57.2
2011	127,398	113.3
2012	249,090	220.2
2013	481,244	424.3
2014	924,157	813.6
2015	1,769,200	1556.4
2016	3,381,507	2973.7
2017	4,312,292	2957.2
2018	4,288,355	2940.8

2014	1	237.3	17.05	28760	
2014	2	254.3	17.04	30826	
2014	3	271.4	17.03	32891	
2014	4	288.4	17.03	34955	
2014	5	305.4	17.02	37018	
2014	6	322.4	17.01	39079	
2014	7	339.4	17.00	41140	
2014	8	356.4	16.99	43200	
2014	9	373.4	16.98	45258	
2014	10	390.4	16.98	47316	
2014	11	407.3	16.97	49373	
2014	12	424.3	16.96	51428	*481244*
2015	1	456.8	32.53	55371	
2015	2	489.3	32.52	59313	
2015	3	521.8	32.50	63252	
2015	4	554.3	32.48	67190	
2015	5	586.8	32.47	71125	
2015	6	619.2	32.45	75059	
2015	7	651.7	32.44	78990	
2015	8	684.1	32.42	82920	
2015	9	716.5	32.40	86848	
2015	10	748.9	32.39	90773	
2015	11	781.3	32.37	94697	
2015	12	813.6	32.35	98619	*924157*
2016	1	875.7	62.07	106142	
2016	2	937.7	62.04	113662	
2016	3	999.7	62.01	121179	
2016	4	1,061.7	61.98	128691	
2016	5	1,123.7	61.95	136200	
2016	6	1,185.6	61.92	143705	
2016	7	1,247.5	61.89	151206	
2016	8	1,309.3	61.85	158703	
2016	9	1,371.1	61.82	166197	
2016	10	1,432.9	61.79	173687	
2016	11	1,494.7	61.76	181173	
2016	12	1,556.4	61.73	188655	*1769200*
2017	1	1,674.9	118.43	203010	
2017	2	1,793.2	118.37	217358	
2017	3	1,911.5	118.31	231699	
2017	4	2,029.8	118.25	246032	
2017	5	2,148.0	118.19	260359	
2017	6	2,266.1	118.13	274678	
2017	7	2,384.2	118.08	288990	
2017	8	2,502.2	118.02	303295	
2017	9	2,620.2	117.96	317593	
2017	10	2,738.1	117.90	331883	
2017	11	2,855.9	117.84	346166	
2017	12	2,973.7	117.78	360443	*3381507*
2018	1	2,972.3	-1.38	360275	
2018	2	2,970.9	-1.38	360108	
2018	3	2,969.5	-1.38	359941	
2018	4	2,968.2	-1.38	359774	
2018	5	2,966.8	-1.38	359607	
2018	6	2,965.4	-1.38	359441	
2018	7	2,964.0	-1.38	359274	
2018	8	2,962.7	-1.37	359107	
2018	9	2,961.3	-1.37	358941	
2018	10	2,959.9	-1.37	358774	
2018	11	2,958.5	-1.37	358608	
2018	12	2,957.2	-1.37	358441	*4312292*
2019	1	2,955.8	-1.37	358275	
2019	2	2,954.4	-1.37	358109	
2019	3	2,953.1	-1.37	357943	
2019	4	2,951.7	-1.37	357777	
2019	5	2,950.3	-1.37	357611	
2019	6	2,949.0	-1.37	357445	
2019	7	2,947.6	-1.37	357280	
2019	8	2,946.2	-1.37	357114	
2019	9	2,944.9	-1.37	356948	
2019	10	2,943.5	-1.37	356783	
2019	11	2,942.1	-1.36	356617	
2019	12	2,940.8	-1.36	356452	*4288355*

Attachment K: San Diego Solar Initiative Financing Plan Limited to $700 Million Solar Incentives Budget

Overview

The limited San Diego Solar Initiative financial plan described in this attachment, with a $700 million photovoltaic (PV) incentives budget, results in the installation of 1,346 MW of direct current PV without battery storage. However, as shown on p. K9 titled "PV Installations by Month," there is some degradation in PV performance over time. This results in a net installed direct current PV of 1,332 MW in 2018.

The PV panels generate direct current (DC) electricity. All buildings or residences that receive electricity from the transmission grid use alternating current (AC) electricity. The DC electricity from the PV panels must be converted to alternating current (AC) via an inverter to be compatible with the AC electricity moving over the transmission grid. About a quarter of the potential power is lost in this conversion process.

There are significant losses in converting the DC power from the panels into AC power ready for transmission over the grid. The assumption used in estimating the AC capacity that will be installed under the San Diego Solar Initiative is that only 77 percent of the maximum DC power potential of the panels is converted to AC power. The AC output from 1,332 MW of direct current PV is 0.77 x 1,332 MW = 1,026 MW. The total amount of grid-compatible AC capacity that would be installed under the San Diego Solar Initiative, if no battery storage is included, is 1,026 MW.

PV systems that are equipped with sufficient battery storage can continue to operate at rated capacity during the afternoon peak demand period. This is when electric power is most needed and most valuable. Southern California Edison began a demonstration project using rooftop PV systems as peaking plants in the summer of 2007. These demonstration units use Gaia Power Towers for storage and energy management. Use of Gaia Power Towers adds somewhat less than 10 percent to the gross PV system cost.

A basic assumption of the San Diego Solar Initiative is that all PV installed under the Initiative would be equipped with battery storage to allow this PV capacity to be available to meet afternoon peak demand. Ten (10) percent of the incentives budget is allocated to the purchase of battery storage and associated control hardware instead of PV panels. Therefore the net PV capacity is reduced 10 percent from the 1,026 MW AC figure to allow for all of these PV systems to be equipped battery storage. The net PV capacity with battery storage is 1,026 MW – (1,026 MW × 0.10) = 923 MW.

The limited version of the San Diego Solar Initiative with a $700 million incentives budget would result in 923 MW AC of net rooftop PV with battery storage being added to the generation base in San Diego County.

Total - Limited San Diego Solar Initiative, $700 million incentives budget

1. Solar Electricity Production (MWh)

Initial Year of Operation*	Total Solar Electricity Produced	% of Total MWhs	Large Systems	Small Systems	Residential
2008	1,092	0.0%	849	121	121
2009	7,446	0.0%	5,791	827	827
2010	17,390	0.0%	13,526	1,932	1,932
2011	35,665	0.0%	27,740	3,963	3,963
2012	69,269	0.0%	53,876	7,697	7,697
2013	131,079	0.0%	101,951	14,564	14,564
2014	244,788	0.1%	190,391	27,199	27,199
2015	453,991	0.2%	353,104	50,443	50,443
2016	838,903	0.3%	652,480	93,211	93,211
2017	1,547,119	0.6%	1,203,315	171,902	171,902
2018	1,951,706	0.7%	1,517,994	216,856	216,856
2019	1,941,893	0.7%	1,510,361	215,766	215,766

INVISIBLE CALCULATIONS - DO NOT MOVE

2. Solar Electric Capacity Installed/Reserved (MW)

Initial Year of Operation*	*New Solar Capacity Installed*	*Cumulative Solar Capacity*	*Large Systems >100 kW*	Small Systems 20 to 100 kW	Residential <20 kW
2008	*2.6*	*2.6*	2.0	0.3	0.3
2009	*4.7*	*7.3*	3.7	0.5	0.5
2010	*8.7*	*16.0*	6.8	1.0	1.0
2011	*16.0*	*32.0*	12.5	1.8	1.8
2012	*29.5*	*61.5*	22.9	3.3	3.3
2013	*54.2*	*115.7*	42.2	6.0	6.0
2014	*99.8*	*215.5*	77.6	11.1	11.1
2015	*183.6*	*399.1*	142.8	20.4	20.4
2016	*337.8*	*737.0*	262.8	37.5	37.5
2017	*621.6*	*1358.6*	483.5	69.1	69.1
2018	*1.3*	*1359.9*	1.0	0.1	0.1
2019	*1.3*	*1361.2*	1.0	0.1	0.1
Totals:	1,361		1,059	151	151

PV Installations (MW)

Initial Year of Operation*	Large Systems >100 kW	Small Systems 20 - 100 kW	Residential <20 kW	Total CA MWhs
2008	2.0	0.3	0.3	255,000,000
2009	3.7	0.5	0.5	257,550,000
2010	7	1	1	260,125,500
2011	12	2	2	262,726,755
2012	23	3	3	265,354,023
2013	42	6	6	268,007,563
2014	78	11	11	270,687,638
2015	143	20	20	273,394,515
2016	263	38	38	276,128,460
2017	483	69	69	278,889,745
2018	1	0	0	281,678,642
2019	1	0	0	290,129,001
	84%	-6%	-6%	

3. Total Funding Requirement

Initial Year of Operation*	Total Direct Incentives Budget	Admin Costs (3%)	Total Annual Funding Available to Projects	Remaining Funding Rolling Forward	Direct Incentive Sub-Totals: Large Systems	Small Systems	Residential
2008	$3,764,621	$112,939	$2,764,621	$887,061	$1,041,443	$783,263	$939,915
2009	$6,517,350	$195,521	$5,517,350	$1,718,153	$2,727,535	$1,268,098	$1,521,718
2010	$10,917,404	$327,522	$9,917,404	$2,442,175	$5,435,986	$2,037,008	$2,444,410
2011	$17,789,182	$533,675	$16,789,182	$2,981,765	$9,712,778	$3,216,547	$3,859,856
2012	$28,239,033	$847,171	$27,239,033	$3,224,047	$16,314,985	$4,965,476	$5,958,572
2013	$42,658,523	$1,279,756	$41,658,523	$3,041,013	$25,212,865	$7,475,299	$8,970,359
2014	$62,586,294	$1,877,589	$61,586,294	$2,254,654	$37,863,941	$10,782,888	$12,939,466
2015	$87,436,947	$2,623,108	$86,436,947	$699,185	$54,473,411	$14,528,880	$17,434,656
2016	$113,087,272	$3,392,618	$112,087,272	-$1,672,457	$73,511,064	$17,534,640	$21,041,568
2017	$129,515,422	$3,885,463	$128,515,422	-$4,608,094	$90,116,286	$17,454,153	$20,944,984
2018	$81,176,963	$2,435,309	$80,176,963	-$6,181,645	$80,176,963	$0	$0
2019	$66,839,796	$2,005,194	$65,839,796	-$7,372,288	$65,839,796	$0	$0
2020	$47,521,875	$1,425,656	$46,521,875	-$8,019,113	$46,521,875	$0	$0
2021	$24,207,429	$726,223	$23,207,429	-$7,985,910	$23,207,429	$0	$0
2022	$1,000,000	$30,000	$0	-$7,255,487	$0	$0	$0
2023	$1,000,000	$30,000	$0	-$6,503,152	$0	$0	$0
2024	$1,000,000	$30,000	$0	-$5,728,246	$0	$0	$0
2025	$1,000,000	$30,000	$0	-$4,930,093	$0	$0	$0
2026	$1,000,000	$30,000	$0	-$4,107,996	$0	$0	$0
2027	$1,000,000	$30,000	$0	-$3,261,236	$0	$0	$0
2028	$1,000,000	$30,000	$0	-$2,389,073	$0	$0	$0
Subtotals:	$729,258,110	$21,877,743	$708,258,110		$532,156,355	$80,046,252	$96,055,503
Avg. Annual Totals	$36,462,906	$1,093,887	$35,412,906	100.0%	$26,607,818	$4,802,775	$4,002,313

$708,258,110 TOTAL FUNDING REQUIREMENT (2008-2028)

*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

San Diego Solar Initiative - Residential PV Systems

Avg. Production per kWac-real	1,410	IOU Annual Avg. Rate Increase	0.0%	Assumptions	<20 kW
In-State Bonus	0%	DC rating to AC-real rating factor	77%	From Other Chart	
Distributed Energy Bonus	0%	IOU Peak Residential Elec. Rate ($/kWh)	0.190		

Initial Year of Operation*	Annual PBI plus rebate expenditures	San Diego Solar Initiative Program - Residential PV Systems <20 kW								
		Solar MWhs annually eligible for PBI Program	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	Capital Rebate	Value of Electricity	Tax Credits	Net System Cost	System Cost Decline
				See Data Table on the Right						
2008	$939,915	121	0.3			$3.29	$2.84	$2.40	$8.00	
2009	$1,521,718	827	0.5			$2.89	$2.84	$2.28	$7.60	5.00%
2010	$2,444,410	1,932	1.0			$2.53	$2.84	$2.17	$7.22	5.00%
2011	$3,859,856	3,963	1.8			$2.17	$2.84	$2.06	$6.86	5.00%
2012	$5,958,572	7,697	3.3			$1.82	$2.84	$1.95	$6.52	5.00%
2013	$8,970,359	14,564	6.0			$1.49	$2.84	$1.86	$6.19	5.00%
2014	$12,939,466	27,199	11.1			$1.17	$2.84	$1.76	$5.88	5.00%
2015	$17,434,656	50,443	20.4			$0.85	$2.84	$1.68	$5.59	5.00%
2016	$21,041,568	93,211	37.5			$0.56	$2.84	$1.59	$5.31	5.00%
2017	$20,944,984	171,902	69.1			$0.30	$2.84	$1.51	$5.04	5.00%
2018	$0	216,856	0.1			$0.00	$2.84	$1.44	$4.79	5.00%
2019	$0	215,766	0.1			$0.00	$2.84	$1.42	$4.74	1.00%
2020	$0	213,608				$0.00	$2.84	$1.41	$4.69	1.00%
2021	$0	211,472				$0.00	$2.84	$1.39	$4.65	1.00%
2022	$0	209,357				$0.00	$2.84	$1.38	$4.60	1.00%
2023	$0	207,264								1.00%
2024	$0	205,191								1.00%
2025	$0	203,139								1%
2026	$0	201,108								1%
2027	$0	199,097								1%
2028	$0									1%
2029	$0									1%
2030	$0									1%
2031	$0									1%
2032	$0									1%
2033	$0									1%
2034	$0									1%
2035	$0									1%
2036	$0									1%
2037	$0									1%
Total for Program	**$96,055,503**	**2,454,719**	**151**		**Average $/Wac-cec =**	$0.64				

*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

San Diego Solar Initiative - Small Commercial PV Systems

Avg. Production per kWac-real	1,410	IOU Annual Avg. Rate Increase	0.0%	Assumptions	20 - 100 kW
In-State Bonus	0%	DC rating to AC-real rating factor	77%	From Other Chart	
Distributed Energy Bonus	0%	IOU Peak Residential Elec. Rate ($/kWh)	0.190		

Initial Year of Operation*	Annual PBI plus rebate expenditures	San Diego Solar Initiative Program - Small Commercial PV Systems 20 to 100 kW								
		Solar MWhs produced annually	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	Capital Rebate	Value of Electricity	Tax Credits	Net System Cost	System Cost Decline
			See Data Table on the Right							
2008	$783,263	121	0.3			$2.74	$2.84	$4.03	$7.00	
2009	$1,268,098	827	0.5			$2.41	$2.84	$3.83	$6.65	5.0%
2010	$2,037,008	1,932	1.0			$2.11	$2.84	$3.64	$6.32	5.0%
2011	$3,216,547	3,963	1.8			$1.81	$2.84	$3.46	$6.00	5.0%
2012	$4,965,476	7,697	3.3			$1.52	$2.84	$3.29	$5.70	5.0%
2013	$7,475,299	14,564	6.0			$1.24	$2.84	$3.12	$5.42	5.0%
2014	$10,782,888	27,199	11.1			$0.97	$2.84	$2.97	$5.15	5.0%
2015	$14,528,880	50,443	20.4			$0.71	$2.84	$2.82	$4.89	5.0%
2016	$17,534,640	93,211	37.5			$0.47	$2.84	$2.68	$4.64	5.0%
2017	$17,454,153	171,902	69.1			$0.25	$2.84	$2.54	$4.41	5.0%
2018	$0	216,856	0.1			$0.00	$2.84	$2.42	$4.19	5.0%
2019	$0	215,766	0.1			$0.00	$2.84	$2.39	$4.15	1.0%
2020	$0					$0.00	$2.84	$0.00	$4.11	1.0%
2021	$0					$0.00	$2.84	$0.00	$4.07	1.0%
2022	$0					$0.00	$2.84	$0.00	$4.03	1%
2023	$0								$3.99	1%
2024	$0								$3.95	1%
2025	$0								$3.91	1%
2026	$0								$3.87	1%
2027	$0								$3.83	1%
2028	$0								$3.79	1%
2029	$0								$3.75	1%
2030	$0								$3.71	1%
2031	$0								$3.68	1%
2032	$0								$3.64	1%
2033	$0								$3.60	1%
2034	$0								$3.57	1%
2035	$0								$3.53	1%
2036	$0								$3.50	1%
2037	$0								$3.46	1%
Total for Program	**$80,046,252**	**804,483**	**151**		**Average $/Wac-cec =**	$0.53				

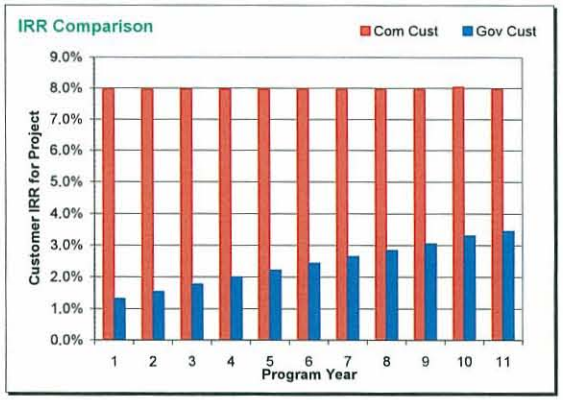
*** Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**

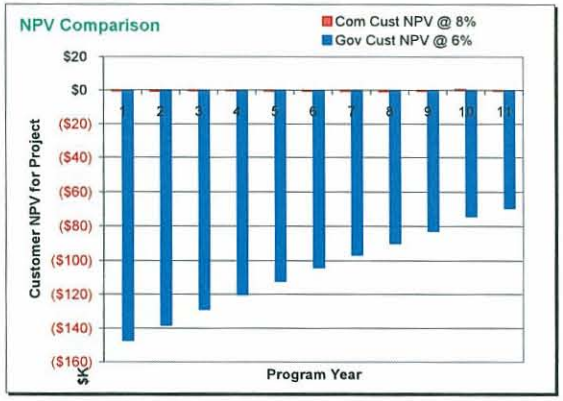
San Diego Solar Initiative - Large Commercial PV Systems

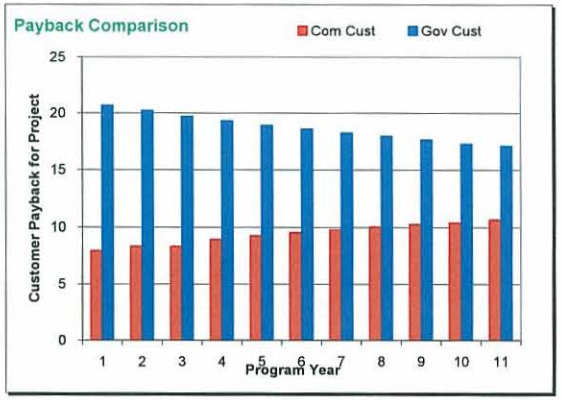
Year 1 Installation Cost ($/Wdc)	$6.25	PBI Annual Decline	0%	Federal Tax Rate	35.0%	Assumptions	>100 kW
Avg. Production per kWac-real	1,889	PBI Pay-out Term (years)	5	State Tax Rate	7.8%	From Other Chart	
Performance Degradation	0.60%	In-State Bonus	0%	Blended Federal & State	40.1%	Recalculate	
AC-cec rating to AC-real rating factor	77%	Distribution Energy Bonus	19%	Discount Rate	7.0%		
Blended Avg. IOU Elec. Rate	0.120						
Annual Avg. Rate Increase	1.8%						

San Diego Solar Initiative Program - Large Commercial PV Systems >100 kW — Target IRR: 8.0%

Initial Year of Operation*	Annual Encumberance from PBI Program	New Solar MWhs annually eligible for PBI Program	ANNUAL SOLAR MWdc Installed	PBI payment per MWh	Customer Bill Savings per kWh	CBI Equivalent using discount rate	*Fed ITC*	*CA ITC*	Value of Tax Benefits (% of Net Cost)	*Avg Install Price ($/Wdc)*	System Cost Decline	Com IRR	Gov IRR
				See Data Table on the Right									
2008	$1,041,443	849	2.0	358	0.120	$2.28	30%	0%	57.6%	$6.25		8.0%	1.3%
2009	$2,727,535	5,791	3.7	315	0.122	$2.01	30%	0%	57.6%	$5.94	5.0%	8.0%	1.5%
2010	$5,435,986	13,526	6.8	275	0.124	$1.75	30%	0%	57.6%	$5.64	5.0%	8.0%	1.8%
2011	$9,712,778	27,740	12.5	236	0.127	$1.51	30%	0%	57.6%	$5.36	5.0%	8.0%	2.0%
2012	$16,314,985	53,876	22.9	198	0.129	$1.26	30%	0%	57.6%	$5.09	5.0%	8.0%	2.2%
2013	$25,212,865	101,951	42.2	162	0.131	$1.03	30%	0%	57.6%	$4.84	5.0%	8.0%	2.4%
2014	$37,863,941	190,391	77.6	127	0.134	$0.81	30%	0%	57.6%	$4.59	5.0%	8.0%	2.6%
2015	$54,473,411	353,104	142.8	93	0.136	$0.59	30%	0%	57.6%	$4.36	5.0%	8.0%	2.8%
2016	$73,511,064	652,480	262.8	61	0.138	$0.39	30%	0%	57.6%	$4.15	5.0%	8.0%	3.1%
2017	$90,116,286	1,203,315	483.5	33	0.141	$0.21	30%	0%	57.6%	$3.94	5.0%	8.0%	3.3%
2018	$80,176,963	1,517,994	1.0		0.143	$0.00	30%		57.6%	$3.74	5.0%	8.0%	3.5%
2019	$65,839,796	1,510,361	1.0		0.146	$0.00	30%		57.6%	$3.70	1%	8.3%	3.7%
2020	$46,521,875				0.149	$0.00				$3.67	1%		
2021	$23,207,429				0.151	$0.00				$3.63	1%		
2022	$0				0.154	$0.00				$3.59	1%		
2023	$0				0.157	$0.00				$3.56	1%		
2024	$0				0.160	$0.00				$3.52	1%		
2025	$0				0.163	$0.00				$3.49	1%		
2026	$0				0.165	$0.00				$3.45	1%		
2027	$0				0.168	$0.00				$3.42	1%		
2028	$0				0.171	$0.00				$3.38	1%		
2029	$0				0.175	$0.00				$3.35	1%		
2030	$0				0.178	$0.00				$3.32	1%		
2031	$0				0.181	$0.00				$3.28	1%		
2032	$0				0.184	$0.00				$3.25	1%		
2033	$0				0.187					$3.22	1%		
2034	$0				0.191					$3.19	1%		
2035	$0				0.194					$3.15	1%		
2036	$0				0.198					$3.12	1%		
2037	$0				0.201					$3.09	1%		
Totals for Program	**$532,156,355**	**5,631,378**	**1,057**			**Average $/Wac-cec =**	$0.50						







Commercial Customers			
Year	IRR	NPV (8%)	Payback
1	8.0%	($378)	7.9
2	8.0%	($603)	8.3
3	8.0%	($373)	8.3
4	8.0%	($346)	8.9
5	8.0%	($490)	9.3
6	8.0%	($433)	9.5
7	8.0%	($492)	9.8
8	8.0%	($641)	10.1
9	8.0%	($511)	10.3
10	8.0%	$610	10.4
11	8.0%	($354)	10.7
12	8.3%	($354)	10.7

		2008			2009			2010			2011			2012			2013		
		Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New
CBI ($/W)			$2.74	$3.29		$2.41	$2.89		$2.11	$2.53		$1.81	$2.17		$1.52	$1.82		$1.24	$1.49
PBI ($/kWh)	Y1	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
	Y2	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
	Y3	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
	Y4	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
	Y5	$0.36			$0.32			$0.28			$0.24			$0.20			$0.16		
	Y6	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y7	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y8	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y9	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y10	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
CBI Equivalent		$ 2.28			$ 2.01			$ 1.75			$ 1.51			$ 1.26			$ 1.03		

Government Customers			
Year	IRR	NPV (6%)	Payback
1	1.3%	($147,451)	20.7
2	1.5%	($138,335)	20.2
3	1.8%	($128,856)	19.7
4	2.0%	($120,146)	19.3
5	2.2%	($112,130)	18.9
6	2.4%	($104,133)	18.6
7	2.6%	($96,693)	18.2
8	2.8%	($89,746)	17.9
9	3.1%	($82,625)	17.6
10	3.3%	($74,060)	17.3
11	3.5%	($69,449)	17.1
12	3.7%	($69,449)	17.1

		2014			2015			2016			2017			2018			2019		
		Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New	Com	Res Retro	Res New
CBI ($/W)			$0.97	$1.17		$0.71	$0.85		$0.47	$0.56		$0.25	$0.30		$0.00	$0.00		$0.00	$0.00
PBI ($/kWh)	Y1	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
	Y2	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
	Y3	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
	Y4	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
	Y5	$0.13			$0.09			$0.06			$0.03			$0.00			$0.00		
	Y6	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y7	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y8	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y9	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		
	Y10	$0.00			$0.00			$0.00			$0.00			$0.00			$0.00		

San Diego Smart Energy 2020

K7

Capacity Based Incentive (CBI)	
CBI Rebate Cap:	100%
CBI Rebate ($/W):	
CBI Payee (1=PL, 0=Host)	0

Performance Based Incentive (PBI)	
Y1 PBI ($/kWh)	$0.36
PBI Term (years)	5
Annual Rate of Decline	0%
PBI Payee (1=PL, 0=Host)	0

System Statistics	
System Size (kWaccec):	100
Yr 1 Annual kWh:	145,453
Yr 1 Annual kWh / kWaccec:	1,455
Performance degradation	0.6%
Maintenance Y1-Y25 (% gross cost):	0.30%
Y1 Avoided Cost ($/kWh):	$0.120

Declining PBI	
Year	PBI Schedule
1	0.358
2	0.358
3	0.358
4	0.358
5	0.358
6	0.000
7	0.000
8	0.000
9	0.000
10	0.000
11	0.000
12	0.000
13	0.000
14	0.000
15	0.000
16	0.000
17	0.000
18	0.000
19	0.000
20	0.000
21	0.000
22	0.000
23	0.000
24	0.000
25	0.000

System Costs			
Gross Price ($/W):	$6.25		
Total Gross Price:	$ 625,000	100%	
CBI Incentives:	$ -	0%	
Net Price	$ 625,000		
% Downpayment:	100%		
Loan Rate (%):	5.0%		
Loan Term (yrs):	10		

Customer Assumptions	
Federal Tax Rate:	35.0%
State Tax Rate:	7.8%
Federal Tax Credit	30.0%
State Tax Credit	0.0%
Com Disc Rate	8%
Gov Disc Rate	6%
Annual Inflation:	0.0%
Elect. Inflation:	1.8%

OutPut	
Total Rebate $:	$ 257
Total Rebate $:	$ 1.03
IRR - Private S	8.0%
Payback Com	7.95
IRR - Public Se	1.3%
Payback Gov	20.68

PBI equ value	
payout	$2.57
NPV (5%)	$2.23
npv(10%)	$1.95

Year 1

Performance Incentive	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance (kWh/year)	3,386,821	145,453	144,583	143,718	142,858	142,003	141,153	140,309	139,469	138,635	137,805	136,980	136,161	135,346	134,536	133,731	132,931	132,136	131,345	130,559	129,778	129,001	128,229	127,462	126,700	125,941
Cumulative Performance		145,453	290,036	433,753	576,611	718,614	859,767	1,000,075	1,139,544	1,278,179	1,415,984	1,552,964	1,689,125	1,824,471	1,959,007	2,092,739	2,225,670	2,357,805	2,489,150	2,619,709	2,749,487	2,878,489	3,006,718	3,134,180	3,260,880	3,386,821
Average Performance to date		145,453	145,018	144,584	144,153	143,723	143,294	142,868	142,443	142,020	141,598	141,178	140,760	140,344	139,929	139,516	139,104	138,694	138,286	137,879	137,474	137,071	136,669	136,269	135,870	135,473
PBI $	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Commercial Customer

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	504,803	17,454	17,662	17,873	18,085	18,301	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Total Cost Savings:	762,066	69,527	69,423	69,323	69,228	69,138	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Expenses:																										
Maintenance	(46,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Total Expenses:		(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Financing:		$																								
% Downpayment:	100%	625,000																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(625,000)																								
Equipment Loan Principal Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(625,000)	(625,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRE-TAX CASH FLOW, NET*:	90,191	(557,348)	67,548	67,448	67,353	67,263	16,644	16,864	17,087	17,313	17,542	17,773	18,007	18,244	18,483	18,726	18,971	19,219	19,471	19,725	19,982	20,242	20,506	20,772	21,042	21,315
PRE-TAX CASH FLOW, CUMULATIVE:		(557,348)	(489,801)	(422,352)	(354,999)	(287,736)	(271,092)	(254,228)	(237,141)	(219,827)	(202,286)	(184,513)	(166,506)	(148,262)	(129,779)	(111,053)	(92,082)	(72,863)	(53,392)	(33,667)	(13,685)	6,557	27,063	47,835	68,877	90,191
Federal tax calculation (+ = refund)																										
Savings as a result of project	(715,191)	(67,652)	(67,548)	(67,448)	(67,353)	(67,263)	(16,644)	(16,864)	(17,087)	(17,313)	(17,542)	(17,773)	(18,007)	(18,244)	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
MACRS Accelerated Depr. w/yr 1 bonus (%)		20.0%	32.0%	19.2%	11.5%	11.5%	5.8%																			
Federal Depreciation	531,250	106,250	170,000	102,000	61,094	61,094	30,813	0	0	0	0	0	0	0	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State tax deduction	7,035	3,246	1,206	1,198	1,191	1,184	(2,764)	(2,747)	(2,730)	(2,712)	(2,694)	(2,676)	(2,658)	(608)	1,442	1,461	1,480	1,499	1,519	1,539	1,559	1,579	1,599	1,620	1,641	1,663
Annual taxable income	(176,905)	41,844	103,659	35,750	(5,068)	(4,985)	11,405	(19,611)	(19,817)	(20,025)	(20,236)	(20,449)	(20,665)	(18,852)	(17,042)	(17,265)	(17,491)	(17,720)	(17,952)	(18,186)	(18,423)	(18,663)	(18,906)	(19,152)	(19,401)	(19,652)
Taxes due before ITC (+ = refund)	(61,917)	14,645	36,281	12,513	(1,774)	(1,745)	3,992	(6,864)	(6,936)	(7,009)	(7,083)	(7,157)	(7,233)	(6,598)	(5,965)	(6,043)	(6,122)	(6,202)	(6,283)	(6,365)	(6,448)	(6,532)	(6,617)	(6,703)	(6,790)	(6,878)
Federal tax credit (ITC)	187,500	187,500																								
Taxes due after ITC	125,583	202,145	36,281	12,513	(1,774)	(1,745)	3,992	(6,864)	(6,936)	(7,009)	(7,083)	(7,157)	(7,233)	(6,598)	(5,965)	(6,043)	(6,122)	(6,202)	(6,283)	(6,365)	(6,448)	(6,532)	(6,617)	(6,703)	(6,790)	(6,878)
State tax calculation (+ = refund)																										
Savings as a result of project	(715,191)	(67,652)	(67,548)	(67,448)	(67,353)	(67,263)	(16,644)	(16,864)	(17,087)	(17,313)	(17,542)	(17,773)	(18,007)	(18,244)	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
State Depreciation	625,000	26,042	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	52,083	26,042	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual taxable income	(90,191)	(41,610)	(15,464)	(15,365)	(15,270)	(15,179)	35,440	35,219	34,996	34,770	34,542	34,310	34,076	7,798	(18,483)	(18,726)	(18,971)	(19,219)	(19,471)	(19,725)	(19,982)	(20,242)	(20,506)	(20,772)	(21,042)	(21,315)
Taxes due before ITC (+ = refund)	(7,035)	(3,246)	(1,206)	(1,198)	(1,191)	(1,184)	2,764	2,747	2,730	2,712	2,694	2,676	2,658	608	(1,442)	(1,461)	(1,480)	(1,499)	(1,519)	(1,539)	(1,559)	(1,579)	(1,599)	(1,620)	(1,641)	(1,663)
State tax credit (ITC to 200 kW)	0	0																								
Taxes due after ITC	(7,035)	(3,246)	(1,206)	(1,198)	(1,191)	(1,184)	2,764	2,747	2,730	2,712	2,694	2,676	2,658	608	(1,442)	(1,461)	(1,480)	(1,499)	(1,519)	(1,539)	(1,559)	(1,579)	(1,599)	(1,620)	(1,641)	(1,663)
AFTER-TAX CASH FLOW, NET*:	208,740	(358,449)	102,622	78,763	64,388	64,334	23,400	12,747	12,881	13,016	13,153	13,292	13,432	12,254	11,077	11,222	11,369	11,518	11,669	11,821	11,975	12,131	12,289	12,449	12,610	12,774
AFTER-TAX CASH FLOW, CUMULATIVE:		(358,449)	(255,826)	(177,064)	(112,675)	(48,341)	(24,942)	(12,194)	687	13,703	26,856	40,148	53,581	65,834	76,911	88,134	99,503	111,021	122,690	134,511	146,486	158,617	170,906	183,355	195,966	208,740
		(308,337)	117,072	88,904	75,881	65,533	49,075	39,564	36,960	34,675	32,676	13,038	13,420	13,809	14,207	14,613	15,163	15,543	15,978	16,422	16,876	17,339	17,812	18,294	18,787	19,290

8.0%	Internal Rate of Return
7.95	Payback Term
(378)	NPV @ 8.0% Discount Rate

Not For Profit / Government

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	257,264	52,072	51,761	51,451	51,143	50,837	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	504,803	17,454	17,662	17,873	18,085	18,301	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Total Cost Savings:	762,066	69,527	69,423	69,323	69,228	69,138	18,519	18,739	18,962	19,188	19,417	19,648	19,882	20,119	20,358	20,601	20,846	21,094	21,346	21,600	21,857	22,117	22,381	22,647	22,917	23,190
Expenses:																										
Maintenance	(46,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Total Expenses:		(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)	(1,875)
Financing:		$																								
% Downpayment:	100%	625,000																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(625,000)																								
Equipment Loan Principal Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(625,000)	(625,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH FLOW, NET*:	90,191	(557,348)	67,548	67,448	67,353	67,263	16,644	16,864	17,087	17,313	17,542	17,773	18,007	18,244	18,483	18,726	18,971	19,219	19,471	19,725	19,982	20,242	20,506	20,772	21,042	21,315
CASH FLOW, CUMULATIVE:		(557,348)	(489,801)	(422,352)	(354,999)	(287,736)	(271,092)	(254,228)	(237,141)	(219,827)	(202,286)	(184,513)	(166,506)	(148,262)	(129,779)	(111,053)	(92,082)	(72,863)	(53,392)	(33,667)	(13,685)	6,557	27,063	47,835	68,877	90,191

1.3%	Internal Rate of Return
20.68	Payback Term
($147,451)	NPV @ 6.0% Discount Rate

San Diego Smart Energy 2020

Capacity Based Incentive (CBI)	
CBI Rebate Cap:	100%
CBI Rebate ($/W):	
CBI Payee (1=PL, 0=Host)	0

Performance Based Incentive (PBI)	
Y1 PBI ($/kWh)	$0.03
PBI Term (years)	5
Annual Rate of Decline	0%
PBI Payee (1=PL, 0=Host)	0

System Statistics	
System Size (kWaccec):	100
Yr 1 Annual kWh:	145,453
Yr 1 Annual kWh / kWaccec:	1,455
Performance degradation	0.6%
Maintenance Y1-Y25 (% gross cost):	0.30%
Y1 Avoided Cost ($/kWh):	$0.141

Declining PBI	
Year	PBI Schedule
1	0.033
2	0.033
3	0.033
4	0.033
5	0.033
6	0.000
7	0.000
8	0.000
9	0.000
10	0.000
11	0.000
12	0.000
13	0.000
14	0.000
15	0.000
16	0.000
17	0.000

System Costs		
Gross Price ($/W):	$3.94	
Total Gross Price:	$ 393,906	100%
CBI Incentives:	$ -	0%
Net Price	$ 393,906	
% Downpayment:	100%	
Loan Rate (%):	5.0%	
Loan Term (yrs):	10	

Customer Assumptions	
Federal Tax Rate:	35.0%
State Tax Rate:	7.6%
Federal Tax Credit	30.0%
State Tax Credit	0.0%
Com Disc Rate	8%
Gov Disc Rate	6%
Annual inflation:	0.0%
Elect. Inflation:	1.8%

Outputs	
Total Rebate $	$ 24
Total Rebate $	$ 0.09
IRR - Private	8.0%
Payback Com	10.41
IRR - Public S	3.3%
Payback Gov	17.28

PBI equiv. value	
payout	$0.24
NPV (5%)	$0.21
npv(10%)	$0.18

Year 10

Performance Incentive	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance (kWh/year)	3,386,821	145,453	144,583	143,718	142,858	142,003	141,153	140,309	139,469	138,635	137,805	136,980	136,161	135,346	134,536	133,731	132,931	132,136	131,345	130,559	129,778	129,001	128,229	127,462	126,700	125,941
Cumulative Performance		145,453	290,036	433,753	576,611	718,614	859,767	1,000,075	1,139,544	1,278,179	1,415,984	1,552,964	1,689,125	1,824,471	1,959,007	2,092,739	2,225,670	2,357,805	2,489,150	2,619,709	2,749,487	2,878,489	3,006,718	3,134,180	3,260,880	3,386,821
Average Performance to date		145,453	145,018	144,584	144,153	143,723	143,294	142,868	142,443	142,020	141,598	141,179	140,760	140,344	139,929	139,516	139,104	138,694	138,286	137,879	137,474	137,071	136,669	136,269	135,870	135,473
PBI $	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Commercial Customer

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	592,723	20,494	20,738	20,985	21,235	21,488	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Total Cost Savings:	616,437	25,294	25,510	25,728	25,950	26,174	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Expenses:																										
Maintenance	(29,543)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Total Expenses:		(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Financing:		$																								
% Downpayment:	100%	393,906																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(393,906)																								
Equipment Loan Principal Payment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(393,906)	(393,906)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRE-TAX CASH FLOW, NET*:	192,988	(369,793)	24,328	24,546	24,768	24,993	20,562	20,821	21,083	21,348	21,617	21,888	22,163	22,441	22,722	23,007	23,295	23,587	23,882	24,180	24,482	24,788	25,097	25,410	25,727	26,047
PRE-TAX CASH FLOW, CUMULATIVE:		(369,793)	(345,465)	(320,919)	(296,151)	(271,159)	(250,596)	(229,775)	(208,692)	(187,343)	(165,726)	(143,838)	(121,675)	(99,234)	(76,512)	(53,505)	(30,210)	(6,623)	17,258	41,438	65,920	90,708	115,805	141,215	166,941	192,988
Federal tax calculation (+ = refund)																										
Savings as a result of project	(586,894)	(24,113)	(24,328)	(24,546)	(24,768)	(24,993)	(20,562)	(20,821)	(21,083)	(21,348)	(21,617)	(21,888)	(22,163)	(22,441)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
MACRS Accelerated Depr, w/yr 1 bonus (%)		20.0%	32.0%	19.2%	11.5%	11.5%	5.8%																			
Federal Depreciation	334,820	66,964	107,142	64,285	38,504	38,504	19,420	0	0	0	0	0	0	0	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State tax deduction	15,053	601	(663)	(646)	(628)	(611)	(957)	(936)	(916)	(895)	(874)	(853)	(832)	470	1,772	1,795	1,817	1,840	1,863	1,886	1,910	1,933	1,958	1,982	2,007	2,032
Annual taxable income	(237,020)	43,452	82,152	39,094	13,108	12,901	(2,099)	(21,758)	(21,999)	(22,244)	(22,491)	(22,741)	(22,995)	(21,971)	(20,950)	(21,212)	(21,478)	(21,747)	(22,019)	(22,294)	(22,572)	(22,854)	(23,139)	(23,428)	(23,720)	(24,015)
Taxes due before ITC (+ = refund)	(82,957)	15,208	28,753	13,683	4,588	4,515	(735)	(7,615)	(7,700)	(7,785)	(7,872)	(7,959)	(8,048)	(7,690)	(7,332)	(7,424)	(7,517)	(7,611)	(7,707)	(7,803)	(7,900)	(7,999)	(8,099)	(8,200)	(8,302)	(8,405)
Federal tax credit (ITC)	118,172	118,172																								
Taxes due after ITC	35,215	133,380	28,753	13,683	4,588	4,515	(735)	(7,615)	(7,700)	(7,785)	(7,872)	(7,959)	(8,048)	(7,690)	(7,332)	(7,424)	(7,517)	(7,611)	(7,707)	(7,803)	(7,900)	(7,999)	(8,099)	(8,200)	(8,302)	(8,405)
State tax calculation (+ = refund)																										
Savings as a result of project	(586,894)	(24,113)	(24,328)	(24,546)	(24,768)	(24,993)	(20,562)	(20,821)	(21,083)	(21,348)	(21,617)	(21,888)	(22,163)	(22,441)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
State Depreciation	393,906	16,413	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	32,825	16,413	0											
Interest deduction on loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual taxable income	(192,988)	(7,700)	8,498	8,279	8,058	7,833	12,263	12,004	11,742	11,477	11,209	10,937	10,662	(6,028)	(22,722)	(23,007)	(23,295)	(23,587)	(23,882)	(24,180)	(24,482)	(24,788)	(25,097)	(25,410)	(25,727)	(26,047)
Taxes due before ITC (+ = refund)	(15,053)	(601)	663	646	628	611	957	936	916	895	874	853	832	(470)	(1,772)	(1,795)	(1,817)	(1,840)	(1,863)	(1,886)	(1,910)	(1,933)	(1,958)	(1,982)	(2,007)	(2,032)
State tax credit (ITC to 200 kW)	0	0																								
Taxes due after ITC	(15,053)	(601)	663	646	628	611	957	936	916	895	874	853	832	(470)	(1,772)	(1,795)	(1,817)	(1,840)	(1,863)	(1,886)	(1,910)	(1,933)	(1,958)	(1,982)	(2,007)	(2,032)
AFTER-TAX CASH FLOW, NET*:	213,150	(237,014)	53,744	38,875	29,984	30,119	20,784	14,142	14,299	14,458	14,619	14,782	14,947	14,281	13,617	13,788	13,961	14,135	14,312	14,491	14,672	14,855	15,041	15,228	15,418	15,610
AFTER-TAX CASH FLOW, CUMULATIVE:		(237,014)	(183,270)	(144,395)	(114,411)	(84,292)	(63,508)	(49,366)	(35,066)	(20,608)	(5,988)	8,793	23,740	38,021	51,639	65,427	79,387	93,523	107,835	122,326	136,998	151,853	166,894	182,122	197,540	213,150

8.0%	Internal Rate of Return
10.41	Payback Term
610	NPV @ 8.0% Discount Rate

Not For Profit / Government

Savings:	25-Yr Totals	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Performance Based Incentive	23,714	4,800	4,771	4,743	4,714	4,686	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Avoided Electricity Purchases	592,723	20,494	20,738	20,985	21,235	21,488	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Total Cost Savings:	616,437	25,294	25,510	25,728	25,950	26,174	21,744	22,003	22,265	22,530	22,798	23,070	23,345	23,623	23,904	24,189	24,477	24,768	25,063	25,362	25,664	25,969	26,279	26,592	26,908	27,229
Expenses:																										
Maintenance	(29,543)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Total Expenses:		(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)	(1,182)
Financing:		$																								
% Downpayment:	100%	393,906																								
% Loan:	0%	0																								
Estimated interest rate on loan (%):	5.0%																									
Term of loan (full yrs):	10																									
Initial Capital Cost (Downpayment)		(393,906)																								
Equipment Loan Principal Payment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Equipment Loan Interest Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Financing Cost:	(393,906)	(393,906)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CASH FLOW, NET*:	192,988	(369,793)	24,328	24,546	24,768	24,993	20,562	20,821	21,083	21,348	21,617	21,888	22,163	22,441	22,722	23,007	23,295	23,587	23,882	24,180	24,482	24,788	25,097	25,410	25,727	26,047
CASH FLOW, CUMULATIVE:		(369,793)	(345,465)	(320,919)	(296,151)	(271,159)	(250,596)	(229,775)	(208,692)	(187,343)	(165,726)	(143,838)	(121,675)	(99,234)	(76,512)	(53,505)	(30,210)	(6,623)	17,258	41,438	65,920	90,708	115,805	141,215	166,941	192,988

3.3%	Internal Rate of Return
17.28	Payback Term
($74,060)	NPV @ 8.0% Discount Rate

K8

PV Installations by Month

year	month	Total MW solar installed by month-end	New solar MW DC installed each month	Monthly solar MWh eligible for PBI	Total solar MWh eligible for PBI by year-end
2008	6	0.001		1	
2008	7	0.4	#N/A	52	
2008	8	0.9	0.43	104	
2008	9	1.3	0.43	156	
2008	10	1.7	0.43	208	
2008	11	2.1	0.43	260	
2008	12	2.6	0.43	311	*1092*
2009	1	3.0	0.39	359	
2009	2	3.4	0.39	407	
2009	3	3.7	0.39	454	
2009	4	4.1	0.39	502	
2009	5	4.5	0.39	549	
2009	6	4.9	0.39	597	
2009	7	5.3	0.39	644	
2009	8	5.7	0.39	692	
2009	9	6.1	0.39	739	
2009	10	6.5	0.39	787	
2009	11	6.9	0.39	834	
2009	12	7.3	0.39	881	*7446*
2010	1	8.0	0.72	969	
2010	2	8.7	0.72	1056	
2010	3	9.4	0.72	1144	
2010	4	10.2	0.72	1231	
2010	5	10.9	0.72	1319	
2010	6	11.6	0.72	1406	
2010	7	12.3	0.72	1493	
2010	8	13.0	0.72	1580	
2010	9	13.8	0.72	1667	
2010	10	14.5	0.72	1754	
2010	11	15.2	0.72	1842	
2010	12	15.9	0.72	1929	*17390*
2011	1	17.2	1.33	2089	
2011	2	18.6	1.33	2250	
2011	3	19.9	1.33	2411	
2011	4	21.2	1.32	2571	
2011	5	22.5	1.32	2732	
2011	6	23.9	1.32	2892	
2011	7	25.2	1.32	3053	
2011	8	26.5	1.32	3213	
2011	9	27.8	1.32	3373	
2011	10	29.2	1.32	3533	
2011	11	30.5	1.32	3693	
2011	12	31.8	1.32	3853	*35665*
2012	1	34.2	2.44	4149	
2012	2	36.7	2.44	4445	
2012	3	39.1	2.44	4740	
2012	4	41.5	2.44	5036	
2012	5	44.0	2.44	5331	
2012	6	46.4	2.43	5626	
2012	7	48.8	2.43	5921	
2012	8	51.3	2.43	6216	
2012	9	53.7	2.43	6510	
2012	10	56.1	2.43	6805	
2012	11	58.6	2.43	7099	
2012	12	61.0	2.43	7393	*69269*
2013	1	65.5	4.49	7937	
2013	2	70.0	4.49	8481	
2013	3	74.5	4.48	9025	
2013	4	78.9	4.48	9568	
2013	5	83.4	4.48	10111	
2013	6	87.9	4.48	10654	
2013	7	92.4	4.48	11196	
2013	8	96.8	4.47	11738	
2013	9	101.3	4.47	12280	
2013	10	105.8	4.47	12822	
2013	11	110.2	4.47	13363	
2013	12	114.7	4.46	13904	*131079*

Adj.(1) --> 99.95% to reflect assumed monthly degradation in solar output.

Year of Operation	Solar MWh Generated & Eligible for PBI	*Cumulative MW of solar electricity installations (DC adjusted for degradation)*
2007	1,092	2.6
2008	7,446	7.3
2009	17,390	15.9
2010	35,665	31.8
2011	69,269	61.0
2012	131,079	114.7
2013	244,788	213.5
2014	453,991	395.4
2015	838,903	729.9
2016	1,547,119	1345.5
2017	1,951,706	1338.7
2018	1,941,893	1332.0

2014	1	123.0	8.26	14905	
2014	2	131.2	8.25	15906	
2014	3	139.5	8.25	16906	
2014	4	147.7	8.25	17905	
2014	5	156.0	8.24	18904	
2014	6	164.2	8.24	19903	
2014	7	172.4	8.23	20901	
2014	8	180.7	8.23	21898	
2014	9	188.9	8.23	22895	
2014	10	197.1	8.22	23892	
2014	11	205.3	8.22	24888	
2014	12	213.5	8.21	25883	*244788*
2015	1	228.7	15.19	27725	
2015	2	243.9	15.19	29566	
2015	3	259.1	15.18	31406	
2015	4	274.3	15.17	33245	
2015	5	289.4	15.16	35083	
2015	6	304.6	15.16	36920	
2015	7	319.7	15.15	38756	
2015	8	334.9	15.14	40591	
2015	9	350.0	15.13	42426	
2015	10	365.1	15.13	44259	
2015	11	380.3	15.12	46092	
2015	12	395.4	15.11	47923	*453991*
2016	1	423.3	27.96	51312	
2016	2	451.3	27.94	54699	
2016	3	479.2	27.93	58084	
2016	4	507.1	27.91	61467	
2016	5	535.0	27.90	64849	
2016	6	562.9	27.89	68229	
2016	7	590.8	27.87	71608	
2016	8	618.6	27.86	74984	
2016	9	646.5	27.84	78359	
2016	10	674.3	27.83	81733	
2016	11	702.1	27.82	85104	
2016	12	729.9	27.80	88474	*838903*
2017	1	781.4	51.44	94709	
2017	2	832.8	51.41	100941	
2017	3	884.2	51.39	107170	
2017	4	935.5	51.36	113395	
2017	5	986.9	51.34	119617	
2017	6	1,038.2	51.31	125837	
2017	7	1,089.4	51.28	132053	
2017	8	1,140.7	51.26	138266	
2017	9	1,191.9	51.23	144476	
2017	10	1,243.1	51.21	150683	
2017	11	1,294.3	51.18	156886	
2017	12	1,345.5	51.16	163087	*1547119*
2018	1	1,344.9	-0.57	163018	
2018	2	1,344.4	-0.57	162950	
2018	3	1,343.8	-0.57	162881	
2018	4	1,343.2	-0.56	162813	
2018	5	1,342.7	-0.56	162745	
2018	6	1,342.1	-0.56	162676	
2018	7	1,341.5	-0.56	162608	
2018	8	1,341.0	-0.56	162539	
2018	9	1,340.4	-0.56	162471	
2018	10	1,339.8	-0.56	162403	
2018	11	1,339.3	-0.56	162335	
2018	12	1,338.7	-0.56	162267	*1951706*
2019	1	1,338.2	-0.56	162198	
2019	2	1,337.6	-0.56	162130	
2019	3	1,337.0	-0.56	162062	
2019	4	1,336.5	-0.56	161994	
2019	5	1,335.9	-0.56	161926	
2019	6	1,335.3	-0.56	161858	
2019	7	1,334.8	-0.56	161790	
2019	8	1,334.2	-0.56	161722	
2019	9	1,333.7	-0.56	161654	
2019	10	1,333.1	-0.56	161587	
2019	11	1,332.5	-0.56	161519	
2019	12	1,332.0	-0.56	161451	*1941893*

1.3.4 ENERGY STORAGE

Technology Description

Advanced storage technologies under active development include processes that are mechanical (flywheels, pneumatic), electrochemical (advanced batteries, reversible fuel cells, hydrogen, ultracapacitors), and purely electrical (superconducting magnetic storage). Energy storage devices are added to the utility grid to improve productivity, increase reliability or defer equipment upgrades. Energy storage devices must be charged and recharged with electricity generated elsewhere. Because the storage efficiency (output compared to input energy) is less than 100%, on a kilowatt-per-kilowatt basis, energy storage does not directly decrease CO_2 production. The exception to this rule is the use of advanced energy storage in conjunction with intermittent renewable energy sources, such as photovoltaics and wind, that produce no direct CO_2. Energy storage allows these intermittent resources to be dispatchable.

A 5-MVA battery energy-storage system for power quality and peak shaving.

Energy-storage devices do positively affect CO_2 production on an industrial output basis by providing high-quality power, maximizing industrial productivity. New battery technologies, including sodium sulfur and flow batteries, significantly improve the energy and power densities for stationary battery storage as compared to traditional flooded lead-acid batteries.

System Concepts

- *Stationary applications:* The efficiency of a typical steam-power plant falls from about 38% at peak load to 28%-31% at night. Utilities and customers could store electrical energy at off-peak times, allowing power plants to operate near peak efficiency. The stored energy could be used during high-demand periods displacing low-efficiency peaking generators. CO_2 emissions would be reduced if the efficiency of the energy storage were greater than 85%. Energy storage also can be used to alleviate the pressure on highly loaded components in the grid (transmission lines, transformers, etc.) These components are typically only loaded heavily for a small portion of the day. The storage system would be placed downstream from the heavily loaded component. This would reduce electrical losses of overloaded systems. Equipment upgrades also would be postponed, allowing the most efficient use of capital by utility companies. For intermittent renewables, advnaced energy storage technology would improve their applicability.
- *Power quality:* The operation of modern, computerized manufacturing depends directly on the quality of power the plant receives. Any voltage sag or momentary interruption can trip off a manufacturing line and electronic equipment. Industries that are particularly sensitive are semiconductor manufacturing, plastics and paper manufacturing, electronic retailers, and financial services such as banking, stock brokerages, and credit card-processing centers. If an interruption occurs that disrupts these processes, product is often lost, plant cleanup can be required, equipment can be damaged, and transactions can be lost. Any loss must be made up decreasing the overall efficiency of the operation, thereby increasing the amount of CO_2 production required for each unit of output. Energy-storage value is usually measured economically with

the cost of power-quality losses, which is estimated in excess of $1.5 B/year in the United States alone. Industry is also installing energy-storage systems to purchase relatively cheap off-peak power for use during on-peak times. This use dovetails very nicely with the utilities' interest in minimizing the load on highly loaded sections of the electric grid. Many energy-storage systems offer multiple benefits. (An example is shown in the photo.) This 5-MVA, 3.5-MWh valve-regulated lead-acid battery system is installed at a lead recycling plant in the Los Angeles, California, area. The system provides power-quality protection for the plant's pollution-control equipment, preventing an environmental release in the event of a loss of power. The system carries the critical plant loads while an orderly shutdown occurs. The battery system also in discharged daily during the afternoon peak (and recharged nightly), reducing the plant's energy costs.

Representative Technologies

For utilities, the most mature storage technology is pumped hydro; however, it requires topography with significant differences in elevation, so it's only practical in certain locations. Compressed-air energy storage uses off-peak electricity to force air into underground caverns or dedicated tanks, and releases the air to drive turbines to generate on-peak electricity; this, too, is location specific. Batteries, both conventional and advanced, are commonly used for energy-storage systems. Advanced flowing electrolyte batteries offer the promise of longer lifetimes and easier scalability to large, multi-MW systems. Superconducting magnetic energy storage (SMES) is largely focused on high-power, short-duration applications such as power quality and transmission system stability. Ultracapacitors have very high power density but currently have relatively low total energy capacity and are also applicable for high-power, short-duration applications. Flywheels are now commercially viable in power quality and UPS applications, and emerging for high power, high-energy applications.

Technology Status - Utilities

Technology	Efficiency [%]	Energy density [W-h/kg]	Power density [kW/kg]	Sizes [MW-h]	Comments
Pumped hydro	75	0.27/100 m	low	5,000-20,000	37 existing in U.S.
Compressed gas	70	0	low	250-2,200	1 U.S., 1 German
SMES	90+	0	high	20 MW	high-power applications
Batteries	70–84	30-50	0.2-0.4	17-40	Most common device
Flywheels	90+	15-30	1-3	0.1-20 kWh	US & foreign development
Ultracapacitors	90+	2-10	high	0.1-0.5 kWh	High-power density

System Components

Each energy-storage system consists of four major components: the storage device (battery, flywheel, etc.); a power-conversion system; a control system for the storage system, possibly tied in with a utility SCADA (Supervisory Control And Data Acquisition) system or industrial facility control system; and interconnection hardware connecting the storage system to the grid. All common energy-storage devices are DC devices (battery) or produce a varying output (flywheels) requiring a power conversion system to connect it to the AC grid. The control system must manage the charging and discharging of the system, monitor the state of health of the various components and interface with the local environment at a minimum to receive on/off signals. Interconnection hardware allows for the safe connection between the storage system and the local grid.

Current Research, Development, and Demonstration

RD&D Goals

- Research program goals in this area focus on energy-storage technologies with high reliability and affordable costs. For capital cost this is interpreted to mean less than or equal to those of some of lower cost new power generation options ($400–$600/kW). Battery storage systems range from $300-$2000/kW. For operating cost, this figure would range from compressed gas energy storage, which can cost as little as $1 to $5/kWh, to pumped hydro storage, which can range between $10 and $45/kWh.

RD&D Challenges

- The major hurdles for all storage technologies are cost reduction and developing methods of accurately identifying all the potential value streams from a given installation. Advanced batteries need field experience and manufacturing increases to bring down costs. Flywheels need further development of fail-

Olivenhain-Hodges Pumped Storage Project

Olivenhain-Hodges Pumped Storage Project

San Diego County Water Authority

FACT SHEET

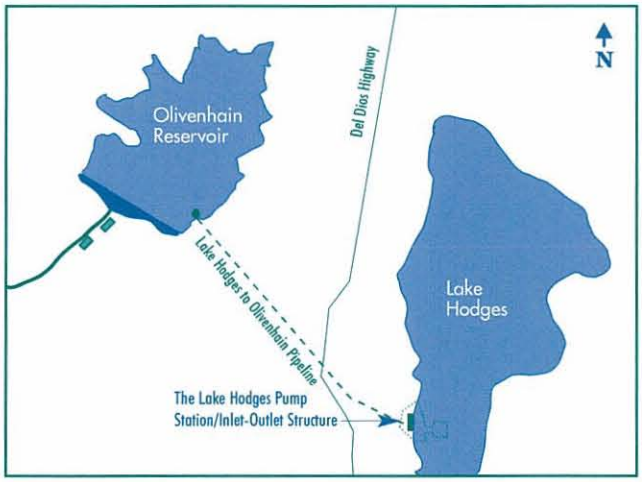
The Water Authority is a public agency serving the San Diego region as a wholesale supplier of water. The Water Authority works through its 23 member agencies to provide a safe, reliable water supply to support the region's $130 billion economy and the quality of life of 3 million residents.

The Olivenhain-Hodges Pumped Storage Project is an integral component of the Lake Hodges projects, providing electrical generating capacity while enhancing Emergency Storage Project requirements to ensure regional water reliability.

Background

In 2005, the Water Authority is scheduled to begin construction of the Lake Hodges projects, which include the Lake Hodges to Olivenhain Pipeline and the Lake Hodges Pump Station/Inlet-Outlet structure.

- The Lake Hodges to Olivenhain Pipeline is a 1¼-mile-long water transmission tunnel between the Lake Hodges Pump Station and Olivenhain Reservoir.
- The Lake Hodges Pump Station/Inlet-Outlet structure, located at Lake Hodges, will pump water from the lake to the Olivenhain Reservoir. It will also control the flow of water from Olivenhain Reservoir to Lake Hodges.



By providing a means to convey water between Lake Hodges and the Olivenhain Reservoir, these projects will increase operational flexibility and water storage capacity for San Diego County. The water will also be available for emergency use in case of a natural disaster such as earthquake or drought. Water pumped from Lake Hodges to Olivenhain Reservoir can readily be conveyed to the Water Authority's Second Aqueduct for further distribution throughout the county.

Conserving Energy

During the planning phase of the Lake Hodges projects' design, the Water Authority recognized the hydroelectric generating potential of the 770-foot elevation difference between Olivenhain Reservoir and Lake Hodges. The Lake Hodges Pump Station, as originally planned, contained three vertical pumps and two pressure-control valves. By replacing the pressure-control valves, pumps and motors with reversible motor-generator/pump turbines and appropriately sizing the tunnel pipeline, all of the elements of a pumped-storage capability became available. Energy created during the transfer of water from the Olivenhain Reservoir to Lake Hodges would now be captured and utilized in the region. This captured energy will provide revenue to pay back the cost of the pumped-storage equipment and facilities and support other Water Authority activities.

The Lake Hodges Pump Station's pump-turbines will produce a maximum output of 40 megawatts during water transfers from Olivenhain Reservoir to Lake Hodges. The electricity generated will be transmitted to an outdoor switchyard located adjacent to the pump station, then to a 1,400-foot-long transmission line that will connect to the existing local transmission system.

The original above-ground pump station structure was modified to be mostly below ground to accommodate the pumped storage equipment, providing the added benefit of reduced visual impact to the area.

When considering both revenue generated and energy saved, the pumped-storage facility will be a major enhancement to the Lake Hodges projects. Construction of the Lake Hodges projects is scheduled to be complete by 2008.

San Diego County Water Authority
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FuelCell Energy
World Leader in Secure, Ultra-Clean Power

Sheraton San Diego

problem:

Starwood Hotels, managers of the Sheraton San Diego Hotel & Marina in San Diego, California, sought to find an affordable and efficient means of producing environmentally-friendly baseload electrical power for this popular hotel and resort.

solution:

FuelCell Energy® provided the answer, installing a one-megawatt (1 MW) stationary fuel cell power plant made up of four 250-kilowatt Direct FuelCell® 300A (DFC300A®) power plants from FuelCell Energy that are classified as an "Ultra-Clean" technology under California law, thus qualifying the new system for considerable financial subsidies. Benefits such as high-reliability, ultra-low emissions, and quiet operation made the fuel cell system a perfect fit for the hotel's needs. As an added benefit, heat produced within the fuel cell is used to support the hotel's hot water needs and to heat three of the facility's large pools.

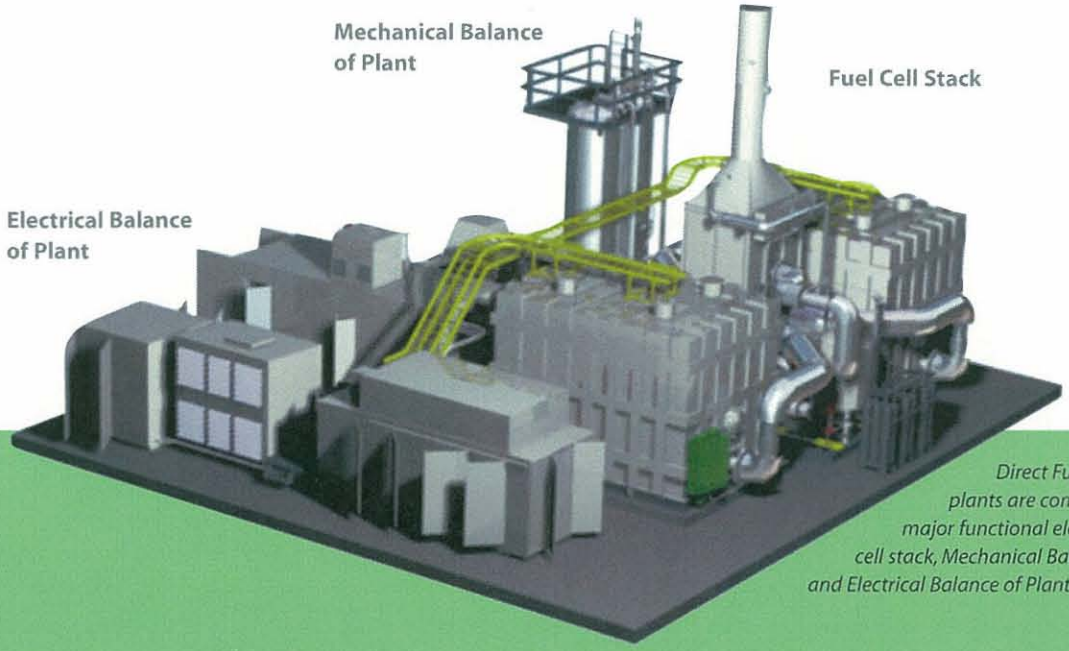
result:

The fuel cell plant supplies 60 - 80% of the hotel's baseload power requirements. Inconspicuously located adjacent to the Sheraton's tennis courts, the fuel cell system generates so little noise pollution, it is virtually unnoticeable. The system has proven very reliable, attaining a reliability rating of more than 98% since operation began.

The power plant has also generated substantial interest from hotel guests, who are curious about the new power system and how it operates. In fact, the Sheraton estimates they have booked more than 1,000 rooms in the last year due to interest in the fuel cell system, and their reputation for environmentally-friendly practices.

About DFC Power Plants

FuelCell Energy's DFC systems are self-contained commercial-grade power plants providing high-quality, baseload electric power using biofuels – gases from wastewater treatment, food processing, and landfills – in addition to natural gas.



Direct FuelCells power plants are comprised of three major functional elements; the fuel cell stack, Mechanical Balance of Plant and Electrical Balance of Plant.

As a result of the resounding success attained after one year of operating the initial 1 MW fuel cell plant, Starwood added a second fuel cell installation to the property in July 2006. Two 250-kilowatt DFC300MA™ fuel cells were installed at the West Tower portion of the property, bringing the total power output to 1.5 MW, making it the single largest commercial fuel cell installation in the world. The West Tower fuel cell plant provides 100% of the power requirement and 100% of the domestic hot water heat source for the West Tower.

About Starwood Hotels

Starwood Hotels & Resorts Worldwide, Inc. is one of the leading hotel and leisure companies in the world with approximately 870 properties in more than 100 countries. Starwood owns, operates, and franchises such internationally renowned brands as St. Regis®, The Luxury Collection®, Sheraton®, Westin®, Four Points® by Sheraton, W® Hotels and Resorts, and Starwood Vacation Ownership, Inc. For more information, please visit **www.starwoodhotels.com.**

About FuelCell Energy

FuelCell Energy develops and markets Ultra-Clean power plants that generate electricity with higher efficiency than distributed generation plants of similar size and with virtually no air pollution. For more information on the company, its products, and its world-wide commercial distribution alliances, please visit **www.fuelcellenergy.com.**

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FuelCell Energy
World Leader in Secure, Ultra-Clean Power

Attachment O: Clean Energy Coalition Letter to Chairman of Maryland Public Service Commission

August 17, 2007

Chairman Steven B. Larsen
Maryland Public Service Commission
6 St. Paul Street, 16th Floor
Baltimore, MD 21202

Mr. Karl V. Pfirrman
Interim President and CEO
PJM, LLC
955 Jefferson Avenue
Valley Forge Corporate Center
Norristown, PA 19403-2497

Dear Chairman Larsen and President Pfirrman:

We write you as a coalition of clean energy developers to urge that the Maryland Public Service Commission undertake a thorough study of specific renewable energy and demand management measures as an alternative to the proposed Amos, West Virginia to Kempton, Maryland transmission expansion project.

Though comprehensive capacity numbers have not yet been released, we understand that the 290 mile, estimated $1.8 billion line, proposed for completion in 2012, is required to service approximately 1800 MW in demand. We understand that the electricity will be wheeled in from coal fired power plants in the Midwest.

As you are no doubt aware, landmark legislation passed by the General Assembly and signed by Governor O'Malley has placed Maryland on track to add approximately 1500 MW of solar energy over the next 15 years. It is our considered opinion that accelerating the deployment of peak-coincident solar energy , along with other high efficiency distributed generation and "smart grid" technologies, can offset the need for the Amos – Kempton line.

We believe that this accelerated, continuous development could be had at a ratepayer cost less than the proposed $1.8 billion and with significantly reduced delivery and financial risk as compared to a single massive transmission corridor.

Amos - Kempton Line: "Smart Energy Alternative" (low case, approximate)

Further, these resources would bring low-emissions *generation* capability into Maryland. The choice is between expending ratepayer funding on low-risk, low-emissions distributed generation, or relying on a single, controversial, high-risk project that will only enable the export of our energy dollars to produce air pollution upwind.

It is time that the PJM and the Commission begin to consider alternatives to the expensive solutions provided by 20th century technologies.

Collectively the undersigned are convinced we can provide at least 1800 MW of distributed generation and resources in the specified time frame. Based on the information available, we feel that this should be sufficient to offset the relevant congestion concerns.

However, we cannot provide a more accurate or thorough analysis of this alternative without access to PJM's modeling capabilities. We urge you to have the probabilistic consumption models used by PJM adapted to the scenario we present, and we stand ready to provide the appropriate inputs and generator profiles.

With almost two billion dollars on the table, and facing profound and controversial changes to the landscape, we feel that the Commission and PJM have the responsibility to consider all practicable alternatives. We would sincerely appreciate the opportunity to discuss our alternative in greater depth and contribute to the development of a more thorough and comprehensive analysis for Maryland.

Sincerely,

Jigar Shah /s/
Jigar Shah, Chief Strategy Officer
SunEdison, LLC
443-909-7200

Charlie Gay /s/
Charlie Gay, Vice President and
General Manager
Solar Business Unit, Applied Materials

Todd Foley /s/
Todd Foley, Director of External Affairs
BP Solar

Lisa Krueger /s/
Lisa Krueger, Vice President,
Sustainable Development
First Solar

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Peter Corsell, President and CEO
GridPoint

Roger Efird /s/
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SunTech America

Richard Feldt /s/
Richard Feldt, CEO
Evergreen Solar

Frank Ramirez /s/
Frank Ramirez, CEO
Ice Energy

Tim Healey /s/
Tim Healey, CEO
EnerNOC

Richard Brent /s/
Richard S. Brent
Director, Government Affairs
Solar Turbines, Incorporated

cc: People's Counsel, Paula Carmody,
Maryland Office of the People's Counsel

San Diego Smart Energy 2020
– The 21st Century Alternative –

Prepared by:

E-Tech International
Santa Fe, New Mexico

Author: Bill Powers, P.E.

October 2007

This report is available on the E-Tech International website: www.etechinternational.org

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The author would like to acknowledge the numerous informal reviewers as well as the following individuals for reviewing the draft document and providing comments:

Henry Abarbanel: Co-Chair, San Diego Association of Governments Regional Energy Working Group
Scott Anders: Director, Energy Policy Initiatives Center, University of San Diego School of Law
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About the author:

Bill Powers, P.E., is an expert on regional power provision, with extensive knowledge and experience in the fields of energy and mechanical engineering, air monitoring and control equipment, and pollution and public health. He is internationally renowned for his work in the energy field, providing expert testimony and analysis, project management, strategic planning, and equipment testing and monitoring for private energy project developers throughout the world, including the United States, Mexico, Peru, Venezuela, Panama, and Chile.

Mr. Powers has served as the U.S. co-chair of the San Diego-Tijuana EPA/SEMARNAT Border 2012 Air Work Group, a federal initiative which develops programs to reduce air pollution along the international border. He is also co-chair of the Border Power Plant Working Group, a binational organization which advocates for sustainable energy projects in the border region. In addition, he is a member of San Diego Association of Governments Regional Energy Working Group.

Mr. Powers has authored numerous technical reports on a variety of energy-related topics, including gas turbine air emission controls, power plant cooling systems, integrating strategic energy and environmental planning in the California – Baja California border region, and use of integrated gasification combined cycle power generation to facilitate carbon dioxide capture and sequestration in Midwestern coal-burning states. He received his Bachelor of Science in Mechanical Engineering from Duke University and Masters of Public Health – Environmental Sciences from the University of North Carolina. Mr. Powers has been a registered professional engineer in California since 1986.

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O Clean Energy Coalition Letter to Chairman of Maryland Public Service Commission

1. Executive Summary

The San Diego region is poised on the brink of a new energy future, and the path it charts now will determine in large part the success of its people, its economy, and its ability to provide a cleaner, more secure energy supply for generations to come.

San Diego Smart Energy 2020 paves the way for a shift from reliance on fossil fuels and imported power to an array of local solutions that include energy efficiency measures with emphasis on high efficiency air conditioning systems; common-sense weatherization and conservation; the proven technology of solar photovoltaic (PV) panels, for large commercial use as well as on homes; small, highly efficient natural gas-fired power plants that generate both power and heating/cooling; adoption of smart grid procedures that improve the efficiency of the grid by monitoring and controlling the flow of electricity on a continuous basis; and the widespread institution of green building design principles.

San Diego Smart Energy 2020, the strategic energy plan for San Diego County described in this report, provides a working blueprint of realistic methods to reduce greenhouse gases from power generation by 50 percent over current levels by 2020 while increasing the total electricity supply from renewable energy resources and maximizing locally generated power. The plan is economically feasible for residents and businesses alike.

Finding 1: Climate Change Must Drive Strategic Energy Planning

The *Global Warming Solutions Act* (AB 32, September 2006) commits California to reducing greenhouse gases by 25 percent to 1990 levels by 2020, and by 80 percent by 2050.

San Diego Gas & Electric (SDG&E) is currently projecting a 20 percent reduction in greenhouse gas emissions over the next decade as part of its strategic plan. This reduction will principally be achieved by meeting the state mandate of 20 percent renewable energy generation by 2010. However, SDG&E's parent company, Sempra Energy, will begin shipping liquefied natural gas north through SDG&E's pipeline system from its Baja California liquefied natural gas terminal in 2009. The lifecycle greenhouse gas burden of liquefied natural gas, including processing, liquefying, transport, and regasification, is approximately 25 percent greater than that of the domestic natural gas SDG&E is currently supplying. The SDG&E greenhouse gas projection, provided in SDG&E's 2007-2016 Long-Term Procurement Plan, does not take into account the generation of additional greenhouse gases associated with the conversion from domestic natural gas to imported liquefied natural gas. This conversion will nullify the greenhouse gas reductions projected by SDG&E over the next decade.

A much more significant shift from fossil fuel to renewable energy sources will be required if the San Diego region is to reduce its greenhouse gas emissions at the maximum rate that is cost-effectively achievable.

Finding 2: A Secure Energy Future Requires an Increase in Local Power Generation and a Decreased Dependence on Natural Gas

Approximately two-thirds of the electric power used in the San Diego region is currently generated by coal-fired (12 percent) and natural gas-fired (53 percent) combustion sources. The power is imported along existing transmission lines as well as being generated by local power plants.

Virtually all local power generation sources burn natural gas. The price of natural gas has nearly tripled since 2002, and remains highly volatile. The high price of natural gas has made renewable energy sources more-cost effective when compared to natural gas-fired power generation sources.

San Diego's political, business, environmental, and community leaders have a history of innovative thinking in planning for the region's energy future. In 2003, the San Diego Association of Governments (SANDAG) adopted the *San Diego Regional Energy Strategy 2030.* The document places strong emphasize on expanded local power generation, including both renewable energy sources and highly efficient combined heat and power (CHP) projects for large businesses and government facilities. Enhanced energy efficiency and energy conservation efforts, and modernization of the region's natural gas-fired power plants to reduce natural gas consumption, are also key elements of *San Diego Regional Energy Strategy 2030.*

Finding 3: A San Diego Energy Future Focused on Photovoltaics Is Cost-Competitive

In 2006, Governor Schwarzenegger signed into law Senate Bill 1, an amended version of the "million solar roofs" California Solar Initiative, to provide incentives for commercial PV applications up to one megawatt (MW) as well as residential systems. The amended California Solar Initiative will rely on $3.35 billion in incentives to add 3,000 MW of rooftop PV in California by 2017. It is anticipated that approximately 300 MW of PV will be added in the San Diego area as a result of this solar legislation.

A core element of *San Diego Smart Energy 2020* is adding over 2,000 MW of PV locally by 2020. This ambitious solar program, the *San Diego Solar Initiative*, will use an incentive structure similar to that of the California Solar Initiative. Power generated from PV systems, when combined with sufficient solar incentives, current federal tax credits, and current accelerated depreciation, is less expensive than conventional power purchased directly from the utility. For example, the City of San Diego pays $0.12 per kilowatt-hour (kWh) to a third party provider for the power generated by the 965 kilowatt PV array at the City's Alvarado Water Treatment Plant under a long-term power purchase agreement. In contrast, the City pays approximately $0.17 per kWh to SDG&E for conventional purchased power.

The capital cost PV is expected to drop 40 percent by 2010 due to an increase in manufacturing capacity worldwide. SDG&E will install electronic "smart" electric meters throughout the San Diego area by 2011. PV systems generate power during the day when electricity prices are highest. These smart meters will precisely track when PV systems are sending power to the grid. This in turn will enable fair compensation for the high value electricity being produced, further enhancing the economics of PV power generation.

Finding 4: Current State Policies Do Not Provide Utilities with Incentives to Prioritize Energy Efficiency, Renewable Energy, and Distributed Generation

California utilities earn a fixed profit based on the value of the property the utility owns. Examples of such property are utility-owned power plants, transmission and distribution lines, and electric and gas meters. The more a utility invests in these types of infrastructure, the more money is earned.

However, in 2003, the California Public Utilities Commission (CPUC) and the California Energy Commission adopted the *Energy Action Plan* and its associated power generation priorities or "loading order." The *Energy Action Plan* provides a roadmap for meeting California's future energy needs. The top priority listed in the *Plan* is energy efficiency to minimize increases in electricity and natural gas demand. Demand response, or reducing electricity demand during periods of peak usage, is next, followed by renewable energy resources and clean natural gas-fired CHP projects. Conventional power plant resources are identified as the last generation priority, to be considered only after maximum development of energy efficiency, renewable energy, and distributed generation has been realized.

A major hurdle to implementing the *Energy Action Plan* is the traditional utility revenue system. This system does not provide California utilities with a financial incentive to invest in energy efficiency, renewable resources, or distributed generation. However, a September 2007 ruling by the CPUC established incentives and penalties to motivate the utilities to pursue energy efficiency more aggressively. This is an important first step toward adapting the utility revenue system to reflect the priorities of the loading order.

Finding 5: Quality of Life in San Diego Requires New Thinking for Energy Supply – San Diego Smart Energy 2020

The primary objective of the energy strategy described in this report is to achieve a 50 percent reduction in greenhouse gas emissions from power generation sources by 2020. *San Diego Smart Energy 2020* is designed to accelerate local, smart distributed generation, with an emphasis on energy efficiency, commercial PV systems, and CHP installations. Implementation of *Smart Energy 2020* will: 1) maximize greenhouse gas reduction, 2) enhance energy security by minimizing dependence on natural gas for power generation, and 3) greatly expand local clean peak generation capacity to minimize reliance on power imports during periods of high demand when competition for these power imports is greatest.

San Diego Smart Energy 2020 calls for the addition of 2,040 MW of rooftop solar, with an emphasis on large commercial installations. It also includes the addition of 700 MW of clean distributed generation from CHP sources. Under *Smart Energy 2020*, renewable energy resources will provide 50 percent of San Diego County's energy demand in 2020. *Smart Energy 2020* is outlined in Table 1-1. *The San Diego Solar Initiative* is a cornerstone of the *Smart Energy 2020* strategy. The *Initiative* will be funded by a $1.5 billion PV incentive budget. The 2,040 MW of PV capacity built under the *Initiative* will be equipped with sufficient battery storage to allow full use of this capacity during peak demand periods.

A more limited *San Diego Smart Energy 2020* with a reduced PV incentive budget of $700 million is outlined in Table 1-2. Under current cost allocation policy, SDG&E customers will be charged only 10 percent, or approximately $700 million, of the $7 billion lifecycle cost of the proposed Sunrise Powerlink (SPL) transmission project. A $700 million *San Diego Solar Initiative* will provide for 920 MW of PV capacity by 2020 equipped with sufficient battery storage for reliable peaking power duty. Under this more limited approach, renewable energy resources will provide 36 percent of San Diego County's energy demand in 2020.

San Diego Smart Energy 2020 increases local peak generation in 2020 by 2,670 MW beyond the level of new local peak generation achieved in SDG&E's long-term plan. The limited version of *Smart Energy 2020*, as outlined in Table 1-2, will increase local peak generation in 2020 by 1,550 MW beyond the new local peak generation achieved in the SDG&E plan. In comparison, the proposed SPL transmission line would add 1,000 MW of power import capability. The greatly increased amount of local peak power generation capacity installed under either *Smart Energy 2020* scenario will eliminate the need to build new transmission to provide reliability during periods of peak power demand.

New residential and commercial buildings would incorporate state-of-the-art green building principles and sufficient rooftop solar to address expected electric energy consumption under *San Diego Smart Energy 2020*. The objective is net zero energy consumption in new construction.

Recommendation: Implement *San Diego Smart Energy 2020*

Step 1: Realign SDG&E financial incentives to match *Energy Action Plan* priorities

Step 2: Achieve absolute reduction of 20 percent in annual energy consumption by 2020

Step 3: Achieve absolute reduction of 25 percent in peak demand by 2020

Step 4: Achieve 50 percent reduction in greenhouse gas emissions from power generation by 2020 through use of local PV and CHP distributed generation

Step 5: Prioritize modernization of the 1950s-vintage electrical distribution system to maximize potential benefits of smart grid

Step 6: Assure new construction in San Diego incorporates state-of-the-art green building principles and sufficient rooftop solar to meet own electricity demand

Each *San Diego Smart Energy 2020* scenario is compared side-by-side with the SDG&E 2016 strategic plan in Tables 1-1 and 1-2. The targets in Tables 1-1 and 1-2 are described in terms of annual electric energy usage and peak power demand. Annual energy usage is analogous to the total gallons of fuel used by an automobile over the course of a year. Peak power demand is analogous to the maximum horsepower required of the automobile when it is fully loaded and must maintain a high rate of speed while driving up a hill. Electricity planning in California is largely guided by peak power demand.

Table 1-1. Comparison of San Diego Smart Energy 2020 ($1.5 billion incentives budget) and SDG&E Strategic Plan

	San Diego Smart Energy 2020 – $1.5 Billion Solar Incentive Expenditure			SDG&E Strategic Plan – 2016 $7 Billion Sunrise Powerlink Expenditure ($700 million allocated to SDG&E customers)		
Element	Action	Demand/ supply (GWh-yr)	Electricity cost impact	Action	Demand/ supply (GWh-yr)	Electricity cost impact
2003 baseline annual energy demand:		20,000			20,000	
1. Energy Efficiency (EE) /Demand Reduction (DR)	Reduce energy demand 20%, 4,000 GWh, compared to 2003 baseline of ~20,000 GWh thru EE. Maximize DR thru cooling system EE upgrades and "smart" meters to reduce peak 25% from 2007 peak of 4,636 MW to 3,500 MW.	(4,000)	neutral	Energy demand increases 4,679 GWh relative to 20,000 GWh baseline. Peak demand increases 560 MW to 5,060 MW from 4,500 MW baseline.	4,679	neutral
2020 annual energy demand:		16,000		2016 SDG&E:	24,679	
2020 sources of energy supply – San Diego Smart Energy 2020:				2016 SDG&E sources of energy:		
2.Renewable Energy	a. SB 107 - 20% renewable energy by 2010. b. Million solar roofs – 300 MW by 2017. c. San Diego Solar Initiative – 2,040 MW w/ battery storage for peaking duty at rated capacity, 3-6 pm (2,265 MW w/o storage).	3,500 600 3,900	existing existing $1.5 billion (lifecycle cost, 2007 dollars)	a. SB 107 - adjusted to 2016. b. 300 MW by 2017. c. None.	3,800 600 0	existing existing none
3. Combined heat and power	a. Existing – 350 MW b. New – 700 MW	2,500 5,000	existing neutral	a. Existing – 350 MW b. New – 40 MW	1,800 300	existing neutral
4. Conventional gas-fired power plants	a. Two existing local 550 MW combined-cycles (CC): nighttime and cloudy days. b. Existing local simple cycle peakers, 500 to 700 MW capacity: as needed to meet peak.	500 [net]	existing/ neutral existing/ neutral	a. Local and imported CC power, assume 40/60 split. b. Simple cycle peakers: as needed to meet peak.	14,729	power from existing generation
5. Nuclear and large hydro-electric imports.	Not necessary to implement strategy.	0	NA	Nuclear meets 14 percent of demand in 2016. No large hydro specifically identified.	3,450	existing
6. Transmission/ Distribution	a. 4 kV & 12 kV distribution system – modernize. b. 69 kV – reconductor as needed with high capacity lines if renewable energy park growth warrants. c. 230 kV/500 kV – add 550 MW total, 350 MW upgrade to existing 230 kV (north/south), 200 MW upgrade to existing 500 kV (east/west).	NA NA NA	unknown optional $740 million (lifecycle cost, 2007 dollars)	a. 4 kV & 12 kV distribution system – modernize. b. 69 kV – no action. c. 230 kV/500 kV – add new 1,000 MW capacity Sunrise Powerlink.	NA NA NA	unknown no action $7 billion (lifecycle cost, 2010 dollars)
7. Residential and commercial new growth	Use green building EE design principles to minimize energy demand, incorporate sufficient PV to meet projected annual energy demand.	No net change	Neutral	Growth in annual energy demand and peak demand is quantified in EE/DR line item.	see above	see above
Total annual energy requirement (GWh):		**16,000**			**24,679**	
Peak demand (MW):		**3,500**			**5,060**	
Percentage renewable energy:		**50**			**18**	
New post-2007 local power generation available at peak (MW):		**3,030**			**360**	
GHG emissions assuming domestic natural gas (in tons CO_2):		**2,600,000**			**7,100,000**	
GHG emissions assuming switch to LNG in 2009 (in tons CO_2):		**3,300,000**			**8,800,000**	

Table 1-2. Comparison of Limited San Diego Smart Energy 2020 ($700 million incentives budget) and SDG&E Strategic Plan

	San Diego Smart Energy 2020 – $700 Million Solar Incentive Expenditure			SDG&E Strategic Plan – 2016 $700 Million of Sunrise Powerlink Cost Allocated to SDG&E Customers		
Element	Action	Demand/ supply (GWh-yr)	Electricity cost impact	Action	Demand/ supply (GWh-yr)	Electricity cost impact
2003 baseline annual energy demand:		20,000			20,000	
1. Energy Efficiency (EE) /Demand Reduction (DR)	Reduce energy demand 20%, 4,000 GWh, compared to 2003 baseline of ~20,000 GWh thru EE. Maximize DR thru cooling system EE upgrades and "smart" meters to reduce peak 25% from 2007 peak of 4,636 MW to 3,500 MW.	(4,000)	neutral	Energy demand increases 4,679 GWh relative to 20,000 GWh baseline. Peak demand increases 560 MW to 5,060 MW from 4,500 MW baseline.	4,679	neutral
2020 annual energy demand:		16,000		2016 SDG&E:	24,679	
2020 sources of energy supply – San Diego Smart Energy 2020:				2016 SDG&E sources of energy supply:		
2.Renewable Energy	a. SB 107 - 20% renewable energy by 2010. b. Million solar roofs – 300 MW by 2017. c. San Diego Solar Initiative – 920 MW w/ battery storage for peaking duty at rated capacity, 3-6 pm (1,030 MW w/o storage).	3,500 600 1,700	existing existing $700 million (lifecycle cost, 2007 dollars)	a. SB 107 - adjusted to 2016. b. 300 MW by 2017. c. None.	3,800 600 0	existing existing none
3. Combined heat and power	a. Existing – 350 MW b. New – 700 MW	2,500 5,000	existing neutral	a. Existing – 350 MW b. New – 40 MW	1,800 300	existing neutral
4. Conventional gas-fired power plants	a. Two existing local 550 MW combined-cycles (CC): nighttime and continuous load following. b. Existing local simple cycle peakers, 500 to 700 MW capacity: as needed to meet peak.	2,700 [net]	existing/ neutral existing/ neutral	a. Local and imported CC power, assume 40/60 split. b. Simple cycle peakers: as needed to meet peak.	14,729	power from existing generation
5. Nuclear and large hydro-electric imports	Not necessary to implement strategy.	0	NA	Nuclear meets 14 percent of demand in 2016. No large hydro specifically identified.	3,450	existing
6. Transmission/ Distribution	a. 4 kV & 12 kV distribution system – modernize. b. 69 kV – reconductor as needed with high capacity lines if renewable energy park growth warrants. c. 230 kV/500 kV – add 550 MW total, 350 MW upgrade to existing 230 kV (north/south), 200 MW upgrade to existing 500 kV (east/west).	NA NA NA	unknown optional $740 million (lifecycle cost, 2007 dollars)	a. 4 kV & 12 kV distribution system – modernize. b. 69 kV – no action. c. 230 kV/500 kV – add new 1,000 MW capacity Sunrise Powerlink.	NA NA NA	unknown no action $7 billion (lifecycle cost, 2010 dollars)
7. Residential and commercial new growth	Use green building EE design principles to minimize energy demand, incorporate sufficient PV to meet projected annual energy demand.	No net change	neutral	Growth in annual energy demand and peak demand is quantified in EE/DR line item.	see above	see above
Total annual energy requirement (GWh):		**16,000**			**24,679**	
Peak demand (MW):		**3,500**			**5,060**	
Percentage renewable energy:		**36**			**18**	
New post-2007 local power generation available at peak (MW):		**1,910**			**360**	
GHG emissions assuming domestic natural gas (in tons CO_2):		**3,500,000**			**7,100,000**	
GHG emissions assuming switch to LNG in 2009 (in tons CO_2):		**4,400,000**			**8,800,000**	

Supporting information for Tables 1-1 and 1-2:

a) Definitions: Neutral cost impact – net effect of action will result in no expected increase to customer electricity rates relative to the utility rate basecase; Existing – operational source.
b) All photovoltaic MW capacities are in alternating current - AC.
c) Energy Action Plan uses 2003 as baseline to measure the 20% absolute reduction by 2015 in energy usage at state government and commercial buildings.
d) California's three utilities, PG&E, SCE, and SDG&E, achieved a combined total of 6,200 GWh of energy efficiency savings through 2006. A May 2006 energy efficiency potential study prepared by Itron for California's three regulated utilities estimates that as much as 48,000 GWh of reduction is attainable in existing buildings statewide with cost-effective technologies. SDG&E represents about 10 percent of the California regulated utility load, or nearly 5,000 GWh of additional economic energy efficiency savings.
e) SDG&E assumes smart meters will reduce peak demand by 5 percent. Industry analysts (Brattle Group) estimate smart meters could reduce peak demand by more than 20 percent. Five (5) percent is used as the default assumption to establish a peak demand reduction target of 25 percent (20 percent through energy efficiency - EE, 5 percent through smart meter efficiencies).
f) SDG&E estimates energy demand in 2016 after employing EE measures at 24,679 GWh, and peak power demand in 2016 after employing EE measures at 5,060 MW.
g) All power generation used to meet the SDG&E projected demand increase of 4,679 GWh in 2016 relative to the 2003 baseline is assumed to be met with combined-cycle generation.
h) In order to achieve a 20% renewable generation mix by 2010 based on a 2009 forecast bundled customer retail sales benchmark of 17,418 GWh, SDG&E must obtain a total of approximately 3,484 GWh of renewable energy (8/4/06 application, p. III-9). SDG&E estimates 2015 bundled customer retail sales of 19,076 GWh. 20% of 19,076 GWh is 3,815 GWh.
i) Assume SB1 "million solar roof" PV systems are not equipped with battery storage to operate as afternoon peaking units.
j) *San Diego Solar Initiative* PV systems will be equipped with energy management/battery storage to operate as afternoon peaking units. The cost of energy management/battery storage is assumed to be 10 percent of the overall system cost.
k) Estimate of growth of CHP under SDG&E 2016 case is from SANDAG Energy Working Group Policy Subcommittee recommendations on CHP dated Nov. 16, 2006.
l) SDG&E estimates approximately 1,800 GWh generated from QF (large CHP) and CHP in 2016 (2007-2016 LTPP presented by SDG&E to SANDAG EWG, Jan. 25, 2007, p. 11 bar chart). SDG&E estimates installed QF + CHP capacity in 2015 of 390 MW. The production of 1,800 GWh-yr from 390 MW of capacity equals a capacity factor of 52 percent. CHP will have a primary baseload role in *San Diego Smart Energy 2020*. Average CHP capacity factor under *San Diego Smart Energy 2020* is assumed to be 80 to 85 percent.
m) Explanation of "net" 500 GWh of power from combined-cycle and conventional gas-fired generation: The output of 1 or 2 combined-cycle plants will be needed routinely under the *San Diego Smart Energy 2020* plan at night and during cloudy days, when there is little solar power generation. CHP alone will not be able to meet the nighttime or cloudy day demand. However, on clear days there will be net outflow of power from the San Diego region to neighboring utility areas as the combined solar and CHP output will often exceed local demand in the middle of the day. There will be power flowing in and out of the San Diego area on a continuous basis. The overall effect of this flow from a greenhouse gas calculation standpoint will be 500 GWh of net greenhouse gas emissions from combined-cycle power generation.
n) Nuclear power estimate in SDG&E 2016 case from SDG&E 2007-2016 Long-Term Procurement Plan, Vol. I, as shown in SDG&E presentation to SANDAG EWG, January 25, 2007, p. 11.
o) Estimate of cost to upgrade north/south 230 kV transmission line and 500 kV east/west transmission line to add 550 MW of additional capacity from D. Marcus, June 1, 2007 testimony, in CPUC proceeding A.05-12-014, SDG&E Sunrise Powerlink 8/4/06 application.
p) Estimate of cost of Sunrise Powerlink, $1.265 billion capital cost and $174 million per year for 40 years in 2010 levelized dollars, a total of $6.96 billion, from SDG&E 8/4/06 application.
q) Central heat & power CO_2 emission factor per SDG&E: 639 lb CO_2 per MWh.
r) Combined-cycle CO_2 emission factor: 819 lb CO_2 per MWh (117 lb CO_2 per million Btu, 7 million Btu per MWh).
s) All gas-fired power generation other than CHP is assumed to be combined-cycle generation for greenhouse gas emissions calculation purposes.
t) A total of 14,729 GWh of combined cycle production is assumed for the SDG&E 2016 case (4,679 GWh of demand increase after EE + 10,050 GWh of conventional gas turbine CC power generation). The current combined-cycle capacity factor used by the CEC is 60%. A total of 1,100 MW of local combined-cycle capacity (542 MW Palomar and 561 MW Otay Mesa) will be online in 2016. The expected GWh of electricity production from these two plants in 2016 is projected to be 5,782 GWh at 60% capacity factor. Local generation represents approximately 40 percent of the 14,729 MW of combined-cycle production in 2016. The remaining combined-cycle power production in the SDG&E 2016 case, 8,947 GWh, is assumed to be imported.
u) The CEC assigns a 7.5 percent greenhouse gas penalty to power imported over transmission lines from out-of-state. A factor of 1.075 is applied to the CO_2 emission calculation for the estimated 8,947 GWh of imported combined-cycle power in the SDG&E 2016 case to account for the greenhouse gas penalty assigned to transmission of energy supplies from out-of-state.
v) New post-2007 generation available for peak demand periods: 1) *San Diego Smart Energy 2020* – 2,040 MW PV, 700 MW CHP, 150 MW CSI PV, 40 MW pumped hydroelectric, 133 MW gas-fired peaking turbines. SDG&E 2016 – 40 MW CHP, 150 MW CSI PV, 40 MW pumped hydro, 133 MW gas-fired peaking turbines (J-Power 86.5 MW and Wellhead Power 46.5 MW).
w) The capital cost estimate for the 230 kV and 500 kV transmission upgrades included in *San Diego Smart Energy 2020* is $135 million. The capital cost estimate for the Sunrise Powerlink is $1.265 billion. The lifecycle cost (in 2010 dollars) of Sunrise is estimates at $6.96 billion per SDG&E. The ratio of lifecycle cost to capital cost in the Sunrise case has been applied to the $135 million capital cost estimate for the 230 kV and 500 kV transmission upgrades to calculate an estimated lifecycle cost of $740 million.
x) All GWh annual totals and estimated CO_2 annual emissions are based on the entire electrical demand in SDG&E service territory, including "direct access" customers. *San Diego Smart Energy 2020* assumes all customers in SDG&E service territory participate, including current direct access customers. SDG&E forecasts that direct access customers will represent 23 percent, 5,603 GWh of 24,679 GWh, of the total demand in SDG&E service territory in 2016.
y) The natural gas used in the region that would be displaced by liquefied natural gas (LNG) is from Southwestern raw gas sources with very low (< 1%) CO_2 content in most cases. A few West Texas raw gas sources have significant levels of CO_2. However, this CO_2 is captured at the natural gas processing plant(s) and used in CO_2 enhanced oil recovery projects.
z) SDG&E parent company Sempra Energy will begin operation of its LNG import terminal in Baja California in 2009. At that time Sempra will reverse flow on the SDG&E pipeline network to move natural gas from the LNG terminal north into SDG&E and SoCalGas pipeline systems. 100% of the natural gas in the SDG&E pipeline system will be from the LNG terminal from 2009 forward. Sempra intends to import the LNG from the BP liquefaction plant in Tangguh, Indonesia. The lifecycle CO_2 burden of LNG from Tangguh, including raw gas CO_2 content, liquefaction, shipping, and regasification, is approximately 25 percent greater than that of domestic natural gas from the Southwest. The CO_2 emissions generated under the "domestic natural gas" scenario are multiplied by 1.25 to determine the additional lifecycle CO_2 burden associated with the regional switch to natural gas derived from imported LNG.

2. Understanding the Policy Context for our Region's Energy Future

2.1 California Energy Legislation

2.1.1 AB 32 – California Global Warming Solutions Act, 2006

In September 2006, Gov. Schwarzenegger signed into law Assembly Bill (AB) 32, which mandates that California reduce greenhouse gas (GHG) emissions to 2000 levels by 2010 (11 percent below business as usual), to 1990 levels by 2020 (25 percent below business as usual), and 80 percent below 1990 levels by 2050. AB 32 also requires the accounting of GHG emissions associated with transmission and distribution line losses from electricity generated within the state or imported from outside the state. The lead agency within state government tasked with developing the regulatory structure for the implementation of AB 32 is the California Air Resources Board.

2.1.2 SB 1078 – California Renewable Portfolio Standard, 2002

Senate Bill (SB) 1078 requires California's investor-owned utilities, SDG&E, Southern California Edison (SCE), and Pacific Gas & Electric (PG&E) to procure 20 percent of their electric retail sales from eligible renewable resources by the year 2017. Eligible renewable resources include solar, wind, geothermal, and biomass. SB 1078 also requires retail sellers of electricity, including SDG&E, to increase their procurement of renewable energy by 1 percent per year.[1]

2.1.3 SB 107 – 20 Percent Renewable Energy by 2010, 2006

SB 107 codifies the acceleration of California's renewable energy portfolio standard to require that 20 percent of electric sales by retail sellers, except for municipal utilities, are procured from eligible renewable energy resources by 2010. In 2003, the CPUC accelerated the 20 percent renewable resource requirement to 2010. SB 107 codified the CPUC's decision to advance the deadline. SB 107 requires municipal utilities to adopt their own renewable procurement programs and does not subject municipal utilities to a specific renewable resource target.

SDG&E estimates that it must purchase approximately 3,500 GWh of renewable energy in 2010 to meet the SB 107 mandate.[2] Neither the CPUC or SDG&E anticipate that new transmission is necessary to meet this renewable energy mandate.[3,4]

2.1.4 SB1 – California Solar Initiative "Million Solar Roofs", 2006

SB1, the Governor's Million Solar Roofs program, established the goal of 3,000 megawatts (MW) of new, solar-produced electricity by 2017. $3.35 billion in PV incentives has been allocated to meet the 3,000 MW goal.[5] The objective is to achieve a self-sustaining solar market by 2016. The program consists of three components:[6]

- The PUC's "California Solar Initiative" (CSI) provides $2.165 billion in incentives over the next decade for existing residential homes and existing and new commercial, industrial, and agricultural properties. The CSI goal is 1,940 MW.[7] The program is funded through revenues and collected from electric utility distribution rates.
- The California Energy Commission manages a 10-year, $400 million program to encourage solar in new home construction through its New Solar Homes Partnership. The New Solar Homes Partnership goal is 360 MW.
- Local publicly-owned electric utilities, such as the Los Angeles Department of Water and Power and the Imperial Irrigation District, will adopt, implement, and finance a solar initiative program by January 2008. The estimated incentive budget is $784 million. The publicly-owned utility goal is 700 MW.

PV system rebates given through CSI changed from capacity-based payments, scaled to the size of the PV system installed, to performance-based incentives that reward properly installed and maintained solar systems on January 1, 2007. The incentives are determined according to the system size, as follows:

- For PV systems greater than or equal to 100 kW in size, incentives will be paid monthly based on the actual energy produced for a period of five years. This incentive path is called Performance Based Incentives (PBI). Systems of any size may elect to opt into the PBI program. In addition, "building integrated" PV systems, regardless of size, are required to participate in the PBI program.
- PV electricity systems up to 5 MW capacity are eligible, although incentives are paid only for the first 1 MW of capacity.
- Incentives for all systems less than 100 kW are paid a one-time, up-front incentive based on expected system performance. Expected performance is calculated based on equipment ratings and installation factors, such as geographic location, tilt, orientation and shading. This type of incentive is called Expected Performance-Based Buydown. Residential and commercial incentives receive up to $2.50 per watt, depending on their location, tilt, orientation, and other installation factors. Government and non-profit organizations receive a higher incentive (up to $3.25 per watt) to compensate for their lack of access to the federal tax credit.

The incentive payment levels are automatically reduced over the duration of the CSI program in ten steps, based on the volume of MW of confirmed reservations issued within each utility service territory. On average, the CSI incentives are projected to decline at a rate of 7 percent each year following the start of implementation in 2007.

SB1 also raised the "net metering cap" to 2.5 percent of each utility's peak demand.[8] Net metering allows utility customers to self-generate PV electricity up to the amount of electricity the customer uses during the year. The utility does not pay the customer for any electricity produced beyond the customers own needs under the net metering format.

2.1.5 SB 1037 – California Energy Efficiency Act, 2005

The primacy of energy efficiency in the State's energy strategy was reinforced with the passage of SB 1037 in September 2005. SB 1037 requires that both the state's investor-owned utilities like SDG&E and locally-owned power providers help meet the state's power needs through energy efficiency and demand reduction. These include energy efficient lights and appliances, and programs that emphasize using less energy or doing tasks at off-peak hours when energy is in less demand. SB 1037 also requires natural gas corporations to have similar policies in place. The law requires that investor-owned utilities (IOU), PG&E, SCE, and SDG&E, exhaust all feasible, cost effective energy efficiency potential in their service areas before pursing any other energy resource options.

SB 1037 requires that an electrical corporation "meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, reliable, and feasible." Additionally, in "considering an application for a certificate for an electric transmission facility, the commission shall consider cost-effective alternatives to transmission facilities that meet the need for efficient, reliable, and affordable supply of electricity, including...energy efficiency."

2.1.6 AB 117 - Community Choice Aggregation, 2002

AB 117 authorizes customers to aggregate their electrical loads as members of their local community with community choice aggregators (CCA). The bill authorizes a CCA to aggregate the electrical load of interested electricity consumers within its boundaries. AB 117 allows individual municipalities and counties to establish a CCA or join together to form a CCA for the purpose of purchasing power independent of the investor-owned utility serving the area. A CCA relies on the utility for electric transmission services only.

AB 117 requires a CCA to file an implementation plan with the CPUC in order for the PUC to determine a cost-recovery mechanism to be imposed on the CCA to prevent a shifting of costs to the utility's remaining customers. AB 117 requires a retail customer electing to purchase power from a CCA to pay specified amounts for Department of Water Resources contracts and utility costs. This component of AB 117 refers to the 10-year power purchase contracts signed in 2001 during the California energy "crisis" that are administered by the Department of Water Resources.

AB 117 also states generally that it is an objective of the legislation to avoid shifting of recoverable costs between customers. This means that a utility like SDG&E can potentially assign an "exit fee" to customers that would like to form a CCA in the San Diego region. The exit fee can be assigned if the utility can demonstrate to the CPUC that those customers were

assumed to a be a part of SDG&E's customer base when SDG&E received approval to ratebase a major new infrastructure investment like the 542 MW Palomar Energy Project in Escondido or the proposed SPL.

2.1.7 AB 1X – Large Commercial Electric Customers Protection Act, 2001

AB 1X was one of the responses to the chaos of the 2000-2001 California energy crisis. AB 1X authorized the Department of Water Resources to purchase power to the meet the power needs of the state's IOUs. AB 1X also protects residential and small commercial utility customers from rate changes for typical levels of electricity consumption. AB 1X provides long-term protection, possibly through the year 2021, from rate increases for these customers.

2.1.8 AB 29X – Large Commercial Customers Must Use Time-Of-Use Meters, 2001

Many of the large commercial customers have been on time-of-use (TOU) meters for years. Over 23,000 advanced interval meters were installed for customers with greater than 200 kW of demand as a result of AB 29X. The legislation required that all meter recipients shift to TOU rates. As a result, much of the potential for peak load reduction from these large commercial customers has already been realized as they have adapted their operations to higher peak prices.

2.1.9 AB 1576 – Modernization of Coastal Boiler Plants, 2005

This legislation authorizes IOUs to enter into long-term power purchase agreements with owners of aging coastal boiler plants to provide the financial mechanism necessary to replace these plants with state-of-the-art, high efficiency combined-cycle plants. San Diego County has two aging coastal boiler plants, 946 MW Encina Power Plant in Carlsbad and 689 MW South Bay Power Plant in Chula Vista. NRG Energy owns the Encina plant. LS Power owns the South Bay plant. NRG Energy filed application with CEC on September 14, 2007 to build a 558 MW dry-cooled combined-cycle replacement plant at the Carlsbad plant site. LS Power filed application with CEC on June 30, 2006 to build a dry-cooled 620 MW combined-cycle replacement plant at the Chula Vista Plant site.

2.1.10 SB 2431 - Garamendi Principle: Transmission Loading Order, 1988

The Garamendi Principle describes the siting of new transmission lines as inherently controversial and establishes priorities in an effort to guide the development of transmission projects. The Garamendi Principle defines the first priority as upgrading existing transmission lines to avoid the need for new construction. The second priority is defined as constructing new transmission lines in existing transmission corridors to avoid creating new transmission corridors. The last option is the construction of new transmission lines in new corridors if 1)

upgrades to existing transmission lines can not provide the needed capacity, and 2) existing transmission corridors are unavailable.

The Garamendi Principle does not address or assign a priority to the replacement of existing transmission structures in state parks with much larger transmission structures having much greater transmission capacity. A map of the proposed route of the SPL through the Anza Borrego State Park, as well as a graphic comparing the size the existing 69 kV transmission poles in the park with the proposed 500 kV SPL towers, is provided in **Attachment A.**

2.2 CPUC and CEC Energy Policy

2.2.1 California State Energy Action Plan

California, through the CEC and the CPUC, has developed the "*Energy Action Plan*"to guide strategic energy decisionmaking. This plan establishes the energy resource "loading order" that defines how California's energy needs are to be met. *Energy Action Plan I* was published in May 2003. *Energy Action Plan II* was adopted in September 2005.[9] *Energy Action Plan II* describes the loading order as "the priority sequence for actions to address increasing energy needs" and then states (p. 2):

> "*The loading order identifies energy efficiency and demand response as the State's preferred means of meeting growing energy needs. After cost-effective efficiency and demand response, we rely on renewable sources of power and distributed generation, such as combined heat and power applications. To the extent efficiency, demand response, renewable resources, and distributed generation are unable to satisfy increasing energy and capacity needs, we support clean and efficient fossil-fired generation.*"

2.2.2 CPUC Policy Decisions

Cap on baseload power plant greenhouse gas (GHG) emissions at level of natural gas-fired combined cycle power plant (Decision 06-02-032): The CPUC adopted a cap on GHG emissions resulting from the generation of electricity used by California consumers on February 16, 2006.[10] The Governor's climate change emission reduction targets are now based in part on all long-term commitments to new electricity generation for use in California coming from sources with GHG emissions equal to or less than those emitted by a new combined cycle natural gas power plant.[11]

Reduce forecasted peak demand by 5 percent from 2007 onward (Decision 03-06-032): The demand response programs described in this 2006 decision are designed to target the highest 80 to100 hours of demand per year when energy costs are at their highest.

Employ energy efficiency measures to reduce forecasted annual energy consumption by 10 percent by 2013 (Decision 04-09-060). The objective of this policy is to reduce electric energy

consumption. SDG&E indicates that it is on a savings goal trajectory that is 118 percent of the cumulative maximum achievable energy efficiency potential.[12] However, in 2006 SDG&E achieved only 41 percent of its CPUC mandated energy savings goal for the year.[13]

Establishment of risk/reward mechanism to financially incentivize utilities to maximize investment in energy efficiency (Decision 07-09-043). The CPUC established a financial incentives framework with this September 20, 2007 decision that rewards utilities with up to 12 percent return on investment for exceeding energy efficiency targets and penalizes the utilities if they achieve less than 65 percent of the target. Utilities generate earnings for shareholders when they invest in "steel-in-the-ground" supply-side resources like power plants and transmission lines, but not when the utilities are successful in procuring cost-effective energy efficiency. This decision addresses this inherent utility bias toward supply-side solutions.[14]

SDG&E advanced metering infrastructure - "smart meters": On April 12, 2007, the CPUC approved $572 million for SDG&E's Advanced Metering Infrastructure (AMI) project. SDG&E's deployment of AMI is scheduled to begin in mid-2008. From 2008 through 2010, SDG&E will install approximately 1.4 million AMI electric meters and 900,000 AMI gas meters that will measure energy usage on a real-time basis. The intent of these meters is to: 1) improve customer service by assisting in gas leak and electric systems outage detection, 2) transforming the meter reading process, and 3) providing real near-term usage information to customers. AMI will be capable of supporting in-house messaging displays and smart thermostat controls, though these innovations are not part of the first phase of SDG&E's AMI project. The use of AMI meters is expected to reduce the peak demand in SDG&E service territory by approximately 5 percent, in the range of 200 MW, in 2011.

Direct Access: Direct Access was instituted as a part of deregulation of the California energy market. The intent was to allow retail competition. Approximately 20 percent of the power sales in SDG&E service territory are through direct access purchases.[15] Direct access was indefinitely suspended as a result of the volatility in the California energy market in 2000-2001. California entered into long-term contracts to purchase power on behalf of the utilities in response to the energy crisis. At the time direct access was suspended, there was a fear that too many ratepayers would switch to direct access and that these departing customers would strand the costs of energy for the remaining ratepayers. Direct access was suspended to ensure that these long-term power contracts would be paid-off through bundled utility rates.

The long-term contracts are being paid down and the utilities are now authorized to purchase power from other providers. Many businesses, universities, and other commercial-scale entities are supportive of increasing customer choice options and reinstituting direct access. A CPUC proceeding has begun that will consider reinstituting direct access.

3. The Community Choice Aggregation Option

Two entities have formed CCAs since AB 117 was passed into law in 2002, the San Joaquin Valley Power Authority and the City of San Francisco.

The PUC authorized its first CCA application under AB 117 on April 30, 2007. The CCA application was submitted by the Kings River Conservation District (KRCD) on behalf of San Joaquin Valley Power Authority (SJVPA). The SJVPA will serve Clovis, Hanford, Lemoore, Corcoran, Reedley, Sanger, Selma, Parlier, Kingsburg, Dinuba and Kerman, and Kings County.

The introduction to the SJVPA implementation plan provides an excellent summary of the expected benefits of forming a CCA. The following paragraphs are excerpts from the implementation plan:

> *"The Authority's primary objective in implementing this Program is to enable customers within its service area to take advantage of the opportunities granted by Assembly Bill 117 (AB 117), the Community Choice Aggregation Law. The benefits to consumers include the ability to reduce energy costs; stabilize electric rates; increase local electric generation reliability; influence which technologies are utilized to meet their electricity needs (including a potential increased utilization of renewable energy); ensure effective planning of sufficient resources and energy infrastructure to serve the Members' residents and businesses; and improve the local/regional economy.*
>
> *The Authority's rate setting policies establish a goal of providing rates that are lower than the equivalent generation rates offered by the incumbent distribution utility (PG&E or SCE). The target rates are initially at a five percent discount with the discount potentially increasing once additional KRCD-owned resources are brought on-line."*

The San Francisco City Council voted to form a CCA on June 20, 2007. The mayor of San Francisco approved the city council action on July 2, 2007. A description of the San Francisco CCA implementation plan is provided in the following section.

3.1 Case Study: San Francisco CCA Implementation Plan

San Francisco's renewable energy target is 51 percent renewable energy by 2017. The city will use $1.2 billion in municipal bond financing for construction over the first few years to implement its strategic energy plan.

The CCA will be implemented in two phases. The first phase will cover the first 3 to 4 years where 360 MW of combined resources will be put in place. This includes both energy supply and demand side resources, specifically:

- 107 MW energy efficiency/conservation - goal is to shift more emphasis to peak load reduction compared to current utility energy efficiency programs.
- 150 MW wind power generation.
- 31 MW of onsite PV - this target is embedded in a larger city goal of 50 MW of PV.
- 72 MW of other local distributed energy resources, preferably renewable.

The San Francisco CCA electricity portfolio will be publicly financed using municipal bonds. This significantly reduces the cost of money for building renewable power generation facilities

relative to the commercial loans available to private investor-owned utilities or private developers.

An important current element of the economically viability of renewable energy generation is the federal tax credit. The tax credits are intermittent and historically have disappeared from time-to-time. In the case of wind generation, the wind production tax credit only applicable during the first ten years of operation. After the first ten years the wind farm must be competitive on its own. CCAs are not eligible for these tax credits, as a CCA is a tax-exempt public entity. The CCA, using tax-free bonds, achieves the same or better net cost as the commercial renewable facility with its tax credit. However, CCA avoids the risk of tax credits being unavailable in any given year, and the low-cost financing benefit extends beyond the first ten years through the full financial lifecycle of the asset.

3.2 Comparison of San Francisco CCA and SDG&E Approaches to Renewable Energy

San Francisco will invest $1.2 billion in low cost municipal bonds to achieve 51 percent renewable energy by 2017. By way of comparison, SDG&E estimates a capital budget of $1.265 billion will be needed to construct the proposed SPL to import 1,000 MW of power into the San Diego area. SDG&E is currently subject to a 20 percent renewable energy requirement by 2010.

The California *Energy Action Plan* identifies 33 percent renewable energy by 2020 as a priority goal of Gov. Schwarzenegger. The passage of AB 32 in September 2006, which requires a 25 percent reduction in GHG emission levels compared to1990 levels by 2020, has increased pressure to accelerate renewable energy development in the state. In April 2007, SDG&E/Sempra[16] opposed state assembly legislation that would have required California's electric utilities to reach 33 percent renewable energy by 2020.[17] This legislation was defeated in committee.

3.3 CCAs and Public Utilities: Low Cost Project Financing

SDG&E is an IOU. IOU's are for-profit regulated monopolies that are responsible to shareholders. The City of San Diego is served by SDG&E and represents approximately half of SDG&E's customer base. This makes San Diego relatively unique among larger cities in California.

A breakdown of the electricity provider structure in California's seven largest cities is provided in Table 3-1. The City of Los Angeles has its own public utility, the Los Angeles Department of Water and Power (LADWP). Public utilities are non-profit entities responsible to the political leadership of the city or geographic area served by that public utility. For example, the board of directors of the LADWP is appointed by the mayor of Los Angeles. Sacramento has its own public utility, the Sacramento Municipal Utility District (SMUD).

Table 3-1. Electricity Provider Structure in California's Seven Largest Cities

City (ranked by population)	Electricity Provider Type	Name	Access to low-cost municipal bonds to finance energy projects?	Renewable energy target
Los Angeles	public utility	LADWP	yes	35% by 2020
San Diego	IOU	SDG&E	no	20% by 2010
San Jose	IOU	PG&E	no	20% by 2010
San Francisco	CCA	SF CCA	yes	51% by 2017
Long Beach[18]	IOU	SCE	no	20% by 2010
Fresno	IOU	PG&E	no	20% by 2010
Sacramento	public utility	SMUD	yes	23% by 2011

San Francisco is now a CCA. CCA's are in many respects similar to public utilities. However, the CCAs rely on the IOUs serving the area to provide transmission service to customers within the CCA. The IOUs provided both electricity and transmission service to these same CCA customers prior to the formation of the CCA, and continue to provide only transmission service following formation of the CCA.

A private or "merchant" developer would need a 15 percent or more rate of annual profit and would pay 7 percent or more annual interest on any borrowed money. The electric generation plant is primarily built with borrowed money and to a lesser degree with direct investments. A facility built with this financing approach must return at least 10 percent of its value every year in combined interest on loans and investor profits. Over 20 years, a merchant plant would be paid for three times over - once to build it and twice more in the form of interest on loans and profits.[19]

The publicly-owned plants are the least expensive due to low financing costs and freedom from taxes. The IOU power plants are currently less expensive than merchant facilities due to lower financing costs. This is in marked contrast to 2003, the when merchant financing costs were at least comparable to those for the IOUs. The change is a reflection of the outcome of the 2000-2001 energy crisis.[20]

One major advantage of public utilities and CCAs is access to low-cost financing. The only cost associated with low-cost municipal bonds available to public utilities and CCAs is the interest on the bond. Municipal bonds have very low interest payments, under 5 percent, as they are issued free of federal tax. Public utility and CCA energy facilities are publicly-owned assets, and for that reason do not need to return a profit. Two costs that private developers must contend with are absent. Over a 20-year period the public energy facility is paid for only twice - once to build it and again to pay the interest on the bond.[21]

The form of financing has a big impact on renewable energy facilities, as most of the cost of these facilities is upfront capital cost. These upfront capital costs carry the burden of having to return interest and profits. This is in contrast to a natural gas-fired plant where 50 percent to 80 percent of the lifecycle cost is fuel, and this fuel is purchased near the time the fuel is needed.[22] Municipal bonds level the playing field for renewable energy facilities, and can make renewable energy facilities competitive in a CCA or public utility structure that would not be competitive for an IOU or private investor.

The CEC recently prepared levelized "cost of power generation" estimates for various central station generation technologies. These levelized costs are useful in evaluating the financial feasibility of a generation technology and for comparing the cost of one technology against another over a 20-year lifecycle. Costs are reported in dollars per megawatt-hour ($/MWh). The $/MWh figure is useful as it allocates costs to the expected hours of operation. Costs vary depending on whether the project is a merchant facility, IOU, or a publicly-owned utility (or a CCA).[23]

Table 3-2 highlights the power project financing advantage of public utilities and CCAs relative to IOUs and merchant (private) developers. For example, the cost of power production from concentrating PV built by a CCA is estimated at $116/MWh. The same project built by a merchant developer has an estimated lifecycle power production cost of $272/MWh.

Table 3-2 also highlights the cost-effectiveness of some renewable energy technologies relative to natural gas-fired combined cycle baseload power plants and simple cycle "peaking" gas turbine power plants. Geothermal and wind power plants are at least as cost-effective as combined cycle power plants on a lifecycle basis. An interesting result of the CEC cost comparison is how cost-effective concentrating PV is relative to simple cycle peaking turbines. Concentrating PV tracks the sun and has an afternoon power production profile that closely follows the late afternoon peak power demand load profile. This makes concentrating PV a direct option to simple cycle peaking turbines. The reason for the superior cost performance of concentrating PV is the fact that in addition to providing peak power during the 100 to 200 hours per year that peaking turbines are typically in operation, concentrating PV provides power at or near its rated capacity whenever the sun is shining.

Large commercial flat plate PV installations are also cost-competitive with simple cycle peaking turbines, assuming current levels of solar incentives and tax credits are available. The addition of sufficient battery storage for flat plate PV to maintain rated capacity through the afternoon peak demand period adds approximately 10 percent to the cost of the PV installation.[24] As shown in Table 3-2, flat plate PV equipped with adequate battery storage to operate effectively as a peaking power plant is cost-competitive with simple cycle peaking turbines even with a 10 percent premium for the battery storage.

Table 3-2. Summary of Levelized Cost of Competing Power Generation Technologies[25]

Year 2007	Size (MW)	Merchant ($/MWh)	IOU ($/MWh)	Public Utility or CCA ($/MWh)
combined-cycle	500	101	94	88
simple cycle	100	586	460	313
small simple cycle	50	633	499	346
geothermal – dual flash	50	89	65	67
concentrating PV	15	272	186	116
parabolic trough	63.5	295	219	155
flat plate PV	1	608	396	256
wind – class 5	50	99	67	61

assumed 2007 natural gas price: $8.34/MMBtu

4. Current State Policies Do Not Incentivize Utilities to Prioritize Investments in Conservation, Renewable Energy, and Distributed Generation

An IOU earns a fixed profit based on the value of the property the IOU owns. Examples of such property are IOU-owned power plants, transmission and distribution lines, and IOU-owned electric and gas meters. In other words, the more an IOU invests in such projects, the more money it earns. When the CPUC, the CEC and the Legislature adopted the *Energy Action Plan* and its associated loading order in 2003, no changes were made to the CPUC's existing ratebasing policies. As a result, the IOUs do not currently have an economic incentive to support the loading order.[26,27]

The CPUC's ratebasing policies have evolved over the last 100 years. The primary type of proceeding where ratebasing policies are addressed is the general rate-setting case. The regulated utility model, used in California up until the 1996 restructuring experiment, called for IOUs to invest shareholder funds in capital projects and to be allowed to recover those costs in rates charged to the ratepayers, along with a rate-of-return (profit) set by the CPUC.

The tendency of the traditional ratemaking formula to encourage overinvestment in utility capital projects is well known. Until 1981, California IOUs were focused on building revenues by convincing customers to use more of their product, as these IOUs had more capacity than needed to serve customer load. The IOUs spent money on marketing to get customers to use more gas and electricity. This included promoting all-electric "gold medallion" homes to increase electric demand, and promotions with rebates and discounts to get customers to buy more gas and electric appliances.

The CPUC decoupled IOU energy sales from its revenues for the first time in SDG&E's 1981 rate case decision.[28] The CPUC created a balancing account that allowed SDG&E to increase its authorized rate-of-return even if its overall gas and electric sales dropped due to conservation efforts. In that same decision, the CPUC authorized SDG&E to spend ratepayer money to create a low income weatherization program. This was the first ratepayer-funded conservation program of its kind that paid for the installation of conservation measures in customer's homes. The 1981 decision ordered SDG&E to initiate the new weatherization program quickly. The decision included an overall corporate rate-of-return penalty for non-compliance.

SDG&E increased its residential conservation programs from1982 onward. The other IOUs in the state also adopted similar programs, starting with their low-income weatherization programs. By 1985 those programs had been expanded to serve commercial and industrial customers as well. The price of oil dropped to approximately $10 to $15 per barrel around 1985, and stayed at that price level for the next several years. Most of the IOU's conservation programs were dropped or severely cut back during this time period.

A state senate bill mandating that all IOUs provide ratepayer-funded energy conservation was passed in 1989. In response the CPUC convened a proceeding in which it adopted IOU shareholder penalties and rewards based on each IOUs energy conservation program

performance. The IOUs set their own goals and the CPUC approved the proposed budget. If the utilities met the goals, they were allowed to recover their program costs in rates. If they failed to meet the goals, they were forced to absorb a portion of those costs. If they significantly exceeded their annual goals, their shareholders were allowed to collect and keep a share of the avoided costs associated with the energy they saved.

California deregulated its energy market with legislation passed in 1996. Prior to deregulation, the IOUs presumed they were going to be forced to divest their power plants and become transmission and pipeline companies only. The CPUC gave indications that ratepayer-funded conservation programs might be dropped and the free market would determine how much, if any, conservation got done by customers. The IOUs began to downsize their conservation departments. In some cases the IOU parent companies started separate unregulated energy service companies. For example, Sempra Energy, parent company of SDG&E, started Sempra Energy Solutions.

In 2002, the CPUC eliminated the IOU conservation penalty/reward mechanism on the basis that the CPUC could simply order the IOUs to pursue conservation. However, the elimination of the penalty/reward mechanism also eliminated penalties for non-compliance. The CPUC reinstated the penalty/reward mechanism for energy efficiency programs in a September 20, 2007 decision.[29]

The CPUC returned ratepayer-funded energy conservation program management responsibilities to the IOUs in 2003. Soon after that, the CPUC also returned long-term resource planning to the IOUs. That put the IOUs back in charge of regional energy resource planning. Today, the IOUs are focused primarily on expanding their CPUC-approved projects that allow full cost recovery through rates charged to customers. An example is Sempra's recent announcement that it plans to invest $8 billion in its subsidiaries, primarily in SDG&E and Southern California Gas Company, for ratebased projects.[30] One of the projects identified in the Sempra announcement is the proposed SPL transmission project.

4.1 SDG&E and Sempra Energy

4.1.1 Sempra Energy – Regional Energy Infrastructure Assets

SDG&E parent company Sempra Energy is an active developer and operator of energy infrastructure projects in and around SDG&E service territory. Sempra owns natural gas-fired power plants in Mexicali, Mexico (600 MW), western Arizona (1,250 MW), Boulder City, Nevada (480 MW), and Kern County, California (550 MW). Sempra built the 542 MW Palomar Energy Project in Escondido and later sold the project to SDG&E in 2005. Sempra is also constructing a liquefied natural gas (LNG) receiving terminal in Baja California approximately 50 miles south of the U.S. border. The company has indicated to the CPUC and the CEC that it is its intends to reverse flow on the SDG&E natural gas pipeline system when the LNG terminal is operational so that natural gas from this facility can be delivered to customers in SDG&E and Southern California Gas Company service territories. As noted, Sempra also owns the Southern California Gas Company.

Sempra owns the entire natural gas pipeline network in Baja California and one 600 MW export power plant in Mexicali. The Sempra plant in Mexicali is connected by two 230 kV transmission lines with a capacity of up to 1,400 MW to the Imperial Valley substation in California.[31] This plant is not physically connected to the Mexican power grid. The Imperial Valley substation is the starting point of SDG&E's proposed SPL.

The Mexican electricity monopoly, Comisión Federal de Electricidad, indicated the addition of a second Sempra plant in Mexicali in its description of the 2003-2007 transmission expansion plan for Baja California.[32] While the second Sempra plant has not yet been permitted or constructed, it is foreseeable that with the existence of the proposed SPL transmission project, Sempra will have a compelling economic incentive to build the second export plant.[33]

The SPL is potentially important to the future energy infrastructure development strategy of Sempra Energy in Baja California, especially if the transmission line ultimately interconnects with the Southern California Edison grid in the Los Angeles area. The Los Angeles area is by far the largest power market in the western U.S. SDG&E has made clear it intends to interconnect the SPL with the Los Angeles area.[34] Maps showing Sempra's pipeline infrastructure in Baja California, existing and proposed export power plants in Mexicali, and the projected pathway of the SPL to the Los Angeles area are provided in **Attachment B**.

4.1.2 Impact of Liquefied Natural Gas Imports on Regional Greenhouse Gas Reduction Efforts

SDG&E is currently projecting a 20 percent reduction in greenhouse gas emissions over the next decade, principally as a result of meeting the state mandate of 20 percent renewable energy generation by 2010.[35] However, this projection does not account for the greenhouse gas burden of converting from domestic natural gas to imported liquefied natural gas.

Parent company Sempra Energy will being shipping liquefied natural gas north through SDG&E's pipeline system from its Baja California liquefied natural gas terminal in 2009.[36, 37] The greenhouse gas burden of liquefied natural gas is approximately 25 percent greater than that of the domestic natural gas SDG&E is currently using.[38] This extra burden is the result of the high levels of CO_2 in the raw gas that will be vented to atmosphere at the gas processing plant,[39] additional energy necessary to liquefy the natural gas, tanker transport across the Pacific, and regasification in Baja California. The net effect of the switch to imported liquefied natural gas in 2009 will be to nullify the 20 percent greenhouse gas reduction by 2016 projected by SDG&E in its current long-term plan. The significance of the switch to liquefied natural gas is explained in more detail in **Attachment C**.

4.2 Reality of Deregulated Energy Market Model

A driving force behind the vision of deregulated energy markets has been the presumption of the need to build transmission "superhighways" across the country to allow consumers to enjoy the benefits of the lowest cost energy available regardless of the physical point of generation. The

California Independent System Operator (CAISO) was created in 1996 to assure the proper functioning of this deregulated market system in California. CAISO is also the representative of the Federal Energy Regulatory Commission in the state. A central role of CAISO is to ensure adequate transmission capacity to allow a deregulated power market to function with minimum physical transmission constraints. However, recent Department of Energy data indicates the cost of power in states that embraced deregulation has risen faster than in states that retained traditional rate regulation.[40]

The concept of eliminating transmission barriers to seeking out the lowest price electricity provider anywhere in the region or country may be obsolete in an environment that now puts a high value on energy security and greenhouse gas reduction. A power plant located in San Diego is inherently more physically reliable than the same plant located hundreds of miles away in Baja California or Arizona or New Mexico. The current high cost of natural gas results in aging and high polluting coal-fired power plants being the lowest- cost electricity providers in the U.S. Yet California's utilities are now prohibited from entering into long-term baseload contracts with power plants that have a greenhouse gas emissions footprint greater than that of a natural gas-fired combined cycle power plant. Coal-fired power plants have a significantly higher greenhouse gas emissions footprint than natural gas-fired combined cycle power plants.

AB 32 also specifically required accounting for the greenhouse gas emissions associated with transmission losses. The transmission loss assumption for the importation of out-of-state power to California is 7.5 percent.[41] The justification for building transmission superhighways under deregulation, obtaining the cheapest electricity wherever it can be found, has been tempered legislatively by the twin objectives of greenhouse gas reduction and energy security.

5. Decoupling Utility Profits from Energy Sales in California[42]

The CPUC adopted an "electric rate adjustment mechanism" for the state's three utilities in the early 1980s. The mechanism sought to ensure that a utility could collect the amount of money needed to recover its fixed costs, to counter the effect of conservation programs reducing revenues.

In 1990, the CPUC supplemented this mechanism with a system of performance-based financial incentives for utilities to promote additional cost-effective energy savings. In 1996, as part of its legislation restructuring the electric industry, the state required all customers to pay a charge to fund conservation and renewable energy programs.

The CPUC suspended the "electric rate adjustment mechanism" and the financial incentives following adoption of the restructuring legislation. However, the CPUC adopted a decoupling mechanism for a natural gas utility, Southern California Gas Company, in 1998. The mechanism compensates the company for its costs on a per-customer basis with a set margin per customer, regardless of change in the total amount of natural gas that the company sells. This mechanism provides an incentive for the utility to increase the efficiency of its service delivery per customer.

The California *Energy Action Plan* requires the utilities to first use conservation and demand response measures to minimize increases in electricity and natural gas demand. Next, they must invest in renewable resources and distributed generation. Finally, they can use conventional resources to meet remaining needs. However, the current revenue system does not provide California utilities with a financial incentive to invest in conservation or renewable resources.

The CPUC issued a final decision on September 20, 2007 that rewards the utilities for meeting energy efficiency goals and penalizes the utilities for failure to do so.[43] This decision represents an important step in aligning electric utility financial incentives with the *Energy Action Plan* loading order.

6. San Diego County Energy Profile

6.1 Current Power Generation Sources

The San Diego area currently has approximately 2,200 MW of baseload natural gas-fired power generation capacity. This capacity includes the 540 MW Palomar Energy Project in Escondido, 946 MW Encina Power Plant in Carlsbad, and 689 MW South Bay Power Plant in Chula Vista. Additional baseload capacity includes approximately 200 MW of large cogeneration plants and 150 MW smaller combined heat and power plants. There are approximately 550 MW of peaking gas turbines in the region. SDG&E also receives 450 MW from the San Onofre Nuclear Power Plant located at the northern edge of Marine Corps Base Camp Pendleton. The 560 MW Otay Mesa combined-cycle plant is expected to be in operation by 2009.[44,45] San Diego County power generation sources are listed in Table 6-1.

Not all power sold by SDG&E is generated in San Diego County. The percentage of energy imported by SDG&E is also provided in Table 6-1. In 2007 approximately two-thirds of the energy used by SDG&E customers is classified as imported energy by SDG&E.[46] SDG&E imports power under long-term power contracts signed in the wake of the 2000-2001 energy crisis and administered by the Department of Water Resources. Most of the contract expiration dates are in the 2010 to 2012 timeframe.[47] The company also imports power from sources outside the region, including coal power from neighboring western states.

In 2007 approximately 6 percent of the electric energy by SDG&E, around 1,000 GWh, will be from renewable energy sources.[48] Most of this renewable energy is generated outside of San Diego County. SDG&E is required by SB 107 to generate 20 percent of its retail sales from renewable energy sources by 2010. The major new renewable energy projects that SDG&E is currently proposing are outside of San Diego County. These projects include the 205 MW Pacific Wind project in the Tehacaphi area and the 300 MW Stirling solar dish project in Imperial County.[49] The Pacific Wind project will account for 3.4 percent of the 20 percent target. The Stirling project will account for 2.5 percent of the target.

The reason the solar project produces less energy on an annual basis than the wind project, while having a higher MW design capacity, is because the solar project will not produce energy at the same rate as the wind project. The capacity factor of the solar project, at approximately 0.2, will be lower than that of the wind project at approximately 0.3.[50]

Table 6-1. San Diego County Power Generation Sources and Power Imported by SDG&E

Source	Capacity (MW)	Status	Fuel	Operating Pattern
A. San Diego County generation resources:[a]				
Palomar Energy gas turbine combined cycle[b]	542	operational	NG	baseload
Otay Mesa gas turbine combined cycle	561	2009	NG	baseload
San Onofre nuclear plant[c]	449	operational	nuclear	baseload
Large cogeneration – QF[d]	233	operational	NG	baseload
Small combined heat and power (CHP)	120	operational	NG	baseload
Encina Power Plant – five boilers[e]	946	operational	NG	load following and peaking power
South Bay Power Plant – four boilers[f]	689	operational	NG	load following and peaking power
Simple-cycle gas turbines, pre-2000 [14 total, 1970s vintage]	200	operational	NG	peaking power
Simple-cycle gas turbines, post-2000 [8 total - Calpeak units (3) on DWR contract]	342	operational	NG	peaking power
Simple-cycle gas turbines, proposed [J-Power 86.5 MW, Wellhead Power 46.5 MW]	133	2008	NG	peaking power
Wind – Crestwood/Kumeyaay project	50	operational	none	intermittent
Solar – rooftop photovoltaic (PV)	38	operational	none	sunny days
Landfill gas + WWT digester gas	19	operational	methane	baseload
Bullmoose biomass project	20	2009	biomass	baseload
Hydroelectric – pumped storage [Lake Olivenhain – Lake Hodges]	40	2008	none	peaking power
Small hydroelectric	2	operational	none	baseload
B. SDG&E projected power imports as percent of forecast 2007 retail power sales:[g]				
Natural gas – DWR long-term contracts[h]	22 percent			
Coal	12 percent			
Nuclear[i]	20 percent			
Large hydroelectric	9 percent			
Renewable energy[j]	4 percent			
Import percentage, 2007 SDG&E sales:	67 percent			

Notes:

a) Sources of in-county data are: SDG&E 2007-2016 Long-Term Procurement Plan (LTPP), Exhibits, Exhibits IV-6 (2007 year) and IV-10; Aug. 4, 2006 SPL CPCN application, p. III-17, Table III-1 (list of renewable resources); proposed peaker gas turbine estimate from SDG&E May 14, 2007 press release – "*SDG&E selects projects to meet peak-power demand in 2008*"; PV estimate from 2nd quarter 2007 SDG&E quarterly compliance filing with CEC on PV interconnection; CHP estimate from SANDAG EWG, *Policy Subcommittee Recommendations for Energy Working Group (EWG) Legislative Efforts*, November 16, 2006.

b) SDG&E filed a petition with the CEC on July 27, 2007 to add a centralized chiller to cool the inlet air to the two combustion turbines at Palomar Energy. The modification will provide up to 40 MW of additional capacity to meet summer peak loads.

c) SDG&E has 20 percent ownership of the 2,254 MW San Onofre nuclear plant. SCE has 75% ownership of the plant.

d) The 55 MW cogeneration plant in Yuma, Arizona under QF contract with SDG&E is included in the 233 MW total.

e) Owner NRG Energy filed application with CEC on September 14, 2007 to build 558 MW combined-cycle replacement plant.

f) Owner LS Power filed application with CEC on June 30, 2006 to build 620 MW combined-cycle replacement plant. SDG&E assumes that South Bay will be permanently shut down in 2009 its Aug. 4, 2006 application to the CPUC for Sunrise Powerlink.

g) Sources of imported power data are: August 2007 SDG&E "*power content label*" utility bill insert; SDG&E Jan. 25, 2007 PowerPoint presentation to SANDAG EWG on 2007-2016 LTPP (p. 11, graphic showing DWR contracts at 22% of sales - 2007).

h) SDG&E was assigned the Williams A, B, and C, Sunrise Power Company (Kern County), and CalPeak long-term power contracts by the Department of Water Resources (DWR) as part of the resolution of the California 2000-2001 power crisis.

i) Although San Onofre nuclear plant is located in San Diego County, SDG&E classifies power supplied by the plant as imports.

j) SDG&E forecasts renewable energy resources will supply 6% of total sales in 2007. In-county renewable energy sources are estimated to provide approximately 2% of total sales. Approximately 2/3 of the renewable energy, 4% of sales, will be imported.

6.2 Electric Energy Consumption and Peak Power Demand Trends

Electric power demand is measured in two ways for resource planning purposes: 1) total electric energy usage over the course of a year, and 2) peak power demand during hot summertime conditions. Annual energy usage is analogous to the total gallons of fuel used by an automobile over the course of a year. Peak power demand is analogous to the maximum horsepower required of the automobile when it is fully loaded and must maintain a high rate of speed while driving up a hill. Electricity planning in California is largely guided by peak power demand.

The residential electricity consumption in SDG&E service territory is approximately 8,000 "gigawatt-hours" (GWh) per year. Commercial and industrial electricity consumption adds another 12,000 GWh per year of demand, for a total annual demand in the range of 20,000 GWh per year.

The use of GWh as the unit of measure of annual energy usage is done for convenience. For example, a typical residence in the San Diego area consumes about 0.8 kilowatt of electricity on average.[51] There are 8,760 hours in a year. SDG&E serves 1.2 million residences. Therefore residences in SDG&E service territory consume about 8,000 million kilowatt-hours (kWh) in a year. This is an unwieldy number. For that reason it is more common to speak in energy units of GWh. One GWh equals one million kWh.

Peak power demand is measured in megawatts (MW). One MW equal one thousand kW.

Table 6-2 shows the current trend in annual and hourly energy consumption in SDG&E service territory. The 2004 electricity consumption data is based on reported information. The 2007 and 2016 electricity consumption values are forecasts prepared by SDG&E. The 2016 forecast assumes a demand growth rate of more than 1.5 percent per year in the 2010-2016 timeframe for energy usage and peak power demand.

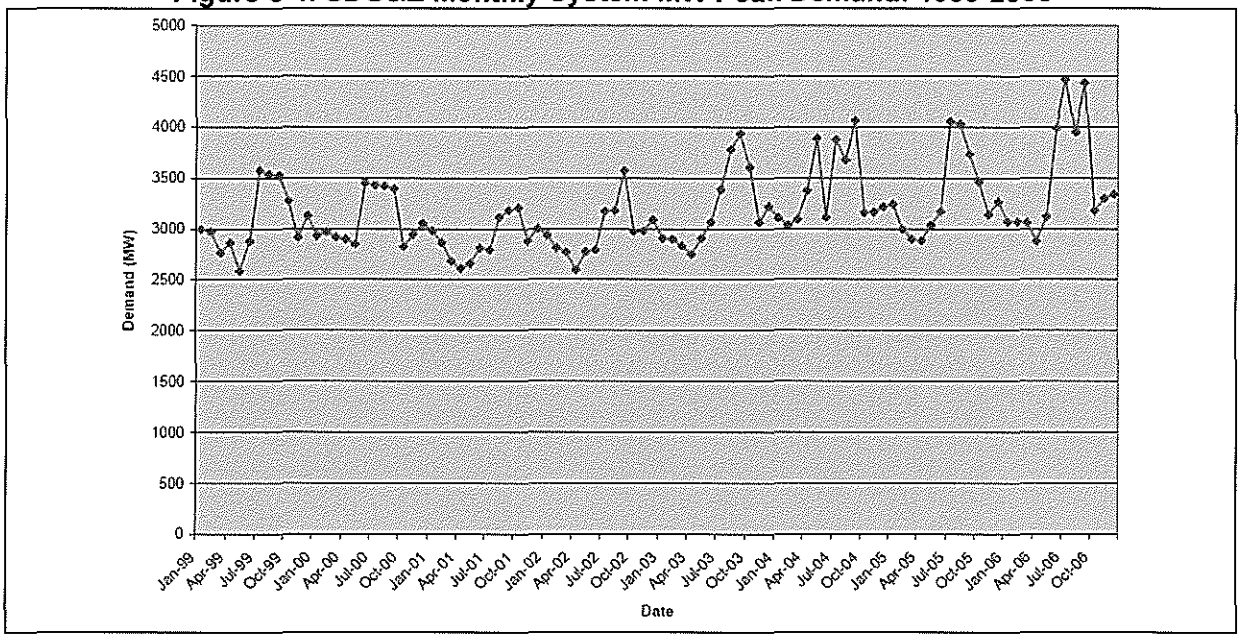
Table 6-2. Trends in Annual and Hourly Consumption

	2004[52]	2007[53]	2016[54]
Annual energy usage in SDG&E service territory, GWh per year	20,578	21,721	24,679
Average hourly usage in SDG&E service territory, MWh	2,349	2,480	2,817

Peak power demand in SDG&E service territory in 2007 reached 4,636 MW.[55] This is nearly twice the average demand level on an annual basis. Peak demand is primarily associated with heavy usage of air conditioning systems on hot summer afternoons. The peak demand trend over the 1999-2006 period is shown in Figure 6-1. Adequate electric power generation capacity must be maintained to provide power even on the hottest day of the year to avoid power curtailments. For this reason, a large number of gas turbine power generators are located in the region to provide extra power for as little as 100 hours a year to address this peak demand. These units are

idle 98 to 99 percent of the time. This is an expensive and inefficient way to address peak power demand.

Figure 6-1. SDG&E Monthly System MW Peak Demand: 1999-2006[56]



6.3 SDG&E Population Growth Forecast and Actual Growth Trend

SDG&E projects a growth in peak electricity demand of just over 60 MW per year in the 2007-2016 timeframe.[57] A major factor contributing to this growth in peak demand that is forecast by SDG&E by 2015 is the assumption of robust population growth. SDG&E uses a private proprietary population forecast service, Moody's "economy.com," to project load growth.[58] SANDAG relies on U.S. Census Bureau statistics for its regional population forecasts. Powers Engineering purchased the San Diego County population growth forecast from economy.com to cross-check the data used by SDG&E with U.S. Census Bureau data. The economy.com population data is provided in **Attachment D.**

The population growth assumed by SDG&E in calculating electricity demand increases over the 2006-2015 time period is much higher than the actual 2000-2006 population growth trend for San Diego. SDG&E assumes a steady population increase of 1.1 percent per year over the coming decade.[59] U.S. Census statistics for San Diego County show an average population growth rate from 2000 to 2006 of 0.7 percent per year, and a July 1, 2005 to July 1, 2006 growth rate of less than 0.2 percent.[60,61] U.S. Census statistics show San Diego County growing at a much slower rate that California as a whole from April 1, 2000 through July 1, 2006, 4.5 percent growth versus 7.6 percent statewide.[62]

SDG&E derived the energy and peak demand forecasts used in the 2007-2016 Long-Term Procurement Plan from the CEC's June 2006 updated demand forecast. The CEC data is statewide. As noted, the San Diego County growth rate is much lower than the statewide growth

rate. Use of CEC statewide data will result in a significant overestimate of the energy and peak demand for San Diego County.

U.S. Census forecasts California increasing its population by 12.4 percent in the 2000 – 2009 period.[63] At its current rate of growth, San Diego County will not achieve a growth rate even one-half the rate that the U.S. Census projects for California for the period 2000 through 2009. Census projects a slower population growth rate for California in the 2010-2019 period, averaging 1.0 percent per year during the period. Yet the economy.com data used by SDG&E forecasts an average San Diego County population growth rate of 1.55 percent per year for the 2010-2019 period, 50 percent higher than the U.S. Census forecast for California as a whole and more than double the San Diego County growth for the 2000-2009 period of 0.7 percent per year provided in the same economy.com forecast database.[64]

One historically unique factor that makes it unlikely that San Diego County will approach the high population growth rates assumed by SDG&E in projecting electric power demand over the next decade is the extraordinarily high cost of housing. It is highly unlikely that this unprecedented disparity between the average price of a home, approximately $550,000,[65] and the typical income level of San Diego County residents will rectify itself over the next ten years. In San Diego County, only 9 percent of the workers earn more than $75,000 per year. Thirty (30) percent earn between $35,000 and $75,000 per year, and 61 percent earn less than $35,000 per year.[66] It is highly speculative to forecast a major new influx of residents to the county unless a major reduction in the cost of housing is also being forecast.

7. Recent Strategic Energy Plans for the San Diego Region

7.1 San Diego Regional Energy Strategy 2030

The *San Diego Regional Energy Strategy 2030* (RES 2030) was prepared for SANDAG in the spring of 2003.[67] Many of the principal San Diego area government, industry, and public interest stakeholders were involved in the process of developing the document. SANDAG is the San Diego County regional planning agency. The SANDAG Board of Directors is composed of the mayors of all the incorporated cities in San Diego County, as well as a representative from the San Diego County Board of Supervisors. *RES 2030* was adopted by the SANDAG Board of Directors on July 25, 2003. The goals defined in *RES 2030* are described in Table 7-1.

Table 7-1. Goals of San Diego Renewable Energy Strategy 2030

RES Goal	Goal Description
1	Achieve and represent regional consensus on energy issues at the state and federal levels.
2	Achieve and maintain capacity to generate 65% of summer peak demand with in-county generation by 2010 and 75% by 2020.
3a	Increase the total electricity supply from renewable resources to 15% by 2010 (~740 MW), 25% by 2020 (~1,520 MW) and 40% by 2030 (~2,965 MW).

3b	Of these renewable resources, achieve 50% of total renewable resources from resources located within the County (~370 MW by 2010, ~760 MW by 2020, and ~1,483 MW by 2030).
4	Increase the total contribution of clean distributed generation resources (nonrenewable) to 12% of peak demand by 2010 (~590 MW), 18% by 2020 (~1,100 MW) and 30% (~2,225 MW) by 2030.
5	Increase the transmission system capacity as necessary to maintain required reliability and to promote better access to renewable resources and low-cost supply.
6	Reduce per capita electricity peak demand and per capita electricity consumption back to 1980 levels.
7	Develop policies to insure an adequate, secure and reasonably priced supply of natural gas to the region.
8	Reduce regional natural gas per capita consumption by the following targets: 5% by 2010, 10% by 2020, 15% by 2030.
9	Complete a transportation energy study by June 2004 to evaluate the potential savings through more efficient use of transportation technology and fuels.

The goal of achieving 1980 levels of per capita electricity peak demand and per capita electricity consumption by 2030 represents a 15 percent reduction from the 2002 baseline year. *RES 2030* provides a sketch of how the per capita reduction in electricity usage will be achieved:

> *"The evolution of technology is such that significant savings are possible in appliances, new construction and in particular, existing construction. For example, the emergence of light emitting diodes in a broad range of lighting applications could reduce lighting demand by as much as 90 percent. Retrofit of existing buildings to off-the-shelf technology can reduce consumption by as much as 60 percent. Although society is demanding more and more electric appliances, energy efficiency and smart energy devices will reduce their consumption significantly. Strategies to reduce energy used per capita should consider new technologies to the extent that they will be more efficient, environmentally benign and reduce reliance on fossil fuels."*

RES 2030 also established the goal of reducing regional natural gas per capita consumption by 15 percent by 2030 is to be achieved by:

- Re-powering or replacement of the existing power plants with high efficiency combined cycle turbines by 2010 and 2015, respectively.
- Increase use of solar water heating in residential, pool and commercial uses to offset natural gas demand.
- Promote the use of high efficiency distributed generation technologies (such as combined heat and power).
- Promote the insulation of un-insulated homes built before the development of building energy codes.

RES 2030 has served as the reference point used by SANDAG to provide comment on proposed energy infrastructure projects. The biggest energy infrastructure project proposed in decades in the region is the proposed SPL transmission project. The SANDAG Board of Directors voted

unanimously to take no position on the proposed transmission project on November 17, 2006. The supporting discussion to the "no position" resolution is instructive in explaining the role of *RES 2030* in guiding SANDAG to adopt a neutral position toward the transmission line:[68]

> *"The Regional Energy Strategy (RES), which was adopted by the SANDAG Board of Directors on July 25, 2003, is being used as a basis for the EWG (Energy Working Group of SANDAG) review of the proposed SPL (Sunrise Powerlink). The RES promotes a mix of power production from centralized and distributed generation resources. Distributed generation is power generated at or near its point of use, typically smaller and more efficient than centralized facilities. The RES recognizes the need for local and imported power but calls for the majority of power used by San Diegans to be produced locally. Several goals in the RES address electricity supply and infrastructure capacity.*
>
> *The RES includes a goal of increasing the total electricity supply from renewable resources to 15 percent by 2010, 25 percent by 2020, and 40 percent by 2030. Subsequent to adoption of the RES, more stringent state law has been adopted requiring 20 percent renewables by 2010. The Governor also has proposed an additional goal of 33 percent renewables by 2020. The use of transmission is needed to meet the renewables goal, but it is unclear whether this need could be met using existing or other new transmission options. Currently, there is no assurance that the SPL will be used to deliver a significant amount of renewable power to the region. It also should be noted that the RES goal calls for an emphasis on in-region renewable installations.*
>
> *The RES includes a goal to increase the transmission system capacity as necessary to maintain required reliability and to promote better access to renewable resources and low-cost supply. This goal could be met through improvements to existing transmission infrastructure, from the SPL, or from other transmission options currently under review at the state and federal levels."*

SANDAG is also engaged in SDG&E's long-term planning process. SANDAG described how the substantive aspects of the *RES 2030* should be incorporated into SDG&E's long-term plan in a September 8, 2006 letter to SDG&E that was included as an attachment to SDG&E's long-term plan submittal to the CPUC. The September 8, 2006 SANDAG letter is included as **Attachment E**.

7.2 SDG&E 2007-2016 Long-Term Procurement Plan

SDG&E submitted its 2007-2016 Long-Term Procurement Plan (LTPP) to the CPUC on December 11, 2006.[69] The major elements of the LTPP are summarized below.

Energy efficiency and peak demand reduction:

- Energy efficiency should reduce forecast peak demand by 487 MW and 2,561 GWh by 2016 (~40 MW per year peak reduction attributable to energy efficiency).
- Demand response programs expected to produce a 5 percent peak reduction (249 MW).

- Distributed generation (DG) including California Solar Initiative will reduce peak load by 225 MW (at time of peak), with the expectation that CSI will produce 150 MW (out of 300 MW forecast); rate of DG increase is about 1 to 2 MW per year currently.

LTPP includes scenarios with and without SPL:

- Add resources with attention to the *Energy Action Plan* loading order.
- SDG&E ran high, low, base case scenarios for need until 2016.

Renewable energy:

- Sixteen (16) percent of energy need is currently under contract as renewables (including the dish Stirling solar contract), with assumption that SDG&E may contract for more than 20 percent total (to account for shortfalls, cancellations) to meet overall renewable energy goal.
- New transmission is essential for cost-effective procurement to meet 20 percent goal by 2010.

Conventional power generation resources:

- Assume South Bay Power Plant retires in 2009.
- Encina Power Plant stays online.
- AB 1576 does not give repowering and replacement (of aging coastal power plants) any unique status that puts them at the head of the contract "line."
- 250 MW of new peaking gas turbines will be added in 2008-2009.

AB 32 greenhouse gas mitigation and reduction:

- Reduction goal levels not yet known, baseline for reduction has not yet been established (could be 1990, current or other year).
- GHG emissions will only see a substantial reduction if baseload plants become more efficient.

Distributed generation:

- No specific set-asides listed for combined heat and power.

7.3 Additional Strategic Plans Developed for the San Diego Region

Four additional strategic assessments have been developed for the San Diego region or areas within the region. The common thread between these assessments is an examination of the benefits and costs of moving to a renewable energy future. These assessments are summarized in **Attachment F** and include:

7.3.1 Perspectives on Regional Renewable Energy Potential

Energy Parks to Balance Renewable Energy in San Diego Region (July 2007).[70] This assessment evaluates the potential for developing a large number of 5 to 10 MW renewable energy power generation facilities in the more rural areas of San Diego County on commercially-

available land. Concentrating solar technologies, such as concentrating PV, are emphasized. Energy parks would be limited to 5 to 10 MW per site, equivalent to approximately 25 to 50 acres, primarily because of the difficult topography. The study includes an initial assessment of the quantity of commercial land potentially available for this purpose. A programmatic environmental siting process for suitable commercial land is recommended to reduce siting uncertainty and facilitate financing of these projects.

Creating a Sustainable Economy – San Diego/Tijuana Case Study (March 2007).[71] The energy portion of this report projects: 1) the amount of land area necessary to meet regional energy needs using rooftop PV, and 2) the economic benefits that would result from converting to PV-based power generation from current fossil fuel-based power generation. The report concludes that all the region's electricity needs could be met by solar energy by fully utilizing the PV potential of existing residential, commercial, and parking areas. The report also projects substantial economic benefits by meeting local power needs with PV in the region instead of sending dollars out of the local economy to purchase fossil fuel-based electric power.

Green Energy Options to Replace the South Bay Power Plant (February 2007).[72] This study analyzes options for replacing the capacity of the South Bay Power Plant in the context of a Chula Vista CCA. Three different levels of renewable energy generation are assessed, 50 percent, 70 percent, and 90 percent. The estimated wholesale price of power generation is estimated between $0.08/kWh and $0.11/kWh for these three scenarios. Current SDG&E energy charges average in the range of $0.13/kWh and $0.17/kWh depending on level of consumption. The study underscores a key advantage of non-profit, public CCA structure – access to low-cost municipal bond financing. The study also highlights that access to this low-cost financing makes renewable energy projects more cost-competitive under public financing than when financed by IOUs or private developers.

Potential for Renewable Energy in the San Diego Region (August 2005).[73] This analysis looked at the renewable energy potential in the region, including San Diego County, Imperial County, and wind power just over the border in Baja California. The estimated peak output technical potential of residential and commercial PV in 2010 is 4,400 MW, 1,800 MW commercial PV and 2,600 residential PV, with an associated annual energy production of approximately 7,000 GWh. This estimate does not include the technical PV potential of parking areas and parking structures. The technical potential of concentrating solar technology in more rural areas of San Diego County is estimated at 2,900 MW and 5,000 GWh.

7.3.2 Photovoltaic Potential of Parking Lots and Parking Structures

As noted, *Potential for Renewable Energy in the San Diego Region* does not include an estimate of the PV potential of open ground-level parking lots or parking structures. It is necessary to have a rudimentary idea of the PV potential of parking areas and parking structures in the San Diego region, since these are often ideal candidates for commercial-scale PV arrays. The 250 kW PV array on the Qualcomm campus parking structure in Sorrento Valley, and the 235 kV Kyocera "solar grove" PV array in Kearny Mesa, are two examples of the potential of parking

structures and ground-level parking lots. Descriptions of these two installations are provided in Section 12 of this report.

Envision Solar is a San Diego-based company that evolved out of the development of the 235 kV "solar grove" PV array in the parking lot of the Kyocera facility on Kearny Mesa. Envision Solar specializes in the development of PV arrays for ground-level parking lots. Powers Engineering requested an estimate of the parking lot square footage in San Diego County from Envision Solar. The rough estimate of the actual PV potential of open parking lots and parking structures is 3,000 MW.[74] This estimate assumes that only 25 percent of total estimated parking surface in the county is sufficiently open, meaning not shaded to a significant degree, that its full solar potential can be realized. The assumptions used to develop the 3,000 MW estimate of PV potential for open parking lots and parking structures are provided in Table 7-2.

Table 7-2. Assumptions Used to Estimate PV Potential of Parking Lots - San Diego County

Assumption	Source
771 vehicles per 1,000 citizens	Dr. Donald Shoup, urban planning, UCLA
At least 4 parking spaces per vehicle, one of which is residential space	Dr. Donald Shoup, urban planning, UCLA
3,000,000 people	Approximate San Diego County population, 2006 U.S. Census update
162 square feet	Square footage of typical 9-foot by 18-foot parking space, Envision Solar
6,939,000 non-residential parking spaces in San Diego County	calculated value: 3,000,000 × (771/1,000) × 3 spaces [4 total spaces per car – 1 residential space per car]
11 watts per square foot	PV capacity per square foot of parking area, in alternating current (AC) output, Envision Solar
12,365 MW	parking lot PV technical potential, calculated value: 6,939,000 spaces × 162 square feet per space × 11 watts per square feet × 1 MW per million watts
3,000 MW	Rough estimate of actual PV potential - assumes 25 percent of non-residential parking spaces are unshaded throughout the day and full PV potential can be realized at these sites, Powers Engineering[75]

8. Energy Efficiency - First in the Loading Order

8.1 Forecast Energy Efficiency Reductions vs. Real Reductions

Energy Action Plan II (2005) lists specific steps to be taken to reduce energy demand in California. For example, it specifically calls for the implementation of actions outlined in the governor's 2004 *Green Buildings Action Plan* to improve building performance and reduce grid-

based electrical energy purchases in all state and commercial buildings by 20 percent by 2015, per Executive Order S-20-04. Executive Order S-20-04 states that:[76]

> *"Commercial buildings use 36 percent of the state's electricity and account for a large percentage of greenhouse gas emissions, raw materials use and waste.*
>
> *It is ordered that state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20 percent by 2015, through cost-effective efficiency measures and distributed generation technologies.*
>
> *The California Public Utilities Commission (CPUC) is urged to apply its energy efficiency authority to support a campaign to inform building owners and operators about the compelling economic benefits of energy efficiency measures; improve commercial building efficiency programs to help achieve the 20 percent goal; and submit a biennial report to the Governor commencing in September 2005, on progress toward meeting these goals.*
>
> *The CEC will undertake all actions within its authority to increase efficiency by 20 percent by 2015, compared to Titles 20 and 24 non-residential standards adopted in 2003; collaborate with the building and construction industry state licensing boards to ensure building and contractor compliance; and promptly submit its report as per Assembly Bill 549 (Statutes of 2001) on strategies for greater energy and peak demand savings in existing buildings."*

The objective described in *Energy Action Plan II* is unambiguous for government and commercial buildings – a 20 percent reduction in grid-based energy purchases by 2015 compared to a concrete 2003 baseline. Executive Order S-20-04 states that government and commercial buildings consume 36 percent of the state's energy. It is of value to calculate what the impact of a 20 percent reduction in energy purchases by government and commercial buildings in SDG&E service territory on the electricity demand projected by SDG&E for 2015.

Total electric power consumption in SDG&E service territory in 2003 was approximately 20,000 GWh.[77] A 20 percent reduction below the 2003 total is a reduction of 4,000 GWh. The resulting total annual electric power consumption would be 16,000 GWh.

The City of San Diego has been very active in conducting energy efficiency upgrades to city buildings. The city has carried-out approximately 70 energy efficiency upgrade projects to date under a CEC low-interest-rate loan energy efficiency incentive program. The primary requirement of this loan program is that each qualifying project has a simple payback of no more than 10 years. The average energy efficiency improvement for these City of San Diego projects is approximately 20 percent based on the most recent energy consumption measurements.[78]

SDG&E promotes the energy efficiency potential of new and remodeled commercial buildings through its Sustainable Communities Program.[79] A Sorrento Valley business, TKG Consulting Engineers, Inc., was recognized by SDG&E for achieving a 30 percent reduction in energy usage

beyond the California new building energy efficiency standard. In regard to this remodeling project, SDG&E notes, "*TKG's new office building is a model for other San Diego County projects. It demonstrates that energy efficiency, occupant comfort, and environmentally friendly design is cost-effective, and be achieved even with a tight construction schedule.*"[80]

The energy efficiency of the TKG building was improved by: 1) adding insulation to the interior of the existing concrete walls, 2) adding a film to the existing single glazed windows, 3) use of a variety of high efficiency lighting strategies, 4) occupancy sensors for private offices, 5) and use of a high efficiency air conditioning system. SDG&E also sited a 40 kW PV array on the roof of the TKG building to provide renewable power to the utility's distribution grid. This is a potential model for the local siting of utility-owned PV generation.

Energy Action Plan II also describes ambitious energy efficiency goals for the utilities, stating:

> *"For the past 30 years, while per capita electricity consumption in the US has increased by nearly 50 percent, California electricity use per capita has been approximately flat."* and *"Most recently, in September 2004, the CPUC adopted the nation's most aggressive energy savings goals for both electricity and natural gas. In achieving these targets, the IOUs (investor-owned utilities) will save an additional 5,000 MW and 23,000 GWh per year of electricity, and 450 million therms per year of natural gas by 2013."*

The goals described by the CPUC represent a 10 percent reduction over business-as-usual. The utilities would be well on the road to achieving an overall absolute 20 percent reduction in electric power consumption by 2015 if the goals described in this excerpt from the *Energy Action Plan* were referenced to a 2003 baseline.

These goals are not referenced to a 2003 baseline. The goals are referenced to utility projections of future demand. The flaw in energy efficiency requirements imposed by the CPUC on utilities is that the energy efficiency and demand response savings are calculated relative to forecast energy usage and peak demand, not a fixed baseline year. As a result, the utility can assume high per capita growth in electricity consumption, combined with robust population growth, to forecast very high energy usage rates prior to the application of energy efficiency measures. The utility then applies energy efficiency measures to this high projected usage to eliminate 10 percent of this consumption by 2013. This is a "paper" reduction in demand. The on-the-ground reality of these high forecasts and paper reductions is an ever-increasing demand for electricity. That is why energy efficiency gains should be measured relative to a baseline year, as in Executive Order S-20-04, to be meaningful.

SDG&E is projecting that both per capita energy consumption and per capita peak electricity demand will increase in SDG&E service territory between 2007 and 2016.[81] This forecast increase runs counter to California's 30-year history of "no change" in per capita energy consumption. It is the reliance on forecast paper reductions instead of absolute reductions relative to a fixed baseline year that allows SDG&E to state in the 2007-2016 Long-Term Procurement Plan that "*SDG&E does not believe that significantly more energy efficiency savings could be realistically achieved from a technical standpoint.*"[82]

8.2 Maximizing Energy Efficiency Reductions

SDG&E could save an additional 4,800 GWh through expanded, cost-effective energy efficiency programs. This is nearly 25 percent of the San Diego region's current annual energy consumption of approximately 20,000 GWh. Major efficiency opportunities include greatly expanded upgrades/replacement of cooling systems, lighting, refrigeration, and greatly expanded weatherization programs. A 2020 target date to achieve a 20 percent reduction in energy consumption and peak demand would allow time to re-design the current energy efficiency program so that all economically justifiable energy efficiency retrofits are carried-out. This target date would also allow convenient phase-in of long-life high efficiency devices as the original devices, specifically central air conditioning units and refrigerators, reach the end of their useful lives.

All energy efficiency upgrades with a reasonable energy savings payback period reduce energy costs in SDG&E's service territory. Energy efficiency measures also drop greenhouse gas emissions and air pollution. It is for these reasons that energy efficiency is first in the loading order. However, realizing full energy efficiency benefits will only occur if the utility or a delegated third party funds the efficiency upgrades as a standard, across-the-board practice for all customers. Customers are unlikely to decline an efficiency upgrade if they incur no additional out-of-pocket expenses and the utility or a designated third party manages the transaction to minimize customer inconvenience.

8.2.1 Cost-Effective Energy Efficiency Potential

California's three IOUs achieved a combined total of 6,200 GWh of energy efficiency savings through 2006. However, the CPUC wants utilities to develop far bolder energy-saving strategies to improve grid reliability and cut customer costs. The Utility Ratepayers Network (San Francisco) has indicated that the difference between economically achievable energy efficiency reductions and what has actually occurred to date is so stark that a different utility energy efficiency program design and longer-term market strategies must be considered.[83]

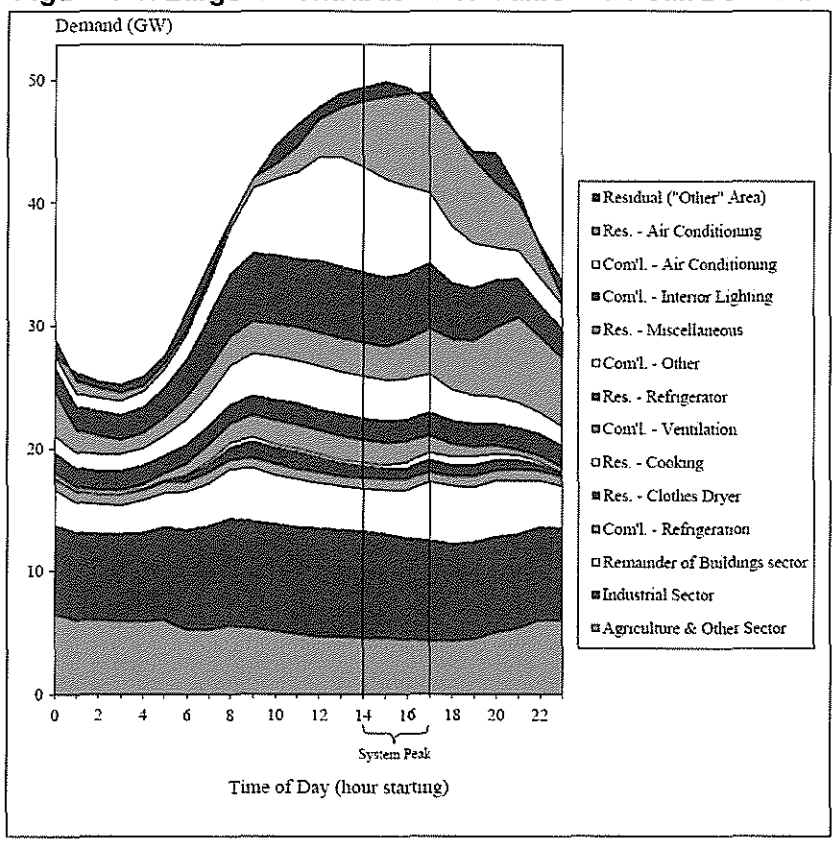
A May 2006 energy efficiency potential study prepared by Itron, Inc. for California's three IOUs estimates that as much as 48,000 GWh of reduction is attainable in existing buildings statewide with economical technologies.[84] The study identifies that 58,000 GWh is technically possible in existing structures, though not all 58,000 GWh would be considered cost-effective using the cost comparison methodology currently applied.

SDG&E represents about 10 percent of the California IOU load. Ten (10) percent of the 48,000 GWh of cost-effective statewide energy efficiency reduction potential is 4,800 GWh, about one-quarter of the estimated 20,000 GWh in total annual power sales in SDG&E service territory.

8.2.2. High Value Energy Efficiency Opportunities in San Diego County

Figure 8-1 provides a breakdown of the demand by device type on hot summer days. Air conditioning load is the dominant contributor to peak power demand on the hottest days of summer, comprising approximately one-third of total demand. In SDG&E service territory, this means a 1,500 MW air conditioning load out of a peak load of up to 4,600 MW. The statewide relationship between air conditioning load and peak load for 2005 is provided in **Attachment G**. Despite the predominance of air conditioning load during peak demand periods, relatively little forward progress has been made in reducing this load.

Figure 8-1. Largest Contributors to California Peak Demand[85]



SDG&E relies on the May 2006 Itron study in measuring its energy efficiency performance.[86] SDG&E uses the Itron study as the yardstick in assessing energy efficiency savings projected by SDG&E compared to the universe of technically achievable energy efficiency savings identified by Itron. Itron is also a contractor to SDG&E tasked with developing smart meter software.[87]

Itron largely avoids the issue of increasing the efficiency of central air conditioning units by stating that the 2006 federal standard for new units is Seasonal Energy Efficiency Ratio (SEER) 13 and the highest SEER rating of "economical" central air conditioning units is 14.[88] Itron goes on to state there is little difference between SEER 13 and SEER 14 in terms of efficiency and therefore no economic justification for upgrading from SEER 13 to SEER 14.

However, the average SEER rating for in-use central air conditioning units in California is approximately SEER 10, not the 2006 federal minimum standard of SEER 13 for new units.[89] Competitively- priced central air conditioning units with ratings as high as SEER 21 are commercially available. As noted below, there is about a 20 percent installed price difference between a SEER 13 or 14 unit and a SEER 21 unit. An incremental energy efficiency improvement of nearly 30 percent is realized by selecting a SEER 21 unit over SEER 13 when compared to the SEER 10 basecase.[90] Itron does acknowledge that major energy efficiency reductions can be achieved in residential and commercial heating and air conditioning systems, though in the context of emerging technology instead of off-the-shelf technology.[91]

Itron also does not address new thermal storage air conditioning systems now on the market which could nearly eliminate cooling-related peak demand if installed in new and existing buildings throughout the region. Graphs of the peak cooling demand reduction achieved by these commercially available thermal storage air conditioning systems are presented in **Attachment H.**

Cost-effective and largely untapped energy efficiency savings can readily be employed on existing commercial and institutional cooling systems as well. Many commercial buildings use electric motor-driven centrifugal chillers to provide cooling. Centrifugal chillers typically consume more electricity than any other single energy-consuming device in a commercial building.[92] The Center for Sustainable Energy has been a leader in conducting energy efficiency evaluations of these cooling systems, conducting hundreds of energy efficiency evaluations on these systems locally. Over 90 percent of these systems operate with relative low efficiency, in the range of 1.0 to 1.2 kW per ton of cooling, using oversized pumps, constant speed equipment, and controls that do not work well.[93,94]

A new trend in these commercial and industrial "chiller plant" cooling systems is converting all devices to variable speed operation and simplified control of the whole system. The initial conversions to this ultra-efficient operating format resulted in an average energy-use reduction of 54 percent over a three-year period.[95] The results indicate that ultra-efficient all-variable-speed systems are reliable and can be installed for the same cost as "standard" central plant systems.

An example of effective application of all-variable-speed operation to an existing chiller plant is the County of San Diego's North County Regional Center, with 610,000 square feet of air-conditioned space (courthouse, offices, and jail). The retrofit was completed and commissioned in December 2003 at a cost of $423,700. Two years later, the entire plant was averaging less than 0.5 kW per ton, saving the county more than $175,000 a year. The simple payback for this upgrade was less than two-and-a-half years. The North County Regional Center also received a $205,447 incentive payment from SDG&E, reducing the payback period to 1.3 years.[96]

8.2.2 Achieving an Absolute 20 Percent Reduction in Electricity Usage by 2020

Table 8-1 lists a number of the major energy efficiency opportunities that could significantly reduce peak demand and energy consumption in the region. These include upgrades to cooling systems, lighting (phase-out of incandescent bulbs), weatherization, and refrigeration.

Table 8-1. Cost-Effective Energy Efficiency Opportunities in the San Diego Region

Device Type	Sector	Number[97]	Average baseline efficiency	Average age of device (years)	Unit of measure	Target efficiency level	Overall potential reduction versus baseline (%)	Potential peak reduction versus baseline (%)	Estimated payback period for typical installation (years)
Central air conditioning	residential/ small commercial	500,000 – 600,000[98]	10	10.7	SEER[99]	20	50	50	depends on location and use of dynamic pricing[100]
Central air – ice storage	medium and large commercial	22,843	new product	new product	kW per ton	advantage is shifting cooling load to nighttime	no change	80	depends on location and use of dynamic pricing
Central heating/cooling plants	large commercial	689	1.0 – 1.2	unknown	kW per ton	0.5 – 0.7	30 - 50	30 – 50	depends on location and use of dynamic pricing
Central heating/cooling Plants – chilled water storage	large commercial	689	1.0 – 1.2	retrofit	kW per ton	0.5 – 0.7	30 - 50	80	depends on location and use of dynamic pricing
Lighting	residential	1.2 million	10 – 20	1	% CFL[101]	100	~60	~60	< 1
Refrigeration	residential	1.2 million	931[102]	7	kWh/yr	721	20	20	NA - new federal efficiency standard
Weatherization – utility energy conservation upgrade	residential	primarily pre-1990 homes	Title 24 new construction standard [103]	20+	kWh/yr	> 30% from existing condition	30[104]	30	Presumed to be comparable to commercial building payback.
Weatherization – LEED existing building retrofit	commercial, all types	141,200	Title 24 new construction standard	20+	kWh/yr	> 30% from existing condition	30[105]	30	2.6[106]

A 2020 target date to achieve a 20 percent reduction in energy consumption and peak demand would allow time to re-design the current energy efficiency program so that all economically justifiable energy efficiency retrofits are in fact carried-out. This target date would also allow convenient phase-in of long-life high efficiency devices as the original devices reach the end of their useful lives. This is typically in the range of 10 to 15 years for central air conditioning units and 7 to10 years for refrigerators.

Some important actions that would significantly reduce energy consumption in the San Diego area require no action in San Diego other than voicing support. For example, legislation currently in the California Assembly (AB 722, Levine) would ban incandescent bulbs in the residential size range, 25 watts to 150 watts, by 2012. Incandescent bulbs would be replaced principally by compact fluorescent lighting (CFL). CFLs reduce electricity demand 75 percent compared to an incandescent bulb of comparable intensity. Currently only 10 to 20 percent of the light bulbs in California residences are CFLs.[107]

All energy efficiency upgrades with a reasonable energy savings payback period reduce energy costs in SDG&E's service territory. However, it is unlikely that large numbers of individual consumers will be willing to spend significant additional sums of up-front money to maximize the energy efficiency of their residences and businesses. Yet it is in the interest of the community and the region that these residences and businesses are as energy efficient as feasible from a cost perspective.

The utility must fund the difference between the lowest cost, higher energy consuming device and a cost-effective state-of-the-art upgrade if the objective is to realize much of the potential efficiency gains in the region. This is also true of weatherization. The current SDG&E energy efficiency incentives are provided in **Attachment I**. These rebate and incentive payments are modest. No incentive payments are currently offered for central air conditioning system upgrades. The program is far too modest to achieve the energy efficiency targets contemplated for *San Diego Smart Energy 2020*.

Carrier Corporation is a leading provider of central air conditioning systems. The energy demand of a 3-ton Carrier Corporation SEER 10 central air conditioning unit is approximately 4.0 kWh under hot summertime conditions.[108] The company advertises a 56 percent reduction in electricity demand for its Infinity® 21 (SEER 21) model compared to a SEER 10 unit.[109] In an area of the county where air conditioning may be necessary much of the summer, in the range of 800 to 1,000 hours per year, more than 2,000 kWh of energy demand would be eliminated over the course of the summer peak period by selecting the Infinity® 21for the upgrade.[110]

As noted, the 2006 federal standard for new central air conditioning units is SEER 13. Is it cost-effective to purchase a SEER 21 unit over a SEER 13 unit solely on the basis of energy savings? Yes. The difference in the installed cost prior to rebates of a reference case Carrier Corporation 3-ton SEER 13 residential central air and heating unit, which costs approximately $9,000, and a state-of-the-art Infinity® 21 unit (SEER 21) is around $2,000.[111] Carrier offers a rebate on high efficiency units that reduces the cost difference between the SEER 13 and SEER 21 alternatives. The SEER 21 unit would save approximately 1,200 kWh relative to the SEER 13 unit over 1,000 hours.[112,113] Summer peak savings would be $300 per year, assuming a peak demand rate of $0.25/kWh and smart meters to measure real-time consumption. By way of comparison

regarding peak rates, SDG&E is already proposing a critical peak pricing rate of $1.20/kWh for non-residential customers in an effort to reduce peak demand.[114] The simple payback for the $2,000 additional cost of the Infinity® 21 would be 6 to 7 years.

Implementing a cost-effective state-of-the-art requirement for residential central cooling system upgrades would be quite simple in concept. For example, SDG&E would advise local heating and cooling system contractors that the utility will pay the difference between the base price for a central air conditioning system that meets the 2006 federal SEER 13 standard and a state-of-the-art unit (SEER 21 in 2007). SDG&E, or a third party provider such as the Center for Sustainable Energy, would identify each municipality and area in the county where the upgrade is automatic, such as Ramona, Lakeside, Santee, Poway, and El Cajon. The incentive payment in cooler areas of the county where air conditioning systems are run on only the very hottest days, such as La Jolla or Pacific Beach, would be pro-rated to cover the additional cost of the highest SEER rating that is cost-effective based on air conditioning usage patterns in that area.

That conversion to smart meters offers another relatively painless method for dramatically reducing peak load on hot days.[115] There are an estimated 500,000 to 600,000 central air conditioning units in residences in the San Diego region.[116,117] Most or all of these units are in operation on the hottest days of summer. Smart meters with home thermostat control are capable of increasing the set-point room temperature automatically to reduce air conditioning load.

Cycling the set-point of one-half of the central air conditioner population from 72 °F to 78 °F for 10 or 15 minutes, and repeating this cycling with the other half of the population for 10 to 15 minutes, would reduce instantaneous MW load during critical peak demand periods by hundreds of MW with almost no impact on the comfort of end users. Residences with sensitive populations, such as the elderly or chronically sick, would be kept out of this type of program. Other customers could opt-out if a compelling reason was provided after the customer had been included in the program for a time and had experienced the impact (or lack of impact) of air conditioning cycling on the comfort level within the residence.

Effective building weatherization is a necessary component of any program intended to minimize the cooling demand. SDG&E has a low-income weatherization program that reached approximately 10,000 homes in 2005.[118] SDG&E reports that the weatherization program elements are cost-effective but does not report the actual reduction in peak electricity demand realized as a result of the program.

However, the City of Houston has published case study data on a 2006 weatherization program conducted in an older neighborhood that resulted in a 14 percent reduction in peak energy demand.[119] Six hundred homes, with an average age of 40 to 60 years in the range of 1,000 to 1,300 square feet, were weatherized. The program was basic. Homes were weatherized with caulking, weatherstripping, and attic insulation of nine inches. The program cost an average of $1,000 per home. Average savings were $160 in the 2006 summer season.

9. Demand Response: Current Utility Program, Pricing and Smart Meters[120]

9.1 Why California is falling short on reducing peak demand

California will fall short of achieving its goal of reducing system peak demand for the three investor owned utilities by 5 percent in the summer of 2007. This goal specifically applies to price response programs that can be called on a day in advance and are designed to address forecasted peaks or supply constraints. Price response programs are likely to reduce peak demand by 2.2 percent, or less than half of the target percentage.

To identify why the state's demand response goals will not be achieved this year, the Brattle Group, which provides consulting services and expert testimony in economics, finance and regulation interviewed two dozen stakeholders within and outside of California. Several reasons for not meeting the demand response goals emerged.

First, the goals focused solely on price response programs, which require advanced interval meters. When the goals were set, only customers with greater than 200 kW demand, representing about one-fourth of the system peak load, had these meters. Achieving the 5 percent goal from large customers alone requires that they reduce their peak demand by about 20 percent.

Second, even by 2011, when advanced metering infrastructure will be installed for customers under 200 kW, a large portion of the electricity consumption in the commercial customer class with demand under 200 kW will continue to be protected from rate changes by AB 1X. This protection may last through the year 2021.

Large customers already face time-of-use (TOU) rates that charge higher prices for demand during peak periods. Many of the largest customers have been on TOU for years. Over 23,000 advanced interval meters were installed for customers with greater than 200 kW of demand as a result of AB 29X. The legislation required that all meter recipients shift to TOU rates. Much of the potential for peak load reduction from the largest commercial customers has already been realized as they have adapted their operations to higher peak prices.

The utilities have proposed voluntary critical peak pricing rates and peak time rebates to accommodate the AB 1X provisions. However, the true potential for demand response from commercial customers is unlikely to be achieved due to a combination of complications. For example, there is currently a built-in disincentive to customers with average demand under 200 kW and with a high peak demand to leave a program, AB 1X, that protects these customers from rate spikes.

The current approach appears to be too centered on the utility and may need to be replaced with an approach focused on customer needs and infrastructure constraints. California lags behind states with restructured power markets where all large customers above 1 MW face default hourly real-time pricing tariffs. Most regions with active demand response programs have both "day ahead" and "day of" programs using a combination of pricing and rebate payments to encourage customers to lower peak loads and/or shift load to off-peak periods.

9.2 Steps necessary to get more from demand response

Rate and program designs must be developed that better reflect the value of demand response to the electricity system and the value of consumption to customers. California has pursued its energy efficiency goals through a combination of programs and standards. At least half of the efficiency gains that have been realized since 1975 have been due to standards. Now may be the time to examine the potential for using standards to achieve the state's demand response goals.

Cost-benefit methodologies for evaluating demand-side programs need to be improved. Protocols must be developed for measuring demand response impacts. Innovative rate designs are needed that incorporate the risks of outages and high peak generation costs.

Dynamic rate designs and effective protocols for measuring demand response impacts are steps toward solving these problems. There is a need to better educate customers about the costs embodied in current rates, the benefits that could come from broad adoption of dynamic rates, the true impacts on their electricity costs that would result from such a change, and the options they have for responding.

Many customers assume such rates would amount to rate increases when in fact utility revenue would not change. Customers whose consumption patterns reflect below average peak consumption would see bill reductions. Those with above average peak consumption would see increases that reflect the degree to which their peak consumption is currently receiving a hidden subsidy from other customers.

9.3 Smart meters are a part of the solution

The demand for electricity is highly concentrated in the top 1 percent of hours of the year. In most parts of the United States, these 80 to 100 hours account for roughly 8 to 12 percent of the maximum or peak demand. In California, they account for approximately 11 percent.

If a way can be found to reduce some of this peak demand, it would eliminate the need to install generation capacity that would be used less than 100 hours a year. This generating capacity is primarily gas-fired peaking combustion turbines. This is expensive power generation given these turbines are idle for almost all of the year.

How much will be saved by demand response will depend on two things: 1) how much peak load can be reduced by customers and 2) how much generation (and related power delivery) investment and fuel can be offset by this load reduction. The first item depends on two things: how rapidly utilities and regulators move to install new pricing designs that provide the correct price signals to customers, and how well customers respond to the price signals.

A prerequisite to the provision of dynamic pricing is the installation of Advanced Metering Infrastructure (AMI). Depending on features and geography, AMI investment costs can range from $100 to $200 per meter. Much of that cost can be recovered through operational benefits

such as avoided meter reading costs, faster outage detection, improved customer service, better management of customer connects and disconnects, and improved distribution management.

Many utilities have already installed AMI because they were able to recover their entire investment through operational benefits. According to a recent Federal Energy Regulatory Commission report, AMI currently reaches 6 percent of electric meters in the United States. Certain states, such as Pennsylvania and Wisconsin, have AMI penetration rates in excess of 40 percent. AMI penetration rates are in the double digits in eight states.[121]

California's three investor-owned utilities tested a variety of dynamic pricing designs in a $20 million pilot project that involved approximately 2,500 residential and small commercial and industrial customers over a three-year period. The experimental process involved a working group that was facilitated by the CPUC and CEC and many interested parties, some opposed to dynamic pricing and some supporting it.

The California experiment provided time-varying prices and smart meters to all participants. In addition, some of the participants also received enabling technologies such as smart thermostats and always-on gateway systems. Smart thermostats automatically raise the temperature setting on the thermostat by 2 or 4 degrees when the price becomes critical. Always-on gateway systems adjust the usage of multiple appliances in a similar fashion and represent the state-of-the art.

The experiment showed that the average Californian customer reduced demand during the top 60 summer hours by 13 percent in response to dynamic pricing signals that were 5 times higher than their standard tariff. Customers who had a smart thermostat reduced their load about twice as much, by 27 percent. And those who had the gateway system reduced their load by 43 percent. The AMI meters that SDG&E will install will be capable of supporting smart thermostat controls and gateway systems.

The gateway "smart meter" system represents the maximum technical potential for demand reduction in the residential customer class. The smart meter system has the potential for lowering peak demand by 43 percent. In the commercial and industrial classes, automatic demand response programs that control multiple end-use loads while working with the energy management system that is installed in most facilities are projected to reduce demand by 13 percent. The weighted average technical demand response potential for all classes is estimated at approximately 23 percent.

The peak demand in SDG&E service territory in 2007 was 4,636 MW. A 23 percent reduction in 2007 peak demand through use of smart meters represents a demand reduction of approximately 1,070 MW. SDG&E estimates that the use of smart meters in SDG&E territory will result in a 5 percent reduction of peak demand 2016, a forecast demand reduction of 249 MW.[122]

10. San Diego Solar Initiative: Cost-Effective Regional Photovoltaics

10.1 Design of California Solar Initiative

The SB1 "million solar roofs" legislation has established the objective of adding 3,000 MW of commercial and residential PV installations in California by 2017. SDG&E serves approximately 10 percent of the IOU customer base in California, and for that reason it is assumed that 300 MW of this PV capacity will be added in SDG&E service territory.[123] $3.35 billion in incentives will be paid-out over the course of the 10-year program. The objective of these incentive payments, in combination with federal and state tax incentives, is to make PV cost-competitive with purchased utility power.

The 12 kW system example shown in Table 10-1 demonstrates the financial impact of the incentive payment and tax credits on the net cost of the PV system. The 12 kW system used in the example is presumed to be a system installed on a residence under a commercial third party power purchase agreement structure.

Table 10-1. Net Cost of 12 kW PV System under SB1 California Solar Initiative[124]

Cost or (Credit), $	Cost Element
100,000	gross cost of 12 kW PV system @ approximately $8 per installed watt
(15,000)	net CSI incentive payment, gross incentive of $25,000 less income tax paid of $10,000
(30,000)	30 percent federal tax credit on gross cost
(28,000)	depreciation on gross cost less tax credit ($70,000 × tax rate)
27,000	net cost of PV system

The annual loan payment would be $2,500 per year, assuming the net capital cost of $27,000 is amortized at 7 percent interest over 20 years. This system would be expected to generate approximately 1,550 kWh per year kW installed, or 1,550 kW × 12 kW = 18,600 kWh per year. Dividing the annual cost of $2,500 by the annual power production of 18,600 kWh gives a unit electricity generation cost of $0.135/kWh. This compares to a typical current SDG&E electric energy charge of $0.15 to $0.25/kWh for residential customers.[125]

Commercial PV systems rely on the incentives, tax credits, and depreciation shown in Table 10-1 to produce electricity that is competitive with utility electricity rates. The major program under SB1 is the California Solar Initiative (CSI). CSI has a $2.165 billion incentives budget and a goal of 1,940 MW of new PV capacity by 2017. The CSI program provides performance-based incentive payments for each kWh produced from commercial PV systems instead of a flat initial payment for smaller systems that is based on the size of the PV system.

The fundamental concept behind the CSI program is that a large increase in demand for PV systems will steadily reduce the cost of PV to the point where PV technology will be cost-

competitive with purchased utility electricity rates by 2017 without incentive payments (though assuming federal and state tax credits remain). Expectations of large growth in PV capacity are predicated on the cost of PV steadily dropping over the next decade to half the current cost due in part to the large demand increase created by the CSI incentives.

Favorable utility tariffs will play an important role in driving the expanded use of PV in commercial systems as well. Most of the initial CSI incentives for commercial PV systems went to applicants in PG&E service territory, in part because of favorable rate structure for PV systems. This rate structure, known as the A-6 tariff, pays nearly triple the proposed SDG&E rate for commercial solar power.[126] The PG&E and SDG&E rate structures for commercial solar installations are compared in Table 10-2. A SDG&E commercial solar tariff structure that is comparable to the PG&E tariff would allow commercial PV in SDG&E service territory is to compete on a level playing field for statewide incentive payments under CSI.

Table 10-2. Comparison of PG&E and SDG&E Commercial PV Rate Structures

	PG&E A-6 tariff	SDG&E AL-TOU tariff (proposed)[127]
Energy Charges ($/kWh)		
Summer		
Peak	0.319	0.109
Part-peak	0.157	0.092
Off-peak	0.093	0.073
Winter		
Peak		0.108
Part-peak	0.138	0.100
Off-peak	0.102	0.079
Demand Charges ($/kW)		
Facility charges	none	10.70
Summer peak	none	4.72
Winter	none	3.59

10.2 Proposed San Diego Solar Initiative

10.2.1 Achieving 50 Percent Greenhouse Gas Reduction with Photovoltaics

A primary goal of *San Diego Smart Energy 2020* is to reduce greenhouse gas emissions from power generation serving San Diego County customers as rapidly as cost-effectively feasible. Accelerated use energy efficiency measures and renewable energy will be necessary to achieve this goal. The *Regional Energy Strategy 2030* establishes a goal of 50 percent of the renewable energy used in the region coming from local renewable energy resources. The large majority of the renewable resources that SDG&E is proposing to utilize to meet the SB 107 "20 percent by 2010" renewable energy mandate, primarily biomass, wind, geothermal, and solar power, will be imported from other regions.

The most abundant renewable resource in San Diego County is the sun. San Diego County currently has approximately 38 MW of installed commercial and residential PV capacity. San Diego County also has thousands of MW of PV potential on existing commercial buildings, parking lots and parking structures, and residences. Rooftop PV has the advantage of being relatively non-controversial from a siting standpoint. The City of San Diego and San Diego Schools pay less per kWh for PV power purchased from third party providers than the energy charge they would otherwise pay SDG&E for the same power generated by conventional power plants. This is possible under the current matrix of PV incentives, tax credits, and depreciation that apply to these PV systems.

For these reasons, the renewable energy component of *San Diego Smart Energy 2020* is focused on local rooftop PV, primarily commercial installations, to expand the renewable energy component of the power used by San Diego County businesses and residences from 20 percent in 2010 to 50 percent in 2020. PV is arguably the best renewable energy "fit" for San Diego County, due primarily to the fact that PV is generated at the point of use and is generally operating at or near capacity when electric power is most needed and most valuable. This is especially true if the PV systems are equipped with adequate battery storage to operate as reliable peaking power units during summertime afternoon peak demand periods.

The renewable energy component of *San Diego Smart Energy 2020* would require the addition of just over 2,000 MW of PV by 2020 to achieve a 50 percent GHG reduction from electric power generation. A leading developer of commercial solar PV was contacted by Powers Engineering to provide an estimate of the incentives budget necessary to cost-effectively meet this PV target by 2020. "Cost-effective" in this case means a payback in approximately 10 years for a commercial PV system in a market where the benchmark utility electric rate is $0.12/kWh.The estimated life-of-project PV incentives budget to achieve this goal is estimated at $1.5 billion (in 2007 dollars).[128] All of this $1.5 billion incentive budget would be utilized to build renewable PV distributed generation in the San Diego region. The *San Diego Solar Initiative* is an appropriate name for this PV program.

The *San Diego Solar Initiative* would be far less expensive than the proposed SPL transmission project over time. The capital cost estimated by SDG&E for its portion of the transmission project is $1.265 billion. The estimated total cost over the 40-year project lifetime, including SDG&E profit, is approximately $7 billion in 2010 dollars.[129] A recent proposal by SDG&E to underground the transmission line between Lake Hodges and Santa Ysabel could add up to another $300 million to the capital cost, increasing the estimate to $1.565 billion.[130] This would in turn increase the levelized cost of the project over 40 years from $7 billion to $8.3 billion.

The cost to build transmission lines is also rising rapidly in general. A recent report prepared by the Brattle Group for the Edison Foundation states that price increases in the past several years have affected all utility sector investments from coal and wind power projects to transmission and distribution projects. Between January 2004 and January 2007, the costs of steam-generation plants, transmission projects, and distribution equipment rose by 25 to 35 percent (compared with an 8 percent rise in the overall price level). The coauthor of the report noted that if these cost increases persist, they will confront utilities and regulators with even tougher choices on capital investment plans in the future, and motivate stepped-up conservation and

demand-side programs.[131]

The levelized annual cost of the proposed SPL transmission project, in 2006 dollars, is $174 million per year for 40 years. This expenditure would provide 1,000 MW of additional import capacity to the San Diego region. However, there is no assurance that there will be power to import over the line during periods of peak regional demand. For example, the California Independent System Operator (CAISO) declared a statewide Stage 1 electrical emergency on August 29, 2007 from 3:20 pm to 8:00 pm. A Stage 1 emergency designation is a call for voluntary conservation. The Stage 1 press release issued by CAISO stated a primary reason for the Stage 1 emergency was, "*temperatures throughout the Southwest continue to climb, decreasing the availability of imported power.*"[132] The existence of transmission capacity does not assure that the transmission capacity can be utilized during periods of peak demand if electricity demand is peaking throughout the region at the same time.

The $1.5 billion incentives budget under the *San Diego Solar Initiative* would total $1.5 billion over 20 years in current dollars. The average annual cost of the *San Diego Solar Initiative*, in 2007 dollars, would be $76 million per year over the 20-year life of the incentive payment program, less than one-half the cost of the SPL over the same time period. The distribution of the $1.5 billion in PV incentives is shown in the PV incentive program financing plan summary tables included in **Attachment J.**

The $1.5 billion budget would incentivize the installation of 2,040 MW of commercial PV (primarily) in the San Diego region by 2020. This PV capacity will be equipped with sufficient battery storage so that it can reliably serve the afternoon peak load at rated output. This capacity is in addition to the 300 MW of PV that will be installed in SDG&E service territory by 2017 as a result of SB1.

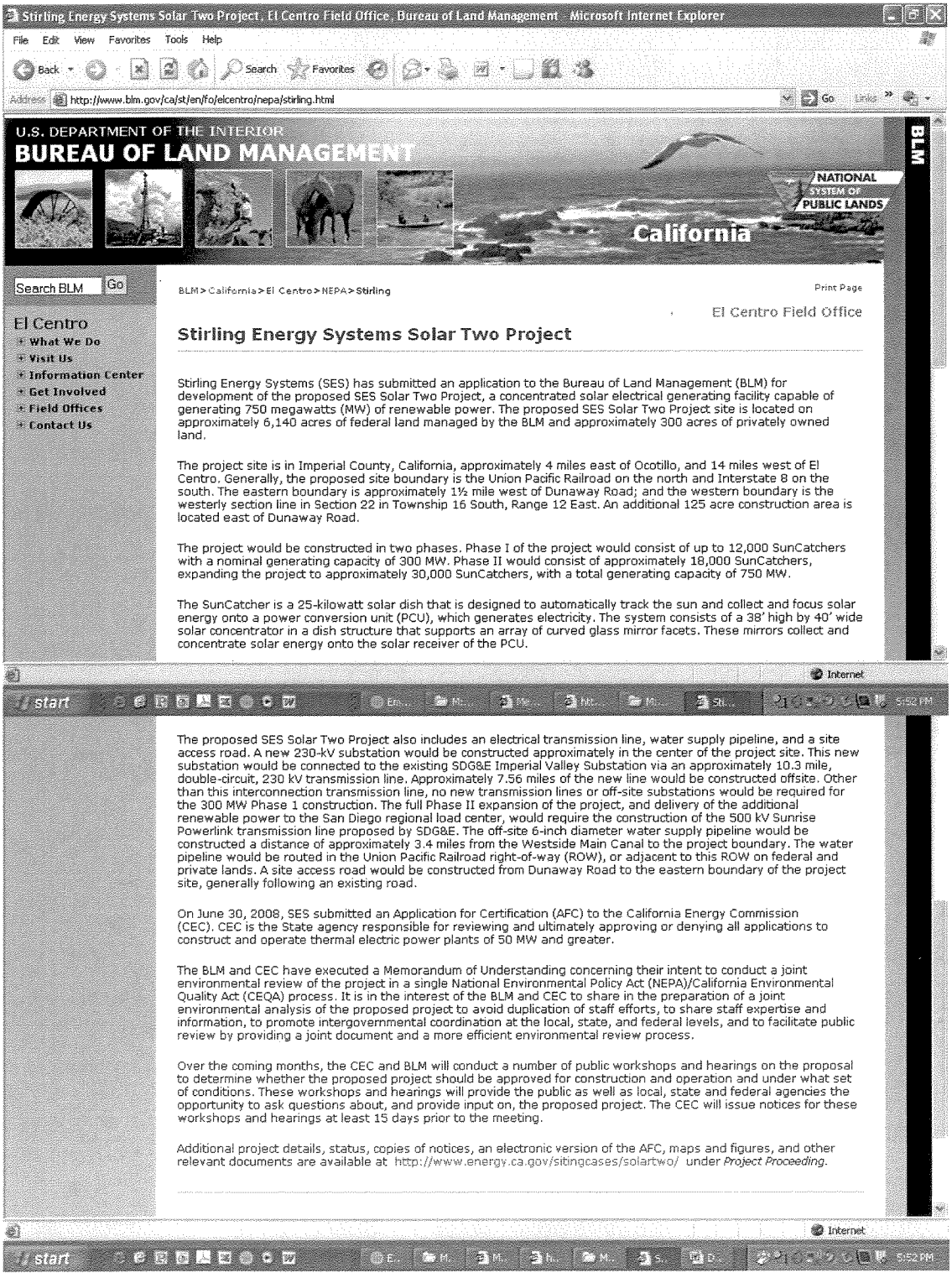
The assumptions behind this addition of 2,040 MW by 2020 are that current federal tax credits and accelerated depreciation remain in place, and customers pay a third party provider $0.12/kWh for the PV energy. Additional assumptions are that the majority of the installed capacity, approximately 75 percent, will be commercial installations over 100 kW, and that a high level of standardization will be utilized by a limited number of large contractors to minimize costs through bulk purchasing of PV system hardware.

Achieving the goal of 2,040 MW installed by 2020 under the *San Diego Solar Initiative* is also based on the installed cost of PV systems dropping by approximately 40 percent between 2008 and 2017. The *San Diego Solar Initiative* would be a major PV incentive program in addition to SB1, accelerating the decline in PV cost relative to conventional power generation. The current installed cost of residential rooftop PV systems is approximately $8 per watt prior to incentive payments and tax credits (see Table 10-1). The cost is 10 to 15 percent lower for large wholesale buyers of PV panels and associated hardware.[133]

This projected decline in the cost of PV systems is conservation relative to U.S. Department of Energy (DOE) projections and current industry trends. Figure 10-1 is a DOE projection of the decline in PV costs through 2020. DOE estimates PV will reach cost parity with high cost conventional baseload power generation by 2020 under a "business as usual" scenario. The

APPENDIX N

SAMPLE WEBSHOTS OF THE BLM AND CEC WEBSITES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Stirling Energy Systems Solar Two Project
Stirling Energy Systems (SES) has submitted an application to the Bureau of Land Management (BLM) for development of the proposed SES Solar Two Project, a concentrated solar electrical generating facility capable of generating 750 megawatts (MW) of renewable power. The proposed SES Solar Two Project site is located on approximately 6,140 acres of federal land managed by the BLM and approximately 300 acres of privately owned land.
The project site is in Imperial County, California, approximately 4 miles east of Ocotillo, and 14 miles west of El Centro. Generally, the proposed site boundary is the Union Pacific Railroad on the north and Interstate 8 on the south. The eastern boundary is approximately 1½ mile west of Dunaway Road; and the western boundary is the westerly section line in Section 22 in Township 16 South, Range 12 East. An additional 125 acre construction area is located east of Dunaway Road.
The project would be constructed in two phases. Phase I of the project would consist of up to 12,000 SunCatchers with a nominal generating capacity of 300 MW. Phase II would consist of approximately 18,000 SunCatchers, expanding the project to approximately 30,000 SunCatchers, with a total generating capacity of 750 MW.
The SunCatcher is a 25-kilowatt solar dish that is designed to automatically track the sun and collect and focus solar energy onto a power conversion unit (PCU), which generates electricity. The system consists of a 38' high by 40' wide solar concentrator in a dish structure that supports an array of curved glass mirror facets. These mirrors collect and concentrate solar energy onto the solar receiver of the PCU.
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The proposed SES Solar Two Project also includes an electrical transmission line, water supply pipeline, and a site access road. A new 230-kV substation would be constructed approximately in the center of the project site. This new substation would be connected to the existing SDG&E Imperial Valley Substation via an approximately 10.3 mile, double-circuit, 230 kV transmission line. Approximately 7.56 miles of the new line would be constructed offsite. Other than this interconnection transmission line, no new transmission lines or off-site substations would be required for the 300 MW Phase 1 construction. The full Phase II expansion of the project, and delivery of the additional renewable power to the San Diego regional load center, would require the construction of the 500 kV Sunrise Powerlink transmission line proposed by SDG&E. The off-site 6-inch diameter water supply pipeline would be constructed a distance of approximately 3.4 miles from the Westside Main Canal to the project boundary. The water pipeline would be routed in the Union Pacific Railroad right-of-way (ROW), or adjacent to this ROW on federal and private lands. A site access road would be constructed from Dunaway Road to the eastern boundary of the project site, generally following an existing road.
On June 30, 2008, SES submitted an Application for Certification (AFC) to the California Energy Commission (CEC). CEC is the State agency responsible for reviewing and ultimately approving or denying all applications to construct and operate thermal electric power plants of 50 MW and greater.
The BLM and CEC have executed a Memorandum of Understanding concerning their intent to conduct a joint environmental review of the project in a single National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) process. It is in the interest of the BLM and CEC to share in the preparation of a joint environmental analysis of the proposed project to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate public review by providing a joint document and a more efficient environmental review process.
Over the coming months, the CEC and BLM will conduct a number of public workshops and hearings on the proposal to determine whether the proposed project should be approved for construction and operation and under what set of conditions. These workshops and hearings will provide the public as well as local, state and federal agencies the opportunity to ask questions about, and provide input on, the proposed project. The CEC will issue notices for these workshops and hearings at least 15 days prior to the meeting.
Additional project details, status, copies of notices, an electronic version of the AFC, maps and figures, and other relevant documents are available at http://www.energy.ca.gov/sitingcases/solartwo/ under Project Proceeding.
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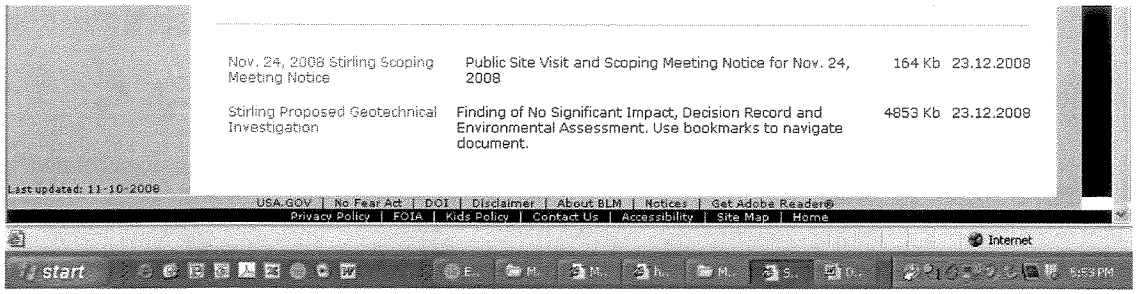

Nov. 24, 2008 Stirling Scoping Meeting Notice	Public Site Visit and Scoping Meeting Notice for Nov. 24, 2008	164 Kb	23.12.2008
Stirling Proposed Geotechnical Investigation	Finding of No Significant Impact, Decision Record and Environmental Assessment. Use bookmarks to navigate document.	4853 Kb	23.12.2008

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SES Solar Two Project

Docket Number: 08-AFC-5 (Application For Certification)

Committee Overseeing This Case:

Jeffrey Byron, Commissioner Presiding Member

Jackalyne Pfannenstiel, Chairman Associate Member

Hearing Officer: Raoul Renaud

- Bureau of Land Management Project Page

Key Dates

- October 08, 2008 - Commission accepts Application as complete and "data adequate."
- June 30, 2008 - Application for Certification filed.

General Description of Project

On June 30, 2008, Stirling Energy Systems Solar Two, LLC (SES Solar Two, LLC) submitted an Application for Certification (AFC) to construct and operate the Stirling Energy Systems Solar Two project (SES Solar Two), a solar dish Stirling systems project in Imperial County, California.

The proposed SES Solar Two project would be a nominal 750-megawatt (MW) Stirling engine project, with construction planned to begin either late 2009 or early 2010. Although construction would take approximately 40 months to complete, renewable power would be available to the grid as each 60-unit group is completed. The primary equipment for the generating facility would include the approximately 30,000, 25-kilowatt solar dish Stirling systems (referred to as SunCatchers), their associated equipment and systems, and their support infrastructure. Each SunCatcher consists of a solar receiver heat exchanger and a closed-cycle, high-efficiency Solar Stirling Engine specifically designed to convert solar power to rotary power then driving an electrical generator to produce grid-quality electricity. The 6,500 acre project site is located on approximately 6,140 acres of federal land managed by the Bureau of Land Management (BLM) and approximately 360 acres of privately owned land. The site is approximately 100 miles east of San Diego, 14 miles west of El Centro, and approximately 4 miles east of Ocotillo Wells.

The project will be constructed in two phases. Phase I of the project will consist of up to 12,000 SunCatchers configured in 200 1.5-MW solar groups of 60 SunCatchers per group and have a net nominal generating capacity of 300 MW. Phase II will add approximately 18,000 SunCatchers, expanding the project to a total of approximately 30,000 SunCatchers configured in 500-1.5-MW solar groups with a total net generating capacity of 750 MW.

The Applicant has applied for a ROW grant for the Project Site from the Bureau of Land Management (BLM) California Desert District. Although the Project is phased, it is being analyzed in this Application for Certification as if all phases will be operational at the same time.

The project would include the construction of a new 230-kV substation approximately in the center of the project site, and would also be connected to the SDG&E Imperial Valley Substation via an approximate 10.3-mile, double-circuit, 230-kV transmission line. Other than this interconnection transmission line, no new transmission lines or off-site substations would be required for the 300-MW Phase I construction. The full Phase II expansion of the project will require the construction of the 500-kV Sunrise Powerlink transmission line project proposed by SDG&E. Within the Project

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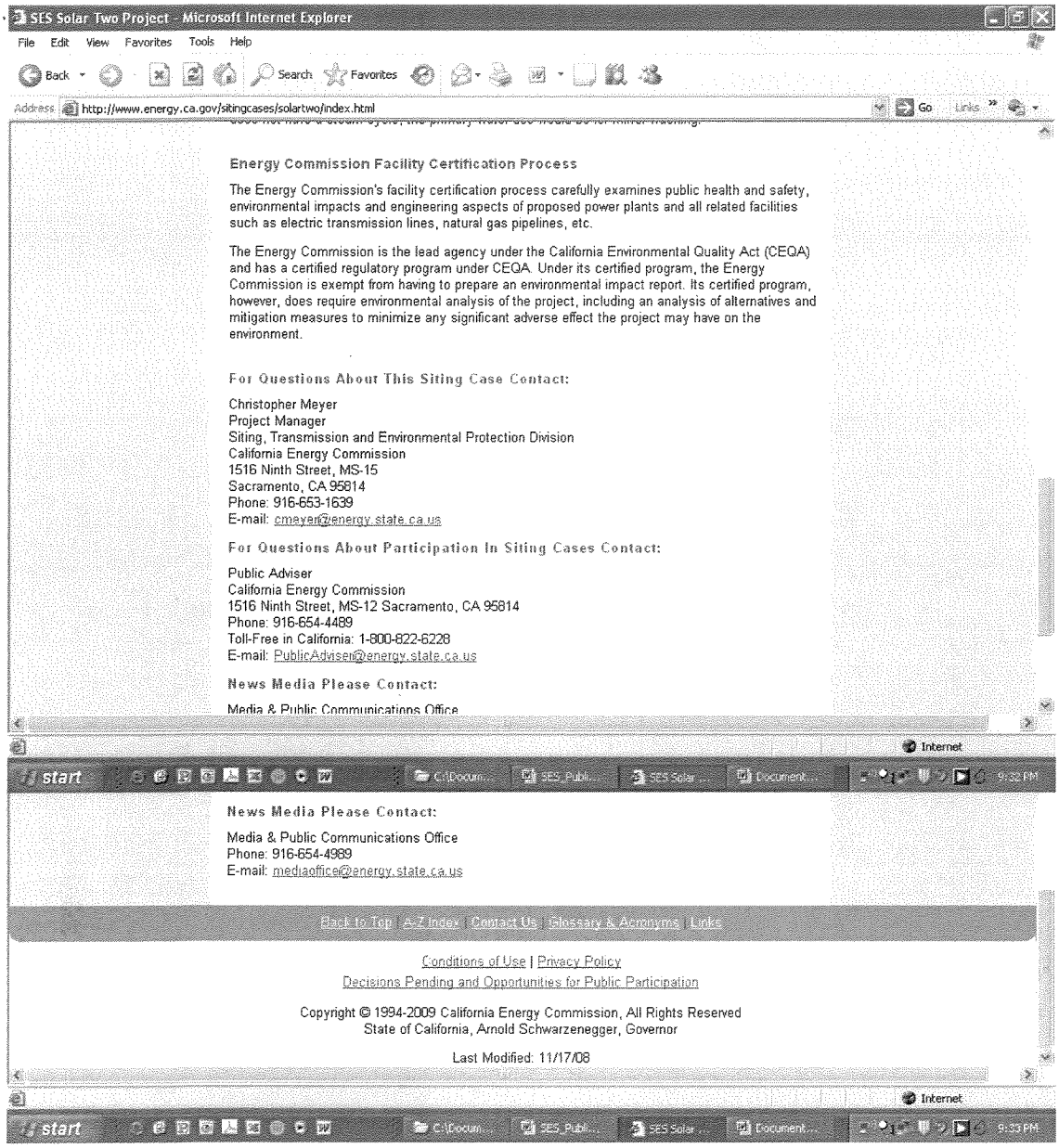
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Energy Commission Facility Certification Process
The Energy Commission's facility certification process carefully examines public health and safety, environmental impacts and engineering aspects of proposed power plants and all related facilities such as electric transmission lines, natural gas pipelines, etc.
The Energy Commission is the lead agency under the California Environmental Quality Act (CEQA) and has a certified regulatory program under CEQA. Under its certified program, the Energy Commission is exempt from having to prepare an environmental impact report. Its certified program, however, does require environmental analysis of the project, including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment.
For Questions About This Siting Case Contact:
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