

RECORD OF DECISION FOR THE SONORAN SOLAR ENERGY PROJECT MARICOPA COUNTY, ARIZONA

Lead Agency:

*United States Department of the Interior
Bureau of Land Management*

Environmental Impact Statement FES 11-26

*Sonoran Solar Energy Project
United States Department of the Interior,
Bureau of Land Management
Phoenix District Office
21605 North 7th Avenue
Phoenix, Arizona 85027-2929*

December 2011



CONTENTS

Contents	i
Attachments.....	iii
Tables	iii
Executive Summary	1
1 Introduction.....	3
1.1 Background	3
1.2 Purpose and Need	4
1.2.1 Purpose of the Action.....	4
1.2.2 Need for the Action.....	4
2 Alternatives.....	5
2.1 Overview of Alternatives Considered in the Final EIS.....	5
2.1.1 No Action Alternative	5
2.1.2 Proposed Action.....	5
2.1.3 Alternative A: Reduced Water Use (dry-cooled CST).....	7
2.1.4 Sub-alternative A1: Photovoltaic (the Selected Alternative)	7
2.1.5 Alternative B: Reduced Footprint	9
2.1.6 Reduced Water Use Option (brine concentrator).....	9
2.1.7 Generation Tie Line Option	9
2.2 Alternatives Considered but Eliminated from Detailed Analysis	10
2.2.1 Original Application/Larger Project	10
2.2.2 Alternate Locations	11
2.2.2.1 Alternative BLM Locations	11
2.2.2.2 Alternative Private Land Locations	11
2.2.3 Alternative Technologies/Conservation.....	11
2.2.3.1 Hybrid Cooling	11
2.2.4 Residential (rooftop) Photovoltaic Energy Production and Energy Conservation.....	12
2.2.5 Alternative Solar Technologies.....	12
2.2.6 Alternative Water Sources	12
2.2.7 Crystallizer.....	12
2.2.8 Alternate Configurations.....	13
2.2.9 Underground Transmission Lines	13
2.2.10 Reduced Project Footprint with Dry Cooling	13
2.3 Preferred Alternative.....	14
2.4 Environmentally Preferred Alternative(s).....	14
3 Decision Rationale.....	14
4 Decision(s).....	15
5 Management Considerations in Choosing the Selected Alternative	17
5.1 Relationships to Other Plans, Policies, and Programs	17

5.1.1	BLM Land-use Plan	17
5.1.2	County and Local Plans	17
5.1.3	State of Arizona	18
5.1.4	Endangered Species Act.....	18
5.1.5	Migratory Bird Treaty Act	18
5.1.6	U.S. Army Corps of Engineers Section 404 Permit.....	19
5.1.7	Section 106 of the National Historic Preservation Act	19
5.1.8	Bald and Golden Eagle Protection Act	19
6	Consistency and Consultation Review	20
6.1	Cooperating Agencies	20
6.2	Agency Consultation.....	20
6.2.1	National Historic Preservation Act (Section 106 Consultation)	20
6.2.2	Native American Consultation.....	20
6.2.3	Endangered Species Act (Section 7 Consultation).....	21
7	Environmental Protection Measures; Best Management Practices; and Laws, Ordinances, Regulations and Standards Applicable to the Selected Alternative	21
7.1	Land-use Plan Best Management Practices and Stipulations.....	21
7.2	Applicant-committed Environmental Protection Measures	22
7.3	Other Features, Management Prescriptions, and Considerations for the Selected Alternative... ..	22
7.3.1	Plan of Development.....	22
7.3.2	Applicable Laws, Ordinances, Regulations, and Standards.....	22
8	Mitigation Measures	22
8.1	Rationale for Mitigation Measures Not Adopted.....	23
9	Monitoring and Enforcement	25
10	Public Involvement	25
10.1	Scoping	25
10.2	Draft EIS Availability and Comments Received	26
11	Final EIS Availability and Comments Received	26
12	Errata.....	28
12.1	Errata to the Final Environmental Impact Statement	28
12.1.1	All Chapters	28
12.1.2	Chapter 2	28
12.1.3	Chapter 3	29
12.1.4	Chapter 4.....	30
12.1.5	References.....	34
12.1.6	Appendix A: Response to Comments	34
13	Right-of-Way Authorization	35
14	Secretarial Approval.....	35
15	References.....	36

ATTACHMENTS

Attachment A. Draft Environmental and Construction Compliance Monitoring Plan

Attachment B. Plan of Development

Attachment C. Location Maps

Attachment D. Concurrence Letters from Cooperating Agencies

Attachment E. Memorandum of Agreement between the Bureau of Land Management and the Arizona State Historic Preservation Officer Regarding the Sonoran Solar Energy Project in Maricopa County, Arizona

Attachment F. Memorandum of Understanding between Boulevard and the Arizona Game and Fish Department and Scope of Work

Attachment G. Responses to Comments on the Final EIS

TABLES

Table 1.	Rationale for Mitigation Measures Not Adopted.....	23
Table 2.	Comment Letters on the Final EIS.....	27

This page intentionally blank

EXECUTIVE SUMMARY

This document constitutes the United States Department of the Interior (DOI) and Bureau of Land Management's (BLM) record of decision (ROD) for the Sonoran Solar Energy Project (SSEP). This ROD approves the construction, operation, maintenance, and decommissioning of the SSEP on approximately 2,013 acres of public land in Maricopa County, Arizona, as analyzed in the *Sonoran Solar Energy Project Final Environmental Impact Statement* (final EIS; BLM 2011), issued on October 21, 2011, through the Environmental Protection Agency's (EPA's) Notice of Availability (NOA) published in the *Federal Register*.

Applications for commercial solar energy facilities are processed by the BLM as right-of-way (ROW) authorizations under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) and 43 CFR § 2804. The BLM's purpose and need for this action is to respond to Boulevard Associates LLC's (a subsidiary of NextEra Energy Resources, LLC, hereafter referred to as Boulevard) application under FLPMA (43 U.S.C. § 1761) for a ROW grant to construct, operate, maintain, and decommission a solar power plant and ancillary facilities in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws. Boulevard is the project proponent. In seeking a ROW grant from the BLM, Boulevard's intention is to develop a utility-scale electricity-generating facility capable of providing commercial quantities of clean, renewable, solar electricity during peak hours of demand to the state of Arizona.

The SSEP will be constructed as a 300-megawatt (MW) photovoltaic (PV) power plant. The plant will generate electricity using multiple arrays of PV panels electrically connected to associated power inverter units. The current from the power inverters will be gathered by an internal electrical collection system and transformed to transmission voltage prior to leaving the Project Area. No consumptive water use will be required by the SSEP for the generation of electricity; although, limited quantities of water will be required for potable use by employees, panel washing, and other general uses.

Alternatives that were considered in the final EIS were the No Action alternative, Proposed Action, Alternative A: Reduced Water Use (dry-cooled concentrated solar thermal [CST]), Sub-alternative A1: Photovoltaic, and Alternative B: Reduced Footprint (wet-cooled CST). An optional component, a brine concentrator, was considered as an additional element that could be added to the action alternatives with a wet-cooling system (the Proposed Action and Alternative B). In addition, an alternative generation tie line (gen-tie) line alignment was considered for the action alternatives as an optional means of routing produced electricity from the SSEP solar field to the Jojoba Switchyard. The BLM has identified Sub-alternative A1 as the agency-preferred alternative. In addition, the BLM has selected the gen-tie route that was put forward under the Proposed Action (see Section 2.5.3.3.1 of the draft EIS) as the preferred gen-tie route rather than the gen-tie line option presented in Section 2.10 of the draft EIS. The No Action alternative and Sub-alternative A1 have been identified as the environmentally preferred alternatives because they would cause the least damage to the biological and physical environment. Sub-alternative A1 is the environmentally preferred alternative that meets the BLM's purpose and need and still allows the development of renewable energy; it is the Selected Alternative.

Other alternatives were considered but eliminated from detailed analysis. These include a larger project (the original application filed with the BLM), five other BLM locations, and a number of alternative private land locations. In addition, hybrid cooling, residential (rooftop) PV energy production and energy conservation, other alternative solar technologies, alternative water sources, a crystallizer, alternate configurations, underground transmission lines, and a reduced project footprint with dry cooling were considered.

This ROD provides the background on the solar project, identifies and summarizes the alternatives studied in the final EIS, describes the decision selected and the rationale for approving that decision, and

discusses relationships to other plans, policies, and programs (e.g., the BLM land-use plan, county and local plans, Endangered Species Act (ESA), and National Historic Preservation Act (NHPA)). Applicant-committed environmental protection measures are described in Section 7. These are actions, practices, or design features that are part of all action alternatives. Mitigation measures and monitoring requirements can be found in Sections 8 and 9, respectively, as well as in the attached Environmental and Construction Compliance Monitoring Program (Attachment A). These are measures to reduce or eliminate potential environmental impacts that were considered in the final EIS and are adopted as required measures in the ROD.

The BLM has taken a variety of steps to inform the public; special interest groups; and local, state, and Federal agencies about the Proposed Action and alternatives for the SSEP, and to solicit feedback from these interested parties to help shape the scope and alternatives of this project. A formal 60-day public and agency scoping period was held in 2009. Public and agency scoping meetings were held in Phoenix, Arizona, and public scoping meetings were held in Buckeye and Gila Bend, Arizona, in August 2009. The BLM provided a 90-day comment period to review the draft EIS. The BLM also issued a newsletter in May 2011 to inform the public about the addition of a low water use sub-alternative to the final EIS. Finally, the BLM provided a 30-day comment period to review the final EIS.

This ROD has one decision: a ROW lease/grant decision under Title V of FLPMA. The ROW will be granted to Boulevard and will allow the construction, operation, maintenance, and decommissioning of the SSEP. This ROW grant is analyzed in the final EIS as BLM's agency-preferred alternative, which is also the Selected Alternative in this ROD. This ROD reflects careful consideration of the information generated from the SSEP environmental review process, and further reflects resolution of the issues by BLM and the DOI through such process.

This ROD applies only to the BLM-administered lands, and to the BLM's decisions on the SSEP. Other agencies are responsible for issuing their own permits and applicable authorizations for the project. Other permits and applicable authorizations are listed in the final EIS in Section 1.6.4 (Permits, Licenses, Approvals, Compliance, or Reviews Required or Potentially Required).

1 INTRODUCTION

This ROD approves the BLM's issuance of a ROW grant on Federal lands to Boulevard to construct, operate, maintain, and decommission the SSEP. The SSEP will be located on approximately 2,013 acres in the Little Rainbow Valley, east of State Route 85 (SR-85), and south of the Buckeye Hills and the town of Buckeye in Maricopa County, Arizona (Map C1, Attachment C). The SSEP is analyzed in the final EIS (BLM 2011), which was issued on October 21, 2011, through the EPA's Notice of Availability published in the *Federal Register*.

The SSEP will be constructed as a 300-MW PV power plant. The plant will generate electricity using multiple arrays of PV panels electrically connected to associated power inverter units. The current from the power inverters will be gathered by an internal electrical collection system and transformed to transmission voltage prior to leaving the Project Area. The proposed gen-tie line route (as considered under all action alternatives in the final EIS) will be used to carry electricity to the Jojoba Switchyard. No consumptive water use will be required by the SSEP for the generation of electricity; although, limited quantities of water will be required for potable use by employees, panel washing, and other construction and general uses.

This proposed solar power project is described in the final EIS for the SSEP and is outlined in detail in the plan of development (POD) (Attachment B).

1.1 Background

As part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future, the Energy Policy Act of 2005 (Public Law (P.L.) 109-58, August 8, 2005) encourages the development of renewable energy resources, which includes solar energy. Section 211 of the Energy Policy Act of 2005 encourages the approval of at least 10,000 MW of nonhydropower renewable energy projects on public lands nationwide within the next 10 years. Secretarial Order 3285 issued by the Secretary of the Interior (March 11, 2009, as amended February 22, 2010) encourages the production, development, and delivery of renewable energy as one of the DOI's highest priorities.

In response, the BLM established its Solar Energy Development Policy (Instruction Memorandum (IM) No. 2007-097 (April 4, 2007), updated by IM No. 2011-003 (Oct. 7, 2010)). This policy directs the BLM to facilitate environmentally responsible commercial development of solar energy projects on public lands and to use solar energy systems on BLM facilities where feasible. Applications for commercial solar energy facilities are processed as ROW grant authorizations under Title V of FLPMA and 43 CFR § 2804. ROW applications for solar energy development projects are identified as a high priority workload and are to be processed in a timely manner. This priority is consistent with the above laws and Secretarial Order.

The SSEP supports the President's New Energy for America Plan, which sets a target of ensuring that 10 percent of United States electricity is generated from renewable sources by 2012, rising to 25 percent by 2025. In order to meet these requirements, renewable energy projects need to be constructed and brought online. Boulevard is the project proponent for the SSEP. Boulevard submitted a Standard Form (SF) 299 *Application for Transportation and Utility Systems and Facilities on Federal Lands* to the BLM for the SSEP on June 28, 2007. In seeking a ROW grant from the BLM, Boulevard's intention is to develop a fully dispatchable (able to produce and deliver power to the electrical grid on demand or according to a schedule), utility-scale electricity-generating facility capable of providing commercial quantities of clean, renewable, solar electricity during peak hours of demand to the state of Arizona. The SSEP is designed to assist the state in meeting the objectives mandated by the Arizona Corporation Commission's Renewable

Energy Standard and Tariff Rules (Arizona Administrative Code (A.A.C.) R14-2-1801–1815), and other renewable energy mandates, which call on the state’s electric utilities to produce 15 percent of their electricity from renewable sources by 2025. The SSEP is also intended to contribute to Arizona’s future electric power needs and promote fuel diversity to protect consumers and electric utilities from fuel unavailability and price fluctuations. Finally, the SSEP is intended to reduce the electricity sector’s greenhouse gas emissions, which are atmospheric gases such as carbon dioxide, methane, and nitrous oxide.

1.2 Purpose and Need

As described in Chapter 1, Section 1.3 of the final EIS, the BLM’s purpose and need for this action is to respond to Boulevard’s application under Title V of FLPMA (43 U.S.C. § 1761) for a ROW grant to construct, operate, maintain, and decommission a solar power plant¹ and ancillary facilities in compliance with FLPMA, BLM ROW regulations, and other applicable Federal laws.

1.2.1 Purpose of the Action

Specifically, the BLM’s purposes in considering the SSEP are as follows:

- To meet public needs for use authorizations, such as ROW grants, permits, leases, and easements, while avoiding or minimizing adverse impacts to other resource values and locating the uses in conformance with land-use plans (LUP). Section 211 of the Energy Policy Act of 2005 (119 Stat. 594, 660) and the BLM’s Solar Energy Development Policy establish a framework to process applications for ROWs and direct the BLM to be responsive to solar energy project applicants while protecting the environment.
- To implement FLPMA and the *Lower Gila South Resource Management Plan* (BLM 1985), as amended (BLM 2005, BLM 2009), by providing consistent land management decisions based on the standards set forth by both authorities. In accordance with Section 103(c) of FLPMA, the BLM must manage public lands for multiple use, taking into account the long-term needs of future generations for renewable and nonrenewable resources. The *Lower Gila South Resource Management Plan* identifies the Project Area as available for multiple uses, which includes renewable energy projects.
- To process ROW application AZA-34187 submitted by Boulevard in an expeditious manner consistent with both Executive Order (EO) 13212 (Actions to Expedite Energy-Related Projects) and mandates of the Energy Policy Act of 2005 and the American Recovery and Reinvestment Act of 2009.

1.2.2 Need for the Action

The BLM’s needs in considering the Proposed Action are as follows:

- Determine whether to grant ROWs for "systems for generation, transmission, and distribution of electric energy" and/or "other necessary. . . systems or facilities which are in the public interest," under Title V of FLPMA (43 U.S.C. §§ 1761–1771).
- Support the President's New Energy for America Plan, which sets a target of ensuring that 10 percent of United States electricity is generated from renewable sources by 2012, rising to 25 percent by 2025.

¹ The purpose and need was changed under the BLM’s authority as the lead federal agency for this action to be more inclusive of other solar power options considered in the final EIS by removing the terms “concentrated” and “thermal” from the description.

- Further the purpose of Secretarial Order 3285A1 (March 11, 2009, as amended February 22, 2010), which "establishes the development of environmentally responsible renewable energy as a priority for the Department of the Interior" (BLM IM No. 2011-059).

2 ALTERNATIVES

Sections 2.1 and 2.2 below summarize the alternatives that were considered in the final EIS and those that were eliminated from detailed analysis. More detailed information on the alternatives can be found in Sections 2.4–2.11 of the final EIS (BLM 2011).

2.1 Overview of Alternatives Considered in the Final EIS

2.1.1 No Action Alternative

Under the No Action alternative, Boulevard's ROW application to develop the SSEP would not be approved and no ROW would be granted. The SSEP would not be developed, and existing land uses in the Project Area would continue. The No Action alternative forms the baseline against which the potential impacts of the Proposed Action and the other action alternatives are compared. Thus, it includes current actions and activities in the Project Area. No additional actions are assumed to occur in the absence of approval of any of the action alternatives.

Under the No Action alternative, the following ongoing actions and activities would continue:

- Livestock grazing in the Project Area would continue in two allotments. Authorized grazing would continue on approximately 2,649 acres of the Beloat grazing allotment in the Project Area, or approximately 78 animal unit months (AUM). Approximately 1,053 acres of the Arnold allotment would continue to be used for ephemeral grazing. Ephemeral allotments are not grazed annually; they are only grazed when infrequent (ephemeral) precipitation allows the production of adequate forage. The Arnold allotment is grazed approximately 6 out of 10 years, and approximately 44 AUMs per year.
- Limited dispersed recreation across the Project Area would continue. The Project Area is currently used infrequently by hikers, mountain bikers, backcountry drivers, hunters, and birders. Off-highway vehicle (OHV) use is limited to 13.1 miles of existing routes in the Project Area.

However, selection of the No Action alternative would not preclude the approval of other ROWs for energy development or other projects in the future.

Several test wells have been drilled in the Project Area to assess the potential water supply for the SSEP. Under the No Action alternative, these wells would be filled, capped, and abandoned, and any associated site disturbance would be reclaimed.

2.1.2 Proposed Action

The Proposed Action for the SSEP would consist of two independent, concentrated solar electric generating facilities with expected net electrical outputs of approximately 125 MW and 250 MW. Parabolic trough solar thermal technology would be used to produce electrical power using steam turbine generators fed from solar steam generators. The solar steam generators would receive heated heat transfer fluid (HTF) from solar thermal equipment comprising arrays of parabolic mirrors that collect energy from

the sun. The solar collector field would consist of approximately 2,300 acres of multiple single-axis-tracking parabolic-trough solar collectors aligned on a north-south axis.

Each plant would use natural gas firing to supplement electrical output, auxiliary boilers to reduce startup time, and HTF freeze protection heaters to maintain the HTF at a minimum of 100 degrees Fahrenheit. Under the Proposed Action, the maximum, annual, natural gas usage is expected to be 3,900 million standard cubic feet per year for a maximum of 3,982,000 million metric British thermal units (MMBtu) per year. Each plant would be designed to allow the use of thermal energy storage (TES), which would consist of a two-tank, molten salt system designed to provide approximately three hours of storage. The ultimate construction and use of TES would depend on the direct preference of customers (i.e., those entities purchasing the power from the SSEP).

The Proposed Action would use a wet-cooling tower for power plant cooling. Water for cooling tower make-up, process water make-up, and other industrial uses (such as mirror washing) would be supplied from on-site groundwater wells, which would also be used to supply water for employees' use. A package water treatment system would be used to treat the water to meet potable standards. A sanitary septic system and on-site leach field would be used to dispose of sanitary wastewater.

Under the Proposed Action, the SSEP would consist of three major types of facilities: power plants as described above, a well field, and linear facilities. The power plant facility footprint would be fenced and would function largely as a single facility. Specific components of the power plant facilities would include power block areas, administration buildings and local warehouses, solar collector field arrangements, evaporation ponds, a land-treatment unit, on-site transmission facilities, on-site gas pipeline facilities, and drainage collection and discharge facilities.

The evaporation ponds would be used to evaporate wastewater from the plant's cooling operations. The 125-MW unit would have three approximately 10-acre, double-lined evaporation ponds, and the 250-MW unit would have three approximately 20-acre, double-lined evaporation ponds. The land-treatment unit would treat soils impacted by incidental spills and leaks of HTF. Under the Proposed Action, the land-treatment unit for the 125-MW unit would cover approximately 5 acres. The 250-MW unit would have an approximately 10-acre land-treatment unit.

A well field would be developed to supply water for the SSEP during the construction and operation phases. The well field would be located approximately 1.2 miles east of the power plant area, and would include wells with on-site pumping facilities, a booster pump station, and supporting linear facilities including service roads, buried pipelines, and electrical service. As many as four high-capacity groundwater production wells would be needed to meet the water supply requirements of the SSEP at full build-out. Estimated total water demand would be 1,700 acre-feet during the 39-month construction period and 2,305 to 3,003 acre-feet per year (afy) thereafter during plant operations.

A number of linear facilities would be developed externally from the main power plant footprint. These linear facilities would include access roads, a generation tie (gen-tie) line to carry electricity to the Jojoba Switchyard, a natural gas pipeline, and water pipelines.

Under the Proposed Action, the SSEP's facilities would be located almost entirely on BLM-administered lands and would encompass approximately 3,620 acres. The main project footprint (not including linear features) under the Proposed Action would occupy approximately 3,313 acres. Approximately 1.5 miles of road improvements are proposed on private and state lands at the western edge of the Project Area, as well as approximately 0.5 mile of gen-tie line on private land. The SSEP would operate between 3,200 and 3,800 hours per year, depending on local solar insolation and level of natural gas co-firing. SSEP construction is expected to occur over 39 months. Start-up and testing would occur over approximately 2 months, for a total of 41 months of work on the site. Boulevard would phase construction so that the 125-

MW unit, located on the east side of the facility, would be operational approximately 1 year before the separate 250-MW unit is operational. The 125-MW unit would produce approximately 290,000 MWh per year, and the 250-MW unit would generate approximately 580,000 MWh per year. The entire facility would operate for 30 years or more.

2.1.3 Alternative A: Reduced Water Use (dry-cooled CST)

Alternative A was developed in response to concerns about consumptive water use by the SSEP that were expressed during public and agency scoping. Under Alternative A, the SSEP would be constructed using a dry-cooling technology rather than the wet-cooling technology considered under the Proposed Action. In general, most aspects of Alternative A would be the same as under the Proposed Action; details that would differ substantially are discussed below.

Under Alternative A, the SSEP would use an air-cooled condenser (ACC) for power plant cooling. One ACC would be installed in each power block. In addition, each power block would include two "wet surface air coolers" that would be used for auxiliary cooling. Because this alternative would not employ a cooling tower, make-up and evaporative losses would be minimized.

The same number of evaporative ponds (six) would be used, but each pond would be approximately 2 acres for the 125-MW plant and 4 acres for the 250-MW plant (instead of 10 acres and 20 acres, respectively, under the Proposed Action). Alternative A's water needs would be supplied by two groundwater wells located in the same area as under the Proposed Action. Estimated total water demand would be 1,700 acre-feet during the 39-month construction period and 116–151 afy thereafter during plant operations.

The total project footprint under Alternative A (all temporary and permanent use areas) would be approximately 3,609 acres. The main project footprint (not including linear features) under Alternative A would occupy approximately 3,385 acres.

Under this alternative, less efficient dry cooling would allow less energy production from the same sized solar field than under the wet-cooled Proposed Action. Total solar generation would be approximately 12 percent (105,600 MWh) less than the anticipated generation under the Proposed Action. There would be no additional space within the SSEP layout to increase the solar field. The allowable gas-fired generation (no more than 25 percent) would drop approximately 9 percent to an approximate maximum of 3,623,620 MMBtu per year, or 3,549 million standard cubic feet per year.

2.1.4 Sub-alternative A1: Photovoltaic (the Selected Alternative)

Sub-alternative A1 was developed in response to public and agency comments on water consumption. Sub-alternative A1 would use PV technology instead of solar thermal technology to reduce water use, to decrease the project footprint, and to avoid other sensitive resources raised as issues by the public and agency cooperators. The use of PV technology was originally eliminated from further analysis in the draft EIS due to technological and economic infeasibility. However, advancements in technology and changing market conditions made PV technology a viable alternative and allowed for its reconsideration in the final EIS. PV technology has continued to evolve and improve. PV panel efficiencies, resistance to degradation, and power inverter technology/performance have all improved over the past 2 years. The maturation of PV technology and the PV marketplace, coupled with the significant increase in manufacturing capacity, contributed to a substantial reduction in the installed cost of PV power generation on a dollar-per-kilowatt basis. The end result is that currently and in the near term, PV facilities are forecasted to be cheaper relative to comparably sized CST facilities at certain locations. In

response to concerns about water consumption associated with CST facilities and due to changes in the financial viability of PV technology, Sub-alternative A1 was developed as an alternative for the final EIS.

The BLM determined that the addition of this sub-alternative did not require a supplemental EIS under 40 CFR § 1502.9(c)(1) because Sub-alternative A1 did not make substantial changes in the Proposed Action relevant to environmental concerns or represent new circumstances or information relevant to environmental concerns. This sub-alternative substantially reduced the environmental impacts associated with the alternatives analyzed in the draft EIS, particularly as it relates to water consumption, and used a smaller footprint of the same area proposed in the draft EIS. Sub-alternative A1 would result in impacts either *within* the range of or *less than* those that would result from the alternatives considered in the draft EIS, and therefore, it is within the spectrum of alternatives analyzed under the draft EIS. Furthermore, Sub-alternative A1 was developed in direct response to public and agency comment on the draft EIS, and notification of the addition of this sub-alternative in the final EIS was provided to the public in a newsletter in May 2011 (see Section 2.1 of the final EIS).

Under Sub-alternative A1, the SSEP would be constructed as a 300-MW PV power plant. Sub-alternative A1 would consist of three major types of facilities: PV panel arrays within a graded solar field (the main project footprint), a well field, and linear facilities (Map C2, Attachment C). This sub-alternative would not incorporate any type of co-fire generation or TES into its design. The SSEP would produce electricity only when the available solar resource is sufficient.

The plant would generate electricity using multiple arrays of PV panels electrically connected to associated power inverter units. The current from the power inverters would be gathered by an internal electrical collection system and transformed to transmission voltage prior to leaving the Project Area. One hundred and fifty 2-MW alternating current (AC) arrays would be constructed for a total generating capacity of 300 MW. The PV panel array facilities would be located on approximately 1,907 graded acres in the primary project footprint, which would be enclosed by fences. Sub-alternative A1 facilities would include the following major components or systems: PV modules/arrays, solar trackers and/or fixed support structures, an electrical collection system, a step-up transformation/on-site switchyard, a gen-tie line/utility interconnection, administration buildings and local warehouses, and drainage collection and discharge facilities.

Only one approximately 1-acre evaporation pond would be required. PV would not use HTF; therefore, no land-treatment unit would be required for this alternative. In addition, Sub-alternative A1 would not use natural gas co-firing, eliminating the need for a natural gas pipeline. Sub-alternative A1 would not require any consumptive water use for the generation of electricity; although, limited quantities of water would be required for potable use by employees, panel washing, and other general uses. A groundwater production well field would be designed with up to two wells (and associated roads and pipelines). Estimated total water demand would be 1,000 acre-feet during the 39-month construction period and 33 afy thereafter during plant operations. Access roads and transportation corridors for this alternative would be the same as the Proposed Action.

Under Sub-alternative A1, the total project footprint (all temporary and permanent use areas) would be approximately 2,013 acres. The main project footprint (not including linear features) under Sub-alternative A1 would occupy approximately 1,907 acres, or 56 percent of the footprint under the Proposed Action. Total solar generation would be approximately 11 percent less than the anticipated generation under the Proposed Action. Construction under Sub-alternative A1 would take the same amount of time as under the Proposed Action; although, the construction would be staged in 100-MW-per-year increments. Unlike the other alternatives, Sub-alternative A1 would not require a natural gas pipeline, and its well field would be smaller. Along with a reduction of generating capacity, this sub-alternative would allow a reduced project footprint and decreased water consumption relative to the Proposed

Action. The project footprint under Sub-alternative A1 would be 381 acres less than under Alternative B: Reduced Footprint (2,013 acres versus 2,394 acres respectively). This would reduce impacts to wildlife and vegetation to a similar degree as under Alternative B by creating less surface disturbance. It would also avoid other resources raised as issues by the public and agency cooperators, including wildlife habitat and travel corridors, pending Federal Emergency Management Agency floodplains, air quality point sources and vapor plumes, and nearby residences.

2.1.5 Alternative B: Reduced Footprint

Alternative B was developed in response to issues identified during agency and public scoping, including impacts to wildlife linkages and travel corridors, impacts to residential areas, impacts to xero (dry) riparian vegetation and washes, impacts to water use, and the overall level of surface disturbance resulting from the SSEP. Under Alternative B, the SSEP would consist of two independent, concentrated solar electric generating facilities, with a total net electrical output of 250 MW, rather than 375 MW considered under the Proposed Action. The reduction of generating capacity would allow a reduced project footprint and the avoidance of the eastern-most wash in the Project Area and an associated pond, which agency scoping identified as a wildlife habitat feature. In general, most aspects of Alternative B would be the same as under the Proposed Action.

Under Alternative B, the SSEP facilities and infrastructure would be scaled to two 125-MW facilities, rather than one 125-MW and one 250-MW facility as under the Proposed Action. Two co-firing boilers, one for each 125-MW unit, would be constructed. Each 125-MW unit would have three 10-acre, double-lined evaporation ponds (60 acres total for both units). This is 30 fewer acres than under the Proposed Action. The SSEP would be constructed with two 5-acre, land-treatment units (compared to a total of 15 acres under the Proposed Action). Under Alternative B, the SSEP would use 33 percent less natural gas than under the Proposed Action, for an annual natural gas usage of approximately 2,600 million standard cubic feet per year or a maximum of 2,655,000 MMBtu per year. The groundwater production well field would be designed with three wells (and associated roads and pipelines). Estimated total water demand would be 1,200 acre-feet during the 39-month construction period and 1,518–2,003 afy thereafter during plant operations.

The main project footprint (not including linear features) under Alternative B would occupy approximately 2,136 acres, or 64 percent of the footprint under the Proposed Action. Total solar generation would be approximately 38 percent less than the anticipated generation under the Proposed Action. Construction of each unit under Alternative B would take approximately 25–28 months, with a total construction period of approximately 37 months (2 months less than under the Proposed Action).

2.1.6 Reduced Water Use Option (brine concentrator)

An optional component, a brine concentrator, could be added to either of the action alternatives that would use a wet-cooling system (the Proposed Action and Alternative B). The water treatment design under the Proposed Action and Alternative B includes pre-treatment and post-treatment systems. A brine concentrator is a piece of equipment that can be added to the post-treatment system. The additional heat requirement for this piece of equipment would result in a slight decrease in the SSEP's electrical output.

The use of a brine concentrator would reduce the volume of wastewater exiting the facility. Its use would also allow a reduction in evaporation pond sizes and a reduction in plant water consumption. The water savings from this type of system under the wet-cooled alternatives (the Proposed Action and Alternative B) would be approximately 7 percent or less. The largest water consumers in a wet-cooled facility are the cooling towers, where a great deal of water is evaporated (greater than 85 percent of a plant's use). The use of a brine concentrator would have no effect on the evaporation rates in the cooling towers.

2.1.7 Generation Tie Line Option

In addition to the proposed gen-tie line route, Boulevard developed an alternate gen-tie line alignment (that could be applied to any of the action alternatives) as part of the Arizona Corporation Commission Certificate of Environmental Compatibility (CEC) process. The CEC process calls for a committee to consider, during public hearings, the information contained in the application relative to a series of factors (e.g., existing state, local, and government plans; wildlife and plant life; noise emissions, etc.) outlined in Arizona's Revised Statutes (A.R.S.) § 40.360.06. Because this optional route would meet the purpose and need for the project and could feasibly be implemented, the BLM considers it in the final EIS as an alternative (or optional) means of routing produced electricity from the SSEP solar field to the Jojoba Switchyard. This option would address alternate methods and locations for crossing existing high-voltage transmission lines near the project, as well as an alternate route through existing designated utility corridors that may be subject to future development.

The Gen-tie Line Option would be routed in a generally southwestern direction and would use an existing utility corridor. The Gen-tie Line Option would be initially routed directly south along a new road and then make a 90 degree turn to the west, also along a new road. It would then extend westward to the Jojoba Switchyard, as shown on Map 3 of the final EIS, for a total of 3.4 miles under the Proposed Action. This represents an increase of approximately 13 percent as compared to the original gen-tie alignment). There would also be approximately 10 pulling sites (as compared to 6 in the original alignment) required to install the conductors.

The Gen-tie Line Option would result in impacts of the same nature, to the same resources, and of the same approximate extent (within 1 percent) as those considered in the draft EIS, and it would not result in any unique site-specific impacts not considered in the draft EIS.

2.2 Alternatives Considered but Eliminated from Detailed Analysis

The National Environmental Policy Act (NEPA) requires Federal officials to rigorously explore and evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR § 1502.14). Specific alternatives that were eliminated from detailed analysis are discussed below, along with the rationale for their elimination.

2.2.1 Original Application/Larger Project

Boulevard originally filed a Standard Form (SF) 299 application with the BLM's Lower Sonoran Field Office in June 2007. In October 2008, at the request of the BLM, Boulevard submitted a preliminary Plan of Development (POD). Based primarily on the size and topography of the proposed project site and with limited field reconnaissance, the initial POD proposes a 500-MW solar facility consisting of two separate, 250-MW generating stations.

As proposed, the 500-MW site alternative would have encroached on two significant (1-mile-wide) utility corridors. As such, a resource plan amendment would have been required to develop the SSEP as a 500-MW facility, as originally proposed. Additionally, constricting these corridors would pose significant challenges to the local utility providers and to the BLM, and the plan amendment process would add months to an already tight permitting schedule. As such, the original configuration was eliminated as an alternative to avoid encroachment into the utility corridors.

Early in the biotic and abiotic field reconnaissance process, it was noted that relatively large drainage features traverse the northern portion of the requested ROW. Rather than moving forward with an alternative that would require re-routing these natural drainage features to accommodate the facility footprint, it was decided to use these washes as a northern boundary and design the facility in such a way as to avoid any impacts to the washes and their associated xeroriparian vegetation.

In order to avoid the utility corridors to the south and north-west and the primary washes to the north, the original proposal was eliminated from further analysis. As a result, design goals and overall facility size for the SSEP were reduced from the originally proposed 500-MW to a more compact 375-MW design.

2.2.2 Alternate Locations

In addition to the ROW application for the SSEP, Boulevard had also submitted applications for five other BLM locations and assessed the potential for solar development on a number of private land locations. The currently proposed SSEP location emerged as the best site for Boulevard to begin the permitting and environmental documentation process for a number of reasons, most notably its close proximity to transmission and natural gas infrastructure, potential for groundwater development, and the few anticipated environmental impacts.

2.2.2.1 ALTERNATIVE BLM LOCATIONS

Boulevard identified six potential project locations (including the Proposed Action) in Arizona on BLM lands. Of these six locations, the proposed site was superior; although, each of the remaining five sites has the potential for future development. No decisions are being issued on those other sites in this ROD.

These sites were not considered as alternatives to the SSEP site for three primary reasons. First, they are not locations suggested during agency and public scoping. No additional suitable BLM sites were suggested during scoping. Second, BLM IM No. 2011-059 provides the BLM with guidance that they may decide not to consider sites with active ROW applications as alternatives in NEPA processes for other ROW applications. Third, even if these sites were potential alternatives in the NEPA process for this ROW application, their consideration was not necessary for the BLM to develop a reasonable range of alternatives that address the resource conflicts identified in public and agency scoping. Detailed information on the screening criteria can be found in Section 2.11.6 of the final EIS.

2.2.2.2 ALTERNATIVE PRIVATE LAND LOCATIONS

Although the BLM cannot require companies to construct on private lands, Boulevard did evaluate a number of privately owned properties as potential locations for the SSEP. None of these properties proved feasible or capable of resolving resource conflicts. When screening for private sites, Boulevard used screening criteria similar to those used to identify suitable BLM sites, along with additional criteria to accommodate the design assumptions of the SSEP. Detailed information on the screening criteria can be found in Section 2.11.6 of the final EIS.

2.2.3 Alternative Technologies/Conservation

2.2.3.1 HYBRID COOLING

In a hybrid cooling scenario, the wet cooling and dry-cooling technologies described under the Proposed Action and Alternative A would be combined and used in tandem. This combined system would result in partially reduced water use and a lower electrical generation penalty than would be seen with the use of the fully dry-cooled system in Alternative A. Thus, the impacts of this alternative would fall within or

above those of the alternatives considered. A hybrid cooling system essentially requires the construction and operation of both a dry-cooling system and a wet-cooling system in a single plant. This would result in a higher capital expenditure to purchase and construct both systems and a higher cost over the life of the project to operate both systems, and would be unreasonably cost prohibitive. A hybrid system does not achieve the same level of water savings as a dry-cooled system for the associated costs. Because of the hybrid system's increased cost and because it would not provide environmental benefits comparable to a dry-cooled system (considered under Alternative A), this alternative has not been carried forward for detailed analysis.

2.2.4 Residential (rooftop) Photovoltaic Energy Production and Energy Conservation

During scoping, several commenters suggested the consideration of residential, rooftop, or distributed energy production, as well as the consideration of combining such distributed generation with increased energy efficiency. The use of distributed generation and/or energy conservation was beyond the scope of the EIS because it would not provide a response to the ROW application submitted by Boulevard for the SSEP because Boulevard and the BLM have no discretion or decision-making power regarding the use and implementation of distributed generation and energy conservation in private homes or commercial buildings.

2.2.5 Alternative Solar Technologies

Alternative solar technologies, including Stirling engines and power towers, were considered during the alternatives development stage, but they were eliminated from further consideration because these technologies have not been commercially proven on a utility scale. To date, nearly all Stirling engine and power tower projects have been deployed on a pilot scale and funded by the technology developers. In order to ensure project financing, Boulevard's development efforts are focused on technologies with proven track records and successful operating histories.

2.2.6 Alternative Water Sources

The use of water by the SSEP under any alternative would be required to comply with all applicable state laws and regulations, including the Arizona Department of Water Resources (ADWR) Third Management Plan: Industrial User Conservation Requirements. In order to ensure compliance with these requirements and also to complete a comprehensive due diligence review, Boulevard evaluated a wide array of potential water supply options that could meet the water supply demands of the SSEP and considered their advantages and disadvantages. The options that were evaluated are off-site groundwater within the Rainbow Valley sub-basin, off-site groundwater within the West Salt River sub-basin, reclaimed water, industrial waste water, surface water, and Central Arizona Project water. Generally, these alternative water sources were eliminated from further analysis because they

- would increase or not provide resolution to environmental impacts when compared to the Proposed Action;
- would significantly increase the cost of the SSEP and ultimately, the price of energy;
- are speculative due to uncertain costs, procedural issues, or legal issues;
- are infeasible due to legal issues, ROWs, or easement issues;
- have a potentially unreliable water supply; and
- cannot meet the SSEP's water needs.

2.2.7 Crystallizer

A crystallizer is a piece of equipment designed to heat waste water to concentrate its impurities. The water would be reused and the byproduct would be a cake of impurities. The use of a crystallizer would reduce the SSEP's water use by approximately 7 percent. The use of a crystallizer was considered as a means of eliminating the need for evaporative ponds and reducing the amount of groundwater required for the SSEP. The use of a crystallizer would create environmental benefits similar to the use of a brine concentrator. Because this option would cost nearly four times as much and the potential environmental effects are similar to a brine concentrator (which is being carried forward for analysis), this alternative has been eliminated.

2.2.8 Alternate Configurations

It was suggested during scoping that the SSEP be configured into six to eight widely spaced north-south rows to allow wildlife migration between the rows. This configuration was not carried forward for detailed analysis for a number of reasons. It would not be feasible to place fences around each row of solar troughs with sufficient space in between to allow wildlife movement without also reducing the size of the solar field and the plant's output. Additionally, the field would be spaced to allow plant personnel to access the troughs with vehicles for maintenance, mirror washing, and emergency response. Creating multiple layers of secure fencing would prohibit and slow access, especially in an emergency situation. These movement corridors would also greatly increase the distance over which the HTF would need to be pumped. In a solar field of this size, that distance and the increased parasitic load would be considerable and adversely affect the plant's output. The increase in capital costs, additional risks to health and human safety, and the increased risk of animal injury warrant that this alternative not be carried forward for additional analysis.

It was suggested during the draft EIS comment period that the SSEP be located further from the Sonoran Desert National Monument to minimize potential impacts to this sensitive resource. Given the constraints of available land parcels for sale or lease surrounding the Project Area, as well as increased visual and environmental impacts from moving the project further from existing infrastructure, it was not possible to locate the Project Area further from the monument under the Proposed Action or other action alternatives.

2.2.9 Underground Transmission Lines

Public comments during scoping suggested the use of underground transmission lines. High-voltage transmission lines similar to what are proposed for the SSEP generate a substantial amount of heat when energized. In a confined space like an underground duct, this heat would create immense engineering, maintenance, and safety challenges. In addition to being technically infeasible, this alternative would be considerably more expensive and likely render the SSEP economically infeasible. For these reasons, this alternative was not carried forward for additional analysis.

2.2.10 Reduced Project Footprint with Dry Cooling

Public comments on the draft EIS suggested that an alternative that both reduces the project footprint and uses dry cooling be analyzed. This alternative was considered after receiving these comments on the draft EIS but not carried forward for detailed analysis in the final EIS because it would be substantially similar in design to Alternative B, except for its cooling system, which would be substantially similar in design to Alternative A. Because of this design similarity, it would also have substantially similar effects to Alternative B, except for water use and disposal, which would be substantially similar to Alternative A, but reduced by approximately one third. For these reasons, this alternative was not analyzed in detail as a

stand-alone alternative. However, the impacts of this alternative would fall within the range of impacts analyzed.

2.3 Preferred Alternative

In the final EIS published on October 21, 2011, the BLM identifies Sub-alternative A1: Photovoltaic as the agency-preferred alternative. This sub-alternative reasonably accomplishes the purpose and need for the Federal action while fulfilling the BLM's statutory mission and responsibilities, giving consideration to economic, environmental, and technical factors. In particular, this sub-alternative best addresses public and agency concerns regarding groundwater use while meeting the purpose and need. Further, the total estimated acreage of surface disturbance under the preferred alternative is the least surface disturbance of all action alternatives discussed in the final EIS. The smaller overall project footprint also reduces adverse impacts to other resources and uses (e.g., wildlife, visual resources, soils, vegetation).

The preferred alternative presented in the final EIS is hereafter referred to as the Selected Alternative in this ROD (Map C2, Attachment C). The Selected Alternative incorporates the shorter 500-kilovolt (kV) gen-tie route presented as part of the Proposed Action (Map C3, Attachment C), and the Gen-tie Line Option is not carried forward.

2.4 Environmentally Preferred Alternative(s)

The Council of Environmental Quality regulations require the ROD to identify one or more environmentally preferred alternative. An environmentally preferred alternative is an alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources. Because they will cause the least damage to the biological and physical environment, the BLM has determined that the No Action alternative and the Sub-alternative A1: Photovoltaic are the environmentally preferred alternatives. However, the No Action alternative would not allow development of the energy generating project and would not meet the purpose and need of the project.

The Sub-alternative A1: Photovoltaic is the environmentally preferred alternative that still allows the development of renewable energy. It will use significantly less water, have a smaller project footprint and well-field, use PV panels instead of solar troughs, and will not require a natural gas pipeline as do the other action alternatives. These factors will reduce the impacts to water, wildlife, soils, vegetation, and visual resources, while still allowing for 300 MW of energy development. Sub-alternative A1: Photovoltaic is the Selected Alternative.

All practicable means to avoid or minimize environmental harm have been considered and adopted. The environmental commitments and mitigation measures noted in Sections 7 and 8 of this ROD, respectively, as well as in the attached Environmental and Construction Compliance Monitoring Program (see Attachment A) are intended to avoid and/or minimize any environmental harm.

3 DECISION RATIONALE

The BLM has identified low water use Sub-alternative A1: Photovoltaic as the Selected Alternative. The Selected Alternative takes advantage of recent advancements in PV technology. PV panel efficiencies, resistance to degradation, and power inverter technology/performance have all improved over the past 2 years. The maturation of PV technology and the PV marketplace, coupled with the significant increase in manufacturing capacity, contributed to a substantial reduction in the installed cost of PV power

generation on a dollar-per-kilowatt basis. The end result is that currently and in the near term, PV facilities are forecasted to be cheaper relative to comparably sized CST facilities at certain locations. This action is responsive to public comment for reducing water consumption and mitigating other resource issues. The Selected Alternative will reasonably accomplish the purpose and need for the Federal action, while fulfilling the BLM's statutory mission and responsibilities, giving consideration to economic, environmental, and technical factors. In particular, the Selected Alternative best addresses public and agency concerns regarding groundwater use while meeting the purpose and need. The Selected Alternative will use only 2 percent to 5 percent of the water required for the Proposed Action CST technology. It will only use approximately 33 afy of groundwater from the Rainbow Valley aquifer for project operations, mostly for washing PV mirrors. No modeled detectable drawdown to existing wells will occur under the Selected Alternative. The technology proposed in Sub-alternative A1: Photovoltaic was considered but eliminated in the draft EIS. However, the BLM added this alternative to the final EIS in response to many concerns about water consumption with the alternatives analyzed in the draft EIS and as a consequence of advancements in PV technology. As described below, this alternative will be located in the same area as the other alternatives, but will use considerably less acres and will have a significant reduction in environmental impacts as compared to the other alternatives.

The Selected Alternative will not require a natural gas pipeline, and its well field will be smaller. Further, the total estimated acreage of surface disturbance under the Selected Alternative (2,013 acres) is the least surface disturbance of all action alternatives, amounting to approximately 44 percent less than under the proponent's Proposed Action. The smaller overall project footprint will also reduce adverse impacts to other resources and uses (e.g., visual resources, soils, vegetation) compared to the other action alternatives, while still providing construction and operational employment for the community. The Selected Alternative's PV panels will have a lower profile and be less reflective than the solar troughs proposed in the other alternatives. The Selected Alternative will also avoid other resources raised as issues by the public and agency cooperators, including wildlife habitat and travel corridors, pending Federal Emergency Management Agency floodplains, air quality point sources and vapor plumes, and nearby residences. The Selected Alternative will generate approximately 775,000 MWh per year of electricity, which is still approximately 89 percent of the generation under the Proposed Action.

Other alternatives that were considered in the final EIS were the No Action, the Proposed Action, Alternative A: Reduce Water Use, and Alternative B: Reduced Footprint. Although the No Action alternative would not result in new environmental impacts, it did not meet the BLM's purpose and need, as did the other alternatives (including the Selected Alternative). Except for Alternative A: Reduced Water, the remaining alternatives (Proposed Action and Alternative B) would have required the use of large volumes of water (1,412 to 3,003 afy) and did not best address public and agency concerns regarding groundwater use. In addition, the alternatives that were not selected would not have addressed agency and public concerns about visual resources, wildlife habitat, proximity to residential areas, and transportation impacts as well as the Selected Alternative. Because the Selected Alternative has a reduced footprint and dramatically less water use while still generating 89 percent of the generation of the Proposed Action, it was selected for best meeting the purpose and need, while minimizing impacts to the environment.

4 DECISION(S)

The BLM has determined that the analysis contained in the final EIS is adequate for the purposes of reaching an informed decision regarding the ROW application. This ROD reflects careful consideration of the information generated from the SSEP environmental review process, and it further reflects resolution of the issues by the BLM and the DOI through such process. This ROD applies only to the BLM-administered lands and to the BLM's decisions on the SSEP. Other agencies, including the Arizona

Corporation Commission, are responsible for issuing their own permits and applicable authorizations for the project.

The decision is hereby made to issue a ROW on Federal lands for the Selected Alternative (Sub-alternative A1, including the proposed 500-kV gen-tie line route noted above) as described and analyzed in the final EIS (dated October 21, 2011). This decision is subject to the mitigation measures, applicant-committed environmental protection measures, and best management practices (BMP) contained in the POD² (see Attachment B) and the ROW grant. The BLM approves issuance of a 30-year ROW grant to Boulevard in accordance with the requirements of FLPMA of 1976 (43 U.S.C. § 1701 *et seq.*) and 43 CFR § 2804 to operate, maintain, terminate, and decommission a PV solar plant (i.e., the Selected Alternative) that will be located on Federal land. The cooperating agencies in the final EIS process were Town of Buckeye, City of Goodyear, Arizona Game and Fish Department (AZGFD), and ADWR. Their letters of concurrence are contained in Attachment D of this ROD. The project ROW includes temporary use areas, including staging areas, pulling stations, and temporary construction widths, as well as use of existing access roads for temporary access to the construction zone on Federal lands. All temporary facilities authorized by this decision are also depicted on Map C3 (Attachment C).

Once ROW grant documents have been approved by the BLM Phoenix District Office, actual on-site construction or other surface disturbing activities will be authorized by the issuance of a single or phased series of written notices to proceed (NTP) by the BLM Authorized Officer. These NTPs will specify authorized activities, location of the authorized activities, and the timing of the authorized activities. Should noncompliance issues, environmental issues, or other problems be encountered during authorized activities, the BLM Authorized Officer may amend or rescind any NTP previously issued.

As a special stipulation of this decision, the BLM will not issue any NTP until a power purchase agreement of sufficient size to warrant construction of at least the first phase of the Selected Alternative (including the gen-tie line) has been secured by Boulevard.

As per the Performance and Bond section of BLM IM No. 2011-003 (Solar Energy Development Policy), the BLM will require a performance and reclamation bond. The BLM has identified an initial bond estimate of \$10,128,578 for the SSEP to ensure compliance with the terms and conditions of the ROW authorization. The performance and reclamation bond is a single instrument to cover all potential liabilities. A summary of stipulations listed in the IM and that will be required for the SSEP includes, but is not limited to, the following:

- The BLM Authorized Officer will review all bonds on an annual basis to ensure adequacy of the bond amount.
- The BLM requires the holder to post the portion of the bond associated with the activities to be approved by the NTP prior to the issuance of that notice.
- The performance and reclamation bond consists of three components for purposes of determining its amount. The first component addresses environmental liabilities including hazardous materials liabilities. The second component addresses the decommissioning, removal, and proper disposal, as appropriate, of improvements and facilities. The third component addresses reclamation, revegetation, restoration, and soil stabilization. This component is determined based on the amount of vegetation retained on-site and the potential for flood events and downstream sedimentation from the site that may result in off-site impacts, including Clean Water Act violations or other violations of law. The holder of the ROW authorization could reduce the bond amount for this component by limiting the amount of vegetation removal as part of the project design and limiting the amount of grading required for project construction.

² The POD will be subject to updates according to this decision and based on ongoing engineering developments.

- The BLM requires that applicants submit a decommissioning and site reclamation plan (DSRP) that defines the reclamation, revegetation, restoration, and soil stabilization requirements for the project area as a component of their POD (43 CFR § 2804.25(b)).
- The BLM uses policy guidance for determining bonding requirements for 43 CFR § 3809 mining operations on the public lands (BLM IM No. 2009-153, dated June 19, 2009) that provides detailed information about the process for determining the appropriate financial guarantees for intensive land uses on the public lands. This guidance can also be used to assist in calculating the bond amount for utility-scale solar energy development projects on public lands.

The affected cooperating agencies discussed above will not issue separate decisions and have concurred with the analyses in the final EIS and the decisions in this ROD (see Attachment D. Concurrence Letters from Cooperating Agencies).

5 MANAGEMENT CONSIDERATIONS IN CHOOSING THE SELECTED ALTERNATIVE

5.1 Relationships to Other Plans, Policies, and Programs

The Selected Alternative must comply with various Federal laws, statutes, regulations, and EOs. FLPMA mandates that the BLM manage public lands on the basis of multiple use and sustained yield (43 U.S.C. § 1701(a)(7)). To implement the Selected Alternative, the proponent must acquire applicable Federal, state, county, and local permits and other approvals, as necessary. Applicable or potentially applicable approvals (permits, licenses, compliance, or reviews) are listed in Table 1.5 of the final EIS.

5.1.1 BLM Land-use Plan

Construction of the Selected Alternative will take place in the Lower Gila South Planning Area. This planning area is managed under the *Lower Gila South Resource Management Plan* (BLM 1985), as amended (BLM 2005, BLM 2009), which is currently being revised. The resource management plan (RMP) allows for multiple uses of public lands and does not prohibit the development of alternative energy sources on public lands. Although the Proposed Action and alternatives are not specifically mentioned in the plan, they are consistent with the plan's objectives, goals, and decisions. As noted in the final EIS in Section 1.6.1, a BLM team completed an LUP conformance analysis on November 21, 2008, and determined that the Selected Alternative will not conflict with other decisions throughout the plan. No alternatives that would conflict with the plan have been considered.

5.1.2 County and Local Plans

The Selected Alternative is consistent with the *Maricopa County Comprehensive Plan* (Maricopa County 2002). In this plan, the county has outlined an objective to "support innovative technological operations and facilities to encourage an appropriate balance of automobile use and to encourage energy efficiency and the use of renewable resources." The Selected Alternative in this ROD is consistent with the goals of the *Maricopa County Comprehensive Plan* because the Selected Alternative will result in the use of renewable resources.

Although the Selected Alternative will not take place on lands where the City of Goodyear has jurisdictional authority, it is consistent with the City of Goodyear's plan because the plan encourages energy conservation and a balance between suburban and urban development, which would allow a solar-powered facility. The goals, objectives, and policies contained in the *City of Goodyear General Plan*

(City of Goodyear 2003) note a desire to "strike the necessary balance between suburban and urban development while retaining the elements of the City's agricultural and natural character." The city's plan further notes that "Environmental and Energy Conservation projects would be considered even if baseline densities were exceeded."

Goal 10.0 ("Use Energy Efficiently and Maximize Sustainability") of the *Town of Buckeye General Plan* (Town of Buckeye 2008) encourages the use and development of renewable energy sources, such as solar and wind. Because they consider the construction and operation of a solar-powered electricity-generating facility a renewable energy source, the Selected Alternative is consistent with the town's plan.

Both the City of Goodyear and the Town of Buckeye were cooperating agencies in the preparation of this EIS, and they have concurred with the analyses in the final EIS and the decisions in this ROD (see Attachment D. Concurrence Letters from Cooperating Agencies).

5.1.3 State of Arizona

The Arizona Corporation Commission establishes jurisdiction for transmission lines (gen-tie) with a voltage higher than 115 kV. The process is formally outlined in A.R.S. §§ 40-360 through 40-360.13 and A.A.C. R14-3-201–220. The process for permitting has two phases: 1) the receipt of a CEC (from the Power Plant and Transmission Line Siting Committee (committee) and 2) an order approving the CEC from the Arizona Corporation Commission. The Selected Alternative's gen-tie line was approved by the Arizona Corporation Commission Line Siting Committee in October 2011, which will issue a CEC. The Arizona Corporation Commission-approved (and BLM-selected) gen-tie line alignment was identified as the proposed gen-tie line in the final EIS.

The Arizona Corporation Commission's Renewable Energy Standard and Tariff Rules (A.A.C. R14-2-1801–1815), along with other renewable energy mandates, call on the state's electric utilities to produce 15 percent of their electricity from renewable sources by 2025. The Selected Alternative will assist the state's electric utilities in meeting this goal and will therefore be consistent with State of Arizona objectives for renewable energy development.

5.1.4 Endangered Species Act

Section 7 of the ESA requires Federal agencies to ensure that their actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction of their designated critical habitat. It also requires consultation with the U.S. Fish and Wildlife Service (USFWS) in making that determination. The BLM has complied with this mandate by initiating informal consultation with the USFWS and preparing a biological assessment. The USFWS subsequently issued a concurrence letter that no adverse effects are likely to occur to the species listed from the construction and operation of the SSEP. More information on consultation with the USFWS can be found in Section 6.2.3 of this ROD (Endangered Species Act, Section 7 Consultation) and in Section 5.3.1 of the SSEP final EIS.

5.1.5 Migratory Bird Treaty Act

The Federal Migratory Bird Treaty Act of 1918 (MBTA) provides protection for 836 bird species present in the United States, most of which are migratory. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell most birds listed under the act. Wildlife surveys conducted in 2009 and 2011 determined that there are western burrowing owls (*Athene cunicularia*) present in the SSEP project area. During field reconnaissance in 2009, western burrowing owl individuals, burrows, and sign were found in the northern portion of the Project Area. Surveys were conducted again in May 2011 and found owl individuals, burrows, and sign throughout the Project Area. Individuals breeding and/or wintering in the Project Area will be displaced from habitat in the longterm (at least 30 years) due to project construction

and operations. These individuals may be forced into areas of less-suitable habitat. Boulevard (the proponent) has committed to obtaining an MBTA relocation permit and relocating any identified western burrowing owl individuals found during these surveys to a separate suitable area and constructing artificial burrows for their future use. In order to relocate the individuals to another area, a relocation permit must be obtained from the USFWS. The proponent plans to obtain the services of Wild at Heart (WAH, an Arizona-based, non-profit 501(3)c organization that provides raptor rescues and is an USFWS permit holder for owl trapping and relocations) to perform the western burrowing owl removal, excavation, and relocation for the project. Subject to USFWS approval, WAH will follow existing protocols that have been corroborated with AZGFD and BLM biologists. Details of the results of the surveys and the relocation process can be found in Appendix I of the final EIS (Burrowing Owl Relocation Analysis); all its actions and stipulations are conditions of approval of this ROD.

5.1.6 U.S. Army Corps of Engineers Section 404 Permit

The U.S. Army Corps of Engineers (USACE) was contacted in 2009 for an approved Department of the Army Jurisdictional Determination for the Project Area. Clarification was requested from the USACE on whether the SSEP would require 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, including wetlands and other special aquatic sites. The USACE indicated that the Project Area does not contain any waters of the United States, and thus no Section 404 permit will be required for the discharge of dredged or fill material associated with the SSEP. The USACE's formal responses to both determinations are contained as separate letters in Appendix B of the final EIS.

5.1.7 Section 106 of the National Historic Preservation Act

Section 106 of the NHPA requires Federal agencies to consider the potential effects of their actions on historic properties eligible for the National Register of Historic Places (NRHP) prior to approving such actions. Historic properties eligible for or listed on the NRHP include “any prehistoric or historic district, site, building, structure, or object . . . [and] properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization” (36 CFR § 800.16(l)(1)). Through a consultative process, Federal agencies identify potential effects to historic properties and seek to resolve adverse effects by avoidance, mitigation, or minimization. Resolution of adverse effects of a Federal agency’s action is documented through a memorandum of agreement (MOA) or a programmatic agreement (PA); both are binding commitments attached to the final agency decision.

The BLM initiated formal Section 106 consultation with the State Historic Preservation Office (SHPO) on October 1, 2009, and with eight federally recognized tribes on July 7, 2009. The BLM identified three affected historic properties eligible for the NRHP and developed an MOA to resolve such adverse effects through consultation with the Arizona SHPO, the Advisory Council on Historic Preservation (ACHP), and the tribes. The MOA was executed on November 23, 2011 (see Attachment E). More information on consultation with interested parties, including the SHPO, the ACHP, and the tribes, can be found in Sections 6.2.1 and 6.2.2 of this ROD (National Historic Preservation Act (Section 106 Consultation) and Native American Consultation) and in Section 5.4 of the SSEP final EIS.

5.1.8 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (Eagle Act) prohibits any form of possession or taking of bald eagles (*Haliaeetus leucocephalus*) or golden eagles. AZGFD conducted a regional bald and golden eagle nest location survey in 2011. No suitable habitat is present in the Project Area for bald or golden eagles. This survey found no nests resembling bald or golden eagle nests within 10 miles of the Project Area. The nearest documented bald eagle breeding area is located 17 miles away, and the nearest known golden

eagle territory is located over 69 miles from the Project Area. Therefore, the SSEP will not have any adverse impacts on bald or golden eagles.

6 CONSISTENCY AND CONSULTATION REVIEW

6.1 Cooperating Agencies

In July 2009, the BLM invited 20 Federal, state, and local entities to participate in the project as cooperating agencies. Cooperating agency status was extended to and accepted by the Town of Buckeye, City of Goodyear, and AZGFD. MOUs outlining the roles and responsibilities of each agency were prepared. The USACE initially accepted the cooperating agency invitation, but upon determination that the Project Area did not contain any waters of the United States and will not require a Section 404 permit, they notified SSEP project managers that there was no longer a need for them to be a cooperating agency for the project. The BLM informally engaged the ADWR for guidance on State of Arizona permitting requirements and input on the development of the NEPA analysis. The ADWR became a formal cooperating agency in March 2011 (following issuance of the draft EIS and prior to publication of this final EIS).

6.2 Agency Consultation

6.2.1 National Historic Preservation Act (Section 106 Consultation)

In accordance with Section 106 of the NHPA, the BLM formally initiated consultation with the SHPO on October 1, 2009. In its initiation letter, the BLM identified the area of potential effect (APE) and clarified that a Class III cultural resources survey of the entire APE would be conducted. A copy of this correspondence is included in Appendix B. The BLM accepted the Class III cultural resources survey. Both the report and the BLM's recommendations of eligibility were forwarded to the SHPO for further consultation in February 2010. By letter dated March 22, 2010, the SHPO concurred with the BLM's determination that three archaeological sites in the APE are eligible for the NRHP. The BLM sent a subsequent letter to the SHPO updating them on the addition of Sub-alternative A1: Photovoltaic (i.e., the Selected Alternative) for detailed analysis in the final EIS, and recommending a determination of adverse effect for the three archaeological sites—only one site directly affected and the other two avoided through modifications to the project. The SHPO responded reiterating the eligibility of the three sites, concurring with the adverse effect determination and recommending an MOA that includes a data recovery plan to resolve the direct adverse effect on the unavoidable site, with monitoring of the two sites to be avoided by construction and operations. As required, a notification of adverse effect determination was sent to the ACHP on July 20, 2011, inviting the ACHP to participate in the development of the MOA. The ACHP declined to participate on August 5, 2011. The BLM consulted with the SHPO and the tribes on the MOA, which was executed by all required signatories on November 23, 2011. A copy of the executed MOA is included in Attachment E.

6.2.2 Native American Consultation

The BLM engaged several federally recognized tribes in formal, government-to-government consultation regarding the project. Consultation with tribes is required under Section 106 of the NHPA, as well as NEPA and other laws and EOs. Agencies must consider effects on places of traditional cultural and religious importance. Section 106 of the NHPA requires that Federal agencies consult with the appropriate SHPO and Tribal Historic Preservation Officer (THPO) if the Federal agencies determine that activities under their control could affect historic properties. Under NHPA, any adverse effects to NRHP-

eligible properties are to be resolved through consultations that identify appropriate mitigation and treatment measures.

The BLM initiated formal consultation with tribes through consultation letters sent on July 7, 2009, to the following eight federally recognized tribes: Ak Chin Indian Community, Fort McDowell Yavapai Nation, Gila River Indian Community, Hopi Tribe, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, Tohono O'odham Nation, and the Yavapai-Prescott Indian Tribe. Consultation took place through letters, telephone calls, face-to-face meetings, and electronic mail. Six tribes responded and requested continuing consultations and opportunities to review documents and matters relating to cultural resources. A letter requesting tribal participation in the MOA was sent to the tribes with a copy of a preliminary draft MOA. Tribal consultations continued through the development and implementation of the MOA and a draft historic properties treatment plan (which will include a data recovery plan). The MOA is included in Attachment E. Government-to-government consultation has not revealed any significant sources of controversy regarding cultural resources or tribal concerns with the proposed undertaking.

6.2.3 Endangered Species Act (Section 7 Consultation)

The BLM initiated informal consultation with the USFWS under Section 7(a) (2) of the ESA on July 8, 2009, requesting from the Arizona Ecological Services Field Office of the USFWS a list of endangered or threatened species (or species proposed for listing) that may occur in the Project Area or be affected by SSEP construction. The list was provided by the USFWS in a letter dated August 11, 2009.

A biological assessment was prepared to determine if the development and/or operation of the SSEP would have any effects on species included in the list provided by the USFWS. The biological assessment was submitted to the USFWS on December 8, 2009. The USFWS responded on January 11, 2010, issuing its concurrence that no adverse effects are likely to occur to the species listed and indicating that no further consultation with the USFWS would be required at this time. In its concurrence letter, the USFWS recommends that a groundwater monitoring plan be established and implemented to track and confirm that the SSEP would have no unanticipated effects on the Gila River. Copies of the August 11, 2009, species list letter and the January 11, 2010, concurrence letter were included in Appendix B of the final EIS (Consultation Letters).

7 ENVIRONMENTAL PROTECTION MEASURES; BEST MANAGEMENT PRACTICES; AND LAWS, ORDINANCES, REGULATIONS AND STANDARDS APPLICABLE TO THE SELECTED ALTERNATIVE

7.1 Land-use Plan Best Management Practices and Stipulations

The Selected Alternative incorporates applicable BMPs and management stipulations from the *Lower Gila South Resource Management Plan* (BLM 1985), as amended (BLM 2005; 2009), as described in Section 2.3.2 of the final EIS. These stipulations are conditions of approval for this ROW authorization by BLM, and they are binding in the event that the facility should be transferred or operated by another entity.

7.2 Applicant-committed Environmental Protection Measures

Applicant-committed environmental protection measures are actions, practices, or design features that are part of the Selected Alternative and will be implemented by the proponent (Boulevard). Under the Selected Alternative, Boulevard will implement the applicant-committed environmental protection measures and BMPs (outlined in detail in Table 2.2, Section 2.3.3, of the final EIS) to minimize adverse impacts of the SSEP to sensitive environmental resources. These measures include actions and design features related to hazardous materials management, human health and safety, biological and water resources, water/floodplain/drainage, visual resources, and air quality. These are conditions of approval for this ROW authorization by the BLM, and they are binding in the event that the facility should be transferred or operated by another entity.

7.3 Other Features, Management Prescriptions, and Considerations for the Selected Alternative

There are a number of management prescriptions and other considerations for the Selected Alternative. They are included for one or more of the following reasons: 1) they are already required by law or regulation for purposes of energy development, 2) they are BMPs or management techniques that could be readily applied to reduce impacts regardless of alternative, 3) they were developed to address issues specific to the Project Area and could be readily applied to reduce impacts, 4) they pertain to actions and/or plans already occurring and/or over which the BLM has no jurisdiction, and 5) they pertain to BLM decisions related to the Project Area that are independent of decisions with respect to the Selected Alternative (i.e., BLM decisions regarding the Selected Alternative would not necessitate changes to decisions related to these items and vice versa).

7.3.1 Plan of Development

A POD is required before the BLM decides to issue a ROW grant pursuant to BLM IM No. 2011-060 (Feb. 7, 2011) and 43 CFR § 2804.25(b). The BLM ROW policy requires that the installation of the SSEP facilities be consistent with the approved POD. If there were to be any unanticipated changes to the POD, the BLM would assess the potential effects of the post-final EIS alterations to the POD by preparing a determination of NEPA adequacy. Boulevard has prepared and submitted a POD to the BLM that addresses all aspects of project development, including but not limited to road construction and maintenance; vegetation removal; natural, cultural, and biological resources mitigation and monitoring; and site reclamation. The POD incorporates, as applicable, a variety of site-specific plans. A copy of the POD is included as Attachment B.

7.3.2 Applicable Laws, Ordinances, Regulations, and Standards

Under the Selected Alternative, the proponent (Boulevard) must comply with all applicable laws, ordinances, regulations, and standards (LORS), and must obtain and meet the requirements of all needed permits.

8 MITIGATION MEASURES

As required in the BLM *NEPA Handbook*, H-1790-1, and 40 CFR § 1505.2(c), all practicable mitigation measures to avoid or minimize environmental harm from the selected alternatives have been adopted

according to Federal laws, rules, policies and regulations. The SSEP includes the following measures, terms, and conditions:

- Avoidance, minimization, and mitigation measures provided in the final EIS Chapter 4 (Environmental Consequences) as amended by this ROD and excepting those noted in Section 8.1, below (see Attachment A [Environmental and Construction Compliance Monitoring Program]).
- Terms and conditions in the MOA provided in Attachment E of this ROD. In any cases where the MOA conflicts with mitigation measures, the MOA will take precedence.
- Terms and conditions in the MOU between Boulevard and the AZGFD provided in Attachment F.
- Terms and conditions in the permit to relocate burrowing owls from the project area.

The complete language of these measures, terms, and conditions is provided in the POD for the SSEP as stipulated in the ROW grant for compliance purposes.

8.1 Rationale for Mitigation Measures Not Adopted

With the following exception, all mitigation measures considered in the final EIS are adopted in this ROD. The measures in Table 1 will not be required either because they do not apply to the Selected Alternative and PV technology, or because the Selected Alternative will not require mitigation to meet the performance standard(s) identified in the mitigation.

Table 1. Rationale for Mitigation Measures Not Adopted

Resource	Potential Mitigation Measures	Decision/Rationale
Livestock Grazing	Rebuild the stock pond in a nearby location to allow cattle to continue accessing the forage in the area. The stock pond would be appropriately sited in an area similar to the original stock pond location and would be constructed according to BLM standards. Impacts from the rebuilt stock pond would be addressed through an agreement or permit with the BLM.	Not adopted: not applicable to Sub-alternative A1 because the stock pond will not be removed.
Transportation and Traffic	Prohibit left turns by southbound traffic on SR-85 onto Riggs Road, pending Arizona Department of Transportation approval.	Not adopted: not required under Sub-alternative A1 to meet a Level Of Service (LOS) C or better.
	Implement (or fund) a mandatory carpool or vanpool system. Workers travelling to the SSEP from proximate locations would be provided van transportation to the project site or be required to carpool to reduce the number of vehicles required for their transport. Although any carpool/vanpool system would be mandatory under this potential mitigation measure, the details of the system would be at the discretion of Boulevard, except that the carpool/vanpool system would be required to result in LOS C or better.	Not adopted: not required under Sub-alternative A1 to meet a LOS C.
	Include acceleration lanes on northbound and southbound SR-85 during construction only. This would mitigate LOS impacts and enable thru-traffic to continue travel along SR-85, while also enabling construction traffic to avoid the thru lanes.	Not adopted: not required under Sub-alternative A1 to meet a LOS C or better.

Table 1. Rationale for Mitigation Measures Not Adopted

Resource	Potential Mitigation Measures	Decision/Rationale
Wildlife and Special Status Species	Rebuild the stock pond in another nearby location outside of the Project Area but within the Buckeye Hills-Sonoran Desert National Monument linkage for wildlife use. The new location would be selected (and surveyed) to ensure that it would not result in significant conflicts with other resources.	Not adopted: not applicable to Sub-alternative A1 because the stock pond will not be removed.
	To facilitate tortoise movement and dispersal across new and upgraded roads as well as to minimize the potential for vehicle collisions, place under-road crossing structures in the form of culverts along the western access road, from SR-85 to the solar field. The most current data regarding culvert size, frequency, placement, and use of guidance fencing would be used at the time of construction. Place additional educational signage denoting the potential for road kill in this zone.	Not adopted because of overlap with other measures including speed limits, speed bumps, signage, etc. An elevated road bed would increase other impacts to wildlife and other resources.

9 MONITORING AND ENFORCEMENT

A monitoring and enforcement program will be adopted and summarized where applicable for any mitigation (40 CFR § 1505.2(c)). Agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases. Mitigation (40 CFR § 1505.2(c)) and other conditions established in the final EIS and committed as part of the decision will be implemented by the lead agency or other appropriate consenting agency. The lead agency will:

- include appropriate conditions in grants, permits, or other approvals;
- condition funding of actions on mitigation;
- upon request, inform cooperating or commenting agencies on the progress in carrying out mitigation measures that have been proposed and that were adopted by the agency making the decision; and
- upon request, make available to the public the results of relevant monitoring (40 CFR § 1505.3).

The environmental and construction compliance monitoring plan for the SSEP is provided in Attachment A of this ROD. This plan establishes the team and process with which the BLM will monitor compliance with the required mitigation measures, stipulations, and other conditions of approval, including establishing criteria for successful implementation as applicable. The plan will be implemented and revised as needed to ensure environmental compliance.

As the Federal lead agency for the SSEP under NEPA, the BLM is responsible for ensuring compliance with all adopted mitigation measures for the SSEP in the final EIS. The complete language of all the measures is required by the ROW grant to be in the final POD. The BLM is also incorporating this mitigation into the ROW grant as terms and conditions. Failure on the part of Boulevard, as the grant holder, to adhere to these terms and conditions could result in various administrative actions up to and including a termination of the ROW grant and requirement to remove the facilities and rehabilitate disturbances.

10 PUBLIC INVOLVEMENT

The BLM has taken a variety of steps to inform the public; special interest groups; and local, state, and Federal agencies about the Selected Alternative for the SSEP, and to solicit feedback from these interested parties to help shape the scope and alternatives of this project.

10.1 Scoping

As part of the NEPA requirements, a notice of intent (NOI) to prepare the EIS was published in the *Federal Register* on July 8, 2009. Publication of the NOI initiated a 60-day, formal public and agency scoping period, during which the BLM solicited comments regarding the project and its potential impacts.

Early in the scoping period, the BLM advertised the initiation of the EIS process through the BLM website, advertisements in the local newspapers, media releases, and direct mailings to 844 past project stakeholders, SSEP Project Area stakeholders, and special interest groups (environmental, elected officials, business interests, recreational, and tribal). Additionally, personal telephone calls were made to key stakeholders to provide project and scoping meeting information, and public meeting information was posted at various community and recreation outlets. Public briefings were held with a variety of interest groups, agencies, etc. to inform them about the project. The BLM held public and agency scoping

meetings for the EIS in Phoenix, Arizona, on August 4, 2009, and public scoping meetings in Buckeye and Gila Bend, Arizona, on August 5 and 6, 2009, respectively.

A detailed description of the scoping process, planning issues derived from the comments, and analysis of the information received are contained in the BLM's October 2009 scoping report. The scoping report is available at the BLM Lower Sonoran Field Office or online at http://www.blm.gov/az/st/en/prog/energy/solar/sonoran_solar/maps.html.

10.2 Draft EIS Availability and Comments Received

As part of the NEPA requirements, notices of availability (NOA) of the draft EIS were published in the *Federal Register* by the EPA on April 9, 2010, and by the BLM on April 19, 2010. Publication of the EPA NOA initiated a 45-day, formal, public and agency comment period, during which the BLM solicited comments regarding the project, the alternatives analyzed, and potential environmental impacts. The BLM held agency and public meetings to discuss the draft EIS in Phoenix, Arizona, on April 27, 2010, and public meetings in Gila Bend and Buckeye, Arizona, on April 28 and 29, 2011, respectively.

The BLM received a total of 161 comment letters on the draft EIS. Eighty-five form or “form-plus letters” (copies of the form letter with additional text) were received from individuals using a letter generator and 76 unique letters were received. The form letters were submitted by individuals belonging to a special interest group (nongovernmental organization). The 76 unique letters came from businesses, nongovernmental organizations, Federal agencies, State of Arizona agencies, regional and local entities, tribes, and individuals. In preparing the final EIS, the BLM considered all comments to the extent practicable.

On May 16, 2011, a project newsletter was sent to 748 past project stakeholders, SSEP Project Area stakeholders, special interest groups (environmental, elected officials, business interests, recreation, and tribal), and individuals who signed up for the mailing list at the public meetings or by other means. The newsletter contained an overview of the Proposed Action, the alternatives analyzed in the draft EIS, and the addition of PV technology as a sub-alternative (Sub-alternative A1) for further study. The newsletter was presented at the May 4, 2011, Resource Advisory Council meeting prior to being distributed to the entities indicated above.

11 FINAL EIS AVAILABILITY AND COMMENTS RECEIVED

An NOA for the final EIS was published in the *Federal Register* on October 21, 2011. The BLM voluntarily offered the public a 30-day review and comment period (40 CFR §1503.1(b)) in part because of the addition of the low water use Sub-alternative A1: Photovoltaic. Electronic and printed copies of the final EIS were distributed by mail to parties who had previously indicated that they wanted to receive one and were made available at libraries, at BLM offices, and on the internet.

Five comment letters were received during the comment period, resulting in 64 unique substantive comments (Table 2). Responses to those comments are provided in Attachment G (Responses to Comments on the Final EIS). Based on the comments received, the BLM modified or added several mitigation measures. These additions are specifically noted in the comment responses. Other changes to the final EIS based on comments are noted in Section 12.

Table 2. Comment Letters on the Final EIS

Letter Number	Name/Organization (if applicable)	Date of Letter	Address
1	The Wilderness Society, the Grand Canyon Chapter of the Sierra Club, Defenders of Wildlife, Arizona Wilderness Coalition, Sonoran Institute, Friends of the Sonoran Desert National Monument, and the Tonopah Area Coalition	November 21, 2011	Alex Daue, Renewable Energy Associate The Wilderness Society – BLM Action Center 1660 Wynkoop St. Suite 850 Denver, CO 80202 Sandy Bahr, Chapter Director Sierra Club - Grand Canyon Chapter 202 E. McDowell Rd, Suite 277 Phoenix, AZ 85004 Matt Clark, Southwest Representative Defenders of Wildlife 110 S. Church Ave. Suite 4292 Tucson, AZ, 85701 Ian Dowdy, Conservation Outreach Associate Arizona Wilderness Coalition PO Box 13524 Phoenix, AZ 85002 John Shepard, Senior Advisor Sonoran Institute 44 E. Broadway Blvd., Suite 350 Tucson, AZ 85701 Thomas Hulen, Executive Director Friends of the Sonoran Desert National Monument PO Box 13252 Tempe, AZ 85284 David Schwake, President Tonopah Area Coalition (no address given)
2	EPA, Region IX Kathleen Martyn Goforth, Manager	November 21, 2011	75 Hawthorne Street, San Francisco, CA 94105-3901
3	Ann Louise Truschel	November 23, 2011	Personal contact information redacted
4	Sonoran Solar Energy LLC	November 21, 2011	PO Box 14000 Juno Beach, FL 33408-0420
5	Arizona Department of Environmental Quality Diane L. Arnst, Manager- Air Quality Planning Section	November 25, 2011	1110 West Washington St., Phoenix, AZ 85007

12 ERRATA

12.1 Errata to the Final Environmental Impact Statement

The errata section of this ROD illustrates the BLM's revisions to the final EIS. The revisions have been developed from either comments received or BLM's internal review of the final EIS. ~~Strike-outs~~ indicate that text has been removed from the final EIS. **Bold** indicates that text has been added or revised for the final EIS.

12.1.1 All Chapters

Throughout the final EIS, all instances of *Carr 2009* and *Carr 2010* should read *Golder 2009* and *Golder 2010, respectively*; and all instances of *CO²* should read *CO₂*.

12.1.2 Chapter 2

Page 2-8, Table 2.2 Proposed Action and Alternatives

~~The toe of the western protective berm slope may be armored with soil cement cover and rip rap to provide for slope erosion protection during a heavy storm event.~~

Page 2-10, Section 2.4. No Action Alternative

Under the No Action Alternative, these wells would be filled, capped, and abandoned, and any associated site disturbance would be reclaimed **unless otherwise directed by the BLM**.

Page 2-30, Section 2.5.2.7 Proposed Action, Off-site Drainage Collection and Discharge Facilities

The channel sides would have gentle slopes (6 feet horizontally to 1 foot vertically), and the channel ~~walls~~ **banks** would not be greater than 6 feet high, except in short sections where the outside bank of a curve would reach up to 8 feet (i.e., it would be super-elevated).

Page 2-35, Section 2.5.2.10 Proposed Action, Proposed Facilities and Infrastructure

This all-weather road (**capable of handling the 100-year event**) would have one lane in each direction, with approximately a 24-foot paved width. The road would be sized to handle all potential vehicle traffic during construction.

Page 2-41, Section 2.5.3.3 Proposed Action, Civil Works Construction Sequence

The ~~road-berm channels~~ **channels** would also be constructed to provide site protection from stormwater runoff during a 100-year return storm event. ~~The toe of the western protective berm slope may be armored with soil cement cover and riprap to provide for slope erosion protection during a heavy storm event.~~

12.1.3 Chapter 3

Page 3-103, Section 3.17 Visual Resources

The 15-mile buffer used to define the visual analysis area was determined after consultation (~~Johnson 2011~~) with the BLM and is based on the BLM's definition of background distance zone.

The visual analysis area was defined in consultation with the BLM.

Page 3-104, Section 3.17.1 Visual Resources, Visual Resource Inventory

Under the inventory process, the BLM applies three ~~ranks~~ **ratings** to landscape scenic quality: Class A (outstanding), B (above average), and C (common).

Page 3-105, Section 3.17.1.2 Visual Resources, Sensitivity Level Analysis

The ~~IOPs~~ **KOPs** represent a critical viewpoint or typical viewing condition associated with a sensitive viewer or viewing location. Potential ~~IOPs~~ **KOPs** for the SSEP were identified and field verified (Johnson 2009). The identification of ~~IOPs~~ **KOPs** was based on a review of aerial photography, a review of topographic maps, agency input, suggestions from special interest groups, and field investigations that include photo documentation using high-resolution photography and global positioning system (GPS) data. Additionally, the selected ~~IOPs~~ **KOPs** are representative of the range of viewing conditions (e.g., elevation) and distance zones for sensitive locations in the visual analysis area.

Page 3-105, Section 3.17.1.3 Visual Resources, Distance Zones

A total of 19 IOPs was selected to represent "typical" viewing conditions for each of the three sensitive viewing ~~locations~~ **location types** (see Map 21): travel routes (five IOPs), recreation areas (eight IOPs), and residences (six IOPs); these are described as follows:

Page 3-115, Section 3.18.2.2.3 Water Resources, Well Spacing and Well Impact

~~The SSEP GIU permit application is pending, and is currently under review by ADWR. The SSEP GIU permit application has been approved by ADWR.~~

Page 3-129, Section 3.18.2.4.1 Water Resources, Groundwater Availability

The thickest basin-fill deposits, as determined by the gravity survey (~~Carr~~ **Golder** 2010), are located in a portion of the analysis area within parts of Sections 24 and 25 (T2S, R3W), and Sections 29 and 30 (T2S, R2W), at the eastern Project Area boundary.

Details of the program can be found in the *Groundwater Resource Evaluation* (~~Carr~~ **Golder** 2010) and are summarized briefly below.

Page 3-130, Section 3.18.2.4 Water Resources, Groundwater Availability

The analytical methods and results for the groundwater samples are found in the *Groundwater Resource Evaluation* (~~Carr~~ **Golder** 2010) and are summarized in this paragraph.

Page 3-131, Section 3.18.2.4 Water Resources, Groundwater Availability

Details on the installation and development of wells TW-1 and MW-1, including as-built diagrams, are provided in the Groundwater Resource Evaluation (Carr Goldner 2010).

Page 3-131, Section 3.18.2.4 Water Resources, Ground Water Availability

Testing activities are extensively documented in the Groundwater Resource Evaluation (Carr Goldner 2010).

12.1.4 Chapter 4

Page 4-5, Section 4.2.1 Regulatory Requirements, Mitigation and Monitoring Measures

Except for Sub-alternative A1, prior to commencing construction, the SSEP facility would be required to obtain a Title V Air Quality Operating Permit (Title V permit) from the MCAQD (MCAQD 2010b). The visual analysis area was defined in consultation with the BLM.

Page 4-6, Section 4.2.1 Regulatory Requirements, Mitigation and Monitoring Measures

Another set of criteria that pertains to air quality significance is the Maricopa County thresholds for applicability of BACT. Several of these thresholds could be exceeded by the SSEP stationary sources on a maximum daily emission rate basis **under all alternatives other than Sub-alternative A1** (Farmer 2010).

Page 4-7, Section 4.2.1 Regulatory Requirements, Mitigation and Monitoring Measures

At the time of this writing, construction emissions have not been calculated on an annual basis for comparison with the de minimus level; however, as part of the Proposed Action (see Table 2.2), the proponent has committed to meeting de minimus levels of construction emissions **under all alternatives**. ~~This would be a necessary step for the conformity analysis.~~ Therefore, the SSEP would be a minor source of air emissions during both the construction and operational phases, and further analysis under the general conformity rule is not necessary.

Page 4-16, Section 4.2.1.1 Air Quality, Project Emissions Calculations

Assumptions applicable to any of the alternatives are described in this section. Assumptions inapplicable to Sub-alternative A1 are noted in the impact analyses summarized in Section 4.2.6.

Page 4-21, Section 4.2.2.2 Air Quality, Contributions to NAAQS

To characterize ambient concentrations due to emissions from SSEP stationary sources (described in the previous section), the EPA SCREEN3 model was used to perform dispersion modeling for criteria pollutants. **Modeling to assess potential contributions to NAAQS is not applicable to Sub-alternative A1, because there are no permanent stationary sources involved in that alternative.**

Page 4-22, Section 4.2.2.3 Air Quality, Visibility of Emission Plumes from Stationary Sources

The VISCREEN model (EPA 1992; EPA 1988) was used to assess the potential for observers in recreational areas, parks, and wilderness areas located within 50 km of the SSEP to perceive visible plumes from emissions associated with combustion of natural gas (Table 4.3). The impact is modeled as a loss of visual clarity in the direction of the SSEP facility. **Modeling to assess potential plume visibility**

contributions is not applicable to Sub-alternative A1, because there are no permanent stationary sources involved in that alternative.

Page 4-34, Section 4.2.6.1.1 Air Quality, Summary of Emissions during Construction

The nature of construction emissions would be the same under Sub-alternative A1 as under the Proposed Action (see Table 4.11) because the nature of construction (e.g., methods) would be the same. **The area cleared during construction under Sub-alternative A1 would be 1,933 acres, 46% less than the 3,600 acres that would be cleared under the Proposed Action.**

Page 4-40, Section 4.2.10 Air Quality, Potential Mitigation Measures

Mitigation of PM₁₀ and PM_{2.5} emissions during the construction phase may be warranted because the project is in a serious nonattainment area, and background data at the Buckeye monitoring station indicate exceedances of the NAAQS. These measures are in addition to those required by MCAQD 310 and A.A.C. R18-02 (see Table 4.1 and Section 4.2.2.1.1) and could include the following:

- Cease emission-producing construction activities during periods of NAAQS exceedances, which could include high wind events and inversions.
- Treat actively disturbed areas on the Project Area prior to foreseeable and/or predictable high wind events with a water or a dust palliative to reduce dust emissions.
- Pave, gravel, and/or apply **water and/or a** dust palliative to all road surfaces on the Project Area.
- Treat actively disturbed areas on the Project Area as soon as practicable (as discrete phases of construction on each area are completed) with **water and/or** a dust palliative to reduce windblown dust emissions.

Page 4-42, Section 4.3.1 Climate Change

Except for Sub-alternative A1, prior to commencing construction, the SSEP facility would be required to obtain a Title V Air Quality Operating Permit (Title V permit) from the MCAQD (MCAQD 2010b).

Under all action alternatives except Sub-alternative A1, the SSEP facility would have the flexibility to supply an amount of electricity not exceeding 25% of the gross generation of the plant (in terms of MWh) by gas-fired generation using co-fired boilers or HTF process heaters (see Section 2.5.2.2.5 for regulatory details concerning gas-fired generation).

Page 4-171, Section 4.15.9.1 Transportation and Traffic, Potential Mitigation Measures

Install speed bumps **or other appropriate speed control devices** every 500–1,000 feet along the access road and install no parking signage along the sides of the access road. The speed bumps **or other appropriate speed control devices** would include standard dimensions as described in the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (FHWA 2009), **or locally appropriate manual.**

Page 4-186, Section 4.16.5.1 Vegetation and Special status Plant Species, Potential Mitigation Measures for Vegetation Communities

In order to reduce the level of herbicide use and disturbance of vegetation, an adaptive management approach to vegetation treatment and removal will be developed and implemented. Prior to the notice to proceed for any phase of work, the holder will work with BLM to determine

how vegetation disturbance/removal and herbicide use may be practicably reduced in the upcoming project phase. In addition, the vegetation management plan will be reviewed annually to incorporate new BMPs that meet these same goals. Alternative methods for vegetation management may include the use of mulching, weed barriers, mowing, and selective removal/treatment of undesirable species.

Page 4-190, Section 4.17 Visual Resources

The BLM uses this type of analysis as part of their VRM system to describe landscapes and analyze the impacts to ~~scenic quality~~ **visual management objectives**; the overall goal of the analysis is to apply a level of objectivity and consistency to the process.

Page 4-190, Section 4.17 Visual Resources

The **project-specific** distance zones are as follows:

- 0–0.25 mile – BLM Foreground Zone
- 0.25–1 mile – BLM Foreground Zone
- 1–3 miles – BLM Foreground Zone
- 3–5 miles – BLM Middleground Zone
- 5 miles and beyond – BLM Background Zone

Page 4-192, Section 4.17 Visual Resources

KOP 9 (Buckeye Hills Regional Park): The SSEP would be ~~completely screened by topography and vegetation from the entire park.~~ **visible from approximately 43% to 45% of the park depending on the alternative.**

Page 4-195, Section 4.17 Visual Resources

Photographic simulations were prepared for ~~all~~ **seven of the nineteen KOPs**, and they are representative of the three sensitive viewer types, different viewing elevations, **and distances.**

Page 4-197, Section 4.17 Visual Resources

These changes produce ~~low or~~ weak levels of contrast and are considered to have a low impact on existing visual resources or on the existing scenic values of the landscape.

- The newer, project-related structures would be compatible with the existing surface disturbances caused by the road and would thus present a ~~low degree of~~ **weak** contrast.

Due to the existing industrial facilities, the contrast would be ~~low~~ **weak** both locally and regionally.

Page 4-197, Section 4.17.2.3.2 Visual Resources, Recreation Areas

Contrast resulting from the project would be ~~strong~~ **moderate** from Quartz Peak.

Page 4-199, Section 4.17 Visual Resources

Table 4.99 KOP 2, 6, 19 (Sonoran Desert ~~Wilderness~~ **National Monument**)

Page 4-204, Section 4.17.4.1 Visual Resources, Changes to the Characteristic Landscape

~~Contrast levels would change from predominately moderate (with strong contrasts at a few locations) under the Proposed Action to predominately weak (with moderate contrasts at a few locations) under Sub-alternative A1.~~

Overall, the project would have strong visual contrast for all alternatives. However, depending on the viewer's location or KOP the level of contrast may vary from weak to strong based on viewing conditions, screening, distance, etc.

Visual changes due to the geometric forms, **and** vertical lines ~~and concentrated light~~ associated with the structural components of the SSEP would be the same as under the Proposed Action, except that **the concentrated light** would not be reflected toward any sensitive viewer because PV panels are designed to minimize light reflectance. PV solar arrays would appear to be a dark color, typically appearing dark blue, when viewed from slightly elevated to superior viewing positions at certain times of the day.

Page 4-223, Section 4.18.1.3.7. Water Resources, Floodplains and Drainage

~~The road berm and collection channel system would also be constructed to provide site protection from stormwater runoff during a 100-year return storm event. The toe of the western protective berm slope may be armored with soil cement cover and riprap to provide for slope erosion protection during a heavy storm event.~~

Page 4-230, Section 4.18.2.1 Water Resources, Analysis Area and Analysis Assumptions

Golder ~~(2009)~~ **(2010)** notes three distinct hydrogeologic units in the exploratory borings: 1) an upper unit consisting of sand and gravel, 2) a middle unit consisting mainly of clay and silty clay, and 3) a lower, highly consolidated conglomerate (see the hydrogeologic cross-section from ~~Car~~ **Golder 2010**, Figure 20).

Page 232, Section 4.18.2.3 Water Resources, Proposed Action

Figure 4.5 shows the changes in depth to groundwater as modeled for the SSEP (Golder **2010** ~~2009b~~) for the Proposed Action.

The maximum extent of the cone of depression for both proposed pump rates is based on the 2-foot drawdown contour that is located approximately 2.0–2.5 miles east, west, and north of the well field (Golder **2010** ~~2009b~~).

The maximum extent of the cone of depression for both proposed pump rates is based on the 2-foot drawdown contour that is located approximately 7–8 miles southeast of the well field (Golder **2010** ~~2009b~~).

Page 4-239, Section 4.18.2.9 Water Resources, Potential Mitigation Measures

To reduce the risk of unforeseen hydrologic impacts, a qualified geologist or hydrologist will periodically inspect downstream drainages for comparison with predevelopment conditions (which will be documented prior to project construction). Operational changes to the stormwater management system will be taken to better match predevelopment hydrology if drainages are eroded by excessive quantities of water or appear to no longer receive water.

Page 4-261, Section 4.19.5 Wildlife, Potential Mitigations Measures

Design perimeter fencing of the SSEP to effectively exclude **most** wildlife, ~~Measures will include~~ **including** burying the fence at least 1 foot underground to keep animals from burrowing under it. **The main solar field will be monitored for wildlife activity, and an adaptive approach will be used for the site in the event that further exclusion methods should prove necessary based on the presence of nuisance wildlife or hazards to sensitive wildlife species. Further measures may include and** reinforcing the first 3 feet off the ground with small diameter mesh and/or silt fencing to keep small animals from entering. **All practicable measures will be used to exclude wildlife from the evaporation pond, particularly avian species, sensitive species, reptiles, and amphibians.**

12.1.5 *References*

Page X-7

~~Carr, D.A. 2010. *Groundwater Resource Evaluation for Sonoran Solar Energy Project*. Submitted to Boulevard Associates, LLC. Golder Associates, Inc. Project No. 093-92820, January 15, 2010.~~

Page X-11

Golder Associates Inc. 2010. ~~Carr, D.A. 2010. *Groundwater Resource Evaluation for Sonoran Solar Energy Project*. Submitted to Boulevard Associates, LLC. Golder Associates, Inc. Project No. 093-92820, January 15, 2010.~~

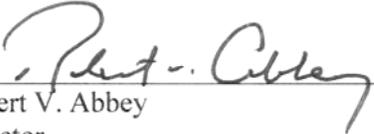
12.1.6 *Appendix A: Response to Comments*

The Response to Comments Appendix was only included in the final EIS and not in the draft EIS; as such, no changes should have been indicated as underlined text.

13 RIGHT-OF-WAY AUTHORIZATION

It is my decision to approve a solar energy right-of-way lease/grant to Boulevard Associates LLC, subject to the terms, conditions, stipulations, plan of development, and environmental protection measures developed by the Department of the Interior and reflected in this Record of Decision. It is my further decision to temporarily close routes within the project area subject to limited exceptions. Specific routes and times will be announced by the BLM Authorized Officer once a more detailed construction schedule is completed. These decisions are effective on the date this Record of Decision is signed.

Approved By:



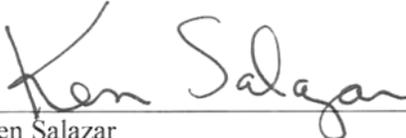
Robert V. Abbey
Director
Bureau of Land Management

12-19-11
Date

14 SECRETARIAL APPROVAL

I hereby approve these decisions. My approval of these decisions constitutes the final decision of the DOI and, in accordance with the regulations at 43 CFR 4.410(a)(3), is not subject to appeal under departmental regulations at 43 CFR 4. Any challenge to these decisions, including the BLM Authorized Officer's issuance of the ROW as approved by this decision, must be brought in the federal district court.

Approved by:



Ken Salazar
Secretary
U.S. Department of the Interior

12-19-11
Date

15 REFERENCES

- BLM. 1985. *Lower Gila South Resource Management Plan/Environmental Impact Statement*. Available at:
http://www.blm.gov/az/st/en/info/nepa/environmental_library/arizona_resource_management/lower_gila_south_rmp.html.
- . 2005. *Approved amendment to the Lower Gila North management framework plan and the Lower Gila South resource management plan and decision record*. Available at:
http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/nepa/library/resource_management.Par.29336.File.dat/Lower-Gila-Amendment-decision-record.pdf.
- . 2009. *Approved Resource Management Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States*. BLM/WO-GI-09-005-1800. January 2009.
- . 2011. *Sonoran Solar Energy Project Final Environmental Impact Statement*. DOI BLM Phoenix District Office. Prepared by BLM Lower Sonoran Field Office. October 2011.
- City of Goodyear. 2003. *City of Goodyear General Plan*. Maricopa County.
- Maricopa County. 2002. *Maricopa County Comprehensive Plan 2020 Eye to the Future*.
- Town of Buckeye. 2008a. *Town of Buckeye General Plan*. Adopted January 18, 2008.