

**CHAPTER 1.**  
**INTRODUCTION, PURPOSE AND NEED**

---



# 1 INTRODUCTION, PURPOSE AND NEED

## 1.1 Introduction

The DOI's BLM administers approximately 262 million acres (106 million hectares) of public land in the United States. This administrative responsibility consists of stewardship, conservation, and resource use, including the development of energy resources, in an environmentally sound manner. Solar energy is one of many energy resources now being developed on BLM-administered lands under ROW authorizations or leases issued in accordance with the requirements of the FLPMA of 1976 (43 U.S.C. § 1701 et seq.).

Boulevard Associates, LLC (Boulevard) has applied to the BLM for a ROW on public lands to construct and operate the SSEP, a CST power plant and ancillary linear facilities. The original ROW application area was 14,759.39 acres; however, the footprint of the SSEP would occupy approximately 3,620 acres, consisting of power blocks, solar fields, evaporation ponds, HTF land treatment areas, and required linear facilities. These linear facilities would consist of access road (or roads), a gen-tie line, a well field and water pipelines, and a gas pipeline.

The SSEP would be located in the Little Rainbow Valley, east of SR-85, and south of the Buckeye Hills and the Town of Buckeye in Maricopa County, Arizona. The BLM must consider requests for ROWs on the land it administers for projects that are in the public interest, for example, the construction of power projects, their associated transmission lines, and other appurtenant facilities, as authorized by FLPMA Title V (43 U.S.C. §§ 1761–1771).

Solar energy has significant potential in the western United States. With a growing population, Arizona's demand for electricity is increasing and will continue to do so for the foreseeable future. Solar energy and other renewable energy sources can play leading roles in meeting these demands. New requirements for utility companies to provide renewable energy options are driving the promotion of solar energy development. The BLM is committed to promoting the Energy Policy Act of 2005 and providing for renewable energy projects on public lands where possible and where appropriate.

The BLM has prepared this EIS to respond to Boulevard's request in a manner that seeks to avoid or reduce impacts on resource values and uses associated with the project and to prevent unnecessary or undue degradation of the public lands.

## 1.2 Project Background

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% of their electricity from renewable sources by 2025. The SSEP is also intended to reduce the electricity sector's GHG emissions, contribute to Arizona's future electric power needs, and promote fuel diversity to protect consumers and electric utilities from fuel unavailability and price fluctuations.

During initial development of the draft EIS, several common requirements and objectives for renewable energy emerged from BLM discussions with potential customers (for SSEP electricity) and researchers at the National Renewable Energy Laboratory (NREL), and from the proponent's engagement with potential customers. During discussions with the BLM in October 2009, potential customers and NREL expressed the following:

- It was important to develop a diversified and sustainable energy portfolio that includes solar energy. Customers desired consistent electrical generation to the grid and indicated they may charge penalties for too much variability in generation. Variability in electrical generation increases risk to customers and the ability to negotiate power purchase agreements.
- Customers were looking for opportunities for large-scale solar thermal generation and considered CST technology very dependable (dispatchable) and valid for commercial applications. Customers considered CST technology generally a lower risk, especially in combination with thermal storage and natural gas back-up. CST technology with thermal storage and up to 25% natural gas back-up provides continued electrical generation into the evening high-demand period when the sun begins to set.
- Customers did not consider large scale PV facilities practical for commercial operation. The power produced by a PV facility is not dispatchable. A passing cloud can reduce electrical output 10%–20% without immediate online natural gas back-up. Without a reliable system of natural gas back-up and storage capacity, PV systems have no inertia to extend power generation into evening high-demand hours. The largest PV facility some customers would consider is 18–25 MW.
- Some customers support renewable energy projects when sited on previously disturbed lands.

Based on this input, the SSEP draft EIS issued in April 2010 concluded that PV was not a viable alternative technology and dismissed it from further analysis in Section 2.9.3. However, since the draft EIS was issued, the following technological changes and market trends have allowed BLM and Boulevard to revisit the feasibility of PV as a viable alternative to the proposed CST project (see Section 2.7 [Sub-alternative A1: Photovoltaic]):

- PV technology continued to evolve and improve. PV panel efficiencies, resistance to degradation, and power inverter technology/performance have all improved over the past two 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.
- The potential cost advantages of a PV project and the continuing advancements in PV technology have caused utility offtakers to seriously consider utility-scale PV as a viable alternative to CST. As the technology continues to improve and other PV projects reach commercial operation, the utility transmission study and planning departments have gained clarity on the likely system impacts from a large PV facility and have gained comfort in the suitability of interconnecting large PV projects. PV technology, both large and small scale, now presents electric utilities with a second viable option for solar power generation.
- The lower costs to develop a PV project, as evidenced by continuing market trends, make a PV project desirable for potential customers, especially given the sluggish economy and the customers' slowed population and load growth.

The SSEP would be located in an area that is well suited for solar generation due to its high availability of solar irradiance throughout the year (U.S. Department of Energy [DOE] 2009a), level topography, ease of access, and availability of transmission capacity from the nearby high-voltage transmission lines at the Jojoba Switchyard.

Boulevard's specific intentions are as follows:

- Develop a utility-scale solar power project using proven technology capable of generating up to 375 MW of electricity.
- Develop a solar power project that optimizes power generation efficiency and provides energy at a reasonable and competitive cost.
- Interconnect directly to the existing electrical transmission system near a major load center.
- Minimize environmental impacts, infrastructure needs, and costs by locating the plant near existing infrastructure (such as a transmission line, a substation, a natural gas pipeline, an adequate water supply, and highways and access roads) and by using designated utility corridors to the maximum extent possible.
- Develop a solar power project that will qualify for and benefit from tax benefits and other incentives available to solar/renewable projects.

Between 1980 and 2007, Arizona's population increased by nearly 137%. Between 2008 and 2032, the state's population is projected to increase an additional 65%, with demand for electricity growing similarly (Arizona Investment Council 2008). Arizona is a state with abundant sunshine, and the development of utility-scale solar energy is needed to meet the state's renewable energy requirements.

### **1.2.1 SSEP Overview**

Boulevard is proposing to construct a 375-MW solar thermal energy plant that would include the proposed power blocks, solar field, evaporation ponds, HTF land treatment areas, and all ancillary facilities. The SSEP would use a parabolic trough solar thermal technology to produce electrical power using steam turbine generators fed by solar steam generators. The SSEP would also use natural gas-fueled boilers or heaters for additional power generation and HTF freeze protection heaters. Thermal energy storage would be used at each of the two plants; would consist of a molten salt, two-tank design; and would provide several hours of storage for each plant. The purpose of gas backup and thermal energy storage systems is to increase daily hours of operation, shift energy production into peak periods, and make up production during periods of extended cloud cover. The SSEP would consist of two solar thermal power block units. A 125-MW unit would produce approximately 290,000 MWh per year, and a 250-MW unit would generate approximately 580,000 MWh per year. The entire facility would operate for 30 years or more. Boulevard would phase construction so that the 125-MW unit, located on the east side of the facility, would be operational approximately one year before the separate 250-MW unit is operational.

### **1.2.2 Location, Acreage, and General Dimension of the SSEP Facilities**

The SSEP would be located in the west end of the Little Rainbow Valley, east of SR-85, and south of the Buckeye Hills and the Town of Buckeye, Arizona (Map 1). The SSEP facilities would occupy approximately 3,620 acres and would be located almost entirely on BLM-administered lands (Map 1; Table 1.1).

**Table 1.1** Legal Description of the Sonoran Solar Energy Project

<b>Ownership</b>	<b>Township and Range</b>	<b>Section</b>	<b>Acreage</b>
<b>BLM</b>	T2S R2W	28	1.681
		29	18.414
		30	14.651
		31	1.895
		32	2.146
		33	2.420
	T2S R3W	12	78.008
		13	600.910
		14	347.597
		15	247.591
		16	0.230
		19	6.184
		20	12.855
		21	143.546
		22	545.739
		23	639.715
		24	635.708
		25	233.328
		26	70.574
		36	5.150
	T2S R4W	24	0.020
		<i>Subtotal</i>	<i>3,608.372</i>
<b>Private</b>	T2S R2W	27	0.0103
		28	0.771
		33	1.186
		34	0.060
	T2S R4W	24	4.013
			<i>Subtotal</i>
<b>State</b>	T2S R4W	23	0.614
		24	1.159
		25	2.144
		26	1.315
			<i>Subtotal</i>
		<b>Total</b>	<b>3,619.648</b>

Note: T=Township; R=Range

### 1.2.3 Federal Renewable Energy Policy

As part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future, the National Energy Policy of 2001 and the Energy Policy Act of 2005 (Public Law [P.L.] 109-58, August 8, 2005) encourage 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. In EO 13212 (May 18, 2001), the President ordered that executive departments and agencies take appropriate actions "to expedite projects that will increase the production, transmission, or conservation of energy." Similarly, Secretary of the Interior Order 3285 (March 11, 2009) encourages the production, development, and delivery of renewable energy as one of the DOI's greatest priorities.

In response, the BLM established their Solar Energy Development Policy (IM No. 2007-097). 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 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 would support the President's New Energy for America Plan, which sets a target of ensuring that 10% of United States electricity is generated from renewable sources by 2010, rising to 25% by 2025. In order to meet these requirements, renewable energy projects need to be constructed and brought online. The American Recovery and Reinvestment Act of 2009 (also known as the economic stimulus plan) also promotes increased renewable energy availability.

## 1.3 Purpose and Need

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 plant<sup>1</sup> and ancillary facilities in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to Boulevard for the proposed solar energy project.

### 1.3.1 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 ROWs, permits, leases, and easements, while avoiding or minimizing adverse impacts to other resource values and locating the uses in conformance with LUPs. 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.

---

<sup>1</sup>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.

- To implement FLPMA and the *Lower Gila South Resource Management Plan* (BLM 1988), as amended (BLM 2005a, BLM 2009a), by providing consistent land management decisions based on the standards set forth by both authorities. Both authorities recognize that the Project Area is available for multiple uses.
- To process ROW application AZA-34187 submitted by Boulevard in an expeditious manner consistent with both 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.

### 1.3.2 Need for the Action

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

- 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% of United States electricity is generated from renewable sources by 2012, rising to 25% by 2025.
- Further the purpose of Secretarial Order 3285A1 (March 11, 2009), which "establishes the development of environmentally responsible renewable energy as a priority for the Department of the Interior" (BLM IM No. 2011-059).

## 1.4 Scope of the Analysis

### 1.4.1 The EIS Decision Framework

NEPA requires federal agencies, in their decision-making processes, to consider the impacts of their proposed actions on the human environment and to consider reasonable alternatives to those actions. The intent of NEPA analyses is to disclose the effects of federal actions and to inform agency decision makers. To meet NEPA requirements federal agencies must prepare a detailed statement—in this case an EIS—describing the direct, indirect, and cumulative effects of their proposed actions and alternatives to those actions on the human environment. The EIS must also describe 1) any unavoidable or residual (i.e., not able to be mitigated), adverse impacts as a result of implementing the Proposed Action or alternatives; 2) the relationship between the short-term uses of the land (i.e., the Proposed Action and alternatives) and the long-term productivity of the human environment; and 3) any irreversible and irretrievable commitments of resources as a result of implementing the Proposed Action or alternatives.

The preparation of an EIS is a process consisting of the following general steps:

- Issue the NOI to prepare an EIS
- Conduct public and agency scoping
- Prepare and issue the draft EIS
- Conduct public review and comment on the draft EIS
- Prepare and issue the final EIS, including responses to comments
- Hold a 30-day waiting period
- Issue the ROD

This EIS analyzes and discloses the environmental impacts of the Proposed Action, the No Action, and three other action alternatives (all alternatives are described in detail in Chapter 2). It is intended to encourage public participation in the BLM's decision-making process. It provides an analysis of impacts that would result from the implementation of the Proposed Action and other alternatives, and it identifies mitigation measures to address environmental consequences. This EIS does not contain final decisions regarding the Proposed Action or other alternatives.

### **1.4.2 Decisions to be Made Through this EIS**

Decisions made regarding the Proposed Action and alternatives will be documented in a ROD signed by the authorized officer (AO), the District Manager for the BLM Phoenix District. The BLM decision will apply only to public lands.

In the ROD, the BLM Phoenix District Manager will determine the following:

- Whether the analysis contained in this EIS is adequate for the purposes of reaching an informed decision regarding the ROW application
- Whether to approve the Proposed Action, select a different alternative, select a combination of alternatives, or deny the ROW request
- Whether the Proposed Action and alternatives are in conformance with applicable land and resource management plans
- Appropriate terms and conditions (including mitigation and monitoring requirements), if the ROW is approved

Further, a plan of development (POD) and constituent plans will be referenced in the ROD and attached as an appendix to the ROD.

## **1.5 Public and Agency Scoping**

### **1.5.1 Process**

Scoping is conducted early in the NEPA process to identify substantive issues for analysis in the preparation of an EIS. During the scoping period, the lead agency solicits, organizes, and analyzes comments submitted by agencies and the public. Issues and concerns specific to a project that will need to be addressed are then identified, and the agency determines the method by which the issues will be addressed through the EIS process.

The BLM has conducted internal, agency, and public scoping to solicit input and to identify the environmental concerns and issues associated with the SSEP. An NOI was published in the *Federal Register* on July 8, 2009. The BLM then prepared scoping information materials and provided copies to federal, state, and local agencies; Native American tribes; and members of the general public. Upcoming meetings and opportunities to comment were announced in various local news media. The BLM conducted open houses to disseminate information, answer questions, and ask for comments on August 4, 2009, in Phoenix, Arizona; on August 5, 2009, in Buckeye, Arizona; and on August 6, 2009, in Gila Bend, Arizona. The BLM also provided opportunities for comments to be submitted through the United States mail and by email.

The issues identified during the scoping process are summarized in the section below.

## **1.5.2 Issues Identified during Scoping**

This section summarizes the relevant issues and concerns related to the SSEP that were identified through the public scoping process and that are addressed in this EIS. Table 1.2 outlines the sections of the EIS that address these issues.

### **1.5.2.1 PROCESS ISSUES**

- Which tribes will be consulted as part of the required government-to-government consultation? How would construction and operation of the solar-powered electricity-generating facility (solar facility) affect the interests and concerns of Native American people?
- Have the USFWS and the AZGFD been consulted regarding how construction and operation of the SSEP would affect wildlife, including threatened, endangered, and sensitive species, and their habitat?
- Has the USACE been consulted regarding how construction and operation of the SSEP would affect waters of the United States?
- How will other federal, state, and local agencies; interest groups; and individuals be involved as stakeholders?
- What additional permits will be needed for construction and operation of the solar facility?

### **1.5.2.2 PURPOSE AND NEED ISSUES**

- What effect would construction and operation of the solar facility have on continued use of fossil fuels for electrical generation?
- What energy market would this solar facility serve?

### **1.5.2.3 ALTERNATIVES ISSUES**

- What is the desired energy profile (capacity factor and time of energy output) for the SSEP, and is it supported by the purpose and need of the SSEP?
- What other Project Area configurations or technologies would meet the SSEP purpose and need and reduce impacts to resources?
- Are there other locations for the SSEP that would reduce potential use conflicts and meet the SSEP purpose and need, even if they are not located on public land?
- Would residential and wholesale-distributed generation, in conjunction with energy efficiency practices, be a viable alternative to the proposed SSEP?

### **1.5.2.4 RESOURCE AND IMPACTS ANALYSIS ISSUES**

#### **1.5.2.4.1 Air Quality Issues**

- What effect would construction and operation of the solar facility have on local air quality?
- What is the SSEP's projected use of natural gas? Within the constraints of the desired energy profile (capacity factor and time of energy output), what opportunities exist to reduce impacts to air quality through operational changes such as the inclusion of a thermal storage unit?
- What effect would inclusion of a thermal storage unit have on reducing emissions from natural gas-fired electrical generation?

- What effect would expansion of the solar field to replace the thermal input provided by gas have on reducing emissions or on other resources?
- What opportunities exist to reduce impacts to air quality through mitigation plans (e.g., fugitive dust control and equipment emissions mitigation plans)?

#### **1.5.2.4.2 Climate Change Issues**

- What is the full carbon footprint of the proposed SSEP, and which phases of the SSEP are appropriate to include in that analysis?
- Against what other energy-generation types should the SSEP's GHG footprint be measured to determine the net GHG reductions or gains?
- Could the SSEP be designed in a way to reduce the impact to carbon sequestration?
- How should potential change in climate be measured and quantified in the EIS?
- How might anticipated change in climate affect the Project Area's resources and sensitive areas? How would this affect the operation of the proposed SSEP?
- How might climate change affect cumulative impacts?

#### **1.5.2.4.3 Cultural Resources Issues**

- How would construction and operation of the solar facility affect cultural resources, including the physical integrity of sacred sites?

#### **1.5.2.4.4 Geology and Minerals**

- What effect would construction and operation of the SSEP have on landforms and subsurface geology in the Project Area?
- How would construction and operation of the SSEP impact mineral resources and their availability for use?

#### **1.5.2.4.5 Hazardous Materials and Hazardous and Solid Waste Issues**

- How would waste generated during construction and operation of the solar facility be managed (i.e., storage and disposal)?

#### **1.5.2.4.6 Land-use and Access Issues**

- What effect would construction and operation of the solar facility have on existing land uses in and adjacent to the Project Area, including master-planned communities, the Hidden Valley transportation system, a sand and gravel operation, and military air space?
- What effect would construction and operation of the solar facility have on proposed land uses in and adjacent to the Project Area, including the land-use objectives of federal, state, tribal, and local plans and policies?

#### **1.5.2.4.7 Livestock Grazing**

- What effect would construction and operation of the SSEP have on ephemeral grazing allotments in the area (i.e., the Beloat grazing allotment and Arnold grazing allotment)?

**1.5.2.4.8 Mitigation Issues**

- What opportunities exist for on-site mitigation of impacts to other resources and values?
- What opportunities exist to ensure adequate funds will be available for complete restoration of the Project Area after the SSEP is retired or abandoned?

**1.5.2.4.9 Noise Issues**

- What effect would construction and operation of a solar facility have on the soundscape in nearby residential communities?
- What effect would construction and operation of a solar facility have on the experience of visitors to the adjacent wilderness?

**1.5.2.4.10 Paleontology Issues**

- Would construction of the SSEP result in the discovery or destruction of paleontological resources in the area?

**1.5.2.4.11 Recreation and Wilderness Characteristics Issues**

- What effect would construction and operation of the solar facility have on the suitability and availability of surrounding public lands and access roads for recreation purposes?
- There is an area adjacent to the SSEP to the south that may have wilderness characteristics. How would the construction and operation of the solar facility impact the potential wilderness characteristics of this area?

**1.5.2.4.12 Socioeconomic Issues**

- What employment opportunities would be provided by construction and operation of the solar facility?
- What contribution would construction and operation of the solar facility have on local revenue and the economy?
- What effect could the solar facility have on minority and low-income populations?
- What effect could the solar facility have on local services such as emergency medical treatment and police response?

**1.5.2.4.13 Soils Issues**

- What effect would the construction and operation of the solar facility and associated facilities have on soils in the Project Area, including cryptobiotic crust, cyanobacteria, mosses, and lichens?
- What measures can be taken to reduce impacts to drainage, erosion, and sediment control?

**1.5.2.4.14 Special Designation Issues**

- What effect would construction and operation of the solar facility have on the resource values and experience of visitors to the adjacent wilderness?

#### **1.5.2.4.15 Threatened, Endangered, and Special-status Species Issues (plants and animals)**

- What effect would the construction and operation of the solar facility and associated facilities have on local populations of ESA-listed or candidate species or other special-status species and suitable habitats, including
  - impacts to suitable upland, riparian, wetland, or aquatic (Gila River) habitat and
  - impacts to species that are listed or candidates for listing under the ESA, or are otherwise designated as a sensitive species, including Tucson shovel-nosed snake, Sonoran desert tortoise, yellow-billed cuckoo, Yuma clapper rail, southwestern willow flycatcher, California barrel cactus, least bittern, and western burrowing owl.
- What measures can be taken to reduce the adverse impacts?

#### **1.5.2.4.16 Transportation and Traffic Issues**

- What effect would construction and operation of the solar facility have on the operation of planned or existing transportation or utility systems and facilities?
- What effect would construction and operation of needed utilities for the solar facility have on existing and proposed transportation systems?
- What effect would the solar facility have on access to local private and public lands?

#### **1.5.2.4.17 Vegetation Issues**

- What effect would the construction and operation of a solar facility and associated facilities have on native plants, including
  - loss of native vegetation from direct disturbance (e.g., grading the proposed Project Area),
  - increased shade from the installation of equipment, and
  - introduction and spread of invasive plant species into the Project Area?
- Can plant loss be mitigated by salvage and reuse or replanting of native plants in the Project Area?

#### **1.5.2.4.18 Visual Resources Issues**

- What effect would construction of a solar facility have on the scenic quality and undisturbed character of the area?
- How would the character of the viewshed from KOPs in the Sonoran Desert National Monument and the North Maricopa Mountains Wilderness be modified by the construction and operation of a CST power generating facility?
- What would be the cumulative effect to visual resources (the scenery) visible from KOPs along Arizona highways from the construction and operation of the solar facility if all of the approximately 35 ROWs for similar facilities are approved?
- What measures can be taken to reduce the impacts?

#### 1.5.2.4.19 Water Resources Issues

- How would the withdrawal of groundwater from the Project Area impact
  - the quantity and quality of water in the aquifer under the City of Goodyear, including the flow of lower-quality water into the aquifer from the waterlogged area near the Gila River;
  - the quantity of water available for use by the Buckeye Hills Regional Park;
  - the quantity and quality of water in existing private wells in the area;
  - the water table in Rainbow Valley; and
  - the aquatic habitats, springs, soils, and land surface (e.g., subsidence)?
- What measures can be taken to prevent further degradation of impaired waters?
- How would the permitting process for the SSEP impact existing water rights?
- What methods could be used to reduce the amount of groundwater needed for the SSEP, and what would be the impact on the quantity and quality of surface water and groundwater resources if these methods were implemented?
- How would construction and operation of the solar facility impact the quality of existing surface water or groundwater?
- How would construction and operation of the solar facility impact existing Project Area drainage patterns, including floodplains and washes?
- What would be the cumulative impact on the local hydrographic basin from the development and use of local water sources to meet SSEP water demands?
- How would the concentrated dewatered waste from evaporation ponds, TDS, nitrates, boron, and salt be disposed of?
- What effect would groundwater pumping to supply water for the solar facility have on area aquifers?
- What effect would other solar-powered electricity-generation technologies have on use and conservation of water?

#### 1.5.2.4.20 Wildlife Issues

- To what extent does modification to the landscape in the Project Area's boundary impact adjacent habitat?
- Would disruptions in surface flows in washes and uplands lead to broad-scale mortality of vegetation and impact wildlife distribution and abundance beyond the SSEP footprint?
- What effect would the construction and operation of the solar facility and associated facilities have on local wildlife populations and individuals, including
  - disruption of north-south movements of wildlife between the Maricopa Mountains and the Buckeye Hills;
  - disruption of the regional landscape of wildlife linkages between the Gila Bend Mountains, the Sierra Estrella range, and the Gila River;
  - impacts to individual animals and populations as a result of increased shade introduced into the environment from the installation of equipment;
  - impacts to wildlife species, particularly migratory waterfowl, as a result of exposure to contaminants in evaporation ponds or stormwater detention basins;
  - impacts to wildlife species near the Gila River; and
  - impacts to desert bighorn sheep historical habitat and reintroduction plans?

**1.5.2.4.21 Cumulative Impacts Issues**

- What would be the cumulative effects of other solar-powered electricity-generating facilities being considered in western Arizona, California, and Nevada on the Sonoran Desert landscape?
- What past, present, and reasonably foreseeable projects and their connected actions (i.e., transmission needs and associated projects) would be appropriate to include in a cumulative impacts analysis?
- What resources are appropriate to include in a cumulative impacts analysis? What are appropriate impact indicators and information to include in that analysis?
- How might climate change affect the cumulative impacts of these facilities on the Sonoran Desert?

**Table 1.2** How and Where Issues are Addressed in the EIS

<b>Issue Category</b>	<b>How or Where Issues are Addressed</b>	<b>Section(s)</b>
Process	Described in Chapters 1 and 5	Chapters 1 and 5, all sections
Purpose and need	Addressed in the Purpose and Need section	Section 1.3
Alternatives	Incorporated into the range of alternatives in Chapter 2	Chapter 2, all sections
Resource and impacts analysis		
Air quality	Analyzed in Air Quality sections	Sections 3.2 and 4.2
Climate change	Analyzed in Climate Change sections	Sections 3.3 and 4.3
Cultural resources	Analyzed in Cultural Resources sections	Sections 3.4 and 4.4
Geology and minerals	Analyzed in Geology and Minerals sections	Sections 3.5 and 4.5
Hazardous materials and hazardous and solid waste	Analyzed in Hazardous Materials sections	Sections 3.6 and 4.6
Land use and access	Analyzed in Land Use and Access sections	Sections 3.7 and 4.7
Livestock grazing	Analyzed in Livestock Grazing sections	Sections 3.8 and 4.8
Mitigation	<u>Some actions with mitigative effects</u> included as actions common to each alternative and applicant-committed measures	Section 2.3
	<u>Potential mitigation proposed and analyzed for all resource sections</u>	<u>Chapter 4 (all sections)</u>
Noise	Analyzed in Noise sections	Sections 3.9 and 4.9
Paleontology	Analyzed in Paleontology sections	Sections 3.10 and 4.10
Recreation and wilderness characteristics	Analyzed in Recreation and Wilderness Characteristics sections	Sections 3.11 and 4.11
Socioeconomics	Analyzed in Socioeconomics sections	Sections 3.12 and 4.12
Soils	Analyzed in Soils sections	Sections 3.13 and 4.13
Special designations	Analyzed in Special Designations sections	Sections 3.14, 4.14
Threatened, endangered, and special-status species (plants and animals)	Analyzed in Wildlife and Special-status Species and Vegetation and Special-status Species sections	Sections 3.16, 3.19, 4.16, and 4.19
Transportation and traffic	Analyzed in Transportation and Traffic sections	Sections 3.15 and 4.15

**Table 1.2** How and Where Issues are Addressed in the EIS

Issue Category	How or Where Issues are Addressed	Section(s)
Vegetation	Analyzed in Vegetation and Specialist Status Species sections	Sections 3.16 and 4.16
Visual resources	Analyzed in Visual Resources sections	Sections 3.17 and 4.17
Water resources	Analyzed in Water Resources sections	Sections 3.18 and 4.18
Wildlife	Analyzed in Wildlife and Special-status Species sections	Sections 3.19 and 4.19
Cumulative impacts	Analyzed for all resources under Cumulative Impacts section	Section 4.20

\*These issues were also considered in the development of a reasonable range of alternatives.

### 1.5.3 Nonsubstantive Issues Identified in Scoping

Table 1.3 summarizes the nonsubstantive issues and concerns that were identified through the public scoping process but that are not addressed in the EIS. Table 1.3 also states the reasons these issues and concerns are not addressed or analyzed.

**Table 1.3** Issues Not Addressed in the EIS

Issue	Why Issue is Not Addressed
What SSEP-specific opportunities are available to educate the public of the value and importance of solar energy; the effects of solar energy production on natural, cultural, and human resources; and conservation of natural resources?	The proposed public education is beyond the scope of the EIS and its analysis. Although the EIS process requires disclosure of project impacts, it does not require public education of the type proposed.
In the context of the SSEP, what opportunities exist to streamline the NEPA and permitting processes? Can the solar project criteria development of other renewable energy multistakeholder processes be used to facilitate timely development?	The EIS process is subject to the provisions of NEPA, the implementing regulations (40 CFR §§ 1500–1508), and the BLM NEPA Handbook (H-1790-1), all of which require a specific analysis process with minimum timeframes.
How will the EIS analysis team coordinate with Maricopa County to ensure that the portions of the Project Area that occur in unincorporated Maricopa County are properly entitled and permitted prior to construction or operation?	Maricopa County has been invited to participate in the EIS process (see Chapter 5). Although the analysis of this EIS may be used in obtaining needed permits for construction and operation of the SSEP, the needed titles, permits, and authorizations have specific legal and regulatory requirements that are separate from the requirements to prepare an EIS. If a ROW is authorized, compliance with federal, state, and local permitting would be a term and condition of BLM's authorizations for the project. See Table 1.5, below.

## 1.6 Relationship to Policies, Plans, and Programs

The preparation of this EIS is in accordance with NEPA and in compliance with the CEQ regulations (40 CFR §§ 1500–1508), DOI requirements (Department Manual 516), and guidelines listed in the BLM NEPA Handbook, H-1790-1.

The Proposed Action must comply with various federal laws, statutes, regulations, and EOs (Table 1.4). FLPMA mandates that the BLM manage public lands on the basis of multiple use and sustained yield (43 U.S.C. § 1701[a] [7]).

**Table 1.4** Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and all Alternatives must Conform

<b>Federal Laws and Statutes</b>
American Indian Religious Freedom Act of 1978 (P.L. 95-341; 42 U.S.C. § 1996)
Archaeological and Historic Data Preservation Act of 1974 (P.L. 86-253, as amended by P.L. 93291; 16 U.S.C. § 469)
Archaeological Resources Protection Act of 1979 (P.L. 96-95; 16 U.S.C. §§ 470aa–mm)
Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. §§ 668–668d, 54 Stat. 250) as amended (P.L. 95-616 (92 Stat. 3114)) November 8, 1978
Clean Air Act (CAA) of 1990 (as amended by P.L. 92-574; 42 U.S.C. § 4901)
Colorado River Basin Salinity Control Act of 1974 (P.L. 93-320)
Department of Transportation Act of 1966 (P.L. 89-670; 49 U.S.C. § 303)
Endangered Species Act of 1973 (P.L. 85-624; 16 U.S.C. §§ 661, 664, 1008)
Energy Policy Act of 2005 (P.L. 109-59)
Farmland Protection Policy Act (P.L. 97-98 and 7 CFR § 658)
Federal Land Policy and Management Act of 1976, § 201(a) (P.L. 94-579; 43 U.S.C. § 1701 et seq.)
Federal Water Pollution Control Act of 1972, Section 404 (P.L. 92-500; 33 U.S.C. § 1344, as amended)
Historic Sites Act of 1935 (P.L. 292-74; 16 U.S.C. §§ 461–467)
Land and Water Conservation Fund Act of 1965 (P.L. 88-578)
Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703–712, as amended)
National Environmental Policy Act of 1969 (P.L. 91-190; 42 U.S.C. § 4321)
NHPA of 1966, Section 106, (P.L. 89-665; 16 U.S.C. § 407(f))
Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601)
<b>Executive Orders</b>
EO 11296, Flood Hazard Evaluation Guidelines
EO 11514, Protection and Enhancement of Environmental Quality
EO 11593, Protection and Enhancement of the Cultural Environment
EO 11644, Use of offroad vehicles on the public lands (as amended by EOs 11989 and 12608)
EO 11988, Floodplain Management (43 CFR § 6030)
EO 11990, Protection of Wetlands
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
EO 13007, Indian Sacred Sites
EO 13175, Consultation and Coordination with Indian Tribal Governments
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds
EO 13212, Actions to Expedite Energy-related Projects
EO 13287, Preserve America
EO 12372, Intergovernmental Review of Federal Programs

**Table 1.4** Federal Laws, Statutes, Regulations, and Executive Orders with which the Proposed Action and all Alternatives must Conform

<b>Federal Regulations</b>
40 CFR §§ 1500–1508, CEQ implementation of NEPA
33 CFR §§ 320–331 and 40 CFR § 230, Section 404 of the Clean Water Act (CWA) and Its Implementing Regulations
36 CFR § 800, as amended, Protection of Historic Properties
7 CFR § 658, as amended, Prime and Unique Farmlands
43 CFR § 2800, as amended, ROWs Principles and Procedures

### **1.6.1 BLM Land-use Plan**

The Proposed Action would take place in the Lower Gila South Planning Area. This planning area is managed under the *Lower Gila South Resource Management Plan* (BLM 1988), as amended (BLM 2005a, BLM 2009a), which is currently being revised. The 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. A BLM team completed an LUP conformance analysis on November 21, 2008, and determined that the Proposed Action would not conflict with other decisions throughout the plan. No alternatives that would conflict with the plan have been considered.

### **1.6.2 County and Local Plans**

The Proposed Action 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 Proposed Action and alternatives presented in this EIS are consistent with the goals of the *Maricopa County Comprehensive Plan* because the Proposed Action and alternatives would result in the use of renewable resources.

Although the Proposed Action and alternatives would not take place on lands where the City of Goodyear has jurisdictional authority, they are 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 2008a) 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, the Proposed Action and alternatives are consistent with the town's plan.

### **1.6.3 State of Arizona**

The Arizona Corporation Commission establishes jurisdiction for the siting of thermal power plants larger than 100 MW and transmission lines with a voltage higher than 115 kilovolts (kV). The process is formally outlined in Arizona Revised Statutes (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 Corporation Commission (commission).

Applicants are required to file an application after they have filed both a ten-year transmission plan and a power plant plan. For a project of this type, the applications would be processed concurrently.

Following the submission of an application, the committee will convene a series of hearings conducted before a quorum of its members, generally adhering to administrative hearing protocols (opening, sworn witnesses, cross examination, introduced exhibits). The proceedings are transcribed by a court reporter. The applicant has the opportunity to present an overview of its proposals. Intervention is generally open to any interested party; however, nonindividual parties (e.g., corporations, partnerships) must be represented by counsel. The committee also accepts unsworn public comments from interested people, other than parties. At the end of the hearing process, the applicant will propose a form or CEC, which will be subject to the input of the interveners. The committee may propose its own amendments.

Upon approval by a vote of the committee, the CEC is referred to the commission for phase two of the process. Before the five commissioners, the committee chairperson will introduce the project, and the commission will then hear additional, unsworn public comment and any further testimony from the applicant or other parties. The commissioners will hold discussions on additional conditions or changes to the CEC and take a final vote. Upon an affirmative vote on the amendments and the order, the commission will issue an order approving the CEC, as amended. From start to finish, this process can take up to approximately nine months to complete.

CEC is an independent permitting process from the BLM ROW approval considered in the EIS, and it is currently underway. Arizona Corporation Commission's approval of the CEC would be required before project implementation.

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% of their electricity from renewable sources by 2025. The Proposed Action and alternatives would assist the state's electric utilities in meeting this goal and would therefore be consistent with State of Arizona objectives vis-à-vis renewable energy development.

### **1.6.4 Permits, Licenses, Approvals, Compliance, or Reviews Required or Potentially Required**

To implement any of the action alternatives analyzed in this EIS, 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.

**Table 1.5** Permits, Licenses, Approvals, Compliance, or Reviews Potentially Required under the Proposed Action and All Action Alternatives

<b>Permit, License, Approval, Compliance, or Review</b>	<b>Issuing Agency</b>	<b>Action Requiring Permit, License, Approval, Compliance, or Review</b>
<b>Federal</b>		
Temporary land-use permit or ROW	BLM	Solar meter installation, temporary geotechnical or groundwater exploratory, or other pre-operational activities on BLM land
ROW grant on federal lands and NEPA ROD	BLM	Commercial solar-powered facility development on BLM land
Section 106 consultation	BLM, SHPO	Potential to disturb historic and archaeological resources
Section 7 consultation	BLM, USFWS	Potential to impact listed species
Approved JD	USACE	Can request an approved JD to determine whether a Section 404 Individual permit is needed
Individual permit under Section 404 of the CWA	USACE	Discharges of dredged or fill material into waters of the <u>United States</u> (includes wetlands and dry desert washes) <sup>1</sup>
Conditional letter of map revision (CLOMR) or letter of map revision (LOMR)	Federal Emergency Management Agency (FEMA)	Rerouting of a wash that may alter the National Flood Insurance Program map
<b>State</b>		
<u>CEC</u> <sup>3</sup>	<u>Arizona Corporation Commission</u>	Thermal power plant $\geq$ 100 MW and construction of transmission line $\geq$ 115 kV
NOI to drill nonexempt well	ADWR	Any new water supply well that will produce groundwater at a rate greater than 35 gallons per minute
General Industrial Use (GIU) Permit <sup>2</sup>	ADWR	Groundwater development in the Phoenix Active Management Area will require either a grandfathered groundwater right or a GIU permit to legally withdraw groundwater.
Hydrologic Testing Permit	ADWR	Required for each well to withdraw groundwater for hydrologic testing purposes
Water quality certification under Section 401 of the CWA	Arizona Department of Environmental Quality (ADEQ)	Any applicant for a federal license or permit who conducts activity that may result in a discharge to waters of the state must provide the licensing or permitting agency a certification that the activity complies with water quality requirements and standards.
Section 402 Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for Stormwater Discharges from Construction Activities	ADEQ	Discharges associated with construction activities that disturb one or more acres of land. This permit is issued under authority of the Federal Water Pollution Control Act and requires a Stormwater Pollution Prevention Plan (SWPPP), BMP, and a NOI (construction). Requires the generation of a SWPPP.
AZPDES De Minimus General Permit for Off-site Discharge of Water	ADEQ	An NOI to Discharge must be filed and a Discharge Authorization issued before groundwater produced during drilling or well development, or both, can be discharged off-site.
Individual aquifer protection permit (APP) <sup>3</sup>	ADEQ	An area-wide APP will be required for the evaporation ponds and possibly the land treatment unit for soils impacted by HTF.

**Table 1.5** Permits, Licenses, Approvals, Compliance, or Reviews Potentially Required under the Proposed Action and All Action Alternatives

<b>Permit, License, Approval, Compliance, or Review</b>	<b>Issuing Agency</b>	<b>Action Requiring Permit, License, Approval, Compliance, or Review</b>
<u>Drinking Water Distribution System Plan</u>	<u>ADEQ</u>	<u>A plan review will be required prior to adoption of a new drinking water distribution system. Approval may also be required by ADEQ's Capacity Assurance Development Program.</u>
Grant for permission to disturb	ASM	Potential disturbances to human remains or funerary objects
<b>Local</b>		
Floodplain Use Permit	Maricopa County Flood Control District	Construction activities in a FEMA-defined floodplain
Type 4.02 or 4.23 general APP	Maricopa County Environmental Services Department (authorized by ADEQ)	<b>For the 4.02 Permit:</b> Septic tank with disposal by trench, bed, chamber technology, or seepage pit, less than 3,000 gallons per day (gpd) design flow. <b>For 4.23 Permit:</b> If septic system exceeds 3,000 gpd (permit type will depend on the type of system selected; the design requirements for each type of system are prescribed in the rules. A percolation test will have to be conducted at some point as part of the design, before submitting an application).
Dust Control Permit	County (Maricopa) Air Quality Department	Fugitive dust (particularly PM <sub>10</sub> because Maricopa County is a serious nonattainment area for PM <sub>10</sub> ) as a result of 1) ground-disturbing activities during construction and 2) barren surfaces during normal operation and maintenance.
<u>Drinking Water Distribution System Plan</u>	<u>Maricopa County Environmental Services Department</u>	<u>A plan review will be required prior to adoption of a new drinking water distribution system.</u>
Title V Air Quality Operating Permit <sup>3</sup>	County (Maricopa) Air Quality Department and U.S. Environmental Protection Agency (EPA)	Natural gas back-up of solar thermal plant

<sup>1</sup> Must be acquired if washes are determined to be jurisdictional.

<sup>2</sup> If a groundwater exploratory drilling program is necessary, three additional permits for drilling are required.

<sup>3</sup> Would not be required under Sub-alternative A1.

*This page intentionally blank*