



CHAPTER I

INTRODUCTION

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CHAPTER I

INTRODUCTION

I.1 OVERVIEW

Renewable Arizona Fast Facts

- Suitable solar resource potential: 57% of the state
- Suitable wind resource potential: 2% of the state
- By 2025, at least 15 percent of Arizona's electrical demand will be met with renewable energy
- Total BLM-administered lands in Arizona: 12.2 million acres

See **Figure I-1**, Statewide Solar and Wind Potential

Arizona has a wealth of renewable energy resources, especially for those technologies that rely on solar radiation and wind (Black and Veatch 2007). The United States (U.S.) Department of the Interior (DOI), Bureau of Land Management (BLM) manages over 12 million surface acres of public lands in Arizona. Wind and solar projects on public lands are administered through BLM right-of-way (ROW) grants in accordance with land use plans.

BLM Arizona has prepared this environmental impact statement (EIS) to identify which public lands across Arizona are most suitable for the development of renewable energy and to consider establishing a baseline set of environmental protection measures that would apply to such projects on public lands.

The Restoration Design Energy Project (RDEP) is a project of BLM Arizona that supports the Secretary of the Interior's goals to build America's new energy future and to protect and restore treasured landscapes. The intent of the RDEP planning effort is to identify Renewable Energy Development Areas (REDAs) and a Solar Energy Zone (SEZ) for Arizona that include disturbed sites such as landfills, retired agricultural lands, or abandoned mines, and lands with low resource sensitivity and few environmental conflicts. Objectives that will help determine the success of the planning effort are to identify REDAs and a SEZ that:

- Are accessible and allow for easier or more efficient building of renewable energy facilities;
- Are close enough to existing transmission facilities as to make it more efficient and cost effective to bring the energy on-line and deliver it to market;



Statewide Solar and Wind Potential



The entire state receives enough solar radiation for development (NREL 2010), with an annual Direct Normal Irradiance of 6.5 or higher. Areas with slopes of 5% or greater were eliminated as these areas are usually considered undevelopable for solar energy projects.

Wind resource classes three or greater (NREL 2010) are considered the most developable. Areas with slopes of 15% or greater were eliminated as these areas are usually considered economically unfeasible for wind energy projects.

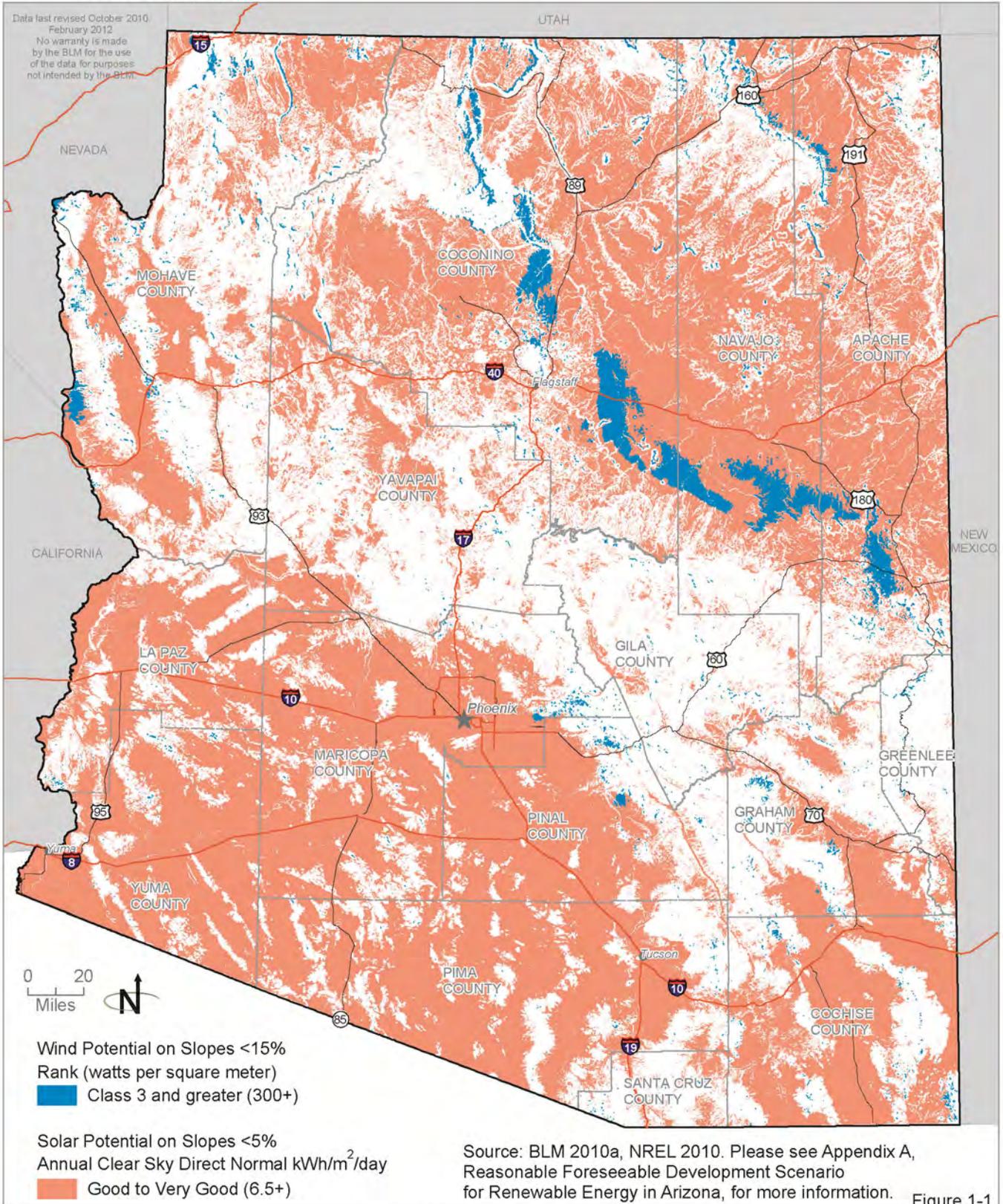


Figure 1-1

Renewable energy comes from natural resources whose supplies are regenerative and virtually inexhaustible, including sunshine, wind, water, vegetation, and the heat of the earth. The Restoration Design Energy Project focuses on solar and wind resources.

- Will provide enough public land acreage (described in **Appendix A**, Reasonably Foreseeable Development Scenario [RFDS] for Renewable Energy in Arizona) to contribute to meeting the renewable energy demand of Arizona (based on the Arizona Renewable Portfolio Standard [RPS]), and provide flexibility for micro-siting and mitigation; and
- Incorporate lands previously identified for disposal in existing BLM land use plans as appropriate for renewable energy development.

Throughout project development, the BLM has engaged cooperating agencies, state and local governments, tribes, and stakeholders in order to obtain broad input on the desired future renewable energy footprint in Arizona and to inform renewable energy developers in their siting of projects throughout the state. Decisions from this project will apply only to public lands administered by the BLM. BLM resource management plans (RMPs) in Arizona would be amended to adopt the proposed alternative.

The RDEP, funded by the American Recovery and Reinvestment Act of 2009, supports the Secretary of the Interior's goals to build America's new energy future and to protect and restore treasured landscapes. The RDEP focuses on renewable resources with the highest potential for development in Arizona, specifically wind and solar in areas with low resource sensitivity, but recognizes that other future renewable energy technologies that require a land base for development may be suitable in those areas as well (see **Appendix A**, Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona, for full discussion of assumed technologies).

I.2 PURPOSE AND NEED FOR THE RDEP

A growing demand for energy in the western U.S. combined with applicable laws, orders, and policies that encourage the DOI and the BLM to facilitate renewable energy siting and production has created a need for BLM Arizona to consider updating and amending existing land use plans (see **Section 1.3**, BLM Guidance for the RDEP). Siting renewable energy projects is complex and multifaceted, requiring the consideration of many variables, including topography, distance to transmission and load, land ownership patterns and availability, tribal concerns, and environmental and cultural resource constraints. Current land use plans generally do not consistently address these factors or provide guidance on where development should occur. Under current plans, applications typically have lengthy processing times as the BLM evaluates the project location, conducts environmental and cultural reviews, develops appropriate mitigation measures, collaborates with stakeholders, and, in some cases, prepares a land use plan amendment.

The purpose of the RDEP is to conduct smart, statewide planning to foster environmentally responsible production of renewable energy and to allow the permitting of future renewable energy development projects to proceed in a

more efficient and standardized manner. The RDEP would amend land use plans to identify geographic areas best suited for renewable energy, establish land reuse goals, and identify design features to protect resource values and uses.

While the RDEP would further the BLM's ability to meet the mandates of Executive Order (EO) 13212, Actions to Expedite Energy-Related Projects (Federal Register, Volume 66, page 28357, May 22, 2001) and the Energy Policy Action of 2005, it also has been designed to meet the requirements of Secretarial Order 3285A1 related to identifying areas best suited for renewable energy (Secretary of the Interior 2010).

I.3 BLM GUIDANCE FOR THE RDEP

Agency guidance for the action comes from the following orders, mandates, and laws, which require the BLM, as part of the DOI, to facilitate renewable energy development:

- The Federal Land Policy and Management Act (FLPMA) of 1976, as amended, is the BLM's basic authority. FLPMA Title V, Rights-of-Way, authorizes the BLM to grant, issue, or renew ROWs for pipelines, transmission, communication sites, roads, highways, or other types of facilities or transportation systems as may be needed. Sections that relate to disposing of land include Sections 102, 205, 206, and 207 for land exchanges. These sections authorize land exchanges determined to be in the public interest and describe the appraisal process to be used. Section 203 of the Act addresses the sale of BLM-administered lands, noting that the sale must meet certain criteria, including serving important public objectives and that the lands be difficult and uneconomic to manage and not suitable for management by another federal agency.
- Secretarial Order 3285A1 states a policy goal of identifying and prioritizing specific locations best suited for large-scale production of solar energy on public lands and requires DOI agencies to work with individual states, tribes, local governments, and other interested stakeholders, including renewable energy generators and transmission and distribution utilities, to identify appropriate areas for generation and necessary transmission; to develop best management practices (BMPs) for renewable energy and transmission projects on public lands to ensure the most environmentally responsible development and delivery of renewable energy; and to establish clear policy direction for authorizing the development of solar energy on public lands.
- The Energy Policy Act of 2005 (Public Law 109-58) encourages the development of renewable and alternative energy resources, including solar and wind energy, as part of an overall strategy to develop a diverse portfolio of domestic energy supplies. Section 211

of the Act calls for the Secretary of the Interior to have approved non-hydropower renewable energy projects located on public lands, where appropriate, with a generation capacity of at least 10,000 megawatts (MW) of electricity by 2015.

- President Obama's new energy plan for America outlines plans to promote renewable energy in the United States, including a national RPS to require that 10 percent of electricity consumed in the U.S. is derived from clean, sustainable energy sources, such as solar, wind, and geothermal, by 2012.
- The State of Arizona has established an RPS of 15 percent by 2025. In November 2006, the Arizona Corporation Commission (ACC) adopted final rules to expand the state's RPS; by 2012, 30 percent of the 15 percent RPS requirement (or 4.5 percent) must come from distributed renewable resources. One half of the distributed renewable energy requirement must come from residential applications and the remaining half from non-residential, non-utility applications. Extra credit multipliers may be earned for early installation of certain technologies. Utilities subject to the Renewable Electricity Standard must submit compliance and implementation plans annually to the ACC, and a yearly compliance schedule has been adopted. Additional tariff rules and other renewable energy mandates also support renewable energy development.
- BLM Arizona has developed a multi-year strategic plan that includes goals for sustainable energy use. These goals provide long-term direction that guide priority setting and support community use of BLM lands. See **Section I.4.3**, BLM Arizona Strategic Goals, for more details.

I.4 THE RDEP'S RELATIONSHIP TO NATIONAL AND STATEWIDE BLM POLICIES AND PROGRAMS

Numerous federal and state BLM initiatives are currently underway to promote renewable energy development. Overviews of key initiatives and the methods by which the RDEP would coordinate with these efforts are included below.

I.4.1 Solar Energy Development Programmatic EIS and Record of Decision

The Solar Energy Development Programmatic EIS (PEIS) and Record of Decision (ROD) prepared by the BLM and U.S. Department of Energy (DOE) supported a decision by the Department of the Interior and BLM to establish a comprehensive Solar Energy Program to further support utility-scale solar energy development on BLM-administered lands in Arizona, California, Colorado, New Mexico, Nevada, and Utah (BLM and DOE 2012a and 2012c). The decisions in the Solar PEIS ROD apply only to utility-scale solar development which is defined as any project capable of generating 20 MWs or

more. The Solar PEIS ROD amends land use plans in the six states with the following planning decisions:

Design features

are those specific means, measures, or practices that make up the proposed action and alternatives, and can be measures that would reduce or eliminate adverse effects. Standard operating procedures, stipulations, and best management practices are usually considered design features. If means, measures, or practices are not incorporated into the proposed action or alternatives, then they are considered mitigation measures.

1. Identifies exclusion areas for utility-scale solar energy development;
2. Identifies SEZs that are well suited for utility-scale production of solar energy and would serve as priority areas for solar energy development;
3. Identifies avoidance areas that are potentially available for utility-scale solar energy development outside of SEZs (termed variance areas); and
4. Establishes design features (i.e., upfront mitigation requirements) for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy (some design features are SEZ-specific).

The SEZs have been defined by the BLM as areas within which the BLM will prioritize and facilitate utility-scale production of solar energy and associated transmission infrastructure development. SEZs are large areas (generally over 2,500 acres) that provide highly suitable locations for utility-scale solar development: locations where solar development is economically and technically feasible, where there is good potential for connecting new electricity-generating plants to the transmission distribution system, and where there is generally low resource conflict.

The Solar PEIS ROD identifies 17 SEZs, two of which are in Arizona – the Brenda SEZ and Gillespie SEZ. These SEZs encompass 5,966 acres (**Figure I-2**, Arizona Solar Energy Zones from the Final Solar PEIS).

The Solar PEIS and the RDEP processes both focus on making land use planning decisions to identify the most suitable areas to develop solar energy facilities. The RDEP is a “step down” from the national level to focus on specific issues and areas in Arizona. The RDEP effort seeks to further refine and build upon the Solar PEIS’s analysis and ROD decisions relating to utility-scale solar development, including the following:

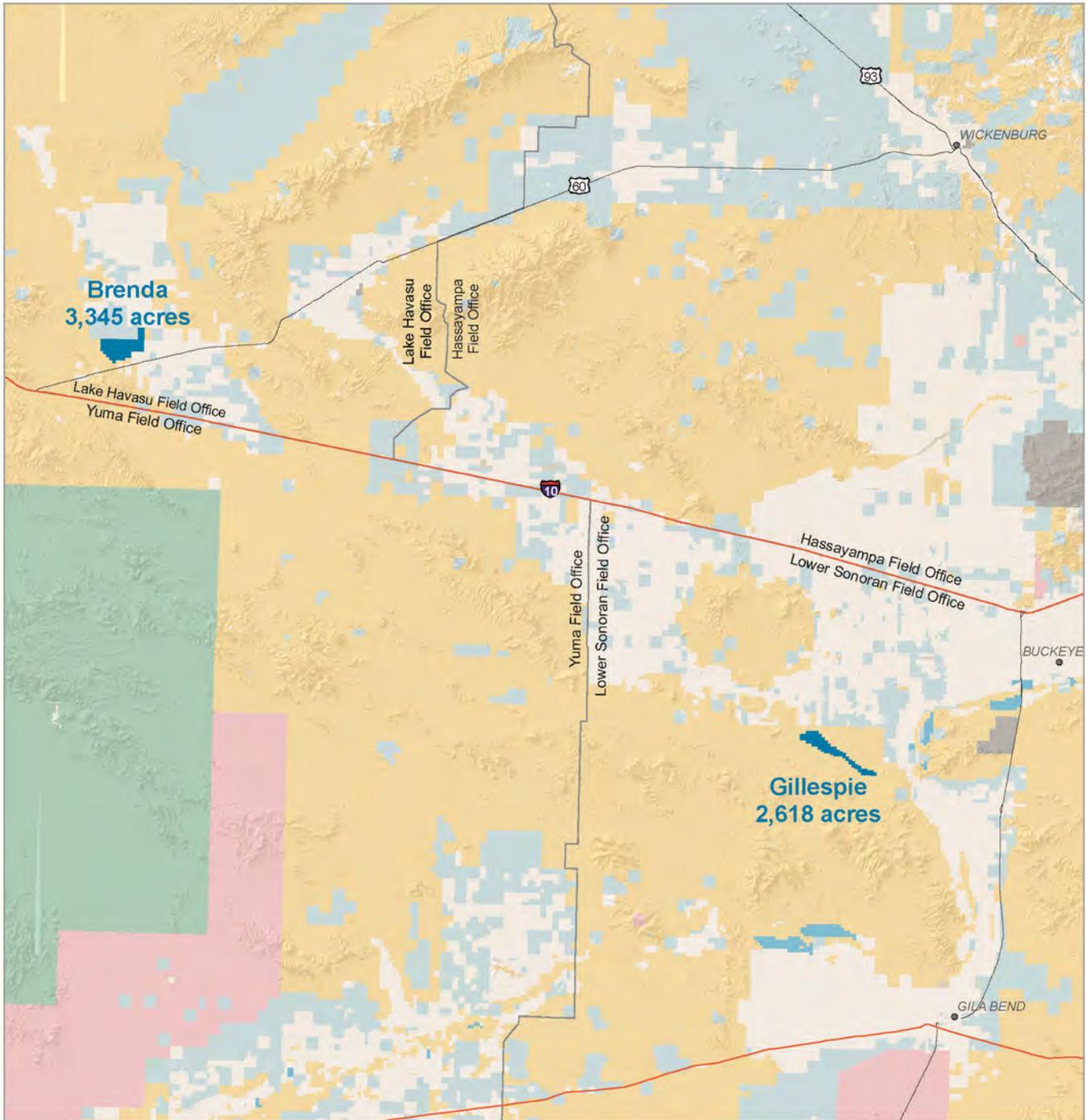
- The RDEP will identify those areas most suitable for renewable energy development (i.e., a REDA) within the variance areas identified by the Solar PEIS ROD. For utility-scale solar development, identification of a REDA will streamline compliance with the variance process requirements outlined in the Solar PEIS ROD (BLM and DOE 2012c).
- Identified REDAs could facilitate the creation of future SEZs during local land use plan activities by informing the SEZ Identification Protocol (BLM and DOE 2012c).



Arizona Solar Energy Zones from the Solar PEIS ROD



The Solar PEIS ROD identifies two Solar Energy Zones (SEZs) in Arizona: Brenda and Gillespie.



Source: BLM 2011a, BLM and DOE 2012b



October 2012
No warranty is made by the BLM for the use of the data for purposes not intended by the BLM.

- | | |
|------------------------|------------------------------|
| Solar PEIS SEZ | US Fish and Wildlife Service |
| BLM-administered lands | Military |
| State | State Wildlife Area |
| Private, other | Local or State Park |



Figure.1-2

- The RDEP will refine and build upon the design features adopted through the Solar PEIS ROD and Wind PEIS ROD for conditions relevant to wind and solar development in Arizona.
- In accordance with the identification protocols for new SEZs (as identified in the Solar PEIS ROD), the RDEP is proposing and analyzing an additional SEZ for Arizona.

A summary of the scope of each of the two land use planning initiatives is provided in **Table I-1**, Comparison of the Scope of the Solar PEIS ROD and the RDEP.

Table I-1
Comparison of the Scope of the Solar PEIS ROD and the RDEP

Solar PEIS ROD	RDEP¹
Applies to: Utility-scale solar energy developments (≥20 MW) ONLY	Applies to: Solar-based energy technologies and wind energy technologies
<ul style="list-style-type: none"> • Allocations: <ul style="list-style-type: none"> - Exclusion Areas - Variance Areas (Variance Process required) - SEZs – two in Arizona: <ul style="list-style-type: none"> ▪ Brenda ▪ Gillespie • Solar Energy Development Program Policies & Procedures • Solar Energy Development Program Design Features 	<ul style="list-style-type: none"> • Identify REDAs within Variance Areas • Identify the Agua Caliente SEZ • Wind Energy Program policies and procedures from the Wind PEIS ROD • Goals, Management Actions, and Design Features for solar and wind renewable energy development regardless of scale, land reuse, and remediation of disturbed sites

¹The Solar PEIS ROD amended Arizona land use plans for utility-scale solar energy development. All of the decisions included in the Solar PEIS ROD apply and will be implemented.

Source: BLM and DOE 2012c

1.4.2 Wind Programmatic EIS

BLM Arizona did not adopt the decisions of the Wind PEIS. The RDEP proposes amending BLM Arizona land use plans in areas that have wind resources with the Wind Energy Program decisions.

In 2005, the BLM prepared a comprehensive PEIS to guide wind energy development in 11 western states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming (BLM 2005b). The U.S. DOE cooperated in the preparation of the Wind PEIS in support of the BLM's proposed action. The decision established policies and BMPs for the administration of wind energy development activities and established minimum requirements for mitigation measures. Fifty-two BLM land use plans were amended to adopt the new program; no plans in Arizona were amended as a result of the Wind PEIS. The RDEP analyzes the Wind Program policies, BMPs, and land use plan decisions relevant to Arizona and will decide whether to adopt the policies, BMPs, and land use plan decisions for Arizona. The RDEP will identify areas best suited for wind energy development for inclusion in the REDAs and will consider any additional design features,

management actions, and/or BMPs to include for wind energy projects in Arizona.

I.4.3 BLM Arizona Strategic Goals

Energy Strategy

Recent interest in renewable energy development in Arizona, and in the West in general, has led to a large interest in the use of public lands for siting of renewable energy projects. BLM Arizona has developed a BLM Arizona Statewide Energy Strategy to help manage the need for renewable energy locations on public lands, including processing of existing applications, participation in the Solar PEIS, and the development of the RDEP. Some of the goals of the Energy Strategy include participating with state and private entities to develop renewable energy strategies for all of Arizona, responsively processing renewable energy applications, and developing a plan for renewable energy developments in an environmentally responsible manner.

Other BLM Arizona Strategies

In addition to the Energy Strategy, BLM Arizona has established other strategies to provide long-term direction and priority setting for BLM Arizona. The strategies reflect current DOI and BLM strategic direction, knowledge of BLM Arizona workload, expected funding, and citizen expectations. The main goals include the following:

- Promote the sustainability of public lands by encouraging renewable energy development on lands with low resource conflicts;
- Be effective stewards of heritage resources by engaging in government-to-government consultation with tribal governments and thoroughly considering cultural resources in environmental analysis; and
- Support community use of BLM-administered lands, especially through promotion of renewable energy.

I.5 DECISIONS TO BE MADE BY THE RDEP

As discussed above, the RDEP process includes: (1) analyzing lands and realty program planning actions related to identifying REDAs and a SEZ, and (2) analyzing goals, management actions, and design features for renewable energy development ROWs.

The decisions evaluated in this EIS are land use plan-level decisions and are intended to help guide and inform future renewable energy development on public lands in Arizona. The decisions would not authorize any specific projects or imply such approval. Any future projects would still require site-specific permitting with additional environmental analysis (see **Section 1.5.3**, Requirements for Further Environmental Analysis).

Renewable energy developments proposed outside of a REDA or SEZ would be considered on a case-by-case basis using applicable national policy direction and guidance from existing land use plan decisions (see **Section 1.5.3**, Requirements for Further Environmental Analysis).

Decisions from the RDEP would apply only to public lands administered by the BLM. There are two independent decisions that will be documented in two separate RODs as part of the RDEP. The scope of the first decision includes the BLM's proposal for consistent management direction, including design features, to facilitate processing solar and wind applications in Arizona, and the identification of REDAs. The second decision focuses on the identification and management of a SEZ. For brevity, these potential decisions are presented together in the alternatives.

1.5.1 Decisions on Renewable Energy Management and the REDAs

The Arizona Strip Field Office RMP (BLM 2008d), Lower Sonoran RMP (BLM 2012d), Phoenix RMP (BLM 1989), Bradshaw-Harquahala RMP (BLM 2010j), Safford RMP (BLM 1991), Kingman Resource Area RMP (BLM 1995a), Yuma RMP (BLM 2010g), and Lake Havasu RMP (BLM 2007a) would be amended to:

REDAs include lands with low resource sensitivity and previously disturbed lands. Disturbed sites were identified by participants in the scoping process. A description of how the REDAs were identified is present in Chapter 2, Alternatives.

- Identify REDAs;
- Establish goals, objectives, and management actions for renewable energy development;
- Identify REDA land disposal criteria for future land disposal allocation decisions and disposal actions, including land exchanges and sales;
- Identify terms and conditions, including design features and mitigation measures, to minimize environmental impacts and that can be used to guide development on any lands available for application for renewable energy (see **Appendix B**, Design Features, Required Plans, and BMPs);
- Establish goals, objectives and management actions for land reuse and sustainability practices; and
- Establish goals, objectives, and management actions for remediation of previously disturbed lands.

Though the BLM's decision would be limited to BLM-administered lands, the RDEP's analysis of REDA criteria on private and state lands may help inform state, tribal, and local governments and agencies and serve as a resource for industry and the general public.

I.5.2 Decisions on the SEZ

A SEZ encompasses public lands identified by the BLM as suited for utility-scale production of solar energy, generally 20 MW or more.

In addition to analyzing potential REDAs, the RDEP is serving as a step-down process to the Solar PEIS ROD for utility-scale solar development (see **Section I.4.I**, Solar Energy Development Programmatic EIS and Record of Decision). As such, the BLM is also proposing to identify a SEZ to facilitate the development of utility-scale solar projects. As discussed in **Chapter 2**, Alternatives, the proposed SEZ is called Agua Caliente and is located in the BLM's Yuma Field Office planning area of southwest Arizona. Based on the EIS analysis, the BLM may decide to carry forward the proposed Agua Caliente SEZ and would then amend the Yuma RMP to:

- Identify the Agua Caliente SEZ;
- Establish renewable energy goals, objectives, management actions, and design features for application in the SEZ;
- Identify SEZ-specific design features;
- Change the visual resource management (VRM) designations in the SEZ from VRM Class III to Class IV;
- Remove the Wildlife Habitat Management Area allocation from within the SEZ; and
- Remove the Special Recreation Management Area designation from within the Agua Caliente SEZ.

The BLM Arizona State Director has filed notice to segregate the proposed Agua Caliente SEZ study area (20,776 acres) from appropriation under the public land and mining laws for a period of two years. The purpose of the segregation is to protect this area from encumbrances, particularly mining claims, while the study area is evaluated in this EIS.

I.5.3 Requirements for Further Environmental Analysis

This EIS provides the necessary analysis to support the amendment of land use plans for the planning level decisions discussed above. This EIS will not eliminate the need for site-specific environmental review for future site-specific renewable energy development proposals. The BLM will make individual decisions on a case-by-case basis whether or not to authorize specific renewable energy development projects in conformance with the amended land use plan on the basis of this EIS.

Applications for proposed solar and wind energy development ROW projects are processed under Title V of FLPMA and Title 43, Part 2800, of the Code of Federal Regulations. The processing of solar and wind energy development ROW applications must comply with the BLM's planning, environmental, and ROW regulatory requirements. When the BLM considers an application, the BLM decision maker must determine if it would conform to the applicable land use plan (43 CFR, 1610.5-3, 516 DM 11.5) and what level or type of

environmental documentation is required. Analysis of proposed solar and wind energy development projects must comply with NEPA and NEPA regulations (40 CFR, Parts 1500-1508; 43 CFR Part 46). The public would have opportunities to participate and comment during the NEPA process.

The BLM would retain the discretion to deny solar and wind ROW applications based on site-specific issues and concerns, even in areas identified as REDA, SEZ, or otherwise available for application in existing land use plans. The environmental review of site-specific projects proposed in a REDA or SEZ could be facilitated by incorporating the analysis of this EIS, the Solar PEIS (BLM and DOE 2012a), and Wind PEIS (BLM 2005b) through “tiered” analyses. Tiering refers to the coverage of general matters in a broader EIS, such as statewide program or policy statements, with subsequent narrower EISs or environmental assessments (EAs), such as site-specific proposal documents, incorporating by reference the general discussions and concentrating solely on the issues specific to the subsequent EIS or EA (40 Code of Federal Regulation [CFR] 1508.28). Site-specific environmental reviews for renewable energy development projects that begin after the ROD for this EIS is finalized could be tiered to this EIS.

I.6 SCOPE OF ANALYSIS

Planning Area: the geographic area (all land ownerships) within which the BLM will make decisions during a planning effort.

Decision Area: the lands within a planning area for which the BLM has authority to make land use and management decisions.

Analysis Area: any lands, regardless of jurisdiction, for which the BLM synthesizes, analyzes, and interprets data and information that relates to planning for BLM-administered lands.

The EIS provides the BLM, the State of Arizona, county and local governments, tribal governments, utility companies, the renewable energy industry, and the public with a better understanding of the environmental and economic issues associated with developing renewable energy in Arizona. For purposes of the RDEP, the Planning Area encompasses all of Arizona, regardless of land ownership. The Analysis Area is the Planning Area, excluding Department of Defense lands and tribal lands. The Decision Area includes all BLM-administered surface land in Arizona.

While decisions made from this EIS will only apply to BLM-administered public lands, the analysis was conducted statewide regardless of land status to facilitate statewide planning and identify areas for possible partnering between the BLM and other federal or state agencies and private land owners. Unless specifically nominated for analysis, however, the EIS does not analyze tribal or Department of Defense lands. During scoping and consultation, the BLM coordinated with tribal governments and invited them to participate in RDEP. As a result of this process, one disturbed site on tribal lands was nominated for analysis.

I.6.1 Scope of the REDA Analysis

The scope of the REDA analysis includes a wide range of renewable energy resources and technologies, including solar-based technologies and wind energy technology, for the entire state of Arizona.¹ The solar and wind technologies described here are representative of those most likely to be deployed over the next 20 years; however, the described procedures and processes could apply to other land-based renewable energy technologies (e.g., algae ponds), with additional mitigation requirements developed on a project-by-project basis. For a detailed discussion of what types of technologies are assumed, see **Appendix A**, Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona.

As discussed above, the BLM's potential identification of REDAs and design features are land use plan-level decisions and as such, the EIS appropriately evaluates the potential direct, indirect, and cumulative effects of those potential decisions at a programmatic scale commensurate with the large geographic scope of the planning area.

I.6.2 Scope of the SEZ Analysis

In addition to the programmatic analysis for the REDAs, the BLM conducted a statewide review of potential SEZs and identified the proposed Agua Caliente SEZ as a candidate for analysis. The screening criteria focused on large blocks of BLM-administered lands that have limited sensitive resources, are located near existing solar energy developments, were previously disturbed, and are near existing road and transmission infrastructure. Beyond the programmatic analysis necessary to support the designation of the proposed Agua Caliente area as a SEZ, this EIS also provides additional, in-depth analysis of utility-scale solar development in this area,² the primary purpose of which is to provide documentation from which the BLM can potentially tier future project authorizations, thereby limiting the required scope and effort of project-specific NEPA analyses. The BLM would complete a site-specific environmental review of all solar energy ROW applications in accordance with NEPA prior to issuing a ROW authorization. All future projects proposed in the Agua Caliente SEZ could tier to the analysis in this EIS. The extent of this tiering, however, would vary by project, as would the necessary level of NEPA documentation.

¹ Geothermal resources are classified as a fluid mineral and are administered under separate laws and regulations from the lands and realty program and are not part of the RDEP project and environmental analysis. In December 2008, the BLM signed the ROD and RMP Amendments for geothermal leasing in the Western U.S. (BLM 2008b). This decision amended all of the land use plans in Arizona to provide the appropriate allocations, stipulations, and procedures to facilitate the leasing of geothermal resources in the state.

² For the purpose of the RDEP, "utility-scale" solar energy development is defined as projects capable of generating 20 MW or greater. Viable utility-scale solar technologies to be deployed over the next 20 years include parabolic trough, power tower, dish engine systems, and photovoltaics.

I.6.3 Geographic Information System Data and Graphics

Data from geographic information systems (GIS) have been used in developing acreage calculations and for generating many of the figures. Calculations in this EIS are rounded and are dependent upon the quality and availability of data. Data were collected from a variety of sources, including the BLM, collaborative partners, stakeholders, and cooperating agencies. Given the scale of the programmatic analysis, the compatibility constraints between datasets, and lack of data for some resources, all calculations are approximate and serve for comparison and analytic purposes only. Likewise, the figures are provided for illustrative purposes and subject to the limitations discussed above. Detailed, site-specific information is available from local BLM offices. BLM may receive additional GIS data; therefore, the acreages may be recalculated and revised at a later date. The GIS has been updated based on public comments and additional information provided by cooperating agencies.

I.7 LAWS AND REGULATIONS THAT APPLY TO THE RDEP

This EIS complies with the National Environmental Policy Act of 1969, as amended; the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA, outlined in Part 40 of the Code of Federal Regulations (40 CFR Parts 1500-1508) and DOI NEPA regulations at 43 CFR 46; DOI and BLM policies and manuals (BLM NEPA Handbook H-1790-1; BLM 2008c); and the BLM Land Use Planning Handbook H-1601-1 (BLM 2005c).

Other federal laws applicable to the RDEP EIS include, but are not limited to, the following:

- FLPMA;
- Clean Water Act;
- Energy Policy Act of 2005;
- Endangered Species Act;
- Migratory Bird Treaty Act of 1918, as amended;
- Bald and Golden Eagle Protection Act;
- Fish and Wildlife Conservation Act of 1980;
- Taylor Grazing Act of 1934; and
- National Historic Preservation Act of 1966, as amended.

I.8 OTHER PLANS AND PROGRAMS APPLICABLE TO THE RDEP

In addition to BLM programs, state- and national-level initiatives have been developed to promote renewable energy development. Implementation of the RDEP would help meet the goals outlined in the listed initiatives by simplifying and standardizing the process for renewable energy development on BLM-

administered lands and by providing analysis that would aid wind and solar energy development on other lands in the state.

1.8.1 Executive Order 13514, Federal Sustainability Policy

On October 5, 2009, President Obama issued Executive Order 13514, which tasked federal agencies with integrating achievement of sustainability goals with agency mission and strategic planning to optimize performance and reduce implementation costs. In addition to specific sustainability goals for federal agencies, the executive order calls on the Interagency Climate Change Adaptation Task Force to develop, within one year, federal recommendations for adapting to climate change impacts both domestically and internationally.

1.8.2 Executive Order 13212, Actions to Expedite Energy-Related Projects

On May 18, 2001, President Bush signed Executive Order 13212, which states, “the increased production and transmission of energy in a safe and environmentally sound manner is essential.” Executive departments and agencies are directed to “take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy.” Executive Order 13212 further states, “For energy-related projects, agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies shall take such actions to the extent permitted by law and regulation and where appropriate.”

1.8.3 Western Governors’ Association and U.S. Department of Energy Renewable Energy Zones Initiative

A document entitled “Western Renewable Energy Zones – Phase I Report” was published by the Western Governors’ Association and the U.S. DOE in June 2009 (Western Governors’ Association and DOE 2009). This Phase I Report was produced in an effort to facilitate the construction of new utility-scale renewable energy facilities and any needed transmission with the goal of delivering this energy into the Western Interconnection. (The Western Interconnection refers to the existing electricity grid linking Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming; El Paso area, Texas; and Alberta and British Columbia, Canada.) The Phase I Report identified Western Renewable Energy Zones (WREZs). These zones have the potential for large-scale development of renewable resources in areas with low environmental impacts and are subject to resource-specific permitting processes. Stakeholders such as renewable energy developers, tribal interests, utility planners, environmental groups, and government policy-makers contributed to planning and mapping new WREZs. The report also evaluated various transmission strategies, which involved facilitating the development of high-voltage transmission to those areas with the potential for abundant renewable resources and low or easily mitigated

environmental impacts. The report implemented a modeling tool to evaluate the relative economic costs of renewable resources on a delivered basis.

I.8.4 Arizona's Renewable Portfolio Standard Program

RPSs are state laws requiring electric utility providers to obtain a minimum percentage of their energy from renewable generation sources. These renewable sources include geothermal, wind, solar, hydroelectric, and other renewables such as biomass. Arizona has set a goal of 15 percent electricity generated from renewable sources by 2025.

I.8.5 Arizona's Renewable Resource and Transmission Identification Subcommittee

The Arizona Renewable Resource and Transmission Identification Subcommittee (ARRTIS) was created in 2009 and included participants from electrical utilities, renewable energy developers, federal and state land and resource management agencies, environmental advocacy groups, consultants, and numerous other stakeholders. The ARRTIS gathered data on environmental sensitivity and identified areas where solar and wind resources were technically ideal for utility-scale development. A four-tier environmental sensitivity and constraint classification system was established to characterize land areas into categories. The ARRTIS developed criteria for exclusion areas and found that approximately half of Arizona's land area was located outside of the identified exclusion areas for utility-scale generation, barring all permitting and analytical processes (ARRTIS 2009).

I.8.6 Arizona's Solar Electric Roadmap Study

The Arizona Department of Commerce (which is now the Arizona Commerce Authority) and the Commerce and Economic Development Commission (CEDC) commissioned this project to help inform a 10-year Arizona economic strategy for future business development in the solar industry. Solar energy, along with water resources and sustainable manufacturing, was identified in the 2004 Sustainable Systems Prospectus as an economy-defining industry opportunity for Arizona based on the research and development strengths of Arizona's university system and building on its presence as one of three solar labs in the world.

I.8.7 Arizona Game and Fish Department – Planning for Wildlife

The goal of responsible planning for wildlife at the landscape or community scale is to balance the growth, diversity, and mobility of Arizona's human population with the sustainability, diversity, and mobility of Arizona's wildlife populations. The Arizona Game and Fish Department (AGFD) has assembled wildlife conservation data, maps, tools, and other information to help inform and guide development in a manner that maintains the quality of Arizona's landscapes and minimizes negative impacts on wildlife and wildlife habitat. The department has issued a number of planning guidance documents for renewable energy development, including Guidelines for Reducing Impacts to Wildlife from Wind

Energy Development in Arizona (AGFD 2009) and Guidelines for Solar Development in Arizona (AGFD 2010a). Additionally, the department has developed the Species and Habitat Conservation Guide, publicly available on-line as HabiMap™ to visually explore the distribution of wildlife in Arizona, potential stressors to wildlife, and other relevant data at a statewide scale. The department provided wildlife datasets used for analysis in this EIS.

The Species and Habitat Conservation Guide data prioritize wildlife habitat. Tiers 4, 5, and 6 are used as a REDA screen, while Tiers 1, 2 and 3 are used for analysis purposes.

1.8.8 Arizona State Land Department - Arizona Renewable Energy Mapping Project

The Arizona State Land Department plays an important role in the development of renewable energy. Specifically, the ASLD works with renewable energy developers to identify potential sites and process solar leases and wind right-of-way applications for renewable energy generation on State Trust Lands. The ASLD has partnered with the BLM and private landowners in siting renewable projects; for example, the ASLD recently partnered with the BLM on the Dry Lake Wind Power Project, situated on federal, state, and private lands in Navajo County. The department maintains an active GIS database and mapping program to facilitate permitting and site assessments and is helping to develop the Arizona Renewable Energy Mapping Project.

The Arizona Renewable Energy Mapping Project is a collaborative project to create a renewable energy mapping system to facilitate the development of Arizona's renewable energy resources in a coordinated manner. The system provides information to the public, the renewable energy industry, and public agencies on lands in Arizona to help users evaluate lands for their general potential for development as renewable energy generation sites.

1.9 PUBLIC INVOLVEMENT

Public involvement, which includes public scoping and comments on the Draft EIS, is required under NEPA, CEQ regulations 40 CFR 1500–1508 DOI NEPA regulations 43 CFR 46; and under FLPMA and its implementing regulations, including 43 CFR 1610.2 and 1610.4-1, which provide additional guidance and direction for public involvement.

The RDEP engaged multiple cooperating agencies, tribes, stakeholders, and the general public for a broad understanding on the desired future renewable energy footprint on federal, tribal, state, and private lands in Arizona. Cooperating agencies are state or federal agencies, or local or tribal governments that enter into a formal relationship with the BLM to help develop EISs. Each cooperating agency's level of involvement is at their own discretion and can include participating in issue identification, collecting inventory data, contributing to alternative formulation, and estimating effects of alternatives

(BLM Land Use Planning Handbook, H-1601-1, pg. 8). The cooperating agencies on the RDEP include the following:

- Arizona Corporation Commission;
- Arizona Department of Environmental Quality;
- Arizona Department of Water Resources;
- Arizona Game and Fish Department;
- Arizona State Land Department;
- Bureau of Reclamation;
- Central Arizona Water Conservation District;
- Mohave County;
- National Park Service; and
- Western Area Power Administration.

The BLM initiated consultation with the Arizona State Historic Preservation Officer in April 2010 in accordance with the Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Arizona. Consultations will continue through the course of the EIS process to ensure compliance with the National Historic Preservation Act (NHPA) and NEPA.

The BLM has also contacted and consulted with Native American tribal governments (all the tribes contacted are listed in **Chapter 6**, Consultation and Coordination). Formal letters were sent to all tribes in Arizona, and presentations were made by invitation at tribal council meetings. BLM continues to remain in contact via in-person meetings, phone calls, and emails, and by responding to individual requests for additional information or meeting presentations.

The RDEP outreach started with scoping and publication of the Notice of Intent on January 13, 2010 (Federal Register, Vol. 75, No. 8, pg. 1807; both the Notice of Intent and Scoping Report are available on-line at the RDEP Web site: http://www.blm.gov/az/st/en/prog/energy/arra_solar.html). The BLM sought identification of site locations of previously disturbed or utilized lands in addition to identification of issues that might be associated with the RDEP. Local, state, and federal agencies; private companies; and members of the public nominated 42 potential sites. The BLM continued to receive nominations through the Web site, individual letters, and scoping meetings, during which local governments, businesses, and members of the public identified additional potential locations for consideration; to date, an additional 22 sites have been added for consideration (see the nominated sites identified in **Appendix C**, Solar and Wind Energy Assessment of Nominated Sites). The BLM identified

additional key issues to be addressed in the EIS (see **Section I.10**, Key Planning Issues, for a summary of these issues).

The BLM provided information on the RDEP project and sought additional information and data to support alternatives development and analysis from groups that have invited BLM to share information and address public forums regarding the RDEP. The BLM met with these stakeholder groups to identify any additional opportunities for or constraints on the project. The groups included Arizona state agencies, military installations, Arizona utilities, and environmental organizations. A full listing of the groups and agencies consulted is contained in **Chapter 6**, Consultation and Coordination.

The BLM distributed the Draft EIS to individuals, agencies, and organizations on the RDEP mailing list and to all cooperating agencies and tribes for a 90-day public comment period. During this time five public meetings were held throughout the state. The BLM reviewed the comments and has revised the EIS in response to comments. **Chapter 6**, Consultation and Coordination, provides summary information on the results of comment analysis, and **Appendix G**, Response to Comments on the Draft EIS, provides detailed responses.

I.10 KEY PLANNING ISSUES

The following list encapsulates the specific issues and questions raised by the public and the BLM during the scoping process:

1. Stakeholders and Collaboration: How will the BLM work with stakeholders across the state to leverage local knowledge, secure data sources, and consider local needs?
2. Site Criteria: What criteria will be applied to the nominated sites to determine suitability for inclusion in the alternatives – for example, proximity to population and energy development potential?
3. Transmission Lines: How will the BLM consider the need for new transmission lines or proximity to existing transmission lines in site selection and alternatives development?
4. Balancing Development: How will the BLM balance the development of renewable energy sites across the landscape?
5. Technology and Infrastructure: How can the BLM accommodate a diversity of technologies, existing infrastructure, and different scales of development?
6. Land Tenure Adjustments: Can BLM exchange or sell disposal parcels in order to benefit local economies and create development incentives?
7. Streamlining Future Analysis: How can this EIS streamline the process for permitting and performing site-specific environmental analyses for sites identified in the future?

8. Remediation: How will the BLM address the need for site-specific remediation?
9. Effects on Resources and Resource Uses: How will the BLM reduce the impacts of renewable energy development on resources and resource uses, including air, water, wildlife, wildlife habitat, wilderness, soils, cultural and paleontological resources, visual resources, and recreation?
10. Socioeconomics and Environmental Justice: How can the BLM implement the project in a way that strengthens state and local socioeconomic conditions, provides local access to energy, ensures environmental justice, and protects human health and safety?
11. Cumulative Impacts: How will the BLM address the cumulative impacts of renewable energy development and its associated infrastructure on a landscape scale?

I.11 PLANNING CRITERIA

In accordance with BLM planning regulations (43 CFR 1610.4-2), planning criteria were developed to help guide data collection, alternative formulation, and impact analysis. Criteria, such as those that follow, are generally based on laws, regulations, and agency guidance and serve to keep the planning process focused.

- The EIS and land use plan amendments will be completed in compliance with FLPMA, the Endangered Species Act, the Clean Water Act, the Clean Air Act, NEPA, and all applicable laws, Executive Orders, and management policies of the BLM.
- The RFDS for renewable energy development within Arizona provides background on other similar assessments done in Arizona, an overview of wind and solar technologies assumed to be used, the methodology used for preparing the RFDS, the results of the analysis, and conclusions. The RFDS will be used as baseline and to provide context for the analysis.
- Unless specifically amended by the ROD for this EIS, the BLM will continue to manage resources and uses by existing land use planning decisions.
- The RMPs, as amended, will recognize valid existing rights.
- The BLM will coordinate with local, state, tribal, and federal agencies during the EIS process to strive for consistency with existing plans and policies, to the extent practicable.
- The BLM will coordinate with tribal governments and will provide strategies for the protection of recognized traditional uses in the EIS process.

- The BLM will take into account appropriate protection and management of special status plant and animal species in the EIS and will engage in all required consultation.
- The BLM will take into account appropriate protection and management of cultural and historic resources in the EIS and will engage in all required consultation.
- The BLM will recognize in the EIS the specific niche occupied by public lands in the life of the communities that surround them or that are surrounded by them and in the nation as a whole.
- The BLM will encourage public participation throughout the process.
- Environmental protection and energy production are both desirable and necessary objectives of sound land management practices and are not to be considered mutually exclusive priorities.
- The BLM will support planning to provide renewable energy opportunities to help meet public consumptive uses that contribute to climate change.
- Geospatial data will be automated within a GIS to facilitate discussions of the affected environment, formulation of alternatives, analysis of environmental consequences, and display of results.

I.12 SUMMARY OF THE REASONABLY FORESEEABLE DEVELOPMENT SCENARIO

I.12.1 RFDS Overview

The RFDS identifies the lands in Arizona that are most suitable for the development of solar and wind energy based on energy potential regardless of environmental constraints. Additionally, the RFDS estimates the acreage of those lands required to support the Arizona RPS of 15 percent renewable energy by 2025.

An RFDS has been prepared to identify the lands in Arizona that are likely most suitable for the development of solar and wind energy resources, based solely on energy potential (see **Appendix A**, Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona). A variety of factors (e.g., economic, social, and political) are beyond the control of the BLM and will influence the demand for renewable energy. Therefore, the RFDS is a best professional estimate of what may occur if REDAs and the SEZ are developed based on current policies, including Arizona's RPS of 15 percent by 2025. The RDEP RFDS is specific to the proposed planning decisions of the RDEP; the Solar PEIS and other planning efforts have developed RFDS using other methods for their specific purposes.

The RFDS is neither a planning decision nor the "No Action Alternative" in the EIS; rather, it serves as a technical reference to provide context for analysis of the alternatives. The RFDS focuses on ground-based, commercial-scale renewable energy projects. The BLM recognizes that Arizona has potential for rooftop solar and cogeneration of renewable energy with conventional energy production facilities, but these could occur without BLM involvement and, therefore, are excluded from the analysis. However, the RFDS provides parallel

analyses for BLM-administered lands and for non-BLM-administered lands throughout the state.

I.12.2 Solar and Wind Technologies

Arizona has a wealth of renewable energy resources, especially for those technologies that rely on solar radiation and wind (Black and Veatch 2007). Wind power utilizes turbines to convert wind to electricity. A wind turbine consists of a blade or rotor, a drive train (usually including a gearbox and a generator), a tower, and other equipment, including controls, electrical cables, ground support equipment, and interconnection equipment. The blades turn in the moving air and power an electric generator that supplies an electric current.

Solar radiation may be harnessed through various technologies and transformed to usable energy, such as heat and electricity. Two basic solar energy technologies that produce electrical power for commercial applications are (1) concentrating solar power (CSP) systems, which use mirrors to concentrate sunlight onto receivers that convert it to heat used to drive a generator via a steam turbine or heat engine to produce electricity, and (2) photovoltaic (PV) systems, which use solar cells made of semiconductor materials to capture the energy in sunlight and convert it directly into electricity.

I.12.3 Findings and Conclusions

Arizona, given its abundance of solar energy resources, is expected to be a net exporter of renewable energy. The RFDS assumes that by 2025 Arizona will generate renewable energy at a level that is twice the amount required by the RPS. In other words, the RFDS estimates that half of the renewable energy generated will stay in-state, while the other half will be exported to neighboring states such as California. The majority of BLM-administered land that is developable for solar energy projects is located in the western half of Arizona, with smaller areas identified to the east around Safford and smaller scattered parcels throughout the Tucson Field Office and in the northern portion of the Safford Field Office. Large tracts of land with no known technical or regulatory conflicts are identified along Interstates 8 and 10 to the west of Phoenix.

Relatively few areas of BLM-administered land are considered developable for wind energy projects across Arizona. These areas include locations within the Arizona Strip Field Office in the northwestern corner of the state; west of Kingman near the California border; an area in the northern portion of the Tucson Field Office; and a scattering of areas in the northern portion of the Safford Field Office, south of Interstate 40. No BLM-administered lands were found to contain the highest class of wind resources (Class 7), and only 69 acres were found to contain the second highest class of wind resources (Class 6). Statistics from the RFDS are summarized in **Table I-2, Summary of RFDS Results**, below.

**Table I-2
Summary of RFDS Results**

Land required to produce 1 GW (solar)	8,000 acres
Land required to produce 1 GW (wind)	28,000 acres (10% of which would be disturbed)
Estimated renewable energy output by 2025	28,642 GWh
Estimated utility scale solar energy maximum production by 2025	9.48 GW
2025 wind energy capacity	0.82 GW
2025 land disturbance (solar, statewide)	76,000 acres
2025 land requirement (wind, statewide)	23,000 acres (10% of which would be disturbed)
2025 land disturbance (solar, BLM lands)	12,000 acres
2025 land requirement (wind, BLM lands)	3,600 acres (10% of which would be disturbed)

GW = gigawatt; GWh = gigawatt-hour

1 GW = 1,000 MW

Source: Appendix A, Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona

I.13 READER'S GUIDE TO THE EIS

The EIS is divided into two volumes. Volume I provides the EIS, and Volume II provides supporting appendices.

Volume I	Volume II
Dear Reader Letter	Appendix A Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona
Abstract	Appendix B Design Features, Required Plans, and BMPs
Table of Contents/List of Acronyms	Appendix C Solar and Wind Energy Assessment of Nominated Sites
Executive Summary	Appendix D Culture History Background of Arizona
Chapter 1 Introduction	Appendix E Arizona Department of Agriculture List of Prohibited, Regulated, and Restricted Noxious Weeds
Chapter 2 Alternatives	Appendix F Southwest Regional GAP Analysis Project Landcover Types and Descriptions for Arizona
Chapter 3 Affected Environment	Appendix G Response to Comments on the Draft Environmental Impact Statement
Chapter 4 Environmental Consequences	
Chapter 5 Cumulative Impacts	
Chapter 6 Consultation and Coordination	
Chapter 7 List of Preparers	
Chapter 8 References	
Chapter 9 Glossary	
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Figure ES-2, Comparison of Conceptual Alternatives of REDA on BLM-Administered Lands, and **Figure ES-3**, Comparison of Conceptual Alternatives on Non-BLM-Administered Lands, provide an overview of the alternatives analyzed in the EIS. These figures are found at the end of the Executive Summary. **Table 2-13**, Summary of the Alternatives, provides a summary of the goals, objectives, allocations, and management actions for each alternative. **Table 2-14**, Summary of Environmental Consequences by Alternative, provides a summary of impacts on resources and resource uses under each alternative. These tables are found at the end of **Chapter 2**, Alternatives, of this EIS.



CHAPTER 2

ALTERNATIVES

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CHAPTER 2

ALTERNATIVES

2.1 INTRODUCTION

The National Environmental Policy Act, under which the EIS is being developed, directs the BLM to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources...” (NEPA Section 102(2)(e)). At the heart of the alternative development process is the required development of a range of reasonable alternatives. Public and internal (within BLM) scoping has identified issues that present opportunities for alternative courses of action, while the purpose and need for action provides sideboards for determining “reasonableness.”

This chapter provides the details of the alternative development process, how potential REDAs were screened, the No Action Alternative, which would continue the BLM’s existing policies; the six action alternatives, including the BLM’s preferred alternative; and a discussion of alternatives considered but eliminated from detailed analysis. An overview of the RFDS, which provides context for analysis of the alternatives, is provided at the end of the chapter.

2.2 ALTERNATIVE DEVELOPMENT PROCESS

2.2.1 Overview

The BLM proposes to identify REDAs, design features, and land tenure and reuse policies applicable to solar and wind energy development on BLM-administered lands in Arizona. The REDAs would identify where solar and wind energy development is likely to be compatible with resource objectives, and the management actions and design features would bring consistency and efficiency to the BLM’s authorization process. In addition, the BLM is proposing to identify a SEZ for utility-scale solar development.

Lands where solar and wind energy development is likely to be compatible with resource objectives are called REDAs. REDAs consist of lands with low resource sensitivity and formerly used disturbed sites.

This section describes the methods used to develop alternatives to achieve these proposals.

CEQ regulations require including the No Action Alternative (40 CFR 1502.14[d]) even if it does not meet the purpose and need for the proposed action. The No Action Alternative provides a useful baseline for comparison of environmental effects (including cumulative effects) and demonstrates the consequences of not meeting the need for the action. For the RDEP, the No Action Alternative was developed by reviewing and analyzing all of the Arizona RMPs for renewable energy decisions, land disposal parcels and criteria; the granting of authorization for use, occupancy, and development; and the terms and conditions that may apply to development areas.

In addition to the No Action Alternative, six action alternatives were developed and analyzed in detail. These alternatives are the result of extensive consultation and coordination with the public, tribes, cooperating agencies, and stakeholders (see **Chapter 6**, Consultation and Coordination). All of the action alternatives were developed to meet the purpose and need for the proposed action (**Section 1.2**, Purpose and Need for the RDEP) and to address the planning issues (**Section 1.10**, Key Planning Issues). Additionally, the alternatives incorporate policies, design features, guidance, and direction from the national BLM renewable energy efforts (see **Section 1.4**, The RDEP's Relationship to National and Statewide BLM Policies and Programs), including the Wind PEIS (BLM 2005b) and the Solar Energy Program presented in the Solar PEIS ROD (BLM and DOE 2012c).

2.2.2 REDA Screening Process

Identification of lands suitable for solar and wind renewable energy development was a collaborative process, involving not only the BLM but cooperating agencies, stakeholders, and the public.

Identifying lands as potential REDAs was an iterative process that provided a range of alternatives. Public scoping and collaboration with cooperating agencies and stakeholders revealed that renewable energy development would be best suited on lands that are disturbed or have low resource sensitivity. Therefore, the BLM conducted two separate screening processes; one to locate lands with low resource sensitivity and one to locate disturbed lands. Taken together, these lands form the basis for the potential REDAs presented in the different action alternatives.

Screening Lands with Low Resource Sensitivity

Lands with low resource sensitivity are areas that are unlikely to contain resources protected by statute or policy, that currently do not have special designations or uses, that are unlikely to contain other recognized values, or for which impacts from development cannot be mitigated (for example, groundwater is a sensitive resource in many parts of Arizona; however, the BLM has the authority to require non-consumptive technologies to mitigate the impact). The BLM collected relevant information from BLM datasets, cooperating agencies, tribes, stakeholders, universities, and other public

REDAs are made up of lands with low resource sensitivity and disturbed sites.

sources. The complete listing of these resource datasets is in **Table 2-1, Areas with Known Sensitive Resources (Eliminated from REDA Consideration)**. The data were loaded into a GIS and analyzed to geographically identify low-sensitivity lands that could be suitable for renewable energy development.

**Table 2-1
Areas with Known Sensitive Resources (Eliminated from REDA Consideration)**

Areas with Known Sensitive Resources	Source
BLM Areas of Critical Environmental Concern (ACECs)	BLM 2011a
BLM Backcountry Byways	BLM 2011a
BLM Designated Wilderness and Wilderness Study Areas	BLM 2011a
BLM Lands with wilderness characteristics managed to protect those characteristics	BLM 2011a
BLM Lands with wilderness characteristics not managed to protect those characteristics	BLM 2011a
BLM Visual Resource Management Classes I, II, and III	BLM 2011a
BLM Special Recreation Management Areas	BLM 2011a
BLM ROW exclusion or avoidance areas	BLM 2011a
BLM Herd Management Areas	BLM 2011a
Gila River Terraces (proposed cultural resources ACEC)	BLM 2011a
Cultural sites well documented in BLM, including House Rock Valley, Poston Butte, Petrified Forest Expansion area, Gila River Terraces (proposed cultural ACEC), and Clanton Hills	BLM 2011a
Designated BLM Utility Corridors	BLM 2011a
National Monuments	BLM 2011a
National Conservation Areas	BLM 2011a
Wild and Scenic Rivers (either eligible or suitable for inclusion in the National Wild and Scenic Rivers System or rivers included in the National Wild and Scenic Rivers System)	BLM 2011a
National Park System units, including Petrified Forest National Park Expansion Area	BLM 2011a, SWReGAP 2011
National Park System National Historic Trails (0.25-mile buffer each side)	BLM 2011a
Tribal Lands	BLM 2011a
Military Lands	BLM 2011a
State Parks	Arizona State Parks 2010
State Wildlife Areas	BLM 2011a
U.S. Fish and Wildlife Service (USFWS) lands	BLM 2011a

Table 2-1 (continued)
Areas with Known Sensitive Resources (Eliminated from REDA Consideration)

Areas with Known Sensitive Resources	Source
The Nature Conservancy conservation easements, Audubon Society land, and private conservation easements	SWReGAP 2011
U.S. Forest Service Designated Wilderness	Forest Service 2010a
U.S. Forest Service Established Research Natural Areas	Forest Service 2010b
U.S. Forest Service Inventoried Roadless Areas	Forest Service 2010c
U.S. Forest Service Heber Wild Horse and Burro area	Forest Service undated
U.S. Forest Service Special Interest Management Areas	Forest Service 2010b
Incorporated cities (except when BLM land is included within boundary of an incorporated city)	ALRIS 2011a
Arizona Game and Fish Department Areas of Conservation Potential, Tiers 4, 5, and 6	AGFD 2011a
Arizona Game and Fish Department important big game habitat, including bighorn sheep, black bear, elk, javelina, mountain lion, mule deer, turkey, and white-tailed deer. ¹	AGFD 1988
Special status species, including threatened, endangered, and BLM sensitive species locations	AGFD 2010b, BLM 2011a
Arizona Game and Fish Department wildlife corridors	AGFD undated
USFWS critical habitat for threatened and endangered species	USFWS 2010
BLM sensitive species habitat	BLM 2011a
Sonoran desert tortoise (<i>Gopherus agassizii</i>) Sonoran population habitat categories I, II, and III	BLM 2011a
Desert tortoise conservation areas from the Solar PEIS	BLM and DOE 2012b
National Wetland Inventory wetlands	NWI 2010
Waterbodies (lakes, rivers, and dry lakes)	BLM 2011a
Federal Emergency Management Agency 100-year floodplains	FEMA 2010 AZGS 2008, Arizona Bureau of Geology and Mineral Technology 1983, Arizona Bureau of Mines 1993
Areas of high potential for known mineral deposits, metallic mineral districts, Holbrook Basin potash potential	BLM 2011a
Sensitive fossil resources	BLM 2011a
Severe soils: Clay Springs (runoff medium to rapid and erosion hazard moderate to severe) and Rositas (wind erosion severe if natural surface and cover disturbed)	BLM 2011a, Description of Soil Series 2010
Greater than 5-percent slopes (or greater than 15-percent slopes for areas with wind potential)	USGS 2010, BLM 2011a
REDAs less than 8 acres in size unless contiguous with larger REDAs	BLM 2011a

¹Bighorn sheep high density, medium, low and sparse; black bear, high, medium, and low; elk summer high, medium, and low plus winter very high, high, medium, and low; javelina high and medium; mountain lion high; mule deer summer Kaibab high and medium, high plus winter Kaibab high and medium, high and medium; turkey summer high and medium plus winter high, medium, and low; white-tailed deer high and medium. AGFD describes wildlife density as number of animals per square mile.

The RDEP emphasizes the reuse of previously disturbed or developed lands as a method for reducing impacts on sensitive resources.

Screening Disturbed Lands and Nominated Parcels

A key component of the RDEP is emphasizing the reuse of previously disturbed or developed lands that, after remediation or site preparation, may be suitable for renewable energy development, thereby reducing impacts on sensitive resources. With this in mind, BLM Arizona and members of the public nominated 64 sites covering 172,200 acres of BLM-administered, state, municipal, and private lands during the public scoping period. Site types include gravel pits, mine sites, retired agricultural lands, landfills, and abandoned or unauthorized airstrips (see **Figure 2-1**, RDEP Nominated Sites, and **Appendix C**, Solar and Wind Energy Assessment of Nominated Sites). The site boundaries generally follow ownership patterns or other geographic references. All lands in the boundaries may or may not have been disturbed depending on the use.

In the Draft EIS, all nominated sites were carried forward and identified as REDAs based on the assumption that prior uses would have removed or reduced any sensitive resource values. During the public review of the Draft EIS, commenters noted that some of the nominated sites did not appear disturbed or may still support sensitive resources. To address this issue, the nominated sites have been screened in the Final EIS using the following process:

1. Nominated sites were evaluated using readily-available satellite photographs and site history to determine if they were notably disturbed. Any nominated sites that were determined to be disturbed were brought forward as a REDA.
2. The remaining sites were evaluated using the REDA screening criteria noted above. If they met the REDA requirements, then they were included as a REDA.
3. Sites that had partial disturbance or contained areas with no known sensitive resources, were delineated. The portions of the sites that were disturbed or met REDA screening requirements were included as REDA.
4. All undisturbed sites containing sensitive resources were not included as REDA.

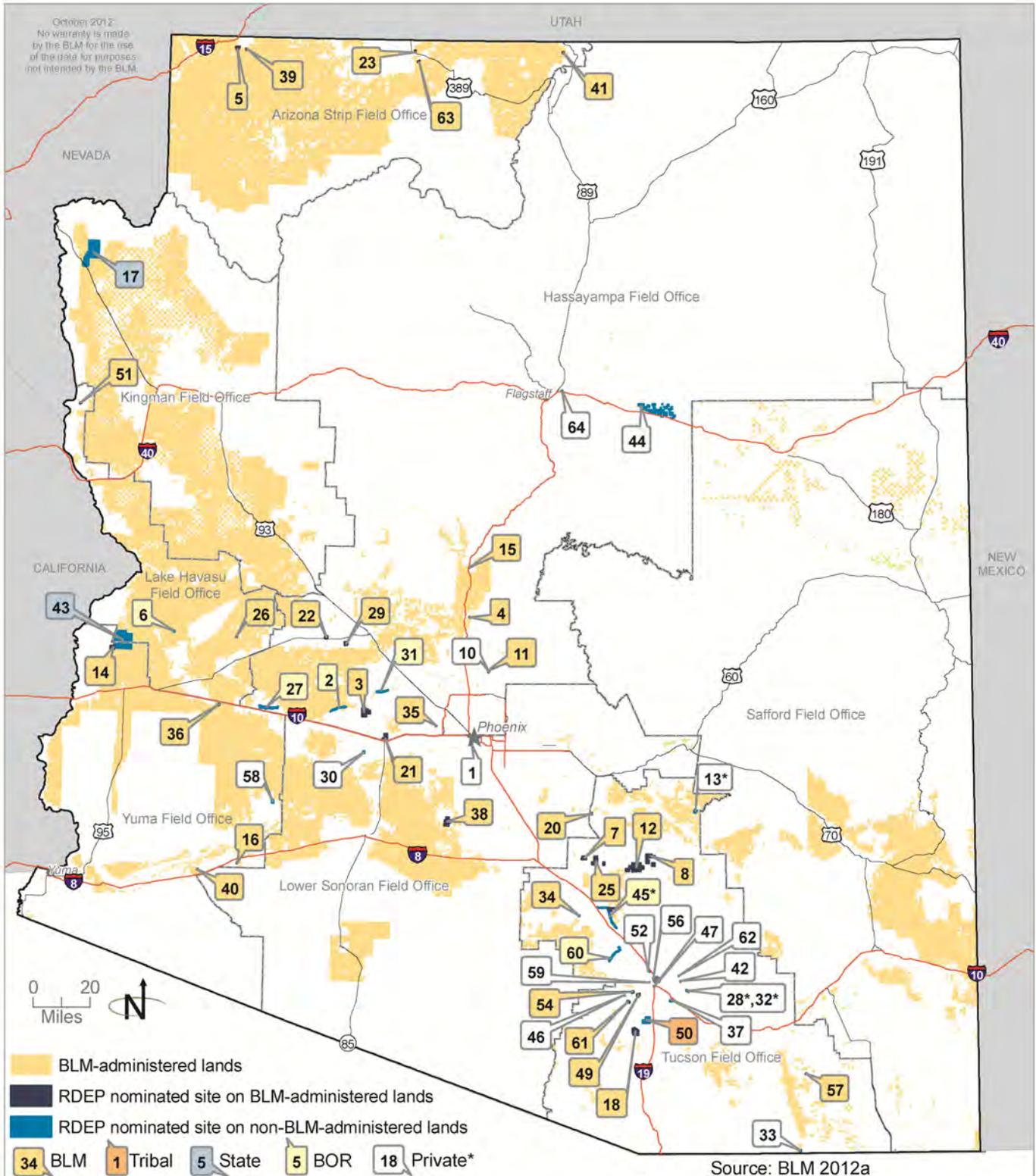
Additionally, the Butler Valley and Empire Farms sites (both on state lands), and the Fredonia OHV Area and Snowflake Mine site (both on BLM-administered lands) were withdrawn from consideration by request of the State of Arizona and BLM Arizona Strip Field Office, respectively, after review of the Draft EIS. The Sonoita Landfill, also known as the Elgin-Sonoita Landfill (on BLM-administered lands) was also withdrawn based on additional analysis that revealed that renewable energy development on this site would be incompatible with the Las Cienegas RMP (BLM 2003). These sites are not included as a REDA or in the analysis.



RDEP Nominated Sites



Based on an extensive public outreach process, the BLM and public identified potentially suitable previously disturbed sites on BLM-administered, state, municipal, private, tribal, and other federal lands.



Please see Appendix C, Table C-1 RDEP Nominated Sites, for RDEP nominated sites' names corresponding to the numbers on this figure. *Sites have multiple ownerships, majority ownership is displayed. The number of sites per landownership type is displayed.

Figure 2-1
October 2012

After the screening process, 48 sites containing 29,000 acres are proposed to be included as REDA, of which 25 sites containing 8,400 acres are on BLM-administered lands. **Table 2-2**, Evaluation of Nominated Sites for Inclusion as REDA, details which sites are included as a REDA and which sites were removed as REDAs.

Table 2-2
Evaluation of Nominated Sites for Inclusion as REDA

Site Number	Site Name	Land Owner	Total Nominated Acres	Acres in REDA
1	19th Avenue Landfill	Private	191	191
2	Belmont Mountain CAP	BOR	841	841
3	Belmont Proposed Disposal	BLM	3,174	1,607
4	Black Canyon City Landfill	BLM	25	25
5	Black Rock Gypsum Mine	BLM	679	679
6	Bouse Hills CAP	BOR	120	120
7	Brady CAP Site	BLM	1,023	136
8	Brady Wash Pipeline	BLM	3,240	0
9	Butler Valley – site withdrawn			
10	Cave Creek 2	Private	68	68
11	Cave Creek Landfill	BLM	42	42
12	Chevron Vacant Land	BLM	7,812	0
13	Christmas Mine	Private and BLM	496	496
14	Copperstone Mine	BLM	929	929
15	Cordes Lakes Hazmat Site	BLM	14	14
16	Dateland Gravel Pit	BLM	64	64
17	Detrital Wash	State	17,695	9,321
18	Dog Town Mine	BLM	2,080	2,080
19	Empire Farms – site withdrawn			
20	Florence – Price Dump	BLM	85	85
21	Foothills Proposed Disposal	BLM	1,355	0
22	Forepaugh Airport	BLM	635	0
23	Fredonia Landfill	BLM	21	21
24	Fredonia OHV Area – site withdrawn			
25	Granite Hill Landing Strip	BLM	2,656	0
26	Harcuvar Substation	BLM	59	59
27	Harquahala CAP	BOR	1,910	670
28	Harrison Road	Private and state	65	65
29	Hartman Wash Mine	BLM	678	0
30	Hassayampa Landfill	Private	131	131
31	Hassayampa CAP	BOR	723	723
32	Irvington	Private and state	13	13
33	Jones Private Property	Private	156	156
34	La Osa Surface Disturbance	BLM	41	41
35	Litchfield Park Urban Parcel	BLM	41	41
36	Little Harquahala CAP Site	BLM	159	159
37	Los Reales	Private	247	247

Table 2-2 (continued)
Evaluation of Nominated Sites for Inclusion as REDA

Site Number	Site Name	Land Owner	Total Nominated Acres	Acres in REDA
38	Mobile Proposed Disposal	BLM	2,843	1,266
39	Mokaac Gravel Pit	BLM	80	80
40	Old Yuma County FUP Site	BLM	27	27
41	Page Landfill	BLM	160	160
42	Prudence	Private	8	8
43	Quartzsite Area	State	22,131	0
44	Red Gap Ranch	Private	7,984	2,659
45	Red Rocks CAP	BOR and BLM	2,213	901
46	Ryan	Private	16	16
47	Ryland	Private	27	0
48	Saginaw-Valhalla – Snyder Mine and Quarry - this is a combination of three other nominations (numbers 49, 54, and 61)			
49	Saginaw Hill	BLM	503	503
50	San Xavier Mine	Tohono O'odham Nation	2,573	2,573
51	Silver Creek Landfill	BLM	50	50
52	Silverbell	Private	36	36
53	Snowflake Mine – site withdrawn			
54	Snyder Hill Mine	BLM	176	176
55	Sonoita Landfill – site withdrawn			
56	St. Mary's	Private	10	0
57	Tombstone Landfill	BLM	43	43
58	Torrez-Brant	Private	408	408
59	Tumamoc	Private	21	21
60	Twin Peaks – Sandario CAP	BOR	888	888
61	Valhalla	BLM	318	0
62	Vincent Mullins	Private	32	32
63	White Sage Gravel Pits	BLM	61	61
64	Wildcat Hill	Private	75	75

CAP – Central Arizona Project

Source: BLM 2012a

2.2.3 Identification of REDA Alternatives

Based on input from cooperating agencies and the public, the BLM has developed and evaluated in detail six action alternatives. The first Alternative, Alternative 1, Maximum REDA, carries forward all potential REDAs for analysis. Using this as a foundation, the BLM looked at the issues identified during scoping to form the themes for four other action alternatives: transmission, proximity to load centers, water consumption, and land tenure adjustments. Based on these themes, the BLM developed Alternatives 2 through 5 by overlaying issue-specific GIS layers (e.g., existing and proposed transmission corridors) on the Maximum REDA alternative. Alternative 6, the Collaborative-Based Alternative, combines the analysis from the other alternatives to address the planning issues.

While decisions made from this EIS would apply only to BLM-administered lands, the analysis was conducted statewide regardless of land status to facilitate statewide planning and identify areas for possible partnering between the BLM and other federal or state agencies and private land owners. Unless specifically nominated for analysis, this EIS does not analyze tribal or Department of Defense lands.

2.2.4 SEZ Screening Process and Alternatives

A SEZ is an area of land identified by the BLM, in collaboration with other federal, state, and local agencies or stakeholders, as best suited for large-scale solar energy production (20 MW or greater).

Serving as a step-down to the Solar PEIS ROD, the BLM is proposing one new SEZ as part of the RDEP process.

In addition to identifying REDAs, the RDEP is serving as a step-down process to the Solar PEIS ROD. As such, the BLM is also proposing to identify the Agua Caliente SEZ to facilitate the development of utility-scale solar projects (see **Figure 2-2**, Proposed Agua Caliente SEZ).

The proposed SEZ was identified based on a similar but different screening process from the REDAs in order to address specific needs of utility scale solar development. This process focused on the following criteria: available large contiguous parcels of BLM land (greater than 2,500 acres); proximity to transmission; limited known environmental or cultural constraints; proximity to roads and infrastructure; and preferably near existing development in order to consolidate impacts and minimize fragmentation. About 20,600 acres in the Agua Caliente area proved to best meet the overall criteria.

After identification of the proposed Agua Caliente SEZ, the BLM solicited input from the regional Arizona Game and Fish office, Indian tribes through ongoing consultation, and stakeholder groups for resource information specific to that location. These groups provided information indicating that portions of the SEZ provided recreational opportunities, hunting, access to other lands, cultural resources, and wildlife habitat and movement corridors. As a result of this input, two smaller SEZ footprints were also proposed for consideration in the Draft EIS.

Based on public comments on the Draft EIS, along with additional information from AGFD and a Class II cultural survey (archaeological sample survey) of the proposed SEZ, the BLM has revised the proposed SEZ boundary to address wildlife habitat and migration, lands with wilderness characteristics, cultural resources, and riparian areas. The revised boundary includes a one-kilometer buffer around the major washes to preserve wildlife corridors; removes the northern portion of the largest SEZ footprint to maintain the area for potential tortoise migration between the Palomas Mountains and Baragan Mountain; and avoids most known archaeological sites and lands with wilderness characteristics not managed to protect those characteristics under current resource management plans.

The Final EIS includes alternatives that contain either the large, medium, or small SEZ footprint as analyzed in the Draft EIS. Alternative 6 in the Final EIS includes the revised proposed SEZ footprint.



Proposed Agua Caliente SEZ



The proposed Agua Caliente Solar Energy Zone (SEZ) Alternatives 1 and 4 were based on the availability of large, continuous tracts of BLM-administered land near transmission lines, access roads, and an existing solar development. Alternatives 2 and 3 concentrate development into a small footprint. Based on the analysis of public comments and additional information from AGFD on the Draft EIS, the BLM has developed another SEZ alternative (revised proposed alternative 6 SEZ). The revised proposed SEZ minimizes effects on wildlife migration, lands with wilderness characteristics, cultural resources, and riparian areas.

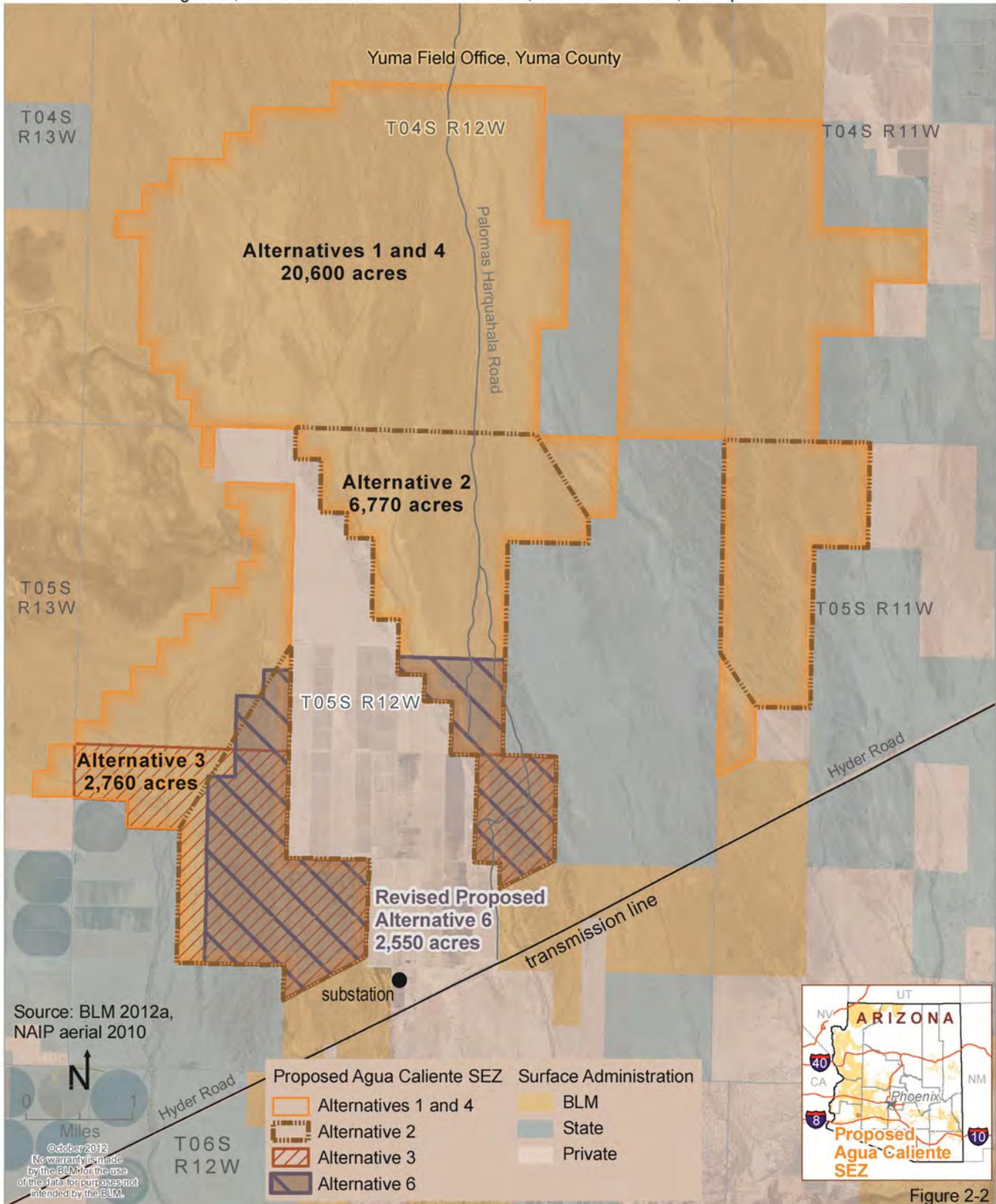


Figure 2-2

2.3 ALTERNATIVES

Decisions in land use plans guide future land management actions and subsequent site-specific implementation decisions. These land use plan decisions establish goals for resource management and the measures needed to achieve these goals, such as management actions and allowable uses. This EIS will not eliminate the need for site-specific environmental review for future individual renewable energy development proposals; the BLM will make individual decisions on a case-by-case basis whether or not to authorize individual renewable energy development projects in conformance with the amended land use plan on the basis of this EIS. The alternatives below describe the existing land use plan decisions (No Action Alternative) and proposed changes to land use plans in the action alternatives.

2.3.1 No Action Alternative

Under the No Action Alternative, renewable energy projects would be developed through ROW authorizations and land disposal actions in accordance with the BLM's existing lands and realty policies, existing solar or wind development policies (including the Solar PEIS ROD), and existing RMP decisions (see **Figure 2-3**, No Action Alternative). Additionally, the BLM would not identify the Agua Caliente SEZ.

Under this alternative, the BLM would continue to consider applications for development on all BLM-administered lands unless such development is prohibited by law, regulation, or RMP decision. Each BLM RMP has identified areas as ROW avoidance areas, variance lands for utility-scale solar energy development from the Solar PEIS ROD, exclusion areas, or available for application. Avoidance areas are those lands that are generally to be avoided but may be available for location of ROWs with special stipulations; exclusion areas would not be available for a ROW application under any circumstances. Available areas would be available for application under the terms and conditions outlined in the respective RMP. BLM-administered lands excluded from renewable energy development include the following:

- National Monuments;
- National Conservation Areas;
- Wilderness Areas; and
- Solar PEIS ROD exclusion areas (BLM and DOE 2012c).

Areas administratively excluded from renewable energy development vary by field office and individual RMP decisions, and may include ACECs, National Historic Trail corridors, lands supporting habitat for listed species, and riparian areas. Under the No Action Alternative, none of the Arizona RMPs would be amended.



No Action Alternative



Renewable energy projects would be developed through right-of-way authorizations in accordance with existing policies and Resource Management Plan decisions. BLM National Monuments, National Conservation Areas, and Wilderness Areas are legislatively excluded. Wilderness Study Areas and lands with wilderness characteristics managed to protect those characteristics are administratively excluded.

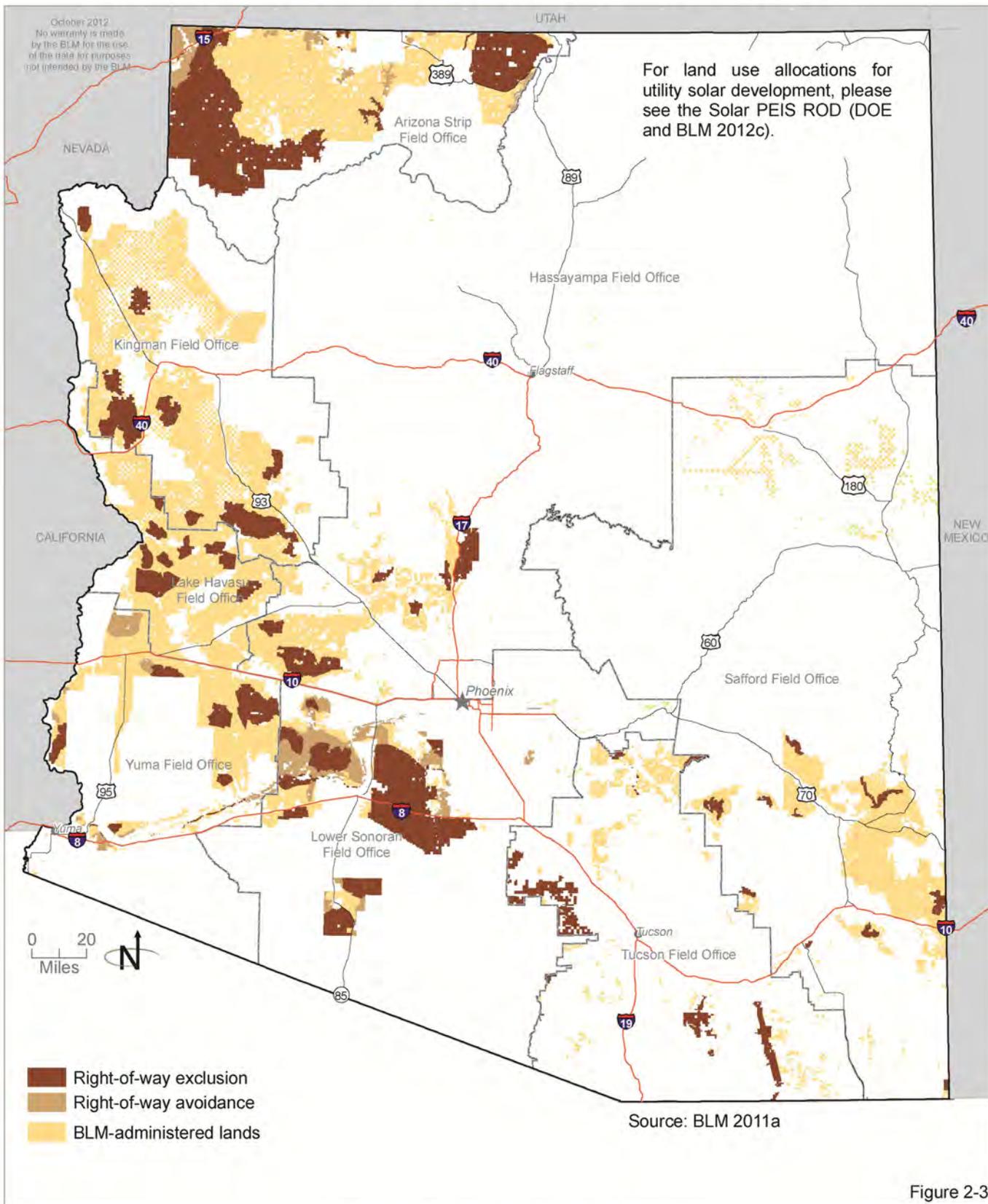


Figure 2-3

The BLM administers approximately 12.2 million surface acres in Arizona. Approximately 3.4 million acres of those lands are administratively excluded from ROW applications, and 8 million acres are potentially available for ROW applications based on existing land use plans (BLM 2011a). Wind projects at any scale and solar projects under 20 MW can apply on potentially available lands. Utility-scale solar energy projects (greater than 20 MW), are governed under the BLM's Solar Energy Development Program. Under this program 3,348 acres in the Brenda SEZ and 2,618 acres of the Gillespie SEZ are available for application. In addition, 3,380,877 acres are open to application but require developers to adhere to a variance process, as detailed in the Solar PEIS ROD (BLM and DOE 2012c). For more information on the utility-scale solar lands available, variance lands, and exclusion areas see Figure A-2, Land Use Allocations in Arizona as a Result of the Solar PEIS Record of Decision, in the ROD for the Solar PEIS (BLM and DOE 2012c, pg. 44).

Table 2-3, No Action Alternative: Acres Available and Excluded for ROW Applications, illustrates the amount of available and excluded acreage in existing decisions.

Table 2-3
No Action Alternative: Acres Available and Excluded for ROW Applications

BLM-Administered Land (acres)	
<i>Wind and Nonutility-scale solar</i>	
ROW exclusion areas	3,416,900
ROW avoidance areas	615,800
Available for ROW Application ¹	8,067,300
<i>Utility-scale solar²</i>	
SEZ lands Available for Utility-Scale Solar ROW Application	5,966
Variance Lands Available for Utility-Scale Solar ROW Application ³	3,380,877

¹ The acreage for available lands was determined by subtracting exclusion and avoidance areas in existing RMPs from the estimated total of BLM-administered lands in Arizona. However, it should be noted that avoidance areas may be available for ROWs and would be subject to special stipulations. Additional lands are excluded for utility-scale solar energy development as outlined in the Solar PEIS ROD.

² These acres are from the Solar PEIS ROD.

³ Require developers to adhere to a variance process, as detailed in the Solar PEIS ROD.

Source: BLM and DOE 2012a and 2012c

The Solar Final PEIS noted that acreage estimates for the utility-scale solar areas (available, variance, and exclusion lands) were calculated on the basis of the best available geographic information system (GIS) data. However, GIS data were not available for the entire set of exclusions; thus the exact acreage for exclusion areas could not be calculated (BLM and DOE 2012b, page ES-5, Table ES-2.1). Exclusions for utility-scale solar that could not be mapped will be identified during the ROW application process based on the decisions in the Solar PEIS ROD.

NEPA analyses for renewable energy development on BLM-administered lands would be prepared on a project-by-project basis. ROW exclusion areas and mitigation measures would be implemented in accordance with existing land use plans and national policy. In addition, projects that require land use plan amendments would be processed on an individual basis as needed.

2.3.2 Elements Common to All Action Alternatives

Land use plan decisions for public lands fall into two categories: desired outcomes (commonly described as goals), and uses and actions anticipated to achieve desired outcomes. Goals are broad statements of desired outcomes that usually are not quantifiable. Once the goals are established, the BLM identifies allowable uses (land use allocations) and management actions that are anticipated to achieve the goals.

Land use plans must identify uses (allocations) that are allowable, restricted, or prohibited on BLM-administered land. For RDEP, this entails identifying the REDAs and SEZ. Land use plans must also identify the actions anticipated to achieve the goals, including actions to maintain, restore, or improve land health. These could include proactive measures as well as measures or criteria that would be applied to guide day-to-day activities occurring on BLM-administered land.

The goals, management actions, design features, best management practices, and allocations common to all of the alternatives are described below.

Lands Available for Renewable Energy Development

Lands identified as REDAs would be available for renewable energy application. REDA lands would be subject to existing BLM renewable energy programs' policies and procedures. Applications proposed within REDAs would comply with some elements of the variance process as outlined in the Solar PEIS ROD and therefore could qualify for priority processing. REDA lands would be available for multiple uses, including off-highway vehicle (OHV) use, grazing, and recreation as allowed by the appropriate RMP decisions for the area. However, once a renewable energy application is submitted or a development proposed, the primary use of the area would be for renewable energy development, subject to appropriate environmental review.

Any SEZ lands designated through RDEP would be subject to the solar energy policies applicable to SEZs outlined in the Solar PEIS ROD.

Renewable Energy

Goals:

- Ensure the most environmentally responsible development and delivery of renewable energy; and
- Help meet community energy needs, create economic opportunities, and provide good value to the taxpayer.

Objectives:

- Identify disturbed sites, such as brownfields, landfills, abandoned mines, etc., which could be reused for renewable energy development;
- Identify areas with low resource sensitivity to lessen the risk of environmental conflicts;
- Identify areas suitable for development that are adjacent to load centers;
- Identify areas close enough to existing transmission to make it efficient and cost effective to bring the energy on-line;
- Identify areas with enough acreage of public lands to help meet the renewable energy demand (including the Arizona RPS), and provide flexibility for micro-siting and mitigation;
- Identify a SEZ specifically for utility-scale solar energy developments (more than 20 MW) in accordance with national BLM policy and guidance (BLM and DOE 2010, 2011, 2012a; Solar PEIS ROD); and
- Engage cooperating agencies, tribes and stakeholders in order to obtain broad input on the desired future renewable energy footprint in Arizona and to inform renewable energy developers in their siting of projects throughout the state.

Management Actions

Management actions are identified actions that are anticipated to achieve the RDEP's goals and desired outcomes; they include actions to maintain, restore, or improve land health, as well as measures or criteria that will be applied to guide day-to-day activities (e.g., applications) occurring on public lands. Management actions for renewable energy activities are as follows:

- Follow all applicable laws, regulations, policies, and guidance, including but not limited to the National Environmental Policy Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy and Management Act;

Management actions are identified actions that are anticipated to achieve the RDEP's goals and desired outcomes; they include actions to maintain, restore, or improve land health, as well as measures or criteria that will be applied to guide day-to-day activities occurring on public lands.

- Conduct consultation with cooperating agencies and stakeholders; federal and state resource management agencies; lease and mining claim holders and grazing permittees; and state, local, and tribal governments;
- Prioritize processing of renewable energy development and electricity transmission applications within the SEZ and REDAs over similar applications located outside of the SEZ and REDAs;
- Require appropriate design features for all renewable energy development projects on all lands available for application as described in **Appendix B**, Design Features, Required Plans, and BMPs. Design features would be applied as appropriate for the type, scale, location, and technology proposed for the development;
- Renewable energy development projects would not be authorized within a designated utility corridor;
- Avoid creating areas that would be difficult to manage. The effect on the manageability and use of public lands around boundaries of renewable energy facilities will be considered during environmental analysis of project applications; and
- Consolidate access and other supporting infrastructure for single projects and for cases in which more than one project is close to another to maximize efficient use of public land.
- Require additional documentation in cases where an energy development ROW application is submitted in an area identified as having a high potential for conflict with the resources of a unit of the National Park System (NPS) or special areas administered by the NPS (BLM and DOE 2012c). This documentation may include information to verify any or all of the following potential resource conditions resulting from the proposed project:
 - Increased loading of fine particulates (criteria pollutants: PM_{2.5} and PM₁₀ [particulate matter with a diameter of 2.5 micrograms or less and 10 micrograms or less, respectively]) and reduced visibility in Class I and sensitive Class II areas;
 - Vulnerability of sensitive cultural sites and landscapes, loss of historical interpretative value due to destruction or vandalism;
 - Altered frequency and magnitude of floods, and water quantity and quality;

- Reduced habitat quality and integrity and wildlife movement and/or migration corridors; increased isolation and mortality of key species;
- Fragmentation of natural landscapes;
- Diminished wilderness, scenic viewsheds, and night sky values on landscapes within and beyond boundaries of areas administered by the NPS; and
- Diminished cultural landscape qualities within and beyond boundaries administered by the NPS.

Design Features

Design features are means, measures, or practices intended to reduce or avoid adverse environmental impacts. In addition to incorporating the BMPs of the Wind PEIS ROD and design features of the Solar PEIS ROD, the RDEP proposes a suite of design features specific to Arizona that would establish the minimum specifications for management of individual renewable energy projects and mitigate adverse impacts. Appropriate design features must be incorporated into project-specific Plans of Development (PODs), Plans of Operation, and ROW grants. In general, the design features are accepted practices that are known to be effective when implemented properly at the project level. However, their applicability and overall effectiveness cannot be fully assessed except at the project-specific level when the project location and design are known. The proposed design features are presented in **Appendix B**, Design Features, Required Plans, and BMPs, by resource topic and project phase (i.e., siting and design, site characterization, construction, operations, decommissioning).

Many of the design features indicate the need for project-specific plans and studies. The content and applicability of these plans will depend on specific project requirements and locations; however, the design features provide some guidance of what to include in specific plans. The authorizing officer would determine the adequacy of such plans before approving a specific project.

Between publication of the Draft EIS and the Final EIS, the design features and BMPs were reviewed in light of the revised design features of the Solar PEIS ROD and the Wind PEIS ROD. The BLM determined that most of the RDEP's suggested mitigation measures duplicated national program guidance; in order to reduce the duplication, RDEP's design features and BMPs have been modified to conform to the BLM's national solar energy and wind energy programs. **Appendix B**, Design Features, Required Plans, and BMPs, has been modified to incorporate by reference the national Solar Energy Program design features, as described in the Solar PEIS, and the wind energy program BMPs, as described in the Wind Energy ROD. Only those design features and BMPs that are unique to Arizona and REDA lands are specifically noted in the revised appendix.

Land Tenure

Goal:

- Pursue land tenure adjustments to improve management of lands identified for disposal in existing RMPs to promote renewable energy development and resource conservation.

Objective:

- BLM would consider, on a case-by-case basis, disposing of REDA lands currently identified for disposal in existing RMPs in exchange for nonfederal lands within areas of high conservation priority to address resource issues and public needs. This could be done using a third-party transaction and/or direct exchange for lands with high conservation value.

Management Actions

- Prior to any available disposal parcel being processed, an additional review would be required to consider the possible presence of priority resources that warrant special protection and/or management that would be best achieved by retention in federal ownership (43 CFR 2430). Prior to disposal, all parcels would be reviewed and would not be disposed if they had any of the following conditions:
 - Contain Sonoran desert tortoise habitat, unless land disposal through an exchange provides greater benefits to desert tortoises;
 - Contain National Register-eligible cultural resources where mitigation and/or data recovery has not occurred prior to patent;
 - Are managed for wilderness characteristics;
 - Are within the Colorado River 100-year floodplain or riparian areas;
 - Would prohibit wild horse and burro free roaming behavior within or between areas inside the herd management area, or would eliminate habitat within the herd management area such that a significant reduction of the appropriate management levels will result;
 - Designated or proposed critical habitat for threatened or endangered plant or animal species;
 - Supported listed or proposed threatened or endangered species such that the disposal would be inconsistent with recovery needs and objectives or

would likely affect the recovery of the listed or proposed species;

- Supported federal candidate species such that the disposal would contribute to the need to list the species as threatened or endangered; or
- Contain other wildlife resource values of interest, such as BLM sensitive species or big game critical and crucial winter range.

Exceptions to the four previous criteria could occur if the recipient of the lands would protect the species or critical habitat equally well under the terms or criteria contained in the Endangered Species Act, such as disposal to a nonfederal governmental agency or private organization if conservation purposes for the species would still be achieved and ensured.

Given the screening criteria used to identify REDA lands, these conditions are unlikely to be present in most cases. Disposal of REDA lands currently identified for disposal would occur with the goal of benefiting local economies and creating development incentives. It would also be used as a tool for acquiring nonfederal lands with high conservation value. For example, REDA lands currently identified for disposal could be exchanged for a nonfederal inholding within an ACEC if such an exchange would improve protection of the relevant and important values of that ACEC.

Land Reuse

Goal:

- Establish sustainable development practices by reusing disturbed lands for renewable energy development.

Objectives:

- For existing ROWs, BLM would encourage concurrent authorized uses for renewable energy development such as installing solar panels to help energize mine facilities; and
- For new actions, BLM Arizona would require submission of proposals for retaining existing infrastructure and for rehabilitating, restoring, reclaiming, and remediating the landscape to meet renewable energy design features as part of Plans of Development, Plans of Operation, and other permitting documentation.

Management Actions:

- Encourage modifying rehabilitation or remediation plans on in-progress or yet-to-be-rehabilitated lands with renewable energy

development interest to meet renewable energy design feature standards;

- Incorporate sustainable development and reuse concepts in the design of new projects; and
- Incorporate ongoing community engagement in all planning, development, implementation, and review actions. This would include working with utilities and the ACC to ensure selected sites fit within existing transmission systems and strategic goals.

Remediation

There are no set rules for remediating disturbed sites such as brownfields, landfills, and mining sites; no two sites are alike, and conditions (e.g., level of contamination, economic incentives, etc.) can vary widely depending on location. However, there are some general goals, strategies, and BMPs that can be used effectively for remediating disturbed sites.

Goals:

- Through creative engineering solutions and environmental policies and programs, encourage remediation of previously disturbed lands to help create economic and social benefits, increase tax revenues, and further community development efforts;
- Work with developers to make previously disturbed sites ready to accommodate renewable energy projects so growth can be directed to those areas where supporting infrastructure already exists; and
- Target environmental benefits of improved water and air quality and vegetation communities for wildlife through use of remediation protocols on previously disturbed sites.

Management Actions:

- Work with developers to formulate a reuse assessment for the selected site. This involves an objective evaluation of opportunities, challenges, and possible implementation strategies. Additionally, a reuse assessment should consider property condition (physical condition, obsolescence, defects, deferred maintenance, etc.), an analysis of the site as a whole (including any building structures and mechanical and electrical systems), safety issues, and environmental issues (e.g., contamination);
- Evaluate a location's compatibility with any BLM, state, county, or municipality goals, planning, zoning, and economics;
- Evaluate the site's context within surrounding communities, properties, other agency lands, and stakeholders;

- Identify economic assets, economic development opportunities, and economic impacts for the site as part of the reuse assessment; and
- Identify possible partnering opportunities for site remediation.

Best Management Practices:

- Conduct public outreach and education to overcome misperceptions and build support for local projects. Conveying information about risk-based cleanup approaches, cost-effective engineering solutions, liability management options, and available funding programs helps generate interest in disturbed land reuse.
- Integrate remediation and reuse with community priorities. Cleanup and reuse can address multiple community concerns such as the need for locally generated clean energy.
- Coordinate intra- and inter-governmental relations. Reusing and redeveloping disturbed lands is an interest of many traditionally independent government departments; however, the independent agencies also may share a common interest in reuse and redevelopment to find mutually beneficial solutions.
- Conduct all appropriate inquiry and due diligence as part of the site assessment, including reviews of existing records, interviews with previous owners and operators, identifying existing or past signs of contamination, and following American Society for Testing and Materials standards.
- Plan for and, if necessary, conduct sampling and risk assessments as part of the clean-up process.
- When contamination is determined to be an unacceptable risk to public health and the environment or exceeds a standard, then remediation becomes necessary. Write and implement a remediation plan for the site.
- Completion of the site remediation is determined by either the site being ready and available for reuse or beginning the specific renewable energy project construction.

Best management practices (BMPs) are practices or a combination of practices that are determined to provide the most effective, environmentally sound, and economically feasible means of managing an activity and mitigating its impacts.

Site cleanup and reuse can be mutually supportive by leveraging infrastructure needs, sharing data, minimizing demolition and earth-moving activities, reusing structures and demolition material, and combining other activities that support timely and cost-effective cleanup and reuse. Early consideration of green remediation opportunities offers the greatest flexibility and likelihood for related practices to be incorporated throughout a project life. While early planning is optimal, green strategies such as

engineering optimization can be incorporated at any time during site investigation, remediation, or reuse (CDPHE 2005).

2.3.3 Alternative I: Maximum REDA

This alternative maximizes opportunities for siting renewable energy development while avoiding sensitive resources. It provides maximum flexibility for locating small- to large-scale projects without consideration of other physical constraints, such as distance to transmission or load. By eliminating areas with known sensitive resources (see **Table 2-1**, Areas with Known Sensitive Resources [Eliminated from REDA Consideration]) and incorporating disturbed sites, this alternative identifies areas as REDAs that have a low likelihood of resource conflicts.

The BLM available lands, management actions, design features, and BMPs in **Section 2.3.2**, Elements Common to All Action Alternatives, would be applied to the REDA BLM-administered lands.

Table 2-4, Alternative I: Acres within Maximum REDA and Proposed Agua Caliente SEZ, outlines the number of REDA acres across BLM-administered lands and all other non-BLM-administered lands under Alternative I. See **Figure 2-4**, Alternative I: Maximum REDA - Areas Eliminated from Consideration, and **Figure 2-5**, Alternative I: Maximum REDA on BLM-Administered and Non-BLM-Administered Lands for illustration of these areas.

Table 2-4
Alternative I: Acres within Maximum REDA and Proposed Agua Caliente SEZ

	BLM-Administered Land (acres)	Non-BLM-Administered Land (acres)
REDA	266,100	2,141,000
Proposed Agua Caliente SEZ	20,600	0
<i>Total</i>	<i>286,700</i>	<i>2,141,000</i>

Source: BLM 2012a

Agua Caliente Solar Energy Zone

The BLM is proposing to identify the Agua Caliente SEZ. Lands that are identified as a SEZ will be given priority for utility-scale solar energy development. As defined in the Solar PEIS ROD, a SEZ is an area with few impediments to utility-scale production of solar energy where BLM would prioritize solar energy and associated transmission infrastructure development. The DOI and BLM Arizona staff provided initial criteria to guide identification of potential suitable parcels, including lands that:



Alternative 1: Maximum REDA on BLM-Administered and Non-BLM-Administered Lands



Alternative 1 includes low resource sensitivity areas, RDEP nominated sites, and proposed Agua Caliente Solar Energy Zone (SEZ).

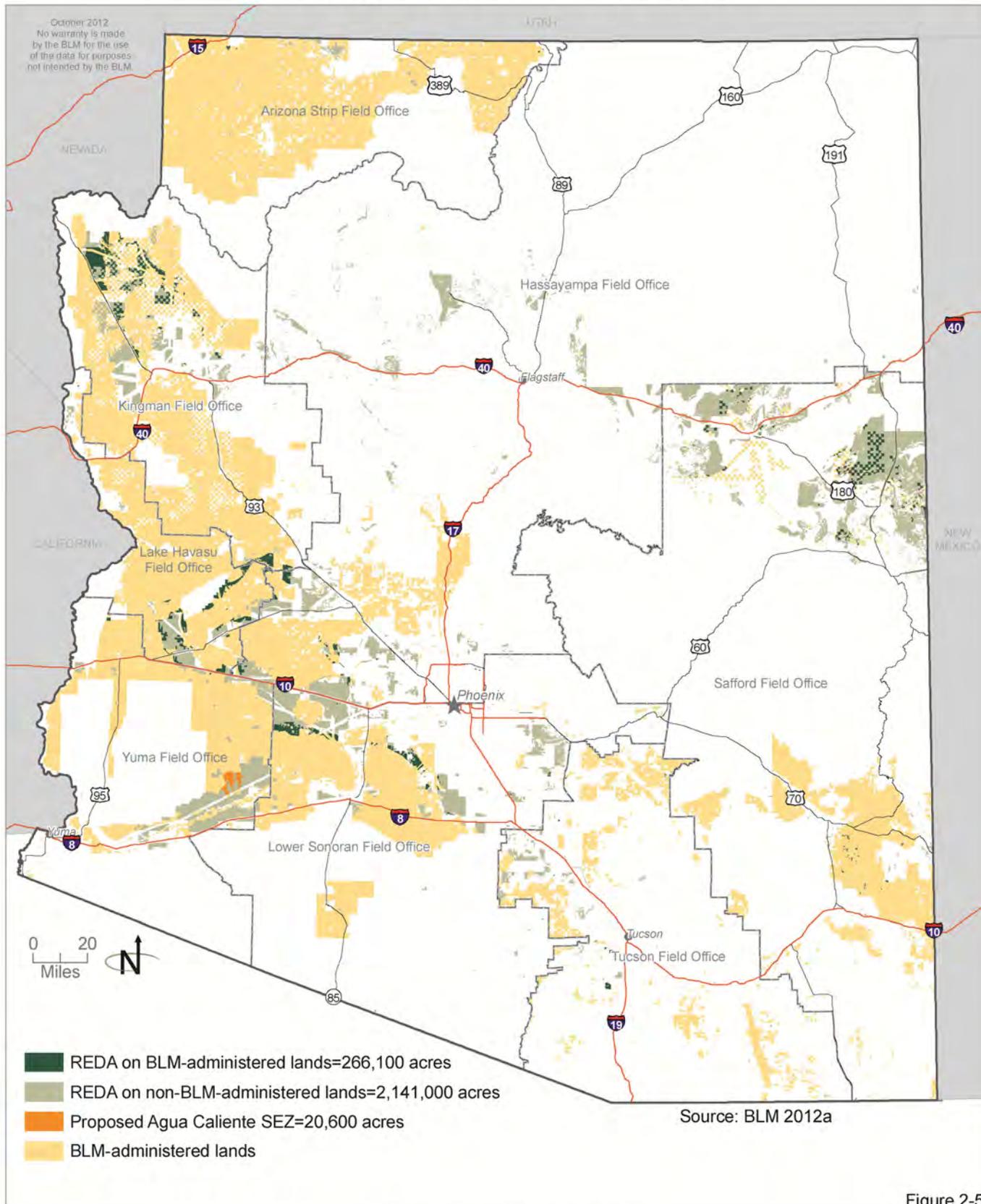


Figure 2-5

- Were located near existing transmission with capacity or designated corridors;
- Were located near existing roads and other infrastructure;
- Generally had a slope of 1 to 2 percent or less;
- Contained a large continuous tract of BLM-administered land with a minimum of 2,500 acres;
- Had limited known environmental constraints; and
- Were near an existing solar development.

Based on these criteria, the proposed Agua Caliente SEZ in **Figure 2-2**, Proposed Agua Caliente SEZ, is the defined analysis area and encompasses 20,600 acres. The 20,600 acres for this proposed SEZ footprint is the maximum area available and was based upon large contiguous tracts of BLM-administered land that had limited known environmental constraints, met all of the above-listed criteria, and is large enough to allow for maximum flexibility in micro-siting of a project and any necessary mitigation measures to reduce impacts of multiple projects. Any development of the proposed Agua Caliente SEZ would be required to follow the requirements of the Solar Energy Program from the Solar PEIS ROD and management actions, design features, and BMPs noted in **Section 2.3.2**, Elements Common to All Action Alternatives.

Additionally, the BLM would petition the Secretary of the Interior to withdraw 20,600 acres in the proposed Agua Caliente SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, to protect and preserve the area for future solar energy development.

2.3.4 Alternative 2: Transmission Line and Utility Corridor REDA

This alternative responds to scoping comments that requested the BLM find renewable energy facility locations close enough to transmission to make it efficient and cost effective to bring the energy on-line and deliver it to the market. This alternative seeks to reduce environmental impacts by focusing renewable energy development on lands within reasonable proximity to designated utility corridors and existing or certified transmission lines. It was developed in coordination with the ACC and utility companies to determine how far away a renewable energy project could be from an existing transmission line to make it economically feasible while affording environmental protections through minimal disturbance. This alternative allows flexibility to practicably locate generation sites at a distance from population utilizing existing and planned transmission.

For this alternative, the BLM started with the Maximum REDA lands (Alternative 1), and then narrowed them further to lands within five miles of an existing or planned transmission line including: (1) BLM-designated utility

corridors, including the West Wide Energy Corridors; (2) existing transmission lines 230 kilovolt (kV) or greater; and (3) reasonably foreseeable proposed transmission lines 230 kV or greater¹ (**Figure 2-6**, Alternative 2: Transmission Line and Utility Corridor REDA - Areas Eliminated from Consideration, and **Figure 2-7**, Alternative 2: Transmission Line and Utility Corridor REDA on BLM-Administered and Non-BLM-Administered Lands). Larger REDAs contiguous with areas within five miles of existing or planned transmission lines were also included. The BLM lands available, management actions, design features, and BMPs spelled out in **Section 2.3.2**, Elements Common to All Action Alternatives, would be applied to the BLM-administered lands identified as the Transmission Line and Utility Corridor REDA in this alternative. **Table 2-5**, Alternative 2: Acres within Transmission and Utility REDA and Proposed Agua Caliente SEZ, outlines the number of REDA acres distributed across BLM-administered lands and all other, non-BLM-administered lands under Alternative 2.²

Table 2-5
Alternative 2: Acres within Transmission and Utility REDA and Proposed Agua Caliente SEZ

	BLM-Administered Land (acres)	Non-BLM-Administered Land (acres)
REDA	185,700	1,492,000
Proposed Agua Caliente SEZ	6,770	0
<i>Total</i>	<i>192,470</i>	<i>1,492,000</i>

Source: BLM 2012a

Agua Caliente Solar Energy Zone

Under Alternative 2, the footprint of the Agua Caliente SEZ would be reduced to 6,770 acres. This smaller analysis area would meet all of the listed selection criteria noted previously under Alternative 1, but would concentrate the development into a smaller footprint. This analysis area fits with the theme for Alternative 2, Transmission and Utility Corridors, namely by emphasizing development in close proximity to the existing and proposed transmission lines, constructed access roads, and existing renewable energy projects. This resulted in removing the northern and

¹ The reasonably foreseeable proposed transmission lines are only those that are certified routes by the ACC.

² If only a portion of a REDA was within the transmission line corridor, all the REDA was included in the calculations.



Alternative 2: Transmission Line and Utility Corridor REDA - Areas Eliminated from Consideration



Alternative 2 eliminates REDA not within 5 miles of existing or likely to be developed transmission lines, designated Arizona BLM Utility Corridors, and designated BLM West Wide Energy Corridors.

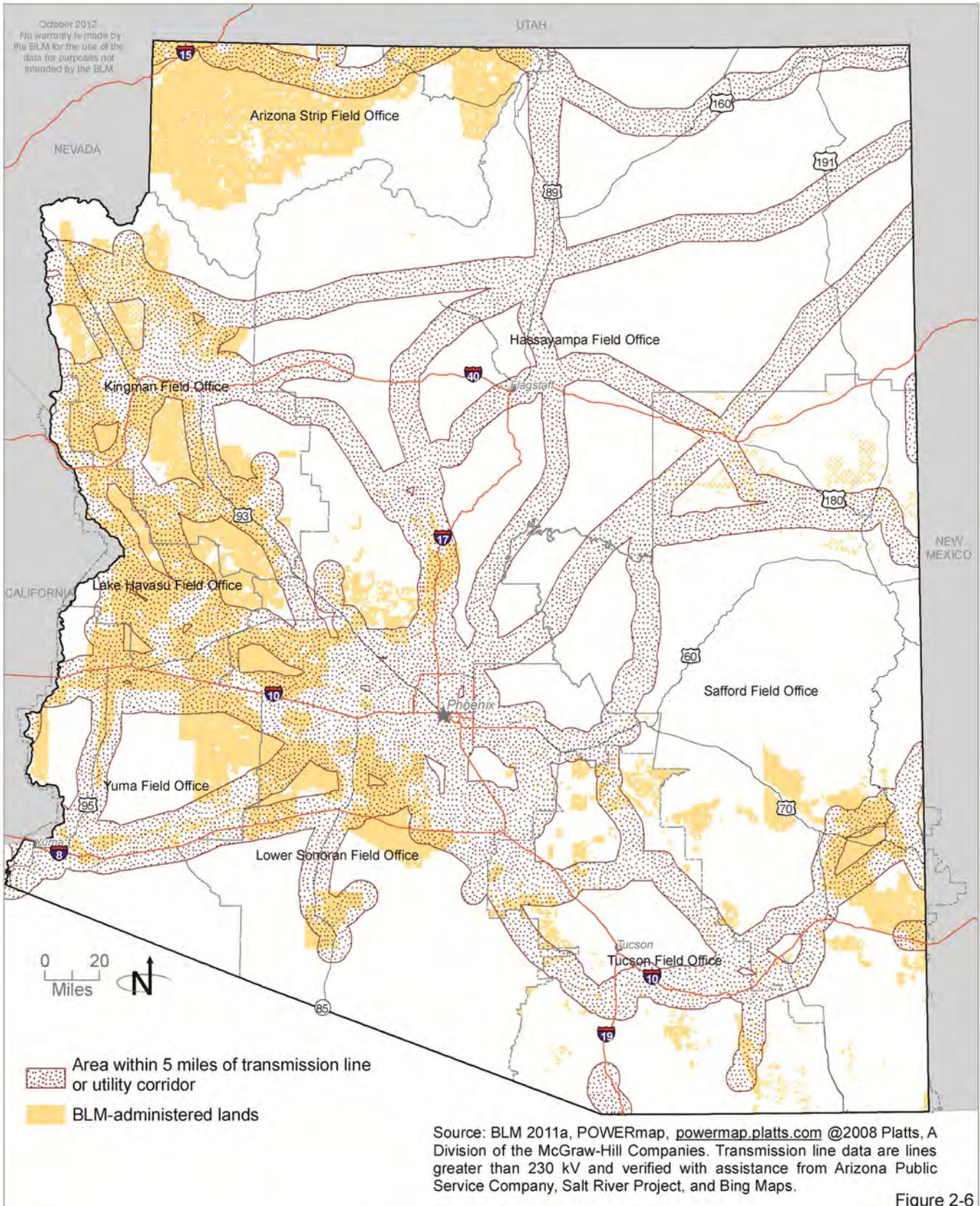


Figure 2-6



Alternative 2: Transmission Line and Utility Corridor REDA on BLM-Administered and Non-BLM-Administered Lands



Alternative 2 includes low resource sensitivity areas, RDEP nominated sites, and proposed Agua Caliente Solar Energy Zone (SEZ). Alternative 2 also includes REDA within 5 miles of existing or likely to be developed transmission lines, designated Arizona BLM Utility Corridors, and designated BLM West Wide Energy Corridors.

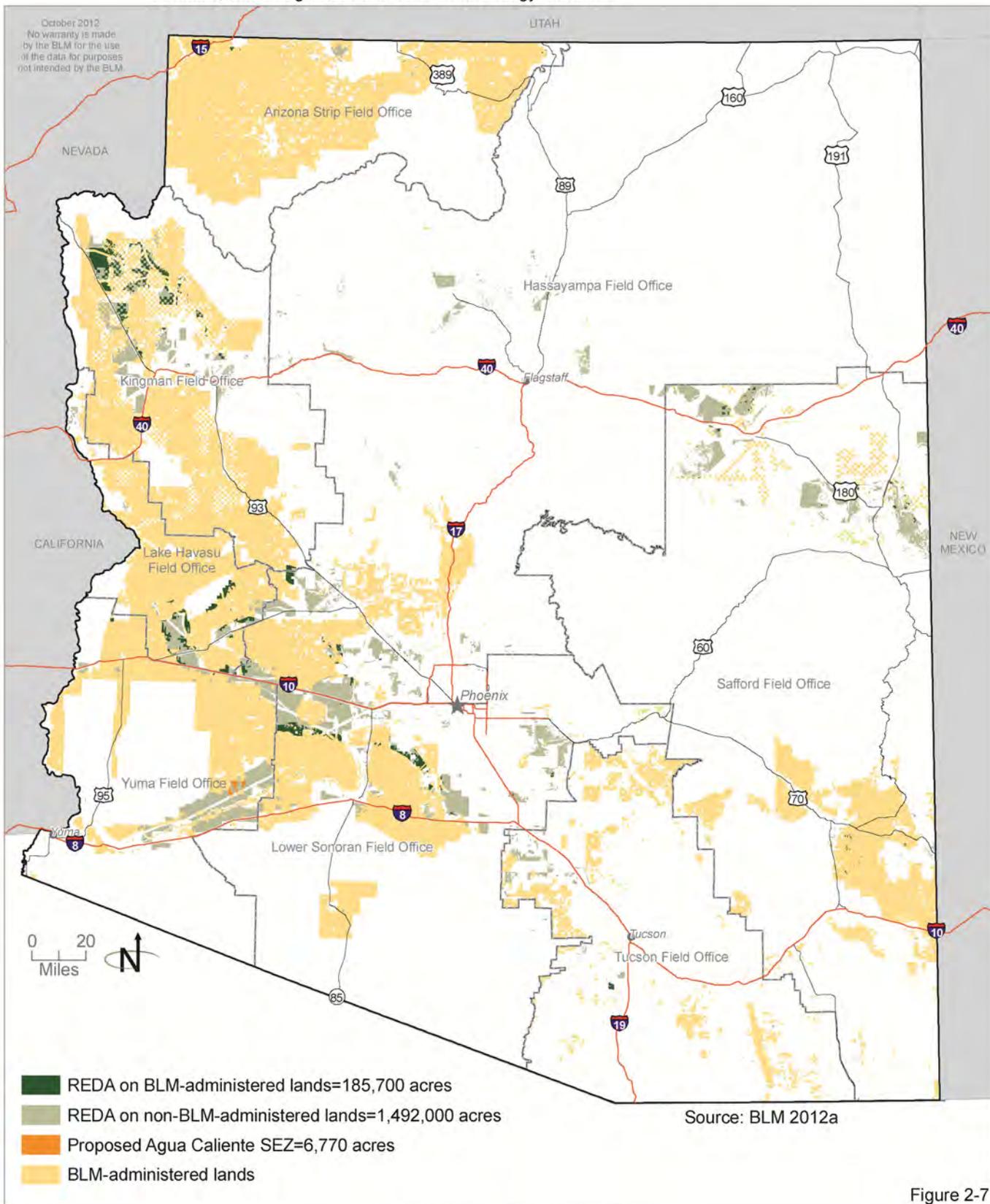


Figure 2-7

western portions of the analysis area as these are further away from transmission, roads and access points, and existing development. This reduced analysis area was analyzed to determine how well the reduced acreage accommodates flexibility in micro-siting and mitigation. Adjacent generation on private lands may affect logical development units.

For purposes of analysis, the entire 6,770 acres was analyzed under Alternative 2. Management of the proposed Agua Caliente SEZ would follow the requirements of the Solar Energy Program from the Solar PEIS ROD and management actions, design features, and BMPs noted in **Section 2.3.2, Elements Common to All Action Alternatives.**

Additionally, the BLM would petition the Secretary of the Interior to withdraw 6,770 acres in the proposed Agua Caliente SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, to protect and preserve the area for future solar energy development.

2.3.5 Alternative 3: Load Offset REDA

Alternative 3 would keep energy generation near the point of demand, such as cities, towns, or industrial centers, while helping Arizona meet the following RPS commitments:

- Fifteen (15) percent of energy generation needs to be met by renewable energy sources by 2025;
- Thirty (30) percent of that 15 percent is to come from distributed renewable resources; and
- One-half of the distributed renewable energy requirement is to come from residential applications, and the remaining one-half is to come from non-residential, non-utility applications.

Keeping energy generation near the point of demand would result in the following:

- Offset urban, rural, or industrial demand by serving both large and smaller loads;
- Reduce load required from the larger power grid, thereby allowing routing to other locations using existing transmission;
- Provide opportunities for utility-scale and distributed energy;
- Promote the development of renewable energy industrial parks near Palo Verde Nuclear Generating Station and the town of Gila Bend; and
- Help Arizona meet its RPS commitments.

The BLM considered only those lands identified under Alternative 1 within a 10-mile area around all incorporated cities in Arizona (ALRIS 2011a), a 5-mile area around the Central Arizona Project ROW and known irrigation sources, a 20-mile area around the Palo Verde Nuclear Generating Station, and a 20-mile area around the town of Gila Bend (**Figure 2-8**, Alternative 3: Load Offset REDA - Areas Eliminated from Consideration, and **Figure 2-9**, Alternative 3: Load Offset REDA on BLM-Administered and Non-BLM-Administered Lands).

Section 2.3.2, Elements Common to All Action Alternatives, describes all of the management actions, design features, and BMPs that are included in this alternative. **Table 2-6**, Alternative 3: Acres within Load Offset REDA and Proposed Agua Caliente SEZ, outlines the number of REDA acres across BLM-administered lands and all other, non-BLM-administered lands under Alternative 3.

Table 2-6
Alternative 3: Acres within Load Offset REDA and Proposed Agua Caliente SEZ

	BLM-Administered Land (acres)	Non-BLM-Administered Land (acres)
REDA	82,500	958,300
Proposed Agua Caliente SEZ	2,760	0
<i>Total</i>	85,260	958,300

Source: BLM 2012a

Agua Caliente Solar Energy Zone

Under Alternative 3, the footprint of the proposed Agua Caliente SEZ would be reduced to 2,760 acres. This smaller analysis area would meet all of the listed selection criteria noted previously under Alternative 1, but would concentrate the development into a smaller footprint. The analysis area fits with the theme for Alternative 3 of keeping energy generation close to load centers of the local agricultural lands and nearby communities such as Dateland. As seen on **Figure 2-9**, Alternative 3: Load Offset REDA on BLM-Administered and Non-BLM-Administered Lands, only the small area in the southwestern portion of the largest proposed SEZ footprint would fall into this alternative. This reduced analysis area was analyzed to determine how well the reduced acreage accommodates flexibility in micro-siting and mitigation. Adjacent generation on private lands may affect logical development units.

Management of the proposed Agua Caliente SEZ would follow the requirements of the Solar Energy Program from the Solar PEIS ROD and



Alternative 3: Load Offset REDA - Areas Eliminated from Consideration



Alternative 3 eliminates REDA not within 10 miles of Arizona incorporated cities, not within 5 miles of US Bureau of Reclamation (BOR) Central Arizona Project right-of-way and irrigation pumping sites, and not within 20 miles of Palo Verde Nuclear Power Plant and the town of Gila Bend.

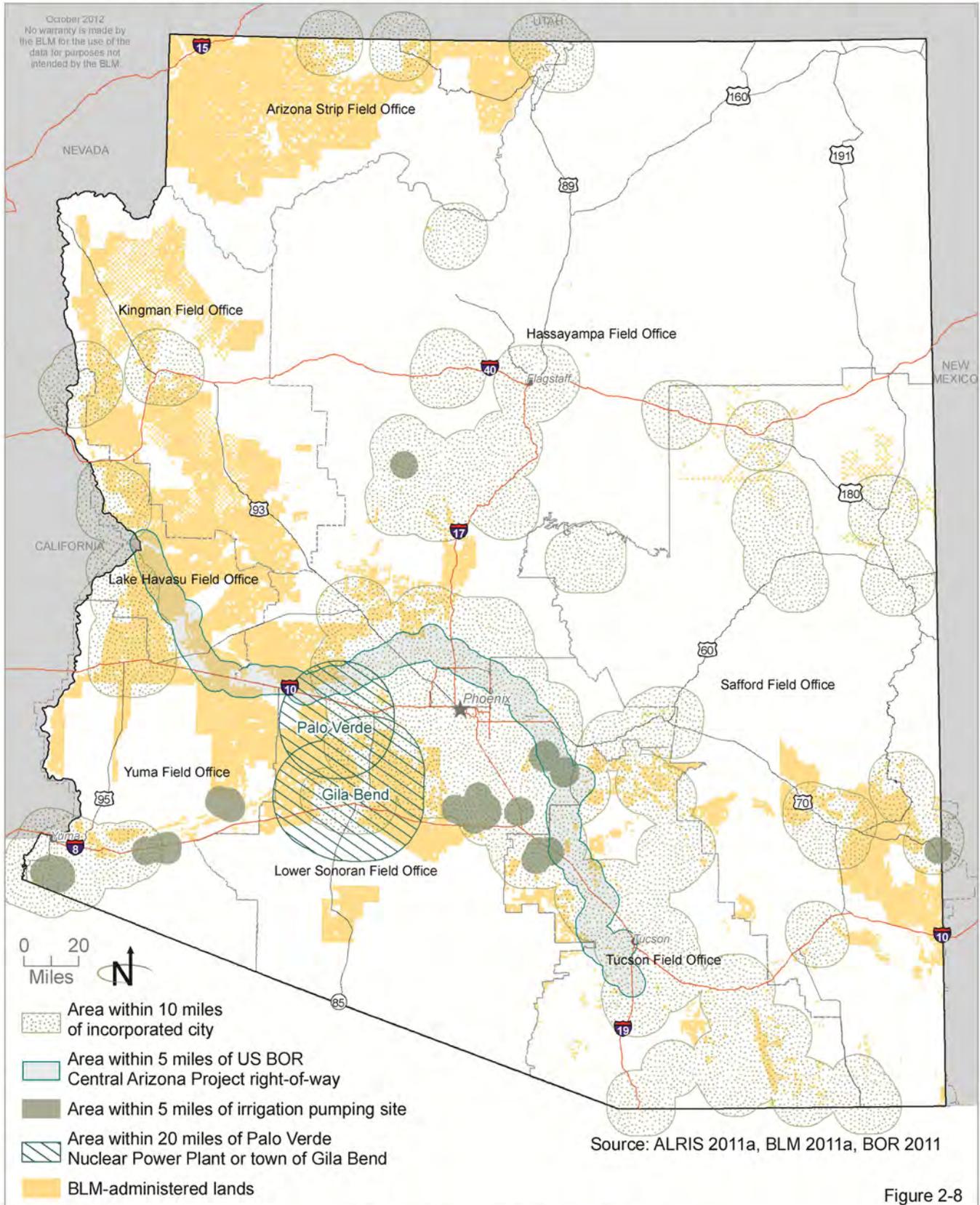


Figure 2-8



Alternative 3: Load Offset REDA on BLM-Administered and Non-BLM-Administered Lands



Alternative 3 includes low resource sensitivity areas, RDEP nominated sites, and proposed Agua Caliente Solar Energy Zone (SEZ). Alternative 3 also includes REDA within 10 miles of Arizona incorporated cities, 5 miles of US Bureau of Reclamation Central Arizona Project right-of-way and irrigation pumping sites, and 20 miles of Palo Verde Nuclear Power Plant and the town of Gila Bend.

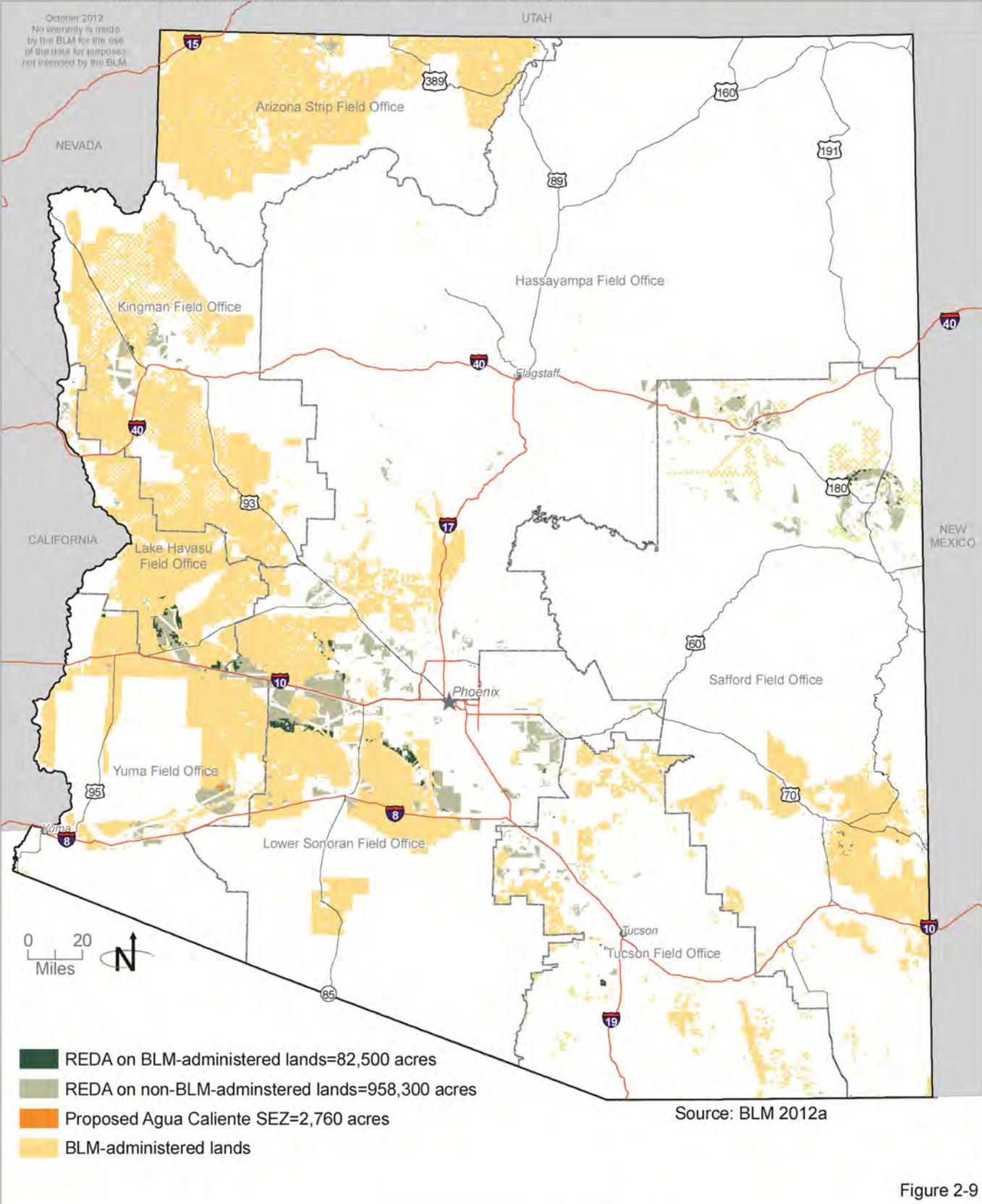


Figure 2-9

management actions, design features, and BMPs noted in **Section 2.3.2, Elements Common to All Action Alternatives.**

Additionally, the BLM would petition the Secretary of the Interior to withdraw 2,760 acres in the proposed Agua Caliente SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, to protect and preserve the area for future solar energy development.

2.3.6 Alternative 4: Water Conservation and Protection REDA

The Water Conservation and Protection REDA alternative is intended to respond to public concerns over water availability in Arizona, potential effects on other water users, and impacts from renewable energy facilities on water resources. It focuses on avoiding impacts on sensitive surface watersheds, protecting and maintaining groundwater quality and quantity, and reducing consumptive use of water.

Alternative 4 was developed from the Maximum REDA (Alternative 1). While the Maximum REDA (Alternative 1) addresses some water issues, this alternative goes further by proposing water protection zones that provide additional design features to protect water resources in areas with known water supply issues. Specific data used to evaluate and map the water protection zones is presented in **Chapter 3, Affected Environment.**

The water protection zones are described in **Table 2-7, Water Protection Zones**, and shown on **Figure 2-10, Alternative 4: Water Conservation and Protection Zones REDA with Proposed Water Resource Protections**, **Figure 2-11, Alternative 4: Water Conservation and Protection REDA on BLM-Administered Lands**, and **Figure 2-12, Alternative 4: Water Conservation and Protection REDA on Non-BLM-Administered Lands.** The BLM management actions, design features, and BMPs in this alternative would be the same as those listed under **Section 2.3.2, Elements Common to All Action Alternatives**, with the addition of those design features listed under each zone in **Table 2-7.**

As part of the required water resources mitigation and monitoring plan (see the water design features in **Appendix B, Design Features, Required Plans, and BMPs**), applicants could include water conservation and replenishment techniques such as importing water, treating and using brackish water, capturing and using storm water runoff, water retirement, use of recycled or waste water, and vegetation treatments (such as tamarisk removal). **Table 2-8, Alternative 4: Acres within Water Protection Zones for REDAs and the Proposed Agua Caliente SEZ**, outlines the number of acres identified under each zone.



Alternative 4: Water Conservation and Protection Zones REDA with Proposed Water Resource Protections



Alternative 4 categorizes REDA into Water Protection Zones of 1, 2, or 3. Zones were created based on information found in Table 2-6.

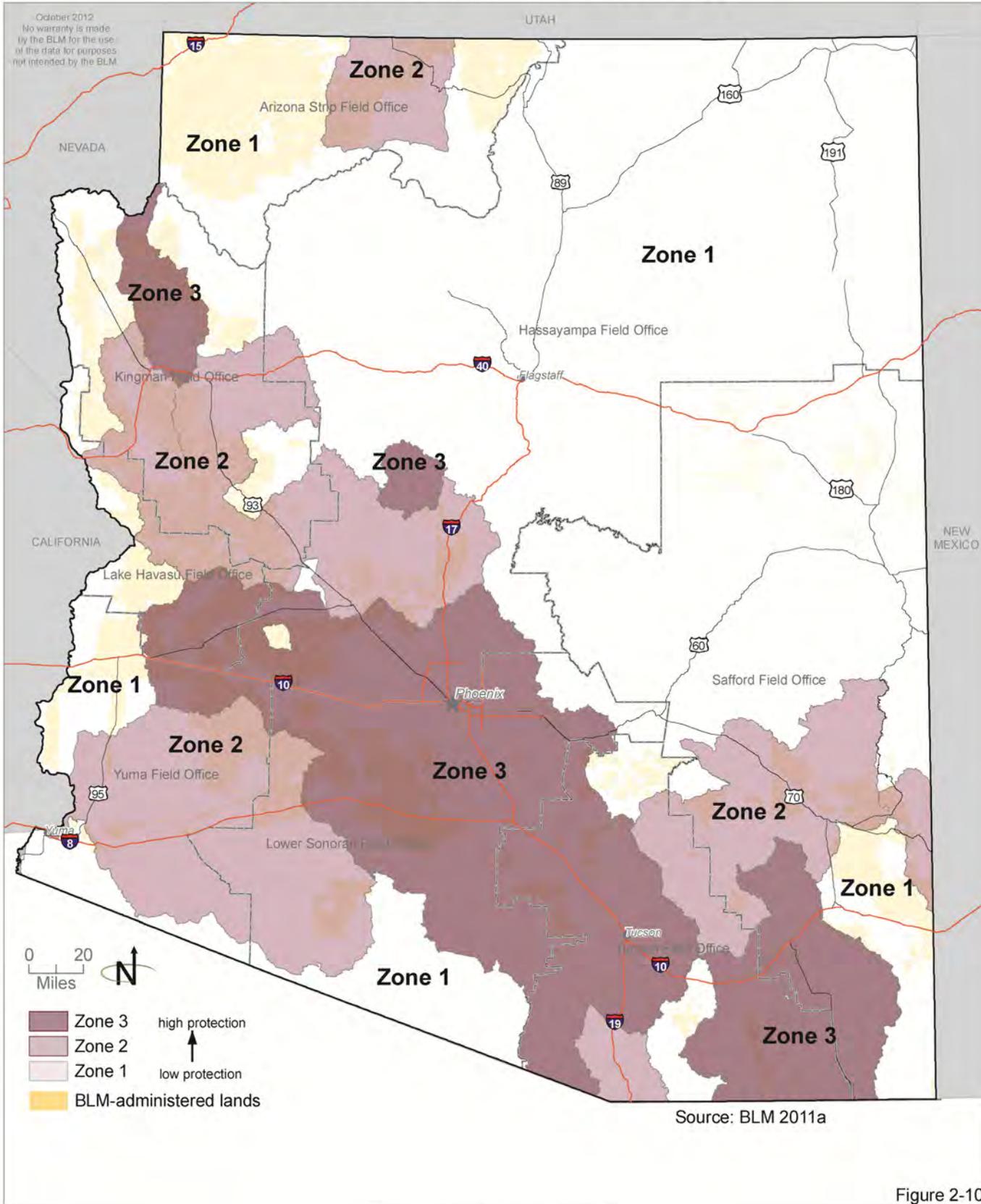


Figure 2-10



Alternative 4: Water Conservation and Protection REDA on BLM-Administered Lands



Alternative 4 includes low resource sensitivity areas, RDEP nominated sites, and proposed Agua Caliente Solar Energy Zone (SEZ). Alternative 4 categorizes REDA into Water Protection Zones 1, 2, or 3. Zone 1 affords the least protection and Zone 3 the highest.

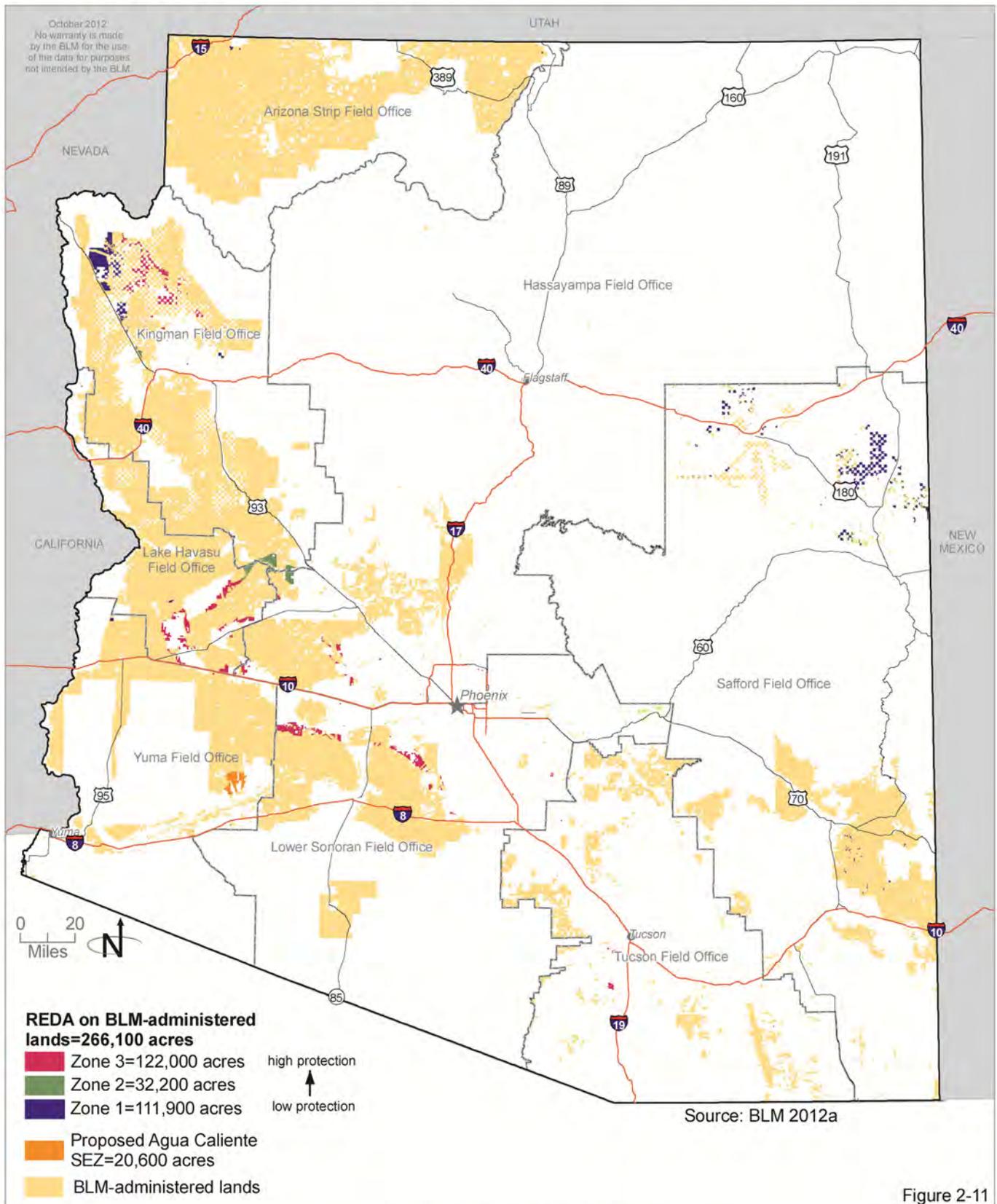


Figure 2-11



Alternative 4: Water Conservation and Protection REDA on Non-BLM-Administered Lands



Alternative 4 categorizes REDA into Water Protection Zones 1, 2, or 3. Zone 1 affords the least protection and Zone 3 the highest.

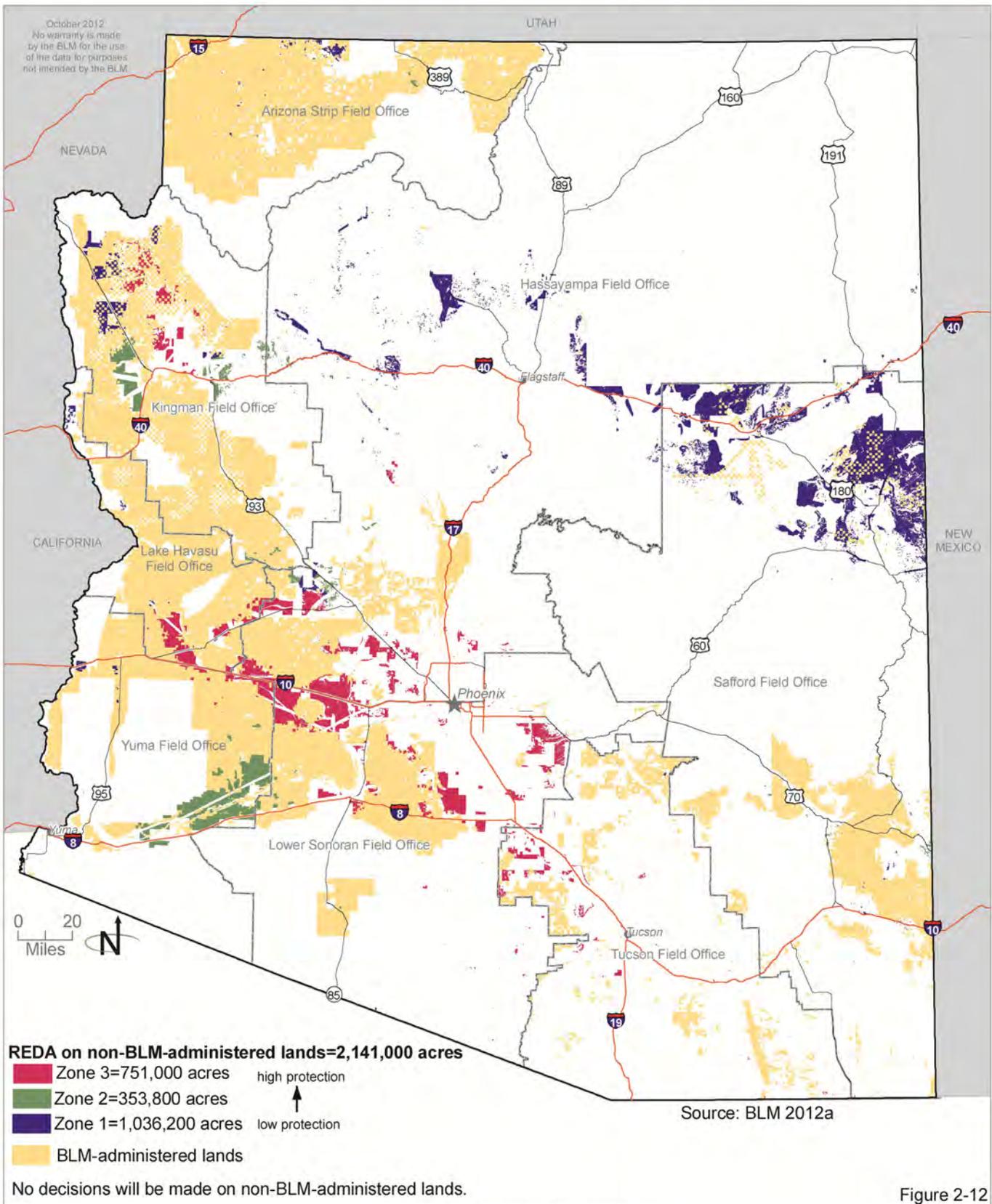


Figure 2-12

**Table 2-7
Water Protection Zones**

Water Protection Zone 3 (WPZ 3) – Represents the highest level of water resource protections and would apply to basins currently in overdraft that have long-term groundwater sustainability issues at baseline rates of groundwater consumption based on the criteria listed below.

Criteria	Design Features
<ul style="list-style-type: none"> • Groundwater demand exceeds natural recharge AND one or more of the following: <ul style="list-style-type: none"> – Ratio of water demand to water in storage is less than or equal to 1:500 – Mean negative water level change rate is greater than -2 feet per year in one or more sub-basins • San Pedro Priority Watershed to meet management objectives of the San Pedro Riparian National Conservation Area 	<p>All activities subject to applicable features, plus the following (applies only to new water developments):</p> <ul style="list-style-type: none"> • De minimis use only (e.g., drinking water, solar panel washing, etc.) • Annual consumption shall not exceed 55 acre-feet per year

Water Protection Zone 2 (WPZ 2) – Represents a moderate level of water resource protections and would apply to groundwater basins, surface watersheds, and other areas based on the criteria listed below.

Criteria	Design Features
<ul style="list-style-type: none"> • Groundwater demand exceeds natural recharge AND one or more of the following: <ul style="list-style-type: none"> – Ratio of water demand to water in storage is less than or equal to 1:1,000 – Mean negative water level change rate is greater than -0.1 feet per year in one or more sub-basins. • Environmental Protection Agency Sole Source Aquifers • Bureau of Land Management Priority Watersheds 	<p>All activities subject to applicable features, plus the following (applies only to new water developments):</p> <ul style="list-style-type: none"> • Industrial water use limited to solar photovoltaic, solar thermal with dry-cooling, or similar low-water use technologies

Water Protection Zone 1 (WPZ 1) – No additional levels of protection besides the standard design features as discussed in **Section 2.3.2, Elements Common to All Action Alternatives.**

Areas where adequate data is not readily available to evaluate against the criteria would, at a minimum, have Zone 1 protections. May contain lands with limited or extremely challenging access to groundwater and those without availability of renewable water supplies and access to water delivery infrastructure. May also contain lands that may be diverting or pumping Colorado River water, requiring an allocation of Colorado River water for legal use. Additional protections may be afforded to these areas as specific project applications are received and the areas are further assessed.

Criteria	Design Features
<ul style="list-style-type: none"> • Groundwater demand less than natural recharge. 	<ul style="list-style-type: none"> • All activities subject to applicable design features as discussed in Section 2.3.2, Elements Common to All Action Alternatives.

Table 2-8
Alternative 4: Acres within Water Protection Zones for REDAs and the Proposed
Agua Caliente SEZ

	BLM-Administered Land (acres)	Non-BLM- Administered Land (acres)
REDA in Water Protection Zone 3	122,000	751,000
REDA in Water Protection Zone 2	32,200	353,800
REDA in Water Protection Zone 1	111,900	1,036,200
<i>Total REDA</i>	<i>266,100</i>	<i>2,141,000</i>
Proposed Agua Caliente SEZ (Water Resource Protection Zone 2)	20,600	0
<i>Total REDA and SEZ</i>	<i>286,700</i>	<i>2,141,000</i>

Source: BLM 2012a

Agua Caliente Solar Energy Zone

The proposed Agua Caliente SEZ analysis area is the same as described in Alternative 1, Maximum REDA. As the area considered for the REDA in this alternative is the maximum area, the footprint for the proposed SEZ was also kept to the maximum area. The 20,600-acre area was based upon the same criteria noted under Alternative 1 for the proposed Agua Caliente SEZ. Management of the proposed Agua Caliente SEZ would follow the requirements of the Solar Energy Program from the Solar PEIS ROD and management actions, design features, and BMPs noted in **Section 2.3.2**, Elements Common to All Action Alternatives. Additionally, the proposed SEZ would include the design features noted under Water Protection Zone 2, as described in **Table 2-7**, Water Protection Zones, above. Similar to Alternative 1, the BLM would petition the Secretary of the Interior to withdraw 20,600 acres in the proposed Agua Caliente SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, to protect and preserve the area for future solar energy development.

2.3.7 Alternative 5: Land Tenure REDA

The Land Tenure REDA alternative meets the purpose and need for the RDEP in planning for environmentally sound renewable energy development on public lands in Arizona by focusing on lands that prior planning processes have concluded are suitable for disposal. These public lands are both within the Maximum REDA (the area identified in Alternative 1) and have been identified as suitable for disposal in existing land use plans. These lands were identified as suitable for general disposal for a number of reasons, including low resource values, previous disturbance, and isolation from larger blocks of public land, which has made managing them as public lands difficult (see

Figure 2-13, Alternative 5: Land Tenure REDA on BLM-Administered Lands). This would be an option for any RDEP alternative in addition to being considered as a stand-alone option in Alternative 5: Land Tenure REDA.

With the increased emphasis on renewable energy development, including on public lands, this alternative examines two possible options for these disposal lands:

1. Retain and allocate the areas for renewable energy development. Existing law and policy require the BLM to authorize renewable energy projects with ROW grants, normally with a term of 30 years. Proposed BLM rule-making may allow the BLM in the future to utilize a competitive process when authorizing ROWs for renewable energy development.
2. Prioritize the disposal of these lands to renewable energy purposes. Add criteria to favor disposal in a manner that creates additional social and environmental benefits (e.g., assist in addressing a water issue, adjusting land patterns to meet public needs).

Because option 2 proposes disposal of public land tracts that could generate public revenues, the following additional disposal criteria focus on creating additional public benefits:

- Priority disposal would be considered to entities who offer lands of equivalent value in areas of conservation importance such as national monuments, wilderness areas, or priority watersheds.
- A public interest determination would be made in accordance with Section 206(a) of FLPMA for disposals by exchange in association with a renewable energy project.
- Disposals may be considered at any time during the life of the project, and the facility authorized by a ROW grant would be included on the land patent as an encumbrance.
- Disposals may be conducted through a variety of mechanisms, including exchange or sale, with or without third-party facilitation (43 CFR 2201).

As with the other alternatives, the BLM management actions, design features, and BMPs in this alternative would be the same as those listed under **Section 2.3.2**, Elements Common to All Action Alternatives. Under disposal regulations and policy, lands that have been allocated for disposal would require additional review and public participation prior to completing any transaction. Any lands that have encumbrances, such as leases, would not be disposed.



Alternative 5: Land Tenure REDA on BLM-Administered Lands



Alternative 5 includes low resource sensitivity areas and RDEP nominated sites. Alternative 5 includes REDA that have lands identified for disposal under land use plans and emphasizes exchange of public lands with renewable energy potential for lands of high conservation potential.

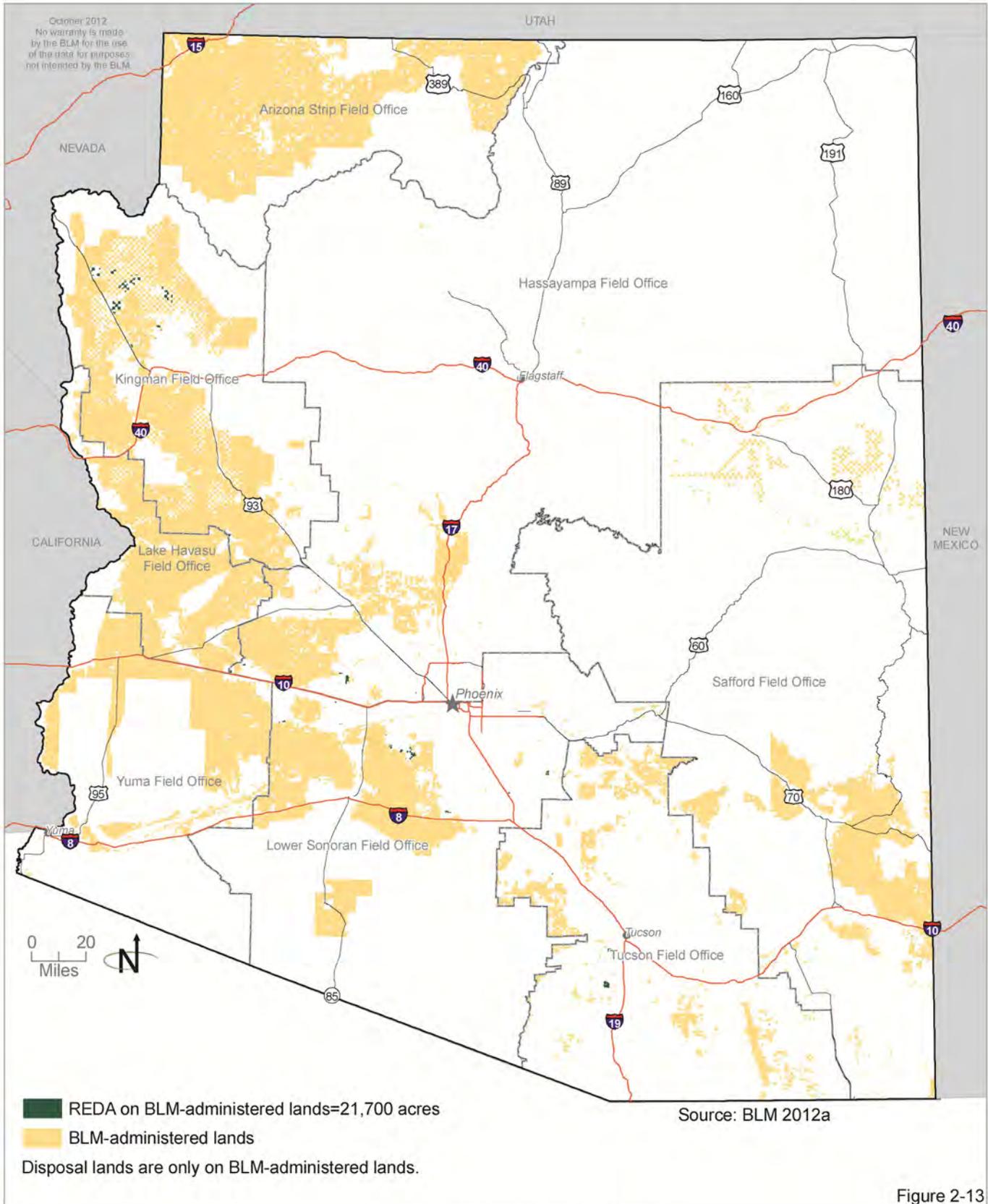


Figure 2-13

Table 2-9, Alternative 5: Acres within Land Tenure REDA and Proposed Agua Caliente SEZ, illustrates the number of acres that have already been identified as suitable for disposal within REDA.

Table 2-9
Alternative 5: Acres within Land Tenure REDA and Proposed Agua Caliente SEZ

	BLM-Administered Land (acres)
REDA (BLM disposal lands)	21,700
Proposed Agua Caliente SEZ	0
<i>Total</i>	<i>21,700</i>

Source: BLM 2012a

Agua Caliente Solar Energy Zone

This alternative focuses on the BLM-administered lands that were identified in existing RMPs as available for disposal; since the maximum proposed SEZ footprint did not have any areas identified in the Yuma RMP for disposal, there is no SEZ proposed for Alternative 5.

2.3.8 Alternative 6: Collaborative-Based REDA (Preferred Alternative)

While the previous five alternatives each address some of the aspects of renewable energy issues and concerns brought forth during scoping, Alternative 6: Collaborative-Based REDA incorporates all of the concepts, issues, and protections from the other five alternatives into a “blended” alternative. Once the other five alternatives were conceptually developed, the BLM made them available for review by stakeholders, the public, and cooperating agencies. Based on this outreach, the BLM refined the alternatives and developed the Collaborative-Based REDA that includes:

- Areas that are more likely to have few resource conflicts that may affect development;
- Areas close enough to transmission to make it efficient and cost effective to bring the energy on-line;
- Energy generation areas near the point of demand, such as cities, towns, or industrial centers; and
- Additional resource protection measures:
 - Water resource design features noted in **Table 2-7**, Water Protection Zones; and
 - Prioritize the available disposal lands for renewable energy purposes, and adding criteria to favor disposal in a manner that creates additional social and environmental benefits (see Alternative 5).

This alternative combines the transmission areas and load centers data from Alternatives 2 (Transmission REDA) and 3 (Load Offset REDA). Locating areas close to transmission and load centers provides the context for where electricity demand is and where renewable energy projects may be developed in the future.³ Resource protection elements were added to these lands, specifically by including the water resource protections (design features) from Alternative 4 to address the water availability concerns, and prioritizing available disposal lands for renewable energy purposes that would favor disposal in a manner that creates additional social and environmental benefits (Alternative 5). **Figure 2-14**, Alternative 6: Collaborative-Based REDA - Areas Eliminated from Consideration, **Figure 2-15**, Alternative 6: Collaborative-Based REDA on BLM-Administered Lands, and **Figure 2-16**, Alternative 6: Collaborative-Based REDA on Non-BLM-Administered Lands, give illustration to all of these elements combined to create the Collaborative-Based REDA.

In terms of how the Collaborative-Based REDA would be managed, the management actions, design features, and BMPs in this alternative would be the same as those listed under **Section 2.3.2**, Elements Common to All Action Alternatives, and would include the water resource design features from Alternative 4 and prioritize available disposal lands for renewable energy purposes with criteria to favor disposal in a manner that creates additional social and environmental benefits from Alternative 5. **Table 2-10**, Alternative 6: Collaborative-Based REDA and Proposed Agua Caliente SEZ, outlines the number of REDA acres across BLM-administered and other lands.

Agua Caliente Solar Energy Zone

Based on public comments on the Draft EIS, along with additional information from AGFD, the BLM has developed a revised proposed SEZ boundary to address wildlife habitat and migration, lands with wilderness characteristics, cultural resources, and riparian areas. The revised boundary includes a one-kilometer buffer around the major washes to preserve wildlife corridors; removes the northern portion of the largest SEZ footprint to maintain the area for potential tortoise migration between the Palomas Mountains and Baragan Mountain and for other wildlife habitat; and avoids most “lands with wilderness characteristics not managed to protect those characteristics.”

This smaller analysis area still meets the SEZ criteria identified in the Solar PEIS ROD, but concentrates the development into a smaller footprint. The analysis area fits with the theme for Alternative 6 of keeping energy

³ REDA parcels contiguous to a parcel within a planned or existing transmission line or load center are also included in the REDA footprint.



Alternative 6: Collaborative-Based REDA - Areas Eliminated from Consideration



Alternative 6 eliminates REDA that is not within 5 miles of existing or likely to be developed transmission lines, designated Arizona BLM Utility Corridors, designated BLM West Wide Energy Corridors, and US Bureau of Reclamation Central Arizona Project right-of-way and irrigation pumping sites. Additionally, Alternative 6 eliminates REDA not within 10 miles of Arizona incorporated cities and within 20 miles of Palo Verde Nuclear Power Plant and the town of Gila Bend. Alternative 6 includes REDA that have lands identified for disposal. Alternative 6 also categorizes REDA into Water Protection Zones 1, 2, or 3.

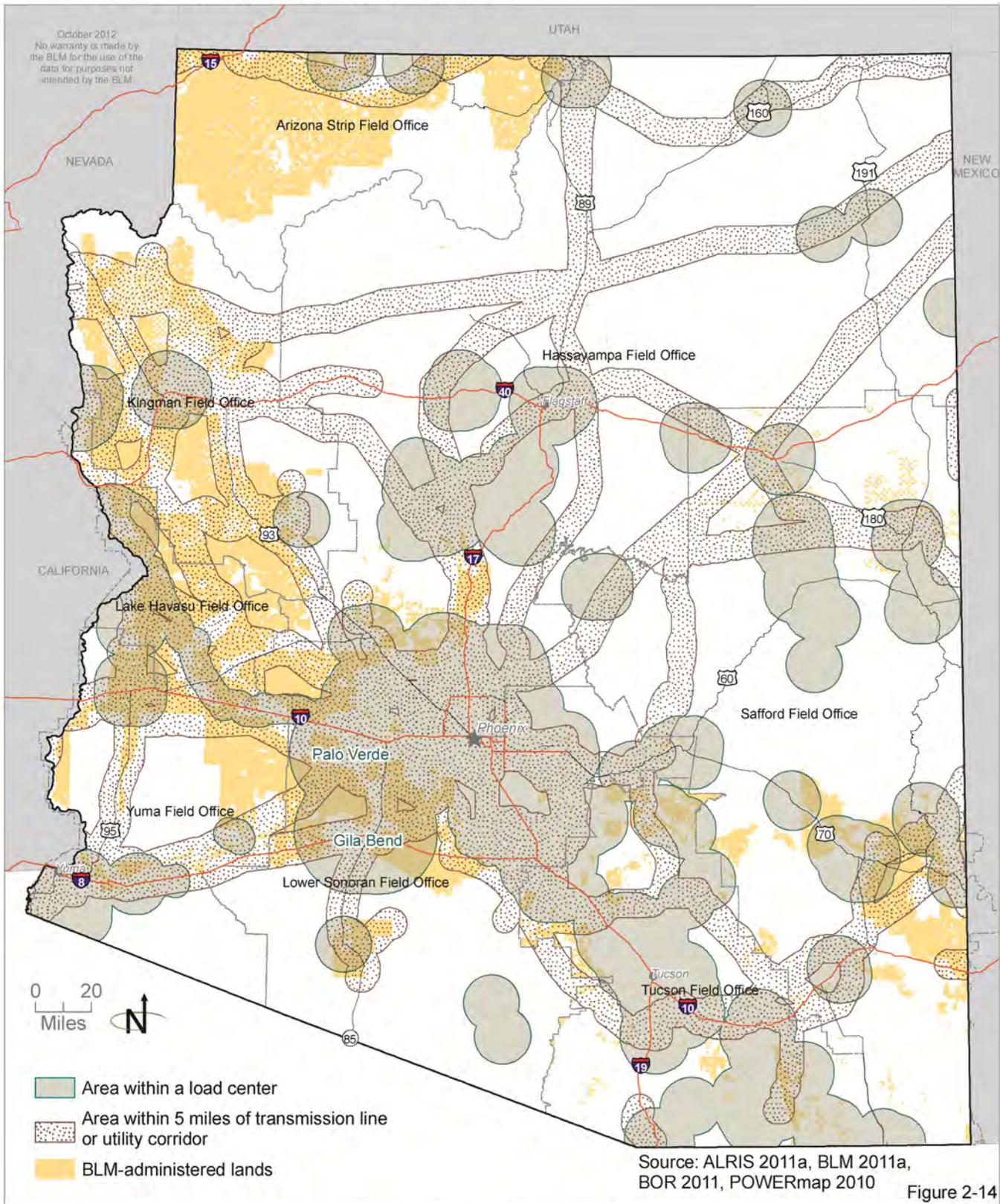


Figure 2-14



Alternative 6: Collaborative-Based REDA on BLM-Administered Lands



Alternative 6 includes REDA within 5 miles of existing or likely to be developed transmission lines, designated Arizona BLM Utility Corridors, designated BLM West Wide Energy Corridors, and US Bureau of Reclamation Central Arizona Project right-of-way and irrigation pumping sites. Additionally, Alternative 6 includes REDA within 10 miles of Arizona incorporated cities and within 20 miles of Palo Verde Nuclear Power Plant and the town of Gila Bend. Alternative 6 includes REDA that have lands identified for disposal. Alternative 6 also categorizes REDA into Water Protection Zones 1, 2, or 3 with Zone 1 affording the least protection and Zone 3 the highest.

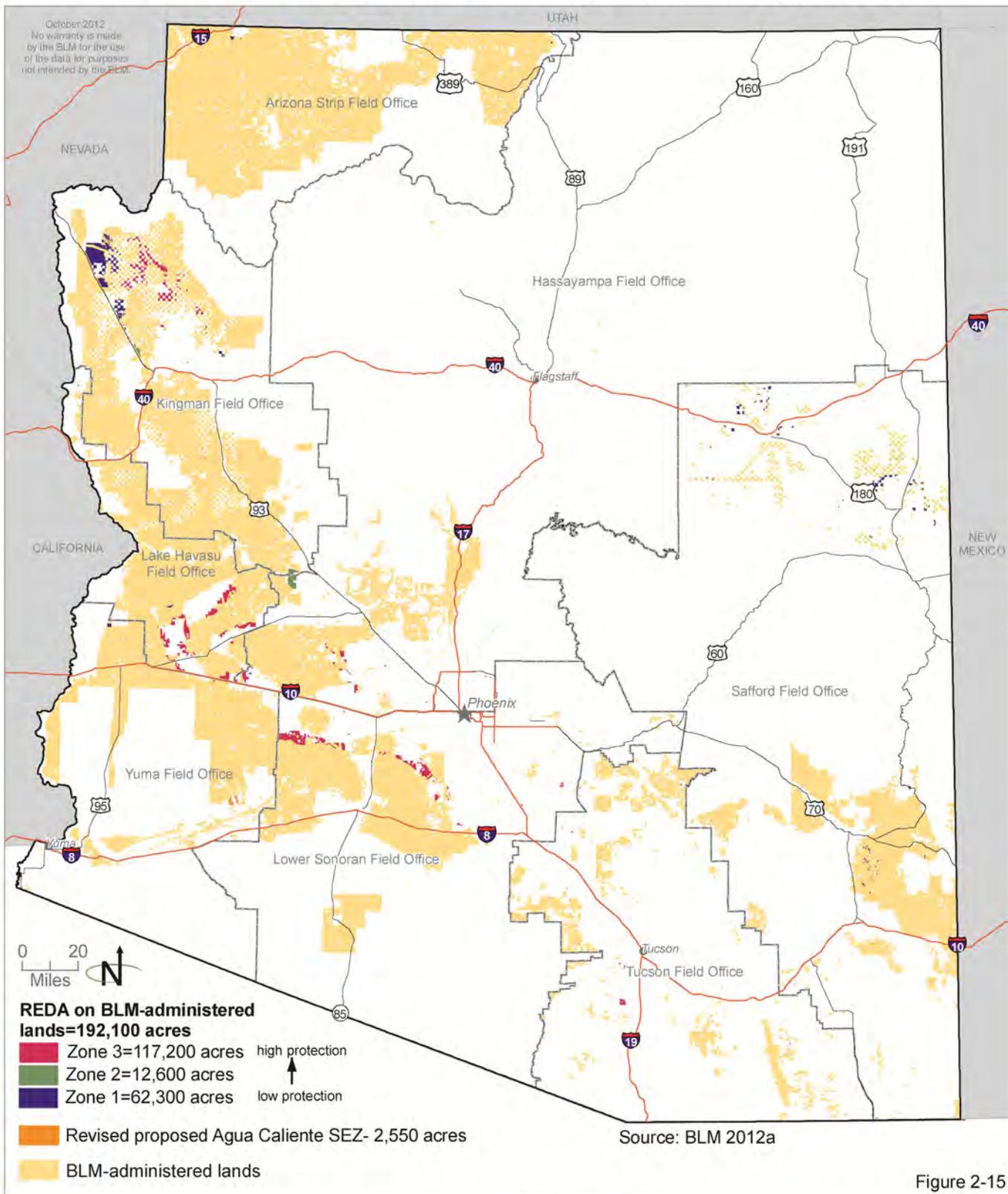


Figure 2-15



Alternative 6: Collaborative-Based REDA on Non-BLM-Administered Lands



Alternative 6 includes REDA within 5 miles of existing or likely to be developed transmission lines, designated Arizona BLM Utility Corridors, designated BLM West Wide Energy Corridors, and US Bureau of Reclamation Central Arizona Project right-of-way and irrigation pumping sites. Additionally, Alternative 6 includes REDA within 10 miles of Arizona incorporated cities and within 20 miles of Palo Verde Nuclear Power Plant and the town of Gila Bend. Alternative 6 includes REDA that have lands identified for disposal. Alternative 6 also categorizes REDA into Water Protection Zones 1, 2, or 3 with Zone 1 affording the least protection and Zone 3 the highest.

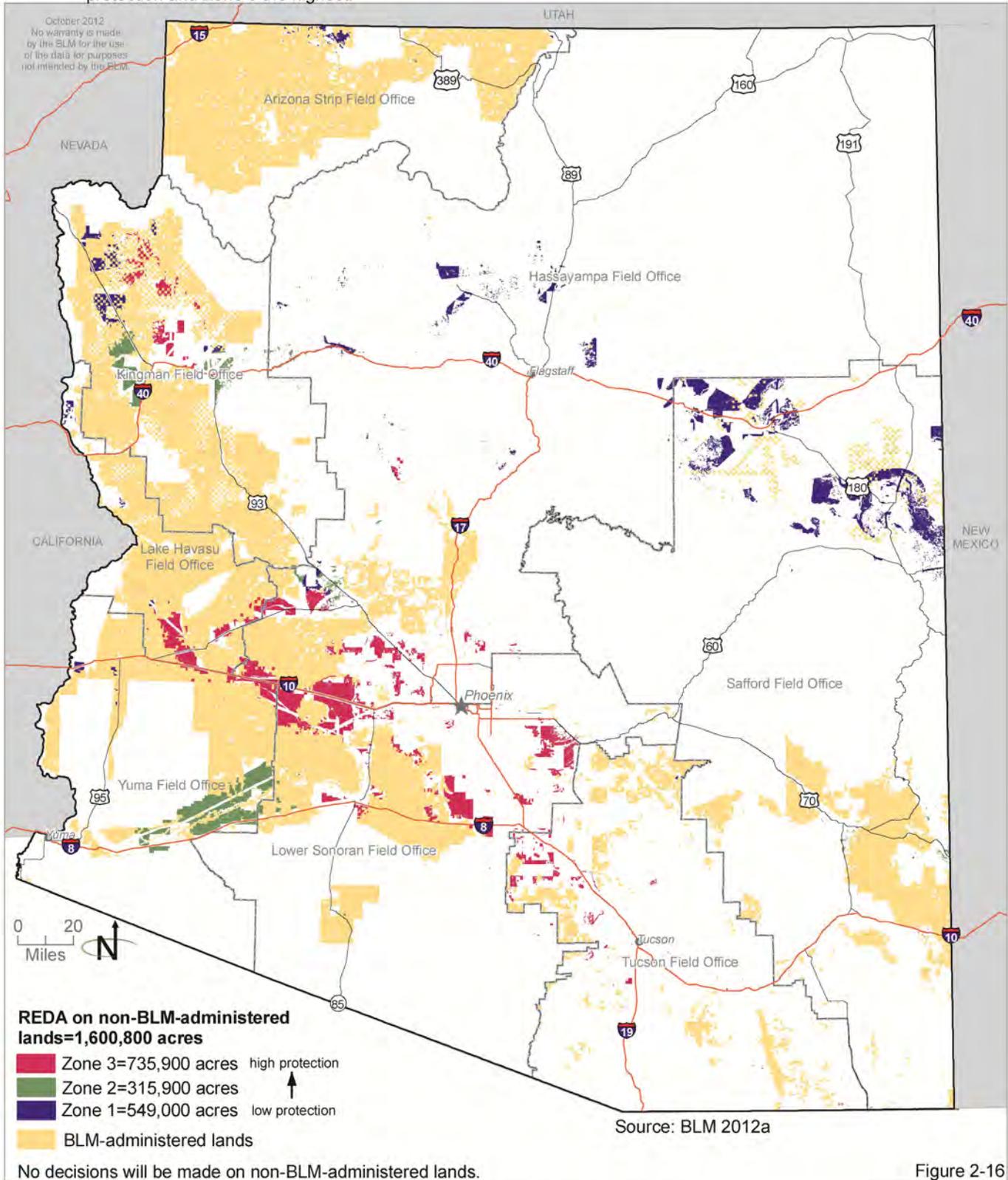


Figure 2-16

Table 2-10
Alternative 6: Collaborative-Based REDA and Proposed Agua Caliente SEZ

	BLM- Administered Land (acres)	Non-BLM- Administered Land (acres)
REDA	192,100	1,600,800
REDA Acreages Containing Water Design Features		
REDA in Water Protection Zone 3	117,200	735,900
REDA in Water Protection Zone 2	12,600	315,900
REDA in Water Protection Zone 1	62,300	549,000
REDA Lands available for disposal	21,700	N/A
Proposed Agua Caliente SEZ (Water Resources Protection Zone 2)	2,550	0

Source: BLM 2012a

generation close to transmission and load centers, while including water protection measures and the additional environmental protections for cultural and environmental resources.

Management of the revised proposed Agua Caliente SEZ would follow the requirements of the Solar Energy Program from the Solar PEIS ROD and management actions, design features, and BMPs noted in **Section 2.3.2**, Elements Common to All Action Alternatives. Additionally, the revised proposed SEZ would include the design features noted under Water Protection Zone 2, as described in **Table 2-7**, Water Protection Zones.

The Palomas-Harquahala Road is within the revised proposed SEZ and provides public access to other BLM lands to the north of the revised proposed SEZ. Continued access along the road or alternative routes would be required as a design feature for any application in the SEZ.

The BLM would petition the Secretary of the Interior to withdraw 2,550 acres in the revised proposed Agua Caliente SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, to protect and preserve the area for future solar energy development.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The range of alternatives developed for RDEP evolved from the issues ascertained through scoping, public outreach, and collaboration with cooperating agencies. The alternatives address a variety of topics, including reuse of disturbed lands, transmission, distributive and utility-scale energy development, and analysis of BLM and other lands. There are other

alternatives that the BLM considered but eliminated from detailed analysis because they did not meet the stated purpose and need (**Section 1.2**, Purpose and Need for the RDEP). These alternatives are summarized below.

Restricting Development to Urban Areas: Suggestions were made to restrict solar and wind energy development to urban areas, such as rooftop solar. The BLM does not have authority to make decisions on non-BLM-administered lands or influence local policies. Likewise, consistent with the purpose and need for the proposed action, the BLM seeks to identify public lands most suitable for renewable energy development. Most BLM lands are located outside of urban areas. While this specific issue has not been incorporated into the EIS as an independent alternative, consideration was given to proximity of available lands to urban areas, load centers, and transmission lines to promote distributed development. Some of the proposed REDAs are located close to urban areas.

Conservation Management: Comments were made to focus an alternative on instituting conservation measures and implementing demand-side management to reduce electrical demand. While these initiatives, if implemented, might help to reduce electricity consumption and otherwise meet America's energy needs, it does not respond to the purpose and need for agency action in this EIS. In general, conservation initiatives would be designed to reduce energy consumption levels in order to reduce the need for increased electricity generation capacity. Demand-side management would involve specific actions taken by utilities, their regulators, and other entities to induce, influence, or compel consumers to reduce their energy consumption, particularly during periods of peak demand. These efforts are beyond the scope of the BLM's land management responsibilities.

Lands Identified for Disposal: Suggestions were made to consider for REDA only lands identified for disposal that are also no longer suitable wildlife habitat and that have no cultural resources. Narrowing REDA consideration to this extent would leave REDA lands so small and fragmented as to not meet the purpose and need of the RDEP.

Other Alternatives Considered but Eliminated: Additional comments were brought up regarding site-specific implementation-level issues. This EIS is a planning document to identify public lands most suitable for renewable energy development. Site-specific implementation-level analysis would be conducted on an application-by-application basis.

2.5 PREFERRED ALTERNATIVE

The BLM has identified Alternative 6: Collaborative-Based REDA as the agency's preferred alternative and proposed land use amendments, because it best meets the following criteria:

- Satisfies statutory requirements (true for all alternatives).
- Reflects what the BLM believes to be the best combination of actions to achieve the stated goals.
- Represents the best solution for the purpose and need as described in **Chapter I**, Introduction.
- Provides the best approach to address the key resource and planning issues.
- Provides resource protection and a viable footprint for energy generation and distribution.
- Responds to public comments.
- Includes input from cooperating agencies, tribes, collaborating partners, stakeholders, the public, and BLM specialists.

2.6 SUMMARY OF THE ALTERNATIVES AND IMPACTS

A wide range of alternatives are analyzed in this EIS. The acreage of proposed REDA and SEZ are provided in **Table 2-11**, Summary of Acres for Alternatives. A summary of which nominated disturbed sites are included by alternative is provided in **Table 2-12**, Summary of Disturbed Sites by Alternative. A summary of the management measure and design features by alternative is provided in **Table 2-13**, Summary of the Alternatives.

The BLM has assessed the potential direct, indirect, and cumulative impacts that could result from these alternatives in **Chapter 4**, Environmental Consequences, and **Chapter 5**, Cumulative Impacts. The summary of impacts by alternative is provided in **Table 2-14**, Summary of Environmental Consequences by Alternative.

Table 2-11
Summary of Acres for Alternatives

	BLM- Administered Land	Non-BLM- Administered Land	Agua Caliente SEZ
Alternative 1: Maximum REDA	266,100	2,141,000	20,600
Alternative 2: Transmission Line and Utility Corridor REDA	185,700	1,492,000	6,770
Alternative 3: Load Offset REDA	82,500	958,300	2,760
Alternative 4: Water Conservation and Protection REDA	266,100	2,141,000	20,600
Alternative 5: Land Tenure REDA	21,700	N/A	0
Alternative 6: Collaborative-Based REDA	192,100	1,600,800	2,550

Source: BLM 2012a

Table 2-12
Summary of Disturbed Sites by Alternative

Site #	Site Name	Land Owner	Alternative					
			1	2	3	4	5	6
1	19th Avenue Landfill	Private	x	x	x	x		x
2	Belmont Mountain CAP	BOR	x	x	x	x		x
3	Belmont Proposed Disposal	BLM	x	x	x	x	x	x
4	Black Canyon City Landfill	BLM	x	x		x		x
5	Black Rock Gypsum Mine	BLM	x	x		x		x
6	Bouse Hills CAP	BOR	x	x	x	x		x
7	Brady CAP Site	BLM	x		x	x		x
8	Brady Wash Pipeline	BLM						
9	Butler Valley – Site withdrawn							
10	Cave Creek 2	Private	x	x	x	x		x
11	Cave Creek Landfill	BLM	x	x	x	x		x
12	Chevron Vacant Land	BLM						
13	Christmas Mine	Private and BLM	x		x	x		x
14	Copperstone Mine	BLM	x	x	x	x		x
15	Cordes Lakes Hazmat Site	BLM	x	x		x		x
16	Dateland Gravel Pit	BLM	x	x		x		x
17	Detrital Wash	State	x	x		x		x
18	Dog Town Mine	BLM	x	x	x	x	x	x
19	Empire Farms – Site withdrawn							
20	Florence-Price Dump	BLM	x	x	x	x	x	x
21	Foothills Proposed Disposal	BLM						
22	Forepaugh Airport	BLM						
23	Fredonia Landfill	BLM	x	x	x	x	x	x
24	Fredonia OHV Area – Site withdrawn							
25	Granite Hill Landing Strip	BLM						
26	Harcuvar Substation	BLM	x	x		x		x
27	Harquahala CAP	BOR	x	x	x	x		x
28	Harrison Road	Private and state	x		x	x		x
29	Hartman Wash Mine	BLM						
30	Hassayampa Landfill	Private	x	x	x	x		x
31	Hassayampa CAP	BOR	x	x	x	x		x
32	Irvington	Private and state	x		x	x		x
33	Jones Private Property	Private	x		x	x		x
34	La Osa Surface Disturbance	BLM	x	x	x	x	x	x
35	Litchfield Park Urban Parcel	BLM	x	x	x	x	x	x
36	Little Harquahala CAP Site	BLM	x	x	x	x		x
37	Los Reales	Private	x	x	x	x		x
38	Mobile Proposed Disposal	BLM	x	x	x	x		x
39	Mokaac Gravel Pit	BLM	x	x		x		x
40	Old Yuma County FUP Site	BLM	x	x		x		x

Table 2-12 (continued)
Summary of Disturbed Sites by Alternative

Site #	Site Name	Land Owner	Alternative					
			1	2	3	4	5	6
41	Page Landfill	BLM	x	x	x	x		x
42	Prudence	Private	x		x	x		x
43	Quartzsite Area	State						
44	Red Gap Ranch	Private	x			x		
45	Red Rocks CAP	BOR and BLM	x	x	x	x		x
46	Ryan	Private	x		x	x		x
47	Ryland	Private						
49	Saginaw Hill	BLM	x		x	x	x	x
50	San Xavier Mine	Tohono O'odham Nation	x	x	x	x		x
51	Silver Creek Landfill	BLM	x	x	x	x		x
52	Silverbell	Private	x		x	x		x
53	Snowflake Mine – Site withdrawn							
54	Snyder Hill Mine	BLM	x		x	x		x
55	Sonoita Landfill – Site withdrawn							
56	St. Mary's	Private						
57	Tombstone Landfill	BLM	x	x	x	x	x	x
58	Torrez-Brant	Private	x	x		x		x
59	Tumamoc	Private	x		x	x		x
60	Twin Peaks-Sandario CAP	BOR	x		x	x		x
61	Valhalla	BLM						
62	Vincent Mullins	Private	x		x	x		x
63	White Sage Gravel Pits	BLM	x	x	x	x		x
64	Wildcat Hill	Private	x	x	x	x		x

Table does not include withdrawn sites

Source: BLM 2012a

**Table 2-13
Summary of the Alternatives**

No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
Goals: In accordance with existing BLM Arizona RMPs	Goals: <ul style="list-style-type: none"> Ensure the most environmentally responsible development and delivery of renewable energy that contributes to protecting and enhancing Arizona’s water, wildlife, and other natural resources. Help meet community energy needs, create economic opportunities, and provide good value to the taxpayer 					
Objectives: In accordance with existing BLM Arizona RMPs	Objectives: <ul style="list-style-type: none"> Identify disturbed sites, such as brownfields, landfills, abandoned mines, marginal or impaired agricultural lands, etc., which could be reused for renewable energy development; Identify areas with low resource sensitivity and few environmental conflicts to lessen the risk for environmental conflicts; Identify areas suitable for development that are adjacent to load centers; Identify areas close enough to existing transmission to make it efficient and cost effective to bring the energy on-line; Identify areas with enough acreage of public lands to help meet the renewable energy demand (including the Arizona RPS), and provide flexibility for micro-siting and mitigation; Identify a SEZ specifically for utility-scale solar energy developments (more than 20 MW) in accordance with national BLM policy and guidance (BLM and DOE 2010, 2011; Final Solar PEIS ROD) and Engage cooperating agencies, tribes, and stakeholders in order to obtain broad input on the desired future renewable energy footprint in Arizona and to inform renewable energy developers in their siting of projects throughout the state. 				Objectives: <ul style="list-style-type: none"> Same as Alternatives 1 through 4, plus Dispose of BLM lands within identified REDAs and acquire nonfederal lands within areas of high conservation priority 	Objectives: <ul style="list-style-type: none"> Same as Alternative 5
Allocation: SEZ – Brenda and Gillespie SEZs, 5,966 acres	Allocation: Agua Caliente SEZ, 20,600 acres	Allocation: Agua Caliente SEZ, 6,770 acres	Allocation: Agua Caliente SEZ, 2,760 acres	Allocation: Same as Alternative 1	Allocation: None	Allocation: revised proposed Agua Caliente SEZ, 2,550 acres
Allocation: In accordance with existing BLM Arizona RMPs and BLM Solar Program guidance	Allocation: Maximize the area identified for renewable energy development with the fewest constraints. Includes RDEP-nominated sites, low resource sensitivity areas, and SEZs as identified in the Solar PEIS.	Allocation: Reduce environmental impacts by focusing renewable energy development on lands within reasonable proximity to designated utility corridors and existing or certified transmission lines. Includes the Maximum REDA lands narrowed further to only those lands (or REDA parcels contiguous to those lands) within a 5-mile buffer around: (1) BLM-designated utility corridors; (2) existing transmission lines; and (3) reasonably foreseeable proposed transmission lines.	Allocation: Reduce disturbance and environmental impacts by keeping energy generation near the point of demand. Includes Maximum REDA lands within a 10-mile buffer around all towns, a 5-mile buffer of the U.S. Bureau of Reclamation Central Arizona Project area and center pivot irrigation systems, a 20-mile buffer around Palo Verde, and a 20-mile buffer around the town of Gila Bend.	Allocation: Avoid impacts on sensitive surface watersheds, protecting groundwater quality and quantity, reducing consumptive use of water, without causing environmental, economic, or social consequences. Includes Maximum REDA lands then applied Water Resource Protection Level criteria.	Allocation: Plan for environmentally sound renewable energy development in Arizona and flexibility for off-site conservation by focusing on lands that prior planning processes have identified for disposal due to their low value for public uses, have limited value for retention, and that do not have any known sensitive resources.	Allocation: A blending of four alternatives; incorporating transmission and load offset acreages (Alternatives 2 and 3) and applying the resource protections from Alternatives 4 and 5.

Table 2-13 (continued)
Summary of the Alternatives

No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	Management Actions, Design Features, BMPs: <ul style="list-style-type: none"> • Listed under Section 2.3.2, Elements Common to All Alternatives 		Management Actions, Design Features, BMPs: <ul style="list-style-type: none"> • Listed under Section 2.3.2, Elements Common to All Alternatives 	Management Actions, Design Features, BMPs: <ul style="list-style-type: none"> • Listed under Section 2.3.2, Elements Common to All Alternatives • Limitations listed under each Water Resource Protection Level • Water Resource Mitigation and Monitoring Plan with the addition of water augmentation techniques 	Management Actions, Design Features, BMPs: <ul style="list-style-type: none"> ▪ Listed under Section 2.3.2, Elements Common to All Alternatives • Additional review and consideration of priority resource criteria prior to disposal of land 	Management Actions, Design Features, BMPs: <ul style="list-style-type: none"> • Same as Alternative 4, plus • Actions, Design Features, BMPs from Alternative 5

**Table 2-14
Summary of Environmental Consequences by Alternative**

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
Air Quality and Air Quality-related Values	<p>Renewable energy actions would be processed on a case-by-case basis. Indirect impacts include construction- and operations-related emissions. Emissions would be dispersed across the planning area. Operational emissions would not contribute to regional degradation of air quality over the long term.</p> <p>Projects would be dispersed over the entire planning area.</p> <p>Standardized design features and BMPs would not be implemented under this alternative.</p>	<p><u>REDA</u>: No direct impacts from identification of REDA. Indirect impacts include construction- and operations-related emissions. Emissions would be dispersed across the REDA. Emissions would not contribute to regional degradation of air quality over the long term.</p> <p>Projects would be dispersed over the widest area; temporary construction-related impacts could be greatest under this alternative.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>REDA</u>: Same as Alternative 1; however, as this alternative only includes lands within five miles of existing or certified transmission lines and utility corridors and REDA parcels adjacent to those lands, the distance to connect any proposed developments would be minimized, potentially reducing construction-related impacts.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>REDA</u>: Same as Alternative 1; however, limiting development to within 10 miles of load centers could encourage development closer to populated areas, resulting in potential localized short-term air quality impacts on sensitive receptors. Development closer to population centers may reduce the miles of dirt access roads required, potentially reducing regional fugitive dust impacts.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>REDA</u>: Same as Alternative 1. With the additional water resource design features, this alternative may encourage PV solar technology over other forms of solar development, slightly reducing potential operation-related emissions.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>REDA</u>: Same as Alternative 1; however, this alternative may result in the least amount of development on BLM-administered lands.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>REDA</u>: Similar to Alternative 2 in that alternative would reduce construction-related impacts by placing REDA closer to transmission lines and utility corridors. Similar to Alternative 3 by encouraging development closer to population centers, resulting in potential short-term air quality impacts on sensitive receptors. Similar to Alternative 4 by slightly reducing potential operation-related emissions.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>
	N/A	<p><u>Proposed SEZ</u>: Similar to impacts under REDA. The size of the proposed SEZ has the potential to support the largest amount of utility-scale renewable energy development, resulting in localized fugitive dust generation and traffic-related exhaust emissions.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>Proposed SEZ</u>: Same as Alternative 1. With a smaller footprint, Alternative 2 would likely result in a lesser amount of development within the proposed SEZ; therefore, short-term impacts would be less.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>Proposed SEZ</u>: Same as Alternative 1. With the smallest footprint, Alternative 3 would likely result in a least amount of development within the proposed SEZ, resulting in the lowest emission levels.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	<p><u>Proposed SEZ</u>: Same as described above for REDA above and Alternative 1.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>	N/A	<p><u>Proposed SEZ</u>: Same as Alternative 2 and Alternative 4.</p> <p>Design features and BMPs would be implemented to reduce air quality impacts.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
Greenhouse Gas Emissions and Climate Change	Renewable energy actions would be processed on a case-by-case basis. Primary sources of greenhouse gas (GHG) emissions are from clearing vegetation (releasing sequestered carbon), and emissions from heavy construction equipment and vehicles. Renewable energy facilities provide potential GHG savings in the form of offsetting energy produced by fossil fuel sources, resulting in a reduction of GHG emissions.	<u>REDA</u> : Same as the No Action Alternative; however, with the added goals, objectives, and management actions, there is a greater likelihood for a more substantial reduction in GHG emissions.	<u>REDA</u> : Same as Alternative I.	<u>REDA</u> : Same as Alternative I.	<u>REDA</u> : Same as Alternative I.	<u>REDA</u> : Same as Alternative I.	<u>REDA</u> : Same as Alternative I.
	N/A	<u>Proposed SEZ</u> : Same as the REDA, noted above.	<u>Proposed SEZ</u> : Same as Alternative I.	<u>Proposed SEZ</u> : Same as Alternative I.	<u>Proposed SEZ</u> : Same as Alternative I.	N/A	<u>Proposed SEZ</u> : Same as Alternative I.
Cultural Resources	Renewable energy actions would be processed on a case-by-case basis in accordance with existing land use planning decisions. Anticipated impacts include damage, destruction, discovery, and analysis of cultural resources. However, with the existing requirements for protection of eligible cultural and historic resources, any impact on resources would be avoided or mitigated.	<u>REDA</u> : Types of impacts would be similar to those described in the No Action Alternative. Using the predictive model, approximately 4,173 newly identified sites could occur within the Maximum REDA. It is unlikely that many known NRHP-eligible sites would be affected by development within the REDA. Implementation of the design features and BMPs would reduce the impacts.	<u>REDA</u> : Types of impacts would be similar to those described in the No Action Alternative. Using the predictive model, approximately 2,912 newly identified sites could occur within the REDA. It is unlikely that many known NRHP-eligible sites would be affected by development within the REDA. Implementation of the design features and BMPs would reduce the impacts.	<u>REDA</u> : Types of impacts would be similar to those described in the No Action Alternative. Using the predictive model, approximately 1,294 newly identified sites could occur within the REDA. It is unlikely that many known NRHP-eligible sites would be affected by development within the REDA. Implementation of the design features and BMPs would reduce the impacts.	<u>REDA</u> : Same as Alternative I.	<u>REDA</u> : Types of impacts would be similar to those described in the No Action Alternative. Using the predictive model, approximately 340 newly identified sites could occur within the REDA. It is unlikely that many known NRHP-eligible sites would be affected by development within the REDA. Implementation of the design features and BMPs would reduce the impacts.	<u>REDA</u> : Types of impacts would be similar to those described in the No Action Alternative. Using the predictive model, approximately 3,012 newly identified sites could occur within the REDA. It is unlikely that many known NRHP-eligible sites would be affected by development within the REDA. Implementation of the design features and BMPs would reduce the impacts.
	N/A	<u>Proposed SEZ</u> : New survey data indicates that there are additional cultural resources that could be impacted if development	<u>Proposed SEZ</u> : Same as Alternative I, but the reduction in size of the SEZ would reduce the potential for impacts by eliminating	<u>Proposed SEZ</u> : Same as Alternative I, but the reduction in size of the SEZ would reduce the potential for impacts by eliminating	<u>Proposed SEZ</u> : Same as Alternative I.	N/A	<u>Proposed SEZ</u> : Similar to Alternative I; however, the smaller boundary has eliminated the sites found in the Class II survey. Any

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		<p>were to occur, including damaging or destroying features or archaeological material. Construction activities have the potential to impact prehistoric resources and historic military-related resources. Implementation of the design features and BMPs would reduce the impacts.</p>	<p>the more-remote areas near mountains and major washes that could contain undisturbed archaeological sites. Implementation of the design features and BMPs would reduce the impacts.</p>	<p>known locations of cultural resources and focusing development on zones near the First Solar development and other previously disturbed areas. Implementation of the design features and BMPs would reduce the impacts.</p>			<p>development would be closer to the existing development, although there is a possibility for additional new sites. Implementation of the design features and BMPs would reduce the impacts.</p>
<p>Energy and Minerals</p>	<p>Renewable energy would be permitted on a case-by-case basis. If renewable energy facilities were constructed, future leasable mineral activities would be precluded, unless the leasable mineral was accessible via directional drilling technologies.</p> <p>Valid mining claims would preclude solar or wind energy development. If solar or wind developments occur in areas of high locatable mineral potential, there would be impacts on exploration and development.</p> <p>Solar or wind developments would preclude future mining activities for salable mineral materials, but would be negligible due to an abundance of material throughout the planning</p>	<p><u>REDA:</u> Impacts on oil, gas, and geothermal resources are anticipated to be negligible due to few resources being present in the REDA and the fact that they could be accessed with directional drilling methods.</p> <p>Metallic mineral districts and areas with high potential of known mineral deposits have been eliminated from the REDA, thereby reducing impacts on these resources from renewable energy developments. Prior to authorizing new energy developments, BLM would identify existing valid mining claims within the project area and determine if it is possible to locate the facility in or close to these areas in such a way as to avoid future adverse effects on mineral development activities.</p>	<p><u>REDA:</u> Same as Alternative 1.</p>	<p><u>REDA:</u> Same as Alternative 1.</p>	<p><u>REDA:</u> Same as Alternative 1.</p>	<p><u>REDA:</u> Same as Alternative 1.</p>	<p><u>REDA:</u> Same as Alternative 1.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	area.	Future saleable mining activities would be precluded in areas with solar and wind energy facility development within the REDA. However, there are numerous available locations in the planning area, so dispersed impacts on saleable mineral development would be negligible.					
	N/A	<u>Proposed SEZ</u> : Impacts on leasable, salable, and locatable minerals are expected to be negligible.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 1.
Environmental Justice	Renewable energy developments would be permitted on a case-by-case basis. Impacts on environmental justice populations would be assessed on a project-specific basis.	<u>REDA</u> : As the REDA excludes tribal lands, there would be negligible impacts on Native American populations. Should developments occur in Santa Cruz or Yuma Counties, impacts on environmental justice populations may occur.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.
	N/A	<u>Proposed SEZ</u> : Impacts on environmental justice populations within Yuma County may occur.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 1.
Fish and Wildlife	Renewable energy actions would occur on a case-by-case basis and would be assessed based on land use planning decisions. Renewable energy actions would likely result in patchy, fragmented development with an	<u>REDA</u> : There would be no direct impacts from identifying a REDA. Indirect impacts would result from implementing the planning decisions and possible future ground-disturbing activities associated with renewable energy	<u>REDA</u> : Similar to Alternative 1, except that there would be 74,300 acres in AGFD Conservation Potential Tier 1, 87,800 acres in AGFD Conservation Potential Tier 2, and 21,300 acres in AGFD Conservation	<u>REDA</u> : Similar to Alternative 1, except that there would be 51,600 acres in AGFD Conservation Potential Tier 1, 15,600 acres in AGFD Conservation Potential Tier 2, and 12,500 acres in AGFD Conservation	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Similar to Alternative 1, except that there would be 9,000 acres in AGFD Conservation Potential Tier 1, 8,900 acres in AGFD Conservation Potential Tier 2, and 1,300 acres in AGFD Conservation Potential Tier	<u>REDA</u> : Similar to Alternative 1, except that there would be 75,400 acres in AGFD Conservation Potential Tier 1, 87,900 acres in AGFD Conservation Potential Tier 2, and 25,800 acres in AGFD Conservation

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	increased likelihood of habitat disturbance and fragmentation of wildlife habitat.	<p>developments.</p> <p>By screening out sensitive wildlife areas from consideration, the impacts would be reduced compared to the No Action Alternative. Development within the REDA would reduce disturbance on lands with high wildlife value and encourage development on previously disturbed lands, reducing habitat fragmentation. Implementation of the design features and BMPs would further reduce the likelihood for impacts.</p> <p>There would be 84,800 acres in AGFD Conservation Potential Tier 1, 101,800 acres in AGFD Conservation Potential Tier 2, and 76,500 acres in AGFD Conservation Potential Tier 3.</p>	Potential Tier 3.	Potential Tier 3.		3.	Potential Tier 3.
N/A		<p><u>Proposed SEZ:</u> Development would remove and fragment wildlife habitat in the southern portion of the Palomas Plain Wildlife Habitat Area (WHA), resulting in habitat loss and fragmentation. Implementation of the design features would likely</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that with the smaller footprint, less area in the Palomas Plain WHA would be impacted. There would be 6,560 acres in AGFD Conservation Potential Tier 1, 50 acres in AGFD Conservation Potential Tier 3, 140 acres in AGFD</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that with a smaller footprint, the less area in the Palomas Plain WHA would be impacted. There would be 2,600 acres in AGFD Conservation Potential Tier 1, 50 acres in AGFD Conservation Potential Tier 3, and 110 acres in AGFD</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1.</p>	N/A	<p><u>Proposed SEZ:</u> Same as Alternative 1, except that with the smallest footprint, less area in the Palomas Plain WHA would be impacted. There would be 2,430 acres in AGFD Conservation Potential Tier 1, 30 acres in AGFD Conservation Potential Tier 3, and 90 acres in AGFD</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		reduce these impacts. There would be 19,690 acres in AGFD Conservation Potential Tier 1, 10 acres in AGFD Conservation Potential Tier 2, 190 acres in AGFD Conservation Potential Tier 3, 690 acres in AGFD Conservation Potential Tier 4, and 20 acres in AGFD Conservation Potential Tier 5.	Conservation Potential Tier 4, and 10 acres in AGFD Conservation Potential Tier 5.	Conservation Potential Tier 4.			Conservation Potential Tier 4.
Geology and Seismicity	As most land use plans require consideration or protection of unique geologic resources, there would be negligible impacts as a result of renewable energy developments. If a land use plan did not allow for protection of unique geological resources, there would be a greater risk of construction-related impacts. Indirect impacts would likely result from visual, aural, and atmospheric intrusions into a pristine landscape if developments were to occur close to unique geological resources.	<u>REDA</u> : Impacts would be similar to those described in the No Action Alternative; however, with implementation of the required design features and BMPs, the impacts would be reduced.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Same as Alternative 1.
	N/A	<u>Proposed SEZ</u> : There would be negligible impacts.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 1.
Land Use and Realty	Renewable energy actions would be permitted on a case-by-case basis in conformance with current land use plans.	<u>REDA</u> : Full development of the REDA under Alternative 1 is assumed to involve solar production on 80 percent of the 266,100	<u>REDA</u> : Similar to Alternative 1, except that is assumed to involve solar production on 80 percent of the 185,700 acres; at a	<u>REDA</u> : Similar to Alternative 1, except it is assumed to involve solar production on 80 percent of the 82,400 acres; at a	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Similar to Alternative 1, except it is assumed to involve solar production on 80 percent of the 21,700 acres; at a	<u>REDA</u> : Similar to Alternative 1, except it is assumed to involve solar production on 80 percent of the 192,100 acres; at a

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	<p>Development could result in fragmented and segregated land uses and access. Developments could occur in areas with high resource sensitivity.</p>	<p>acres; at a rate of 8 acres per megawatt, development of the 212,880 acres would result in an estimated electrical capacity of 29.6 GW.</p> <p>Alternative 1 is assumed to involve wind development on 10 percent of lands identified as Class 2 (43,300 acres) and Class 3 (1,400 acres); at a rate of 28 acres per megawatt, development of the 4,470 acres would result in an estimated electrical capacity of 1.6 GW.</p> <p>Depending upon where development occurred within the REDA, access into BLM-administered lands may be altered. The large REDA would provide opportunities to minimize conflicts with public access.</p> <p>It is anticipated that implementing required design features and BMPs would reduce impacts on public uses and access.</p>	<p>rate of 8 acres per megawatt, development of the 148,560 acres would result in an estimated electrical capacity of 18.6 GW.</p> <p>Similar to Alternative 1, except that it is assumed to involve wind development on 10 percent of lands identified as Class 2 (28,000 acres); at a rate of 28 acres per megawatt, development of the 2,800 acres would result in an estimated electrical capacity of 1 GW.</p> <p>As this alternative keeps development closer to transmission lines, additional impacts from siting and construction of new lines would be reduced.</p>	<p>rate of 8 acres per megawatt, development of the 65,920 acres would result in an estimated electrical capacity of 8.2 GW.</p> <p>Similar to Alternative 1, except that it is assumed to involve wind development on 10 percent of lands identified as Class 2 (2,300 acres); at a rate of 28 acres per megawatt, development of the 230 acres would result in an estimated electrical capacity of 82 MW.</p> <p>As this alternative keeps development closer to load centers, development would be more consistent with surrounding land uses.</p>		<p>rate of 8 acres per megawatt, development of the 17,360 acres would result in an estimated electrical capacity of 2.2 GW.</p> <p>Similar to Alternative 1, except that it is assumed to involve wind development on 10 percent of lands identified as Class 2 (4,100 acres); at a rate of 28 acres per megawatt, development of the 410 acres would result in an estimated electrical capacity of 146 MW.</p> <p>Due to the small amount of REDA acreage in this alternative, there would be less flexibility in siting renewable energy facilities and infrastructure, possibly resulting in more land use and access conflicts.</p>	<p>rate of 8 acres per megawatt, development of the 153,680 acres would result in an estimated electrical capacity of 19.2 GW.</p> <p>Similar to Alternative 1, except that it is assumed to involve wind development on 10 percent of lands identified as Class 2 (28,100 acres); at a rate of 28 acres per megawatt, development of the 2,810 acres would result in an estimated electrical capacity of 1 GW.</p> <p>As the alternative keeps development closer to load centers and transmission lines, development would be more consistent with surrounding land uses, and additional impacts from siting and construction of new lines would be reduced.</p>
N/A		<p><u>Proposed SEZ:</u> If the proposed SEZ were fully developed, there would be conflicts with existing recreational uses of the area; however, if development were</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that with the smaller footprint there would be less impacts on recreational uses, and necessary transmission connections and access</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that with the smallest footprint there would be the fewest impacts on recreational uses, and necessary transmission connections</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1.</p>	N/A	<p><u>Proposed SEZ:</u> Same as Alternative 2.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		concentrated around existing facilities, impacts would be reduced. Existing access may be altered based on the scale and location of development. Implementation of the design features and BMPs would reduce impacts by identifying conflicts early in the process and requiring specific measures to maintain public uses and access.	roads would be less due to the boundary of the proposed SEZ being closer to the existing infrastructure.	and access roads would be less due to the boundary of the proposed SEZ being closer to the existing infrastructure.			
Livestock Grazing	Renewable energy actions would be permitted on a case-by-case basis in conformance with current land use plan decisions. Project siting would likely result in patchy, fragmented developments across the landscape. Impacts on grazing would be assessed on a project-specific level. Developments would possibly occur in areas with high resource sensitivity.	<u>REDA:</u> The entire REDA has allotted grazing lands, resulting in some decrease in grazing production due to areas being developed for renewable energy facilities. Large-scale solar facilities are an incompatible use with grazing due to the large amounts of acreage that would be taken out of production, resulting in areas becoming unavailable for grazing. Wind development would take fewer acres out of production and would generally be considered a compatible use.	<u>REDA:</u> Same as Alternative 1, except that the REDA has fewer acres; therefore, less area would be taken out of production.	<u>REDA:</u> Same as Alternative 2.	<u>REDA:</u> Same as Alternative 2.	<u>REDA:</u> Same as Alternative 1, except that with this alternative having the least amount of acreage, development would result in the least area being taken out of production.	<u>REDA:</u> Same as Alternative 1.
	N/A	<u>Proposed SEZ:</u> The proposed SEZ is in the Palomas allotment, which has had no grazing in the recent past; therefore, impacts would be negligible.	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	N/A	<u>Proposed SEZ:</u> Same as Alternative 1.
National Trails	The case-specific studies	<u>REDA:</u> Approximately -	<u>REDA:</u> Approximately	<u>REDA:</u> Approximately	<u>REDA:</u> Same as Alternative	<u>REDA:</u> Approximately 600	<u>REDA:</u> Approximately

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	<p>that would address impacts on National Trails required prior to any issuance of a ROW for renewable energy development would likely prevent many impacts on national scenic and historic trails. However, there would be no comprehensive list of design features or BMPs that would serve as consistent guidance for future renewable energy development, resulting in fragmented and segregated developments.</p>	<p>6,000 acres of BLM-administered land within the REDA occur within 5.25 miles of the three National Trails in the planning area. Application of the proposed design features and BMPs would reduce impacts on the national and scenic trails, including restricting disturbance within the viewshed of trail segments potentially eligible for listing on the NRHP.</p>	<p>5,500 acres of BLM-administered land within the REDA occur within 5.25 miles of the three National Trails in the planning area. Application of the proposed design features and BMPs would reduce impacts on the national and scenic trails, including restricting disturbance within the viewshed of trail segments potentially eligible for listing on the NRHP.</p>	<p>5,900 acres of BLM-administered land within the REDA occur within 5.25 miles of the three National Trails in the planning area. Application of the proposed design features and BMPs would reduce impacts on the national and scenic trails, including restricting disturbance within the viewshed of trail segments potentially eligible for listing on the NRHP.</p>	<p>I.</p>	<p>acres of BLM-administered land within the REDA occur within 5.25 miles of the three National Trails in the planning area. Application of the proposed design features and BMPs would reduce impacts on the national and scenic trails, including restricting disturbance within the viewshed of trail segments potentially eligible for listing on the NRHP.</p>	<p>6,000 acres of BLM-administered land within the REDA occur within 5.25 miles of the three National Trails in the planning area. Application of the proposed design features and BMPs would reduce impacts on the national and scenic trails, including restricting disturbance within the viewshed of trail segments potentially eligible for listing on the NRHP.</p>
	<p>N/A</p>	<p><u>Proposed SEZ:</u> Depending on the type of technology used, the viewshed of the Juan Bautista de Anza National Historic Trail may be impacted from development within the proposed SEZ (e.g., a PV array would be less intrusive than a CSP tower).</p>	<p><u>Proposed SEZ:</u> Same as Alternative I.</p>	<p><u>Proposed SEZ:</u> Same as Alternative I.</p>	<p><u>Proposed SEZ:</u> Same as Alternative I.</p>	<p>N/A</p>	<p><u>Proposed SEZ:</u> Same as Alternative I.</p>
<p>Native American Interests and Heritage Resources</p>	<p>Impacts include direct disturbance of locations associated with traditional beliefs, resource gathering or hunting areas, water sources, ancestral sites, human remains, and trails. Other impacts could result from alternations of visual, aural, and atmospheric aspects of the setting of a place of traditional religious</p>	<p><u>REDA:</u> Types of impacts would be similar to those described in the No Action Alternative; however, with the addition of the proposed design features and BMPs, impacts would be reduced or avoided. There may be residual effects, such as permanent loss of some cultural uses or valued qualities of places</p>	<p><u>REDA:</u> Types of impacts would be similar to those described in the No Action Alternative; however, potential impacts would be reduced or eliminated on lands more than five miles from major transmission lines and utility corridors.</p>	<p><u>REDA:</u> Types of impacts would be similar to those described in the No Action alternative; however, potential impacts would be reduced or eliminated on lands distant from rural communities, power plants, and other load centers.</p>	<p><u>REDA:</u> Similar to Alternative I, except that with the additional water design features, there would likely be a reduction in impacts on water resources that Native American tribes consider sacred or culturally important.</p>	<p><u>REDA:</u> Impacts would be reduced as development would be directed to relatively small areas identified for disposal. However, due to the REDA's small size, if heritage resources were discovered within the REDA, it would be more difficult to move or microsite any proposed</p>	<p><u>REDA:</u> Similar to Alternative 2, except with additional water design features that could reduce impacts on water resources of cultural concern.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	or cultural importance. Compliance with existing laws would reduce these impacts.	within traditional tribal territories as a result of renewable energy development.				development.	
	N/A	<u>Proposed SEZ:</u> The proposed SEZ is within 10 miles of the Sears Point ACEC, a significant Native American heritage site. There may be visual, aural, or atmospheric intrusions on the landscape as a result of development within the SEZ. In addition to the required design features and BMPs that would reduce impacts, continuing consultation with tribes may provide additional mitigations that would further reduce impacts on this area.	<u>Proposed SEZ:</u> Similar to Alternative 1; however, the smaller size of the proposed SEZ would likely eliminate portions of the cultural resources known to occur within the area. Implementation of the design features and BMPs, and continued consultation with tribes would reduce impacts.	<u>Proposed SEZ:</u> Similar to Alternative 1; however, considering that the proposed SEZ is the smallest area proposed, it would eliminate more of the known cultural resources, thereby further reducing impacts. However, if heritage resources were discovered within the area, it would be more difficult to move or microsite any proposed development.	<u>Proposed SEZ:</u> Same as Alternative 1.	N/A	<u>Proposed SEZ:</u> Similar to Alternative 3.
Noise	Projects would have short-term and localized noise impacts at the project sites, along area roadways, and along new transmission or generation tie-in routes during construction. No standard list of design features or BMPs would be in place to reduce noise impacts, although permitting for individual projects would require analysis and mitigation of impacts.	<u>REDA:</u> Similar to types of impacts anticipated under the No Action Alternative. This alternative has the most flexibility for siting projects due to its large acreage area. Design features and BMPs would require that individual projects avoid or mitigate noise impacts on sensitive land uses or within sensitive receptor areas.	<u>REDA:</u> Similar to Alternative 1, except that the distance to connect any proposed development to transmission would be minimized, reducing construction-related noise impacts associated with transmission lines.	<u>REDA:</u> Similar to Alternative 1; however, as this alternative encourages development close to load centers and populated areas, there is the potential for short-term noise impacts on sensitive receptors if these receptors were located adjacent to construction activity areas. Design features and BMPs would require that individual projects avoid or mitigate noise impacts on sensitive receptors, thereby	<u>REDA:</u> Similar to Alternative 1; however, the additional water design features would likely prevent wet cooling technologies, which would encourage PV solar and thus slightly reduce potential operation-related noise emissions.	<u>REDA:</u> Same as Alternative 1.	<u>REDA:</u> Similar to Alternative 2 in area, similar to Alternative 3 in the potential effects on sensitive receptors, and similar to Alternative 4 in prohibiting wet cooling technologies. Design features and BMPs would require that individual projects avoid or mitigate noise impacts within sensitive receptor areas.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	N/A	Proposed SEZ: Given the lack of sensitive receptors in the area around the proposed SEZ, impacts are anticipated to be minimal. Application of the required design features and BMPs would further reduce impacts.	Proposed SEZ: Same as Alternative 1.	Proposed SEZ: Same as Alternative 1.	Proposed SEZ: Same as Alternative 1.	N/A	Proposed SEZ: Same as Alternative 1.
Paleontological Resources	Impacts could include destruction of the resource and loss of valuable scientific information, degradation of near-surface paleontological resources and their stratigraphic context, and human disturbance of near-surface paleontological resources. Mitigation measures would be included on a case-by-case basis.	REDA: Types of impacts would be the same as described under the No Action Alternative. There are 137,900 acres of BLM-administered land assigned to Potential Fossil Yield Classification (PFYC) levels 3, 4, or 5 (Moderate/Undetermined to High Sensitivity). Implementation of the design features and BMPs would reduce the likelihood and severity of impacts.	REDA: Similar to Alternative 1, except that there are 58,400 acres of BLM-administered land assigned to PFYC levels 3, 4, or 5 (Moderate/Undetermined to High Sensitivity). Implementation of the design features and BMPs would reduce the likelihood and severity of impacts.	REDA: Similar to Alternative 1, except that there are 41,300 acres of BLM-administered land assigned to PFYC levels 3, 4, or 5 (Moderate/Undetermined to High Sensitivity). Implementation of the design features and BMPs would reduce the likelihood and severity of impacts.	REDA: Same as Alternative 1.	REDA: Similar to Alternative 1, except that there are 7,900 acres of BLM-administered land assigned to PFYC levels 3, 4, or 5 (Moderate/Undetermined to High Sensitivity). Implementation of the design features and BMPs would reduce the likelihood and severity of impacts.	REDA: Similar to Alternative 1, except that there are 61,500 acres of BLM-administered land assigned to PFYC levels 3, 4, or 5 (Moderate/Undetermined to High Sensitivity). Implementation of the design features and BMPs would reduce the likelihood and severity of impacts.
	N/A	Proposed SEZ: Impacts would be the same as the types described in the No Action Alternative. There are 4,070 acres assigned to PFYC level 3; there are no PFYC level 4 or 5 units. Impacts on potential paleontological deposits would be reduced with the application of the required design features and BMPs.	Proposed SEZ: Types of impacts would be the same as Alternative 1, except that there are 490 acres assigned to PFYC level 3 and no PFYC level 4 or 5 units.	Proposed SEZ: Types of impacts would be the same as Alternative 1, except that there are 10 acres assigned to PFYC level 3 and no PFYC level 4 or 5 units.	Proposed SEZ: Same as Alternative 1.	N/A	Proposed SEZ: Types of impacts would be the same as Alternative 1, and acreage affected would be similar to Alternative 3.
Public Health and Safety	Impacts under the No Action Alternative are expected to be negligible.	REDA: Development of previously disturbed lands that may contain varying	REDA: Same as Alternative 1.	REDA: Same as Alternative 1.	REDA: Same as Alternative 1.	REDA: Same as Alternative 1.	REDA: Same as Alternative 1.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		levels of contamination may result in the cleanup and securing of these lands, thereby reducing sources of hazardous substances. Implementation of design features and BMPs would likely reduce impacts to negligible levels.					
	N/A	<u>Proposed SEZ</u> : Unexploded ordnance could pose a risk of explosion during ground-disturbing operations. Implementation of design features and BMPs would reduce impacts to negligible levels.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 1.
Recreation	Direct impacts would result from fencing solar energy facilities, resulting in the exclusion of the public from areas that once were available for recreational purposes. Wind energy facilities are not usually fenced and may allow limited on-site recreation. Indirect impacts include degradation of the recreation setting characteristics and increased access from the construction of new or improved roads that may be integrated with local trail and road systems.	<u>REDA</u> : There would be greater potential for conflict with recreational opportunities and experiences. Impacts would be mitigated through avoidance of areas with unique or important recreation resources. OHV enthusiasts could potentially retain access to the same number of miles of trails and roads due to integration with new or improved roads from construction.	<u>REDA</u> : Because the REDA would be in close proximity to transmission lines and utility corridors, development would be concentrated in a smaller area, resulting in development becoming more concentrated and impacts on nearby recreation resources becoming more amplified.	<u>REDA</u> : Impact types would be similar to the No Action Alternative; however, by concentrating in areas close to towns, cities, and other load centers, impacts on developed recreation would be more likely than on dispersed recreation.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Impacts under this alternative would be negligible as the REDA is located on disposal lands not highly valued for recreational resources.	<u>REDA</u> : Impacts would be similar to those described in the No Action Alternative, Alternative 2, and Alternative 3.
	N/A	<u>Proposed SEZ</u> : Locating utility-scale renewable energy developments within the proposed SEZ would	<u>Proposed SEZ</u> : Impacts would be similar to Alternative 1; however, as the proposed SEZ is	<u>Proposed SEZ</u> : Impacts would be similar to Alternative 1, except that popular hunting areas in the	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 2.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		result in long-term loss of recreational opportunities and experiences within the Yuma undeveloped special recreation management area (SRMA).	smaller, development would be more concentrated, resulting in fewer conflicts with recreation in the SRMA.	northern area above the proposed SEZ would be preserved, and recreational opportunities and experiences would be retained.			
Socioeconomics	There could be increased unanticipated impacts from the lack of planning for appropriate land uses, which could alter the character of rural areas and increase the potential for social or economic impacts on local communities.	<u>REDA:</u> The majority of development would not be located adjacent to large population centers. Impacts on local communities during construction could occur should a large number of workers be required to temporarily move to the area, possibly resulting in a strain on housing and service resources. Jobs and related income, tax revenue, and social changes in local communities would differ depending on the location of potential development. With the inclusion of previously disturbed lands and areas with low resource sensitivity, more high-value lands would be available for community use and ecosystem services.	<u>REDA:</u> Similar to Alternative 1.	<u>REDA:</u> Similar to Alternative 1; however, impacts would be concentrated near towns, cities, and other load centers, resulting in a higher likelihood for workers to be drawn from the local employment pool.	<u>REDA:</u> Same as Alternative 1.	<u>REDA:</u> Similar to Alternative 1, except that the REDA is considerably smaller, resulting in less potential for employment opportunities, and related impacts on local and regional economies and social structure.	<u>REDA:</u> Similar to those described in Alternative 1 and Alternative 3.
	N/A	<u>Proposed SEZ:</u> Minimal social and economic impacts immediately surrounding the proposed SEZ. Development would likely require 18 to 40 temporary construction jobs and 2 to 14 permanent operations/maintenance	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	N/A	<u>Proposed SEZ:</u> Same as Alternative 1.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		jobs. Workers would likely be drawn from the local region and a large population increase would not be anticipated.					
Soil Resources	Impacts could include soil compaction, disruption of biological crusts or desert pavement, and changes in soil erosion or deposition. Erosion could result in decreased soil productivity by carrying away nutrients normally stored in the upper soil horizon. Given the low precipitation and limited vegetation levels in the planning area, soil productivity would be slow to recover. No standard set of design features or BMPs would be available.	<u>REDA:</u> Impacts would be similar to those described in the No Action Alternative, except that the REDA is dominated by Aridisols, which located with sparse vegetative cover and low organic content are susceptible to erosion. However, with the implementation of the required design features and BMPs, impacts would be reduced.	<u>REDA:</u> Same as Alternative 1, except there would be less acreage of Aridisols due to the REDA's smaller overall size.	<u>REDA:</u> Same as Alternative 1, except there would be less acreage of Aridisols due to the REDA's smaller overall size.	<u>REDA:</u> Same as Alternative 1, except there would be less acreage of Aridisols due to the REDA's smaller overall size.	<u>REDA:</u> Same as Alternative 1.	<u>REDA:</u> Same as Alternative 1 and Alternative 4.
	N/A	<u>Proposed SEZ:</u> Soil resources in the proposed SEZ have low to moderate susceptibility to erosion. Site design features and BMPs would limit the potential for impacts on soil resources.	<u>Proposed SEZ:</u> Same as Alternative 1 except that the size of the SEZ is reduced so the scale of impacts would be less.	<u>Proposed SEZ:</u> Same as Alternative 1 except that the size of the SEZ is reduced so the scale of impacts would be less.	<u>Proposed SEZ:</u> Same as Alternative 1.	N/A	<u>Proposed SEZ:</u> Same as Alternative 1 except that the size of the SEZ is reduced so the scale of impacts would be less.
Special Designations	Impacts on congressional designations would be negligible. In administrative designations, where wind and solar energy development is not specifically precluded, field offices would determine if wind and solar energy development would be in	<u>REDA:</u> Areas with special designations have been eliminated from consideration as a REDA; therefore, direct impacts from potential development in these areas would be negligible. Within five miles of BLM-administered lands within the REDA, there are	<u>REDA:</u> Similar to Alternative 1, except that there are 15 ACECs, 0 backcountry byways, 1 national conservation area, 4 national monuments, 2 national parks, 21 wilderness areas, and 1 WSA within 5 miles of BLM-administered land	<u>REDA:</u> Similar to Alternative 1, except that within 5 miles of BLM-administered lands within the REDA, there are 9 ACECs, 0 backcountry byways, 1 national conservation area, 4 national monuments, 3 national parks, 14	<u>REDA:</u> Same as Alternative 1.	<u>REDA:</u> Similar to Alternative 1, except that within 5 miles of BLM-administered lands within the REDA, there are 5 ACECs, 0 backcountry byways, 1 national conservation area, 4 national monuments, 0 national parks, 11	<u>REDA:</u> Similar to Alternative 1, except that within 5 miles of BLM-administered lands within the REDA, there are there are 16 ACECs, 0 backcountry byways, 1 national conservation area, 4 national monuments, 3 national parks, 21

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	conformance with the prescriptions outlined in the relevant land use plan(s).	16 ACECs, no backcountry byways, 1 national conservation area, 4 national monuments, 3 national parks, 22 wilderness areas, and 1 Wilderness Study Area (WSA). Solar and wind energy development within the REDA could impact these areas by affecting scenic, cultural, or fish and wildlife resources.	within the REDA.	wilderness areas, and 1 WSA.		wilderness areas, and 0 WSAs.	wilderness areas, and 1 WSA.
	N/A	<u>Proposed SEZ:</u> There are no special designations within the proposed SEZ. The Sears Point ACEC may be impacted by solar energy development in the proposed SEZ, as certain types of development would be visible from the ACEC.	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	<u>Proposed SEZ:</u> Same as Alternative 1.	N/A	<u>Proposed SEZ:</u> Same as Alternative 1.
Special Status Species	Impacts on special status species would be assessed on a project-specific level, and measures to avoid important habitat and mitigate impacts would be undertaken. In the absence of identifying the REDA, however, solar and wind project development would likely result in patchy, fragmented development with an increased likelihood of habitat disturbance and fragmentation for special status species. In addition, no standard set of design	<u>REDA:</u> The REDA has been designed to minimize impacts on special status species by directing future development to areas where current habitat values are poor or fragmented and potential for special status species occupation is limited, resulting in reduced impacts. While the limited potential for special status species to be injured, killed, or disturbed due to project	<u>REDA:</u> Similar to Alternative 1. Locating energy development near existing transmission lines and utility corridors would indirectly protect special status species habitat from removal and fragmentation by reducing the need for new habitat disturbance associated with ROW development.	<u>REDA:</u> Same as Alternative 1.	<u>REDA:</u> Similar to Alternative 1. The focus on protection of the groundwater supply in Alternative 4 would benefit special status species by maintaining water available to vegetation, which would therefore maintain wildlife habitats.	<u>REDA:</u> Similar to Alternative 1. Development on lands identified for disposal in existing RMPs would reduce impacts on special status species, as these lands would not have special status species populations or habitats.	<u>REDA:</u> Similar to Alternatives 1, 2, and 3. By combining the protective features of all the alternatives, this alternative would maximize avoidance of special status species habitats and would reduce habitat disturbance and fragmentation.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	features or BMPs would be developed for protection of special status species.	<p>construction or operations remains, impacts would be minimal due to the elimination of important habitat areas and the existing uses of the REDA, which are disturbed sites and do not provide suitable special status species habitat.</p> <p>Application of the required design features and BMPs would further reduce impacts on special status species.</p>					
N/A		<p><u>Proposed SEZ:</u> No special status species have been recorded within the proposed SEZ; therefore, impacts are anticipated to be minimal.</p> <p>Habitat for several special status species is located within the proposed SEZ. Design features and best management practices would protect habitat from removal associated with solar energy development. Other design features would minimize disturbance caused by construction noise and disruptions during the breeding seasons. These design features would reduce the likelihood for impacts on special status species.</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1; however, the reduced size eliminates several washes with special status species habitat. As such, there would be fewer impacts on those special status species that rely on riparian and desert wash habitats.</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1; however, the reduced size avoids all major washes. As such, there would be fewer impacts on those special status species that rely on riparian and desert wash habitats.</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1.</p>	N/A	<p><u>Proposed SEZ:</u> Same as Alternative 2.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
Travel Management	Impacts include increased traffic during construction, and reducing, eliminating, or adding access on routes. Field offices would determine if wind and solar energy development would be in conformance with the travel management decisions in the relevant land use plan(s), but there would not be any guaranteed protection for travel management.	<u>REDA</u> : Impacts would be similar to those described in the No Action Alternative. More area would be available to renewable energy development, resulting in a greater potential for conflict with travel management. However, by implementing the required design features and BMPs, impacts would be negligible.	<u>REDA</u> : Impacts would be similar to those described in the No Action Alternative. However, by focusing on utility corridors and areas near transmission lines, which often provide access, development in these areas may conflict with access. Impacts would be mitigated through the use of design features and BMPs.	<u>REDA</u> : Locating the REDA near cities, towns, and other load centers would likely result in development in areas where roads and trails receive higher use, thereby increasing impacts. Impacts would be most prominent during construction, when more vehicles are needed for transporting equipment and personnel. Design features and BMPs would reduce but not eliminate impacts.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Under Alternative 5, the REDA would be composed of land identified for disposal in existing RMPs, which would not include areas highly valued for their access to adjacent lands. As a result, impacts on travel management would be negligible.	<u>REDA</u> : Same as Alternatives 1, 2, and 3.
	N/A	<u>Proposed SEZ</u> : Impacts on motorized travel are expected to be negligible as routes in the proposed SEZ are classified as digital linear features or nonmotorized routes and usage is documented as light. Although some routes within the proposed SEZ are classified as nonmotorized routes, impacts on nonmotorized travel are expected to be minor because the routes receive light use.	<u>Proposed SEZ</u> : Similar to Alternative 1.	<u>Proposed SEZ</u> : Similar to Alternative 1.	<u>Proposed SEZ</u> : Similar to Alternative 1.	N/A	<u>Proposed SEZ</u> : Similar to Alternative 1.
Vegetation	The greatest impacts on vegetation are likely to occur during construction, as this phase has the greatest amount of surface-disturbing activities. Vegetation removal would also leave barren areas that would be susceptible to the	<u>REDA</u> : Impacts would be similar to those described in the No Action Alternative. The Sonoran Basin and Range and Mojave Basin and Range are the ecoregions that would be most likely to be affected on BLM-administered lands	<u>REDA</u> : Similar to Alternative 1, except that by locating energy development near existing transmission lines and utility corridors, this would reduce the need for vegetation removal associated with new ROW	<u>REDA</u> : Same as Alternative 1. However, as the REDA is a smaller area, the impacts would occur on fewer acres.	<u>REDA</u> : Same as Alternative 1, except that the focus on protection of water resources would maintain water available to vegetation, which would thereby maintain the composition and structure of vegetation communities.	<u>REDA</u> : Same as Alternative 1. However, as the REDA has the smallest area, the impacts would occur on the fewest acres.	<u>REDA</u> : Similar to Alternative 1, except that Alternative 6 reduces impacts on vegetation by combining the protective features of the other action alternatives. This would reduce new vegetation disturbance and removal.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	introduction or spread of noxious weeds and invasive plant species. Other impacts include changes to plant community composition, plant productivity, and plant health. Without a programmatic approach to solar and wind development, planning for vegetation may be fragmented and segregated, increasing impacts.	under Alternative 1. Implementation of the required design features and BMPs would reduce impacts on vegetation.	development, thereby indirectly protecting intact vegetation communities.				
	N/A	<u>Proposed SEZ</u> : Sonora-Mojave Creosotebush-White Bursage Desert Scrub is the community that would be most likely to be affected in the SEZ. Implementation of the required design features and BMPs would reduce impacts on vegetation.	<u>Proposed SEZ</u> : Same as Alternative 1. However, as the proposed SEZ is smaller, the disturbance could occur over a smaller area.	<u>Proposed SEZ</u> : Same as Alternative 2.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 2.
Visual Resources	Solar and wind energy development would continue to be authorized on a case-by-case basis. In areas identified as ROW exclusions, solar and wind energy development would not be permitted, thereby protecting the surrounding viewshed. In ROW avoidance areas, solar and wind energy development may be permitted if better locations cannot be found. Under such circumstances, development would still be	<u>REDA</u> : VRM Class I, II, and III lands have been eliminated from consideration as a REDA. There are exceptions, though, where pre-disturbed lands (nominated sites) happen to be located within VRM Class II and III areas. There are 5 nominated sites within VRM Class II that would cover 200 acres (less than 1 percent of the total VRM II acreage), and 16 nominated sites within VRM Class III	<u>REDA</u> : Similar to Alternative 1, however, there are 5 nominated sites within VRM Class II territory that would cover 200 acres (less than 1 percent of the total VRM II acreage), and 13 nominated sites within VRM Class III territory that would cover 4,600 acres (less than 1 percent of the total VRM Class III acreage). Approximately 14,300 acres of scenic quality B-ranked	<u>REDA</u> Similar to Alternative 1, however, there is 1 nominated site within VRM Class II territory that would cover 100 acres (less than 1 percent of the total VRM II acreage), and 13 nominated sites within VRM Class III territory that would cover 5,200 acres (less than 1 percent of the total VRM Class III acreage). Approximately 7,600 acres of scenic quality B-ranked	<u>REDA</u> : Similar to Alternative 1. However, because more restrictions would be imposed to protect water resources under Alternative 4, development is more likely to be in the form of PV versus CSP, particularly in Zone 3 areas, due to the amount of water required for CSP technology. PV development would generally be less visually obtrusive than CSP development, resulting in	<u>REDA</u> : Similar to Alternative 1, however, there are 6 nominated sites within VRM Class III territory that would cover 2,600 acres (less than 1 percent of the total VRM Class III acreage). Approximately 200 acres of scenic quality B-ranked lands in the foreground/middleground distance zone overlap the REDA. Table 4-31 , Number and Acres of	<u>REDA</u> : Similar to Alternative 1. Approximately 15,700 acres of scenic quality B-ranked lands in the foreground/middleground distance zone overlap REDA. Table 4-32 , Number and Acres of Sensitive Receptors within Five Miles of the REDA, Alternative 6 shows the number of sensitive receptors and associated acreages within

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	<p>required to meet the applicable VRM class assigned to the land on which the project would be developed.</p>	<p>that would cover 5,300 acres (less than 1 percent of the total VRM Class III acreage).</p> <p>Approximately 26,000 acres of scenic quality B-ranked lands in the foreground/midground distance zone overlap the REDA.</p> <p>Indirect impacts on visual resources would occur if solar or wind energy was developed within the viewshed of these VRM class areas, as such activities would result in a modification of the landscape and may be visible from the adjoining VRM Class I, II or III area.</p> <p>Table 4-27, Number and Acres of Sensitive Receptors within Five Miles of the REDA, Alternatives 1 and 4 shows the number of sensitive receptors and associated acreages within five miles of the REDA.</p>	<p>lands in the foreground/midground distance zone overlap REDA. Table 4-29, Number and Acres of Sensitive Receptors within Five Miles of the REDA, Alternative 2, shows the number of sensitive receptors and associated acreages within five miles of the REDA.</p>	<p>lands in the foreground/midground distance zone overlap REDA. Table 4-30, Number and Acres of Sensitive Receptors within Five Miles of the REDA, Alternative 3, shows the number of sensitive receptors and associated acreages within five miles of the REDA.</p>	<p>less of a visual impact.</p>	<p>Sensitive Receptors within Five Miles of the REDA, Alternative 5, shows the number of sensitive receptors and associated acreages within five miles of the REDA.</p>	<p>five miles of the REDA.</p>
<p>N/A</p>		<p><u>Proposed SEZ</u>: The Yuma Field Office RMP would be amended so that the proposed Agua Caliente SEZ would be managed as VRM Class IV instead of VRM Class III. This would result in a 20,600-acre reduction in VRM Class III</p>	<p><u>Proposed SEZ</u>: Same as Alternative 1; however, 6,770 acres would be managed as VRM Class IV instead of VRM Class III.</p>	<p><u>Proposed SEZ</u>: Same as Alternative 1; however, 2,760 acres would be managed as VRM Class IV instead of VRM Class III.</p>	<p><u>Proposed SEZ</u>: Similar to Alternative 1. However, because the proposed SEZ is within the Water Protection Zone 2 area, more restrictions would be imposed to protect water resources under this alternative. As such,</p>	<p>N/A</p>	<p><u>Proposed SEZ</u>: Same as Alternative 1; however, 2,550 acres would be managed as VRM Class IV instead of VRM Class III.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		<p>areas while increasing VRM Class IV areas by the same amount. Due to existing and new landscape modifications within the proposed SEZ, it is unknown whether additional solar development would result in changes in the visual quality or sensitivity of the area to an extent that the VRI would change from Class III to Class IV.</p>			<p>development is more likely to be in the form of PV versus CSP technology due to the amount of water required for CSP technology. PV development would generally be less visually obtrusive than CSP technology, resulting in less of a visual impact.</p>		
Water Resources	<p>Renewable energy applications would continue to be processed on a case-by-case basis and would not include design features and BMPs noted in the action alternatives. Without the REDA and the proposed SEZ being identified, applications are likely to occur on areas with sensitive water resources, and impacts are likely to occur on surface and groundwater resources.</p> <p>The grading of renewable energy project sites could impact surface water quality and quantity. Water needs for cooling are a function of the energy technology and size of the energy development site. Potential impacts on water quality would result from spills of</p>	<p><u>REDA:</u> Alternative 1 eliminated surface waters, wetlands, streams, and floodplains from consideration as REDA. As a result, this alternative would have negligible impacts on surface water resources.</p> <p>Any proposed groundwater-supply extraction wells would be subject to review and approval by the ADWR.</p> <p>Design features and BMPs listed in Appendix B would establish the minimum specifications for management of individual renewable energy projects and mitigate adverse impacts on water resources.</p> <p>Under this alternative,</p>	<p><u>REDA:</u> Similar to Alternative 1.</p> <p>Under this alternative, there are 28,300 acres in AMAs and 15,900 acres in BLM Priority Watersheds.</p>	<p><u>REDA:</u> Similar to Alternative 1.</p> <p>Under this alternative, there are 29,100 acres in AMAs and 5,300 acres in BLM Priority Watersheds.</p>	<p><u>REDA:</u> Same as Alternative 1. However, Alternative 4 includes additional water resource protection design features that identify additional protections in Water Resource Protection Zones 2 and 3.</p> <p>Under this alternative, there are 29,100 acres in AMAs and 35,400 acres in BLM Priority Watersheds.</p>	<p><u>REDA:</u> Similar to Alternative 1.</p> <p>Under this alternative, there are 8,900 acres in AMAs and 1,900 acres in BLM Priority Watersheds.</p>	<p><u>REDA:</u> Similar to Alternatives 1 and 4.</p> <p>Under this alternative, there are 35,100 acres in AMAs and 15,900 acres in BLM Priority Watersheds.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	hazardous liquids (e.g., oils and lubricants) and other industrial activities.	there are 29,100 acres in Active Management Areas (AMAs) and 35,400 acres in BLM Priority Watersheds.					
	N/A	<p><u>Proposed SEZ:</u> The 20,600-acre SEZ contains approximately 300 acres of ephemeral washes. Water resources in the proposed SEZ would be impacted by construction, operations, and reclamation activities.</p> <p>Implementing the management actions, design features, and BMPs would effectively avoid or reduce impacts on water resources within the proposed SEZ, but would not provide specific measures to protect the highly vulnerable water resource found in the proposed SEZ.</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1, except that there are 30 acres of ephemeral washes in the 6,770-acre SEZ.</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1, except that there are 20 acres of ephemeral washes in the 2,760-acre SEZ.</p>	<p><u>Proposed SEZ:</u> Impacts would be similar to Alternative 1. Implementing the management actions, design features, BMPs, and the additional water resource design features for Water Protection Zone 2 in the proposed SEZ would reduce impacts on water resources.</p>	N/A	<p><u>Proposed SEZ:</u> Same as Alternative 1, except that there are 0 acres of ephemeral washes in the 2,550-acre SEZ.</p>
Wild Horses	Impacts on wild horses and burros would be assessed on a project-specific level. Solar and wind project development would likely result in patchy, fragmented development with an increased likelihood of fragmentation of wild horse or burro ranges. In addition, no standard set of design features or BMPs would be developed for protection of wild horses and burros.	<p><u>REDA:</u> All herd management areas (HMAs) have been eliminated from the REDA; therefore, impacts on wild horse and burros would be negligible. There is limited potential for impacts to occur should development occur in a REDA adjacent to a HMA. Under Alternative 1, portions of Alamo HMA, Black Mountain HMA and Cerbat Mountain Herd Area are located within five miles of REDA. In particular, actions that</p>	<p><u>REDA:</u> Similar to Alternative 1. Under this alternative, portions of Alamo HMA, Black Mountain HMA and Cerbat Mountain HA are located within five miles of REDA.</p>	<p><u>REDA:</u> Similar to Alternative 1. Under this alternative, portions of the Alamo HMA are located within five miles of REDA. Therefore, the scale of impacts would be reduced.</p>	<p><u>REDA:</u> Similar to Alternative 1. Design features that limit the withdrawal of groundwater under this alternative may reduce the potential for impacts on water availability for wild horses and burros in HMAs adjacent to the REDA. Under this alternative, portions of Alamo HMA, Black Mountain HMA and Cerbat Mountain HA are located within five miles of REDA.</p>	<p><u>REDA:</u> Similar to Alternative 1. Under this alternative, portions of Black Mountain HMA and Cerbat Mountain HA are located within five miles of REDA. Therefore, the scale of impacts would be reduced.</p>	<p><u>REDA:</u> Similar to Alternative 1. Under this alternative, portions of Alamo HMA, Black Mountain HMA and Cerbat Mountain HA are located within five miles of REDA.</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		reduced available water in the surrounding area may impact wild horse and burro herds. Water is a limited resource throughout much of the planning area and may partially dictate the capacity of a habitat to support wild horses and burros.					
	N/A	<u>Proposed SEZ</u> : The proposed SEZ would have negligible impacts on wild horses and burros as it is not within or adjacent to any HMAs.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	<u>Proposed SEZ</u> : Same as Alternative 1.	N/A	<u>Proposed SEZ</u> : Same as Alternative 1.
Wilderness Characteristics	Solar and wind energy development would continue to be authorized through the lands and realty program via a ROW grant. Because solar and wind energy development would diminish wilderness characteristics, it is assumed that such actions would not be permitted on lands managed to maintain these characteristics. As such, wilderness characteristics of these lands would be provided some direct protection from impacts associated with solar and wind energy development. If solar or wind energy development were to occur on lands with wilderness characteristics but not	<u>REDA</u> : Lands with wilderness characteristics have been eliminated from consideration as a REDA. Therefore, negligible direct impacts on lands with wilderness characteristics are anticipated. However, lands with wilderness characteristics may experience indirect impacts from solar and wind energy development on BLM-administered lands adjacent to or within the viewshed of the eliminated areas similar to those described in the No Action Alternative. 18,300 acres of lands managed to maintain wilderness characteristics are within 5 miles of the REDA and could be	<u>REDA</u> : Similar to Alternative 1. 18,300 acres of lands managed to maintain wilderness characteristics are within 5 miles of the REDA and could be indirectly impacted by solar and wind energy development. Similarly, 42,100 acres of lands with wilderness characteristics but not managed to maintain these characteristics under the applicable RMP are within 5 miles of the REDA and could also be indirectly impacted by wind and solar energy development.	<u>REDA</u> : Similar to Alternative 1. 16,600 acres of lands managed to maintain wilderness characteristics are within 5 miles of the REDA and could be indirectly impacted by solar and wind energy development. Similarly, 25,500 acres of lands with wilderness characteristics but not managed to maintain these characteristics under the applicable RMP are within 5 miles of the REDA and could also be indirectly impacted by wind and solar energy development.	<u>REDA</u> : Same as Alternative 1.	<u>REDA</u> : Similar to Alternative 1. 600 acres of lands managed to maintain wilderness characteristics are within 5 miles of the REDA and could be indirectly impacted by solar and wind energy development. Similarly, 1,200 acres of lands with wilderness characteristics but not managed to maintain these characteristics under the applicable RMP are within 5 miles of the REDA and could also be indirectly impacted by wind and solar energy development.	<u>REDA</u> : Similar to Alternative 1. 18,300 of lands managed to maintain wilderness characteristics are within 5 miles of the REDA and could be indirectly impacted by solar and wind energy development. Similarly, 42,100 acres of lands with wilderness characteristics but not managed to maintain these characteristics under the applicable RMP are within 5 miles of the REDA and could also be indirectly impacted by wind and solar energy development.

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
	<p>managed to maintain these characteristics, the impacts could result in reducing wilderness characteristics in the project area. For all lands with wilderness characteristics, potential impacts from solar and wind development adjacent to or within the viewshed of the lands with wilderness characteristics could include light pollution and visual intrusions. The magnitude of impact would vary by field office and would depend upon RMP decisions, including ROW allocations (e.g., exclusion and avoidance), VRM class, and existing land uses.</p>	<p>indirectly impacted by solar and wind energy development.</p> <p>Similarly, 58,500 acres of lands with wilderness characteristics but not managed to maintain these characteristics under the applicable RMP are within 5 miles of the REDA and could also be indirectly impacted by solar and wind energy development.</p> <p>Implementing the management actions, design features, and BMPs are anticipated to reduce impacts on lands with wilderness characteristics.</p>					
<p>N/A</p>		<p><u>Proposed SEZ:</u> Under Alternative 1, the lands with wilderness characteristics currently managed to maintain these characteristics would continue to be managed to maintain these characteristics.</p> <p>A total of 9,030 acres of land with wilderness characteristics were identified within the proposed SEZ, none of which are being managed to maintain wilderness characteristics. Impacts</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that 1,700 acres lands with wilderness characteristics not managed to maintain those characteristics would be within the proposed Agua Caliente SEZ.</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that 390 acres of lands with wilderness characteristics not managed to maintain those characteristics would be within the proposed Agua Caliente SEZ.</p>	<p><u>Proposed SEZ:</u> Same as Alternative 1.</p>	<p>N/A</p>	<p><u>Proposed SEZ:</u> Similar to Alternative 1, except that 140 acres of lands with wilderness characteristics not managed to maintain those characteristics would be within the proposed SEZ</p>

Table 2-14 (continued)
Summary of Environmental Consequences by Alternative

Resource	No Action	Alternative 1: Maximum REDA	Alternative 2: Transmission Line and Utility Corridor REDA	Alternative 3: Load Offset REDA	Alternative 4: Water Conservation and Protection REDA	Alternative 5: Land Tenure REDA	Alternative 6: Collaborative-Based REDA
		<p>from solar development on these lands would diminish both the naturalness of the area and opportunities for solitude and primitive or unconfined recreation to the degree that these characteristics may cease to exist in the area, resulting in a reduction in total acres of lands with wilderness characteristics.</p> <p>Implementing the management actions, design features, and BMPs are anticipated to reduce impacts on lands with wilderness characteristics.</p>					

¹For a more detailed description of wet and dry cooling technologies, please refer to the "Water Resources" section in table ES.2-5 and the Glossary in the Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy in Six Southwestern States (BLM and DOE 2012)