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CHAPTER I

INTRODUCTION

I.1 OVERVIEW

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 by the BLM lands and realty program through right-of-way (ROW) grants in accordance with land use plans.

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

BLM Arizona has prepared this environmental impact statement (EIS) to identify which 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 brownfields, 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 the people who need it;

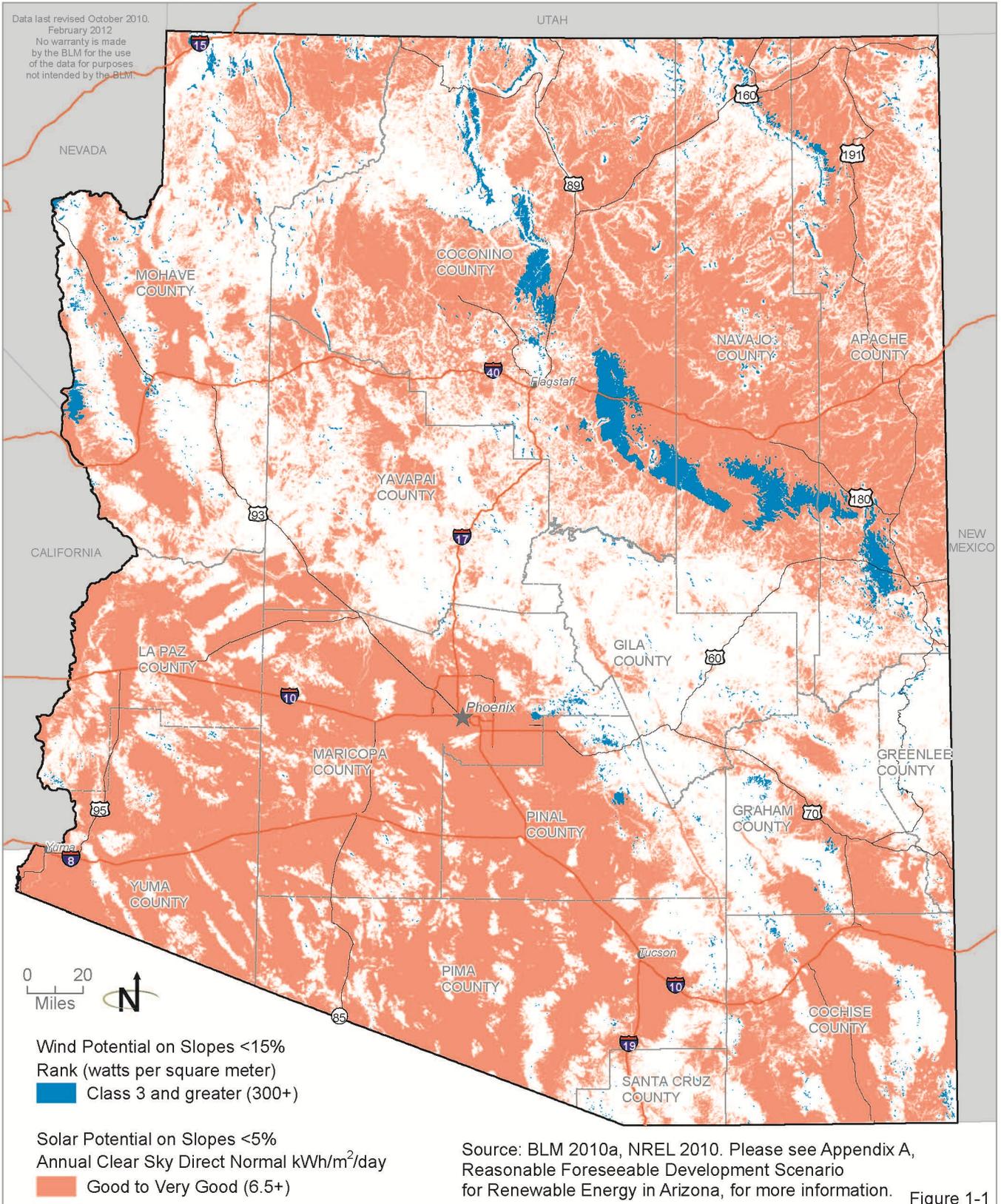


Statewide Solar and Wind Potential



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.



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
- Will include lands previously identified for disposal in existing BLM land use plans to incentivize development on REDAs and to conserve important resources.

Throughout project development, the BLM has engaged cooperating agencies, state and local governments, tribes, and stakeholders in order to obtain broad consensus 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 selected 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 Foreseeably 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 their 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 address these factors or provide guidance on where development should occur. Therefore, under current plans, processing of applications can take a long time to adequately evaluate the site location, to conduct environmental and cultural reviews, to develop appropriate mitigation measures, to effectively collaborate with stakeholders, and, in some cases, to prepare 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 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, allows 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. All of these sections contain provisions to facilitate and expedite land exchanges by establishing uniform rules and regulations for appraisals and to ensure that the public interest will be well served by making the exchange. 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 3285 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 1.4.3**, 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

The Solar Energy Development Programmatic EIS (PEIS), currently being prepared by the U.S. Department of Energy (DOE) and the BLM, will assess environmental impacts associated with the development and implementation of agency-specific programs that would facilitate environmentally responsible, utility-scale solar energy development in six western states: Arizona, California, Colorado, New Mexico, Nevada, and Utah.

On the basis of the analyses presented in the Solar PEIS, the BLM anticipates making the following land use planning decisions that will establish the foundation for a comprehensive Solar Energy Program in the six-state study area:

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. Land use plan amendments that identify exclusion areas for utility-scale solar energy development in the six-state study area;
2. Land use plan amendments that identify areas potentially available for utility-scale solar energy development outside of SEZs in the six-state study area (i.e., variance areas);
3. Land use plan amendments that identify priority areas for solar energy development that are well suited for utility-scale production of solar energy (i.e., SEZs); and
4. Land use plan amendments that establish design features (i.e., mitigation requirements) for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy (some design features may be SEZ-specific, as necessary).

The proposed SEZs are 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 should be relatively large areas 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.

There are 17 proposed SEZs being carried forward in the Solar PEIS study area, two of which are in Arizona – the Brenda SEZ and Gillespie SEZ. The two proposed SEZs in Arizona encompass 6,465 acres (**Figure I-2**, Arizona Solar Energy Zones from the Solar PEIS). The proposed SEZs were determined by finding areas with suitable slope, proximity to roads and transmission lines or designated corridors, and containing at least 2,000 acres of BLM-administered public lands. Sensitive lands, wilderness, and other high-conservation-value lands as well as lands with conflicting uses were excluded. As the Solar PEIS is finalized, it may modify the boundaries of the proposed SEZs or remove them, but no new SEZs will be proposed through the Solar PEIS. The Record of Decision (ROD) for the Solar PEIS is anticipated for September 2012.

The Solar PEIS effort and the RDEP are being closely coordinated as both are related to making land use planning decisions for 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. Upon issuance of the ROD for the Solar PEIS, land use plans in Arizona will be amended to incorporate the land use plan decisions described above. The RDEP effort seeks to further refine and build upon the decisions being analyzed in the Solar PEIS for utility-scale solar, including the following:

- The RDEP will identify those areas most suitable for renewable energy development within the variance areas identified by the Solar PEIS (i.e., a REDA). Identification of a REDA could fulfill the variance process requirements proposed in variance areas through the Supplement to the Draft Solar PEIS (BLM and DOE 2011). This would allow utility-scale solar energy developers a more streamlined process in these highly suitable areas.
- The RDEP would refine and build upon the design features being proposed in the Solar PEIS for conditions relevant to wind and solar development in Arizona.
- In accordance with the identification protocols for new SEZs (as identified in the Supplement to the Draft Solar PEIS), the RDEP is proposing and analyzing an additional SEZ for Arizona.

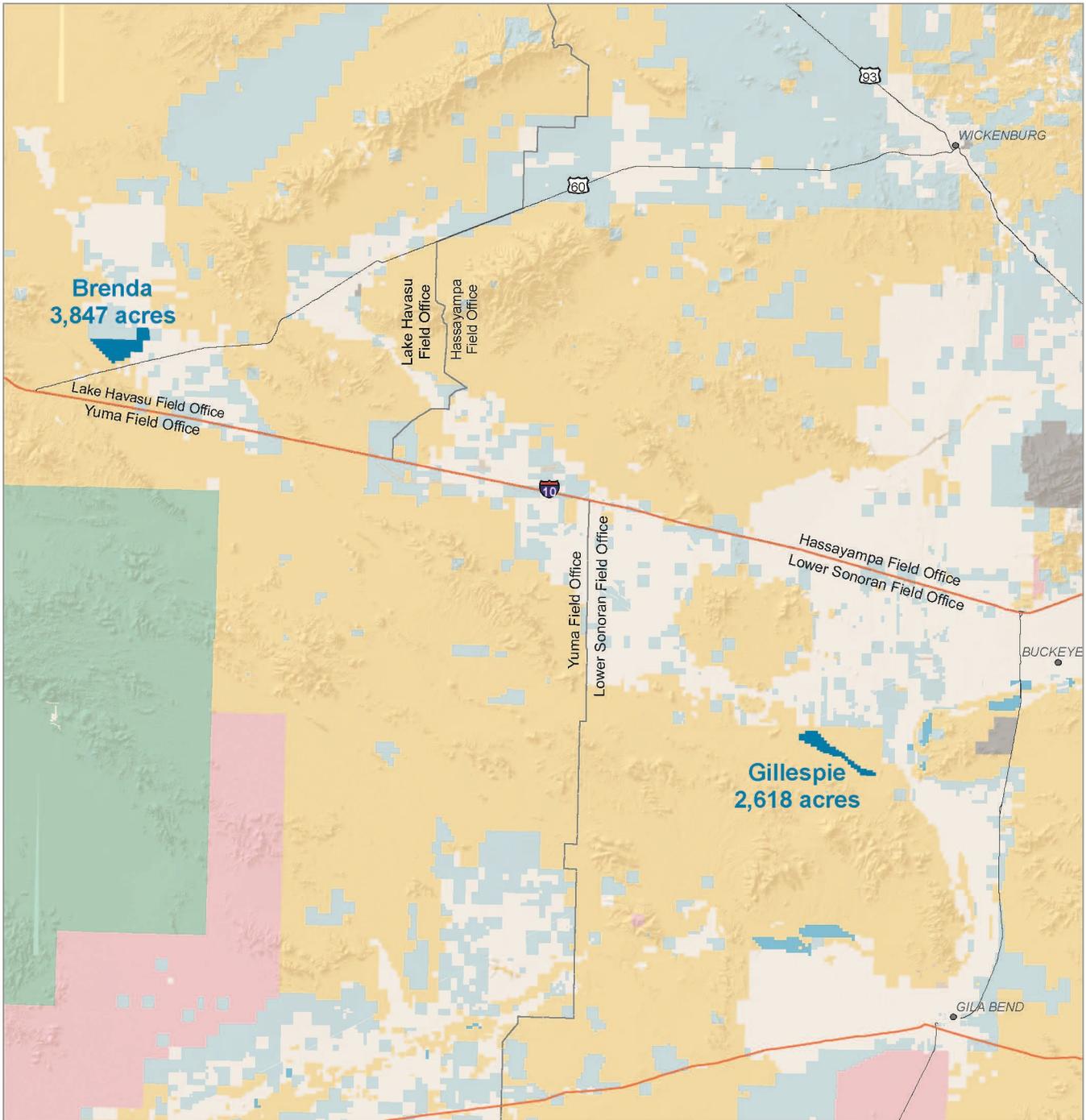
A summary of the scope of each of the two projects is provided in **Table I-1**, Comparison of the Scope of the Solar PEIS and the RDEP.



Arizona Solar Energy Zones from the Solar PEIS



The Solar PEIS proposes to identify two Solar Energy Zones (SEZs) in Arizona: Brenda and Gillespie.



Source: BLM 2011b, BLM and DOE 2011



February 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 Surface Administration |
| BLM-administered lands | Military |
| State | State Wildlife Area |
| Private, other | Local or State Park |



Figure 1-2

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

Solar PEIS	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 Energy Program ROD • Goals, Management Actions, and Design Features for solar and wind renewable energy development regardless of scale, land reuse, and remediation of disturbed sites

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.

1.4.3 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

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

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 directing renewable energy onto lands with low resource conflicts;
- Be effective stewards of heritage resources by engaging 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.

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 I.5.3**, Requirements for Further Environmental Analysis).

I.5.1 Decisions on the REDA

The Arizona Strip Field Office RMP (BLM 2008d), Phoenix Resource Area RMP (BLM 1988; Lower Sonoran portion of planning area), 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) will be amended to:

- Identify REDAs for renewable energy development;
- 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; and
- Identify terms and conditions, including design features and mitigation measures to minimize environmental impacts and that can be used to guide development at the local level (see **Appendix B**, Design Features and Best Management Practices).

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 identified 64 previously utilized sites on BLM-administered, state, municipal, and private lands; site types include gravel pits, mine sites, retired agricultural lands, landfills, isolated parcels that have been disturbed, and abandoned unauthorized airstrips (see **Figure I-3**, 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 and how the site was nominated.

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

As discussed in **Chapter 2**, Description of Alternatives and the Reasonably Foreseeable Development Scenario, all nominated sites are identified as REDAs for analysis along with other lands with low resource sensitivity. To further plan for and support reuse of disturbed lands, the RMPs would also be amended to:

- 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.

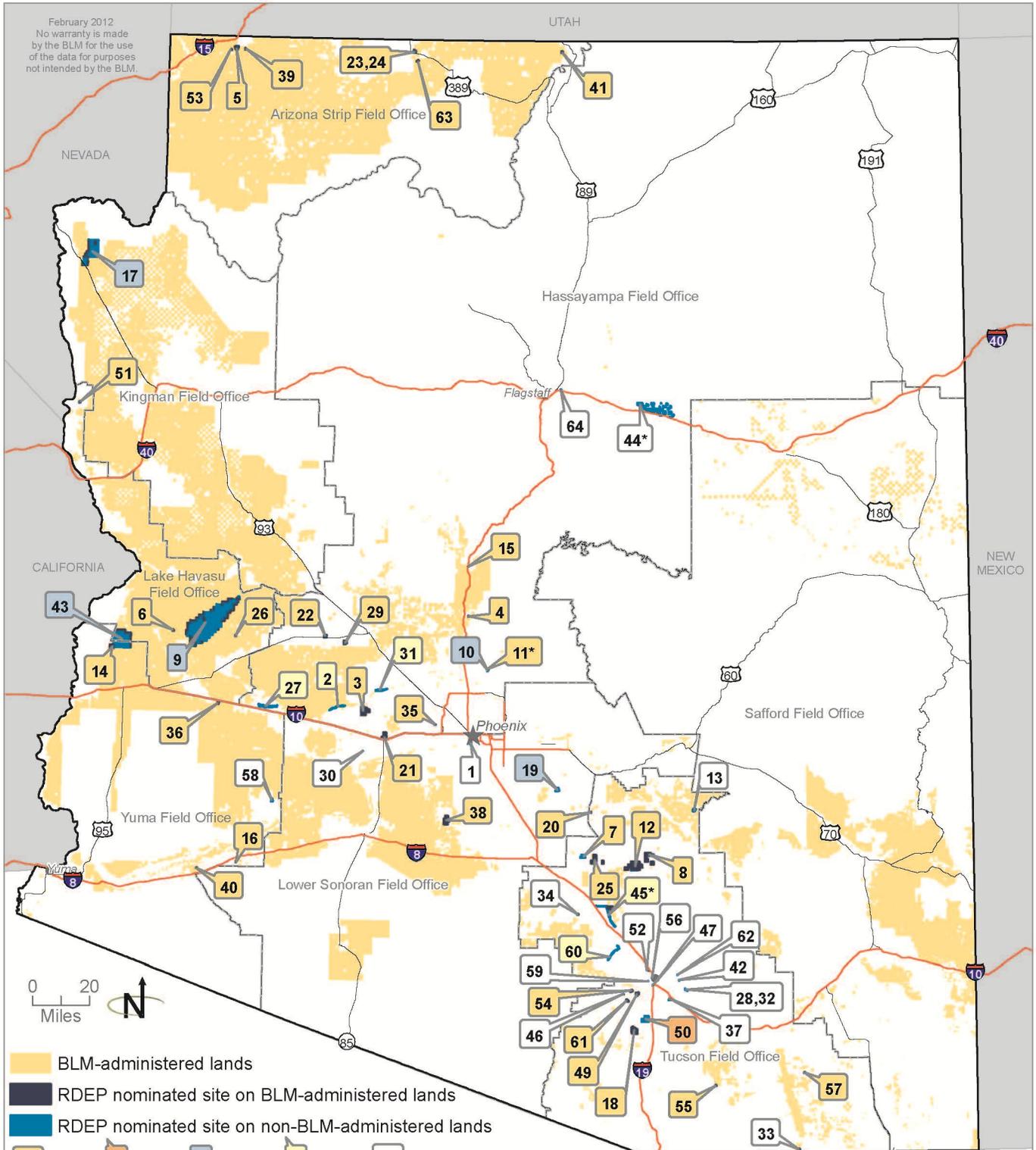
Nominated sites not on BLM-administered public lands will not be subject to these decisions, but these sites are considered part of the planning and analysis area to help BLM decision-making on adjacent suitable public lands (see **Section I.6.1**, Scope of the REDA Analysis). **Appendix C**, Solar and Wind Energy Assessment of Nominated Sites provides analysis of all nominated sites. This analysis will help inform state, tribal, and local governments and agencies and serve as a resource for the general public, policy makers, and energy planners that are considering renewable energy projects on these sites.



RDEP Nominated Sites



Based on an extensive public outreach process, the BLM and public identified 64 suitable previously disturbed sites on BLM-administered, state, municipal, private and other federal lands.



Source: BLM 2011b

Please see Appendix C, Table 1-1 RDEP Nominated Site Summaries, for RDEP nominated sites' names corresponding to the numbers on this figure. Site 48 (not shown on map) is comprised of sites 49, 54, and 61. *Sites have multiple ownerships, majority ownership is displayed. The number of sites per landownership type is displayed.

Figure 1-3

I.5.2 Decisions on the SEZ

In addition to identifying REDAs, the RDEP is serving as a step-down process to the Solar PEIS for utility-scale solar development (see **Section I.4.1**, Solar Energy Development Programmatic EIS). 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**, Description of Alternatives and the Reasonably Foreseeable Development Scenario, 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; 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 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 BLM retains the discretion to deny solar and wind ROW applications based on site-specific issues and concerns, even in those areas available or open for application in the existing land use plan.

In cases where a broad policy, plan, program, or project will later be translated into site-specific projects, subsequent analyses are referred to as "tiered" analyses. Tiering refers to the coverage of general matters in a broader EIS, such as state-wide 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 will be tiered to this EIS.

I.6 SCOPE OF ANALYSIS

The RDEP has a programmatic focus. 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.

I.6.1 Scope of the REDA Analysis

The scope of the EIS encompasses a wide range of renewable energy resources and technologies, including solar-based technologies and wind energy technology.² For a detailed discussion of what types of technologies are assumed, see **Appendix A**, Reasonably Foreseeable Development Scenario for Renewable Energy in Arizona.

Along with the BLM-administered lands with low resource sensitivity, the 64 nominated sites described earlier are included as part of the REDAs. As the BLM does not have jurisdiction to apply management decisions to non-BLM-administered lands, the RDEP land use and management decisions only apply to BLM-administered lands. While any decisions made related to renewable energy development within the REDAs would apply only to the BLM-administered nominated sites, non-BLM-administered sites were also included in the RDEP planning and analysis areas. This analysis will help inform state, tribal, and local governments and agencies and serve as a resource for the general public, policy makers, and energy planners that are considering renewable energy projects on these sites. Additional suitable disturbed lands may continue to be identified over time and may be considered in this or subsequent analyses.

I.6.2 Scope of the SEZ Analysis

In addition to the programmatic analysis for the REDAs, the BLM conducted a statewide review 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. This EIS provides in-depth environmental analysis on the proposed Agua Caliente SEZ as a

² 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.

location suitable for utility-scale solar energy development.³ The primary purpose of this more rigorous analysis is to provide documentation from which the BLM can tier future project authorizations, thereby limiting the required scope and effort of project-specific National Environmental Policy Act (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.

1.6.3 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.

1.7 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;

³ 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.

- 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.

I.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.

I.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.”

I.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 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.

1.8.4 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.

1.8.5 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).

1.8.6 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 (AZGFD) 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 (AZGFD 2009) and Guidelines for Solar Development in Arizona (AZGFD 2010). Additionally, the department has developed the 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.

I.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.

I.9 PUBLIC INVOLVEMENT

Public involvement, which includes public scoping, is required under NEPA, as defined in CEQ regulations 40 CFR 1500–1508, DOI NEPA regulations 43 CFR 46, and the BLM NEPA Handbook (BLM Handbook H-1790-1), and under FLPMA, as defined in 43 CFR 1610.2 and 1610.4-1 and the BLM Land Use Planning Handbook (BLM Handbook H-1601-1), which provide additional guidance and direction for public involvement.

The RDEP engaged multiple cooperating agencies, 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 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:

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

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 several 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 have been made 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 has provided information on the RDEP project and has 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 are listed in **Chapter 6**, Consultation and Coordination.

The BLM has distributed the Draft EIS to individuals, agencies, and organizations on the RDEP mailing list and to all cooperating agencies for a 90-day public comment period. Following the public comment period, the BLM will review the comments and will revise the EIS if warranted.

As the project moves forward, there will be additional opportunities for public involvement and comment. Public involvement opportunities will be advertised through local news media, the Federal Register, email, the RDEP Web site, and newsletters posted to mailing list recipients. Also, key project documents will be published on the Web site and made available in individual BLM Arizona Field Offices. Future key public involvement opportunities include the following:

- Publication of a Proposed RMP Amendments and Final EIS. In compliance with BLM planning regulations (43 CFR 1610), a 30-day public protest period will begin following publication. The Governor of Arizona will have 60 days to review the document for consistency with state and local plans and policies. Approval shall be withheld on any portion of the amendment being protested until final action has been completed on such protest. Before such approval is given, there shall be public notice and

opportunity for public comment on any significant change made to a proposed plan decision.

- The BLM will accept public input throughout the process. All of the materials and documents related to the project will be made available on the RDEP web site. Dates for the official public comment and protest periods, along with other relevant project dates, also will appear on the Web site.

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 SOLAR AND WIND TECHNOLOGIES

Arizona has a wealth of renewable energy resources, especially for those technologies that rely on solar radiation and wind (Black & 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. Additional details for these and other technologies are provided in the RFDS document produced for this project (**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 and Best Management Practices
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 Description of Alternatives and the Reasonably Foreseeable Development Scenario	Appendix F Southwest Regional GAP Analysis Project Landcover Types and Descriptions for Arizona
Chapter 3 Affected Environment	
Chapter 4 Environmental Consequences	
Chapter 5 Cumulative Impacts	
Chapter 6 Consultation and Coordination	
Chapter 7 List of Preparers	
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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 2-12**, Summary of the Alternatives, provides a summary of the goals, objectives, allocations, and management actions for each alternative. **Table 2-13**, 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**, Description of Alternatives and the Reasonably Foreseeable Development Scenario of this EIS.