

APPENDIX C

SOLAR AND WIND ENERGY ASSESSMENT OF NOMINATED SITES

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ACRONYMS AND ABBREVIATIONS

	Full Phrase
ACC	Arizona Corporation Commission
ADEQ	Arizona Department of Environmental Quality
AGFD	Arizona Game and Fish Department
BLM	United States Department of the Interior, Bureau of Land Management
BOR	United States Department of the Interior, Bureau of Reclamation
CAP	Central Arizona Project
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRA	Community Reinvestment Act
CSP	concentrating solar power
DNI	direct normal irradiance
DOE	US Department of Energy
EIS	Environmental Impact Statement
EPA	US Environmental Protection Agency
FUP	Free Use Permit
GIS	geographical information system
GW	gigawatt
H.R.	House of Representatives
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour
m^2	square meter
mph	miles per hour
MW	megawatt
MWh	megawatt hour
NEPA	National Environmental Policy Act
NREL	National Renewable Energy Laboratory
OHV	off-highway vehicle
PPA	power purchase agreement
PV	photovoltaic
RCRA	Resource Conservation and Recovery Act of 1976
RDEP	Restoration Design Energy Project
REST	Renewable Energy Standard and Tariff
ROW	right-of-way

ACRONYMS AND ABBREVIATIONS *(continued)*

	Full Phrase
SRP	Salt River Project
US	United States
USC	United States Code
VRM	Visual Resource Management

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APPENDIX C
SOLAR AND WIND ENERGY ASSESSMENT OF NOMINATED SITES

C.1 EXECUTIVE SUMMARY

C.1.1 Introduction

On January 13, 2010, the United States (US) Department of the Interior, Bureau of Land Management (BLM) Arizona State Office launched the Restoration Design Energy Project (RDEP) in an effort "to identify sites and/or areas managed by the BLM that may be suitable for the development of renewable energy and to establish appropriate design criteria for such projects" (Federal Register, Volume 75, Number 8, page 1807).

As part of the RDEP, the BLM is exploring opportunities to sustainably reuse disturbed lands with renewable energy potential in order to meet the demand for renewable energy generation, and address remediation and restoration requirements for the sites. Various types of solar and wind energy technology can be considered viable options for renewable energy development on previously disturbed sites and areas with low resource conflicts. These technologies evaluated in this report include:

- Utility and distributed scale solar power technologies, including concentrating solar power (CSP) and photovoltaic (PV), and
- Wind, including utility and community scale.

Based on an extensive public outreach process, the BLM and public identified 64 previously disturbed sites on federal (including BLM-administered), state, municipal, and private lands that may potentially be suitable for renewable energy development (see **Table C-1**, RDEP Nominated Sites). Site types include gravel pits, mine sites, landfills, isolated parcels that have been disturbed,

Table C-1
RDEP Nominated Sites

Site Number	Site Name	County	Land Owner	Acres	Site Type
1	19th Street Landfill	Maricopa	Private	191	Landfill
2	Belmont Mountain CAP	Maricopa	BOR	841	CAP right-of-way
3	Belmont Proposed Disposal	Maricopa	BLM	3,174	Undeveloped
4	Black Canyon City Landfill	Yavapai	BLM	25	Landfill
5	Black Rock Gypsum Mine	Mohave	BLM	679	Mine
6	Bouse Hills CAP	La Paz	BOR	120	CAP right-of-way
7	Brady CAP Site	Pinal	BLM	1,023	CAP borrow pit
8	Brady Wash Pipeline	Pinal	BLM	3,240	Utility corridor
9	Butler Valley – site withdrawn				
10	Cave Creek 2	Maricopa	Private	68	Landfill
11	Cave Creek Landfill	Maricopa	BLM	42	Landfill
12	Chevron Vacant Land	Pinal	BLM	7,812	Undeveloped
13	Christmas Mine	Gila	Private and BLM	496	Mine
14	Copperstone Mine	La Paz	BLM	929	Mine
15	Cordes Lakes Hazmat	Yavapai	BLM	14	Hazardous materials site
16	Dateland Gravel Pit	Yuma	BLM	64	Gravel pit
17	Detrital Wash	Mohave	State	17,695	Undeveloped
18	Dog Town Mine	Pima	BLM	2,080	Mine
19	Empire Farms – site withdrawn				
20	Florence – Price Dump	Pinal	BLM	85	Borrow pit, dump site
21	Foothills Proposed Disposal	Maricopa	BLM	1,355	Undeveloped
22	Forepaugh Airport	Maricopa	BLM	635	Previous landing strip
23	Fredonia Landfill	Coconino	BLM	21	Landfill
24	Fredonia OHV Area – site withdrawn				
25	Granite Hill Landing Strip	Pinal	BLM	2,656	Previous landing strip
26	Harcuvar Substation	La Paz	BLM	59	Utilities
27	Harquahala CAP	La Paz and Maricopa	BOR	1,910	CAP right-of-way
28	Harrison Road	Pima	Private and State	65	Landfill
29	Hartman Wash Mine	Maricopa	BLM	678	Mine
30	Hassayampa Landfill	Maricopa	Private	131	Landfill
31	Hassayampa CAP	Maricopa	BOR	723	CAP right-of-way
32	Irvington	Pima	Private and State	13	Landfill
33	Jones Private Property	Cochise	Private	156	Agricultural

Table C-1 *(continued)*
RDEP Nominated Sites

Site Number	Site Name	County	Land Owner	Acres	Site Type
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35	Litchfield Park Urban Parcel	Maricopa	BLM	41	Disturbed area
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37	Los Reales	Pima	Private	247	Landfill
38	Mobile Proposed Disposal	Maricopa	BLM	2,843	Undeveloped
39	Mokaac Gravel Pit	Mohave	BLM	80	Gravel pit
40	Old Yuma County FUP	Yuma	BLM	27	Borrow pit
41	Page Landfill	Coconino	BLM	160	Landfill
42	Prudence	Pima	Private	8	Landfill
43	Quartzite Area	La Paz	State	22,131	Agricultural
44	Red Gap Ranch	Coconino	Private	7,984	Ranching
45	Red Rocks CAP	Pima and Pinal	BOR and BLM	2,213	CAP right-of-way
46	Ryan	Pima	Private	16	Landfill
47	Ryland	Pima	Private	27	Landfill
48	Saginaw-Valhalla-Snyder Mine and Quarry- this is a combination of three other nominations (numbers 49, 54, and 61)				
49	Saginaw Hill	Pima	BLM	503	Mine
50	San Xavier Mine	Pima	Tohono O'odham Nation	2,573	Mine
51	Silver Creek Landfill	Mohave	BLM	50	Landfill
52	Silverbell	Pima	Private	36	Landfill
53	Snowflake Mine – site withdrawn				
54	Snyder Hill Mine	Pima	BLM	176	Mine
55	Sonoita Landfill – site withdrawn				
56	St. Mary's	Pima	Private	10	Residential (landfill)
57	Tombstone Landfill	Cochise	BLM	43	Landfill
58	Torrez – Brant	Maricopa	Private	408	Agricultural and residential
59	Tumamoc	Pima	Private	21	Landfill
60	Twin Peaks – Sandario CAP	Pima	BOR	888	CAP right-of-way
61	Valhalla	Pima	BLM	318	Undeveloped
62	Vincent Mullins	Pima	Private	32	Landfill
63	White Sage Gravel Pits	Coconino	BLM	61	Gravel pits
64	Wildcat Hill	Coconino	Private	75	Brownfield

marginal or impaired agricultural lands, abandoned unauthorized airstrips, and Central Arizona Project (CAP) right-of-ways (ROW). Based on public comments to the RDEP Draft Environmental Impact Statement (EIS), five nominated sites have been withdrawn from consideration. An additional site was withdrawn because it was duplicate site. The remaining 58 sites are not an exhaustive list, as there may be other disturbed lands in the state; however, they serve as a reasonable sample to understand the potential issues associated with reuse for renewable power on disturbed lands. Detailed *Nominated Site Profiles* that summarize existing resources, contamination/remediation concerns, and solar and wind potential for the remaining nominated sites are provided in **Section C.6**, Nominated Site Profiles.

Scope

This overview provides background information for the 58 nominated sites, including solar and wind energy potential, environmental characteristics, and potential remediation or restoration requirements. While Arizona has potential for rooftop solar and cogeneration of renewable energy along with conventional energy production facilities, the scope of this analysis is limited to on-the-ground CSP and PV solar energy technology (including utility and distributed scale), and utility and community wind energy technology.

C.1.2 Siting Renewable Energy on Previously Disturbed Lands

The benefits of developing on disturbed lands, such as brownfields, landfills, mine sites, and marginal or impaired agricultural lands, are well established; however, siting renewable energy on these types of lands can be complicated. Developers need to consider the environmental laws and regulations at the federal, state, and local level.

A disturbed site's characteristics may present unique environmental considerations and need to be carefully examined during the planning stage.

- **Site contamination.** The severity of site contamination may limit redevelopment opportunities.
- **Environmental liability.** If leasing land, work with the owner to determine liability for issues that may arise during renewable energy construction, operation, and decommission.
- **Remediation.** Consider the types of remediation required and the technology required for remediation tasks.

Developers also need to contend with technical issues related to construction and operation of renewable energy technologies on these types of sites. Key technical considerations include:

- **Proximity to transmission.** If the electricity generated will be sent off-site, consider whether the site has adequate transmission interconnection opportunities.

- **System size.** How large will the onsite system be and will it conflict with the local electric grid's capacity?
- **Usable acreage.** How much of the site can be utilized for renewable energy development? Does slope, aspect, or structures obstruct the resource?
- **Surrounding land uses.** Developers should determine the surrounding land uses, including open space and conservation areas, and their compatibility with renewable energy development.

Some of the more notable advantages to developing on these sites include the following: infrastructure; terrain; property size; zoning; reciprocal interest; public and community relations; reduced liability and cleanup costs; and tax and financial incentives.

Brownfields

Cleaning up and reinvesting in brownfields increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off of undeveloped, open land, and improves and protects the environment. Brownfields may offer several of the advantages listed above that can result in cost and time savings for the developer. However, certain site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on brownfields. For example, smaller sites may not support utility-scale wind development or certain solar energy technologies. Brownfields may also pose unique environmental considerations. Existing buildings or other obstructions can limit the placement of renewable energy infrastructure. If the site is classified by the US Environmental Protection Agency (EPA), renewable energy might conflict with the cleanup and investigation schedule. On-going remediation requirements may limit the type and location of solar and wind energy facilities.

Landfills

Landfills are also being identified as potential areas for solar and wind energy generation and may offer several of the advantages listed above. Some landfill site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, portions of the landfill may still be active and avoided during construction activities. Gas collection systems may require setbacks and other siting considerations. The search for a suitable site shouldn't be limited to closed landfills. Active landfills where a portion of the site has been closed may also be acceptable for renewable energy development and landfill operators may be actively seeking a clean energy partnership.

Mine Sites

Mine sites may also pose unique environmental considerations that may impose restrictions on the type and amount of renewable energy that can be developed on an active or closed mine site. For example, vertical cuts in the land can

present a significant danger when in close proximity to structures or roads, and structures built above or below highwalls may be damaged by falling rock, and building near a highwall can also increase safety concerns. Other concerns include settlement, subsidence, landslides, and drainage.

Marginal or Impaired Agricultural Lands

With continuing use of incentives to generate renewable energy, developers have also demonstrated a preference for marginal and impaired private lands, particularly agricultural parcels that may no longer be economically viable for agricultural production or where land is taken out of farm production for lack of water. They are often attracted to this farmland because of its proximity to existing electricity infrastructure such as transmission lines and substations. The degraded nature of the land may also make it less likely to have significant biological, environmental, or agricultural value that may make the land unsuitable for renewable energy development.

Technical feasibility of solar and wind developments on brownfields, landfills, mine sites, and marginal or impaired agricultural lands depends on compatibility of the solar or wind systems with the existing site components, including ongoing remediation, slope stability, settlement, foundation considerations, maintaining integrity of the cap system (landfills), and drainage.

C.1.3 Solar and Wind Energy Technology and Development Considerations

Solar Technologies

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 are CSP systems and PV systems. CSP technologies use mirrors to concentrate sunlight onto receivers that convert it to heat. The thermal energy is then used to drive a generator via steam turbine or heat engine to produce electricity. CSP technologies require cooling of the exhaust steam so that it condenses back into water before being heated again into steam. CSP technologies are the most suitable solar technologies for large utility-scale applications. The three main types of CSP technologies are linear concentrator, dish/engine, and power tower systems.

PV systems use solar cells consisting of semiconductor materials similar to those used in computer chips to capture the energy in sunlight and convert it directly into electricity. PV systems must be scaled over a very large area in order to be effective for utility-scale applications. There are two types of PV systems in use today: flat-plate systems and concentrated PV systems.

Wind Technologies

Wind turbines are available in a variety of sizes, and, subsequently, a variety of power ratings. Utility-scale wind turbines for land-based wind farms have rotor diameters ranging from 130 to about 395 feet, and towers that reach 130 to 425 feet high. Utility-scale turbines range in power rating from 100 kilowatt (kW) to

as large as several megawatts (MW). Larger turbines are grouped together into wind farms, which provide bulk power to a utility power grid. Wind power plants are modular, which means they consist of small individual modules (turbines), and, depending on electricity demand, can easily modify production capacity.

Development Considerations

Solar and wind power generation depends on selecting a suitable site, including consideration of access roads and interconnections with the transmission grid. Many different factors determine whether a particular site warrants consideration for potential solar or wind power generation. Once a preliminary screening is completed, developers will want to conduct more detailed research before committing to project construction and operation. Steps to undertake may include resource surveys (e.g., rare plants, biological, or cultural surveys), soil studies, surface hydrology and wetlands mapping, and microsite meteorological testing. Developers will also want to calculate the cost necessary to construct access roads (if necessary) and consider any compatibility issues with surrounding land uses. Finally, power purchase agreements (PPA) and transmission grid interconnection are critical financial aspects of any project and will vary by location.

Overall, developers are looking for a site that can generate revenue. Developers look for areas where regulatory and funding programs are in place to encourage development of solar and wind projects. Having these types of programs in place help expedite the process and can provide financial incentives to ensure the project is economically feasible. Other features developers look for include flat land, nearby transmission connections, older disturbed lands, and good solar or wind potential. These factors ultimately determine the costs associated with development and their influence on a developers return on investment.

Solar and Wind Market Trends

Annual US grid-connected PV installations doubled to 890 MW in 2010 compared with installations in 2009 (IREC 2011). The largest growth of grid-connected PV occurred in the utility sector. Although the number of utility PV installations remains small, the average system size is over 1.45 MW. The average size of grid-connected PV installations varies from state-to-state, depending on available incentives, interconnection standards, net metering regulations, solar resources, retail electricity rates, and other factors. In 2010 Arizona had 63.6 MW of grid-connected PV capacity installed, a 201 percent change from 2009 which saw 21.1 MW of capacity installed.

In 2010 the demand for CSP was insignificant. However, there are several very large projects currently under development in California and Arizona. There is greater uncertainty with the future growth of CSP technology in the US due to financing, permitting, water use, and environmental approvals because of the large land requirements for this type of technology.

The US wind power market slowed in 2010. Through 2010, Arizona had cumulative total of 128 MW of utility-scale wind power (AWEA 2011). Wind power installations in 2010 were similar in magnitude to those recorded in 2007; however they were just half those seen in 2009 and were 40 percent lower than in 2008. With federal incentives for wind energy in place through 2012, an improved project finance environment in 2010 and early 2011, and lower wind turbine and wind power pricing, modest growth in annual wind power capacity appears likely in 2011 relative to 2010.

C.2 INTRODUCTION

Utility: Utility-scale energy plants generate a large amount of electricity that is transmitted from one location (the energy plant) to many users through the transmission grid.

Distributed: Energy provided by small, modular power generators (typically ranging in capacity from a few kilowatts to 50 megawatts) located at or near customer demand.

Community: Projects are locally owned by public or private entities that utilize wind energy, and may be used for on-site power or to generate wholesale power for sale, usually on a commercial-scale greater than 100 kilowatt.

On January 13, 2010, the United States (US) Department of the Interior, Bureau of Land Management (BLM) Arizona State Office launched the Restoration Design Energy Project (RDEP) in an effort "to identify sites and/or areas managed by the BLM that may be suitable for the development of renewable energy and to establish appropriate design criteria for such projects" (Federal Register, Volume 75, Number 8, page 1807).

As part of the RDEP, the BLM is exploring opportunities to sustainably reuse disturbed lands with renewable energy potential in order to meet the demand for renewable energy generation, and address remediation and restoration requirements for the sites. Various types of solar and wind energy technology can be considered viable options for renewable energy development on previously disturbed sites and areas with low resource conflicts. These technologies evaluated in this report include:

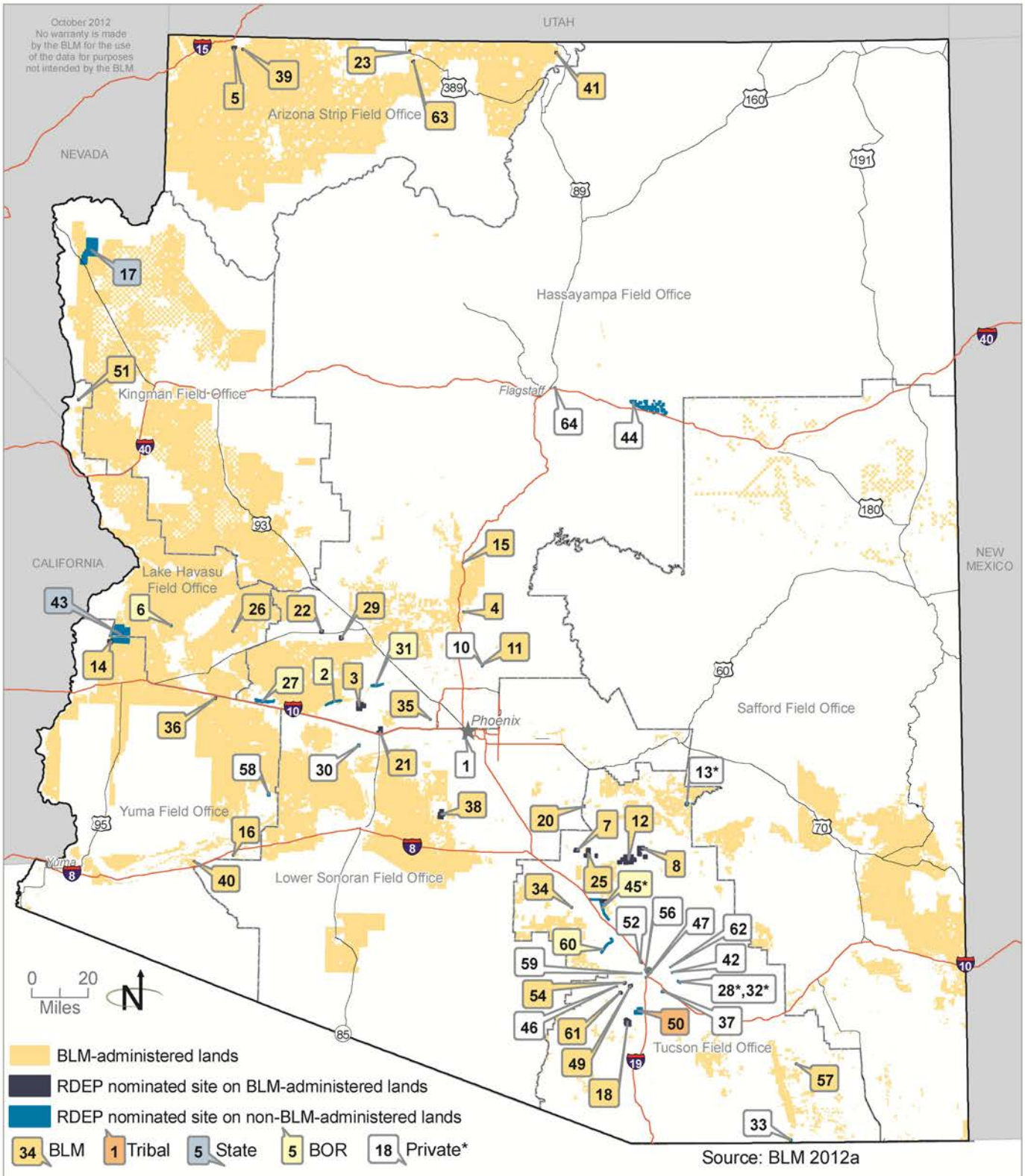
- Utility and distributed scale solar power technologies, including concentrating solar power (CSP) and photovoltaic (PV), and
- Wind, including utility and community scale.

Descriptions of solar and wind energy technologies are discussed in **Section C.4**, Solar and Wind Energy Technology and Development Considerations.

Based on an extensive public outreach process, the BLM and public identified 64 previously disturbed sites on federal (including BLM-administered), state, municipal, and private lands (see **Figure C-1**, RDEP Nominated Sites, and **Table C-2**, RDEP Nominated Sites) that may potentially be suitable for renewable energy development. Site types include gravel pits, mine sites, landfills, isolated parcels that have been disturbed, marginal or impaired agricultural lands, abandoned unauthorized airstrips, and Central Arizona Project (CAP) right-of-ways (ROW). Based on public comments to the RDEP Draft Environmental Impact Statement (EIS), 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 in the analysis.. The remaining 58 sites are not an exhaustive list, as there may be other disturbed lands in the state; however, they serve as a reasonable sample to understand the potential issues associated with reuse for renewable power on disturbed lands.

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 C-1

Table C-2
RDEP Nominated Site Summaries

Site Number	Site Name	County	Land Owner	Acres	Site Type
1	19th Street Landfill	Maricopa	Private	191	Landfill
2	Belmont Mountain CAP	Maricopa	BOR	841	CAP right-of-way
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Table C-2 *(continued)*
RDEP Nominated Site Summaries

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62	Vincent Mullins	Pima	Private	32	Landfill
63	White Sage Gravel Pits	Coconino	BLM	61	Gravel pits
64	Wildcat Hill	Coconino	Private	75	Brownfield

Detailed *Nominated Site Profiles* for the remaining nominated sites are provided in **Section C.6**, Nominated Site Profiles, and include the following information:

- Location facts, including site size, location, previous land use, adjacent land use(s), and surface and mineral ownership;
- Site characteristics, including solar and wind potential rating, estimated solar and wind generation capacity, developable acres, distance to graded roads, distance to transmission interconnections, and groundwater;
- Select environmental factors, including those for wildlife, vegetation, sensitive or listed species, wetlands, hydrology, special designations, land use, etc.;
- Site opportunities and constraints; and
- Suggested remediation and restoration requirements; and
- Summary describing the overall potential of the site for renewable energy development.

To facilitate site nominations, the BLM launched a Web site with RDEP information and nomination forms. During scoping, the BLM received 42 site nominations from local, state, and federal agencies, private companies, and the public. During preparation of the Draft EIS, the BLM continued to receive nominations, resulting in a total of 64 nominated sites. Fivesites were withdrawn from consideration based on comments to the Draft EIS and one duplicate site was removed.

The information contained within these site summaries has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

C.2.1 Scope

Although over 52 percent of the land in Arizona supports adequate solar resources and approximately two percent has adequate wind resources, this overview provides background information for the 58 nominated sites, including solar and wind energy potential, environmental characteristics, and potential remediation or restoration requirements. Additionally, while Arizona has potential for rooftop solar and cogeneration of renewable energy along with conventional energy production facilities, the scope of this analysis is limited to on-the-ground CSP and PV solar energy technology (including utility and distributed scale), and utility and community wind energy technology.

There are many issues that must be addressed when considering renewable energy as a redevelopment option, and an appropriate resource siting is only one. Other issues not considered in this report include policies, tax incentives, financing, and technology changes. Further technical and financial analysis of the nominated sites will be needed to determine the optimal sites for development of specific types of solar and wind energy technology. The assessment was conducted using geographical information system (GIS) analysis (see **Section C.5**, References and Data Sets for GIS Screening).

C.2.2 Report Organization

Following this introductory section, Section 2 provides background information for considering solar and wind energy development on brownfields, landfills, and mine sites. An overview of solar and wind technology and development is provided in Section C.4. References and GIS data sets are provided in Section C.5. The nominated site profiles are included in Section C.6.

C.3 SITING RENEWABLE ENERGY ON PREVIOUSLY DISTURBED LANDS

C.3.1 Background

Renewable energy development on previously disturbed lands is relatively new and growing in acceptance and popularity, and is often considered to be sustainable development. Sustainable development has numerous definitions depending on usage, but most sources cite the 1987 United Nations World Commission on Environment and Development report "Our Common Future" definition of "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." In this context of developing renewable energy, sustainable development hinges on balancing developing energy to meet a community's needs while preserving undisturbed lands.

US Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response states the reasons for pursing renewable energy projects on disturbed lands may include (EPA 2005a):

- Taking stress off undeveloped lands for construction of new energy facilities;
- Using existing transmission capacity and infrastructure of formerly developed lands;
- Providing economically viable reuse to sites with significant cleanup costs or low real estate development demand; and
- Spurring needed investment in both urban and rural communities, and creating jobs.

This section identifies issues and concerns that should be addressed by communities, agencies, and developers interested in developing renewable energy on previously disturbed lands. The information presented will help define key aspects that need to be addressed in order to successfully site renewable energy development on previously disturbed lands. However, interested parties will need to further investigate the site prior to making a final determination on a site's suitability for their project(s). The section begins with highlighting common regulatory requirements and factors to be considered regardless of the type of disturbed land sites, followed by specific information related to reusing brownfields, landfills, mine sites, and marginal or impaired agricultural lands for renewable energy development.

C.3.2 Regulations and Resources

The benefits of developing on disturbed lands are well established; however, siting renewable energy on disturbed lands can be complicated. Developers need to consider the environmental laws and regulations at the federal, state, and local level. The following is a condensed summary representative of

regulations involved in developing on previously disturbed land. A sampling of resources available for developing on previously disturbed sites is also provided.

Federal Regulations

- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund.** This federal act (42. United States Code [USC] 9601–9675) created a tax to fund a federal cleanup program for contaminated sites, including sites that fall under EPA's National Priorities List.
- **Small Business Liability Relief and Brownfields Revitalization Act.** This federal law (Public Law 107-118 [House of Representatives (H.R.) 2869]) provides certain relief for small businesses from liability under CERCLA, and to promote the cleanup and reuse of brownfields (including landfills and mine sites) to provide financial assistance for revitalization, to enhance state response programs, and for other purposes.
- **Resource Conservation and Recovery Act (RCRA).** This federal act (42 USC Section 6901 et seq.) gives EPA the authority to regulate the treatment of hazardous waste from manufacturing to disposal. State and local governments are responsible for the implementation of RCRA, including the Arizona Department of Environmental Quality (ADEQ) Waste Programs Division.
- **Community Reinvestment Act (CRA).** By requiring banks and other lenders to make capital available in low-income zones, this federal act (12 USC 2901) encourages development in areas likely to include brownfields. The EPA provides incentives for brownfield redevelopment through the CRA.
- **National Environmental Policy Act (NEPA).** Compliance with the NEPA is required for any project with a federal nexus, such as construction on federal land, transmission line siting on federal land, federal funding (e.g., US Department of Energy [DOE] Loan Guarantee Program), or interconnection with the federal grid (e.g., Western Area Power Administration).
- **Federal Permits.** Depending on the site and project characteristics, these can include consultation and approval from the National Pollutant Discharge Elimination System, Federal Aviation Administration, US Fish and Wildlife Service, US Army Corps of Engineers, and others. These agencies will often advise developers on common design features, mitigation measures, and/or best management practices necessary to obtain required permits.
- **Surface Mining Control and Reclamation Act.** This federal act (30 USC Sections 1201-1328) establishes a program for regulating

surface coal mining and reclamation activities. The act creates an Abandoned Mine Reclamation Fund for use in reclaiming and restoring land and water resources adversely affected by coal mining practices.

State and Local Regulations

- **State Permits.** Arizona agencies may require transmission routing permits, Arizona Corporation Commission (ACC) approval, resource surveys, or other permits. State agency contacts can assist developers with questions and identification of potential site constraints early in the process.
- **Land Use Regulations.** Local zoning requirements and other land use regulations must be compatible to renewable energy development and site reuse. Many land use policies and regulations currently do not address solar and wind power generation as a land use separate from other major utility facilities (e.g. power generating plants, substations, refuse collection, transfer, and disposal facilities) which are allowed in most zoning districts with a special use permit. Solar developers prefer clearly documented policies, requirements, and standards that reduce the potential for surprises in the entitlement process.

Resources

- **Brownfields National Partnership Action Agenda.** Coordinated by the EPA, this program outlines federal efforts to encourage private and state and local government redevelopment of brownfield sites (EPA 2002).
- **Brownfields Redevelopment Toolbox.** ADEQ developed this Toolbox to explain the brownfields process and to help guide redevelopment of these sites from start-to-finish. The Toolbox identifies five steps in the brownfields renewal process (ADEQ 2010).
- **The Abandoned Mine Site Characterization and Cleanup Handbook.** While not official policy, this comprehensive resource, published by the EPA in 2000, draws on decades of experience to guide project managers through the reclamation of abandoned mines (EPA 2000).
- **Mine Site Cleanup for Brownfields Redevelopment: A Three-Part Primer.** Provides information about the cleanup aspects of mine site redevelopment, including new and innovative approaches to more efficiently characterize and clean up those sites. The use of these approaches to streamline characterization and remediation of mine sites offers the potential for redevelopment at a lower cost and within a shorter timeframe (EPA 2005b).

C.3.3 Site Contamination, Liability and Remediation

A site's characteristics may present unique environmental considerations and need to be carefully examined during the planning stage.

- **Site contamination.** The severity of site contamination may limit redevelopment opportunities.
- **Environmental liability.** If leasing land, work with the owner to determine liability for issues that may arise during renewable energy construction, operation, and decommission.
- **Remediation.** Consider the types of remediation required and the technology required for remediation tasks.

The passage of CERCLA (the Superfund Act) provided provisions to protect landowners from site contamination liability issues that were not caused by them. The due diligence process that evolved out of the liability concerns lead to the passage of the Small Business Liability Relief and Brownfields Revitalization Act. This act created various liability assurances for those who acquire contaminated properties. The act defines the steps one must take to conduct "All Appropriate Inquiry" (due diligence) prior to purchase of a potentially contaminated site, dictates what type of professionals may perform the due diligence, and provides grant funding to perform cleanups. Under the act, Phase I studies must be conducted to meet the criteria of "All Appropriate Inquiry" and establish a buyer as a Bona Fide Prospective Purchaser.

Being a Bona Fide Prospective Purchaser provides release from liability for existing environmental problems at the time of purchase (as long as the new owner doesn't make the pollution situation worse and takes immediate steps to remediate). If a landowner follows the steps set forth in statute the liability exposure is quantified and capped, providing a higher degree of liability protection and certainty to the redevelopment process.

The EPA has prepared two documents addressing liability concerns with contaminated sites. "Revitalizing Contaminated Sites: Addressing Liability Concerns (The Revitalization Handbook)" addresses environmental cleanup liability risks associated with the revitalization of contaminated property or sites (EPA 2011a). The "Siting Renewable Energy on Contaminated Properties: Addressing Liability Concerns" fact sheet provides answers to some common questions that developers of renewable energy projects on contaminated properties may have regarding potential liability for cleaning up contaminated properties. It also includes a Reference Section listing key EPA documents and Web sites, and endnotes citing specific provisions discussed in the fact sheet that provide additional information.

Remediation is necessary when contamination exceeds a standard or poses an unacceptable risk to public health and the environment. Often remediation can be done as part of the development plan. For example, construction of solar and

wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. It has been found that many contaminants degrade naturally, thereby limiting the scope of cleanup. Removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

In many instances the mere presence of contamination does not always justify cleanup. It is the exposure or potential exposure of populations to unsafe levels of contamination that triggers a cleanup. It may be that the contamination does not pose a threat to public health and the environment within the proposed redevelopment scheme.

Groundwater cleanup criteria usually rely on a maximum contaminant level. The remediation plan may propose a risk-based closure for a specific use. Risk-based closure means that contamination may be left on site. For instance, cleanup for solar and wind energy use may allow for a higher contaminant level than if the site were to be used for residential construction. Similarly, a risk-based closure may entail eliminating exposure pathways, i.e., capping the soil so there is no human contact.

Environmental covenants may be needed to notify future parties about persistent contamination that may be left in place under a risk-based closure. This is a method of managing the site to prevent exposure to future site users. For instance, industrial cleanup standards are not quite clean enough for residential use; the environmental covenant will notify future residential developers that additional cleanup needs to be performed. If waste is consolidated in an onsite location and capped, an environmental covenant would notify future property owners not to dig in that location, or to have a plan to deal with the buried waste.

Lessons Learned

The development of a 40-acre solar farm at the Aerojet General Corporation Superfund site in Sacramento, California is an example of successful renewable energy projects and green remediation at contaminated lands. Reuse of the Aerojet General Corporation Superfund site provided a range of broad lessons learned that can help guide similar projects at contaminated lands in Arizona (EPA 2010).

1. EPA works with potentially responsible parties and other stakeholders to support green remediation and reuse projects like renewable energy development that are compatible with site cleanups. EPA places a high priority on green remediation and the development of renewable energy opportunities as part of the reuse of contaminated lands. At the Aerojet General Corporation site, EPA's coordination with Aerojet enabled the siting of the facility in

an appropriate location and with an appropriate design that ensured flexibility if future investigation and remediation is necessary.

2. While EPA provides tools and resources to support Superfund reuse, communities and public and private sector organizations make it happen. EPA relies on engaged community stakeholders to bring their future land use goals and priorities to the table so that this information can be incorporated as part of the remedial process, linking cleanup and redevelopment. Aerojet shared its solar energy plans and worked cooperatively with EPA. When possible, future use plans should be shared with EPA as early in the remedial process as is feasible.
3. The Superfund remedial process can provide information to fulfill environmental permitting and other regulatory requirements for renewable energy projects like solar farms. Superfund sites are among the most comprehensively documented and evaluated areas of land. Aerojet relied on detailed site investigation information from the Superfund process to address environmental permitting requirements for the site as part of its larger real estate development plans, several years before the solar farm was even under consideration. At most sites, a completed remedial investigation/feasibility study or a draft proposed plan will provide site owners and prospective purchasers with extensive site information.

Specific factors that contributed to the Aerojet project's success include:

- Aerojet energetically pursued the development of the solar farm to help power the site's ground water remediation program, motivated by economic and environmental considerations to put in place the requisite resources, partnerships and expertise.
- Aerojet worked with private and public sector partners to develop a project approach that addressed liability concerns.
- EPA and state agencies were engaged partners with thorough knowledge of the biology, geology and chemistry of the location and they supported Aerojet's green remediation goals in the context of the site's cleanup.
- EPA had selected a remedy that would be consistent with the property's reasonably anticipated future land uses.

Siting Factors

Developers also need to contend with technical issues related to construction and operation of renewable energy technologies on these types of sites. Key technical considerations include:

- **Proximity to transmission.** If the electricity generated will be sent off-site, consider whether the site has adequate transmission interconnection opportunities.
- **System size.** How large will the onsite system be and will it conflict with the local electric grid's capacity?
- **Usable acreage.** How much of the site can be utilized for renewable energy development? Does slope, aspect, or structures obstruct the resource?
- **Surrounding land uses.** Developers should determine the surrounding land uses, including open space and conservation areas, and their compatibility with renewable energy development.

Section C.4, Solar and Wind Development Considerations, provides a detailed discussion of these technical issues.

C.3.4 Brownfields

EPA defines the term "brownfield site" as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" (Public Law 107-118 (H.R. 2869). Examples of Brownfields include:

- Landfills or dump sites
- Abandoned facilities
- Dry cleaning facilities
- Old gas stations
- Mine-scarred land
- Auto repair shops

Cleaning up and reinvesting in these properties increases local tax bases, facilitates job growth, utilizes existing infrastructure, takes development pressures off of undeveloped, open land, and both improves and protects the environment. Brownfields may offer several advantages that can result in cost and time savings for the developer. Some of the more notable advantages include the following:

- **Infrastructure.** Many brownfields have existing utility infrastructure on site or nearby. Given their previous use as commercial or industrial property, brownfields are often in close proximity to a road network suitable for transporting construction equipment.
- **Terrain.** The flat topography of most brownfields makes them suitable for solar or wind development.

- **Property size.** Brownfields vary tremendously in size, making it easy to tailor a renewable energy project to property's boundaries. In addition, contaminated sites may offer certain purchase or lease incentives unavailable on greenfield sites. Coupled with low competing real estate demand, the purchase or lease of brownfields can lower project costs considerably.
- **Zoning.** Brownfields are often located on lands zoned for commercial or industrial uses. In many cases, there is often no time-consuming rezoning process and adjacent landowners may not object to clean energy development of these sites for solar or wind energy.
- **Reciprocal interest.** Owners of brownfields may be looking for income opportunities and the liability relief that may accompany redevelopment.
- **Public and community relations.** Developers considering brownfield sites may receive support or an expedited permitting process from communities eager to reuse a brownfield site.
- **Reduced liability and cleanup costs.** Renewable energy development may require less intensive cleanup efforts than other potential reuses of brownfields. In addition, developers may be shielded from liability arising from existing on-site contamination.
- **Tax and financial incentives.** Municipalities may offer tax benefits to developers who agree to remediate and reuse a brownfield site. The ADEQ Brownfields Assistance Program awards grants to qualifying redevelopment projects (ADEQ 2010).

Technical Aspects

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on brownfields. For example, smaller sites may not support utility-scale wind development or certain solar energy technologies.

Brownfields may also pose unique environmental considerations. Existing buildings or other obstructions can limit the placement of renewable energy infrastructure. If the site is classified as a brownfield by the EPA, renewable energy might conflict with the cleanup and investigation schedule. On-going remediation requirements may limit the type and location of solar and wind energy facilities.

Select Project Profiles

The following examples illustrate siting solar and wind energy facilities on brownfield sites.

Exelon City Solar in Chicago, Illinois. Situated on 41 acres of former industrial "brownfield" property that has been vacant for more than 30 years, the site is now remediated and restored to productive use. PV panels at Exleon City Solar now produce 10 MW. The project came online in 2010 (Exelon 2011). Some key aspects related to development include:

- Site work began in July 2009, with Exelon performing considerable work to prepare the site for a PV plant. The site was cleared, basements and cisterns were filled, and barrels of hazardous materials were recovered and removed. As a final step, the ground was paved and 7,300 steel piers were driven into the ground.
- Undocumented underground storage tanks were located during the cleanup process and had to be removed and built around.

Casper Wind Power Project in Casper, Wyoming. Chevron is using 11 turbines on part of a former petroleum refinery to produce 16.5 MW of wind energy (Chevron 2011a). Some key aspects related to developing on brownfields include:

- Designated RCRA site; refinery produced motor fuels and asphalt.
- Risk-based soil remediation was contingent on reuse.
- Chevron investigated the site extensively and continues to fulfill their obligation to remediate site.

Bethlehem Steel Winds Project in Lackawanna, New York. A 30-acre former steel mill is now home to eight turbines with a 20 MW capacity (EPA 2011b). Some key aspects related to development include:

- Project location is a Superfund site contaminated with heavy metals and has mine acid drainage.
- Much of the construction could occur without excavating the contaminated soil.
- Windmill foundations, service roads, and green space cover the contamination.

New Rifle Mill Site in Rifle, Colorado. A 2.3 MW PV system now operates on 12 acres of contaminated land that had limited development potential for other projects (EPA 2011c). Some key aspects related to development include:

- Project location is a DOE Uranium Mine Tailings Remediation Control Act site.
- DOE performed the cleanup of surface and ground water contamination at the site.

Philadelphia Naval Yard in Philadelphia, Pennsylvania. A 1.5 MW PV system is expected to come online in 2011 at this former naval yard (EPA 2011d). Some key aspects related to development include:

- Project is a US Department of Defense Base Realignment and Closure project. Site is contaminated with heavy metals.
- Most of site required some form of cleanup (e.g., soil remediation and removal of underground storage tanks).
- Cleanup actions included soil remediation, groundwater monitoring, and a soil and vegetative cap.

C.3.5 Landfills

In recent years, with the increasing interest in renewable energy sources, closed landfills are being identified as potential areas for solar energy generation. Closed landfills may offer several advantages, including the following:

- **Infrastructure.** Many landfills have existing utility infrastructure on site and given their proximity to urban centers, transmission interconnects may be close by. Landfills also depend on a road network capable of supporting large construction and maintenance vehicles, which can often be reused for energy project construction, operation, and maintenance.
- **Terrain.** The flat or gently sloping topography of landfills make them suitable for solar or wind development.
- **Land acquisition.** Developers can avoid a complicated acquisition process because landfills often have one or only a few owners. In addition, contaminated sites may offer certain purchase or lease incentives. Coupled with low competing real estate demand, the purchase or lease of landfills can lower project costs considerably.
- **Industrial zoning.** Renewable energy development is often considered compatible with surrounding land uses if sited on a former landfill. There is often no time-consuming rezoning process and adjacent landowners may not object to clean energy development of these sites for solar or wind energy.
- **Reciprocal interest.** Owners of closed landfills may be looking for alternative forms of income and the liability relief that may accompany redevelopment.
- **Public and community relations.** Developers considering contaminated sites may receive support or an expedited permitting process from communities eager to repurpose a closed landfill.
- **Reduced liability programs.** Where cleanup is necessary, EPA and most state voluntary cleanup programs offer mechanisms for limiting liability.

Technical Aspects

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, portions of the landfill may still be active and avoided during construction activities. Gas collection systems may require setbacks and other siting considerations. The search for a suitable site shouldn't be limited to closed landfills. Active landfills where a portion of the site has been closed may also be acceptable for renewable energy development and landfill operators may be actively seeking a clean energy partnership.

Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

Slope Stability

For landfills with steep slopes, re-grading and use of additional top soil can help achieve suitable slopes capable of supporting structure placement. In general steep slopes demand strong foundations (i.e., poured concrete or pre-cast concrete footings) with light weight components. Light weight solar components of appropriate mechanical loading rates with strong foundation are preferred at sloped surfaces, rather than the heavy structures associated with large solar components or wind turbines. It is also necessary to perform slope stability assessment prior to construction activities to ensure integrity of cap and adequate slope stability can be maintained (Sampson 2009).

Landfill Settlement

Physio-chemical, mechanical and bio-chemical processes change properties of disposed waste over time and cause settlement. Landfill settlements over time could result in formation of surface cracks to the final landfill cover; damages to the leachate and gas collection piping, water drainage systems and underground utilities; and formation of water holding depressions (Sampson 2009). To reduce settlement effects, dynamic compaction is applied as controlled tamping of loose soils to raise or promote densification. For landfills, dynamic compaction can increase the material density and decreases the differential settlement (Sampson 2009). Waste removal and replacement with the clean fill could improve landfill densification. For development of previously closed landfills, application of geo-grid reinforcement can increase the cover soil strength placed above the geo-membrane. Use of adjustable components (i.e., shims and adjustable racking systems of solar mounting structures) can resist against the changes in the landfill deformations (Sampson 2009).

Foundation Considerations

Weights of the structures have a greater significance for installations on the landfill cap. Landfill cap depth needed to support a PV system depends on the dead weight loads contributed by the piers and footings (SRA 2008). Choice of suitable PV system depends on the weight of the system (i.e., tracking systems heavier than fixed tilt systems), type of waste and its properties, and side slope

stability (Sampson, 2009). In general, flat surfaces have less foundation requirements. For sloped surfaces, lighter panels with a strong foundation (i.e., pre-cast or poured concrete footings) are preferred (e.g., Nellis Air Force Base single axis tracking systems) (Sampson 2009).

Maintaining Integrity of the Cap System

Maintaining the integrity of the cap is both an engineering and regulatory concern. Clearing, filling, grading, and compaction activities are generally performed during the development of the landfill for solar or wind system installation. During installation, extreme care is necessary not to damage the landfill cap or expose the waste. Installation on landfills requires good foundation placement, which depends on landfill cap characteristics to support the footings. Generally, during the planning stage, the cap design must consider anticipated loads by the PV system and its components.

For most cases, prefabricated concrete piers or concrete slabs could be sufficient enough to support a solar system. Wind turbine foundations on the landfill cap can utilize piles extended to bedrock, or floating adjustable footings, to address settlement issues. Also, requirements for trenching activities (i.e., electrical lining), existing or future landfill gas-to-energy recovery infrastructures should be considered (Sampson 2009). Adequate soil layer should exist for trenching activities with no or minimal impact on clay or geo-synthetic liner (Sampson 2009). If the landfill requires regular top surface (cap) maintenance (e.g., mowing of grass), placement of structures high enough for the operation of mowing equipment beneath the structures should be considered.

Drainage

Drainage and erosion are also major factors to consider. Developers will want to engineer methods of preserving top liners and soil caps to preserve slope stability and mitigate erosion that could degrade the cap. Drainage patterns at closed landfills could also be impacted by renewable energy development and panel or turbine placement should be planned accordingly (Sampson 2009).

Challenges in Using Closed Landfills For Solar and Wind Generation

As discussed above, developing solar and wind energy systems on landfills present challenges. For example, Tessman Road Landfill (see **Select Project Profiles**) employed flexible PV laminates on side slopes (18 degrees) directly attached to the exposed geomembrane cover. Application of exposed geo-membrane cover with light weight panels (flexible PV strips) was a remedy for problems associated with steep side slope. In the case of Pennsauken Landfill Project, New Jersey; shallow pre-cast concrete footings were used to provide strong foundation for the PV system on the sloped surfaces overcoming complications of side slope installation. This facility used ballast foundation with crystalline panels on top surfaces for maximum energy production.

Construction of a wind turbine on a closed landfill in Hull Massachusetts used stainless steel piles extended to bedrock beneath landfill to mitigate settlement

issues. In Karhlsruhe, Germany, a wind turbine was constructed on a landfill cap with a floating, adjustable spread footing foundation to correct for settlement.

Select Project Profiles

The following examples illustrate siting solar and wind energy facilities on landfill sites.

Fort Carson Landfill at Fort Carson Army Base, Colorado. Sited on 12 acres of a former construction debris landfill, the Army's largest solar energy project came online in early 2008 and utilizes PV panels to produce 2 MW (EPA 2011e). Some key aspects related to development include:

- Designated RCRA site; construction debris.
- Without costly excavation, capping or extensive cleanup, reuse options for the site were limited.
- Site was prepared for the solar facility by covering the inert landfill debris with two feet of soil, grading it for drainage and planting a native seed mix. Engineered cover is not required because landfill contains inert construction debris.

Holmes Road Landfill. Houston, Texas. City of Houston developed a 10 MW solar energy project on a 300 acre former landfill located near downtown. The solar farm will generate over 12.5 million kilowatt hours (kWh) annually accounting for approximately one percent of the city's annual energy purchases (EPA 2011f). Some key aspects related to development include:

- Cap depth is variable, complicating construction, tree removal, and site grading as consideration must be taken to ensure the cap's integrity.
- Utility distribution lines are located adjacent to the landfill on three sides.

Nellis Air Force Base in Clark County, Nevada. On 140 acres of a closed landfill site, this project utilizes tracking PV arrays to generate 14 MW, enough to provide 25 percent of the electricity needs at Nellis Air Force Base (EPA 2011g). Some key aspects related to development include:

- Designated RCRA site; polychlorethene and trichlorethene (methyl chloroform).
- Landfill was capped with native soils and groundwater monitoring wells were installed for sampling every five years.

Pennsauken Landfill in Pennsauken, New Jersey. This project, which came online in 2008, utilizes PV panels to produce 2.6 MW of electricity on the

site of a closed municipal landfill (Messics 2009). Some key aspects related to development include:

- Majority of waste is bulky and consists of construction and demolition waste.
- Landfill is capped with vegetation, soils and membrane, and the site has groundwater treatment.
- Flatter areas of the landfill were developed; cheaper mounting system and construction costs.
- Grading and earthwork was minimized on older waste where most settlement has already occurred.

Tessman Road Landfill, San Antonio, Texas. This project, which came online in 2009, includes flexible PV solar cells installed directly to the cap to produce 135 kW of electricity on the site of a closed municipal landfill (Sampson 2009). Coupled with landfill gas technology, the site produces 9 MW of electricity. Some key aspects related to development include:

- Geomembrane cover system functions as both an effective landfill cap and mounting surface for flexible PV panels.
- The system covers 5.6 acres of 18-degree south facing slope.
- Exposed geomembrane is securely anchored rather than held in place with soil ballast.

Hull Wind II, Hull, Massachusetts. One turbine, capable of generating up to 1.8 MW, was constructed at a closed landfill site (Manwell et al. 2006). Some key aspects related to development include:

- A geotechnical investigation determined in sufficient detail the characteristics of the landfill and the bedrock underneath it, and that a foundation could be designed.
- Landfill does not have a protective liner. Piles were driven through the landfill to solid rock beneath to support the turbine, instead of waste supporting the turbine.

C.3.6 Mine Sites

Active and abandoned mine sites may serve as excellent locations for solar or wind energy projects, as the requirements for these facilities and the characteristics of mine lands may be well-suited to each other. Mine sites offer a number of potential advantages over greenfields, including the following:

- **Infrastructure.** Many mine sites have existing infrastructure that is often more economically viable to retrofit than to develop. Mines consume large amounts of energy to extract and distribute raw

materials, meaning they often have good energy transmission capacity, proximity to transmission interconnections, and a road network capable of supporting large construction and maintenance vehicles.

- **Terrain.** Flat or terraced topography of mine sites make them suitable for solar or wind development. Tailings dam sites offer a mix of ideal terrain and suitable geology for turbine and solar array foundations.
- **Land acquisition.** Developers can avoid a complicated acquisition process because large mine sites often have one or only a few owners. Contaminated sites may offer certain purchase or lease incentives unavailable on greenfield sites. Coupled with low competing real estate demand, the purchase or lease of mine lands can lower project costs considerably.
- **Industrial zoning.** Renewable energy development is often considered compatible with surrounding land uses if sited on a former or active mine. There is often no time-consuming rezoning process and adjacent landowners may not object to clean energy development.
- **Reciprocal interest.** Mine operators may desire to utilize on-site renewable energy development as a way to meet state renewable portfolio standards or comply with other laws and regulations.
- **Public and community relations.** Developers considering mine sites may receive support or an expedited permitting process from communities eager to repurpose an abandoned or contaminated mine site.
- **Reduced liability programs.** EPA and most state voluntary cleanup programs offer mechanisms for limiting liability.

Technical Aspects

Mine sites may pose unique environmental considerations that may impose restrictions on the type and amount of renewable energy that can be developed on an active or closed mine site. For example, vertical cuts in the land (highwalls) can present a significant danger when in close proximity to structures or roads. Structures built above or below highwalls may be damaged by falling rock, and building near a highwall can also increase safety concerns (ODNR 2008).

Buildings and other such features located on mine spoil may settle, move or have leachate problems. Mine spoil and coal refuse, even if reclaimed, are prone to settlement and are subject to movement by freeze-thaw cycles. Subsidence, in the context of underground mining, is the lowering of the earth's surface due to collapse of bedrock and unconsolidated materials (sand, gravel, salt, and clay)

into underground mined areas. Building above abandoned underground mines can cause structural problems if subsidence occurs (ODNR 2008).

The indiscriminate placement of steeply sloped unconsolidated mine spoil, prevalent on abandoned surface mines, can result in landslides that impact existing roads, structures, and streams. Drainage from deep mines and strip mine impoundments can also saturate native soil units on non-mined slopes and result in the instability of these slopes (ODNR 2008).

Impoundments left behind by a mining operation can pose many problems for site development, such as potential flooding problems due to heavy seasonal rains, and saturation of surrounding areas causing hillside instability. Surface and subsurface drainage patterns and flow rates may have been altered as a result of mining practices. This situation may have resulted in increased sediment in streams, which can reduce channel capacity and increased the frequency of flooding. Subsurface drainage can also be impacted by abandoned deep and strip mines (ODNR 2008).

Select Project Profiles

The following examples illustrate siting solar and wind energy facilities on mine sites.

Green Mountain Wind Energy Center located in Somerset County, Pennsylvania. Green Mountain Energy constructed eight 1.3 MW turbines on an abandoned coal strip mine in Pennsylvania. This wind farm was the first utility scale wind energy generation facility developed in the state. Operation began in 2000 and the project produces 10.4 MW (Disgen 2011). A key aspect related to development includes wind farm constructed on reclaimed area of former mining site.

Glenrock Wind Energy Project located in Converse County, Wyoming. Pacific Power has constructed 158 turbines with an output of 237 MW on the site of the old Dave Johnston coal strip mine The project became operational in 2009 (PacifiCorp 2011). Some key aspects related to development include reclamation of the nine-mile-long site involved extensive grading and contouring and reseeding with native vegetation, making the site suitable for wind energy, cattle grazing, and wildlife habitat.

Chevron Solar Project in Questa, New Mexico. The 1 MW Questa solar field covers approximately 20 acres and includes 173 solar trackers. The solar facility is located on the tailing site of a molybdenum mine. The project was completed in April 2011 (Chevron 2011b). Some key aspects related to development include:

- Remediation includes containment of waste rock and tailing source materials, ground water extraction and treatment, temporary

ground water restrictions, and provision of alternate water supply, if needed.

- Solar project includes an evaluation of various soil cover depths in preparation for closure of the mill tailings area at the end of mining operations.

C.3.7 Agricultural Lands

With continuing use of incentives to generate renewable energy, developers have demonstrated a preference for marginal and impaired private lands, particularly agricultural parcels that may no longer be economically viable for agricultural production or where land is taken out of farm production for lack of water. They are often attracted to this farmland because of its proximity to existing electricity infrastructure such as transmission lines and substations. The degraded nature of the land may also make it less likely to have significant biological, environmental, or agricultural value that may make the land unsuitable for renewable energy development. Marginal and impaired agricultural land may offer several advantages, including the following:

- **Infrastructure.** Some farmlands are located in close proximity to market centers, transmission interconnections, and other infrastructure, including road networks capable of supporting large construction and maintenance vehicles, which can often be reused for energy project construction, operation, and maintenance.
- **Terrain.** The flat or gently sloping topography of farmlands make them suitable for solar or wind development.
- **Land acquisition.** Developers can avoid a complicated acquisition process because farmlands often have one or only a few owners. The land value for marginal or impaired farmlands can lower project costs considerably. In some states, landowners may benefit from a reduced property tax assessment if they develop renewable energy on farmland that is impaired either due to physical limitations or adverse soil conditions.
- **Agricultural zoning.** Renewable energy development is often considered compatible with surrounding land uses if sited on former farmland. Projects can often be considered on nonprime agricultural land pursuant to a conditional use permit if accompanied by appropriate mitigation measures. Encouraging renewable energy development on impaired or marginal farmlands directs this development away from prime farmland and environmentally sensitive areas.
- **Reciprocal interest.** Owners of marginal or impaired farmlands may be looking for alternative forms of income.
- **Reduced liability and cleanup costs.** Renewable energy development may require less intensive cleanup efforts than other

potential reuses of contaminated agricultural land. In addition, developers may be shielded from liability arising from existing on-site contamination.

- **Public and community relations.** Developers considering marginal or impaired farmlands may receive support or an expedited permitting process from communities eager to utilize these impaired farmlands instead of prime farmland and farmland with environmentally sensitive areas.

Technical Aspects

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on marginal or impaired farmlands. For example, smaller sites may not support utility-scale development or certain energy technologies.

Marginal or impaired farmlands may also pose unique environmental considerations, including sensitive habitats adjacent to farmland. Existing farming operations can limit the placement of renewable energy infrastructure.

Select Project Profiles

The following examples illustrate siting solar and wind energy facilities on impaired or marginal farmland sites.

Westlands Solar Park, King County California. The Westlands Solar Park is a master planned infrastructure development in Central California comprising primarily of a 2.7 plus gigawatt (GW) solar park with phased generation development, transmission, and other facilities. The project is proposed on 30,000 acres of land owned by three private landowners and Westlands Water District. Early Phase 1 projects are expected to begin operation as early as 2013-2015 (Westlands 2011). The land includes properties affected by lack of drainage facilities to remove water runoff containing high levels of selenium. Some key aspects related to development include:

- Project is unique among others in the Central Valley because the land has been given a state designation as a competitive renewable energy zone and the project is unanimously supported by agricultural and environmental organizations.
- Land within the Westlands Solar Park also has the advantage of being under existing transmission, which makes it an ideal location for a large solar park

Project West Wind, Wellington, New Zealand. Meridian is using 62 turbines on marginal farmland to produce 142.6 MW of wind energy (NZWEA 2011). The project was completed in 2009. Some key aspects related to development include:

- The turbines were installed and commissioned in groups, allowing the site to generate increasing amounts of electricity as work progressed.
- The turbines are linked to an on-site substation with underground cabling. From the substation, the wind farm is connected with a short overhead line to a double circuit transmission line.

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C.4 Solar and Wind Energy Technology and Development Considerations

C.4.1 Solar Power Technologies

Solar radiation may be harnessed through various technologies and transformed to usable energy, such as heat and electricity. This section examines the large-scale commercial applications of solar energy capture. Two basic solar energy technologies that produce electrical power are CSP systems and PV systems.

Concentrating Solar Power Systems

CSP technologies use mirrors to concentrate sunlight onto receivers that convert it to heat. The thermal energy is then used to drive a generator via steam turbine or heat engine to produce electricity. CSP technologies are the most suitable solar technologies for large utility-scale applications. The three main types of CSP technologies are linear concentrator, dish/engine, and power tower systems. CSP technologies require cooling of the exhaust steam so that it condenses back into water before being heated again into steam. Wet cooling is many times more efficient than dry cooling and uses 500 to 800 gallons of water per megawatt hour (MWh) (Solar Energy Industries Association 2010).

Linear Concentrator Systems

Linear CSP systems use a large field of long, rectangular, U-shaped mirrors tilted toward the sun that capture and focus solar energy onto linear receiver tubes that run along the length of the mirrors. The receiver contains a fluid (oil or water) that is heated by the sunlight and used to boil water in a steam-turbine generator to produce electricity.

The two major types of linear CSP systems are parabolic trough systems and linear Fresnel reflector systems. Parabolic trough systems are the predominant CSP systems currently operating in the US. They use collectors in which the receiver tube is positioned along the focal line of each parabolic mirror. Currently the largest individual trough systems generate 80 MW of electricity.

Array of parabolic troughs at the National Solar Energy Center in Israel. Credit: Sandia National Laboratory

In linear Fresnel reflector systems, the receiver tube is positioned above several flat or slightly curved mirrors that are mounted on tracking structures. In some systems, a small parabolic mirror may be added atop the receiver to further focus the sun's rays.

Dish/Engine Systems

The dish/engine system produces relatively small amounts of electricity (3 to 25 kW) compared to other types of CSP technologies. Dish/engine systems use mirrored dishes (about 10 times larger than a backyard satellite dish) to focus and concentrate sunlight onto a receiver. The receiver is mounted at the focal point of the dish. To capture the maximum amount of solar energy, the dish assembly tracks the sun across the sky. The receiver is integrated into a high-efficiency "external" combustion engine. The engine has thin tubes containing hydrogen or helium gas that run along the outside of the engine's four piston cylinders and open into the cylinders. As concentrated sunlight falls on the receiver, it heats the gas in the tubes to very high temperatures, causing the gas to expand inside the cylinders. The expanding gas drives the pistons. The pistons turn a crankshaft, which drives an electric generator. The receiver, engine, and generator comprise a single integrated assembly mounted at the focus of the mirrored dish.

Solar dish/engine system. Credit Solar Energy Development PEIS.

Power Tower Systems

Power tower systems use a large field of flat, sun-tracking mirrors, known as heliostats, to focus sunlight onto a receiver, which is located atop a tower. A fluid in the receiver, either water or molten nitrate salt, is heated and used to generate steam, which, in turn, is used in a conventional turbine generator to produce electricity. The molten nitrate salt has heat-transfer and energy-storage capabilities, which allows for continued production of electricity during cloudy weather and at night.

Photovoltaic Systems

PV systems use solar cells consisting of semiconductor materials similar to those used in computer chips to capture the energy in sunlight and convert it directly into electricity. PV systems must be scaled over a very large area in order to be effective for utility-scale applications. The process by which a PV cell converts sunlight into electricity is called the photoelectric effect. Through this process, the sunlight absorbed by the

The PS10 Solar Power Plant (Spain) concentrates sunlight from a field of heliostats onto a central solar power tower. Credit: Solúcar PS10

semiconductor material knocks electrons loose from their atoms, allowing them to flow through the material and generate electric current.

There are three main types of materials used for solar cells. Traditional solar cells are made from silicon. These cells are usually flat-plate and are the most efficient. The second type is the thin-film solar cell made from amorphous silicon or non-silicon materials, such as cadmium telluride. The third and newest type of solar cell is made from a variety of new materials besides silicon, including solar inks, solar dyes, and conductive plastics. Some new solar cells use plastic lenses or mirrors to concentrate sunlight onto high-efficiency PV materials. These systems are cost effective for use in utility-scale applications because they produce a significant amount of energy using smaller quantities of more efficient, albeit more expensive, materials (NREL 2010).

PV cells are connected into units to form PV modules, which in turn are combined to make PV arrays. The size of an array depends on the amount of sunlight and the needs of the customer. For utility-scale electricity generation, hundreds of arrays are interconnected to form a single large system. Modules and arrays are often combined with other components, such as those that convert the current within the cell material to usable electricity, batteries to store some of the electricity, and mounting structures that point them toward the sun. These components, referred to as the balance-of-system components, combined with modules and arrays create a complete PV system. There are two types of PV systems in use today: flat-plate systems and concentrated PV systems.

Water requirements for PV systems are approximately 20 gallons per MWh for the purpose of cleaning solar panels (Solar Energy Industries Association 2010). In some operations where water availability is especially limited, a PV operator may choose not to wash the panels at all, eliminating water consumption altogether.

Flat-plate Photovoltaic Systems

The most common array designs use flat-plate PV panels, which can either be fixed in place or allowed to track the sun. These panels respond to both diffuse and direct solar radiation, making them useful even on cloudy days when the diffuse radiation accounts for nearly 100 percent of the total radiation. On a sunny day, an estimated 10 to 20 percent of the total solar radiation comes from the diffuse component of sunlight.

Arizona Public Service's Prescott Airport Solar System Showing a Tracking Flat-Plate, Nonconcentrating PV System. Credit: Arizona Public Service

Generally, flat-plate PV panels are mounted on stationary structures with a tilt at a fixed angle determined by the latitude of the site, the requirement of the load, and the availability of sunlight. The fixed arrays are advantageous in that they are simple, inexpensive, and lightweight. However, because their orientation to the sun is fixed, often at a less than optimal angle, they receive less energy per unit area compared with a tracking array. The flat-plate tracking arrays are primarily mounted on one-axis tracking structures, which are designed to track the sun from east to west.

Concentrated Photovoltaic Systems

Concentrated PV systems use lenses or mirrors to concentrate sunlight on solar cells. The concentration of sunlight allows for greater efficiency and reduction in size and number of cells. These systems must track the sun to keep light focused on the PV cells. They are primarily mounted on two-axis tracking structures, which are designed to track the sun's daily and seasonal course. One-axis tracking systems are also sometimes used.

A 6.2 kilowatt array, part of a solar power plant project in Spain. Credit: SolFocus

Both reflectors and lenses have been used to concentrate light for PV systems. The most promising lens for concentrated PV application is the Fresnel lens, which uses a miniature saw tooth design to focus incoming light. The best lenses, however, can transmit only 90 to 95 percent, and in practice even less, of incident light. In addition, lenses cannot focus diffuse sunlight, which makes up nearly 10 to 20 percent of the radiation on a clear day.

While concentrated PV systems lower costs by reducing PV material needs, they require sophisticated tracking devices and expensive concentrating optics. High concentration ratios also introduce an excessive heat, which can decrease cell efficiencies and damage solar cells.

C.4.2 Wind Power Technologies

Technology Overview

A wind turbine is a mechanical assembly that converts the energy of wind into 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. The blades act much like an airplane wing.

Wind turbines near Palm Springs, CA. Credit: Arizona Solar Center

Blowing wind causes a pocket of low-pressure air to form on the downwind side of the blade, which in turn causes the blade to be pulled toward that pocket. This force causes the rotor to spin like a propeller and turn a shaft. The rotational energy of the shaft turns the generator to produce electricity. Wind turbines are mounted on a tower to enable them to capture the most energy. Tower height affects the amount of power that can be extracted by a given wind turbine. At 98 feet or more above ground, wind turbines can take advantage of faster and less-turbulent wind.

Wind turbines fall into two basic groups, horizontal-axis propeller-style variety, like traditional farm windmills, and vertical-axis design, like the eggbeater-style Darrieus model. The horizontal-axis turbines are the most common, constituting nearly all the utility-scale turbines. These typically have either two or three blades. The three-blade turbines are operated upwind with their blades facing into the wind.

Wind turbines are available in a variety of sizes, and, subsequently, a variety of power ratings. Utility-scale wind turbines for land-based wind farms have rotor diameters ranging from 130 to about 395 feet, and towers that reach 130 to 425 feet high.

Utility-scale turbines range in power rating from 100 kW to as large as several MW. Larger turbines are grouped together into wind farms, which provide bulk power to a utility power grid. Wind power plants are modular, which means they consist of small individual modules (turbines), and, depending on electricity demand, can easily modify production capacity.

Small and Large Wind Systems

Small scale wind turbines (also known as home or residential wind turbines) can either be connected to the utility grid or stand-alone as an "off-grid" application, normally providing electrical power for home, farm, school, or business applications. Small scale wind machines can have blade length between three feet and 30 feet, with a 100 foot tower, and can power between 1/4 to 6 average American homes (ASU 2011).

Large scale wind turbines (also known as utility wind turbines) are normally tied directly into the utility grid and are used to provide electrical power for entire communities and municipalities. Each of these large, "utility-scale," wind turbines

can have blade lengths up to 150 feet and sit on a 200 foot tower, and produce enough electricity for 500 to 600 average homes per year (ASU 2011).

Community Wind

Community wind is a growing sector of wind development that increases local energy independence. Community wind projects are owned by a variety of individuals, including local small business owners, farmers, local organizations including schools and universities, as well as Native American Tribes, rural electric cooperatives, municipal utilities, and religious institutions. These projects can range from a single turbine to a community-owned commercial-scale wind farm.

Rural landowners who possess windy land currently benefit from the wind resource primarily by leasing their land to large wind developers who sell the wind energy. Others have installed their own wind turbines, individually or through local small businesses, including farms, and local organizations such as schools, universities, Native American Tribes, rural electric cooperatives, municipal utilities, and even religious institutions. These projects keep more dollars in local communities, preserve local energy independence, and protect the environment.

The key feature of community wind is that local community members own and have a significant financial stake in the project beyond just land lease payments and tax revenue. Community wind projects can be any size, ranging from a single turbine to more than one hundred, yet typically serve local communities or consumers. Community wind projects have been installed throughout the country and are in the planning stages in virtually every state with wind power development underway.

C.4.3 Solar and Wind Power Plant Development Considerations

Development Considerations Common to Solar and Wind Plants

Site Characterization

Solar and wind power generation depends on selecting a suitable site. Many different factors determine whether a particular site warrants consideration for potential solar or wind power generation. Once a preliminary screening is completed, developers will want to conduct more detailed research before committing to project construction and operation. Steps to undertake may include resource surveys (e.g., rare plants, biological, or cultural surveys), soil studies, surface hydrology and wetlands mapping, and microsite meteorological testing. Developers will also want to calculate the cost necessary to construct access roads (if necessary) and consider any compatibility issues with surrounding land uses. Finally, power purchase agreements (PPA) and transmission grid interconnection are critical financial aspects of any project and will vary by location.

Overall, developers are looking for a site that can generate revenue. According to Steve Birndorf (Borrego Solar), developers look for areas where regulatory and funding programs are in place to encourage development of projects (Birndorf 2011). Having these types of programs in place help expedite the process and can provide financial incentives to ensure the project is economically feasible. Developers also look for other features such as flat land, nearby transmission connections, older disturbed lands, and good solar or wind potential. These factors ultimately determine the costs associated with development and influence a developer's return on investment.

Land Agreements

Solar and wind developers need to work with the land owner(s) to determine the nature of the contractual relationship between land owner and developer. Issues to be agreed upon include: ingress and egress rights, transmission rights, compensation terms, project life, and reclamation provisions at project end. The terms need to include reasonable access for solar or wind resource assessment, construction, operation, maintenance and reclamation activities. Compensation can be in the form of a fixed lease fee per acre, fixed fee per kWh or a percentage of gross revenue attributable to the landowner's parcel.

Environmental Review

Additional compliance with NEPA is required for any project with a federal nexus, such as construction on federal land, transmission line siting on federal land, federal funding (e.g., DOE Loan Guarantee Program), or interconnection with the federal grid (e.g., Western Area Power Administration). Depending on the level of review required and the potential for sensitive species, the developer must undertake, at its cost and, as required, studies of threatened and endangered species, land disturbance, and wetlands and a review of the results of consultation with interested local, state or federal officials, and interested citizens or citizen groups. They may also be required to perform historical and archeological studies and visual impact studies.

Permitting

Permitting requirements to construct and operate a solar or wind plant vary widely depending upon who owns the land and any federal, state, or local restrictions on land use. Typically, land use permits and building permits are the minimum required for solar and wind plants.

Site Preparation and Construction

Once a developer has committed to a project on a specific site, the site must be prepared for construction. This includes constructing access roads as necessary, clearing, and grading. Depending on the amount of site modification needed, the types of heavy construction equipment and the scope of their use will vary.

Many sites are subject to local noise and construction ordinances, which must be adhered to. Also, the developer may be required to carry out detailed,

comprehensive resource surveys or have a qualified specialist on site to monitor site preparation and construction activities.

The type and amount of vehicles used to transport workers and equipment may require the preparation of a transportation plan and best management practices to limit impacts on traffic and road systems.

Transmission Lines

To minimize land use impacts and control costs, developers desire project sites that are in close proximity to the existing electric transmission grid. The power from a wind or solar project needs to be delivered to the grid at an approved interconnection point (typically a new or existing substation). Acquiring a route for the interconnection circuits will involve the negotiation of ROW from one or more landowners, plus permitting and construction costs.

New interconnection circuits are expensive, with costs depending on the voltage level, the types of terrain and associated land uses along the interconnection route, and whether or not a portion of the installation is underground. Transmission line costs can be very high, and access to transmission lines of appropriate capacity is a very important siting factor. Depending on the line voltage level and the length of the transmission line, costs for a 100-MW capacity, for example, can range from $50,000 to $180,000 per mile (DOE 2008). Therefore, the proximity of potential solar and wind sites to transmission lines is very important. Consequently, relatively small projects are normally built near existing transmission facilities, while larger projects can justify the costs of interconnection at greater distances from existing transmission. Purchasing capacity at an existing substation, rather than constructing a new substation, can lower project costs. As such, sites with close proximity to existing substations may be more desirable.

Transmission line preparation and construction will require surveys, staking, clearing, access, and the use of heavy construction equipment.

Water Use and Availability

Arizona has five Active Management Areas, located in regions with a heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code and management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

Interconnection and Wheeling

Utilities, private companies or power marketing administrations with transmission systems must allow solar and wind plants to interconnect to their transmission systems; however, the requirements that must be met, the studies to be undertaken, and the interconnection equipment that will be required are determined by the transmission-owning entity, where the costs are usually borne by the developer. Studies such as capacity limitations, load flow analysis,

voltage controls and system protection are the norm. Recent legislation has caused the rules and requirements to be re-visited and standards for interconnection equipment and timelines have been developed for two classes of generation–20 MW or less, or greater than 20 MW.

Moving the solar or wind generated energy to the purchaser of the energy through the utility or other entity owned transmission system is called wheeling. The fee for this wheeling may be determined through negotiation or defined by a tariff filed by state or federal regulators.

In June 2007, the ACC initiated a rulemaking process to establish statewide interconnection standards for distributed generation. This proceeding is still in progress; however, the commission has recommended that the utilities use the *Interconnection Document* as a guide. This document applies to systems up to 10 MW in capacity (DOE 2011a).

The state's utilities independently developed interconnection agreements for distributed generation prior to the ACC's ongoing proceeding to establish statewide standards. The Salt River Project (SRP), which is not regulated by the ACC on utility matters, developed distributed generation interconnection guidelines and an interconnection agreement based on draft rules and a report released by the ACC in 1999 and 2000, respectively. Tucson Electric Power and Arizona Public Service have similarly established their own interconnection procedures for distributed generation systems. It is likely that Arizona's regulated utilities will adopt the ACC's interconnection standards when the final rules are adopted (DOE 2011a).

Net Metering

In Arizona, net metering is available to customers who generate electricity using solar, wind, hydroelectric, geothermal, biomass, biogas, combined heat and power, or fuel cell technologies. The ACC has not set a firm kW-based limit on system size capacity; instead, systems must be sized to not exceed 125 percent of the customer's total connected load. If there is no available load data for the customer, the generating system may not exceed the customer's electric service drop capacity. SRP modified an existing net-metering program for residential and commercial customers in October 2009. Net metering is now available to customers who generate electricity using PV, geothermal, or wind systems up to 100 kW in alternating current peak capacity.

Power Purchase Agreement

The solar or wind developer must find a buyer for the energy to be generated in order to obtain project financing as the buyer determines the potential revenue stream amount and time frame. The PPA defines the terms for this long term revenue stream. A creditworthy buyer is necessary to ensure a predictable long term cash flow for project financing approval.

Financing and Incentives

With the PPA in hand, the solar or wind developer can work with financiers to determine the terms of the loans, due diligence and assignability of documents. The financing is typically used to provide for the solar collectors, and power generation systems (e.g. turbines) procurement and construction/installation costs though other project costs may also be included.

Identifying and leveraging federal, state and utility incentives and grants is an important part of making solar and wind energy systems cost-effective. A number of policies and incentives are available to facilitate the development of energy projects. The DOE Database of State Incentives for Renewables & Efficiency provides a comprehensive database of information on state, local, utility, and federal incentives and policies that promote renewable energy and energy efficiency (http://www.dsireusa.org/). Select federal and state programs include:

Federal Incentives and Grants

- **Modified Accelerated Cost Recovery Program.** Under the federal Modified Accelerated Cost-Recovery System, businesses may recover investments in certain property through depreciation deductions. The system establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. A number of renewable energy technologies are classified as five-year property (26 USC Section 168(e) (3) (B) (vi)) under the system, which refers to 26 USC Section 48(a) (3) (A), often known as the energy investment tax credit or Investment Tax Credit to define eligible property (IRS 2011).
- **DOE Loan Guarantee Program.** DOE can issue loan guarantees to mitigate the financing risks associated with clean energy projects (DOE 2011b).
- **Tribal Energy Grant Program.** The DOE Tribal Energy Program promotes tribal energy sufficiency, economic growth and employment on tribal lands through the development of renewable energy and energy efficiency technologies. The program provides financial assistance, technical assistance, education and training to tribes for the evaluation and development of renewable energy resources and energy efficiency measures (DOE 2011c).
- **Renewable Energy Production Incentive.** Established by the federal *Energy Policy Act of 1992*, the federal Renewable Energy Production Incentive provides incentive payments to qualified tax-exempt entities for electricity generated and sold by new qualifying renewable energy facilities. Qualifying systems are eligible for annual incentive payments of 1.5 cents per kWh in 1993 dollars (indexed for inflation) for the first 10-year period of their operation, subject

to the availability of annual appropriations in each federal fiscal year of operation. The incentive was designed to complement the federal renewable energy production tax credit, which is available only to businesses that pay federal corporate taxes (DOE 2011d).

State Incentives

- **Arizona Renewable Energy Standard and Tariff.** In 2006, the ACC approved the Renewable Energy Standard and Tariff (REST). These rules require that regulated electric utilities must generate 15 percent of their energy from renewable resources by 2025. Each year, Arizona's utility companies are required to file annual implementation plans describing how they will comply with the REST rules. The proposals include incentives for customers who install solar energy technologies for their own homes and businesses (ACC 2011).
- **Renewable Energy Production Tax Credit.** Qualified renewable energy systems installed on or after December 31, 2010, may be eligible for the tax credit based on the amount of electricity produced annually for a 10-year period (DOE 2011d).
- **Solar Energy Equipment Sales Tax Exemption.** Arizona provides state tax incentives for the sale or installation of "solar energy devices," as these devices are defined within the Arizona Revised Statutes. Transaction privilege ("sales") tax exemptions apply to retail sales of solar energy devices, and installations of such devices under the prime contracting classification. Applies to solar energy devices and any other device or system designed for the production of solar energy for onsite consumption (ASC 2011).

Operation and Maintenance

The solar or wind developer must include provisions for operations and maintenance for financing because it is critical to the successful long-term operation of the solar plant or wind turbine. The operations and maintenance terms typically specify a solar plant or wind turbine availability percentage (usually 95 to 98 percent of the year) and outline the nonperformance penalties (DOE 2008).

CSP Plant Development Considerations

Solar Resource

The amount of power generated by a CSP plant depends on the amount of direct sunlight. These technologies use only direct-beam sunlight, rather than diffuse solar radiation. The southwestern US potentially offers the best development opportunity for CSP technologies in the world.

Land

A parabolic trough solar power plant requires approximately five acres (20,000 m^2) per MW of plant capacity. Plants with thermal storage and higher capacity factors will require proportionally more land per MW. Siting studies have generally found that land with an overall slope of less than one percent are the most economical to develop (DOE 2008). Potential sites should have reasonable land costs, be generally level, and be close to transmission, water, and natural gas. The specific slope and topography of the land will then determine the comparative acceptability of competing sites through their impact on site costs for grading and preparation. Land characteristics are thus most effectively used as screening tools in selecting acceptable sites for further evaluation.

Water

The primary water uses at a Rankine steam solar power plant are for the steam cycle, cooling, and washing mirrors. Historically, parabolic trough plants have used wet cooling towers for cooling. The cooling uses approximately 90 percent of the water. The steam cycle uses approximately eight percent and mirror washing uses the remaining two percent (DOE 2008).

Annual water consumption at trough plants is approximately 750 acre-feet for a 100 MW plant (DOE 2008). If sufficient water is not available for cooling, either dry cooling or wet-dry systems are necessary. These options can increase plant electricity costs by 10 percent or more, indicating the desirability of sites with sufficient aquifer or other water resources. Treatment of raw water is required for plant use.

Natural Gas

Solar thermal power plants have the capacity to provide firm power in a hybrid configuration where fossil fuel, preferably natural gas, can supplement the solar energy resource. This is particularly important during peak demand periods where electricity's value is high. If power firming is a requirement of the power buyer, proximity to natural gas pipelines is a very important factor. It is a significant, though usually not critical, determinant in the viability of hybrid operation. Very large distances can make this option economically unacceptable.

PV Plant Development Considerations

Solar Resource

Concentrating PV systems require high direct normal irradiance (DNI), or beam radiation, for cost-effective operation. Flat-plate, non-concentrating PV systems use global diffuse solar radiation, which includes the DNI and scattered blue-sky light. Generally, under clear sky conditions, 85 percent of the sunlight is DNI and 15 percent is scattered light that comes in at all different angles (DOE 2008). The scattered light, which cannot be used by any concentrating system, can be used by flat-plate PV systems. Sites that have a good solar resource for

concentrating systems are also great for flat-plate systems, since the global solar resource includes the DNI.

Land
All large PV systems require fairly flat land with slopes of less than three percent. The slope of the land has an impact on construction costs. PV power plants require a large area for their solar collector field. Approximately five acres are required per MW of electricity produced in a PV power plant.

Water
Water is not required for the normal operation of any PV system. Water is used chiefly for occasional cleaning of the PV modules, Fresnel covers, or the reflective surfaces. The washing interval is determined by local site conditions and an economic analysis of cleaning costs versus increased energy production. Cleaning flat-plate PV systems can be as simple as driving a water truck between the rows and spraying the PV modules. Many installations are not regularly cleaned due to cost, and rely on wind and rain to keep the modules sufficiently clean.

Wind Power Plant Development Considerations

Wind Resource
A wind project's energy production and life-cycle economics depend more on the strength of the wind resource than any other factor. Therefore developers must seek windy locations when prospecting for potential development sites. A rule-of-thumb is that a site's annual average wind speed should be 15.7 miles per hour (mph) or stronger at the wind turbines' hub height to be considered at least marginally attractive for project development (GEC undated). Other project cost variables may require stronger average winds in order to realize economic viability.

Land
In general, land requirements for wind power projects vary considerably and mostly depend on two sets of factors. The first set pertains to the developer's goals in terms of preferred windy locales and desired project size or power capacity (i.e., number of turbines). Larger projects naturally require more land area, and larger projects also tend to yield lower costs of energy due to economies of scale.

The second set of factors pertains to local landform characteristics and existing patterns of land use and land ownership. Various landforms, including high-plains, valley floors, hills, ridges, plateaus, and mountains have differing exposures to prevailing wind conditions. They also offer differing wind power project siting opportunities. For example, only the tops of ridges are practical sites for wind turbines due to superior wind exposure, whereas high-plains can experience similar wind conditions across a broad area. Accordingly, land requirements for a wind power project will vary depending on the landform

type. Even after a given landform is identified, other factors such as land ownership patterns, land use, and land cover patterns will influence how a wind project is ultimately designed and how much land is ultimately required.

Wind Turbine Transportation and Installation Issues
Due to the ever increasing size of wind turbines, such as 80 to100 meter hub heights, transporting wind turbines is increasing in cost. Turbine tower sections are large diameter, as long as possible, and extremely heavy for transport by specialized trucking equipment to the site. The same is true for the turbine hub and blades in excess of 70 meters. Trucking equipment require large turning radius, so site access may require road improvement to delivery turbine components. An additional consideration for installation of large wind turbines is the cost and availability of large cranes in the vicinity of the wind farm site.

Soil conditions must be favorable for road construction and for installing underground facilities such as wind turbine foundations, fiber-optic communication lines, and electrical conductors. All of these factors have cost and land use implications and are therefore an important consideration when evaluating prospective project sites.

C.4.4 Solar and Wind Power Plant Trends

US Grid-Connected Solar Market Trends

PV Technology
Annual US grid-connected PV installations doubled to 890 MW in 2010 compared with installations in 2009 (IREC 2011). The following factors helped drive PV growth in 2010:

- Stability in federal incentive policy.
- Capital market improvements.
- State renewable portfolio standards requirements encouraging investments in utility-scale solar plants.
- State financial incentives, including commercial distributed installations.
- Continued federal stimulus funding.
- Decline in PV module prices.

The largest growth of grid-connected PV occurred in the utility sector. Utility sector photovoltaic installation quadrupled over 2009 installations (15 to 32 percent). Of the 10 largest PV installations in the US, six were installed in 2010. The two largest US PV installations were installed in 2010 (58-MW Sempra/First Solar plant in Boulder City, Nevada and 35-MW Southern Company/First Solar plant in Cimarron, New Mexico).

State renewable portfolio standards requirements are encouraging investments in utility-scale solar plants in some states. Federal tax incentives and grants and lower costs for PV modules also made these investments attractive. Construction has begun on many additional utility sector installations, and utilities and developers have announced even more projects to be built in the next few years. Installations in this sector seem poised for continued growth (IREC 2011).

Although the number of utility PV installations remains small, the average system size is large (over 1.45 MW). These installations represent 32 percent of all installations on a capacity basis. Only 34 utility installations greater than 1 MW totaled 239 MW, or 27 percent of the capacity total of US systems installed in 2010 (IREC 2011). In 2009, just six such installations totaled 60 MW. Large utility installations attract significant attention, but small installations also occur in the utility sector. The average size of grid-connected PV installations varies from state-to-state, depending on available incentives, interconnection standards, net metering regulations, solar resources, retail electricity rates, and other factors.

In 2010 Arizona had 63.6 MW of grid-connected PV capacity installed, a 201 percent change from 2009 which saw 21.1 MW of capacity installed. Cumulatively (through 2010), Arizona has the fourth largest amount of installed grid-connected PV capacity (110 MW) (IREC 2011).

CSP Technology

In 2010 the demand for CSP was insignificant. However, there are several very large projects underway in California and Arizona. Major CSP development highlights in Arizona include the Solana project (250 MW) scheduled to be completed in 2012, and the University of Arizona Tech Park project (5 MW) scheduled to be completed in 2011.

Between 2011 and 2016, GBI Research forecasts that utility-owned or sponsored CSP capacity additions in the US will approach 6,360 MW, led by the likes of Southern California Edison (2,500 MW projected), Pacific Gas & Electric (1,600 MW), NV Energy (800 MW), San Diego Gas & Electric (700 MW), and Arizona Public Service (600 MW), among others (Solar ETC 2011).

CSP has some legitimate advantages on PV at scale that are winning over wavering utilities. Higher capacity factors allow CSP plants to produce more power per MW installation, and output of PV in the desert drops due to factors like extreme heat, losing as much as 15-20 percent productivity for a crystalline silicon panel (Solar ETC 2011). CSP also offers efficiency rates that solve intermittency problems that utilities fear with other renewables. However, there is greater uncertainty with the future growth of CSP technology in the US due to financing, permitting, water use, and environmental approvals because of the large land requirements for this type of technology. Because of these

uncertainties, the progression of CSP projects is not at all as clear as it was in 2010 (CSP Today 2011).

US Wind Market Trends

Installation Trends

The US wind power market slowed in 2010, with 5,113 MW of new capacity added, bringing the cumulative total to more than 40,000 MW (DOE 2011e). Through 2010, Arizona had cumulative total of 128 MW of utility-scale wind power (AWEA 2011). Wind power installations in 2010 were similar in magnitude to those recorded in 2007; however, installations were just half those seen in 2009 and were 40 percent lower than in 2008. Cumulative wind power capacity grew by 15 percent in 2010. Factors slowing growth in 2010 included: the delayed impact of the global financial crisis (which impacted the apparent availability of capital for 2010 projects that were being planned in 2009); relatively low natural gas and wholesale electricity prices, which, in part, inhibited the development of merchant projects that were more-common in previous years; and slumping overall demand for energy, which reduced utility demand for wind energy power purchase agreements.

More than 20 MW of small wind turbines (100 kW and less in size) were sold in the US in 2009. These installation figures represent a 15 percent growth (in terms of capacity) in annual sales relative to 2008, yielding a cumulative installed capacity of small wind turbines in the US of roughly 100 MW by the end of 2009 (AWEA 2010). Within this market segment, there has been a trend towards larger, grid-tied systems. Sales of turbines less than1 kW in size (often used off-grid) were flat from 2006-09 at roughly 3 MW. Sales of 1 to 10 kW turbines (often used in the grid-tied residential market), on the other hand, grew from less than 2 MW in 2006 to 8 MW in 2009, while sales of 11 to 100 kW turbines (often used in the grid-tied commercial, light industrial, and government market) grew from around 3 MW in 2006 to almost 10 MW in 2009 (AWEA 2010). Growth in this sector has been driven, at least in part, by a variety of state incentive programs (refer to **Development Considerations Common to Solar and Wind Plants** for a discussion of select Arizona incentive programs). In addition, wind turbines equal to or under 100 kW in size are eligible for an uncapped 30 percent federal investment tax credit.

Future Outlook

With federal incentives for wind energy in place through 2012, an improved project finance environment in 2010 and early 2011, and lower wind turbine and wind power pricing, modest growth in annual wind power capacity appears likely in 2011 relative to 2010. Additions are expected to remain well below the 2009 high, however, due in part to relatively low wholesale electricity prices and limited need for new electric capacity additions, which are likely to reduce merchant wind power development and utility demand for wind energy PPAs, and in part to existing state-level renewable portfolio standards programs that,

in aggregate, are not sizable enough to support continued wind power capacity additions at 2008 and 2009 levels. A variety of forecasts suggest that wind power installations in 2011 may fall within the range of 4,450 MW to 8,000 MW, substantially below the 2009 high of 9,993 MW.

The DOE suggests four other areas where supportive actions may be needed in order to reach such annual installation rates. First, the nation will need to invest in significant amounts of new transmission infrastructure designed to access remote wind resources. Second, to more effectively integrate wind power into electricity markets, larger power control regions, better wind forecasting, and increased investment in fast-responding generating plants will be required. Third, siting and permitting procedures will need to be designed to allow wind power developers to identify appropriate project locations and move from wind resource prospecting to construction quickly. Finally, enhanced research and development efforts in both the public and private sector will be required to lower the cost of offshore wind power and incrementally improve conventional land-based wind energy technology (DOE 2011e).

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C.6 NOMINATED SITE PROFILES

C.6.1 Introduction

Based on an extensive public outreach process, the BLM and public identified 64 previously disturbed sites on federal, (including BLM-administered), state, municipal, and private lands (refer to **Figure C-1**, RDEP Nominated Sites, and **Table C-1**, RDEP Nominated Sites) that may potentially be suitable for renewable energy development. Site types include gravel pits, mine sites, landfills, isolated parcels that have been disturbed, marginal or impaired agricultural lands, abandoned unauthorized airstrips, and CAP ROW. Based on public comments to the RDEP Draft EIS, 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 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 in the analysis. The remaining 58 sites are not an exhaustive list, as there may be other disturbed lands in the state; however, they serve as a reasonable sample to understand the potential issues associated with reuse for renewable power on disturbed lands.

Detailed *Nominated Site Profiles* for the remaining sites are provided in this section and include the following information:

- Location facts, including site size, location, previous land use, adjacent land use(s), and surface and mineral ownership;
- Site characteristics, including solar and wind potential rating, estimated solar and wind generation capacity, developable acres, distance to graded roads, distance to transmission interconnections, and groundwater;
- Select environmental factors, including those for wildlife, vegetation, sensitive or listed species, wetlands, hydrology, special designations, land use, etc.;
- Site opportunities and constraints;
- Suggested remediation and restoration requirements; and
- Summary describing the overall potential of the site for renewable energy development.

Although these sites have been identified as previously disturbed sites, the overall context of the site's location is considered in determining the site's characteristics, and opportunities and constraints. For example, a site profile may list critical habitat as an environmental factor; indicating that, although the

site is disturbed, it may contain critical habitat on portions of the sites. Environmental factors and site constraints do not necessarily indicate that a site is unsuitable for development but that a developer should be aware of these factors as they plan for a project.

The information contained within each site profile has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

Table C-3
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

Table C-3 *(continued)*
Summary of Disturbed Sites by Alternative

Site #	Site Name	Land Owner	Alternative					
			1	2	3	4	5	6
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
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						
48	Saginaw -Snyder Mine and Quarry-Valhalla – this is a combination of three other nominations (numbers 49, 54, and 61)							
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

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #1

Name: 19th Avenue Landfill

Facts:

Total Nominated Acres: 191

Acres in REDA: 191

County: Maricopa

Nominated By: City of Phoenix

Previous Land Use: Landfill

Current Land Use: Closed landfill site

Adjacent Land Use: Industrial, undeveloped

Surface Ownership: Private

Mineral Ownership: Private

Legal Description: T.1N, R.3E, sec. 19, Lots 1-3, E2NW, NESW

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	188 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	1 mile
115kV	3 miles
230kV	1 mile
500kV	2 miles
Active Management Area	Yes
Estimated Maximum Potential Capacity	
Solar[1]	24 MW
Wind[2]	None

Selected Environmental Factors

- In an urban area
- Special status species habitat
- Adjacent to Salt River channel

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat, AGFD Species and Habitat Conservation Guide Conservation Potential. Due to previous use as a landfill, this site may not to contain these resources.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #1

Remediation/Restoration Requirements

The 19th Avenue Landfill was on the National Priorities List until 2006 when it was deleted. The EPA and the State of Arizona (through ADEQ) determined at that time that all appropriate response actions under CERCLA had been completed. Operation and maintenance and five year reviews continue at the Site. This deletion does not preclude future actions under Superfund. While nearby underground storage tanks and leaking underground storage tanks are present, none are expected to contribute to contamination at or near the surface of the project site since the surface is a soil cap above surface grade underlain by a thick layer of solid waste. Likewise, none of the other area Superfund sites are expected to contribute contamination to the Site.

On-going remediation requirements may limit the type and location of solar and wind energy facilities. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 24 MW solar energy facility would fit on the 188 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection. The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area (AMA), this site is within a region with heavy reliance on mined groundwater. AMAs are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the AMA may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act. Due to previous use as a landfill, this site may not contain these resources.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential. Due to previous use as a landfill, this site may not to contain these resources.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #2

Name: Belmont Mountain CAP

Facts:

Total Nominated Acres: 841

Acres in REDA: 841

County: Maricopa

Nominated By: Bureau of Reclamation

Previous and Current Land Use: CAP ROW and canal

Adjacent Land Use: Undeveloped

Surface Ownership: Bureau of Reclamation

Mineral Ownership: Federal

Legal Description: T.3N., R.7W., sec. 23, 24, 26, 27 (partial sections), T.3N., R.6W sec 15,16,17,18,19,20,21 (partial sections).

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	830 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	7 miles
115kV	32 miles
230kV	5 miles
500kV	6 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	104 MW
Wind[2]	None

Selected Environmental Factors

- Managed as VRM Class III
- Desert tortoise habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Desert tortoise habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential
* Managed as VRM Class III

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #2

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 104 MW solar energy facility would fit on the 830 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV and CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

This site is located within desert tortoise habitat and developers should consult with the BLM and the USFWS regarding potential mitigation and compliance measures.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

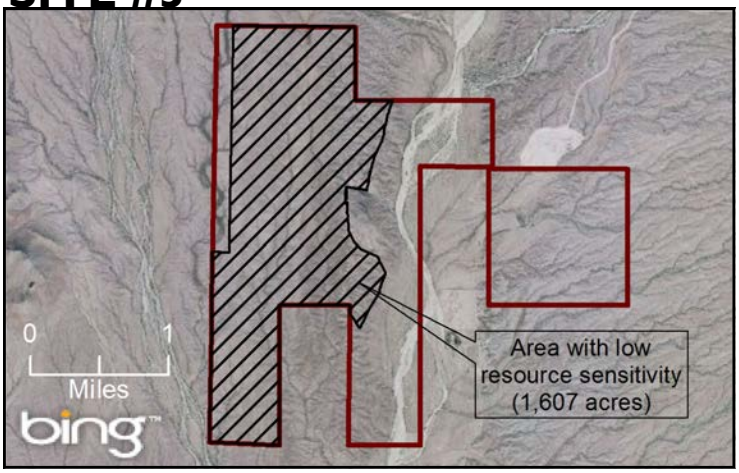
These lands were originally surveyed under the NEPA process before construction of the Central Arizona Project (CAP). This includes areas identified by Reclamation as wildlife habitat areas ("green-up" areas) to be managed as mitigation for impacts from the CAP construction. Use of such areas would require consideration of mitigation for losses of wildlife habitat.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #3



Name: Belmont Proposed Disposal

Facts:

Total Nominated Acres: 3,174

Acres in REDA: 1,607

County: Maricopa

Nominated By: Sonoran Institute

Previous and Current Land Use: Undeveloped

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.3N., R.5W., sec. 22, All; sec. 23, S2; sec. 25, all; sec. 26, W2; sec. 77 all; sec. 34, W2; sec. 35,

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	3,037 acres
Distance to Graded Road	1-2 miles
Distance to Transmission Interconnection:	
69kV	13 miles
115kV	23 miles
230kV	0 miles
500kV	2 miles
Active Management Area	Yes
Estimated Maximum Potential Capacity	
Solar[1]	397 MW
Wind[2]	None

Selected Environmental Factors

- River or wash runs through site area
- 360 acres of site identified as FEMA 100-year floodplain
- Site is close to a load center
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Area of low resource sensitivity

Site Constraints

* Active Management Area
* 360 acres of site identified as FEMA 100-year floodplain
* River or wash runs through site area
* Access may be hampered by surrounding private lands

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #3

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 397 MW solar energy facility would fit on the 3,037 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

A portion of this site lies within a 100-year floodplain and is likely unsuitable for development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #4

Name: Black Canyon City Landfill

Facts:

Total Nominated Acres: 25

Acres in REDA: 25

County: Yavapai

Nominated By: Yavapai County PW

Previous Land Use: Landfill

Current Land Use: Unknown

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.8N., R.2E., sec. 1, SW1/4

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	25 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	10 mile
115kV	36 miles
230kV	2 miles
500kV	0 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	3.1 MW
Wind[2]	None

Selected Environmental Factors

- Desert tortoise habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Desert tortoise habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #4

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 3.1 MW solar energy facility would fit on the 25 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #5

Name: Black Rock Gypsum Mine

Facts:

Total Nominated Acres: 679

Acres in REDA: 679

County: Mohave

Nominated By: Arizona Strip Field Office

Previous Land Use: Gypsum Mine

Current Land Use: Unknown

Adjacent Land Use: BLM-owned; wilderness and state lands

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.41N., R.12W.; T.41N., R.13W.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	210 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	98 miles
115kV	164 miles
230kV	110 miles
500kV	0.1 mile
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	26 MW
Wind[2]	None

Selected Environmental Factors

- Mountainous area with significant washes
- Special status species habitat
- Special Recreation Management Area

Site Opportunities

* Site is close to transmission lines and roads
* Site is previously disturbed

Site Constraints

* Only 31 percent of site has slope of <5%
* BLM Special Recreation Management Area
* Special status species habitat

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #5

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 26 MW solar energy facility would fit on the 210 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site is located within a Special Recreation Management Area, which may place limitations on development. Developers should consult with the BLM to determine allowable uses in this area.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.
Disclaimer: The information contained within this site summary has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #6

Name: Bouse Hills CAP

Facts:

Total Nominated Acres: 120

Acres in REDA: 120

County: La Paz

Nominated By: CAWCD

Previous and Current Land Use: CAP right-of-way, canal and siphon

Adjacent Land Use: CAP sites and undeveloped land

Surface Ownership: BLM withdrawn to Bureau of Reclamation

Mineral Ownership: Federal

Legal Description: T.7N., R.16W., sec. 9, E2; sec. 10, W2.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	94 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	22 miles
115kV	17 miles
230kV	8 miles
500kV	30 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	11.8 MW
Wind[2]	None

Selected Environmental Factors

- Canal on site
- Desert tortoise habitat
- Site is close to a load center

Site Opportunities

* Majority of site has slope of <5%
* Site is close to roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Desert tortoise habitat
* Cultural sites

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #6

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

An 11.8 MW solar energy facility would fit on the 94 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV technology. CSP development may become feasible as technology improves.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. The site is located in the viewshed of the Colorado River Indian Reservation. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

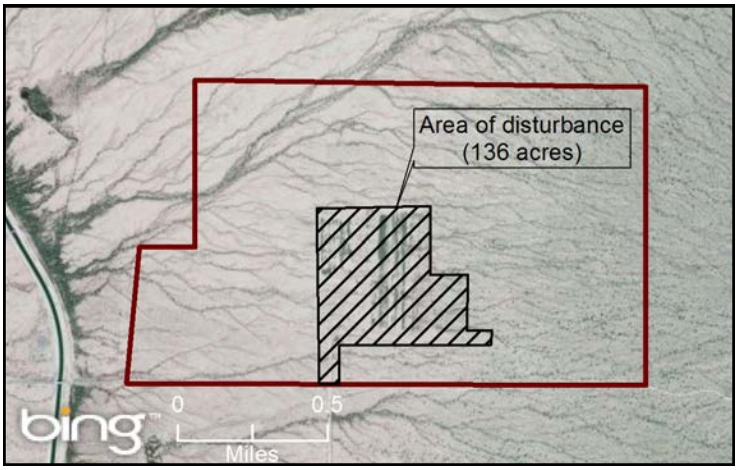
This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #7



Name: Brady CAP Site

Facts:

Total Nominated Acres: 1,023

Acres in REDA: 136

County: Pinal

Nominated By: CAWCD

Previous and Current Land Use: CAP borrow pit; Bureau of Reclamation reconveyed lands to BLM

Adjacent Land Use: CAP site; undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.7S., R.9E., sec. 3, lots 1-4, S2N2, S2; sec. 4, lots 1-2, S2NE, S2.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	1,023 acres
Distance to Graded Road	1-2 miles
Distance to Transmission Interconnection:	
69kV	35 miles
115kV	7 miles
230kV	11 miles
500kV	19 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	128 MW
Wind[2]	None

Selected Environmental Factors

- Multiple streams and/or washes present
- AGFD big game habitat
- Active Management Area
- Site is close to a load center

Site Opportunities

* Entire site has slope of <5%
* Site is close to roads
* Site is close to a load center
* Minimal environmental constraints
* Area of previous disturbance

Site Constraints

* Active Management Area
* AGFD big game habitat
* Topography related to borrow pit activities

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #7

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

The Brady Pumping Plant is a hazardous waste generator. No spills have been reported.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 128 MW solar energy facility would fit on the 1,023 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP or PV technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

Portions of this site were previously used as a borrow pit during construction of the CAP canal. These areas may require restoration prior to construction of solar energy projects. The site is part of a planned regional park to act as retention basins for water to CAP.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #8

Name: Brady Wash Pipeline

Facts:

Total Nominated Acres: 3,240

Acres in REDA: 0

County: Pinal

Nominated By: Tucson Field Office

Previous and Current Land Use: Utility corridor and pipeline

Adjacent Land Use: BLM

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.7S., R.13E., sec. 3, S2; sec. 4, Lots 1-4, S2N2, S2; sec. 5, Lots 1-4, S2N2, S2; sec. 8, W2; sec. 17, all; sec. 22, All.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	Fair (6 acres)
Slope <5%	2,310 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	54 miles
115kV	7 miles
230kV	25 miles
500kV	5 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	289 MW
Wind[2]	0.2 MW

Selected Environmental Factors

- Managed as VRM Class III
- AGFD big game habitat
- Special status species habitat (2,700 acres)
- Desert tortoise habitat
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads

Site Constraints

* Active Management Area
* Special status species habitat (2,700 acres)
* Managed as VRM Class III
* Desert tortoise habitat
* AGFD big game habitat
* Grazing leases
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #8

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 289 MW solar energy facility would fit on the 2,310 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology. With six acres rated as "fair" for wind potential, this site could be a candidate for community wind generation.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

Grazing occurs on this site, and would require termination of the lease or mitigation to minimize impacts to grazing operations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #10

Name: Cave Creek 2

Facts:

Total Nominated Acres: 68
Acres in REDA: 68
County: Maricopa
Nominated By: Hassayampa Field Office
Previous Land Use: Landfill
Current Land Use: Portions of lined and unlined landfill with detention basin
Adjacent Land Use: Recreational, residential, undeveloped
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: T.5N., R.3E., sec. 12, E1/2SE1/4

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	68 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	2 miles
115kV	20 miles
230kV	0.4 mile
500kV	13 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	8.5 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near load center
- Active Management Area
- Near transmission lines and roads

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Potentially incompatible adjacent land uses

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #10

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

An 8.5 MW solar energy facility would fit on the 68 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

This location is known to be near sensitive cultural resources. Documentation of the cultural resources would be required and avoidance of impacts to these areas would be considered in reviewing any applications for development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #11

Name: Cave Creek Landfill

Facts:

Total Nominated Acres: 42
Acres in REDA: 42
County: Maricopa
Nominated By: Hassayampa Field Office
Previous Land Use: Landfill
Current Land Use: Unlined Landfill
Adjacent Land Use: Recreational, residential, undeveloped
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.5N., R.4E., sec. 7, Lots 5-12

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	42 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	2 miles
115kV	21 miles
230kV	1 mile
500kV	13 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	5.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near load center
- Active Management Area
- Near transmission lines and roads

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Potentially incompatible adjacent land uses
* AZGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #11

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 5.3 MW solar energy facility would fit on the 42 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

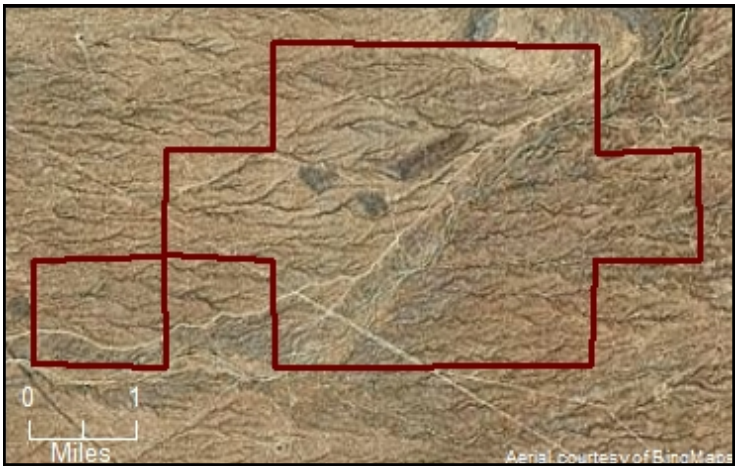
This location is known to be near sensitive cultural resources. Documentation of the cultural resources would be required and avoidance of impacts to these areas would be considered in reviewing any applications for development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #12



Name: Chevron Vacant Land

Facts:

Total Nominated Acres: 7,812

Acres in REDA: 0

County: Pinal

Nominated By: Tucson Field Office

Previous and Current Land Use: Undeveloped

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: Township 07 South, Range 12 East, Sec. 21-23, 25-29, 31, and 33 – 35.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	7,586 acres
Distance to Graded Road	3-4 miles
Distance to Transmission Interconnection:	
69kV	46 miles
115kV	0 miles
230kV	17 miles
500kV	10 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	948 MW
Wind[2]	None

Selected Environmental Factors

- AGFD big game habitat
- Desert tortoise habitat (6,780 acres)
- Near transmission lines and roads
- Mining claims and road and pipe-line ROWs present
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads

Site Constraints

* Active Management Area
* AZGFD big game habitat
* Desert tortoise habitat (6,780 acres)
* Alluvial fans
* Mining claims and road and pipeline ROWs present
* AGFD Species and Habitat Conservation Guide Conservation Potential
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #12

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 948 MW solar energy facility would fit on the 7,586 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP or PV technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #13

Name: Christmas Mine

Facts:

Total Nominated Acres: 496

Acres in REDA: 496

County: Gila

Nominated By: Freeport McMoran

Previous and Current Land Use: Mine

Adjacent Land Use: Undeveloped

Surface Ownership: Private/BLM

Mineral Ownership: Private/Federal

Legal Description: T.4S., R.16E., sec. 17, S1/2, SE1/4NW1/4; sec. 18, SE1/4SE1/4; sec. 19, NE1/4NE1/4; sec. 20, N1/2

About This Site

Characteristic	Description
Solar Potential	None
Wind Potential	None
Slope <5%	0 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	77 miles
115kV	5 miles
230kV	22 miles
500kV	16 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	None*

*Because this site has 0 acres with < 5% slope, it is considered undevelopable with current technology.

Wind[2]	None

Selected Environmental Factors

- Mining claims present
- Mining claims present
- Desert tortoise habitat
- Special status species habitat
- AGFD big game habitat

Site Opportunities

* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Little or no flat terrain
* Desert tortoise habitat
* Special status species habitat
* AGFD big game habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #13

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

A leaking underground storage tank (LUST) exists approximately 0.8 mile to the southeast of the site boundary. Due to the distance from the site and the rugged topography between the LUST and the site, no contamination at the site from the LUST is expected.

On-going remediation requirements may limit the type and location of solar and wind energy facilities. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

Because this site does not exhibit land with a slope of <5 percent, solar energy generation would be difficult.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

Developers should consult with mineral estate owner/administrator regarding the potential for existing mining claims that could limit renewable energy development.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #14

Name: Copperstone Mine

Facts:

Total Nominated Acres: 929
Acres in REDA: 929
County: La Paz
Nominated By: Mike Taylor
Previous Land Use: Gold mine
Current Land Use: Active mine
Adjacent Land Use: Undeveloped
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.6N., R.20W., sec. 12, S2; sec. 13, NE.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	750 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	30 miles
115kV	9 miles
230kV	24 miles
500kV	18 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	94 MW
Wind[2]	None

Selected Environmental Factors

- Mining claims and ROWs present
- Managed as VRM Class III
- Special status species habitat (240 acres)
- Sensitive soils

Site Opportunities

* Majority of site has slope of <5%
* Site is close to roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Special status species habitat
* Mining claims and ROWs present
* Managed as VRM Class III
* Sensitive soils
* Cultural sites

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #14

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 94 MW solar energy facility would fit on the 750 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Developers should consult with mineral estate owner/administrator regarding the potential for existing mining claims that could limit renewable energy development. In addition, there may be ROWs on-site. Developers should contact land managers and ROW-holders to determine the nature of on-site ROWs and what, if any, restrictions they may pose.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development. The site is located in the viewshed of the Colorado River Indian Reservation.

Soil properties on this site may restrict renewable energy development. Some soil types require additional engineering requirements to support solar or wind energy infrastructure foundations. Further research through the property owner/administrator and USDA NRCS is recommended.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #15

Name: Cordes Lakes Hazmat Site

Facts:

Total Nominated Acres: 14

Acres in REDA: 14

County: Yavapai

Nominated By: Arizona State Office

Previous and Current Land Use: Hazardous materials site

Adjacent Land Use: Residential, undeveloped, transportation

Surface Ownership: BLM

Mineral Ownership: Federal

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	2 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	27 miles
115kV	27 miles
230kV	1 mile
500kV	2 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	0.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- ROW present
- Managed as VRM Class III
- AGFD big game habitat
- Special status species habitat

Site Opportunities

* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* ROW present
* Special status species habitat
* AGFD big game habitat
* Managed as VRM Class III
* Potentially incompatible adjacent land uses
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #15

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 0.3 MW solar energy facility would fit on the 2 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be ROWs on-site. Developers should contact land managers and ROW-holders to determine the nature of on-site ROWs and what, if any, restrictions they may pose.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #16

Name: Dateland Gravel Pit

Facts:

Total Nominated Acres: 64

Acres in REDA: 64

County: Yuma

Nominated By: Yuma Field Office

Previous and Current Land Use: gravel pit

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.7S., R.12W, sec. 21, SW1/4; sec. 28, NW1/4.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	26 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	19 miles
115kV	56 miles
230kV	1 mile
500kV	9 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	3.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Mining claim present
- Special status species habitat
- Near transmission lines and roads

Site Opportunities

* Site is close to transmission lines and roads
* Site is previously disturbed

Site Constraints

* Only 41% of site exhibits slopes < 5 percent
* Active Management Area
* Special status species habitat

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #16

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 3.3 MW solar energy facility would fit on the 26 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

The site is located in the viewshed from Lake Mead National Recreation Area.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #17

Name: Detrital Wash

Facts:

Total Nominated Acres: 17,695

Acres in REDA: 9,321

County: Mohave

Nominated By: Glen Collins

Previous and Current Land Use: Undeveloped

Adjacent Land Use: NPS, BLM, BOR lands; near reservation; adjacent to Mohave Wind Project

Surface Ownership: State

Mineral Ownership: State

Legal Description: T.28N., R.21W.; T.29N., R.21W.; T.29N., R.20W.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	16,828 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	42 miles
115kV	109 miles
230kV	371 miles
500kV	0 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	2,104 MW
Wind[2]	None

Selected Environmental Factors

- Washes on site
- Special status species habitat (6,270 acres)

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Area with low resource sensitivity

Site Constraints

* Special status species habitat (6,270 acres)
* Washes on site

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #17

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 2,104 MW solar energy facility would fit on the 16,828 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site contains 6,270 acres of habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #18

Name: Dog Town Mine

Facts:

Total Nominated Acres: 2,080

Acres in REDA: 2,080

County: Pima

Nominated By: Tucson Field Office

Previous and Current Land Use: Mine

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.17S., R.12E., sec. 10

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	1,892 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	30 miles
115kV	0.2 mile
230kV	2 miles
500kV	43 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	237 MW
Wind[2]	None

Selected Environmental Factors

- Mining claims present
- Managed as VRM Class III
- Special status species habitat
- Site is close to transmission lines and roads
- Part of site identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Mining claims present
* Managed as VRM Class III
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #18

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 237 MW solar energy facility would fit on the 1,892 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP or PV technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Developers should consult with mineral estate owner/administrator regarding the potential for existing mining claims that could limit renewable energy development.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #20

Name: Florence-Price Dump

Facts:

Total Nominated Acres: 85
Acres in REDA: 85
County: Pinal
Nominated By: Tucson Field Office
Previous Land Use: Borrow pit, trash dump site, OHV activities
Current Land Use: Unknown
Adjacent Land Use: Neighboring National Guard use in sec. 17
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.4S., R.10E., sec. 19, lots 2-3, N2NE, E2NW, NESW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	85 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	47 miles
115kV	0.3 mile
230kV	9 miles
500kV	14 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	10.6 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Managed as VRM Class III
- Special status species habitat
- Site is identified for disposal by BLM

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Managed as VRM Class III
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #20

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 10.6 MW solar energy facility would fit on the 85 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #21

Name: Foothills Proposed Disposal

Facts:

Total Nominated Acres: 1,355

Acres in REDA: 0

County: Maricopa

Nominated By: Sonoran Institute

Previous and Current Land Use: Undeveloped

Adjacent Land Use: Undeveloped, rural residential, transportation

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.1N., R.4W.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	749 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	4 miles
115kV	19 miles
230kV	0 miles
500kV	0 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	94 MW
Wind[2]	None

Selected Environmental Factors

- Mining claims present
- Special status species habitat (870 acres)
- Near transmission lines and roads
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints

Site Constraints

* Active Management Area
* Special status species habitat
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #21

Remediation/Restoration Requirements

A search of federal and state records indicates one underground storage tank (UST) at the southeast corner of the site. Since no leaks have been reported and the UST is downgradient from the adjacent portions of the site, no contamination at the site from this UST is expected. There are no other indications of present or past contamination or presence of USTs within a quarter mile of its boundaries.

Site Summary

A 94 MW solar energy facility would fit on the 749 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #22

Name: Forepaugh Airport

Facts:

Total Nominated Acres: 635

Acres in REDA: 0

County: Maricopa

Nominated By: Hassayampa Field Office

Previous Land Use: Landing strip

Current Land Use: Undeveloped

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.7N., R.7W., sec. 16, all.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	635 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0 miles
115kV	42 miles
230kV	10 miles
500kV	1 mile
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	79 MW
Wind[2]	None

Selected Environmental Factors

- AGFD wildlife corridor
- Site is near transmission lines and roads
- Site is identified for disposal by BLM

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints

Site Constraints

* AGFD wildlife corridor
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #22

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 79 MW solar energy facility would fit on the 635 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site is part of a wildlife corridor identified by the AGFD and provides important habitat connectivity for certain species. Consultation with AGFD will help determine the affected species and any necessary mitigation measures.

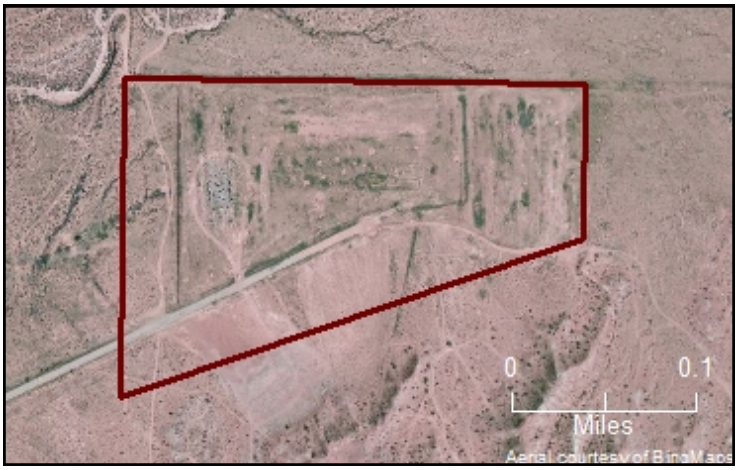
This location is known to be near sensitive cultural resources. Documentation of the cultural resources would be required and avoidance of impacts to these areas would be considered in reviewing any applications for development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.
Disclaimer: The information contained within this site summary has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #23



Name: Fredonia Landfill

Facts:

Total Nominated Acres: 21
Acres in REDA: 21
County: Coconino
Nominated By: Arizona Strip Field Office
Previous Land Use: Landfill
Current Land Use: Closed landfill
Adjacent Land Use: Undeveloped
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.41N., R.2W., sec. 22, N2NWNE, N2NENW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	18 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	45 miles
115kV	160 miles
230kV	48 miles
500kV	4 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	2.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- ROW present
- Managed as VRM Class III
- Special Recreation Management Area
- Special status species habitat
- Sensitive soils
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* ROW Present
* Special status species habitat
* Special Recreation Management Area
* Managed as VRM Class III

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #23

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks (USTs) at the site or within a quarter mile of its boundaries. There is one UST and one leaking UST within one mile of the site boundary, but both are downgradient from the landfill.

On-going remediation requirements may limit the type and location of solar and wind energy facilities. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 2.3 MW solar energy facility would fit on the 18 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be ROWs on-site. Developers should contact land managers and ROW-holders to determine the nature of on-site ROWs and what, if any, restrictions they may pose.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

The site is located within a Special Recreation Management Area, which may place limitations on development. Developers should consult with the BLM to determine allowable uses in this area.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development. The site is located in the viewshed of the Pipe Springs National Monument.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #25

Name: Granite Hill Landing Strip

Facts:

Total Nominated Acres: 2,656
Acres in REDA: 0
County: Pinal
Nominated By: Tucson Field Office
Previous Land Use: Landing strip
Current Land Use: Undeveloped
Adjacent Land Use: Undeveloped
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.7S., R.10E.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	2,406 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	37 miles
115kV	4 miles
230kV	13 miles
500kV	15 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	301 MW
Wind[2]	None

Selected Environmental Factors

- Mining claims present
- Site is near transmission lines and roads
- Managed as VRM Class III
- AGFD big game habitat
- Special status species habitat (1,990 acres)
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center

Site Constraints

* Active Management Area
* Mining claims present
* Special status species habitat (1,990 acres)
* AGFD big game habitat
* Desert tortoise habitat (1,020 acres)
* Managed as VRM Class III
* AGFD Species and Habitat Conservation Guide Conservation Potential
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #25

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 301 MW solar energy facility would fit on the 2,406 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

Developers should consult with mineral estate owner/administrator regarding the potential for existing mining claims that could limit renewable energy development.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

This site is located partially within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #26

Name: Harcuvar Substation

Facts:

Total Nominated Acres: 59

Acres in REDA: 59

County: La Paz

Nominated By: CAWCD

Previous and Current Land Use: Substation, transmission lines

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.7N, R.12W, Sec. 17 NE1/4, NW 1/4 and Sec. 20 SE 1/4, SW 1/4.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	59 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	20 miles
115kV	39 miles
230kV	0 miles
500kV	26 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	7.4 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Site is near transmission lines and roads
- Managed as VRM Class III
- Special status species habitat
- Desert tortoise habitat

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is previously disturbed

Site Constraints

* Desert tortoise habitat
* Special status species habitat
* Managed as VRM Class III
* Cultural sites

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #26

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 7.4 MW solar energy facility would fit on the 59 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

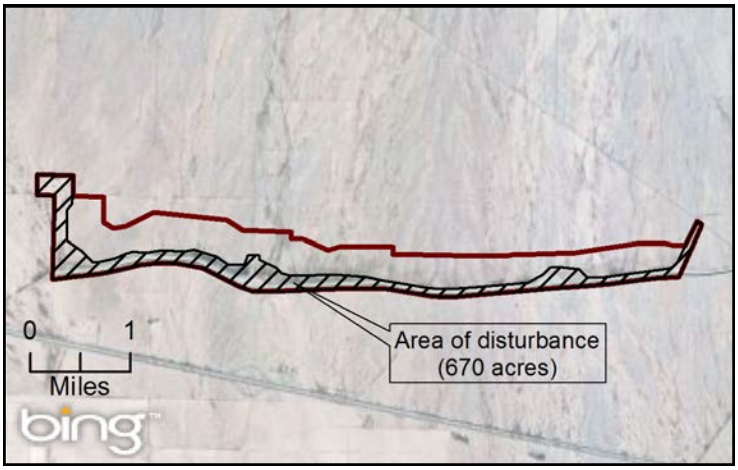
This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development. The site is located in the viewshed of Indian reservation.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #27



Name: Harquahala CAP

Facts:

Total Nominated Acres: 1,910
Acres in REDA: 670
County: La Paz and Maricopa
Nominated By: Bureau of Reclamation
Previous and Current Land Use: CAP ROW and canal
Adjacent Land Use: Undeveloped, Interstate 10
Surface Ownership: Bureau of Reclamation
Mineral Ownership: Federal
Legal Description: T. 3N., R.11W., sec. 15, 16, 21, 22, 23, 24 (partial sections) T. 3N., R.10W., sec 19, 20, 21, 22 (partial sections).

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	1,910 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	25 miles
115kV	55 miles
230kV	19 miles
500kV	0 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	239 MW
Wind[2]	None

Selected Environmental Factors

- Site is close to a load center
- Site is close to transmission lines and roads

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Initial GIS screening did not identify potential site constraints. More detailed screening and site visits or surveys may identify constraints.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #27

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 239 MW solar energy facility would fit on the 1,910 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV and CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

These lands were originally surveyed under the NEPA process before construction of the Central Arizona Project (CAP). This includes areas identified by Reclamation as wildlife habitat areas ("green-up" areas) to be managed as mitigation for impacts from the CAP construction. Use of such areas would require consideration of mitigation for losses of wildlife habitat.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #28

Name: Harrison Road

Facts:

Total Nominated Acres: 65

Acres in REDA: 65

County: Pima

Nominated By: City of Tucson

Previous Land Use: Landfill

Current Land Use: Closed and capped municipal landfill

Adjacent Land Use: Residential, undeveloped

Surface Ownership: Private/State

Mineral Ownership: Private/State

Legal Description: T.14S., R.15E., sec. 34, SE.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	10 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	19 miles
115kV	9 miles
230kV	9 miles
500kV	32 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	1.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Special Management Area
- Near urban area
- Special status species habitat
- Potentially incompatible adjacent land uses

Site Opportunities

* Site is close to roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses
* Only 15 percent of site exhibits slopes <5 percent
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #28

Remediation/Restoration Requirements

Remedial action at old landfills normally includes capping of the waste, managing landfill leachate and gas, and monitoring the impact on the environment.

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks (USTs) at the site or within a quarter mile of its boundaries. The Davis Monthan Air Force Base Superfund site is directly across Irvington Avenue to the south of the Harrison Road site. From an inspection of aerial photography, these lands appear undeveloped except for a few dirt trails. Groundwater flow in the area is generally toward the northwest. None of the upgradient lands seem to have any development on them that would be related to the specific concerns related to the Superfund site.

The Garigan property is listed as a CERCLIS site, but EPA has no information on the nature of the site. Groundwater flow at the Garigan site is expected to be to the north-northeast and away from the Harrison Landfill.

Site Summary

A 1.3 MW solar energy facility would fit on the 10 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #29

Name: Hartman Wash Mine

Facts:

Total Nominated Acres: 678
Acres in REDA: 0
County: Maricopa
Nominated By: Hassayampa Field Office
Previous Land Use: Mine
Current Land Use: Undeveloped
Adjacent Land Use: BLM site
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.7N., R.6W., sec. 27, N2, SW, N2SE, SWSE; sec. 34, N2NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	10 acres
Distance to Graded Road	1-2 miles
Distance to Transmission Interconnection:	
69kV	1 mile
115kV	40 miles
230kV	11 miles
500kV	3 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	1.3 MW
Wind[2]	None

Selected Environmental Factors

- Mining claim present
- Managed as VRM Class II
- Special status species habitat
- AGFD wildlife corridor
- Desert tortoise habitat
- Site is identified for disposal by BLM

Site Opportunities

* Site is close to transmission lines and roads
* Site is close to a load center

Site Constraints

* Mining claim present
* Special status species habitat
* Managed as VRM Class II
* Desert tortoise habitat
* AGFD wildlife corridor
* AGFD Species and Habitat Conservation Guide Conservation Potential
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #29

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 1.3 MW solar energy facility would fit on the 10 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

Developers should consult with mineral estate owner/administrator regarding the potential for existing mining claims that could limit renewable energy development.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

The site is part of a wildlife corridor identified by the AGFD and provides important habitat connectivity for certain species. Consultation with AGFD will help determine the affected species and any necessary mitigation measures.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #30

Name: Hassayampa Landfill

Facts:

Total Nominated Acres: 131

Acres in REDA: 131

County: Maricopa

Nominated By: Maricopa County

Previous Land Use: Landfill

Current Land Use: Unknown

Adjacent Land Use: Industrial, undeveloped

Surface Ownership: Private

Mineral Ownership: Private/State

Legal Description: T.1S., R.5W., sec. 3, S2

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	131 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	6 miles
115kV	29 miles
230kV	9 miles
500kV	3 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	16 MW
Wind[2]	None

Selected Environmental Factors

- Site is near transmission lines and roads
- Special status species habitat
- Near load center

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #30

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past underground storage tanks at the site or within a quarter mile of its boundaries.

As of 1986, on-site monitoring wells were contaminated with chlorinated organic solvents, including 1,1,1-trichloroethane and trichloroethylene, according to tests conducted by the Arizona Department of Health Services (ADHS). At that time, contamination had not been detected in off-site wells. The landfill was then listed on the NPL in 1987. Cleanup systems were initiated in 1994 and completed in 1997. The site has not yet been deleted from the NPL. Supporting maps and reports are attached.

EPA and the ADEQ are working together to clean up this site. Operation and maintenance of the groundwater treatment system and the soil vapor extraction system at the site is on-going. Coordination with the EPA and ADEQ is recommended before initiating any construction activities at the site.

Site Summary

A 19 MW solar energy facility would fit on the 150 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #31

Name: Hassayampa CAP

Facts:

Total Nominated Acres: 723

Acres in REDA: 723

County: Maricopa

Nominated By: Bureau of Reclamation

Previous and Current Land Use: CAP ROW and canal

Adjacent Land Use: Undeveloped, Residential

Surface Ownership: Bureau of Reclamation

Mineral Ownership: Federal

Legal Description: T. 4N., R.4W. Sec. 13, 21, 22, 23, 24 (partial sections).

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	720 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	8 miles
115kV	20 miles
230kV	1 mile
500kV	0 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	90 MW
Wind[2]	None

Selected Environmental Factors

- Site is close to a load center
- Special status species habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site previously disturbed

Site Constraints

* Near urban area
* Special status species habitat

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #31

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 90 MW solar energy facility would fit on the 720 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV and CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

These lands were originally surveyed under the NEPA process before construction of the Central Arizona Project (CAP). This includes areas identified by Reclamation as wildlife habitat areas ("green-up" areas) to be managed as mitigation for impacts from the CAP construction. Use of such areas would require consideration of mitigation for losses of wildlife habitat.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #32

Name: Irvington

Facts:

Total Nominated Acres: 13

Acres in REDA: 13

County: Pima

Nominated By: City of Tucson

Previous Land Use: Landfill

Current Land Use: Closed and capped landfill

Adjacent Land Use: Residential, undeveloped

Surface Ownership: Private/State

Mineral Ownership: Private/State

Legal Description: T.15S., R.15E., sec. 2, Lot 2

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	9 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	18 miles
115kV	8 miles
230kV	9 miles
500kV	33 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	1.1 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Site is close to transmission lines and roads

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #32

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks (USTs) at the site. The nearest USTs are at 0.2, 0.35 and 0.4 mile to the northeast. There are no leaking USTs within 0.5 mile of the site. Davis Monthan Air Force Base, a Superfund site, is 0.5 mile to the west. Groundwater flow in the area is generally toward the north; none of the aforementioned sites would impact groundwater at the Irvington Landfill.

Global Solar Energy, located 0.8 mile to the southeast and upgradient from the Irvington site, has a record of releasing lead to underground wells and to an onsite landfill during years 2003 through 2006. Lead could be present in groundwater underlying the Irvington Landfill but would not be a concern since a thick layer of solid waste and a soil cap is presumed to overly such groundwater. Also, lead in groundwater does not pose an inhalation hazard as it is not a volatile compound.

Site Summary

A 1.1 MW solar energy facility would fit on the 9 acres of land with a slope of <5%. Size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #33

Name: Jones Private Property

Facts:

Total Nominated Acres: 156

Acres in REDA: 156

County: Cochise

Nominated By: Kathleen Jones

Previous and Current Land Use: Agricultural

Adjacent Land Use: Undeveloped

Surface Ownership: Private

Mineral Ownership: Private/State

Legal Description: T.24S., R.22E., sec. 16, NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	156 acres
Distance to Graded Road	1-2 miles
Distance to Transmission Interconnection:	
69kV	14 miles
115kV	14 miles
230kV	13 miles
500kV	100 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	19.5 MW
Wind[2]	None

Selected Environmental Factors

- AGFD big game habitat
- Special status species habitat

Site Opportunities

* Entire site has slope of <5%
* Site is close to a load center

Site Constraints

* Special status species habitat
* AGFD big game habitat
* Distance to transmission interconnect
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #33

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 19.5 MW solar energy facility would fit on the 156 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

The distance to transmission lines may make interconnection less cost-efficient.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #34

Name: La Osa Surface Disturbance

Facts:

Total Nominated Acres: 41

Acres in REDA: 41

County: Pinal

Nominated By: Tucson Field Office

Previous and Current Land Use: disturbed area

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.10S., R.9E., sec. 17, SW1/4SE1/4.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	41 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	26 miles
115kV	8 miles
230kV	1 mile
500kV	8 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	5.1 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Site is identified for disposal by BLM
- Special status species habitat (24 acres)

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints

Site Constraints

* Active Management Area
* Special status species habitat (24 acres)
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #34

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 5.1 MW solar energy facility would fit on the 41 acres of land with a slope of <5%. Size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

This location is known to be near sensitive cultural resources. Documentation of the cultural resources would be required and avoidance of impacts to these areas would be considered in reviewing any applications for development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #35

Name: Litchfield Park Urban Parcel

Facts:

Total Nominated Acres: 41

Acres in REDA: 41

County: Maricopa

Nominated By: Arizona State Office

Previous Land Use: Disturbed area

Current Land Use: OHV trespass

Adjacent Land Use: Industrial, undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.2.N., R.1W., sec. 13, SWSE; sec. 24, NWNE; sec. 25, NWNE.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	41 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	3 miles
115kV	3 miles
230kV	0 miles
500kV	7 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	5.1 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Rights of way present
- Part of site identified for disposal by BLM

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #35

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 5.1 MW solar energy facility would fit on the 41 acres of land with a slope of <5%. Size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #36

Name: Little Harquahala CAP Site

Facts:

Total Nominated Acres: 159

Acres in REDA: 159

County: La Paz

Nominated By: CAWCD

Previous and Current Land Use: CAP ROW and canal

Adjacent Land Use: Arizona Canal, undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.3N., R.13W., sec. 18, Lots 3-4, SE, E2SW; sec. 19, Lots 1-2, NE, E2NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	131 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	35 miles
115kV	43 miles
230kV	24 miles
500kV	4 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	16.4 MW
Wind[2]	None

Selected Environmental Factors

- ROW present
- Managed as VRM Class III
- Desert tortoise habitat
- Canal on site

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Desert tortoise habitat
* Managed as VRM Class III
* CAP pumping station located on site
* AGFD Species and Habitat Conservation Guide Conservation Potential
* Cultural sites

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #36

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 16.4 MW solar energy facility would fit on the 131 acres of land with a slope of <5%. Size of developable acreage would likely make the site suitable for PV or CSP technology.

This site is located within desert tortoise habitat and developers should consult with the BLM and the USFWS regarding potential mitigation and compliance measures.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development. The site is located in viewshed of Indian reservation.

A CAP pumping station is located on the site and may inhibit development of portions of tis site.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #37

Name: Los Reales

Facts:

Total Nominated Acres: 247

Acres in REDA: 247

County: Pima

Nominated By: City of Tucson

Previous and Current Land Use: Landfill

Adjacent Land Use: Residential, commercial, undeveloped

Surface Ownership: Private

Mineral Ownership: Private/State

Legal Description: T.15S., R.14E., sec. 23, N2.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	225 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	21 miles
115kV	3 miles
230kV	6 miles
500kV	34 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	28 MW
Wind[2]	None

Selected Environmental Factors

- Active Management Area
- Near urban area and load center
- Special status species habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #37

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

The City of Tucson, owner and operator of the active municipal sanitary landfill, conducts site investigations and cleanup operations with ADEQ oversight of this Water Quality Assurance Revolving Fund (WQARF) Site.

Site Summary

A 28 MW solar energy facility would fit on the 225 acres of land with a slope of <5%. Size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.
The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

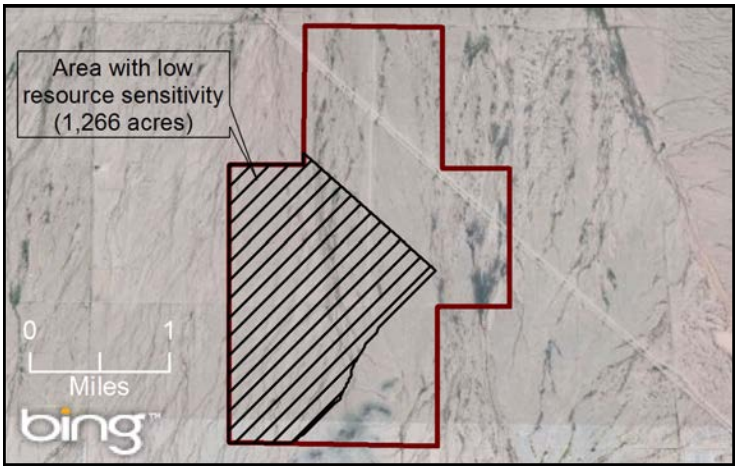
Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #38



Name: Mobile Proposed Disposal

Facts:

Total Nominated Acres: 2,843

Acres in REDA: 1,266

County: Maricopa

Nominated By: Sonoran Institute

Previous and Current Land Use: Undeveloped, with transmission line

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.4S., R.1E., sec. 34, E2; sec. 35, W2

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	2,776 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	27 miles
115kV	12 miles
230kV	13 miles
500kV	0 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	347 MW
Wind[2]	None

Selected Environmental Factors

- Rights-of-way present
- Active Management Area
- Partially within AGFD wildlife corridors
- Managed as VRM class II

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Area with low resource sensitivity

Site Constraints

* Active Management Area
* BLM utility corridor
* Includes 570 acres of AGFD wildlife corridors

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #38

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of USTs at the site or within a quarter mile of its boundaries.

Site Summary

A 347 MW solar energy facility would fit on the 2,776 acres of land with a slope of <5%. Size of developable acreage would likely make the site suitable for PV or CSP technology.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site is part of a wildlife corridor identified by the AGFD and provides important habitat connectivity for certain species. Consultation with AGFD will help determine the affected species and any necessary mitigation measures.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #39

Name: Mokaac Gravel Pit

Facts:

Total Nominated Acres: 80

Acres in REDA: 80

County: Mohave

Nominated By: Arizona Strip Field Office

Previous Land Use: Gravel pit

Current Land Use: Unknown

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.41N., R.12W., sec. 23, W2SW

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	78 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	97 miles
115kV	164 miles
230kV	107 miles
500kV	0.1 mile
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	9.8 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Rights-of-way present
- Portion of site managed as VRM Class II
- Special Recreation Management Area
- Special status species habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is previously disturbed

Site Constraints

* Special Recreation Management Area
* Special status species habitat
* Site has 17 acres managed as VRM Class II

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #39

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 9.8 MW solar energy facility would fit on the 78 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.
Disclaimer: The information contained within this site summary has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #40

Name: Old Yuma County FUP Site

Facts:

Total Nominated Acres: 27

Acres in REDA: 27

County: Yuma

Nominated By: Yuma Field Office

Previous Land Use: Borrow pit

Current Land Use: Unknown

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: BLM

Legal Description: T.8S., R.14W., sec. 7, NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	26 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	30 miles
115kV	42 miles
230kV	2 miles
500kV	5 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	3.3 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Managed as VRM Class II and III
- Special Recreation Management Area
- ROW exclusion or avoidance area

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is previously disturbed

Site Constraints

* Managed as VRM Class II and III
* Special Recreation Management Area
* ROW exclusion or avoidance area

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #40

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 3.3 MW solar energy facility would fit on the 26 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

This site is located within a ROW exclusion or avoidance area. As such, ROWs may be restricted or prohibited. Developers should consult with the BLM to determine the feasibility of ROW development on this site.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #41

Name: Page Landfill

Facts:

Total Nominated Acres: 160

Acres in REDA: 160

County: Coconino

Nominated By: Arizona Strip Field Office, Page Electric Utility

Previous Land Use: Landfill

Current Land Use: Closed and capped landfill

Adjacent Land Use: Undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.41N, R.8E., sec 20, NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	160 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0 miles
115kV	169 miles
230kV	0.3 mile
500kV	0.1 mile
Active Management Area	No

Estimated Maximum Potential Capacity	
Solar[1]	20 MW
Wind[2]	None

Selected Environmental Factors

- Right-of-ways present
- Managed as VRM Class II and III
- Special Recreation Management Area

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Managed as VRM Class II and III
* Special Recreation Management Area

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #41

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 20 MW solar energy facility would fit on the 160 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #42

Name: Prudence

Facts:

Total Nominated Acres: 8

Acres in REDA: 8

County: Pima

Nominated By: City of Tucson

Previous Land Use: Landfill

Current Land Use: Capped landfill

Adjacent Land Use: Residential, Pantano Wash

Surface Ownership: Private

Mineral Ownership: Private

Legal Description: T.14S., R.15E., sec. 17, NWSE.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	6 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	23 miles
115kV	10 miles
230kV	13 miles
500kV	28 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	0.8 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Active Management Area
- Near urban area
- Special status species habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #42

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of USTs at the site. A portion of the Broadway-Pantano Superfund site, which is on the WQARF Registry, is 0.2 mile to the north of the Prudence Landfill. No other sources of contamination were identified within 0.25 mile of the site, but when looking out to 0.5 mile, several sources exist, per the summary table below. Supporting maps and reports are attached.

The Broadway-Pantano Site consists of the Broadway North Landfill (BNL) the Broadway South Landfill (BSL), and the groundwater contamination associated with both landfills. Groundwater at the site is contaminated with tetrachloroethene (PCE), trichloroethene (TCE) and vinyl chloride occurring over regulatory limits. Other contamination is buried metal waste (dross) at the far southern section of the BNL (closest to the Prudence Landfill). Depth to groundwater is about 340 feet below ground surface. More information on the Broadway-Pantano site is provided in the attached WQARF files. Given the presence of the Pantano Wash immediately to the east of both the Broadway-Pantano site and the Prudence Landfill, groundwater flow in both cases is expected to be toward the east. Groundwater contamination from Broadway-Pantano site is not expected to underlie the Prudence Landfill; likewise, TCE and PCE vapors from the Broadway-Pantano site are not considered to be a concern within the Prudence Landfill footprint. Regardless, any development on the Prudence Landfill would be on the landfill's soil cap, which would not be subject to groundwater flow.

Site Summary

A 0.8 MW solar energy facility would fit on the 6 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #43

Name: Quartzsite Area

Facts:

Total Nominated Acres: 22,131

Acres in REDA: 0

County: La Paz

Nominated By: Glen Collins

Previous Land Use: Agricultural

Current Land Use: Unknown

Adjacent Land Use: Undeveloped

Surface Ownership: State

Mineral Ownership: State

Legal Description: T.6N., R.19W., T.7N., R.19W.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	21,689 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	24 miles
115kV	3 miles
230kV	16 miles
500kV	20 miles
Active Management Area	No
Estimated Maximum Potential Capacity	
Solar[1]	2,711 MW
Wind[2]	None

Selected Environmental Factors

- Potential mining claims and rights of way
- Partially within special status species habitat
- Sensitive soils

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center

Site Constraints

* Sensitive soils
* Includes 18,840 acres within special status species habitat
* Cultural sites
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #43

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries. La Paz County Regional Landfill is adjacent to the northeast corner of the Quartzsite site (ADEQ has classified this as a Municipal Landfill); however, the Quartzsite Area is upgradient from the landfill and no effects to soil or groundwater from the landfill would be present.

Site Summary

A 2,711 MW solar energy facility would fit on the 21,689 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

Soil properties on this site may restrict renewable energy development. Some soil types require additional engineering requirements to support solar or wind energy infrastructure foundations. Further research through the property owner/administrator and USDA NRCS is recommended.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. The site is located in the viewshed of the Colorado Rive Indian Reservation. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

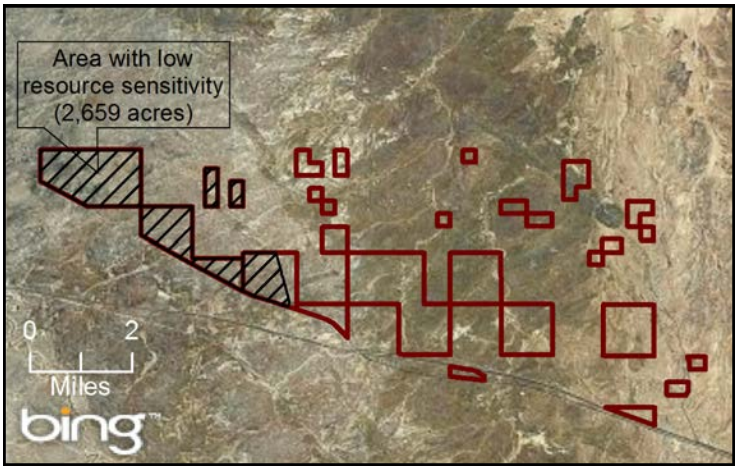
The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #44



Name: Red Gap Ranch

Facts:

Total Nominated Acres: 7,984
Acres in REDA: 2,659
County: Coconino
Nominated By: City of Flagstaff
Previous Land Use: Ranching
Current Land Use: Unknown
Adjacent Land Use: Undeveloped
Surface Ownership: Private
Mineral Ownership: Private/State
Legal Description: T.19N., R.14E; T.20N., R.12E; T.20N., R.12.5E; T.20N., R.13E; T.20N., R.14E

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	Fair
Slope <5%	7,983 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0 miles
115kV	87 miles
230kV	5 miles
500kV	29 miles
Active Management Area	No

Estimated Maximum Potential Capacity	
Solar[1]	998 MW
Wind[2]	61 MW

Selected Environmental Factors

- Near load center
- Special status species habitat
- Salt River Channel on site

Site Opportunities

* Majority of site has slope of <5%
* "Fair" wind potential rating on 1,700 acres
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Area with low resource sensitivity

Site Constraints

* Potential wetlands on 14 acres
* Sensitive soils on 5,316 acres

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #44

Remediation/Restoration Requirements

A search of federal and state records indicate two leaking underground storage tanks (LUSTs) within approximately 0.25 mile of the southern edge of a portion of the site. These LUSTs are upgradient from portions of the site and could have associated groundwater contamination plumes present; however, AZDEQ records shown that both of these investigations are closed, presumably indicating that all clean up actions have been completed. Applicants should verify with AZDEQ the worker health and safety implications of closed LUST sites upgradient from this property. Federal and state records show no other present or past contamination or presence of underground storage tanks (USTs) at the site or within a quarter mile of its boundaries.

Site Summary

A 998 MW solar energy facility would fit on the 7,983 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

A small (14-acre) portion of this site may contain wetlands. If field-verified, development would need to avoid this area. Consultation with USFWS is recommended to determine appropriate mitigation and avoidance techniques.

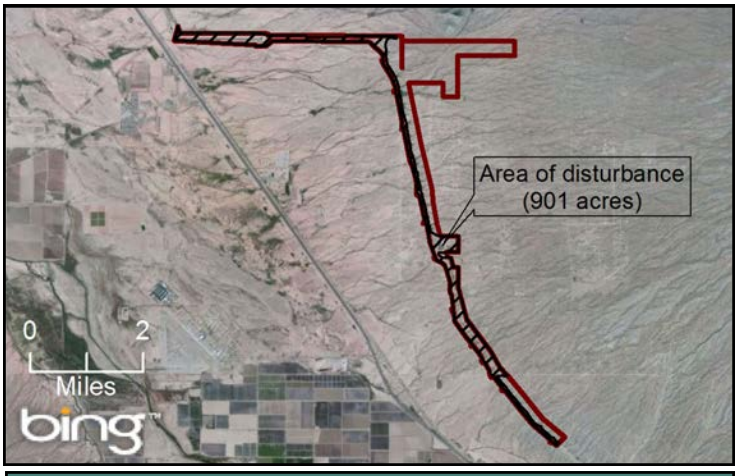
Soil properties on this site may restrict renewable energy development. Some soil types require additional engineering requirements to support solar or wind energy infrastructure foundations. Further research through the property owner/administrator and USDA NRCS is recommended.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #45



Name: Red Rocks CAP

Facts:

Total Nominated Acres: 2,213

Acres in REDA: 901

County: Pima and Pinal

Nominated By: Bureau of Reclamation

Previous and Current Land Use: CAP ROW and canal

Adjacent Land Use: Undeveloped, transportation

Surface Ownership: Bureau of Reclamation/BLM

Mineral Ownership: Federal

Legal Description: T. 4N., R.4W. Sec. 13, 21, 22, 23, 24 (partial sections).

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	2,210 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	2 miles
115kV	0 miles
230kV	2 miles
500kV	0 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity	
Solar[1]	276 MW
Wind[2]	None

Selected Environmental Factors

- Site is close to a load center
- Special status species habitat
- Part of site identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Portions of site have been disturbed

Site Constraints

* Desert tortoise habitat
* AGFD big game habitat
* Special status species habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #45

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 276 MW solar energy facility would fit on the 2,210 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV and CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

These lands were originally surveyed under the NEPA process before construction of the Central Arizona Project (CAP). This includes areas identified by Reclamation as wildlife habitat areas ("green-up" areas) to be managed as mitigation for impacts from the CAP construction. Use of such areas would require consideration of mitigation for losses of wildlife habitat. The site is part of a planned regional park to act as retention basins for water to CAP.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #46

Name: Ryan

Facts:

Total Nominated Acres: 16
Acres in REDA: 16
County: Pima
Nominated By: City of Tucson
Jurisdiction: Private
Previous Land Use: Landfill
Current Land Use: Capped landfill
Adjacent Land Use: Airport
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: T.15S., R.12E., sec. 7, Lot 2

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	16 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	37 miles
115kV	5 miles
230kV	16 miles
500kV	29 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	2 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Incompatible surrounding land use

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #46

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 2 MW solar energy facility would fit on the 16 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #47

Name: Ryland

Facts:

Total Nominated Acres: 27
Acres in REDA: 0
County: Pima
Nominated By: City of Tucson
Jurisdiction: Private
Previous Land Use: Landfill
Current Land Use: Capped landfill
Adjacent Land Use: Residential and undeveloped
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: T.14S., R.13E., sec. 26, SENW

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	27 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	29 miles
115kV	2 miles
230kV	11 miles
500kV	28 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	3.4 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Urban area
- Special status species habitat

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is within a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Site has potential wetlands
* Potentially incompatible adjacent land uses
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #47

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 3.4 MW solar energy facility would fit on the 27 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

A 7-acre portion of this site may contain wetlands. If field-verified, development would need to avoid this area. Consultation with USFWS is recommended to determine appropriate mitigation and avoidance techniques.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

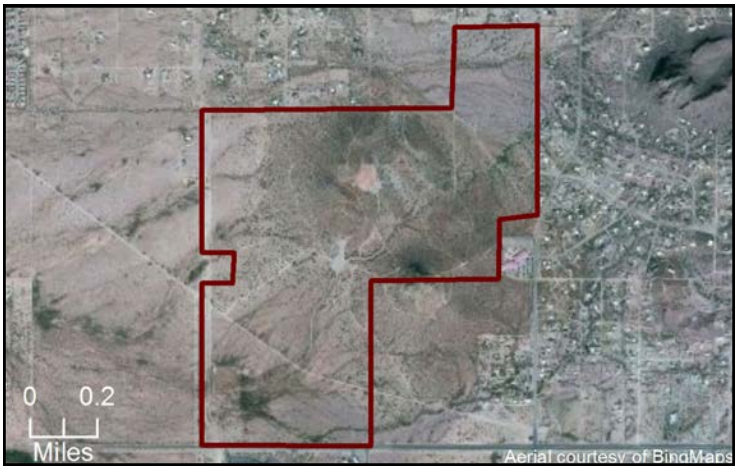
The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #49



Name: Saginaw Hill

Facts:

Total Nominated Acres: 503
Acres in REDA: 503
County: Pima
Nominated By: Tucson Field Office, Venture Catalyst, Individual
Jurisdiction: BLM
Previous Land Use: Sulfide mining and smelting
Current Land Use: Remediated mine
Adjacent Land Use: Residential and undeveloped
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.15S., R.12E., sec. 11, E2NE, NWNE, N2 SWNE, SESWNE, SE; sec. 12, Lots 5-12, W2, N2SE, SWSE

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	433 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	33 miles
115kV	0.1 mile
230kV	12 miles
500kV	28 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	54 MW
Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Site is managed as VRM Class III
- Potentially incompatible adjacent land uses
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active management area
* Special status species habitat
* Site is managed as VRM Class III
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #49

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 54 MW solar energy facility would fit on the 433 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #50

Name: San Xavier Mine

Facts:

Total Nominated Acres: 2,573

Acres in REDA: 2,573

County: Pima

Nominated By: Tohono O'odham Nation, San Xavier District

Jurisdiction: Tohono O'odham

Previous and Current Land Use: Mine

Adjacent Land Use: Industrial and undeveloped

Surface Ownership: Tohono O'odham Nation

Mineral Ownership: Tohono O'odham Nation

Legal Description: T.16S., R.13E., sec. 20, E2; sec. 21, All; sec. 28, All; sec. 30, E2

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	2,198 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	26 miles
115kV	5 miles
230kV	5 miles
500kV	38 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	275 MW
Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Close to transmission and roads

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active management area
* Special status species habitat
* Portions of site may be contaminated

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #50

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 275 MW solar energy facility would fit on the 2,198 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #51

Name: Silver Creek Landfill

Facts:

Total Nominated Acres: 50
Acres in REDA: 50
County: Mohave
Nominated By: Lake Havasu Field Office
Jurisdiction: BLM
Previous Land Use: Landfill
Current Land Use: Leveled and closed landfill
Adjacent Land Use: Vacant and residential
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.20N., R.21W

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	Fair
Slope <5%	9 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	6 miles
115kV	63 miles
230kV	0.3 mile
500kV	38 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	1.1 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	0.4 MW

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Desert tortoise habitat
- Near 230kV line

Site Opportunities

* Wind potential rating of "Fair" on 11 acres
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Only 9 acres exhibits slope less than 5 percent
* Special status species habitat
* Desert tortoise habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #51

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 1.1 MW solar energy facility would fit on the 9 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #52

Name: Silverbell

Facts:

Total Nominated Acres: 36
Acres in REDA: 36
County: Pima
Nominated By: City of Tucson
Jurisdiction: City of Tucson
Previous Land Use: Landfill
Current Land Use: Capped landfill
Adjacent Land Use: Mixed (Urban)
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: T.13S., R.13E., sec. 28, W2SE; sec. 33, NENE

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	9 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	33 miles
115kV	0 miles
230kV	17 miles
500kV	23 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	4.5 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- In urban area
- Special status species habitat
- Within 0.25-mile of National Historic Trail

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Site is within 0.25-mile of National Historic Trail
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #52

Remediation/Restoration Requirements

The site is a closed municipal solid waste landfill and is classified by the EPA as a Superfund site. Silverbell is listed on the WQARF Registry. Sites placed on the Registry are scored using an approved eligibility and evaluation (E&E) model for evaluating risk and other environmental factors. The Silverbell site has an E&E score of 51 out of a possible total score of 120. The attached WQARF reports provide detailed information on the site and its environmental issues.

Seven leaking underground storage tanks are reported to occur within 0.5 mile of the site. There are no brownfields within 0.5 mile. Supporting maps and reports are attached. Due to the composition of the site as a landfill, any earth-disturbing activities on the site would be on a soil cap, which would not be subject to contamination from migrating groundwater.

Four CERCLIS/Superfund sites exist within one mile of the site; however, groundwater contamination is not expected to be a concern given the soil cap on the landfill.

Site Summary

A 4.5 MW solar energy facility would fit on the 9 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #54

Name: Snyder Hill Mine

Facts:

Total Nominated Acres: 176
Acres in REDA: 176
County: Pima
Nominated By: Tucson Field Office
Jurisdiction: BLM
Previous Land Use: Mine
Current Land Use: Inactive rock quarry
Adjacent Land Use: Undeveloped
Surface Ownership: BLM
Mineral Ownership: BLM
Legal Description: T.15S., R.12E., sec. 3, Lots 9-16, SWNW; sec. 4, Lots 1 and 9-10, S2NENE, SENE

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	151 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	33 miles
115kV	0.1 mile
230kV	12 miles
500kV	28 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	19 MW
Wind[2]	None

Selected Environmental Factors

- Site is managed as VRM Class III
- Special status species habitat
- Desert tortoise habitat
- Near urban area
- Site is identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active management area
* Special status species habitat
* Desert tortoise habitat
* Site is managed as VRM Class III

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #54

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 19 MW solar energy facility would fit on the 151 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located partially within desert tortoise habitat and developers should consult with the land management agency, if applicable, and the USFWS regarding potential mitigation and compliance measures.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #56

Name: St. Mary's

Facts:

Total Nominated Acres: 10
Acres in REDA: 0
County: Pima
Nominated By: City of Tucson
Jurisdiction: Private
Previous Land Use: Landfill
Current Land Use: Residences and park
Adjacent Land Use: Commercial and residential
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: n/a

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	10 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	1 mile
115kV	3 miles
230kV	2 miles
500kV	14 miles
Active Management Area	Yes
Estimated Maximum Potential Capacity	
Solar[1]	1.3 MW
Site is less than 100 acres and may not be suitable for CSP technology.	
Wind[2]	None

Selected Environmental Factors

- In urban area
- Special status species habitat
- Close proximity to transmission and roads
- Surrounded by residential and commercial development

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is within a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Site is currently residential area
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #56

Remediation/Restoration Requirements

Drainage is expected to be to the east toward the Santa Cruz River. A search of federal and state records indicate the presence of one or two leaking underground storage tanks approximately 0.4 to 0.5 miles to the east of the site, rendering them potentially upgradient in terms of groundwater flow. Groundwater plumes could have resulted in contamination of groundwater under the landfill. Contaminated groundwater underlying a landfill could result in soil vapor intrusion into enclosed spaces within the landfill and could pose a potential hazard to workers that may excavate into the solid waste contained therein.

Site Summary

A 1.3 MW solar energy facility would fit on the 10 acres of land with a slope of <5%. Size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #57

Name: Tombstone Landfill

Facts:

Total Nominated Acres: 43
Acres in REDA: 43
County: Cochise
Nominated By: Tucson Field Office
Jurisdiction: BLM
Previous Land Use: Landfill
Current Land Use: Unknown
Adjacent Land Use: Commercial
Surface Ownership: BLM
Mineral Ownership: Federal
Legal Description: T.19S., R.22E

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	33 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0 miles
115kV	5 miles
230kV	3 miles
500kV	79 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	4.1 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near urban area
- Close proximity to transmission and roads
- Part of site identified for disposal by BLM

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #57

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

If future surveys reveal any contamination, the type and location of solar and wind energy facilities may be limited. For example, construction of solar and wind plants may entail significant excavation of contaminated soil, or site development may involve extensive hardscaping, which may serve as a cap to prevent further migration of contamination. In some cases, removal of contaminated soils and prevention of any additional ground water contamination may suffice as a remedial effort.

Site Summary

A 4.1 MW solar energy facility would fit on the 33 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

Site characteristics may impose restrictions on the type and amount of renewable energy that can be developed on a landfill. For example, gas collection systems may require setbacks and other siting considerations. Technical feasibility of solar and wind developments on landfills depends on compatibility of the solar or wind systems with the existing landfill components.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #58

Name: Torrez-Brant

Facts:

Total Nominated Acres: 408

Acres in REDA: 408

County: Maricopa

Nominated By: Royna Torrez Rosell

Jurisdiction: Private

Previous and Current Land Use: Agricultural and residential

Adjacent Land Use: Agricultural

Surface Ownership: Private

Mineral Ownership: Private, State

Legal Description: T.4S., R.10W., sec. 4, W2, SE, W2 NE

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	4 miles
115kV	67 miles
230kV	17 miles
500kV	3 miles
Active Management Area	No
Estimated Maximum Potential Capacity	
Solar[1]	51 MW
Wind[2]	None

Selected Environmental Factors

- Near load center
- Surrounded by agricultural and undeveloped land

Site Opportunities

* Entire site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints

Site Constraints

* Initial GIS screening did not identify potential site constraints. More detailed screening and site visits or surveys may identify constraints.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #58

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 51 MW solar energy facility would fit on the 408 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.
Disclaimer: The information contained within this site summary has been created to give an overview of each site and is not a guarantee of a site's suitability for energy development. Developers should consult with appropriate government agencies and undertake further research before making a final determination on a site's suitability for their project(s).

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #59

Name: Tumamoc

Facts:

Total Nominated Acres: 21
Acres in REDA: 21
County: Pima
Nominated By: City of Tucson
Jurisdiction: Private
Previous Land Use: Landfill
Current Land Use: Inactive landfill requiring earthwork and stormwater management
Adjacent Land Use: Residential, open space
Surface Ownership: Private
Mineral Ownership: Federal
Legal Description: T.14S., R13E., sec. 16, SESE

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	7 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	31 miles
115kV	0 miles
230kV	13 miles
500kV	27 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	0.9 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- In urban area
- Special status species habitat
- Nearby residential development
- Close proximity to transmission and roads

Site Opportunities

* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* Only 33 percent of site exhibits slope of <5 percent

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #59

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 0.9 MW solar energy facility would fit on the 7 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #60

Name: Twin Peaks-Sandario CAP

Facts:

Total Nominated Acres: 888

Acres in REDA: 888

County: Pima

Nominated By: Bureau of Reclamation

Previous and Current Land Use: CAP ROW and canal

Adjacent Land Use: Residential, mining

Surface Ownership: Bureau of Reclamation

Mineral Ownership: Federal

Legal Description: T.12S., R.11E., secs 14, 15, 23, 26, 27, 28, 32, 33 T.13S., R.11E., sec. 5, 6, 7, 8 (all partial sections).

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	870 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0 miles
115kV	0 miles
230kV	13 miles
500kV	12 miles
Active Management Area	Yes
Estimated Maximum Potential Capacity	
Solar[1]	109 MW
Wind[2]	None

Selected Environmental Factors

- Site is close to a load center
- Special status species habitat

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* AGFD big game habitat
* Special status species habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #60

Remediation/Restoration Requirements

A search of federal and state records indicate one underground storage tank (UST) approximately 0.25-mile to the west of the site. This UST is not reported as leaking. Records provide no indication of present or past contamination at the site or within a quarter mile of its boundaries.

Mitigation policy is in place for the lands administered by the Bureau of Reclamation (Reclamation) as a part of the Central Arizona Project (CAP) that lie upslope of the canal, including all areas within the detention/retention basins. These lands have the primary purpose of providing temporary storage of storm runoff. While the lands must remain under Federal control and be readily available for the primary purpose of flood control, other uses are permissible provided they are consistent with project operations and maintenance requirements, do not interfere with operation of the basin, and can accommodate intermittent flooding. Appropriate mitigation measures must be undertaken for impacts from uses other than operations and mitigation on lands within the basins. Full replacement or enhancement of existing habitat values will be required in these mitigation measures. These measures will be developed in consultation with the appropriate wildlife management agencies.

Site Summary

A 109 MW solar energy facility would fit on the 870 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV and CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site contains AGFD big game habitat and may be subject to mitigation requirements to protect species viability.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

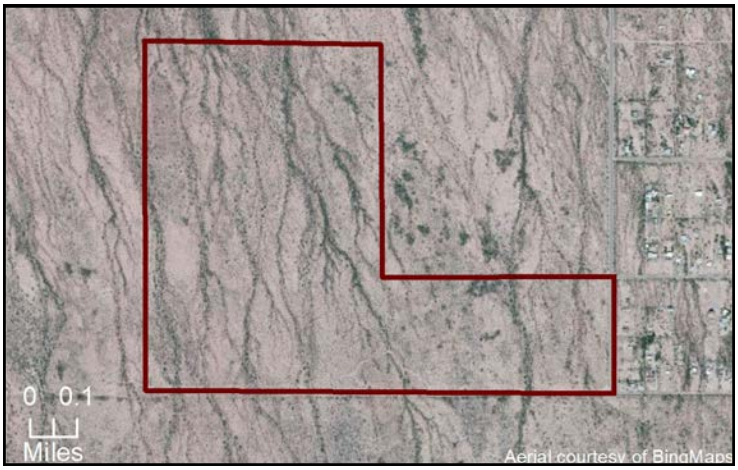
These lands were originally surveyed under the NEPA process before construction of the Central Arizona Project (CAP). This includes areas identified by Reclamation as wildlife habitat areas ("green-up" areas) to be managed as mitigation for impacts from the CAP construction. Use of such areas would require consideration of mitigation for losses of wildlife habitat.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #61



Name: Valhalla

Facts:

Total Nominated Acres: 318

Acres in REDA: 0

County: Pima

Nominated By: Tucson Field Office

Jurisdiction: BLM

Previous and Current Land Use: Undeveloped

Adjacent Land Use: Residential and undeveloped

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.15S., R.12E., sec. 20, S2NW, SW, S2SE.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	273 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	33 miles
115kV	0.1 mile
230kV	12 miles
500kV	28 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	34 MW
Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Site is identified for disposal by BLM
- Site is managed as VRM Class III

Site Opportunities

* Majority of site has slope of <5%
* Site is close to transmission lines and roads
* Site is close to a load center
* Minimal environmental constraints

Site Constraints

* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses
* Site is largely undisturbed

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #61

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 34 MW solar energy facility would fit on the 273 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site suitable for PV or CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

This site is located on BLM-administered lands with a VRM class that may require special design features to minimize visual disturbances. Consultation with the BLM will determine whether the VRM class will impact development.

Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #62

Name: Vincent Mullins

Facts:

Total Nominated Acres: 32
Acres in REDA: 32
County: Pima
Nominated By: City of Tucson
Jurisdiction: Private
Previous Land Use: Landfill
Current Land Use: Closed and capped landfill
Adjacent Land Use: Industrial and residential
Surface Ownership: Private
Mineral Ownership: Private
Legal Description: T.14S., R.15E., sec. 5, NWSW

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	15 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	25 miles
115kV	9 miles
230kV	15 miles
500kV	26 miles
Active Management Area	Yes

Estimated Maximum Potential Capacity

Solar[1]	1.9 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- In urban area
- Special status species habitat
- Nearby residential developments
- Close proximity to road network

Site Opportunities

* Site is close to transmission lines and roads
* Site is within a load center
* Minimal environmental constraints
* Site is previously disturbed

Site Constraints

* Only 47 percent of site exhibits slope of <5 percent
* Active Management Area
* Special status species habitat
* Potentially incompatible adjacent land uses

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #62

Remediation/Restoration Requirements

A search of federal and state records indicate the presence of leaking underground storage tanks directly to the east of the site. Drainage is expected to be to the west to the Pantano Wash, directly adjacent to the landfill. Groundwater plumes could have resulted in contamination of groundwater under the landfill.

Site Summary

A 1.9 MW solar energy facility would fit on the 15 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

There may be fewer environmental constraints associated with this site, which could result in a reduced likelihood for increased permitting and construction costs and public opposition. A more detailed site assessment can help identify the presence or likelihood of sensitive resources.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

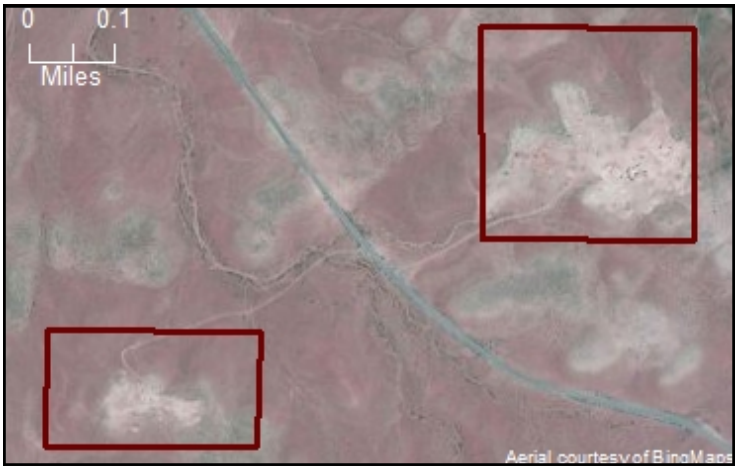
Surrounding areas may include some potentially incompatible land uses. For sites under local jurisdiction, developers should contact local planning departments to determine adjacent zoning designations.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #63



Name: White Sage Gravel Pits

Facts:

Total Nominated Acres: 61

Acres in REDA: 61

County: Coconino

Nominated By: Arizona Strip Field Office

Previous and Current Land Use: Gravel pits

Adjacent Land Use: Undeveloped BLM-administered land

Surface Ownership: BLM

Mineral Ownership: Federal

Legal Description: T.40N., R.2W., sec. 2, S2SWSW,

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	27 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	44 miles
115kV	157 miles
230kV	47 miles
500kV	0.4 mile
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	3.4 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near load center
- Special status species habitat
- Close proximity to 500kV line

Site Opportunities

* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* BLM Special Recreation Management Area
* Special status species habitat
* Sensitive soils
* Only 44 percent of site exhibits slope of <5 percent

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

SITE #63

Remediation/Restoration Requirements

A search of federal and state records indicate no present or past contamination or presence of underground storage tanks at the site or within a quarter mile of its boundaries.

Site Summary

A 3.4 MW solar energy facility would fit on the 27 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

The site is located within a Special Recreation Management Area, which may place limitations on development. Developers should consult with the BLM to determine allowable uses in this area.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

Soil properties on this site may restrict renewable energy development. Some soil types require additional engineering requirements to support solar or wind energy infrastructure foundations. Further research through the property owner/administrator and USDA NRCS is recommended.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #64

Name: Wildcat Hill

Facts:

Total Nominated Acres: 75

Acres in REDA: 75

County: Coconino

Nominated By: City of Flagstaff

Jurisdiction: City of Flagstaff

Previous and Current Land Use: Brownfield

Adjacent Land Use: Industrial, undeveloped

Surface Ownership: Private

Mineral Ownership: Private, State

Legal Description: T.21N., R.8E., sec. 9, NW.

About This Site

Characteristic	Description
Solar Potential	Good
Wind Potential	None
Slope <5%	72 acres
Distance to Graded Road	<1 mile
Distance to Transmission Interconnection:	
69kV	0.2 mile
115kV	66 miles
230kV	0 miles
500kV	32 miles
Active Management Area	No

Estimated Maximum Potential Capacity

Solar[1]	9 MW

Site is less than 100 acres and may not be suitable for CSP technology.

Wind[2]	None

Selected Environmental Factors

- Near urban area
- Special status species habitat
- Within AGFD big game habitat

Site Opportunities

* Majority of site has slope of <5 percent
* Site is close to transmission lines and roads
* Site is close to a load center
* Site is previously disturbed

Site Constraints

* Active Management Area
* Special status species habitat
* AGFD big game habitat
* AGFD Species and Habitat Conservation Guide Conservation Potential

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.

Restoration Design Energy Project

Environmental Impact Statement—Nominated Sites Summary

SITE #64

Remediation/Restoration Requirements

The site is a biosolids processing area for the Wildcat Hill Wastewater Treatment Facility. The site received a Phase I environmental site assessment from the ADEQ Brownfields Program in July 2010. The results of the Phase I showed that there were no contaminants of concern. A search of federal and state records indicate no past contamination or presence of underground storage tanks (USTs) at the site. An existing UST, reported as "non-leaking" exists at the southeastern edge of the site. Other USTs and leaking USTs are across Rio de Flag, and therefore, there would be no hydrologic connection with any shallow groundwater present at the site.

Site Summary

A 9 MW solar energy facility would fit on the 72 acres of land with a slope of <5 percent. The size of developable acreage would likely make the site unsuitable for CSP technology.

This site's close proximity to roads can lower construction costs by providing easy access for equipment and workers. Nearby transmission lines may offer cost-efficient opportunities for interconnection.

The site's proximity to a load center may decrease transmission costs while increasing distribution options. Selling solar energy-generated electricity to a local market may increase community support for a project.

As a part of an Active Management Area, this site is within a region with heavy reliance on mined groundwater. Active Management Areas are subject to regulation pursuant to the Arizona Groundwater Code. Management goals for the Active Management Area may restrict water-intensive uses, such as solar energy generation requiring water for cooling or condensation.

The site contains habitat for federal or state-listed species, including threatened and endangered species. As a result, developers should consult with the appropriate state or federal land management agency and USFWS to determine which species' habitat may be present on the site and begin potential compliance process with the Endangered Species Act.

The site overlaps with an Arizona Game and Fish Department Species and Habitat Conservation Guide Conservation Potential area. These areas contain critical habitat and provide opportunities for people to enjoy and benefit from the presence of wildlife. Conservation potential areas are ranked on a scale of 1 to 6, with 1 indicating the lowest conservation potential, and 6 indicating the highest conservation potential. This site contains tier 4, 5, and/or 6 conservation potential.

[1] Calculated by dividing acreage with slope <5% by a factor of 8 acres per megawatt.
[2] Calculated by dividing the acreage with a wind rating of "Fair" by a factor of 28 acres per megawatt.