DRAFT FOR STAKEHOLDER COMMENT: Gillespie Solar Energy Zone: Resources, Impacts, & On-site Mitigation

In Maricopa County in west-central Arizona, Lower Sonoran Field Office - 2,618 developable acres, up to 419 MW generation capacity.
Source: Draft and Final Solar PEIS for Gillespie SEZ available at: (http://blmsolar.anl.gov/sez/az/gillespie/)

Resource/Issue	Impacts[1]	On-site Mitigation[2]		Unavoidable Impacts[3]?
		Avoidance	Minimization	
Acoustics Section 8.3.15[4]	Direct: Increased noise levels during construction, operation, and decommissioning could cause impacts, particularly for activities occurring near the southeastern boundary of the SEZ, close to the nearest residences. Estimated noise levels at the nearest residences would not exceed EPA's guideline level. Indirect: Noise from solar development in the SEZ is not likely to adversely affect any of the nearby specially designated areas. Cumulative[5]: If multiple facilities were to be constructed close to the SEZ, residents nearby could be affected by the noise generated, particularly during construction and/or at night when the noise is more discernible due to relatively low background levels. Data Gaps[6]: Refined modeling would be warranted along with background noise measurements during project-specific assessments.	Solar facilities must be located far enough away from residences, or include engineering and/or operational methods such that county, state, and/or federal regulations for noise are not exceeded. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Noise.pdf	Limiting the hours of daily activities, construction of noise barriers if needed and practicable, coordination with nearby residents. See programmatic design features.	No

[1] The impacts assessment assumed 80 percent of the SEZ area will be used for solar development.
[2] Avoidance is accomplished by imposing spatial and/or temporal restrictions, including those specified in programmatic and SEZ-specific design features (DFs) (as presented in the Record of Decision for the Final Solar PEIS). Minimization is accomplished using programmatic and SEZ-specific DFs (as presented in the Record of Decision for the Final Solar PEIS), and/or best management practices. (Note: In general only SEZ-specific DFs and SEZ-specific application of programmatic DFs are presented in this table.) Monitoring is planned to verify the implementation and effectiveness of design features.
[3] Unavoidable impacts are those that cannot be adequately mitigated on-site by avoidance and/or minimization. Preliminary assessments are provided for comment.
[4] Section numbers are the same in both the Draft and Final Solar PEIS.
[5] Sections 8.3.22.4 of the Draft and Final Solar PEIS address cumulative impacts, which consider ongoing and reasonably foreseeable activities in the vicinity of the SEZ such as wind, geothermal, mining, agricultural, and commercial development; new roads, traffic, and off-highway vehicle use; and infrastructure including transmission lines, pipelines, canals, fences, and communication systems.
[6] Data gaps have not been identified for all resources in this table. Additional data gaps may be identified during future SEZ- or project-specific assessments.

Resource/Issue	Impacts[1]	On-site Mitigation[2]		Unavoidable Impacts[3]?
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Air Quality Section 8.3.13	Direct: Fugitive dust and equipment exhaust emissions during construction could result in exceedance of Ambient Air Quality Standards (AAQS) for particulate matter (PM) at SEZ boundaries. However, some existing background PM levels already exceed the standards. Specifically, predicted 24-hour PM_{10} and 24-hour and annual $PM_{2.5}$ concentrations could exceed AAQS at the SEZ boundaries and in the immediate surrounding areas during the construction of solar facilities. High PM_{10} concentrations would be limited, however, to the immediate areas surrounding the SEZ boundary and would decrease quickly with distance. Generation of fugitive dust may result in exposure to respirable particulates and/or microbes (human health impacts). The majority of the soils on the SEZ have been characterized as having high potential for wind erosion. Indirect: Decreased visibility in nearby residential or specially-designated areas due to elevated PM levels from soil disturbance/grading during construction. Cumulative: Cumulative effects due to dust emissions would be greatest if multiple solar projects had overlapping construction periods. Data Gaps: Monitoring for PM during construction, operation, and decommissioning will be required to identify levels exceeding AAQS.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Air_Quality_Climate.pdf	Dust suppression measures will be implemented during all phases of development (construction, operations, and decommissioning). See programmatic design features.	Maybe (particularly if site is graded).

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Climate Change Section 5.11.4 of DPEIS for soil storage capacity; 8.3.13 for emissions avoided	Direct: Possible impact through loss of carbon storage capacity of the soil (estimated at 100 g carbon/m^2). Preliminary calculations show loss of CO_2 storage capacity as 1.6 tons/acre/yr (3,351 tons/yr for SEZ full build-out), less than 1 percent of the CO_2 emissions avoided by operation of a solar facility (see below) Positive impact: Solar power generation reduces demand for energy from fossil fuels, and thereby reduces greenhouse gas emissions (from about 347,000-624,000 tons/yr CO_2 avoided at full build-out depending on technology). Cumulative: Over the long term and across the region, the development of solar energy may contribute to reduced greenhouse gas emissions in the region. Based on data from the Sonoran Desert Rapid Ecoregional Assessment (REA), the SEZ is situated in an area with moderate to moderately low potential for future climate change (e.g., increased temperature, decreased precipitation, and changes in vegetation and habitat).	Maintaining native vegetation cover and soils and minimizing grading. See programmatic design features for vegetation at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	See programmatic design features.	Positive impacts expected

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Cultural Section 8.3.17	Direct: Development may adversely affect cultural resources; however, further investigation is needed. The potential for impacts on prehistoric cultural resources is high in the eastern portion of the SEZ, the area closest to the Gila River, because access to potable water would have been a critical factor for groups in prehistoric times. The northern portion of the SEZ, near the Southern Pacific Railroad spur, has potential for historic resources. Indirect: Erosion impacts on the cultural landscape outside of the SEZ resulting from land disturbances and modified hydrologic patterns; increased accessibility and potential for damage to eligible sites outside of the SEZ (if present). Cumulative: Dependent on whether eligible sites are found and impacted in the SEZ and adjacent areas. Data Gaps: Pre-development cultural inventory and evaluation will be completed, as part of the Section 106 consultation process.	Significant resources clustered in specific areas which retain sufficient integrity will be avoided. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Cultural.pdf	Recordation of historic structures through Historic American Building Survey/Historic American Engineering Record protocols through the National Park Service would be appropriate and could be required if any historic structures or features would be affected, or if the Gillespie Dam Highway Bridge were used as part of an off-site access route. A Memorandum of Agreement will be developed and executed (including implementation of a Historic Property Treatment Plan) if eligible sites are discovered within the SEZ to determine how the eligible properties will be treated (avoided or mitigated to minimize impacts). See programmatic design features.	Maybe

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Ecology: Vegetation and Riparian Areas; Invasive and Noxious Weeds Section 8.3.10	Direct: Development will adversely affect characteristic vegetation (e.g., creosote bush, white bursage, cactus, palo verde, and ironwood) through destruction and loss of habitat. Development will result in small impacts to the following land types which comprise the SEZ: Creosotebush-White Bursage Desert Scrub and Paloverde-Mixed Cacti Desert Scrub. Development, including vegetation removal, land clearing, grading, changes in surface water flow, and dust deposition may alter soils and vegetation communities and result in the establishment of invasive species and noxious weeds within the SEZ. Indirect: Loss of native vegetation due to dust deposition from construction and operations, increased surface water runoff and related erosion, or through the introduction of invasive species. Establishment of noxious weeds in the SEZ may result in their spreading to adjacent areas. Cumulative: Solar energy development could be a contributor to cumulative impacts on some vegetation communities, depending on the number and location of other developments in the region.	All, dry wash, dry wash woodland, saguaro cactus, and ironwood (including those outside of washes) communities within the SEZ and associated new roads or transmission lines will be avoided to the extent practicable. A buffer area will be maintained around dry washes, dry wash woodland, to reduce the potential for impacts. Travel through weed-infested areas will be avoided; vehicles and equipment will be inspected and cleaned to avoid spreading weeds; ground disturbance will be limited, soil conditions that promote weed germination and establishment will be avoided, seed and plant parts will be disposed of. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	Appropriate engineering controls will be used to minimize impacts on, dry wash, , including downstream occurrences, resulting from surface water runoff, erosion, sedimentation, altered hydrology, accidental spills, or fugitive dust deposition to these habitats. Appropriate buffers and engineering controls will be determined through agency consultation. Groundwater withdrawals will be limited to reduce the potential for indirect impacts on groundwater-dependent communities, such as, microphyll (palo verde/ ironwood) communities, or riparian habitats along the Gila or Hassayampa Rivers. See programmatic design features.	Yes

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Ecology: Terrestrial Wildlife and Aquatic Biota Section 8.3.11	Direct: Loss of habitat and connectivity (linkages) for several species of amphibians, reptiles, mammals, bats, and invertebrates. Remaining habitat in SEZ could be of reduced value for some species. Ground disturbance, fugitive dust generated by project activities, noise, lighting, vegetation clearing, spread of invasive species, accidental spills, harassment, and ephemeral wash loss could impact wildlife within the SEZ. Indirect: Outside the SEZ, impacts could occur from habitat loss or modification related to groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills. Cumulative: Cumulative effects from all future development in the region on some species could be moderate, depending on the type, number, and location of other developments in the region. Data Gaps: Impacts on terrestrial wildlife from construction noise would have to be considered on a project-specific basis.	Development will avoid any wetlands identified during site-specific fieldwork. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	The fencing around the solar energy development should not block the free movement of mammals, particularly big game species. Appropriate engineering controls will be implemented to minimize the amount of contaminants and sediment entering wetlands and washes within the SEZ. See programmatic design features.	Yes

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Migratory Birds Section 8.1.11.2	Direct: Loss of habitat and connectivity (linkages) for several species. Noise, lighting, and vegetation clearing could impact migratory birds using the SEZ. Birds could water birds be attracted to solar fields (because they look like water) and collide with solar panels. Burning of wings in the solar radiation field between heliostats and power towers has been observed; the level of impacts at the population level is unknown. There may also be night sky impacts. Priority migratory bird species that may occur on or near the SEZ include Gila woodpecker, gilded flicker, and LeConte's thrasher.[7] Indirect: Outside the SEZ, impacts could occur from habitat loss. Cumulative: Impacts to migratory birds could occur; depending on the type, number, and location of other developments in the region. Data Gaps: Impacts on migratory birds from construction noise would have to be considered on a project-specific basis.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	See programmatic design features.	Yes

[7] Priority migratory bird species for the SEZ were determined based on the distribution of Arizona Natural Heritage Program tracked species and USFWS Birds of Conservation Concern in the Arizona Habimap tool (http://www.habimap.org/).

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Ecology: Plant Special Status Species Section 8.3.12	Direct: Ground disturbance, land clearing and grading, and fugitive dust generated by project activities would result in loss of special status plant species habitat, if present, and might result in loss of individual plants. No Endangered Species Act (ESA)-listed or BLM-listed plant species have been identified that have suitable habitat within the SEZ. Indirect: Indirect impacts to individuals and habitat outside of the SEZ could occur from groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills. Suitable habitat for two BLM-sensitive plant species has been identified on or near the SEZ. However, indirect impacts on these species would be small, with less than 1 percent of these species habitat in the SEZ region lost. Cumulative: There could be cumulative impacts on some special status plant species due to habitat destruction and overall development and fragmentation of the area. Data Gaps: Pre-disturbance surveys are required to identify the presence and abundance of special status species.	Based on data from pre-disturbance surveys, disturbance to occupied habitats would be avoided to the extent practicable. Desert playa, wash habitats, sand dunes and transport systems, woodlands, rocky cliffs, and outcrops will be avoided to the extent practicable. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	If avoidance is not possible for some species, translocation of individuals from areas of direct effects or compensatory mitigation may be employed. See programmatic design features.	No

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Ecology: Animal Special Status Species Section 8.3.12	Direct: Ground disturbance, land clearing and grading, and fugitive dust generated by project activities would result in loss of special status animal species habitat, if present, and might result in loss of individual animals. Development on the SEZ could directly disturb individuals or habitat for two candidate species for listing under the Endangered Species Act (ESA) (i.e., the **Sonoran population of desert tortoise**[8] and the Tucson shovel-nosed snake), and seven BLM sensitive special status animal species. No Category 1, 2, or 3 desert tortoise habitat has been identified within the SEZ; however, Category 2 desert tortoise habitat occurs outside the SEZ adjacent to the southern border. Although no Category 1, 2, or 3 desert tortoise habitat occurs on the SEZ, desert tortoises may still occur in lower quality habitat on the SEZ where they may be directly impacted by solar development. Indirect: Indirect impacts to individuals and animal habitat outside of the SEZ could occur due to groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills. Suitable habitat for 3 ESA-listed or candidate species (**southwestern willow flycatcher**, **Western yellow-billed cuckoo**, and **Yuma clapper rail**) and 4 BLM-sensitive animal species occurs on or near the SEZ. For non-groundwater dependent species impacts would be small, with less than 1% of these species habitat in the SEZ region lost. For nine groundwater dependent species, impacts could range from small to large depending on groundwater use for development. Cumulative: There could be cumulative impacts on some special status animal species due to habitat destruction and overall development and fragmentation of the area. Data Gaps: Pre-disturbance surveys are required to identify the presence and abundance of special status species.	To comply with the Bald & Golden Eagle Protection Act, Eagle Take Guidance would be followed. Based on data from pre-disturbance surveys, disturbance to occupied habitats would be avoided to the extent practicable. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf	If avoidance is not possible for some species, translocation of individuals from areas of direct effects or compensatory mitigation may be employed. Consultation with the U.S. Fish & Wildlife Service will be conducted to address the potential for impacts on the Sonoran bald eagle, southwestern willow flycatcher, Yuma clapper rail, Sonoran desert tortoise, Tucson shovel-nosed snake, and western yellow-billed cuckoo. Groundwater withdrawals will be avoided or minimized to reduce or eliminate impacts on nine special status species. See programmatic design features.	Yes

[8]Species in bold text have been recorded or have designated critical habitat within 5 miles (8 km) of the SEZ.

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Environmental Justice Section 8.3.20	Direct: There is a minority population within a 50-mile (80 km) radius of the SEZ, so any adverse impacts of solar projects could affect this population. There are no low-income populations within a 50-mile radius of the SEZ. Positive impacts are possible if solar facility-related employment increases. Indirect: None identified. Cumulative: Contributions from solar development in the SEZ would likely be small and would not be expected to significantly contribute to cumulative impacts on minority populations within the 50-mile geographic extent of effects.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Environmental_Justice.pdf	See programmatic design features.	No

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Hydrology Surface Water Section 8.3.9	Direct: Land clearing, land leveling, vegetation removal, and spills and runoff associated with development of the SEZ have the potential to increase surface runoff, reduce infiltration/recharge, cause loss of ephemeral stream networks, cause a reduction in evapotranspiration rates, increase sediment transport (by water), change sediment transport (by wind), and degrade water quality. No perennial surface water features have been identified within the SEZ. The SEZ is located on sloping land containing more than 29 miles (46 km) of intermittent/ephemeral wash tributaries to Centennial Wash (a tributary to the Gila River). Three intermittent/ephemeral channels within the Gillespie SEZ were classified as having high sensitivity to land disturbance, and a significant quantity of intermittent/ephemeral channels within the SEZ were classified as having moderate sensitivity to land disturbance. Based on an evaluation of data in the Sonoran Desert REA, ephemeral drainages with high potential for water erosion occur on the SEZ. Indirect: Indirect impacts from development and groundwater use on ephemeral and perennial surface water features could occur. Cumulative: Alterations to ephemeral stream networks can alter groundwater recharge and surface runoff processes potentially impacting the basin-scale water balance and water quality aspects of water features receiving surface runoff.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Water.pdf	See programmatic design features.	Maybe

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Hydrology Water Quality and Groundwater Availability Section 8.3.9	Direct: Groundwater withdrawals for development may cause declines in groundwater elevations that can impact water availability for surface water features, vegetation, ecological habitats, regional groundwater flow paths, and other groundwater users in the basin. A riverine wetland is located just inside the southeast corner of the SEZ. The Gillespie SEZ is in the Lower Hassayampa groundwater basin, where the primary aquifer is composed of basin-fill alluvium deposits. Indirect: Groundwater withdrawals for solar energy facilities have the potential to affect other groundwater users in the basin. Cumulative: Cumulative impacts on groundwater could occur depending on the type, number, and location of other developments in the region.	Groundwater analyses suggest that full build-out of wet-cooled technologies is not feasible. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Water.pdf	For mixed-technology development scenarios, any proposed wet--cooled projects should utilize water conservation practices. See programmatic design features.	Maybe ((if projects use groundwater)

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Lands & Realty Section 8.3.2	Direct: Full development of Gillespie SEZ would disturb 2,618 acres (11 km^2). A Right Of Way (ROW) for the existing Agua Caliente Road (29 acres [0.1km^2] of the SEZ) would be protected as a requirement of any solar development proposal. The road cuts the SEZ area into smaller portions and provides public access through the site. To avoid these issues, relocation of the road may be considered as part of a site development plan. It may be possible to modify the existing unused railroad ROW that overlaps the SEZ to allow for development. Indirect: Impacts due to altering uses on public, state, and private lands in the vicinity of the SEZ. Examples could include conversion of land in and around local communities from open space or other uses to provide services and housing for employees who move to the region in support of solar energy development. Increased traffic and increased access to previously remote areas also could change the overall character of the landscape. Cumulative: Cumulative impacts on land use could occur through impacts on land access and use for other purposes, on groundwater availability, and on visual resources, particularly if additional solar development occurred in the region. However, projects within the SEZ would make only a small contribution to cumulative impacts because of its relatively small size.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Lands_and_Realty.pdf	Priority consideration should be given to using the existing Agua Caliente Road to provide construction and operations access to the SEZ. Any potential impacts on the existing county road should be discussed with the county. See programmatic design features.	No

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Livestock Grazing Section 8.3.4.1	Direct: The SEZ includes small portions of four grazing allotments. The percentage of three of the four allotments that intersect the proposed SEZ is less than 1.5 percent of each allotment. Impacts on the three allotments would be small. Potential impacts on the fourth ephemeral allotment could not be determined at the time of the Final Solar PEIS. Indirect: None identified. Cumulative: Other development in the area of the SEZ could result in cumulative impacts on grazing. However, the contribution of such effects from projects within the SEZ would be minimal due to the small area affected.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Rangeland_Resources.pdf	See programmatic design features.	Maybe
Military & Civilian Aviation Section 8.3.6	Direct: There is one military training route (MTR) above the SEZ; the MTR has a 300-foot (91-m) above-ground-level operating limit. The military says that the construction of solar or related facilities in excess of 250 feet (76 m) tall could interfere with military training activities and be a safety concern. Buckeye and Gila Bend Municipal Airports are 15 miles (42 km) northeast and 20 miles (32 km) south-southeast, respectively. Neither has regularly scheduled passenger or freight service. Indirect: None identified. Cumulative: Solar development occurring throughout the region, which is largely undeveloped, could result in small cumulative effects on the system of MTRs. Such effects would be limited by mitigations developed in consultation with the military.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Military_Civilian_Aviation.pdf	Coordination with Federal Aviation Administration and the military will be required on a project–specific basis to ensure that solar facilities do not interfere with operations. See programmatic design features.	Maybe (with respect to MTRs)

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Minerals Section 8.3.8 and Section 8.3.24 of the Final Solar PEIS	Direct: There is one placer mining claim in the very northwestern portion of the SEZ, about 260 acres (1 km^2) in size. No solar development would be possible within this area without the claimant's agreement or unless the claim is ruled to be invalid. The SEZ has been withdrawn from receiving new mining claims for a period of 20 years, precluding impacts from many types of mining activities. Indirect: None identified. Cumulative: The specific locations of mining claims will be identified during project-specific analyses.	The existing mining claim is a prior existing right and, if valid, likely would preclude development of the portion of the SEZ in which the claim is located. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Mineral_Resources.pdf	See programmatic design features.	No

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Native American Concerns Section 8.3.18	Direct: Tribes are likely to have major concerns about the impact of development on water resources. Culturally significant sites and landscapes in the vicinity of the SEZ are associated with the Gila River corridor, rock art, burials, and sacred mountains, as well as traditional plant and animal resources. Indirect: General habitat loss with vegetation clearing and water reduction that could affect species and ecosystem health. Cumulative: Development of solar energy facilities in combination with the development of other planned and foreseeable projects in the area would likely reduce the traditionally important plant and animal resources available to the tribes. Although some of these plant species are abundant, any level of impact may be of concern for the tribes. Data Gaps: Government-to-government consultation will be required to determine issues of Native American concern.	Known human burial sites and rock art (panels of petroglyphs and/or pictographs) will be avoided. Where there is a reasonable probability of discovering unanticipated human remains and associated cultural items (as defined under the Native American Graves Protection and Repatriation Act) during construction of a solar project, the BLM will carry out discussions with Indian tribes before the project is authorized. The purpose will be to get general guidance on the treatment of cultural items that might be exposed. Visual intrusion on sacred sites will be avoided to the extent practicable. Springs and other water sources that are or may be sacred or culturally important will be avoided to the extent practicable. Culturally important plant and wildlife species will be avoided to the extent possible. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Native_American_Concerns.pdf	See programmatic design features.	Yes

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Paleontological Section 8.3.16	Direct: The SEZ is in an area classified as Potential Fossil Yield Classification (PFYC) Class 3b. It has a low to undetermined potential for paleontological resources. Indirect: None identified. Cumulative: Cumulative impacts would be dependent on whether significant resources are found within the SEZ and in additional project areas in the region. Data Gaps: Potential for impacts is relatively unknown. A more detailed assessment of the geological deposits of the SEZ is needed to determine whether a paleontological survey is warranted.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Paleo.pdf	The BLM will be notified immediately upon discovery of fossils. Work will be halted at the fossil site and continued elsewhere until qualified personnel, such as a paleontologist, can visit the site. That expert will, determine the significance of the find, and make site-specific recommendations for collection or other resource protection, if warranted. See programmatic design features.	No

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Public Access and Recreation Section 8.3.5	Direct: Development may impact recreational activities that occur within the SEZ boundary and surrounding specially designated areas or the Saddle Mountain Special Recreation Management Area (SRMA). Access routes to the south could be impacted adversely affecting access to areas south of the SEZ. It is anticipated that some users of portions of the nearby wilderness areas may choose to move their activities farther away from solar energy facilities. Indirect: Indirect effects would occur primarily on lands near the solar facilities and would result from the change in the overall character of undeveloped BLM-administered lands to an industrialized, developed area. People seeking more rural or primitive surroundings for recreation may go elsewhere. Changes in character of surrounding undeveloped lands to an industrialized character can result in impacts to the visual landscape, impacts on vegetation, and displacement of wildlife species resulting in reduction in recreational opportunities and/or degraded recreational experience. Lands that are outside the SEZ may be acquired or managed for mitigation of impacts on other resources. Managing these lands for mitigation could further exclude or restrict recreational use, potentially leading to additional losses in recreational opportunities. Cumulative: Multiple developments could reduce recreational opportunities in the vicinity of the SEZ. Data Gaps: Potential impacts on visitor use in the SRMA are unknown.	Because of the potential for solar development to sever current access routes from the county road within the SEZ, legal access to the areas to the south should be maintained consistent with existing land use plans. See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Public_Access_and_Recreation.pdf	See programmatic design features.	Maybe

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Socio-economics Section 8.3.19	Direct: Impacts to local economy as a result of expenditures of wages and salaries and the collection of state sales and income taxes. From 92 to 1,218 direct construction jobs and 5 to 91 direct operations jobs could be created (least for PV; most for parabolic trough facilities). Adverse impacts could occur due to the need for procurement of goods and services required for project construction and operation (e.g., police, firefighters, schools). Indirect: From 196 to 2,600 indirect construction jobs and 1 to 59 indirect operations jobs could be created. Impacts from project wages and salaries, and tax revenues subsequently circulating through the economy would be positive. Cumulative: Impacts overall would be positive, through the creation of additional jobs and income. The negative impacts, including some short-term disruption of rural community quality of life, are expected to be small.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Socioeconomics.pdf	See programmatic design features.	No

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Soils/Erosion Section 8.3.7	Direct: Impacts on soil resources would occur mainly as a result of ground-disturbing activities (e.g., grading, excavating, and drilling), especially during construction. These include soil compaction, soil horizon mixing, soil erosion and deposition by wind, soil erosion by water and surface runoff, sedimentation, and soil contamination. Soils within the SEZ are extremely gravelly sandy loams and very gravelly sandy loams typical of alluvial fan (and fan terrace) settings, likely to be impacted through compaction and erosion. Soil contamination from spills could occur. Based on an evaluation of data in the Sonoran Desert REA, the majority of the soils on the SEZ have high potential for wind erosion. Therefore, increased wind erosion is likely if grading is needed. Indirect: Disturbance of soil can lead to introduction of invasive species. Cumulative: Cumulative impacts would occur from the disturbance of several renewable energy projects, connecting linear facilities, and other projects in the vicinity of the SEZ, but would be limited through application of design features.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Soil_Geologic_Hazards.pdf	See programmatic design features.	Yes

Resource/Issue	Impacts[1]	On-site Mitigation[2]		Unavoidable Impacts[3]?
		Avoidance	Minimization	
Specially Designated Areas and Lands with Wilderness Characteristics Section 10.3.3	Direct: Specially designated areas (SDAs) within 25 miles (40 km) of the SEZ could be visually impacted by solar development. Moderate to strong visual contrasts could be experienced in the Signal Mountains and Woolsey Peak Wilderness Areas (WAs). There are no undesignated areas with wilderness characteristics near the SEZ. Indirect: Minimal visual impacts are anticipated at Sonoran Desert National Monument, Juan Bautista de Anza National Historic Trail, Big Horn Mountains, Eagletail Mountains, Hummingbird Springs, North Maricopa Mountains, Signal Mountains, and South Maricopa Mountains, and Woolsey Peak WAs. However, indirect impacts on the SDAs could include impacts on night sky viewing, reduced recreation use, fragmentation of biologically linked areas, and loss of public access. Cumulative: Increased development and visual clutter in general in the surrounding areas, reduced local and regional visibility due to construction-related air particulates, light pollution, road traffic, and impacts on wildlife and plants may result in cumulative effects on SDAs.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/SDAs_and_LWC.pdf	See programmatic design features.	Yes
Transportation Section 8.3.21	Direct: Development will add traffic to existing roads serving the area. The volume of traffic on Old U.S. 80 could represent an increase in traffic of about 200 percent during construction. Local roads would also be impacted. Indirect: None identified. Cumulative: Cumulative impacts to traffic could occur with multiple developments in the region.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Transportation.pdf	Local roads such as Old U.S. 80 would require improvements to accommodate additional traffic. See programmatic design features.	No

Resource/Issue	Impacts[1]	On-site Mitigation[2]		Unavoidable Impacts[3]?
		Avoidance	Minimization	
Visual Resources Section 8.3.14	Direct: Development will adversely affect visual resources. The Visual Resource Inventory (VRI) values for the SEZ and immediate surroundings are VRI Class III, indicating moderate visual values. Development will adversely impact visual resources and may impact night skies. The Solar PEIS identified moderate to strong visual contrasts for some viewpoints within the Signal Mountain WA, Woolsey Peak WA, and the Saddle Mountain SRMA, as well as within the community of Arlington. Westbound travelers on Agua Caliente Road, a BLM-proposed backcountry byway and a scenic, high-use travel corridor with a high degree of public interest would already be subject to large to very large visual contrasts from solar facilities within the SEZ as they approached Agua Caliente Road from Old U.S. 80. Solar development within the viewshed would result in modification of the landscape and may be visible from areas of higher scenic quality. Indirect: None Identified. Cumulative: If several projects become visible from one location, or in succession as viewers move through the landscape (such as driving on local roads), these cumulative impacts may make the area less visually appealing.	See programmatic design features at http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Visual.pdf	See programmatic design features.	Yes
Wild Horses and Burros Section 8.3.4.2	Because the Gillespie SEZ is 47 miles (76 km) or more from any wild horse and burro Herd Management Areas managed by the BLM and more than 50 miles (80 km) from any wild horse and burro territory administered by the U.S. Forest Service, solar energy development within the SEZ would not directly or indirectly affect wild horses and burros that are managed by these agencies.	Not applicable	Not applicable	No