

DRAFT FOR COMMENT: Dry Lake Valley North Solar Energy Zone: Resources, Impacts, & On-site Mitigation

Dry Lake Valley North SEZ: In Lincoln County, NV, Ely District Office – 25,069 developable acres; 3,657 wetland and dry lake non-development acres; up to 2,228 to 4,011 MW generation capacity
 Draft and Final Solar PEIS for the SEZ are available at: <http://blmsolar.anl.gov/sez/nv/dry-lake-valley-north/>

Resource / Issue	Impacts ¹	On-site Mitigation ²		Unavoidable Impacts? ²	Regional Mitigation Warranted?
		Avoidance	Minimization		
Acoustics Section 11.4.15 ³	<p>Direct: There would be increased noise levels during construction and operations. Estimated noise levels at the nearest residences do not exceed EPA's guideline level. Noise levels at the Chief Mountains Special Recreation Management Area could exceed EPA's guideline level during both construction and operations, depending on the solar technologies used.</p> <p>Noise and associated overpressures created by authorized supersonic flight above and near the SEZ could adversely affect solar technology and/or infrastructure.</p> <p>Indirect: None identified.</p> <p>Cumulative⁴: Since proposed projects and nearest residents are relatively far from the SEZ and the area is sparsely populated, cumulative noise effects during the construction or operation of solar facilities are unlikely.</p> <p>Data Gaps⁵: Impacts on terrestrial wildlife from construction noise would have to be considered on a project-specific basis.</p>	<p>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.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Noise.pdf)</p>	<p>Limit the hours of daily activities, construct noise barriers if needed and practicable, and coordinate with nearby residents.</p> <p>Noise dampeners may be attached to equipment to minimize the amount of noise emitted.</p> <p>See programmatic design features.</p>	Maybe	No

¹ The impacts assessment assumed 80% 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, and/or best management practices. In general only SEZ-specific DFs and SEZ-specific application of programmatic DFs are presented in this table.

² Unavoidable impacts are those that cannot be adequately mitigated on-site by avoidance and/or minimization. Preliminary assessments are provided for comment.

³ Section numbers are the same in both the Draft and Final Solar PEIS.

⁴ Sections 11.4.22.4 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.

⁵ 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.

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Air Quality Section 11.4.13	<p>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. Specifically, predicted 24-hour and annual PM₁₀ concentrations at the SEZ boundary and in the immediate surrounding areas could exceed AAQS during construction of solar facilities, but would decrease quickly with distance. The Prevention of Significant Deterioration increment at Zion National Park in Utah (the nearest Class I area) would not be exceeded. (Note – although Great Basin National Park is closer to the SEZ, it is not classified as a Class I area).</p> <p>Generation of fugitive dust may result in exposure to respirable particulates and/or microbes (human health impacts)</p> <p>Wind speeds higher than 80 mph can occur in the Dry Lake Valley (particularly in spring), and could increase dust.</p> <p>Positive impact: Solar power generation reduces demand for energy from fossil fuels, and thereby reduces greenhouse gas and other emissions.</p> <p>Indirect: None identified.</p> <p>Cumulative: Emissions from solar facilities are low and are not expected to contribute to local or regional air pollution problems. Over the long term and across the region, the development of solar energy may have beneficial impacts on air quality in the region.</p> <p>Data Gaps: Monitoring for PM during construction and operations will be required to identify levels exceeding AAQS.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Air_Quality_Climate.pdf)</p>	<p>Dust suppression measures will be implemented during construction and operations.</p> <p>Implementation of certain technologies (e.g. use of elevated solar structures and low emission vehicles, placing gravel on roads, use of “drive and crush” installation) that minimize the amount of grading and surface disturbance would also reduce dust emissions and PM levels.</p> <p>Revegetation of the SEZ with native vegetation will increase soil stability and reduce the amount of dust.</p> <p>Vortex generators may be needed to disturb the airflow to protect solar structures from strong valley winds.</p> <p>See programmatic design features.</p>	<p>Maybe (if large area of site is graded)</p>	<p>No, unless monitoring identifies high PM levels.</p>

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Cultural Section 11.4.17	<p>Direct: There is potential for impacts on historic properties. Impacts are possible in areas related to the access road improvement. There are four sites located in the SEZ that are known to be eligible for listing in the NRHP.</p> <p>Indirect: Indirect impacts from erosion are possible for prehistoric sites in the dry lake, alluvial fan, and dune non-development areas in the southern portion of the SEZ 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).</p> <p>Cumulative: None expected, but would be dependent on whether any eligible sites are found and impacted in the SEZ .and adjacent areas.</p> <p>Data Gaps: Pre-development cultural inventory and evaluation will be completed, as part of the Section 106 consultation process.</p>	<p>Significant resources clustered in specific areas which retain sufficient integrity will be avoided.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Cultural.pdf)</p>	<p>The existing access road that connects the SEZ to U.S. 93 should be upgraded instead of constructing a new access road to reduce ground disturbances and the potential for impacts on cultural resources.</p> <p>A Memorandum of Agreement will be developed and executed if eligible sites are discovered within the SEZ to determine how the eligible properties will be treated (avoided or mitigated to minimize impacts).</p> <p>See programmatic design features.</p>	Maybe	Not at this time. However, if significant resource values are discovered during pre-development surveys, implementing required protection measures as established in the MOA may result in regional mitigation measures.

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<p>Ecology: Vegetation and Riparian Areas; Invasive and Noxious Weeds Section 11.4.10</p>	<p>Direct: Development will adversely affect plant communities due to the removal of vegetation (e.g., greasewood flats). Development will result in moderate impacts to the following land types which comprise the majority of the SEZ: Inter-Mountain Basin Mixed Salt Desert Scrub and Inter-Mountain Basin Semi-Desert Grassland. Sensitive habitats on the SEZ include desert dry washes, wetland, and playa. Development, including vegetation removal, land clearing, grading, dust deposition, and lowered groundwater levels, may alter soils and vegetation communities and result in the establishment of invasive species and noxious weeds within the SEZ. Surface disturbances could lead to impacts upstream and downstream of intermittent/ephemeral streams that flow through the SEZ and could have an impact on the critical functions of groundwater recharge, sediment transport, flood conveyance, and ecological habitat in the vicinity of the SEZ.</p> <p>Indirect: Loss of native vegetation due to deposition of fugitive dust, groundwater withdrawal, increased surface water runoff and related erosion, and the introduction of invasive species. Establishment of noxious weeds in the SEZ may result in spread of weeds to adjacent areas. Indirect impacts on habitats associated with the playa, wetlands, or dry washes, including Coyote Wash, within or near the SEZ could occur. Indirect impacts from groundwater use on plant communities in the region that depend on groundwater could also occur.</p> <p>Cumulative: Solar energy development could be a contributor to cumulative impacts on some vegetation communities. Cumulative impacts from establishment of weeds could occur with multiple developments in the region.</p> <p>Data Gaps: Potential impacts on springs will be determined through hydrologic studies.</p>	<p>Dry washes, playas, and wetlands within the SEZ, and dry washes within the access road corridor, will be avoided to the extent practicable. A buffer area will be maintained around wetlands, playas, and dry washes to reduce the potential for impacts.</p> <p>Avoid travel through weed-infested areas; inspect and clean vehicles and equipment to avoid spread of weeds; limit ground disturbance, avoid creating soil conditions that promote weed germination and establishment, dispose of seed and plant parts.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf)</p>	<p>Groundwater withdrawals will be limited to reduce the potential for indirect impacts on groundwater-dependent communities and habitats dependent on springs associated with the Dry Lake Valley basin, Delamar Valley Basin, or other hydrologically connected basins.</p> <p>Appropriate engineering controls will be implemented to minimize impacts on dry wash, playa, marsh, scrub-shrub wetland, riparian, and greasewood flat habitats, including occurrences downstream of solar projects or assumed access road, 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.</p> <p>Implementation of certain technologies (e.g., use of elevated solar structures, use of "drive and crush" installation) that minimize the amount of grading and surface disturbance, and increase clearance between ground level and solar infrastructure, would better enable native vegetation growth.</p> <p>Revegetation of the SEZ with native seeds would minimize impacts to native plant community composition.</p> <p>See programmatic design features.</p>	<p>Yes to vegetation. No unavoidable impacts anticipated to riparian areas.</p>	<p>Yes for vegetation, depending on the implementation of onsite minimization measures and BMPs. Native vegetation communities are basic components to the ecosystem; the loss of these communities to solar development in the SEZ would be unavoidable. However, the amount of regional mitigation required could vary based on the implementation of onsite minimization measures and BMPs chosen by the developer in addition to required programmatic design features.</p> <p>Human development in the ecoregion is expected to increase by 7.7% by 2025 and is expected to contribute to the decline in native vegetation communities.</p> <p>Riparian areas and invasive species will not individually require regional mitigation. Mitigation measures that conserve intact ecosystems will also mitigate the loss of riparian systems and impacts from invasive species.</p>
		4			

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<p>Ecology: Wildlife and Aquatic Biota Section 11.4.11</p>	<p>Direct: Loss of habitat and connectivity (linkages) for several species of reptiles, mammals, birds, and invertebrates. Specifically, need to consider possible loss of connectivity for desert bighorn sheep (occupied habitat exists to west of SEZ; unoccupied habitat to east of SEZ). Ground disturbance, fugitive dust generated by project activities, noise, lighting, vegetation clearing, spread of invasive species, accidental spills, harassment, and ephemeral stream loss could impact wildlife within the SEZ.</p> <p>There may be loss of mule deer winter habitat in the SEZ; a small portion of mapped crucial winter range habitat occurs within the SEZ. There may also be a loss of pronghorn antelope habitat in the SEZ.</p> <p>Indirect: Outside the SEZ, impacts could occur from habitat loss or modification related to groundwater depletions, surface runoff, dust, noise, lighting, or accidental spills.</p> <p>Cumulative: Cumulative impacts would be small because the wildlife species present within the SEZ that could be affected by other actions have extensive available habitat within the region.</p>	<p>Development will avoid any additional wetlands identified during site-specific fieldwork.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf)</p>	<p>Appropriate engineering controls will be implemented to minimize the amount of contaminants and sediment entering Coyote Wash and the unnamed washes and dry lakes within the SEZ.</p> <p>Fencing on the SEZ should be removed to the extent possible. Fencing that remains near and around the solar energy development should not block the free movement of mammals, particularly big game species.</p> <p>Implementation of certain technologies (such as elevated solar structure installation and increased spacing between solar equipment) that increase clearance between ground level and solar infrastructure, will better enable native vegetation growth. Such technologies may minimize impacts to understory habitats and allow wildlife movement corridors to remain on the SEZ. In addition, implementation of technologies that minimize the amount of reflective surfaces, or alter how the surfaces are perceived by wildlife, will reduce the "lake effect" in attracting migratory birds and other wildlife.</p> <p>See programmatic design features.</p>	Yes	<p>Yes, depending on the implementation of onsite minimization measures and BMPs. The impact to vegetation and habitat on the SEZ from solar development would be unavoidable. However, the amount of regional mitigation required could vary based on the implementation of onsite minimization measures and BMPs chosen by the developer in addition to required programmatic design features.</p> <p>Human development in the ecoregion is expected to increase by 7.7% by 2025 and is expected to contribute to the decline in wildlife habitat.</p>

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<p>Ecology: Plant Special Status Species Section 11.4.12</p>	<p>Direct: Ground disturbance, land clearing and grading, fugitive dust generated by project activities, and the spread of invasive species would result in loss of special status plant species habitat and might result in loss of individual plants. No Endangered Species Act (ESA)-listed plant species have been identified with suitable habitat within the SEZ. However, several BLM-sensitive species may be directly affected, including the Blaine fishhook cactus, Great Basin fishhook cactus Eastwood milkweed³, and Needle Mountains milkvetch.</p> <p>Indirect: Indirect impacts to individuals and habitat outside of the SEZ could occur due to depletions of groundwater resources, surface water and sediment runoff from disturbed areas, fugitive dust generated by project activities, accidental spills, harassment, and lighting. Potentially suitable habitat for 3 BLM-sensitive plant species has been identified within the SEZ affected area (i.e., area within 5 mi [8 km] of the SEZ). No Endangered Species Act (ESA)-listed plant species have been identified with suitable habitat within the SEZ affected area.</p> <p>Cumulative: There could be cumulative impacts on some special status plant species due to habitat destruction and overall development and fragmentation of the area, but the likelihood is relatively low.</p> <p>Data Gaps: Pre-disturbance surveys are required to identify the presence and abundance of special status species.</p>	<p>Pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats (including playa on the SEZ that is habitat for Blaine fishhook cactus, Eastwood milkweed, and Needle Mountains milkvetch) will be used to reduce or eliminate impacts.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Ecological_Resources.pdf)</p>	<p>Seed collection and banking may reduce impacts by maintaining genetic diversity and opportunities for reestablishment in alternate habitats.</p> <p>If avoidance of Joshua trees, other Yucca species, and cactus species within the SEZ is not possible, individual plants should be salvaged in coordination with the BLM Caliente field office to the extent possible.</p> <p>Implementation of certain technologies (such as elevated solar structure installation) that minimize the amount of grading and surface disturbance, and increase clearance between ground level and solar infrastructure, will better enable native vegetation growth and minimize impacts to special status plant species.</p> <p>If avoidance is not possible for some species, translocation of individuals from areas of direct effects or compensatory mitigation may be employed.</p> <p>See programmatic design features.</p>	<p>Yes</p>	<p>Yes. Vegetation is a basic component of the ecosystem. The loss of habitat for special status plant species from solar development is expected to be unavoidable. The loss of individual plants is possible. Special status plant species are expected to continue to decline in the ecoregion due to human development and other change agents.</p> <p>The need for regional mitigation could vary based on the implementation of onsite minimization measures and BMPs chosen by the developer in addition to required programmatic design features.</p>

³ Species in bold text have been recorded or have designated critical habitat within 5-mi (8 km) of the SEZ.

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<p>Ecology: Animal Special Status Species Section 11.4.12</p>	<p>Direct: Ground disturbance, land clearing and grading, fugitive dust generated by project activities, and the spread of invasive species would result in loss of special status animal species habitat, if present, and might result in loss of individual animals. No habitat for Endangered Species Act (ESA)-listed species is known to occur within the SEZ. However, up to 23 BLM-sensitive species may be directly affected, including Brewer's sparrow, golden eagle, loggerhead shrike, prairie falcon, western burrowing owl, California myotis, Desert Valley kangaroo mouse, and Pahranaagat Valley montane vole.</p> <p>Indirect: Indirect impacts to individuals and animal habitat outside of the SEZ could occur due to depletions of groundwater resources, surface water and sediment runoff from disturbed areas, fugitive dust generated by project activities, accidental spills, harassment, and lighting.</p> <p>Cumulative: There could be cumulative impacts on some special status animal species due to habitat destruction and overall development and fragmentation of the area, but the likelihood is relatively low.</p> <p>Data Gaps: Pre-disturbance surveys are required to identify the presence and abundance of special status species.</p>	<p>Pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats (including playa on the SEZ that is potential habitat for western snowy plover, Desert Valley kangaroo mouse, and Pahranaagat Valley montane vole) will be used to reduce or eliminate impacts.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/ocs/peis/programmatic-design-features/Ecological_Resources.pdf)</p>	<p>Consultation with the USFWS shall be conducted to address the potential for impacts on the golden eagle under the Bald and Golden Eagle Protection Act. Consultation will identify an appropriate survey protocol, avoidance and minimization measures, and, if appropriate, reasonable and prudent alternatives, reasonable and prudent measures, and terms and conditions for incidental take statements.</p> <p>Implementation of certain technologies (such as elevated solar structure installation) that minimize the amount of grading and surface disturbance, and increase clearance between ground level and solar infrastructure, will better enable native vegetation growth. Such technologies may minimize impacts to understory habitats and allow wildlife movement corridors to remain on the SEZ. In addition, implementation of technologies that minimize the amount of reflective surfaces, or alter how the surfaces are perceived by wildlife, will reduce the "lake effect" in attracting special status wildlife species.</p> <p>If avoidance is not possible for some species, translocation of individuals from areas of direct effects or compensatory mitigation may be employed.</p> <p>See programmatic design features.</p>	<p>Yes</p>	<p>Yes. Special status species, along with other wildlife, represent a basic component of the ecosystem. The loss of habitat for special status species from solar development is expected to be unavoidable. The loss of individuals is possible. Special status animal species are expected to continue to decline in the ecoregion due to human development and other change agents.</p> <p>The need for regional mitigation could vary based on the implementation of onsite minimization measures and BMPs chosen by the developer in addition to required programmatic design features.</p>

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Environmental Justice Section 11.4.20	<p>Direct: There are minority and low income individuals within a 50-mile (80-km) radius of the SEZ; 18.5% of the population is classified as minority, while 9.9% is classified as low-income. However, the number of minority individuals and low-income households does not exceed 50% and does not exceed the state average by 20% or more, thus no minority or low-income populations were identified in the aggregate 50-mi radius in the Solar PEIS. However, a low-income population was identified in one census block group in Iron County Utah. Further evaluation of adverse impacts of solar development in the SEZ will be needed to determine whether this Census Block could experience disproportionate adverse impacts.</p> <p>Indirect: None identified.</p> <p>Cumulative: Contributions from solar development in the SEZ would likely be small and would not be expected to significantly contribute to cumulative impacts on low-income populations within the 50-mi geographic extent of effects.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Environmental_Justice.pdf)</p>	<p>See programmatic design features.</p>	<p>Maybe</p>	<p>No</p>
Hydrology Surface Water Section 11.4.9	<p>Direct: Land clearing, land leveling, vegetation removal, and spills and runoff associated with development of the SEZ have the potential to affect drainage patterns, 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.</p> <p>Eighty-one percent of the intermittent/ephemeral stream channels were classified as having moderate sensitivity to land disturbance; these sensitive channels were concentrated in the northeastern portion of the SEZ. No stream channels were classified as having high sensitivity to land disturbance.</p> <p>Indirect: Indirect impacts from development and groundwater use on ephemeral and perennial surface water features could occur. Disturbance to intermittent/ephemeral stream channels within the SEZ could have an impact on the critical functions of groundwater recharge, sediment transport, flood conveyance, and ecological habitat in the vicinity of the SEZ.</p> <p>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.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Water.pdf)</p>	<p>Implementation of certain technologies (such as elevated solar structure installation) that minimize the amount of grading and surface disturbance will minimize impacts to natural drainage patterns.</p> <p>See programmatic design features.</p>	<p>Yes</p>	<p>Yes, depending on the implementation of onsite minimization measures and BMPs in addition to required programmatic design features. Hydrology is a basic component of the ecosystem. Reconfiguration of topography for solar development would have an unavoidable impact to surface hydrology. The distribution of unaltered ephemeral stream channels in the ecoregion is declining.</p>

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Hydrology Water/ Quality and Groundwater Availability Section 11.4.9	<p>Direct: Groundwater withdrawals for solar energy development could result in groundwater drawdown in the vicinity of the SEZ. Alteration at the surface could impact groundwater recharge. The availability of groundwater and the impacts of groundwater withdrawal would need to be assessed at the project level.</p> <p>Indirect: Groundwater withdrawals for solar energy facilities have the potential to affect other groundwater users in the basin.</p> <p>Cumulative: Cumulative impacts of climate change could result in increased evapotranspiration and less recharge in the Dry Lake Valley; impacts on groundwater could occur when combined with other future developments in the region.</p> <p>Water rights are managed and determined by the State Engineer.</p>	<p>Groundwater analyses suggest that full build-out of dry-cooled and wet cooled technologies is not feasible.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Water.pdf)</p>	<p>For mixed-technology development scenarios, any proposed dry- or wet-cooled projects should utilize water conservation practices.</p> <p>See programmatic design features.</p>	<p>Maybe (depending on compensation requirements)</p>	<p>Not at this time. It is possible for impacts to groundwater aquifers to be avoided or minimized. However, if project-specific impacts are identified, additional regional mitigation measures may be implemented.</p>
Lands & Realty Section 11.4.2	<p>Direct: Development of the SEZ could disturb up to 25,069 acres (102 km²). There are existing ROWs for one transmission corridor, one Section 368 designated energy corridor, the pending Southern Nevada Water Authority pipeline ROW, and a short segment of road ROW. An additional land withdrawal for the Yucca Mountain Railroad ROW will expire in 2015.</p> <p>Existing roads that cross or enter the SEZ could be closed or relocated if solar development occurs.</p> <p>Indirect: Impacts from excluding many existing and potential uses of the land on public, state, and private lands in the vicinity of the SEZ.</p> <p>Cumulative: Cumulative impacts due to changing land use could occur with multiple developments in the region.</p>	<p>Where proposed development intersects existing designated energy corridors, the BLM will review and approve individual project plans of development to ensure compatible development that maintains the use of the corridor.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Lands_and_Realty.pdf)</p>	<p>Priority consideration shall be given to utilizing existing county roads to provide construction and operational access to the SEZ.</p> <p>See programmatic design features.</p>	<p>No</p>	<p>No</p>

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Livestock Grazing Section 11.4.4.1	<p>Direct: The SEZ includes a portion of one grazing allotment, the Ely Springs Cattle allotment, which supports production of 2,761 animal unit months (AUMs) of forage per year. The grazing permit for this allotment is transferable. County would lose tax revenues. BLM would also lose some revenue.</p> <p>Indirect: Removal of current fencing and loss of access to water supplies due to solar development could impact grazing. Loss of existing range improvements could increase costs to the permittee.</p> <p>Cumulative: Multiple projects in the region, including potential future solar and wind projects, could result in cumulative impacts on grazing allotments, particularly if current fencing were removed. Wind facilities generally have a low impact on grazing.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Rangeland_Resources.pdf)</p>	<p>Within the cattle allotment, solar development could be sited to minimize the number of pastures affected, and existing range improvements (e.g., fencing) could be relocated in coordination with the grazing permittee.</p> <p>See programmatic design features.</p>	Yes	No.
Military & Civilian Aviation Section 11.4.6	<p>Direct: Portions of the SEZ are covered by two military training routes with 200-ft (61-m) above ground level operating limits and a major special use airspace. The area is completely included within the airspace use boundary of the Nellis Testing and Training Range (NTTR), which conducts anti-missile defense exercises over SEZ airspace. Supersonic speeds are authorized at and above 500 AGL (1,524 m) in the NTTR in this area; there is a potential for supersonic flights to damage solar installation equipment. A NTTR patriot site occurs within the SEZ.</p> <p>Solar development could result in adverse impacts on military training and testing missions. Light from solar energy facilities could affect nighttime military operations.</p> <p>Indirect: None identified.</p> <p>Cumulative: Additional solar and particularly wind facilities northeast of the SEZ could present cumulative impacts for military aviation, depending on the eventual location of such facilities with respect to training routes.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Military_Civilian_Aviation.pdf)</p>	<p>Coordination with the military will be required on a project-specific basis to ensure that solar facilities do not interfere with operations</p> <p>See programmatic design features.</p>	Yes	No. Coordination with the military and possible height restrictions will address most impacts.

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Minerals Section 11.4.8	<p>The SEZ contains two existing oil and gas leases that are classified as nonproducing, but there are no existing mining claims or geothermal leases within the SEZ. The SEZ has been withdrawn from receiving new mining claims for a period of 20 years, precluding impacts from many types of mining activities.</p> <p>Indirect: None identified.</p> <p>Cumulative: None identified.</p> <p>Data Gaps: The specific locations of mining claims will be identified during project-specific analyses</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Mineral_Resources.pdf)</p>	<p>See programmatic design features.</p>	No	No
Native American Concerns Section 11.4.18	<p>Direct: It is likely that some plants traditionally important to Native Americans will be destroyed and that habitat of traditionally important animals will be lost if grading of the project area is required for development.</p> <p>Indirect: Development within the SEZ could result in visual impacts on Dry Lake Valley from surrounding elevated areas and mountain tops and may affect the spiritual connection that the Southern Paiute and Western Shoshone tribes have to water as well as the quantity of water naturally stored in underground aquifers.</p> <p>Cumulative: Although SEZ development would result in loss of habitat for some culturally-important species, these species have extensive habitat in the area, which reduces the cumulative effect. However, tribes are concerned over the adverse effects of energy projects on a wide range of resources in the area, including water.</p> <p>Data Gaps: Government-to-government consultation will be required to determine issues of Native American concern.</p>	<p>Known human burial sites and rock art (panels of petroglyphs and/or pictographs) will be avoided. Where there is a reasonable probability of encountering undetected human remains and associated funerary objects by a solar project, the BLM will carry out discussions with Indian tribes before the project is authorized, in order to provide general guidance on the treatment of any cultural items that might be exposed.</p> <p>Visual intrusion on sacred sites will be avoided to the extent practicable.</p> <p>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 be extent practicable.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Native_American_Concerns.pdf)</p>	<p>The Duckwater Shoshone Tribe signed the Programmatic Agreement produced as part of the Solar PEIS project. Coordination with the Duckwater Shoshone will continue through the Mitigation project.</p> <p>See programmatic design features.</p>	Maybe	<p>Unknown at this time. Consultation on project applications will determine whether regional mitigation for Native American Concerns is warranted.</p>

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Paleontological Section 11.4.16	<p>Direct: Few, if any, impacts on significant paleontological resources are likely to occur in the SEZ.</p> <p>Indirect: None identified.</p> <p>Cumulative: Cumulative impacts would be dependent on whether significant resources are found within the SEZ and in additional project areas in the region.</p> <p>Data Gaps: A more detailed look at the geological deposits of the SEZ is needed to determine whether a paleontological survey is warranted.</p>	<p>If surveys find that geological formations with potential for significant paleontological resources are present, they would be avoided to the extent possible.</p> <p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Paleo.pdf)</p>	<p>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, determine the significance of the find, and, if significant, make site specific recommendations for collection or other resource protection.</p> <p>See programmatic design features.</p>	No	No
Public Access and Recreation Section 11.4.5	<p>Direct: If east–west travel across the SEZ were prevented by solar energy development, a detour around the site would be required. Solar development within the SEZ would affect public access along OHV routes designated open and available for public use. The SEZ and surrounding area are also used for hunting</p> <p>The Silver State Off-Highway Vehicle (OHV) Trail is located from 3 to 6 miles from the western, eastern, and southern boundaries of the SEZ, and development in the SEZ would be visible from over 40 miles of the trail. Special recreation permits are issued for several OHV and motorcycle events on the trail each year. Portions of the SEZ itself are used for these events. The events result in substantially elevated dust levels. Solar development would have an undetermined level of impact on these events and other uses of the trail in the area; these events could also impact solar facility operations.</p> <p>Indirect: Indirect effects on recreation use 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, displacing people who are seeking more rural or primitive surroundings for recreation. Changes 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.</p> <p>Cumulative: Multiple developments could cumulatively reduce recreational opportunities in the vicinity of the SEZ.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Public_Access_and_Recreation.pdf)</p>	<p>Because of the length of the SEZ and the potential for solar development severing current east–west travel, legal vehicular access through the area should be maintained.</p> <p>See programmatic design features.</p>	Yes	Maybe. Impacts to the Silver State Trail may be unavoidable and may require regional mitigation.

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Socioeconomics Section 4.11.19	<p>Direct: Positive impacts to local economy as a result of expenditures of wages and salaries and the collection of state sales and income taxes. From 263 to 3,488 direct construction jobs and from 44 to 874 direct operations jobs could be created (low end of range corresponds to PV facilities and high end to parabolic trough facilities). Adverse impacts could occur due to the need for procurement of goods and services for new workers in the area during project construction and operation (e.g., housing, police, fire-fighters, schools for services to new area workers).</p> <p>Indirect: From 194 to 2,560 indirect construction jobs and from 15 to 473 indirect operations jobs could be created. Positive impacts associated with project wages and salaries and tax revenues subsequently circulating through the economy.</p> <p>Construction and operation could adversely affect existing grazing allotments and/or recreational events in the area, resulting in the loss of jobs and income.</p> <p>Cumulative: Cumulative impacts from the presence of a large numbers of construction workers could place a short-term strain on local resources. Cumulative impacts during operations would be positive through the creation of additional jobs and income; negative impacts during operations would not be expected to be large.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Socioeconomics.pdf)</p>	<p>See programmatic design features.</p>	<p>Maybe</p>	<p>No</p>
Soils/Erosion Section 11.4.7	<p>Direct: Soils in the SEZ likely to be impacted as a result of ground-disturbing activities, especially during the construction phase. Impacts 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 predominantly a mix of sandy loams, silt loams, loamy sands, and loams; the Saltydog–Ambush–Panacker and Koyen–Geer associations make up about 46% of the soil coverage. Some soils in the SEZ, primarily near to the dry lake, are not suitable for roads because of a severe rutting hazard.</p> <p>Indirect: None identified.</p> <p>Cumulative: Solar energy development could contribute to cumulative impacts on soil from foreseeable development in the region.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Soil_Geologic_Hazards.pdf)</p>	<p>Implementation of certain technologies (such as elevated solar structures and use of “drive and crush” installation) that minimize the amount of grading and surface disturbance will minimize disturbance to soils.</p> <p>Revegetation of the SEZ with native vegetation will increase soil stability and reduce the amount of dust.</p> <p>See programmatic design features.</p>	<p>Yes</p>	<p>Yes. Soils represent a basic component to the ecosystem. Solar development on the SEZ is expected to result in an unavoidable loss of sensitive soils and soil functions.</p> <p>The need for regional mitigation could vary based on the implementation of onsite minimization measures and BMPs chosen by the developer in addition to required programmatic design features.</p>

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<p>Specially Designated Areas and Lands with Wilderness Characteristics Section 11.4.3</p>	<p>Direct: There are 14 specially designated areas (SDAs) within 25 miles (40 km) of the SEZ. The developed SEZ may also be visible from areas further than 25 miles (40 km) from the SEZ (e.g., Mount Grafton). The Visual Resource Inventory report for the SEZ states that some of these areas have a high level of public interest (for example, the Chief Mountains Special Recreation Management Area (SRMA) less than 1 mile from the southern SEZ boundary.</p> <p>Visual impacts to areas beyond 25 miles (e.g., Grafton Wilderness Area, Far South Egan Wilderness Area) are possible, but likely to be small based on visualizations included in the Solar PEIS.</p> <p>A recently maintained inventory of wilderness characteristics of public lands within the SEZ found that these lands do not contain wilderness characteristics.</p> <p>Indirect: Solar development in the SEZ could result in moderate to strong visual contrasts in the Big Rocks Wilderness Area, Chief Mountains SRMA, and the Weepah Springs Wilderness Area, and along some portions of the Silver State Off-Highway Vehicle trail and U.S 93 Scenic Highway.</p> <p>Cumulative: Currently proposed solar and wind projects lie far enough away from the SEZ that sensitive areas would not likely be cumulatively affected by facilities within the geographic extent of effects. However, facilities and associated roads and transmission lines would add to the visual clutter of the area.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/SDAs_and_LWC.pdf)</p>	<p>See programmatic design features.</p>	<p>Yes</p>	<p>Maybe, if project-specific analysis reveals that visual and other impacts to SDAs are large and of regional importance. For visual impacts, consideration of visual resources should be included as a part of the site selection criteria for mitigating other resources that warrant regional mitigation.</p>

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Transportation Section 11.4.21	<p>Direct: Development will add traffic to existing roads serving the area. During construction, the volume of traffic on U.S. 93 could represent an increase in traffic of about a factor of 2 or 4, maximum, in the area of the SEZ. Because higher traffic volumes would be experienced during shift changes, traffic on U.S. 93 could experience moderate slow down during these time periods in the general area of the SEZ. Local road improvements would be needed on U.S. 93 near any site access point(s). State Route 318 could also be impacted if an access road were constructed from it to the SEZ, but the Solar PEIS stated that this is not recommended due to potential ecological and other impacts.</p> <p>Solar development within the SEZ would affect public access along OHV routes designated open and available for public use.</p> <p>Indirect: None identified.</p> <p>Cumulative: Cumulative impacts to traffic could occur with multiple developments in the region.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Transportation.pdf).</p>	<p>Local road improvements, multiple site access locations, staggered work schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads leading to the site.</p> <p>See programmatic design features.</p>	<p>Yes (for OHV use)</p>	<p>Maybe. Similar to public access and recreation impacts, impacts to transportation associated with OHV use of the SEZ and the Silver State Trail may be unavoidable and may require regional mitigation.</p>
Visual Resources Section 11.4.14	<p>Direct: The Visual Resource Inventory (VRI) class for the SEZ is VRI Class III, indicating moderate scenic quality for the SEZ and its immediate surroundings. Solar development will involve major modification of the existing character of the landscape, and likely will dominate the views from most locations within the SEZ. Development will adversely impact visual resources and may impact night skies. The Solar PEIS identified moderate to strong visual contrasts due to solar development in the SEZ for the Big Rocks and Weepah Springs Wilderness Areas, U.S. 93 Scenic Highway, Silver State OHV trail, and Chief Mountain SRMA.</p> <p>Indirect: Solar development within the viewshed would result in modification of the landscape and would be visible from the adjoining areas.</p> <p>Cumulative: If several projects become visible from one location or in succession as viewers move through the landscape (such as driving on local roads), the resulting visual disharmony could exceed the visual absorption capability of the landscape and add significantly to the cumulative visual impact. Since only potential wind developments to the northeast of the SEZ have been identified, small cumulative visual impacts are expected within the geographic extent of effects from solar, wind, and other existing and future developments.</p>	<p>See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Visual.pdf)</p>	<p>See programmatic design features.</p>	<p>Yes</p>	<p>Yes. For visual impacts, consideration of visual resources should be included as a part of the site selection criteria for mitigating other resources that warrant regional mitigation (e.g., protection and/or restoration of ecosystem intactness will slow the regional decline in visual resource quality.)</p>

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Wild Horses and Burros Section 11.4.4.2	<p>Direct: A small portion (0.02 percent) of an HMA would be in the area of direct impact for the SEZ, resulting in a small potential impact on the wild horse population within the HMA. Wild horses outside of the HMA may be displaced.</p> <p>Indirect: None identified.</p> <p>Cumulative: The effects of multiple projects, including pending solar and wind applications in the region would not likely result in cumulative impacts on wild horses because of the small number and distance of the proposed facilities from the SEZ and the generally low impact of wind facilities on wild horses.</p>	See programmatic design features (http://blmsolar.anl.gov/documents/docs/peis/programmatic-design-features/Wild_Horses_Burros.pdf)	Installation or preservation of fencing and access control, provision for movement corridors, delineation of open range, traffic management, compensatory habitat restoration, and access to or development of water sources will be coordinated with the BLM. See programmatic design features.	Maybe	No