

Afton Solar Energy Zone – Draft Summary Table: Impacts That May Warrant Regional Compensatory Mitigation¹

Afton Solar Energy Zone Resource/ Issue	Residual or Unavoidable Impact?	How certain is it that the residual impacts will occur?	How significant are the residual impacts onsite?	How significant are the residual impacts of developing the Afton SEZ in the region?	Role in the ecosystem?	Other Considerations	Are potential residual impacts likely to warrant regional mitigation?
Cultural	Maybe, depending on survey ² results, including visual assessments for El Camino Real de Tierra Adentro National Historic Trail (El Camino Real NHT) and the Butterfield Trail (under study for NHT designation) to ensure that the project would not be visible to these properties. See discussion under Special Designations and Visual Resource.	Low; based on an informal visual assessment of the El Camino and Butterfield Trails, and the anticipated types, density and sensitivity of archaeological sites that could be found during class III inventory	Unknown until surveys are completed	Unknown	Human Element	Section 106 of NHPA will be followed to resolve adverse effects to historic properties that would be impacted by solar development. National Historic Trails (and trails under study) are handled under NEPA and NHPA (Section 106).	No
Ecology: Vegetation	Yes. Development would result in direct removal or disturbance of these native plant communities, special soil environments, and the ecosystem services they provide.	Very High	Very. Expect the loss of all vegetation in the developed areas, though mitigation may result in some remaining vegetation.	Somewhat. Existing vegetation on the SEZ has already been degraded and departed from historic conditions due to human activities such as grazing.	Basic Component	Natural regeneration of native vegetation is slow in the Chihuahua Desert, and the effects of seeding or other reclamation efforts are variable and poorly understood.	Yes

¹ Only resources for which residual impacts may occur (“yes” or “maybe”) are included in this table. Resources/Issues with no residual impacts: Acoustics, Air Quality, Climate Change, Hydrology, Lands & Realty, Military and Civilian Aviation, Minerals, and Paleontology, Wild Horses and Burros.

² In this instance, the term survey is used to generally describe activities needed to determine if adverse effects on cultural resources may occur if a project is developed within the SEZ. This would include cultural inventories and visual analyses for identifying if significant segments of El Camino Real or the Butterfield Trail, or NRHP-eligible or -listed properties with an important visual setting would be impacted by solar development.

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Ecology: Xero-riparian Areas	Maybe. Depends on the degree of avoidance and engineering controls. Development may alter ephemeral stream channels that can alter natural water flow; impacting groundwater recharge, ecological habitats, and riparian vegetation communities.	Low- Impacts to be avoided.	Low- Impacts to be avoided onsite.	Low	Basic Component	Many impacts to riparian areas can be mitigated onsite by avoiding development in riparian areas and by the installation of engineering controls on surface water runoff/erosion.	No
Ecology: Invasive & Noxious Weeds	Maybe. Onsite mitigation will reduce, but not eliminate, the potential for invasive species. The degree of disturbance creates a significant opportunity for the establishment of invasive species and weeds, which may then spread off-site.	Moderate	Moderate	Low. Assumes that the development is completed in compliance with the terms and conditions of the weed monitoring and reporting requirements established at the time the lease is issued.	Change agent - invasives	Impact assessments are contingent upon a weed plan being fully implemented as part of on-site mitigation which, to be successful, will require an intensive commitment from developers to monitor, report to the BLM, & control weeds & invasive species. Relevant policy includes E.O. 13112, the Federal Noxious Weed Act of 1974, and the New Mexico Noxious Weed Management Act of 1998.	No. If weed plan is rigorously implemented, no residual impacts warranting regional mitigation.

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Ecology: Terrestrial Wildlife & Aquatic Biota	Yes. Development of the Afton SEZ will likely impact up to 29,964 acres of wildlife habitat. Level of site grading and disturbance to native vegetation would be the primary driver of residual impact to functional habitat for full build-out of SEZ. In addition, loss of range improvements resulting from solar development would also adversely affect wildlife.	Very High	Very High	Somewhat. There is the marginal impact of losing habitat in the region and a potential for impacts to certain migration or movement corridors.	Basic Component	Site design may need to include movement corridors.	Yes
Ecology: Migratory Birds	Yes. Some level of bird injury/fatality has been observed for all types of solar facilities (through collisions with equipment or from burns). Research is ongoing to quantify impacts and identify effective mitigation measures.	Very High	Very High	Somewhat. There is the marginal potential of losing nesting and foraging habitat for migratory birds on the SEZ. Migratory birds are also losing habitat throughout the region. ^{3,4}	Basic Component (along with other wildlife).	Important to review current research. Compliance with the Migratory Bird Treaty Act.	Yes
Ecology: Plant Special Status Species (SSS)	Maybe, if surveys reveal sand prickly-pear or other special status species on the SEZ and occupied habitat cannot be avoided.	Unknown. Until a pre-disturbance survey is completed, the impacts are effectively unknown.	Unknown. Until a pre-disturbance survey is completed, the impacts are effectively unknown.	Unknown. Until a pre-disturbance survey is completed, the impacts are effectively unknown.	Basic Component (along with other vegetation)	Refer to BLM Manual 6840 manual and avoid based on the pre-disturbance survey.	No. As long as the appropriate guidance is followed.

³ Langham GM, Schuetz JG, Distler T, Soykan CU, Wilsey C. (2015) Conservation Status of North American Birds in the Face of Future Climate Change. PLoS ONE 10(9): e0135350.

⁴ Schuetz et al., Making Spatial Prioritizations Robust to Climate Change Uncertainties: A Case Study with North American Birds, Ecological Applications, 2015: [esajournals.org]

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Ecology: Animal Special Status Species (SSS)	Yes. Level of site grading and disturbance to native vegetation would be the primary driver of residual impact to functional habitat for full build out of the SEZ.	Low. SEZ has a relatively low potential for the occurrence of Special Status Species.	Low. SEZ has a relatively low potential for the occurrence of Special Status Species.	Low	Basic Component (along with other wildlife).	Compliance with Endangered Species Act and 6840 manual.	No
Environmental Justice	Yes, relative to livestock grazing.	Somewhat	Low	Low	Human Element	IM No. 2013-142 states that regional mitigation for loss of AUMs is not required.	No, but reimbursement for loss of range improvement will be addressed in project-specific NEPA.
Livestock Grazing	Yes. Reductions to allotments are expected. Also, there is potential for loss of permittee-funded range improvements.	Somewhat	Low	Low	Change agent – human development	IM No. 2013-142 states that regional mitigation for loss of AUMs is not required.	No, but reimbursement for loss of range improvement will be addressed in project-specific NEPA.
Public Access & Recreation	Maybe. Development may impact hunting permits on state lands in and near the SEZ.	High	High to Moderate. There are a number of roads within the SEZ (all in relative close proximity to Las Cruces).	Low	Human element	There are a number of suitable (similar) recreation opportunities in close proximity to the SEZ.	No
Socioeconomics	Maybe, relative to livestock grazing. For grazing, impacts would depend on mitigation measures implemented on the basis of project-specific NEPA.	Somewhat	Low	Low	Human element		No

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Soils	Maybe. Solar development on the SEZ is expected to result in a loss of soil functions. Onsite design features and engineering controls would be developed to control surface water runoff and erosion from the project site.	High- Loss of soil function, such as soil structure and microbes would be impacted negatively for the long-term.	High. Soil structure would be significantly degraded once the site was prepared for development (e.g., grading and vegetation removal)	Low. Soil productivity in the SEZ is currently low.	Basic component	Following state and local regulations would minimize offsite impacts.	No.
Special Designations	Yes, for some Special Designations, pending further assessment of visual impacts. Additionally, residual impacts will be evaluated during project level NEPA based on locations of development within the SEZ and project features. There could be minor residual visual impacts to the Butterfield Trail (under study for NHT designation) and the El Camino Real NHT. See discussion under Visual Resources.	High. Some Special Designations will be subject to residual visual impacts from solar development in the SEZ. The specific Special Designations that will be subject to residual impacts is highly dependent on the solar technologies deployed. Residual impacts from solar power tower facilities would affect substantially more Special Designations. There will also be residual impacts to night sky quality in these areas from artificial lighting impacts from solar facilities.	High. For certain Special Designations, significant residual impacts will result from high levels of visual contrast that will occur because solar development within a large portion of the SEZ will occupy a large portion of the field of view. Significance is highly dependent on the solar technologies deployed, with significantly greater residual impacts expected from solar power tower facilities.	Residual impacts to certain individual Special Designations may be significant at the regional level, but much more so if power tower facilities are constructed and operated in the SEZ. Residual impacts to night sky quality from artificial lighting impacts from solar facilities are unlikely to be regionally significant (assuming strict lighting controls for mitigation of night skies impacts).	Human element.		Yes.

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Transportation	Maybe, depending on project-specific location. Need to preserve access for recreation, grazing, and mining.	Low. Development will avoid existing roads. These existing roads (principally county roads) will be used for ingress and egress to the area effectively as they are now.	Low	Low	Change agent – human development	Through a combination of avoidance, design features, and the establishment of alternative access routes to these areas, most impacts will be short-term and can be adequately mitigated onsite.	No
Tribal Concerns	Maybe.	Unknown	Unknown	Unknown	Human element	Government-to-Government consultation on project applications will determine whether regional mitigation for Tribal Concerns is warranted.	Maybe.

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Visual	<p>Yes. While onsite mitigation and technology restrictions would reduce visual contrasts caused by solar facilities within the SEZ, these would not likely reduce impacts to less than moderate or strong levels for nearby viewers. Potential residual impacts on individual visually sensitive areas (VSAs) will be identified through VSA analysis. Additionally, residual impacts will be evaluated during project level NEPA based on locations of development within the SEZ and project features.</p> <p>There could be minor residual visual impacts to the Butterfield Trail (under study for NHT designation) and the El Camino Real NHT.</p>	High. Some VSAs with high levels of visitation and high visual sensitivity will experience high levels of visual contrast from solar development in the SEZ. The specific VSAs that will be subject to residual impacts is highly dependent on the solar technologies deployed. Residual impacts from solar power tower facilities will affect substantially more VSAs. Residual impacts will also occur due to loss of visual quality within the SEZ itself. There will also be residual impacts to night sky quality from artificial lighting impacts from solar facilities.	High. For certain VSAs, significant residual impacts will result from high levels of visual contrast that will occur because solar development within a large portion of the SEZ will occupy a large portion of the field of view at relatively short distances. Significance is highly dependent on the solar technologies deployed, with significantly greater residual impacts expected from solar power tower facilities. Residual impacts from loss of visual quality within the SEZ itself will also be significant.	Residual impacts to certain individual VSAs are likely to be significant at the regional level, but much more so if power tower facilities are constructed and operated in the SEZ. Residual impacts due to loss of visual quality within the SEZ itself, and residual impacts to night sky quality from artificial lighting impacts from solar facilities are unlikely to be regionally significant (assuming strict lighting controls for mitigation of night skies impacts).	Human element.		Yes.