4.3 Cultural Resources

For the programmatic-level approach, various sources were searched to gather information regarding the types and number of cultural resources in the Plan Area. Sources included the National Register of Historic Places (NRHP), the online California Historical Resources, the CDCA Plan, the Bishop Resource Management Plan (RMP), the Bakersfield RMP, the Eastern San Diego County RMP, Imperial Sand Dunes Recreation Area Management Plan, WEMO RMP, NEMO RMP, WECO RMP, and the NECO RMP. The online California Historical Resources includes California Historical Landmarks, California Points of Historical Interest, California Register of Historical Resources, and the NRHP by county (http://ohp.parks.ca.gov/listedresources/). The BLM GIS 2004 Legacy data was also examined. This data was compiled through 2004 for the CDCA area and includes cultural resources on BLM, NPS, and private lands. Within the Plan Area, there have been numerous surveys and/or investigations, and there are approximately 25,534 cultural resources. Additional cultural resources would be identified as portions of the Plan Area are surveyed on a project-by-project basis pursuant to 36 CFR 800. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, buildings, places, or objects and locations of traditional cultural or religious importance to specified social and/or culture groups. Cultural resources include the entire spectrum of objects and places, from artifacts to cultural landscapes. The latter are referred to as traditional cultural properties (TCP). TCPs derive their significance from the role the property plays in the community's beliefs, customs, and practices of a living community that have been passed down through the generations. Both historic and prehistoric cultural resources are present, representing a wide range of resource types throughout the Plan Area. .

4.3.1 Typical Impacts from Renewable Energy Development

This document is intended to provide a programmatic analysis of impacts on cultural resources associated with the implementation of the DRECP. Subsequent renewable energy and transmission projects covered by the DRECP would continue to require project-specific environmental review of site-specific impacts to cultural resources as part of the approval process. Therefore, impact analysis to cultural resources was based on typical impacts from renewable energy developments. The cultural resources GIS layer from the BLM 2004 Legacy data and the locations of the DFAs were used in the analysis. Because the DFAs only identify where future projects can be built and the exact locations of the projects within the DFA footprints are unknown, the analysis is based on a worst-case scenario, and provides a general description of common impacts on cultural resources from solar, wind, and geothermal projects. The impact analysis is based on calculations of acres needed to achieve the proposed total MWs for the combined technologies within each egoregion under each alternative. For example, 58,966 acres are needed to construct various facilities of the

different technologies to produce 3,749 MW of alternative energy. The 58,966 acres would be dispersed among DFAs identified by this document.

Impacts to cultural resources can be described as those actions that result in:

- Physical destruction, damage or alteration to all or part of the significant cultural resource;
- Isolation of the cultural resource or alteration of the character of the resource's setting when that character contributes to the resource's qualifications for the NRHP; or
- Introduction of visual, audible, or atmospheric elements that are out of character with the resource or changes that may alter its setting.

While impacts to cultural resources would be determined on a project-specific basis, certain activities associated with alternative energy development have a greater potential for adversely affecting cultural resources than others. Earthmoving activities (e.g., grading and digging) have the highest potential for disturbing or destroying cultural resources; however, pedestrian and vehicular traffic and indirect impacts of earthmoving activities, such as soil erosion, may also have an effect. Visual impacts on cultural resources may also occur.

Development for solar, wind, and geothermal projects share many of the same types of impacts. Pre-construction activities, site construction, operation and maintenance, and decommissioning for the three energy-type projects have potential to impact cultural resources. Pre-construction and site construction activities have the greatest potential to impact cultural resources because of the increased ground disturbance during this phase. Fewer impacts to cultural resources would occur from the operation and maintenance of alternative energy developments. Site decommissioning, reclamation, and abandonment would have the least amount of impacts if ground disturbance was confined to the originally disturbed during construction. If additional work areas were needed beyond those disturbed during construction, there would be the potential for new impacts similar to those that would occur during construction. Visual impacts on cultural resources would be mostly removed after decommissioning, as long as the site was restored to its preconstruction state. However, despite the physical removal of equipment and facilities, the impact of a scarred environment in an area sacred to Native Americans would remain. If access roads were left in place, the potential for looting and vandalism would also remain and might even increase, since the area would no longer be periodically monitored by an operator.

Impacts on cultural resources could result in several ways, including, but not limited to, the following.

- Complete destruction of cultural resources could result from the clearing, grading, and excavation of a project-specific area and from construction of facilities and associated infrastructure, including access roads, spur roads, transmission lines, temporary staging and construction areas, and temporary access routes. These activities might also impact areas of interest to Native Americans, such as sacred areas or areas used for harvesting traditional resources.
- Degradation and/or destruction of cultural resources could result from the alteration of topography, alteration of hydrologic patterns, removal of soils, erosion of soils, runoff into and sedimentation of adjacent areas, and oil or other contaminant spills if sites are located on or near a project specific area. Such degradation could occur both within the project footprint and in areas downslope or downstream. Additionally, erosion can also destabilize historic structures. Agents of erosion and sedimentation include wind, water, downslope movements, and both human and wildlife activities. Contaminants could affect the ability to conduct an analysis of material present at a cultural resource and thus the ability to interpret resource's components.
- Increases in human access and subsequent disturbance of cultural resources could result from the establishment of corridors or facilities in otherwise intact and inaccessible areas. Increased human access exposes cultural resources to a greater probability of impact from a variety of stressors. These impacts include off-highway vehicle (OHV) tracks, looting, unauthorized collection of artifacts, vandalism, trampling, and inadvertent destruction of unrecognized resources.
- Visual degradation of settings associated with cultural resources could result from the presence of an alternative energy development and associated land disturbances and ancillary facilities. Large areas of exposed ground surface, increases in dust, and the presence of large-scale machinery, equipment, and vehicles could contribute to an adverse impact on cultural resources. This could affect significant cultural resources for which visual integrity is a component of the resource's significance, such as sacred sites and landscapes, historic structures, trails, and historic landscapes.
- Cumulative impacts should be considered within individual ecoregions and between ecoregions where there are multiple projects. Cumulative impacts should also be considered where more than one type of energy generation is being considered in close proximity to each other or when clustered on landscapes.

In sum, all energy type projects involve ground disturbing activities such as vegetation clearing, boring, grading, and trenching. These activities are direct impacts because they could destroy or compromise the integrity of a significant cultural resource. Direct impacts include construction of solar panels, wind turbines, geothermal production and injection wells, well field pipelines, access roads, spur roads, staging and laydown yards, switchyards, substations, meteorological stations, auxiliary facilities, storage, revegetation activities, transmission gen-ties, drainage and flood control structures, and utility services. Loss of visual integrity of setting for cultural landscapes, sacred sites, trails, and historic structures is another direct impact. Indirect impacts include increased opportunity for looting, vandalism, and trampling; increased off-road vehicular activity; and increased effects from soil erosion by washing away artifacts and affecting the integrity of the cultural resource.

Some of the above activities may be defined as temporary versus permanent impacts, particularly if areas are restored to native habitats. There is no distinction between permanent and temporary impacts to cultural resources. Both types of impacts can adversely affect cultural resources, and are therefore treated equally. Cultural resources are nonrenewable and, once damaged or destroyed, are not recoverable.

4.3.1.1 Solar

The different solar energy technologies could result in impacts to cultural resources. Solar alternative energy can be provided by two technologies: concentrating solar power (CSP) or thermoelectric and photovoltaic (PV) or solar electric. CSP technologies can use three different solar collectors including parabolic trough and compact linear Fresnel reflector, solar power tower, or solar dish engine. PV technologies can use flat-plate PV or concentrating PV. Both types of technologies require large solar fields where solar collectors capture the sun's energy. The parabolic trough and power tower collectors use mirrors and focus energy into a heat transfer fluid and then transfer it to a power block with steam-powered turbines that produce electricity. Each individual component of dish engines and PV systems generate electricity and do not require a power block. Substations and transmission lines would connect to existing transmission grid.

Different technologies for solar energy development can result in different visual impacts based on facility height differences. For cultural resources where integrity of setting is an important aspect of the resource's significance, such as a historic trail, whether a resource is adversely affected can depend on what type of facility is constructed (see Chapter IV.19).

Differences in water requirements (i.e., water use and discharge) among the technologies are not likely to be a factor in determining levels of impact of surface runoff and possible

effects on cultural resources. However, depending on the source of water for solar technologies using cooling towers or steam generators, drawdown of surface water levels could increase the potential for erosion in some localities and inadvertently expose cultural resources present along stream banks or lakeshores. Changes in water levels could result in changes to native vegetation, which could affect traditional gathering locations or TCPs. Land subsidence as a result of withdrawing ground water could also impact cultural resources. These issues would be addressed at the site-specific level of analysis.

4.3.1.2 Wind

Impacts to cultural resources from wind energy development could occur during all construction phases.

During initial pre-construction activities, impacts include geotechnical borings, installation of temporary meteorological stations, and access roads and staging area for each of these.

The construction of the wind turbines and infrastructure necessary for wind energy development has the greatest potential to impact cultural resources because of the increased ground disturbance during this phase. The amount of area disturbed could be considerable. An indirect effect of this ground disturbance would be soil erosion, which could also impact cultural resources outside the construction footprint.

4.3.1.3 Geothermal

Impacts specific to geothermal development are discussed in this section.

The exploration phase includes surveying and drilling temperature gradient wells. Surveying activities would impact cultural resources if additional roads were required.During site construction, drill pads would be graded for production and injection wells. The drilling operations phase would require roads to accommodate larger equipment and access to the wells. If there are hot springs of cultural significance near the geothermal wells, the temperature and water level of the hot springs may affected by the drilling operations.

Ground disturbance would result from the construction of a power plant to convert the steam to energy or from the transmission line towers. Pipelines from the wells to geothermal power generating plants would be needed for each well or set of wells. If the pipelines are constructed above-ground on steel supports, they could result in a visual impact to cultural resources. Pipelines also have the potential to impact cultural resources because they require trenching if they are underground or excavations of steel supports if they are aboveground. As

wells are depleted over time, new replacement wells may need to be drilled to supply enough geothermal fluid and sufficient temperature to maintain the power capacity.

4.3.2 Methodology for Analysis

Analysis of impacts to cultural resources for each alternative is based on the description of Covered Activities on federal and non-federal lands and the overall conservation strategy within the Plan Area. Covered Activities are those actions associated with renewable energy development that would be permitted within DFAs. Transmission development may also occur outside the DFAs, but would be subject to permitting and management conditions set by the Plan. Development and operation would be permitted under the DRECP. This analysis would apply to those projects on non-BLM lands.

Analysis for those projects on BLM managed lands is examined under the BLM LUPA component. Under the BLM LUPA component of each alternative, the BLM would designate ACECs to address the special management needs for natural and cultural resources. Under the LUPA, ACECs, NLCS designations, and Wildlife Designations would be designated as Desert Conservation Lands (DCL). In addition to proposed DCL designations, the BLM has identified criteria for cultural resources protection and management on BLM lands in the DRECP boundaries. See Appendix E for details.

Individual ACECs also have specific management rules contained in existing ACEC management plans and take precedent of over the general criteria. The designation of additional ACECs with DCL lands would protect cultural resources from future development.

Because this is a programmatic document, it analyzes typical impacts and does not evaluate site-specific impacts associated with particular projects. Whether an individual project would have an impact on cultural resources would depend on the project's location. Two tables are presented for the impact analysis for each alternative. Both tables build their impact analysis around the number of cultural resources taken from the BLM 2004 legacy data within each of the 10 ecoregions. The BLM 2004 legacy data was the best available data based on the BLM directed approach to impact analysis at the time of this writing. This data is a work in progress. The first table for each alternative analyzes the number of cultural resources in DFAs, DFA development footprints, and proposed Conservation Planning Area lands. A separate table analyzes the BLM LUPA component and looks at the number of cultural resources on both DCL and non-DCL lands. The number represents the minimum number of previously recorded cultural resources within the each type of land use area. Although the dataset used in the analysis is currently incomplete because the DFAs have not been completely surveyed, the number of resources would likely change when actual

projects are put through the environmental process and project-specific record searches and DFA footprint surveys are completed.

4.3.3 Impacts by Alternative

4.3.3.1 Alternative 1

Table 4.3-1a demonstrates that there are 1,695 cultural resources within the DFAs of Alternative 1 and 229 cultural resources within DFA development footprints (including solar, wind, geothermal, and ROWs). The Western Mojave and Eastern Slopes ecoregion has the greatest number of cultural resources that could be impacted based on the BLM legacy data of previously recorded cultural resources. There are less than 25 cultural resources in DFAs in four ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, Piute Valley and Sacramento Mountains, and Providence and Buillion Mountains. With adoption of Alternative 1, it is estimated that approximately 50% of cultural resources would occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may be impacted within designated transmission corridors.

4.3.3.1.1 BLM LUPA Elements

Under Alternative 1, Table 4.3-1b lists the number of previously recorded cultural resources by egoregion located in DCLs and non-DCLs. Under Alternative 1, 5,777 cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which is discussed in Appendix E. There are 17,368 cultural resources on non-DCLs lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

Under Alternative 1, renewable energy development in the variance lands identified in the Final Solar PEIS would be permitted under the conditions indicated in Section 2.2.2.3 of the PEIS. Table 4.3-1b shows that 72 cultural resources occur within the variance lands. The BLM would consider ROW applications for utility-scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate federal, state, and local agencies and tribes; and public outreach. The responsibility for demonstrating to the BLM and other coordinating parties that a proposal in a variance area would avoid, minimize, and/or mitigate, as necessary, sensitive resources would rest with the applicant. The applicant is also expected to demonstrate that the proposed project is compatible with state and local plans and is capable of acquiring all required permits and authorities to implement the project.

The proposed variance areas and associated variance process would only apply to utility-scale solar development capable of generating 20 MW or greater of electricity. All non-utility-scale solar energy projects, including distributed generation, would follow existing management prescriptions in BLM land use plans and be subject to individual site-specific NEPA analyses. Utility-scale solar development projects in variance lands would not receive incidental take permitting under the DRECP.

4.3.3.2 Alternative 2

Under Alternative 2, Table 4.3-2a demonstrates that there are 2,478 cultural resources within the DFAs of Alternative 2 and 279 cultural resources within the DFA development footprints (including solar, wind, geothermal, and ROWs). The Western Mojave and Eastern Slopes ecoregion has the greatest number of cultural resources that could be impacted based on the BLM legacy data of previously recorded cultural resources. There are less than 25 cultural resources in DFAs in four ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, Piute Valley and Sacramento Mountains, and Providence and Buillion Mountains. With Alternative 2, it is estimated that approximately 50% of cultural resources would occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may still be impacted within designated transmission corridors.

Table 4.3-1a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 1

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	43	8	227	795	228	71%
Imperial Borrego Valley	5,287	646	91	513	1,468	523	47%
Kingston and Funeral Mountains	857	2	0	420	335	94	99%
Mojave and Silurian Valley	2,949	52	7	477	1,055	105	56%
Owens River Valley	700	55	4	52	213	227	70%
Panamint Death Valley	1,562	0	0	1,272	91	119	95%
Pinto Lucerne Valley and Eastern Slopes	1,954	55	10	395	184	26	31%
Piute Valley and Sacramento Mountains	342	1	0	120	93	104	93%
Providence and Buillion Mountains	1,640	14	2	904	174	200	78%
West Mojave and Eastern Slopes	8,475	827	107	294	740	1,250	27%
Total	**25,534**	**1,695**	**229**	**4,674**	**5,148**	**2,876**	**50%**

DFA = Development Focused Area; HBS = High Biological Sensitivity; MBS = Moderate Biological Sensitivity; Note: The number of cultural resources are estimates and subject to change.

Table 4.3-1b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 1

Ecoregion	# Sites in DCLs			# Sites in Non-DCLs			# sites in PEIS Solar Variance
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*	
Cadiz Valley and Chocolate Mountains	643	132	775	638	43	681	97
Imperial Borrego Valley	973	1,005	1,978	427	395	822	216
Kingston and Funeral Mountains	339	30	369	83	2	85	10
Mojave and Silurian Valley	427	330	757	187	338	525	15
Owens River Valley	78	23	101	115	34	149	19
Panamint Death Valley	3	115	118	51	164	215	1
Pinto Lucerne Valley and Eastern Slopes	88	58	146	16	29	45	3
Piute Valley and Sacramento Mountains	31	93	124	120	32	152	4
Providence and Buillion Mountains	160	40	200	130	24	154	7
West Mojave and Eastern Slopes	140	305	445	99	159	258	12
Total	**2,882**	**2,131**	**5,013**	**1,866**	**1,220**	**3,086**	**384**

DCL= Biological Conservation Land; SRMA = State Resource Management Area; Note: The number of cultural resources are estimates and subject to change.

Table 4.3-2a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 2

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	252	55	222	779	193	68%
Imperial Borrego Valley	5,287	937	85	536	1,602	526	50%
Kingston and Funeral Mountains	857	13	0	418	333	91	98%
Mojave and Silurian Valley	2,949	75	5	474	1,043	100	55%
Owens River Valley	700	55	2	52	217	232	72%
Panamint Death Valley	1,562	2	0	1,272	90	118	95%
Pinto Lucerne Valley and Eastern Slopes	1,954	62	12	395	183	24	31%
Piute Valley and Sacramento Mountains	342	1	0	120	93	104	93%
Providence and Buillion Mountains	1,640	22	2	903	173	199	78%
West Mojave and Eastern Slopes	8,475	1,059	118	292	727	1,148	26%
Total	**25,534**	**2,478**	**279**	**4,684**	**5,240**	**2,735**	**50%**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-2b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 2

Ecoregion	# Sites in DCLs			# Sites in Non-DCLs		
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*
Cadiz Valley and Chocolate Mountains	515	131	646	767	43	810
Imperial Borrego Valley	711	847	1,558	810	432	1,242
Kingston and Funeral Mountains	337	30	367	85	2	87
Mojave and Silurian Valley	423	330	753	197	332	529
Owens River Valley	78	23	101	119	30	149
Panamint Death Valley	3	115	118	51	164	215
Pinto Lucerne Valley and Eastern Slopes	88	57	145	16	30	46
Piute Valley and Sacramento Mountains	31	93	124	120	32	152
Providence and Buillion Mountains	160	40	200	130	24	154
West Mojave and Eastern Slopes	140	305	445	102	156	258
Total	**2,486**	**1,971**	**4,457**	**2,397**	**1,245**	**3,642**

Note: The number of cultural resources are estimates and subject to change.

4.3.3.2.1 BLM LUPA Elements

Table 4.3-2b lists the number of previously recorded cultural resources by ecoregion located in DCLs and non-DCLs. Under Alternative 2, 4,457 previously recorded cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which is discussed in Appendix E. There are 3,642 previously recorded cultural resources on non-DCL lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

4.3.3.3 Alternative 3

Table 4.3-3a demonstrates that there are 2,157 cultural resources within the DFAs of Alternative 3 and 217 cultural resources within DFA development footprints (including solar, wind, geothermal, and ROWs). The Western Mojave and Eastern Slopes ecoregion has the most cultural resources that could be impacted based on the BLM legacy data of previously recorded cultural resources. There are less than 25 cultural resources in DFAs in four ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, Piute Lucerne Valley and Sacramento Mountains, and Providence and Buillion Mountains. With Alternative 3, it is estimated that approximately 50% of the cultural resources would occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may be impacted within designated transmission corridors.

4.3.3.3.1 BLM LUPA Elements

Table 4.3-3b lists the number of previously recorded cultural resources by ecoregion located in DCLs and non-DCLs. Under Alternative 3, 4,517 previously recorded cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which are discussed in the criteria in Appendix E. There are 3,582 cultural resources would occur on non-DCLs lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

Table 4.3-3a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 3

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	133	15	226	842	239	74%
Imperial Borrego Valley	5,287	661	35	536	1,604	528	50%
Kingston and Funeral Mountains	857	2	0	420	335	98	100%
Mojave and Silurian Valley	2,949	57	7	478	1,066	91	55%
Owens River Valley	700	41	1	52	218	233	72%
Panamint Death Valley	1,562	2	0	1,270	91	119	95%
Pinto Lucerne Valley and Eastern Slopes	1,954	65	13	395	187	15	31%
Piute Valley and Sacramento Mountains	342	1	0	120	93	104	93%
Providence and Buillion Mountains	1,640	17	2	905	181	194	78%
West Mojave and Eastern Slopes	8,475	1,178	144	287	1,366	417	24%
Total	**25,534**	**2,157**	**217**	**4,689**	**5,983**	**2,038**	**50%**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-3b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 3

Ecoregion	# Sites in DCLs			# Sites in Non-DCLs		
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*
Cadiz Valley and Chocolate Mountains	575	131	706	707	43	750
Imperial Borrego Valley	710	926	1,636	811	353	1164
Kingston and Funeral Mountains	339	30	369	83	2	85
Mojave and Silurian Valley	427	329	756	193	333	526
Owens River Valley	78	23	101	119	30	149
Panamint Death Valley	3	114	117	51	165	216
Pinto Lucerne Valley and Eastern Slopes	68	56	124	38	29	67
Piute Valley and Sacramento Mountains	31	93	124	120	32	152
Providence and Buillion Mountains	161	40	201	129	24	153
West Mojave and Eastern Slopes	138	245	383	181	139	320
Total	**2,530**	**1,987**	**4,517**	**2,432**	**1,150**	**3582**

Note: The number of cultural resources are estimates and subject to change.

4.3.3.4 Alternative 4

Table 4.3-4a demonstrates that there are 2,307 cultural resources within the DFAs of Alternative 4 and 286 cultural resources within DFA development footprints (including solar, wind, geothermal, and ROWs). There are few cultural resources in DFAs in three ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, and Piute Lucerne Valley and Sacramento Mountains. With Alternative 4, it is estimated that approximately 50% of the cultural resources would occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may be impacted within designated transmission corridors.

4.3.3.4.1 BLM LUPA Elements

Table 4.3-4b lists the number of previously recorded cultural resources by ecoregion located in DCLs and non-DCLs. Under Alternative 4, 4,867 previously recorded cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which was discussed in Appendix E. There are 3,232 previously recorded cultural resources on non-DCL lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

4.3.3.5 Alternative 5

Table 4.3-5a demonstrates that there are 3,142 cultural resources within the DFAs of Alternative 4 and 453 cultural resources within DFA development footprints (including solar, wind, geothermal, and ROWs). The Imperial Borrego Valley ecoregion has the greatest number of cultural resources that could be impacted based on the BLM legacy data of previously recorded cultural resources. There are less than 25 cultural resources in DFAs in the three ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, and Piute Lucerne Valley and Sacramento Mountains. With Alternative 5, it is estimated that approximately 48% of the cultural resources would not occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may be impacted within designated transmission corridors.

Table 4.3-4a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 4

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	135	24	226	842	239	74%
Imperial Borrego Valley	5,287	1,038	114	536	1,592	493	50%
Kingston and Funeral Mountains	857	2	0	420	335	98	100%
Mojave and Silurian Valley	2,949	56	6	477	1,054	105	55%
Owens River Valley	700	55	3	52	217	232	72%
Panamint Death Valley	1,562	7	0	1,271	89	115	94%
Pinto Lucerne Valley and Eastern Slopes	1,954	59	11	395	184	23	31%
Piute Valley and Sacramento Mountains	342	1	0	120	93	104	93%
Providence and Buillion Mountains	1,640	21	2	904	173	199	78%
West Mojave and Eastern Slopes	8,475	933	126	293	730	1,230	27%
Total	**25,534**	**2,307**	**286**	**4,694**	**5,309**	**2,838**	**50%**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-4b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 4

Ecoregion	# Sites in DCLs			# Sites in Non-DCLs		
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*
Cadiz Valley and Chocolate Mountains	575	131	706	706	44	750
Imperial Borrego Valley	974	926	1,900	426	474	900
Kingston and Funeral Mountains	339	30	369	83	2	85
Mojave and Silurian Valley	427	330	757	187	338	525
Owens River Valley	78	25	103	115	32	147
Panamint Death Valley	3	115	118	51	164	215
Pinto Lucerne Valley and Eastern Slopes	88	57	145	16	30	46
Piute Valley and Sacramento Mountains	31	93	124	120	32	152
Providence and Buillion Mountains	160	40	200	130	24	154
West Mojave and Eastern Slopes	140	305	445	102	156	258
Total	**2,815**	**2,052**	**4,867**	**1,936**	**1,296**	**3,232**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-5a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 5

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	254	52	222	960	10	67%
Imperial Borrego Valley	5,287	1,470	123	536	1,579	177	43%
Kingston and Funeral Mountains	857	13	0	418	333	91	98%
Mojave and Silurian Valley	2,949	76	19	474	1,056	86	55%
Owens River Valley	700	78	9	51	203	232	69%
Panamint Death Valley	1,562	8	0	1,270	89	115	94%
Pinto Lucerne Valley and Eastern Slopes	1,954	103	20	392	178	12	30%
Piute Valley and Sacramento Mountains	342	1	0	120	120	77	93%
Providence and Buillion Mountains	1,640	49	12	903	162	183	76%
West Mojave and Eastern Slopes	8,475	1,090	216	291	1,452	416	25%
Total	**25,534**	**3,142**	**453**	**4,677**	**6,132**	**1,399**	**48%**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-5b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 5

Ecoregion	# Sites in DCLs			# Sites in Non-DCLs		
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*
Cadiz Valley and Chocolate Mountains	507	130	637	776	43	819
Imperial Borrego Valley	471	903	1,374	1,147	279	1,426
Kingston and Funeral Mountains	337	30	367	85	2	87
Mojave and Silurian Valley	423	330	753	197	332	529
Owens River Valley	73	23	96	124	30	154
Panamint Death Valley	3	115	118	51	164	215
Pinto Lucerne Valley and Eastern Slopes	78	57	135	27	29	56
Piute Valley and Sacramento Mountains	31	93	124	120	32	152
Providence and Buillion Mountains	149	39	188	142	24	166
West Mojave and Eastern Slopes	141	274	415	140	148	288
Total	**2,213**	**1,994**	**4,207**	**2,809**	**1,083**	**3,892**

Note: The number of cultural resources are estimates and subject to change.

4.3.3.5.1 BLM LUPA Elements

Table 4.3-5b lists the number of previously recorded cultural resources by egoregion located in DCLs and non-DCL lands. Under Alternative 5, 4,207 previously recorded cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which are discussed in the criteria in Appendix E. There are 3,892 previously recorded cultural resources on non-DCLs lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

4.3.3.6 Alternative 6

Table 4.3-6a demonstrates that there are 2,114 cultural resources within the DFAs of Alternative 6 and 259 cultural resources within DFA development footprints (including solar, wind, geothermal, and ROWs). The Western Mojave and Eastern Slopes ecoregion has the greatest number of cultural resources that could be impacted based on the estimated data. There are less than 25 cultural resources within DFAs in four ecoregions: Kingston and Funeral Mountains, Panamint Death Valley, Piute Valley and Sacramento Mountains, and Providence and Buillion Mountains. With Alternative 6, it is estimated that approximately 47% of cultural resources would occur within the Conservation Planning Area and would not be subject to renewable energy development. Some cultural resources in the Conservation Planning Area may be impacted within designated transmission corridors.

4.3.3.6.1 BLM LUPA Elements

Table 4.3-6b lists the number of previously recorded cultural resources by egoregion located in DCLs and non-DCLs. Under Alternative 6, 4,039 previously recorded cultural resources would occur on lands designated as DCLs and would receive some level of protection, some of which is discussed above in Section 4.3.2. There are 4,060 previously recorded cultural resources on non-DCLs lands. Because this is a programmatic document, impacts would be determined on a project-specific basis.

Table 4.3-6a
Number of Previously Recorded Sites in DFAs and Conservation Planning Area by Ecoregion– Alternative 6

Ecoregion	# of Sites	# of Sites in DFAs	# of Sites in DFA Development Footprint	# of Sites in Existing & Planned Conservation Area			% of Sites in Conservation Planning Area
				Existing Conservation Lands	*HBS*	*MBS*	
Cadiz Valley and Chocolate Mountains	1,768	240	54	222	641	123	56%
Imperial Borrego Valley	5,287	646	64	513	1,569	240	44%
Kingston and Funeral Mountains	857	4	0	420	335	90	99%
Mojave and Silurian Valley	2,949	54	4	476	1,059	84	55%
Owens River Valley	700	55	3	52	419	0	67%
Panamint Death Valley	1,562	2	0	1,272	96	112	95%
Pinto Lucerne Valley and Eastern Slopes	1,954	59	12	395	192	16	31%
Piute Valley and Sacramento Mountains	342	1	0	120	93	97	91%
Providence and Buillion Mountains	1,640	14	1	904	188	162	76%
West Mojave and Eastern Slopes	8,475	1,039	122	292	1,015	867	26%
Total	**25,534**	**2,114**	**259**	**4,666**	**5,607**	**1,791**	**47%**

Note: The number of cultural resources are estimates and subject to change.

Table 4.3-6b
Number of Previously Recorded Sites in BLM Proposed Conservation – Alternative 6

Ecoregion	# of Sites in DCLs			# of Sites in Non-DCLs			# of Sites on BLM Solar Variance Lands
	Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*	
Cadiz Valley and Chocolate Mountains	432	127	559	895	2	897	295
Imperial Borrego Valley	437	827	1,264	1,104	432	1,536	786
Kingston and Funeral Mountains	338	30	368	84	2	86	23
Mojave and Silurian Valley	422	330	752	198	332	530	72
Owens River Valley	57	23	80	140	30	170	84
Panamint Death Valley	2	115	117	52	164	216	2
Pinto Lucerne Valley and Eastern Slopes	86	57	143	18	30	48	28
Piute Valley and Sacramento Mountains	31	93	124	126	26	152	25
Providence and Buillion Mountains	147	40	187	151	16	167	47
West Mojave and Eastern Slopes	140	305	445	102	156	258	60
Total	**2,092**	**1,947**	**4,039**	**2,870**	**1,190**	**4,060**	**1,422**

Note: The number of cultural resources are estimates and subject to change.

Under Alternative 6, renewable energy development in the variance lands identified in the Final Solar PEIS would be permitted under the conditions indicated in Section 2.2.2.3 of the PEIS. Table 4.3-6b shows that 1,422 cultural resources occur within the variance lands. The BLM would consider ROW applications for utility-scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate federal, state, and local agencies and tribes; and public outreach. The responsibility for demonstrating to the BLM and other coordinating parties that a proposal in a variance area would avoid, minimize, and/or mitigate, as necessary, sensitive resources would rest with the applicant. The applicant is also expected to demonstrate that the proposed project is compatible with state and local plans and is capable of acquiring all required permits and authorities to implement the project.

The proposed variance areas and associated variance process would only apply to utility-scale solar development capable of generating 20 MW or greater of electricity. All non-utility-scale solar energy projects, including distributed generation, would follow existing management prescriptions in BLM land use plans and be subject to individual site-specific NEPA analyses. Utility-scale solar development projects in variance lands would not receive incidental take permitting under the DRECP.

4.3.3.7 Alternative 7/No Action Alternative

Under Alternative 7, analysis of impacts to cultural resources is based on expected renewable energy development under the current regulatory condition, including conservation actions and management regimes. Such development would continue to be authorized on a project-by-project basis. Under Alternative 7, the Available Development Areas within the DRECP total 10,309,278 acres and existing conservation areas and BLM designations total approximately 7,563,993 acres. Additional conservation may occur under individual projects as requirements for mitigation on a project-by-project basis.

Table 4.3-7a demonstrates that there are 10,759 previously recorded cultural resources within the available development areas. With Alternative 7, it is estimated that approximately 17% of cultural resources occur within the Conservation Area and are not subject to renewable energy development. Some cultural resources in the Conservation Area may be impacted within designated transmission corridors.

Table 4.3-7a
Number of Previously Recorded Sites in Available Development Areas and Existing Conservation by Ecoregion – Alternative 7 (No Action)

Ecoregion	# of Sites	# of Sites in Available Development Areas	# Sites in Existing Conservation (LLPs/MEML)	% of sites in Conservation Area
Cadiz Valley and Chocolate Mountains	1,768	1,357	186	11%
Imperial Borrego Valley	5,287	3,200	501	9%
Kingston and Funeral Mountains	857	334	393	46%
Mojave and Silurian Valley	2,949	1,036	421	14%
Owens River Valley	700	553	33	5%
Panamint Death Valley	1,562	178	1,259	81%
Pinto Lucerne Valley and Eastern Slopes	1,954	377	387	20%
Piute Valley and Sacramento Mountains	342	203	108	32%
Providence and Buillion Mountains	1,640	437	865	53%
West Mojave and Eastern Slopes	8,475	3,084	233	3%
Total	**25,534**	**10,759**	**4,386**	**17%**

LLP = Legislative and Legally Protected; MEML = Military Expansion Mitigation Lands; Note: The number of cultural resources are estimates and subject to change.

Table 4.3-7b
Number of Previously Recorded Sites in BLM LUPA Designations – Alternative 7 (No Action)

Ecoregion	# of Sites in Ecoregion	# of Sites in ACECs			# of Sites in Non-ACECs			# of Sites on BLM Solar Variance Lands
		Non-SRMA	*SRMA*	*Subtotal*	*Non-SRMA*	*SRMA*	*Subtotal*	
Cadiz Valley and Chocolate Mountains	1,768	320	0	320	1,335	0	1,335	435
Imperial Borrego Valley	5,287	148	627	775	2,118	733	2,851	787
Kingston and Funeral Mountains	857	200	25	225	408	22	430	23
Mojave and Silurian Valley	2,949	550	345	895	826	444	1,270	72
Owens River Valley	700	0	7	7	524	185	709	84
Panamint Death Valley	1,562	0	70	70	231	254	485	2
Pinto Lucerne Valley and Eastern Slopes	1,954	51	54	105	533	85	618	28
Piute Valley and Sacramento Mountains	342	139	2	141	223	18	241	25
Providence and Buillion Mountains	1,640	90	3	93	617	0	617	47
West Mojave and Eastern Slopes	8,475	249	332	581	3,847	732	4,579	60
Total	**25,534**	**1,747**	**1,465**	**3,212**	**10,662**	**2,473**	**13,135**	**1,563**

ACEC = Area of Critical Environmental Concern; SRMA = State Reserve Management Area; Note: The number of cultural resources are estimates and subject to change.

4.3.3.7.1 BLM Land Use Plans

Under Alternative 7, BLM-administered management and guidelines for cultural resources would continue as currently outlined in BLM land use plans. Individual projects may result in site-specific land use plan amendments. Renewable energy applications and ROW lease applications would continue to be processed by the BLM on a case-by-case basis. Areas currently excluded from renewable energy development by statute, regulation, or orders would remain excluded, and administratively excluded areas would be assessed based on management in the relevant land use plan. Impacts to cultural resources and mitigation measures would continue to be assessed on a case-by-case project-specific level.

Table 4.3-7b lists the number of previously recorded cultural resources by egoregion located in ACEC and non-ACEC lands. Under Alternative 7, 3,212 previously recorded cultural resources occur on lands designated as ACECs and are managed under current BLM plans. There are 13,135 previously recorded cultural resources that occur on non-ACEC lands.

Additionally, Table 4.3-7b shows 1,563 previously recorded cultural sites occur on variance lands identified in the Final Solar PEIS. Renewable energy development on variance lands would be permitted under the conditions indicated in Section 2.2.2.3 of the PEIS and summarized above in Section 4.3.3.6.1.

4.3.3.8 Comparison of Alternatives

Table 4.3-8 provides a summarized comparison of the estimated number of cultural sites across the alternatives. Alternative 7 (No Action) has the potential to impact the greatest number of cultural resources with approximately 10,759 in available development areas. Alternative 5 has the next greatest potential to cultural resources with approximately 3,142 cultural resources in the DFAs. The least potential to impact cultural resources is under Alternative 1 with approximately 1,695 cultural resources in DFAs. Alternative 7 would have the least number of cultural resources within the existing Conservation Area, representing 17% of the total number of cultural resources in the DRECP Plan area. Under the other alternatives, a range of 47% to 50% of cultural resources would be in the existing and planned Conservation Area. Alternative 1 would have the greatest number of cultural resources, which is 5,013, within DCLs while Alternative 7 would have only 3,212 cultural resources within existing ACECs. Alternative 1 would have the least number of cultural resources in non-DCL lands. Alternative 7 would have the greatest number of cultural resources in non-ACEC.

4.3.4 Summary of Conservation and Management Actions, including Allowable Uses and Use Restrictions

Site-specific NEPA and a Section 106 review would be conducted on individual projects. Refer to Appendix E for specific guidance. For all potential impacts, the application of mitigation measures developed in consultation under Section 106 of the National Historic Preservation Act (NHPA) would avoid, reduce, or mitigate the potential for adverse impacts on significant cultural resources. Section 106 consultations between the BLM and the State Historic Preservation Officers (SHPOs), appropriate Tribes, and other consulting parties would be required. Thresholds for the involvement of and review by the Advisory Council on Historic Preservation (ACHP) include non-routine interstate and/or interagency programs; undertakings directly and adversely affecting National Historic Landmarks or National Register (NRHP) eligible properties; and/or highly controversial undertakings, when ACHP review is requested by the managing agency, SHPO, Indian Tribe, local government, or the applicant for a BLM authorization. Ongoing Tribal consultation, in accordance with the NHPA and other applicable laws, would help determine areas of sensitivity, appropriate survey and mitigation needs, and other issues of concern, such as access rights or disruption of cultural practices (see Section 5.16.3 of NHPA), and to take those concerns into consideration during project development.

Table 4.3-8
Number of Previously Recorded Sites Across Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Working Title	"Disturbed Lands/Low Resource Conflict Alternative"	"Geographically Balanced/Transmission Aligned Alternative B"	"West Mojave Emphasis Alternative"	"Geographically Balanced/Transmission Aligned Alternative A"	"Increased Geographic and Technology Flexibility Alternative"	"Geographically Balanced Alternative C with Variance Lands"	"No Action"
Cultural Resources							
Quick Facts	• **# previously recorded sites in DFAs:** 1,695 • **# previously recorded sites in DFA development footprint:** 229 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,698 (50%) • **# previously recorded sites in DCLs:** 5,013 • **# previously recorded sites in Non-DCLs:** 3,086 • **# previously recorded sites in variance lands:** 384	• **# previously recorded sites in DFAs:** 2,478 • **# previously recorded sites in DFA development footprint:** 279 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,659 (50%) • **# previously recorded sites in DCLs:** 4,457 • **# previously recorded sites in Non-DCLs:** 3,642	• **# previously recorded sites in DFAs:** 2,157 • **# previously recorded sites in DFA development footprint:** 217 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,710 (50%) • **# previously recorded sites in DCLs:** 4,517 • **# previously recorded sites in Non-DCLs:** 3,582	• **# previously recorded sites in DFAs:** 2,307 • **# previously recorded sites in DFA development footprint:** 286 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,841 (50%) • **# previously recorded sites in DCLs:** 4,867 • **# previously recorded sites in Non-DCLs:** 3,232	• **# previously recorded sites in DFAs:** 3,142 • **# previously recorded sites in DFA development footprint:** 453 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,208 (48%) • **# previously recorded sites in DCLs:** 4,207 • **# previously recorded sites in Non-DCLs:** 3,892	• **# previously recorded sites in DFAs:** 2,114 • **# previously recorded sites in DFA development footprint:** 259 • **# previously recorded sites in Conservation Planning Area (LLPs, MEMLs, HBS, MBS):** 12,064 (47%) • **# previously recorded sites in DCLs:** 4,039 • **# previously recorded sites in Non-DCLs:** 4,060 • **# previously recorded sites in variance lands:** 1,422	• **# previously recorded sites in available development areas:** 10,759 • **# previously recorded sites in existing conservation (LLPs & MEMLs):** 4,386 (17%) • **# previously recorded sites in ACECs:** 3,212 • **# previously recorded sites in Non-ACECs:** 13,135 • **# previously recorded sites in variance lands:** 1,563

ACEC = Area of Critical Environmental Concern; DCL = Biological Conservation Land; DFA = Development Focused Area; HBS = High Biological Sensitivity; LLP = Legislative and Legally Protected; MBS = Moderate Biological Sensitivity; MEML = Military Expansion Mitigation Lands; Note: The number of cultural resources are estimates and subject to change.

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The following are examples of avoidance, minimization, and mitigation measures that could be implemented.

- The BLM may require modification/project redesign to development proposals to protect and avoid NRHP-eligible cultural resources, or it may disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or otherwise mitigated.
- If significant or NRHP-eligible cultural resources are present within the project area and would be adversely affected or if areas with a high potential to contain additional cultural material have been identified, a formalized agreement should be required to address management and mitigation options in the form of various planning documents (such as a monitoring and mitigation plan, data recovery plan, historic treatment plan, etc.). The agreement should be developed in consultation with the SHPO, appropriate federally recognized Tribes, and any consulting parties. The agreement also should also identify measures to prevent potential looting/vandalism or erosion impacts and address the education of workers and the public to make them aware of the consequences of unauthorized collection of cultural resources on public land.
- Data recovery plans would address those NRHP-eligible cultural resources that would be impacted by the project by requiring some level of extracting the scientific value and analysis of the cultural resources deposit prior to development.
- Monitoring and mitigation plans would address an unexpected discovery of cultural resources during construction. The plan could require archaeological monitoring during construction by qualified and permitted cultural resource consultants. In the case of an unexpected discovery, the plan could require that work be halted in the vicinity of the find. The area of the find would be protected to ensure that resources are not removed, handled, altered, or damaged while they are being evaluated and to ensure that appropriate mitigation measures are being developed.
- To protect NRHP-eligible cultural resources, sacred sites, and portions of historic trails that are eligible for listing in the NRHP from visual intrusion and to maintain the integrity of the historic cultural setting, the managing agency could require that surface disturbance be restricted or prohibited within the viewshed of a historic property, sacred site, or trail segment for which eligibility is tied to the visual setting. These types of adverse effects would be minimized, avoided, or otherwise resolved (mitigated) through the Section 106 consultation process.

- Education/training programs for workers and the public could reduce the occurrences of human-related disturbances to nearby cultural resources including looting and vandalism.

For projects on non-BLM lands, CEQA review would be conducted on individual projects. Specific mitigation measures to avoid or reduce impacts on cultural resources, including Sacred Sites and TCPs, would be developed on a project-specific basis. Similar mitigations measures as those described above for BLM could be implemented.

- Data recovery plans for those CEQA significant cultural resources
- Construction monitoring in areas of cultural sensitivity where there may be buried cultural resources or where there is a high density of cultural resources.
- Education/training programs for workers and the public to minimize in advertent disturbances and looting to cultural resources.