					On-Site and Off-Site Mitigation Requirements for BLM Solar Projects	
Project Name	**Solar Tech., MW Potential, and Acres Disurbed**	**Status**	**Data/ Document Title and URL**	**Source / Author/ Year**	**ON-SITE mitigation--Summary of Information**	**OFF-SITE mitigation--Summary of Information**
Amargosa Farm Road (Nye County, NV)	Trough, 464, MW, 4,350 acres	FEIS Complete, ROD signed	Biological Opinion for the Amargosa Farm Road Solar Project	USFWS, 2010		The Biological Opinion determined that the proposed issuance of a right-of-way for Amargosa Farm Road Solar Project may affect, is likely to adversly affect the desert tortoise and requested concurrence that the project may affect, but is not likely to adversely affect 12 listed species. For desert tortoise, the BLM proposes to collect remuneration fees from the project proponent prior to surface disturbance for compensation of desert tortoise habitat loss using IM NV-2010-062. BLM estimates that 4,350 acres of desert tortoise habitat would be disturbed (at $774/acre), resulting in $3,366,900 in funds to be used for management actions to benefit desert tortoise over time. There is no discussion of off-site mitigation structures.
Amargosa Farm Road (Nye County, NV) - 2	Trough, 464, MW, 4,350 acres	FEIS Complete, ROD signed	EIS - Appendix A "Proposed Avoidance, Minimization, and Mitigation Measures"	BLM, 2010	Numerous on-site mitigation measures are required. They fall in a number of different categories: air quality, geological hazards and mineral resources, soils, water, noise, biological resources (vegetation, birds, reptiles, general wildlife and wildlife habitat), historic and cultural resources, paleontological resources, land use, recreation, transportation and access, visual resources, hazardous materials, and hazardous and solid waste. For example, prior to any ground-disturbing construction activity, a qualified biologist will survey and inspect the potentially affected area(s) for nests or breeding birds. If a breeding pair is discovered within the construction footprint, BLM protocol for species protection will be implemented. To minimize perching opportunities for raptors near habitats supporting sensitive prey species, structures incorporating a design to discourage raptor perching should be selected including Avian Power Line Interaction Committee (APLIC) guidelines for avoiding unintended injuries to birds.	Of all the mitigation measures identified in Appendix A, there were only a few that indicated off-stie mitigation requirements. These are listed here: 1) (VEG-6) Pre-construction surveys will be conducted to identify the locations of plants protected by the State of Nevada (NRS 527.60-120); these locations will be flagged and avoided until BLM authorizes a proper salvage protocol. 2) (VEG-7) Vegetation salvage and replanting will be implemented and completed as required by the BLM in accordance with their established guidelines. Adopting roadway signage that discourages off-road travel will help protect vegetation along the road margins. 3) (WL-18) Any Desert Tortoise removed from construction sites shall be placed in an unoccupied burrow similar to the one in which it was found or in an artificial burrow, following the protocol approved by the BLM and USFWS and in compliance with NRS 503.597 and NAC 503.093. (WL-19) Desert Tortoise eggs found within construction sites will be removed by qualified tortoise biologists, in accordance with BLM and USFWS protocols.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Blythe Solar Power Project	PV, 1,000 MW, 7,025 acres	FEIS Complete, ROD Signed, on-hold pending approval of technology change	PLAN Amendment/Final EIS for the Blythe Solar Power Project Appendix G	BLM, 2010	The Cultural Resources Specialist shall manage all cultural resources mitigation; measures on air quality and noise control, Paleontologic Resources Monitoring and Mitigation Plan; Safety Management Plan; Operation Security Plan; Project Construction Safety and Health Program; Project Operations and Maintenance Safety and Health Program; Drainage Erosion and Sedimentation Control Plan; Groundwater Level Monitoring, Mitigation, and Reporting Plan; Drainage Report; Traffic Control Plan; Biological Resources Mitigation Implementation and Monitoring Plan; desert tortoise clearance surveys within the plant site; Raven Monitoring and Control Plan; Weed Management Plan; Avian Protection Plan; American badgers and desert kit fox: pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys; Burrowing Owl Mitigation Plan; Monitoring and Adaptive Management Plan for Golden Eagles; cover evaporation ponds; Couch's Spadefoot Toad Protection and Mitigation Plan; Multiple Visual requirements. USFWS Regional Raven Management Program. The Project owner shall submit payment to the project sub-account of the REAT Account to support the USFWS Regional Raven Management Program..	See attached "Summary of Offsite Mitigation for Current BLM Solar Projects", pg. 1. 'Blythe Off-site Mitigation Requirements'
Crescent Dunes (Nye County, NV)	Power tower, 100 MW, 1,600 acres	Under construction	Crescent Dunes Final EIS, Appendix E, Wildlife Mitigation and Monitoring Plan	BLM, 2010	Avian and wildlife mortality monitoring of transmission lines and power poles, at the central receiving tower, and around the solar heliostats; measures to reduce likeihood of electrocutions and collisions of avian species; training of their onsite workforce to increase awareness of and ability to identify sensitive wildlife species; if ground-disturbing activities cannot be conducted outside the migratory bird nesting season, pre-construction nest surveys shall be conducted by a BLM-approved biologist; evaporation pond mitigation; golden eagle nest monitoring	The BLM concluded that the most effective mitigation approach for the loss of pale kanagroo mouse habitat would be to establish a fund to further the data needs for supporting management decisions regarding the species. The applicant will provide $200,000 in funding for a phased study (multi-year study, initial payment of $75,000 and two additional payments of $62,500 over following two years), including: compile and summarize existing information and data regarding the pale kangaroo mouse to be used to develop methodologies for later habitat mapping, surveying, and sampling distribution; resulting in GIS-usable data, and using information from phase one, conduct surveys to determine habitat needs, distribution, and relative abundance of the pale kangaroo mouse. See Appendix E, page 6 for information needs and anticipated work.
Crescent Dunes (Nye County, NV) - 2	Power tower, 100 MW, 1,600 acres	Under construction	Crescent Dunes Final EIS, Wildlife Mitigation and Monitoring Plan, November. Appendix F, Groundwater Monitoring Plan	BLM, 2010	Monitoring plan will consist of: collecting groundwater elevations and groundwater quality samples at selected wells.	

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Desert Sunlight Solar Farm (Riverside County, CA)	PV, 500 MW, 4,165 acres	Under construction	Desert Sunlight Solar Farm ROD Appendix 2 http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/desert_sunlight.Par.85099.File.dat/ROD%20Appendix%202_Adopted%20MMs.pdf	BLM, 2011	Construction equipment to meet EPA standards; dust control; biological monitoring during construction (specfically American badger, kit fox, Nelson's bighorn sheep, Palm Springs round tailed ground squirrel, Mojave fringe toed lizard); Bird Monitoring and Avoidance Plan; Golden Eagle nesting surveys; Salvage and Restoration Plan; Desert Dry Wash Woodland Monitoring and Reporting Plan; desert tortoise excusion fencing; lighting control; visual surface treatment of structures; groundwater level monitoring; Mitigatiton and Reporting Plan; Storm Water, Flood Drainage and Water Quality Control Plan; tribal consultations; archeological monitoring, Vegetation Resources Management Plan, Lighting Mitigation Plan, Dust Control Plan, Integrated Weed Management Plan, Construction Traffic Control Plan, visual BMPs; Signage and Guidance Plan for Joshua Tree Natl Park.	See attached "Summary of Offsite Mitigation for Current BLM Solar Projects", pg 2: 'Desert Sunlight Solar Farm (DSSF) Off-site Mitigation Requirements'. Includes off-site compensation ratios, nested resources in compensation, no compensation for previously-disturbed acres, land selection criteria and requirements, use of the National Fish and Wildlife Foundation (NFWF).
Genesis Solar Energy Project (Riverside County, CA)	Trough, 250 MW, 4,640 acres	Under construction	Plan Amendment/ Final EIS for the Genesis Solar Energy Project Appendix G http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/palmsprings/genesis.Par.19404.File.dat/Vol2_Genesis%20PA-FEIS_Apdx-G-Certification.pdf	BLM, 2010	(51 AQ measures) Air Quality Construction Mitigation Plan (AQCMP); dust control, diesel-fueled engine control; **29 conditions of certification for biological resources**; designated biologist and biological monitors to the project; Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP); desert tortoise exclusion fence Installation; Desert Tortoise Translocation Plan (Plan); Raven Management Plan; Weed Management Plan; pre-construction nest surveys for bird species; Avian Protection Plan; American badgers and desert kit fox and burrowing owl pre-construction surveys; special status plant impact avoidance and minimization measures; evaporation pond covering, Revegetation Plan, Groundwater-Dependent Vegetation Monitoring Plan (Vegetation Monitoring Plan), Couch's Spadefoot Toad Protection and Mitigation Plan, cultural resource specialist on site, Cultural Resources Monitoring and Mitigation Plan (CRMMP); Paleontological Resources Monitoring and Mitigation Plan; Paleontological Resources Report; Safety Management Plan; Drainage Erosion and Sedimentation Control Plan; Groundwater Level Monitoring and Reporting Plan; Grading and Drainage Plans; Channel Maintenance Program; Water Supply Plan; Water Policy Compliance; Traffic Control Plan; surface treatment of non-mirror project structures and buildings; Operation Waste Management Plan; Project Construction Safety and Health Program; Project Operations and Maintenance Safety and Health Program.	See attached "Summary of Offsite Mitigation for Current BLM Solar Projects", pg 5: 'Genesis Off-site Mitigation Requirements." Desrt tortoise compensation mitigation, selection criteria for compensation Lands, SSS plant off-site mitigation plan, compensatory mitigation by habitat enhancement/restoration, compensatory mitigation by conducting or contributing to a study for the affected species, mitigation for impacts to state waters, In-Lieu Fee Mitigation Option, cultural fund contributions.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Ivanpah Solar Electric Generating System (San Bernardino, CA)	Power tower, 370 MW, 3,472 acres (an FEIS addendum has been submitted reducing acreage by 450 acres to mitigate biological impacts.	Under construction	Ivanpah Solar Electric Generating System FEIS http://www.blm.gov/pgdata/etc/medialib/blm/nv/field_offices/las_vegas_field_office/energy/nextlight_-_other/NextLight_BO.Par.54027.File.dat/NextLight_Silver_State_Solar_BO%20.pdf	BLM, 2010	Air Quality Construction Mitigation Plan to mitigate for fugitive dust, visible dust plumes, and fuel-related emissions; designated biologist onsite, Biological Resources Mitigation Implementation and Monitoring Plan; desert tortoise clearance surveys and fencing; Desert Tortoise Translocation Plan; desert tortoise compliance verification; Raven Management Plan; Weed Management Plan; Closure, Revegetation, and Rehabilitation Plan; ,pre-construction nest surveys; Burrowing Owl Mitigation and Monitoring Plan; Special-Status Plant Protection and Monitoring Plan; Special-Status Plant Remedial Action Plan; Bighorn Sheep Mitigation Plan; Avian and Bat Monitoring and Management Plan; Cultural Resources Monitoring and Mitigation Plan; Drainage, Erosion, and Sediment Control Plan; Stormwater Damage Monitoring and Response Plan; Groundwater Level Monitoring and Reporting Plan; Wastewater Collection System and Septic System and Leach Field Requirements.	See attached "Summary of Offsite Mitigation for Current BLM Solar Projects", pg. 6: 'Ivanpah Off-site Mitigation Requirements': for Desert Tortoise Compensatory Mitigation(BIO-17); Acquire Off-Site Occurrence of Mojave Milkweed or Adjacent Land; Streambed Impact Minimization and Compensation Measures (BIO-20).
The K Road Moapa Solar Generation Facility (Clark County, Nevada)	2000 acres - Indian Reservation lands; 153 acres of ROW on BLM and reservation lands; PV; 350 MW	FEIS Complete, ROD Signed, ROW grant pending	Record of Decision for the FEIS , http://projects2.pirnie.com/MoapaSolar/index.cfm?fuseaction=FROD	BIA/BLM, 2012	Soils - implement Storm Water Pollution Prevention Plan and Site Restoration Plan. Water Quality - adaptive management via the SWPP, vegetative buffers, Emergency Response Plan; Spill Prevention, Control, and Countermeasure Plan; xeric landscaping. Air - several measures to control fugitive dust. Biological Resources - sensitive plant species spring surveys will be conducted (project area, transmission ROW, tortoise relocation areas, desert tortoise relocation and conditions in BO, Moapa Dace groundwater withdrawals consistent with Programmatic BO, migratory birds avian safe transmission towers and poles; other measures including evaporation pond and specific monitoring measures for Western Burrowing Owl, Gila Monster training for workers, harm's way procedures. Cultural Resources - flag and rope off known sites to avoid inadvertent impacts; monitor during construction; stop work for unexpected discovery. Transportation - condition assessment of access route; Traffic Management Plan. Public H&S - General Design and Construction Standards; Health and Safety Program; Emergency Response Plan; and Hazardous Waste Storage Plan.	None identified.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
The K Road Moapa Solar Generation Facility (Clark County, Nevada) - 2	2000 acres - Indian Reservation lands; 153 acres of ROW on BLM and reservation lands; PV; 350 MW	FEIS Complete, ROD Signed, ROW grant pending	Biological Opinion (App B Final PEIS), http://projects2.pirnie.com/MoapaSolar/documents/FEIS%20Vol%20II%20App%20A-P.pdf	BIA/BLM, 2012	Permanent perimeter exclusionary fence (7.14 mi) - monitoring during construction of fence; preconstruction survey and tortoise removal from project area; roving biological monitors during construction until 100% clearance of tortoise confirmed; speed limits of less than 25 mph in project area; lighting focused toward facility and not habitats beyond perimeter fence; monitoring for predators (e.g., ravens); implement Weed Management Plan.	Desert Tortoise Relocation Plan; acreage-based compensatory mitigation formula developed in consultation with the USFWS - includes payment into a tribal conservation fund at a rate of $786 per acre - funds will be used for desert tortoise recovery actions; monitor must be present in occupied tortoise habitat outside of the perimeter fencing for any maintenance activities in these areas
Lucerne Valley Solar Project (San Bernardino County, CA)	Thin film PV, 45 MW, 516 acres	FEIS Complete, ROD Signed, ROW Grant.	BLM Final EIS - Chapter 4	BLM, 2010	MM BIO-1: Minimize Effects on Vegetation. No direct effects on vegetation in areas outside the construction footprint would be authorized. As appropriate, areas of native vegetation would be flagged for avoidance during perimeter and desert tortoise exclusion fence construction. Within the site, healthy Joshua trees and all cacti, other than cholla, would be salvaged in accordance with the Cactus Salvage Plan. MM BIO-3: Biological Monitors. The Applicant would provide a third-party biological monitor (BM) (or BMs) to oversee compliance with BMPs and mitigation measures for protected species. The BMs would be authorized biologists, approved by the BLM, USFWS, and CDFG, would hold all required permits or agency approvals, and would be on-site during all ground-disturbing activities. The BM would have a copy of all stipulations when work is being conducted on-site. At least one BM would be on site during all construction activities. During operations, at least one BM will be "on call" (but not necessarily on site) at all times and available on an as needed basis. The most up-to-date USFWS guidance would be required for monitoring of any construction, operation, or maintenance activities that may result in injury or mortality of desert tortoises.	Offsite Mitigation measures as follows: MM BIO-13: Desert Tortoise Off-Site Mitigation. All loss of desert tortoise habitat shall be off-set consistent with the requirements of the WEMO Plan, wildlife agency permits, and the USFWS's BO. The applicant will coordinate with the BLM to develop off-site mitigation to compensate for effects on desert tortoises and their habitat by funding desert tortoise habitat acquisition and enhancement activities on other lands. The following description represents the current requirements by the BLM and CDFG: Both the BLM and the CDFG would require CES to compensate for the loss of habitat. According to the provisions of the amended CDCA Plan (Bureau et al. 2005), the BLM would require compensation at the ratio of 1:1. To meet its "fully mitigated" standard under the CESA, the CDFG requires a compensation 2;1 ratio. Because the CDFG has agreed to accept the BLM's 1:1 ratio as part of its 2:1 requirement, the total compensation ratio would be 2:1. For the BLM's portion of the compensation, the Applicant will deposit funds based on the price to acquire land (i.e. funding sufficient to acquire 516 acres) into an account managed by NFWF. Funds will be used to enhance desert tortoise habitat within the Ord-Rodman Desert Wildlife Management Area. This 1:1 component of the total compensatory mitigation could be provided in fee to the BLM based on the July 13, 2010 REAT fee schedule. The REAT –NFWF Memorandum of Agreement allows for the REAT agencies to require additional funding to be deposited into the project specific account if they find that the money is not adequate to implement the required biological mitigation.

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Lucerne Valley Solar Project (San Bernardino County, CA) (cont.)	Thin film PV, 45 MW, 516 acres	FEIS Complete, ROD Signed, ROW Grant.	BLM Final EIS - Chapter 4	BLM, 2010	The USFWS is currently using the Desert Tortoise Field Manual (Service 2009). CES would provide the credentials of all individuals seeking approval as BMs and monitors to the BLM. The BLM would review the credentials and provide those of appropriate individuals to the USFWS and CDFG for approval at least 30 days prior to the time they must be in the field.	Habitat enhancement actions for this project could include all or some of the following: construction of a fence along State Route 247 from Barstow to Lucerne Valley to prevent desert tortoise from entering the roadway with the primary focus area being Barstow to Stoddard Ridge; signing open routes within the Ord-Rodman Desert Wildlife Management Area and visually obscuring routes that have been administratively closed but continue to be used by vehicles; and installation of barrier fencing in the Stoddard Valley area to prevent unauthorized use of the DWMAs. These funds may also be used to support a headstarting program for desert tortoises that would be developed in coordination with the USFWS's Desert Tortoise Recovery Office. The portion of the compensation required by the CDFG would be used to acquire 516 acres of desert tortoise habitat in the Ord-Rodman, Superior-Cronese, or Fremont-Kramer DWMAs. This acquisition can be done by CES and donated to the BLM or CES can deposit sufficient funds for this acquisition, as determined by CDFG, into the NFWF account for NFWF to then contract the purchase of these lands.
McCoy Solar Energy Project (Riverside County, CA)		Final EIS published	McCoy Solar Energy Project Prpoposed Plan Amendment and Final EIS-Appendix M	BLM, 2012	Mitigation measures are listed in Appendix M. They include minimization of **air quality impacts**; **biological resources:** a Biological Resources Mitigation Implementation and Monitoring Plan; Weed Management Plan; designated biologist and monitors; worker program; special-status plant impact avoidance and minimization measures; desert tortoise protection measures; mtigation for impacts to sensitive riparian habitat and state waters; Raven Monitoring and Control Plan; Avian and Bat Protection Plan, pre-construction nest surveys; american badger and desert kit fox protection; burrowing owl proection and mitigation; measures to minimize impact to golden eagle and wildlife impacts from evaporation ponds; **mitigation for cultural resource**s and paleontological resources, mitigation for recreation, transportation, and visual resources. Stormwater Pollution Prevention Plan, Comprehensive Drainage, Stormwater, Sedimentation Control Plan, Groundwater Monitoring and Mitigation Plan	Off-site compensatory mitigation for special status plants: ratio shall be 3:1 for Rank 1 plants and 2:1 for Rank 2 plants--the applicant shall provide funding for the acquisition and/or restoration/ enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The document details the requirements for compensatory mitigation by acquisition and by habitat enhancement/restoration. Desert Tortoise Compensation: compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat--the document details the criteria that would be used to select compensation lands. Acquire compensatory burrowing owl habitat: The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party. The document details the criteria that would be used to select compensation lands. Compensatory mitigation for Mojave fringe-toed lizard habitat losses: ratio shall be 3:1 which may include compensation lands purchased in fee or in easement in whole or in part. Sensitive riparian habitat and state waters: an applicant must acquire in fee or in easement a parcel of land that includes acres of state jurisdictional waters, or comparable area. The applicant proposes the suggested mitigation ratios to be used for the state jurisdictional waters that will be impacted by the project (see attached word document, pg 31: "McCoy Solar Energy Project: Mitigation Ratios for Jurisdictional Waters" for mitigation ratios). Translocation Plan: the applicant will prepare and implement a Desert Tortoise Translocation Plan that will be approved by USFWS prior to construction.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Silver State North (Clark County, Nevada)	Thin film PV, 50 MW, 618 acres	Operations began May 2012	ROW grant https://sharepoint.anl.gov/Divisions/evs/rmpp/Shared%20Documents/Baseline%20Data%20Review/Silver%20State%20North/Signed%20ROW%20Grant%20N-85077.pdf	BLM, 2010	Per Stipulations in Exhibit B of the ROW Grant, on-site mitigation measures to be performed include but are not limited to: (1) on-site mitigation and monitoring for cultural sites; (2) On-site measures to comply with Section 404 of the Clean Water Act; (3) on-site measures to minimize impact of power lines on raptors based on "Suggested Practices for Raptor Protection on Powerlines"; (4) authorized use of pesticides in accordance with applicable Federal and State laws and according to label instructions; (5) compliance with applicable Federal, State, and local laws regarding hazardous materials generated or stored on-site. (6) fire suppression costs associated with fires during construction or operation; (7) erosion and sedimentation control measures; (8) storm water monitoring and control measures; (9) flood risk control measures; (10) groundwater monitoring and implement a groundwater monitoring plan; (11) traffic management; (12) measures to reduce visual contrast; (13) compliance with NDOW Gila Monster protocols.	Required mitigation measures are outlined in Appendix A of the ROD and were incorporated into the ROW authorization and stipulations. ROW lease/grant stipulations are in Appendix B of the ROD. However, Appendix A (biological mitigation) is currently not available online. According to Stipulations in Exhibit B of the ROW Grant, the holder shall comply with the BO signed by the USFWS on 9-16-2010. Off-site ROW stipulation regarding SSS plant salvaging: BLM will conduct commercial sales of cactus and yucca present on the site. The proponent will reimburse BLM for costs associated with the sales through a cost reimbursable account. For the remaining cactus and yucca not purchased in the BLM sale, the Proponent shall fund, set up, and maintain three cactus and yucca stockpiles to assist with BLM habitat restoration, road closure, and mine reclamation programs. The Proponent shall contract with a BLM-approved company to set up and maintain stockpiles. Set up would include: (A) fencing 1 to 2 acre sites with posts and wires (or repair existing fences); (B) salvage and transplant cactus/yucca; and (C) water plants at least once a month. The proponent shall continue maintenance (watering) for a one year period. There are no costs or estimated amount of effort associated with plant salvaging provided.
Silver State North (Clark County, Nevada) - 2	Thin film PV, 50 MW, 618 acres	Operations began May 2012	Biological Opinion	FWS, 2010		The FWS Biological Opinion was prepared for the entire Silver State Project (North and South, approximately 7,925 acres). The FWS estimates that up to 38 tortoises will be accidentally injured, killed, or destoryed; up to 123 may be encountered and relocated. Desert Tortoise Remuneration Fees: BLM estimates a total of 2,966 acres of tortoise habitat would be disturbed between the two Silver State projects. Total fees for disturbance of tortoise habitat within the material site and expansion area would be $2,295,684 ($774/acre X 2,966 acres). Desert Tortoise translocation and fencing: no quantitative presentation on number of acres or tortoises, amount of fencing, or costs. Reasonable and Prudent Measures with Terms and Conditions: (1) additional tortoise fencing; (2) off-site tortoise monitoring for minimum of 5 years; (3) fee of $9,000 for each tortoise sent to the desert tortoise recovery center.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Sonoran Solar Project (Maricopa County, Arizona)	PV, 300 MW, 2,013 acres	FEIS Complete, ROD Signed	FEIS http://www.blm.gov/az/st/en/info/nepa/environmental_library/eis/feis.html.	BLM, 2011	Chapter 4 of the FEIS lists several on-site measures for each resource area: Air Quality (4.2), Climate Change (4.3), Cultural Resources (4.4), Geology and Minerals (4.5), Hazardous Materials and Solid Waste (4.6), Land Use and Access (4.7), Livestock Grazing (4.8), Noise (4.9), Paleontology (4.10), Recreation and Wilderness Characteristics (4.11), Socioeconomics (4.12), Soils (4.13), Special Designations (4.14), Transportation and Traffic (4.15), Vegetation and Special Status Plants (4.16), Visual Resources (4.17), Water Resources (4.18), and Wildlife and Special Status Species (4.19).	General Off-Site Mitigation Synopsis: Very little quantification of mitigation costs or acres are given. The EIS lists the potential for plant and wildlife salvage and translocation, but no estimated costs or numbers are given. Species include cacti and SSS plants, tortoise, and burrowing owl. The EIS also discusses the construction of exclusion fencing. There are no ESA-listed species in the area. The Sonoran population of the desert tortoise is a candidate for listing. The burrowing owl is a sensitive species and a bird species under the MBTA. Appendix I describes the Burrowing Owl Relocation Analysis. The Proponent used Wild by Heart (WAH), a non-profit 501(3)c organization to perform owl removal, excavation, and relocation. WAH identified 25.5 acres off-site for new burrow excavation and relocation. Construction of 68 burrows in the relocation area is a conservative estimate based on a 4:1 burrow mitigation ratio (no estimate of cost is given).
Sonoran Solar Project (Maricopa County, Arizona) - 2	PV, 300 MW, 2,013 acres	FEIS Complete, ROD Signed	Record of Decision for the FEIS (Attachment A - Environmental Construction Compliance Monitoring Plan)	BLM, 2011	Appendix E lists on-site measures to mitigate impacts to several resource groups.	Appendix E of Attachment A lists the potential for plant and wildlife salvage and translocation, but no estimated costs or numbers are given. Species include cacti and SSS plants, tortoise, and burrowing owl. The EIS also discusses the construction of exclusion fencing.
Sonoran Solar Project (Maricopa County, Arizona) - 3	PV, 300 MW, 2,013 acres	FEIS Complete, ROD Signed	Plan of Development (POD) http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/energy/sonoran-solar/rod.Par.69679.File.dat/attach-B.pdf	BLM , 2011		Appendix B describes the Ecological Resource Mitigation and Monitoring Plan. However, this appendix is missing from the Plan of Development.

Summary of Mitigation Requirements for BLM Solar Projects

Project Name	Solar Tech., MW Potential, and Acres Disurbed	Status	Data/ Document Title and URL	Source / Author/ Year	ON-SITE mitigation--Summary of Information	OFF-SITE mitigation--Summary of Information
Topaz Solar Farm (San Luis Obispo County, CA)		Under construction	Memo to Board of Directors, First Solar Topaz Solar Farm Project Mitigation Program. May 23.	San Luis Obispo County Air Pollution Control District, 2012		The APCD determined that on-site mitigation alone would not reduce project emissions below the APCD's significance level for ozone precursors. As a condition of approval, off site mitigation funds were identified as a feasible option. As a condition of approval, First Solar provided the APCD with $830,783 for a mitigation incentive program. The mitigation funds are to be used to fund emission reduction projects. The proposed Mitigation Program has three funding categories described in some detail: 1) Atascadero Unified School District Transportation Project; 2) Compressed Natural Gas Vehicles and Infrastructure, and 3) additional 2011/2012 Incentive Program emission
Calico Solar Energy Project	PV, 664 MW, 4,604 acres	ROW granted in 2010; revised POD was submitted; SEIS in prep for impacts from the change in technology.				
C Solar South	Thin film PV, 550 MW, 4,165 acres	FONSI; Decision Record; ROW granted				

1. Blythe Solar Power Project Off-site Mitigation

Desert Tortoise Relocation/Translocation Plan:

- **1:1 ratio for impacts to 6,958 acres**

- The Mitigation Security is as follows: (a) land acquisition costs for compensation land, calculated at $500/acre (b) initial protection and improvement activities on the compensation land, calculated at $330/acre (c) Long term maintenance and management fee, calculated at $1,450 an acre.
-In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). A set selection criteria for compensation lands is described. Review and approval of compensation lands prior to acquisition is required.

Burrowing Owl Compensation Mitigation

- **39 acres of land suitable to support a resident population of burrowing owls**

-The acquisition lands must either currently support burrowing owls or be no farther than 5 miles from an active burrowing owl nesting territory.
-The 39 acres of burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met.

Couch's spadefoot toad Mitigation

- **Create additional breeding habitats (ephemeral pond) at least equal in area to the acreage of ponds being impacted**

-If complete avoidance of breeding sites identified during surveys is not possible, the Protection and Mitigation Plan shall include plans to create breeding habitat
-Alternatively, the Project owner may purchase mitigation land that has the potential for ponding that is equal to or greater than the ponds identified as potential Toad breeding ponds within the Project disturbance area.
-If the above criteria are met, these habitats may overlap on other lands preserved by the applicant for other mitigation (e.g., desert tortoise habitat within Northern and Eastern Colorado Desert Coordinated Management).

Mojave Fringe-Toed Lizard Compensation Mitigation

- **3:1 ratio for impacts to 58 acres of sand dune/partially stabilized sand dune habitat impacted by the final Project footprint**

Nelson's bighorn sheep loss of spring foraging habitat

The project owner must create a new water source or acquire compensatory habitat. The acquired acreage may be included with the desert tortoise mitigation lands.

Special-Status Plant Compensation Mitigation

Mitigation for CNDDB Rank 1 Plants: Avoidance Required. If avoidance protects less than 75% of the local population of the affected species, the project owner shall implement offsite mitigation.
-Mitigation for CNDDB Rank 2 Plants: Avoidance on Linears Required: The Project owner shall provide compensatory mitigation for impacts to plants that could not be avoided.

-Compensatory mitigation shall consist of acquisition of habitat or restoration/enhancement of populations of the target species.
-Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants. The Mitigation Security is as follows: $2,280 per acre, using the estimated cost per acre for Desert Tortoise
- As an alternative or adjunct to land acquisition for compensatory mitigation the Project owner may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants.
- As a contingency measure in the event that there are no opportunities for acquisition or restoration/enhancement, a Scientific Study of Special-status Plant Species Distribution Study may be funded.
-Additional details are contained in the FEIS, including selection criteria for compensation lands.

Mitigation For Impacts to State Waters

- **1,384 acres of state jurisdictional waters (include at least 639 acres of desert dry wash woodland at a 3:1 ratio)**

Water:
Where it is determined that the project owner shall reimburse a private well owner for increased energy costs the project owner shall calculate the compensation owed to any owner of an impacted well based on change in lift/total system head , total energy consumption, and costs/unit of energy using a formula described in the FEIS.

Prehistoric Trails Network Cultural Landscape (PTNCL) Documentation and Possible NRHP Nomination
The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM . The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs.

Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) Documentation and Possible NRHP Nomination
The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM. The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs.

2. Desert Sunlight Solar Farm Off-site Mitigation Requirements

Mojave Fringe-Toed Lizard Compensation Mitigation

- **Ranges from 1:1 to 5:1** depending upon (a) species known to be present on site (b) habitat condition (c) proximity of known disturbances (d) vegetation type.

Offsite Compensation:
(1) Desert dry wash woodland (101 acres at 3:1 ratio); (2) **Occupied desert tortoise habitat (2,757 acres at 1:1 ratio; 1,214 acres at 2:1 ratio; 191 acres at 5:1 ratio)**; (3) occupied or suitable habitat for breeding or wintering burrowing owls (13 acres for each occupied burrow, estimated as two burrows);
(4) state-jurisdictional streambeds (302 acres, including the desert dry wash woodland, above, at 3:1 ratio); (5) creosote bush scrub (4,072 acres at 1:1 ratio); (6) occupied foxtail cactus habitat (estimated as two acres, at 1:1 ratio); (7) undisturbed habitat for most wildlife species including desert

kit fox and American badger (i.e., away from sources of noise or other disturbance such as highways, wind farms, etc.) (4,173 acres, at 1:1 ratio); (8) occupied chuckwalla and rosy boa habitat (Red Bluff Substation A site, 149 acres, at 1:1 ratio); (9) suitable/occupied upland shrubland nesting habitat for migratory birds (4,173 acres, at 1:1 ratio); (10)suitable foraging habitat for golden eagles, and within foraging range of a known nesting site (4,173 acres, at 1:1 ratio); (11)suitable or occupied roosting habitat for special status bats (101 acres desert dry wash woodland at Solar Farm B and 149 acres rocky slopes at Red Bluff Substation A), and (12)suitable or occupied habitat for Palm Springs round-tailed ground squirrel (estimated as 92 acres, based on Gen-Tie Line A-1 disturbance), Colorado Valley woodrat (estimated as 149 acres at Red Bluff Substation A location).

DSSF Table 4.3-10 Minimum Total Compensation Acreage

Resource	Acres of Impact	Compensation Ratio	Compensation Acres
Previously disturbed (no compensation)	3	0	0
Desert tortoise habitat (moderate density)[1]	1,214	2:1	2,428
State-jurisdictional desert dry wash and desert dry wash woodland (302 ac.), less 24 acres desert dry wash woodland within DWMA/ CHU[2]	278	3:1	834 (to include 288 acres dry wash woodland)
Wildlife Management Areas Chuckwalla DWMA, Chuckwalla CH[3]	191	5:1	955
Balance of total project disturbance 4,176 – (3 + 1,214 + 278 + 191) = 2,490	2,490	1:1	2,490
Minimum Total Habitat Compensation Requirement			6,707

Compensation habitat for biological resources may be “nested”. Where impacted habitats meet criteria as two or more compensation ratios, the highest ratio will apply.

The Project owner shall provide money to establish an account with non-wasting capital that will be used to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment, the Project owner shall either: (i) provide initial payment equal to the amount of $1,450 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation; or (ii)provide security to the BLM and CPUC, in an amount equal to $1,450 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation. The BLM and CPUC will consult with USFWS and CDFG before deciding whether to approve an entity to hold the Project’s long-term maintenance and management funds.

In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

The Project owner may elect to comply with the requirements in this condition for acquisition of

compensation lands, initial protection and habitat improvement on the compensation lands, or long term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement and additional fees, management funds, and other costs associated with the NFWF account. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation.

Biological Resource Compensation/Mitigation Cost Estimate[1]/ Table of Estimated Costs[2]

Task		Cost
1	Land Acquisition (6,707 acres)	$1000 per acre[3]
2	Level 1 Environmental Site Assessment (42 parcels at estimated 160-acre average parcel size)	$3000 per parcel[4]
3	Appraisal	$5000 per parcel
4	Initial site work - clean-up, enhancement, restoration	$330 per acre[5]
5	Closing and Escrow Costs – 1 transaction includes landowner to 3rd party and 3rd party to agency	$5000 per transaction
6	Biological survey for determining mitigation value of land (habitat based with species specific augmentation)	$5000 per parcel
7	3rd party administrative costs - includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acres to acquire….	10% of land acquisition cost (#1)
8	Agency costs to review and determine accepting land donation - includes 2 physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed and deed restrictions; issue escrow instructions; mapping the parcels.	15% of land acquisition costs (#1) × 1.17 (17% of the 15% for overhead)
	Subtotal - Acquisition & Initial Site Work	$11,524,000
9	Long-term Management and Maintenance (LTMM) Fund - includes land management; enforcement and defense of easement or title [short and long term]; monitoring….	$1450 per acre[6]
Total	(if compensation not implemented through NFWF account)	$21,249,000
10	Establish the project specific account	$12,000
11	NFWF management fee for acquisition & initial site work	3% of SUBTOTAL
12	NFWF Management fee for LTMM Fund	1% of LTMM Fund
Total for deposit in REAT-NFWF Project Specific Account		**$21,704,000**

[1] All costs are best estimates as of spring 2011. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
[2] Companion table to the excel spreadsheet with formulas.

[3] Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18-24 month window to acquire the land after agency decisions are made. If the agencies, developer, or 3rd party has better, credible information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
[4] For the purposes of determining costs, a parcel is 160 acres.
[5] Based on information from CDFG.
[6] Estimate for purposes of calculating general costs. The actual long term management and maintenance costs will be determined using a Property Assessment Report (PAR) tailored to the specific acquisition.

3. Genesis Off-Site Mitigation Requirements

Desert Tortoise Compensatory Mitigation

- **1:1 ratio for impacts to 1750 acres**
- **5:1 ratio for impacts to 24 acres of critical habitat**.

-Costs of these requirements are estimated to be $4,263,600 (acquisition of 1,870 acres, estimated per-acre costs of $500 for acquisition, $330 for initial habitat improvement, and $1,450 for LTMM).
-Additional details are contained in the FEIS, including: selection criteria for compensation lands, review and approval of lands, property analysis record, LTMM funding, and mitigation security.
-The Project owner may elect to comply with the requirements by providing funds to implement those measures into the REAT Account established with the NFWF in an amount equal to the estimated costs of implementing the requirement.

Special-Status Plant Compensation Mitigation

Mitigation for CNDDB Rank 1 Plants: Avoidance Required. If avoidance protects less than 75% of the local population of the affected species, the project owner shall implement offsite mitigation.
-Mitigation for CNDDB Rank 2 Plants: Avoidance on Linears Required: The Project owner shall provide compensatory mitigation for impacts to plants that could not be avoided.
-Compensatory mitigation shall consist of acquisition of habitat or restoration/enhancement of populations of the target species.
-Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants.
-Additional details are contained in the FEIS, including selection criteria for compensation lands.

Mojave Fringe-Toed Lizard Compensation Mitigation

- **136 acres for impacts to stabilized and partially stabilized sand dunes and other Mojave fringe-toed lizard habitat**
- **5:1 ratio for impacts to 24 acres of critical habitat**.

-Additional details are contained in the FEIS, including: selection criteria for compensation lands and security for implementation of mitigation.
- In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the REAT Account established with the NFWF.

Mitigation For Impacts to State Waters

- **132 acres of state jurisdictional waters**

-The Project owner shall acquire mitigation lands in fee or in easement.
-The acquisition of state waters may be integrated with the desert tortoise mitigation if criteria are met.

Couch's Spadefoot Toad Impact Avoidance and Minimization Measures
-If complete avoidance is not possible, the Protection and Mitigation Plan shall include plans to create additional breeding habitats (ephemeral pond) at least equal in area to the acreage of ponds being impacted. Specifications for the created ponds are detailed in the FEIS.
-The Project owner may choose to satisfy its mitigation obligations by paying an in lieu fee instead of acquiring compensation lands.

Prehistoric Trails Network Cultural Landscape (PTNCL) Documentation and Possible NRHP Nomination
The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM . The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs.

Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) Documentation and Possible NRHP Nomination
The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM. The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs.

Water:
Where it is determined that the Project owner shall reimburse a private well owner for increased energy costs, the Project owner shall calculate the compensation owed to any owner of an impacted using a formula described in the FEIS

4. **Ivanpah Off-Site Mitigation Requirements**

Desert Tortoise Compensatory Mitigation
3:1 ratio for impacts to 3,582 acres

- **Two thirds of the 3:1 mitigation shall be achieved by acquisition, in fee title or in easement, of no less than 7,164 acres of land suitable for desert tortoise.**
- **The remaining third of the 3:1 mitigation shall be developed as described in the Northern and Eastern Mojave Desert Management Plan (BLM 2002).**

-The mitigation shall consist of desert tortoise habitat enhancement**,** including installation of at least 50 miles of desert tortoise exclusion fencing and habitat restoration of at least 50 routes within the Desert Wildlife Management Area.
-In lieu of acquiring lands and providing restoration/enhancement itself, the project owner may deposit funds into the REAT Account established with NFWF in an amount equal to the sum of: 1) the cost of fencing and route restoration; 2) the CEC's Complementary Mitigation Security for acquisition; and 3) long term maintenance of fencing and habitat restoration; and 4) the NFWF administrative fee.
-Additional details are contained in the FEIS, including: responsibility for acquisition of lands, selection criteria for compensation lands, review and approval of compensation lands, financial assurances, compensation lands acquisition conditions, and long-term maintenance of fencing and restoration.

Mojave Milkweed Compensatory Mitigation

- **30 acres that contain a viable occurrence of Mojave milkweed (or suitable habitat adjacent to a known occurrence).**

-The project owner shall acquire, in fee or in easement, mitigation lands that: 1) provide habitat

for the species that is of similar or better quality than that impacted; 2) contain or abut a known occurrence of the species that shares the same watershed as the land; and 3) be adequately sized and buffered to support self-sustaining populations.
-These mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above criteria are met

Streambed Impact Compensatory Mitigation

- **175 acres of state jurisdictional waters that include ephemeral washes**

The project owner shall acquire, in fee or in easement, desert wash mitigation lands that: 1) be characterized by similar soil permeability, hydrological and biological functions as the impacted drainages; and 2) be within the same watershed as the impacted wash.
-The desert wash mitigation lands may be included with the desert tortoise mitigation lands ONLY if the above criteria are met.
-Additional details are contained in the FEIS, including: security for implementation of mitigation, preparation of management plan, access and review for compliance monitoring.

Biological Resources Mitigation/Compensation Cost Estimate Table -

Number of Acres	3582
Estimated number of parcels to be acquired, at 40 acres per parcel	90
Land cost at $1000/acre	$ 3,582,000.00
Level 1 Environmental Site Assessment at $3000/parcel	$ 270,000.00
Appraisal at no less than $5,000/parcel	$ 450,000.00
Initial site work - clean-up, restoration or enhancement, at $250/acre	$ 895,500.00
Closing and Escrow Cost at $5000/parcel	$ 450,000.00
Biological survey for determining value of land at $5000/parcel	$ 450,000.00
3rd Party Administrative Costs (Land Cost x 10%)	$ 358,200.00
Agency cost (Land Cost x 15%) x 1.17 (17% of the 15% for overhead)	$ 628,641.00
SUBTOTAL - Acquisition and Initial Site Work	$ 7,084,341.00
LTMM fee at $1450/acre	$ 5,193,900.00
NFWF Fees	
Establish Project Specific Account	$ 12,000.00
NFWF Mgmt fee for Acquisition and Enhancement (Subtotal x 3%)	$ 212,530.23
NFWF Mgmt Fee for LTMM account (LTMM x 1%)	$ 51,939.00
Subtotal of NFWF Fees	$ 276,469.23
TOTAL Estimated cost for deposit in project specific REAT-NFWF Account	*$ 12,554,710.23*