

## 1.0 EXECUTIVE SUMMARY

### Project Description

Genesis Solar, LLC, a Delaware limited liability company and wholly owned subsidiary of NextEra Energy Resources, LLC, submits this Application for Certification (AFC) to the California Energy Commission (CEC) to construct, own, and operate the Genesis Solar Energy Project (the Project). The Project is a concentrated solar electric generating facility that would be located in Riverside County, California.

The Project consists of two independent solar electric generating facilities with a nominal net electrical output of 125 megawatts (MW) each, for a total net electrical output of 250 MW. Parabolic trough technology is widely considered a cost-effective and commercially proven technology for utility-scale solar electric power generating facilities. Electrical power would be produced using steam turbine generators fed from solar steam generators. The solar steam generators receive heated transfer fluid from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun.

The Project proposes to use a wet cooling tower for power plant cooling. Water for cooling tower makeup, process water makeup, and other industrial uses such as mirror washing would be supplied from onsite groundwater wells. Project cooling water blowdown will be piped to lined, onsite evaporation ponds.

A transmission line, access road, and natural gas pipeline will be co-located in one linear corridor to serve the main Project facility. This corridor would exit the facility to the south and would be approximately 6.5 miles long. The generation tie-line would cross Interstate 10 (I-10), and tie into the Blythe Energy Project Transmission Line. The generation tie-line would use the existing pole structures of the Blythe Energy Transmission Line to interconnect with the proposed Colorado River Substation to the east.



**Parabolic trough solar thermal technology**

## Project Location

The Project is located approximately 25 miles west of the city of Blythe on lands managed by the Bureau of Land Management (BLM). The Project is an undeveloped area of the Sonoran Desert. Surrounding features include the McCoy Mountains to the east, the Palen Mountains (including the Palen/McCoy Wilderness Area) to the north, and Ford Dry Lake, a dry lakebed, to the south. I-10 is located to the south of the Project facility. The Chuckwalla Mountains and Little Chuckwalla Mountains Wilderness Areas are also located farther south-southwest. The Project area is currently undisturbed, although the area has been used for grazing and off-highway vehicle recreation in the past. Ford Dry Lake was formerly open to the public for off-highway vehicle use, but has since been closed. Access to the Project facility is poor and limited to 4-wheel-drive tracks located on the western end of the Project area.



Project location map

## Project History and Alternatives Considered

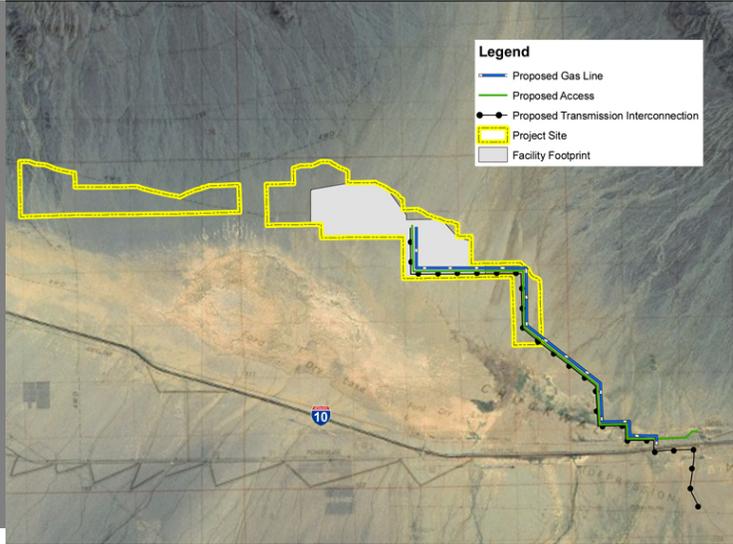
Genesis Solar, LLC evaluated a range of ideas for potential renewable projects in Southern California in terms of location, linear facility routes, and design. It was particularly important to develop a project where the solar insolation values were high, the environmental impacts were low, at least 1,800 acres of contiguous land could be used, the land slope was less than three percent, and transmission lines were located within 25 miles of the solar electric generating facility.



Project site

After consideration of numerous potential sites, Genesis Solar, LLC filed Right-of-Way (ROW) applications with the BLM on five sites in Riverside County. The ROW application for the Genesis Solar Energy Project was originally 19,000 acres when filed in 2007. In consultation with BLM, preliminary studies were conducted to determine potential environmental impacts. The results of these surveys were used to avoid sensitive cultural and biological resources that were primarily associated with the dry lake bed. These efforts resulted in substantial revisions and reductions to the acreage requested in the ROW application.

Today the ROW application with BLM consists of 4,640 acres, with an eastern and western portion. Once constructed, the



Main project features

Project would permanently occupy approximately 1,800 acres within the eastern portion (the Project footprint), plus approximately 90 acres of linear facilities. The remainder of the acreage in the ROW application is not anticipated to be needed for the Project.

**Project Objectives and Renewable Initiatives**

The United States is currently interested in reducing reliability on foreign oil supplies, and increasing renewable energy production. The State of California has issued a number of executive and legislative measures that have created a need in California for the development of solar and other renewable energy sources.

In response to the growing demand for renewable energy sources in California, the BLM and the CEC have received applications for the development of solar and other renewable energy facilities throughout California. Several planning initiatives have been established to programmatically review California's natural and social resources and identify areas most suitable for development of renewable energy resources.

The primary objective of the Genesis Solar Energy Project is to provide clean, renewable, solar-powered electricity and assist California utilities in meeting their obligations under California's Renewable Portfolio Standard (RPS) Program. A secondary objective is to assist the future off-taker in reducing its greenhouse gas emissions as required by the California Global Warming Solutions Act.

**Permitting Process**

Because the Project is a solar thermal project greater than 50 MW in size, it will need to be permitted through the CEC. The CEC is also the designated lead agency for all state compliance and permitting activities for these types of projects. The CEC's licensing and certification process is a certified regulatory program under the California Environmental Quality Act (CEQA). This

means the CEC AFC process is a CEQA-equivalent process. Therefore, the CEC is the state lead agency for CEQA.

Because the Project would be located on BLM administered land, the Project must also be compliant with the National Environmental Policy Act (NEPA). Genesis Solar, LLC has been working closely with the BLM's Palm Springs field office, and understands the NEPA process and associated requirements that must be met for the BLM to ultimately make a decision on the Project and use of the land.

The BLM and CEC have signed a memorandum of understanding outlining the joint process for conducting environmental review of solar thermal plants. The process sets forth a unified approach to compliance and permitting that integrates CEQA and NEPA processes to minimize redundancy of analysis and documentation, and streamlines the overall timeline for conducting such review.

## **Environmental Impacts**

The environmental impacts of the project are fully described in Section 5 of this AFC. In general, project impacts are expected to be less than significant. However, the Project would change approximately 1,890 acres of undeveloped desert land to light industrial use. Biological habitat would be permanently reduced for plant and animal species in the area.

An understanding of potential cumulative impacts is important, particularly in light of the recent proposals for a number of new renewable energy projects in the southeast region of California, or the BLM California Desert District. Historically, the desert has seen little change or human development largely due to the remote nature of the area and its adverse climatic conditions. The introduction of large utility-scale solar facilities would reduce the amount of previously undisturbed desert area. The intensity of the proposed development projects that will actually be constructed is unknown at this time, making quantification of cumulative impacts difficult. Both the CEC and BLM are working on developing plans for addressing potential cumulative impacts in the area.

The following environmental subjects are addressed in detail in this AFC and discussed briefly below.

- Air Quality
- Biological Resources
- Water Resources
- Geologic Resources and Hazards
- Agriculture and Soils
- Land Use
- Socioeconomics
- Noise
- Visual Resources
- Traffic and Transportation
- Hazardous Materials Handling
- Waste Management
- Worker Safety
- Public Health
- Cultural Resources
- Paleontological Resources

### ■ Air Quality

Emissions to the air will consist primarily of combustion by-products produced by the auxiliary boilers, and the diesel-fired emergency fire pump and electrical generator engines. Controlled emissions from these sources will not exceed major source thresholds for any criteria pollutant, and do not exceed the threshold above which emission offsets would be required for the Project. There may be some particulate matter (PM10) exceedances during project construction; however, the emissions will be temporary and limited to the construction period. Because the project is a renewable energy source it will ultimately reduce both PM10 and carbon based emissions by reducing the need for energy from carbon based power plants.

### ■ Biological Resources

Comprehensive biological resource surveys were conducted in Spring 2009 of the 4,640 acre ROW and two potential linear facility routes, and surrounding areas out to one mile. Within the survey area, 64 wildlife species, 135 plant species, and 5 vegetation communities were observed. Although five vegetation communities occur within the survey area, only Sonoran Creosote Bush Scrub and Stabilized and Partially Stabilized Sand Dunes occur within the Project footprint. One California Native Plant Society (CNPS) list 2 species, Harwood's milkvetch, was observed within the Project area. No federally or state-listed wildlife species were observed during 2009 surveys; no signs (burrows, tracks) for the state-threatened desert tortoise (*Gopherus agassizii*) were found within the Project area. The nearest sign of desert tortoise were one set of tracks approximately a mile to the north of the Project ROW. California species of special concern were observed, including Mojave fringe-toed lizard (*Uma scoparia*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), and American badger (*Taxidea taxus*, burrow only). In addition, tracks of the burro deer (*Odocoileus hemionus eremicus*; a game species) were detected within the survey area.

The Project is situated within areas designated by the BLM and United States Fish and Wildlife Service (USFWS) to manage natural resources and require special consideration by the resource agencies. The solar facility site and portions of the linear facility routes overlap a BLM Multi-Species Wildlife Habitat Management Area (WHMA), and the sand dune community found within the Project area is also considered special by the BLM. The southern portions of the linear facilities are within a BLM desert tortoise Desert Wildlife Management Area (DWMA), and the southern end of the transmission line overlaps USFWS-designated desert tortoise critical habitat.



**Common leopard lizard**

■ **Water Resources**

The Project would use a wet cooling tower for power plant cooling utilizing groundwater from wells that would be installed on the Project site. The average total annual water usage for each 125 MW power plant is estimated to be about 822 acre-ft/yr, or 1,644 acre-ft/yr for the entire Project, which corresponds to an average daily flow rate of about 1,000 gallons per minute (gpm). The groundwater contains high levels of total dissolved solids, and would not be considered a potential potable water source. Initial testing indicates water quantity is adequate for the Project demand and the water quality can be treated to levels that can be used for the wet cooling tower. Based on the results of the drawdown impact modeling, groundwater pumping for the Project is not predicted to significantly impact nearby water supply wells.

■ **Geologic Resources and Hazards**

The project site lies within the eastern part of Riverside County in a part of California considered to be not very seismically active. Faults are presumed Tertiary (2 million years before present) and likely inactive with very low chance of earthquakes. Based on the available data, the Project is subject to low to moderate seismic ground shaking hazard. Ground rupture and slope stability are not considered to be significant hazards at the Project site. To address the management of sediment transport, erosion, and sedimentation during operation, the Project design would incorporate diversion berms, channels, and detention basins.

■ **Agriculture and Soils**

The Project site soils would be subject to wind and water erosion during facility construction and operation activities. The United States Department of Agriculture soil survey classifies the soil onsite as typical durorthids, (soils characterized by shallow compact layer “hard pan”), loamy-skeletal, mixed hyperthermic, and shallow, and typical torripsamments. Construction activities would be in conformance with applicable regulatory requirements and sound construction practices. The soils on the Project site have a moderate to high hazard for wind erosion. Systematic watering of active grading areas during construction at least twice daily is expected to significantly reduce wind-borne dust. With implementation of the required Storm Water Pollution Prevention Plans (SWPPP) and a CEC-required Drainage Erosion Sediment Control Plan (DESCP) during and after construction, soil erosion impacts are expected to be less than significant.

■ **Land Use**

The land use is currently undeveloped desert managed by the BLM as Class M land. Class M (Moderate Use) lands are managed to provide for a wide variety of uses such as mining, livestock grazing, recreation, utilities, and energy development. A ROW for a solar power generation facility effectively precludes other uses of the land and resources subject to the ROW for at least the term of the ROW and may extend to the time needed to reclaim the lands disturbed. An amendment to the BLM’s California Desert Conservation Area Plan would likely be required for all solar power generation facilities, including the Genesis Solar Energy Project.

### ■ Socioeconomics

Project construction is anticipated to create a beneficial impact on the local economic base and fiscal resources. Construction and operations employment wages and salaries would provide additional income to the area, as would local expenditures for construction materials and services. It is anticipated the vast majority of the construction workforce over the 37-month construction phase would commute to the Project or live temporarily in Blythe. Impacts to local population growth are expected to be less than significant, and the Project would not induce substantial local growth. Additionally, the Project is located in a remote area and would not displace existing residents. Project construction labor demand would not significantly affect the availability of construction labor in the region. Less than significant impacts are expected on local public services or utility demands during construction. The Project's operations work force (40 to 50 workers) would not cause significant population growth that could adversely affect local services.

### ■ Noise

During operations, the Project steam turbine generator, solar steam generator, and cooling tower would create some noise. The nearest noise-sensitive land use (residence, school, church, hospital, etc.) in the vicinity of the Project site is a residence over 6 miles from the plant site boundary. Project noise impacts would be less than significant.

### ■ Visual Resources

The Project would have limited visibility and less than significant impacts on visual resources.

The project would most often be viewed from I-10. The key observation points chosen in consultation with the BLM and the corresponding visual simulations show the project is barely visible from any key observation point. Genesis Solar, LLC would work with the BLM to use compatible desert colors for paint, and use non-glare material where possible.



**Visual simulation of Project from I-10**

### ■ Traffic and Transportation

Most roadways in the Project vicinity, including I-10, currently operate at level of service "A" (free flow). Roadways are forecast to operate at similar, primarily free flowing conditions under Baseline Year 2012 conditions, which assumes continued growth in traffic volumes consistent with growth rates experienced between 2004 and 2008 in the Project area. Project construction-related increases in traffic would be limited. Project impacts would be limited to I-10 and would only cause a minimal degradation of existing peak hour level of service and thus would have less than significant impacts on existing roadway operations. No traffic impacts are expected during the operation of the Project.

■ **Hazardous Materials Handling**

The Genesis Solar Energy Project would be designed, constructed, operated, and maintained to ensure the safe use and storage of hazardous materials. Accident prevention and mitigation measures would be implemented, including risk management plans, hazards assessments, process management systems, release prevention and emergency response programs, employee training, and adherence to sound professional design standards and operating procedures.

Compared to typical fossil-fueled power plants, solar thermal plants use relatively less hazardous materials. Hazardous materials that would be used onsite during Project operations include the heat transfer fluid used in the solar component of the Project, activated carbon, various water treatment and cleaning chemicals, and hydrogen for generator cooling. A combination of methods would be employed to detect any heat transfer fluid leaks and ensure they are addressed promptly.

■ **Waste Management**

Project construction and operation would generate non-hazardous solid (e.g., heat transfer fluid-contaminated soils) and liquid (e.g., sanitary wastewater, residual solids from treatment of cooling water blowdown) wastes, and small quantities of hazardous waste (e.g., used hydraulic fluids, oils and grease). Where practicable, waste materials would be recycled. Project procedures and personnel training would ensure waste generation is minimized, and wastes generated are managed appropriately to prevent significant adverse impacts. Disposal of Project wastes would not significantly affect the capacity of available non-hazardous or hazardous waste disposal facilities.

■ **Worker Safety**

Project construction and operations may expose workers to physical and chemical hazards. Worker exposure to such hazards would be minimized by adherence to appropriate engineering design standards and sound construction, operation, and maintenance practices. During both construction and operation, the Project would implement appropriate safety and administrative procedures, safety training, use of personal protective equipment, and compliance with applicable health and safety-related regulations. Injury and Illness Prevention Plans would be central to reducing worker hazards during both construction and operation. Site-specific Fire Protection and Prevention and Emergency Action Plans also would be implemented during both construction and operations. With implementation of the planned worker safety programs, no significant worker safety impacts are expected.

■ **Public Health**

A human health risk assessment was conducted to determine the potential impacts from Project emissions of toxic air contaminants. Air would be the dominant pathway for public exposure to chemical substances released by the Project. The health risk assessment method considered the emission rate of the pollutant, its potency, and receptor proximity to calculate facility risk and assumed no dispersion or dilution. The nearest residential receptor is located more than six miles from the plant site. The Project can be characterized as a low priority facility with minimum receptor impacts. Based on the results of the human health risk assessment, the Project poses an insignificant incremental cancer and non-cancer health risk.

### ■ Cultural Resources

Archival research, consultation with local historical societies and interested parties, and systematic pedestrian surveys were performed to determine the presence of sensitive cultural resources. A Class III survey was performed on the entire eastern portion of the ROW where the Project footprint is located. Based on these investigations, two sites are potentially eligible for the National Register. Refinements were made to the transmission line location to avoid one site; slight modifications to the



**Cultural resources artifact**

Project footprint will be investigated to avoid the perimeter of the second site. However, with implementation of mitigation measures, including testing and data recovery where sites cannot be avoided, potential impacts on cultural resources would be less than significant. If unanticipated archaeological and/or historical resources are discovered during construction, Project construction activities would be halted in the immediate vicinity so the significance of these resources can be evaluated and appropriate mitigation measures implemented, if deemed necessary.

### ■ Paleontological Resources

A paleontological records search and literature review indicated no fossil localities have been previously recorded in the Project area. No fossils were observed on the surface during the paleontological field survey that was conducted for the Project. Geologic units underlying the plant site and linear facilities include areas of both high and low sensitivity. Implementation of the planned mitigations (e.g., monitoring and appropriate data recovery of fossil materials encountered, if any), would ensure impacts to paleontological resources would be less than significant.