NIVLOC SOLAR ENERGY PROJECT
PRELIMINARY PLAN OF DEVELOPMENT

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1.0 PROJECT DESCRIPTION

1.1 Introduction

Nivloc Solar Energy LLC (Nivloc Solar) is applying for a right-of-way (ROW) on public land managed by the Bureau of Land Management (BLM) to access the Nivloc Solar Energy Project (the Project) on private land. This Preliminary Plan of Development (PPOD) has been prepared to support a ROW application. The Project would produce approximately 500 MW of electricity and provide 500 MW of energy storage, using ground-mounted solar panels and Battery Energy Storage Systems (BESS). Associated with the Project would be an electrical collection system connecting power inverters and transformers to the Project's collector substation, where the collection system voltage would be increased to 230 kilovolts (kV). A control building would contain protective relays and communications infrastructure and an operations and maintenance building would house technicians, documents and equipment. A 230-kV generation-tie transmission line (gen-tie line) would connect the Project to a proposed new Esmeralda substation owned by NV Energy on the Greenlink Ft. Churchill to Harry Allen 525-kV transmission line that runs through the project area.

The Project is projected to take approximately 39 months from executing a BLM ROW to commercial operation. Table 1 provides a schedule.

Table 1. Schedule

Activity	Date
BLM Decision Record approving issuance of ROW	Fall 2022
Interconnect Agreement	Fall 2022
BLM ROW	Summer 2024
Lander County Special Use Permit	Summer 2024
Public Utilities Commission of Nevada (PUCN) Permit	Summer 2024
Lander County and Nevada state construction permits	Fall 2024
BLM and PUCN Full Notice to Proceed	Fall 2024
Complete Project financing	Fall 2024
Contractor selection	Fall 2024
Project construction	Fall 2024 – Fall 2026
Commercial operation	Fall 2026 – 2051
Construction reclamation	Fall 2026 – TBD

Invenergy Solar has compiled this PPOD with, to the best of its knowledge, currently available information. This document is subject to change and will be modified as new information becomes available and as design drawings are developed.

1.2 Applicant's Purpose and Need for the Project

The purpose of this Project is to provide a source of environmentally clean, renewable electricity that helps fulfill the needs of national and state renewable energy policies.

Federal laws and orders issued beginning in 2001 have established requirements for the BLM related to renewable energy development. Executive Order 13212, signed in 2001, states that "the increased production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people [and] that agencies shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy." The Energy Policy Act of 2005 set a 10-year target for the Secretary of the Interior to approve at least 10,000 megawatts (MW) of non-hydropower renewable energy projects located on public lands (BLM 2013). These laws and orders led to, among other things, the BLM issuing a solar energy development policy in 2007 (BLM 2007a), and then the *Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States* (PEIS) (BLM 2012).

The State of Nevada has also recognized the need for new and diverse energy resources, including renewable energy generation. The Nevada Renewable Portfolio Standard (Nevada Revised Statutes [NRS] 704.7821) was revised on July 1, 2009, by Senate Bill 358 to state that by calendar year 2027, no less than 42% of the total amount of electricity sold by NV Energy to its retail customers in Nevada must be from renewable energy resources. Additionally, a solar "carve-out" states that beginning in 2016, at least 6% of the energy should be solar. In June 2013, the Nevada Legislature passed Senate Bill 123, requiring NV Energy to retire at least 800 MW of coal-fired electric generating capacity by the end of 2019, and replace this with at least 350 MW from renewable energy.

1.3 General Facility Description, Design, and Operation

1.3.1 Project Location, Land Ownership, and Jurisdiction

The Project is located about 28 miles west-southwest of Tonopah in Esmeralda County, Nevada between Hawthorne to the north and Beatty to the south (Figure 1). The Project is located across 16 sections of BLM owned Lands. The Project will be accessed from State Road 265 in Esmeralda, south of State Route 95.

1.3.2 Legal Land Description of Facility (Federal and Non-Federal Lands)

The Project will be built on approximately 8,635 acres of BLM land in sections 2 - 4, 9 - 10, 20 - 23, 26 - 29, 32 - 35 Townships 1 & 2 North, Range 38 East, Esmeralda County, Nevada., Esmeralda County, Nevada (Figure 2). The Project will interconnect to the NV Energy Greenlink Ft. Churchill to Harry Allen 525-kV transmission line at a new Esmeralda substation in the East ½ of Section 15.

To access the Project from Nevada State Route 265, roadways may need to be improved to accommodate vehicles during construction. At the time this document was written, there are no known issues with the roads that would require improvements.

1.3.3 Total Acreage and General Dimensions of All Facilities and Components

Within the 8,635 acres on federal land, the Project would have short-term land disturbance effects during construction and lesser long-term land disturbance effects during operations. It is anticipated that a majority of the project area would be developed, and that any disturbed area that is not needed for operations would be reclaimed (see Section 2.12).

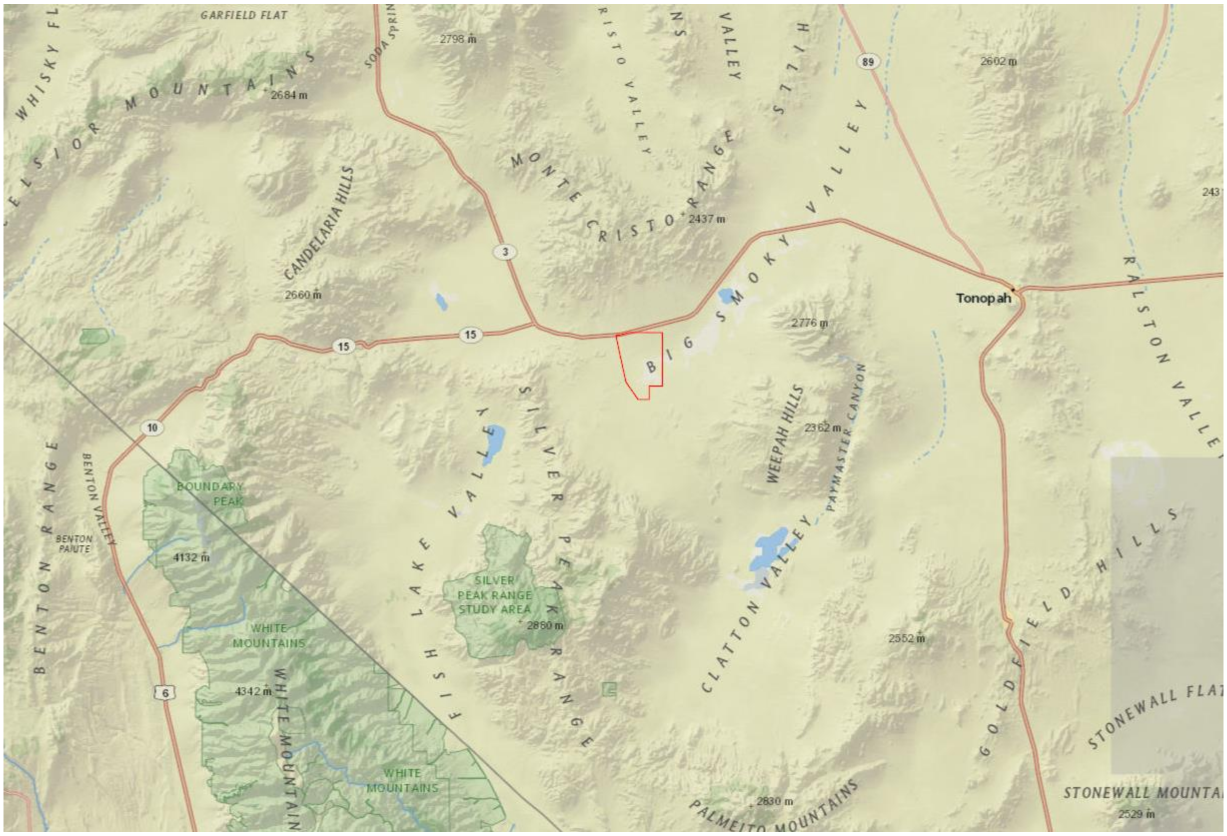

Figure 1. Project location map

1.3.4 Power Plant Facilities, Thermal Conversion Process

The Project would generate up to 500 MW of electricity using multiple arrays of single-axis tracking solar panels connected to electrical infrastructure and transmitted via a gen-tie line to the interconnection point (see Sections 1.3.5, 1.3.15, and 1.3.16 for more information).

Solar panels generate electricity using the photoelectric effect, whereby the cells that compose the panel receive the sun's radiation in the form of photons and release electrons into the conduction band.
The capture of these free electrons produces an electrical current that can be collected and supplied to the electrical power grid.

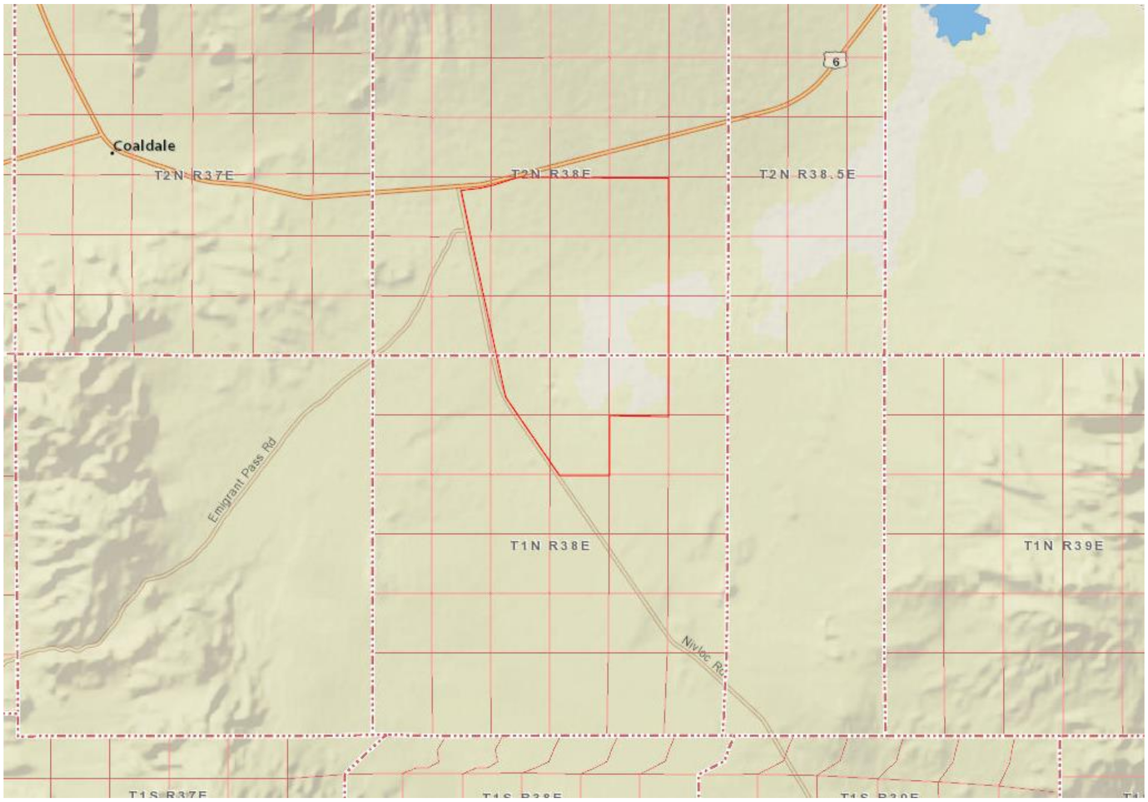

Figure 2. Project detail map. Includes anticipated location of Greenlink Esmeralda Substation and Transmission line

1.3.5 Numbers and General Dimensions of Solar Array, Power Generation Units (Wet or Dry Cooling), Towers, Substations, Transmission Lines, Access Roads, Buildings, and Parking Areas

Materials have not yet been procured nor have final decisions been made on specific manufacturers or designs. However, for planning purposes, the Project would consist of the following:

- solar modules using single-axis trackers;
- an approximately 3,000 square foot O&M building and 1,000 square foot control building;
- interior access roads and a perimeter road;
- offsite access road improvements and distribution line for construction and operation power;
- collection system and power conversion stations;
- a collector substation;
- substation and other facilities to interconnect to the existing transmission network;
- an energy storage system;
- an aboveground water storage tank;
- project security fencing;

- a temporary construction laydown yard; and
- drainage control.

Solar modules would be mounted on a single-axis tracking system that rotates to the east and west. The modules and tracking assembly would have a ground clearance of approximately 2 feet when rotated, and approximately 5 feet when flat. Each rack would be supported by steel posts; post depth would vary depending on soil conditions but are typically 10 to 15 feet below the surface. If soil conditions require it, concrete foundations would be used. Solar modules would be placed along with perimeter and interior access roads, inverters, and transformers to form alternating current blocks. Racks of modules would be installed with enough spacing between rows to minimize row-to-row shading.

The power would be transmitted from the solar array through electrical infrastructure to the collector substation (see Section 1.3.15 for a thorough description). At that point, it would be transmitted via the overhead 345-kV gen-tie line to the substation (see Section 1.3.16).

1.3.6 Temporary Construction Workspace, Yards, and Staging Areas

A laydown yard for staging and storage during construction would be located at the southeast end of the site. In addition to providing a temporary storage space for equipment and vehicles during construction, the laydown yard would be used to house temporary office trailers during construction for Project management purposes. Portable toilets would be used by construction workers and visitors.

1.3.7 Geotechnical Studies and Data Needs, Including Solar Insolation Testing

Geotechnical and solar insolation investigations will be conducted and inform final project design.

1.3.8 Ancillary Facilities (Administrative and Maintenance Facilities and Storage Sites)

The Project would have an operations and maintenance (O&M) building and a control house (Operations Facilities). The O&M building would sit adjacent to the Project substation and house maintenance staff and project documents. The control house would store protective relay and communications equipment. The Operations Facilities would have fire and safety equipment such as smoke detectors, fire extinguishers, and an eye-wash station. They would also be equipped with a heating and ventilation and air conditioning (HVAC) system.

The O&M building would include a septic tank and leach field system for sanitary streams. When needed, septic tank contents would be removed from the site by a sanitary service. Water for the septic system would be brought in and stored in the water tank (see Section 1.3.9). Maintenance trucks and personal vehicles would park adjacent to the O&M building.

1.3.9 Water Usage, Amounts, and Sources (during Construction and Operations)

During construction, the Project would require approximately 350 gallons of potable water per day for use as drinking water. During operations, maintenance workers would bring potable drinking water on-site as necessary for consumption during maintenance activities. This water would be stored in the office trailers during construction and in the O&M building during operations.

Some water would be needed for site preparation and grading activities. During earthwork for the grading of access roads and other Project components, the main use of water is for compaction and dust control. Some water would be required for reclamation and for preparation of any concrete required for foundations. The total amount of water needed during construction would be approximately 100 million gallons (307 acre-feet).

During operations, annual solar panel washings are planned to increase the average optical transmittance of the flat panel surface. The annual demand for water to wash the panels would be approximately 1,050,000 gallons (3.25 acre-foot).

All water would be brought in from an existing off-site source in Tonopah as needed. Water for site preparation, grading, concrete, dust control, and panel washings would be brought by 3,500-gallon water trucks, whereas potable water would be transported in 1- to 10-gallon containers and sanitation water for the O&M building would be stored in an on-site storage tank.

1.3.10 Erosion Control and Stormwater Drainage

The Project design will includes review of existing stormwater drainage patterns which will inform Project grading plans. Any erosion during construction would be controlled by implementing a Stormwater Pollution Prevention Plan (SWPPP), as required by the Nevada Department of Environmental Protection (NDEP), Bureau of Water Pollution Control for projects disturbing more than 1 acre.

1.3.11 Vegetation Treatment and Weed Management

Any new infestations of non-native, invasive species in the project area would be treated promptly.

Invenergy Solar proposes to reduce and control invasive plants within the project area by using herbicides in combination with manual methods to lessen the potential for the dispersal or increased abundance of existing and any new non-native, invasive plant species. Prior to any herbicide application; Invenergy Solar would prepare a pesticide use proposal for submittal to the BLM using those herbicides as described in the BLM's PEIS for Vegetation Treatments Using Herbicides on BLM lands (BLM 2007b). The PEIS addresses human health and ecological risk for the proposed use of chemical herbicides on public lands within 17 western states, including Nevada. It is anticipated that this would include the use of glyphosate (as found in Roundup PRO® and Aquamaster®).

1.3.12 Waste and Hazardous Materials Management

Locally generated trash during construction and operations would be hauled off-site for disposal. There are two main sources of hazardous materials: pad-mounted transformers and inverters. Each pad-mounted transformer contains approximately 500 gallons of oil, and each inverter cooling system contains approximately 11 gallons of ethylene glycol/water mixture, totaling 32,925 gallons of hazardous liquid at this Project. These hazardous materials would be managed in accordance with applicable state and federal regulations.

Section 40 Code of Federal Regulations (CFR) Part 112 requires that a Spill Prevention Control and Countermeasure (SPCC) plan be prepared for a project that stores oil in quantities greater than 1,320 gallons aboveground and/or 42,000 gallons belowground. Therefore, an SPCC would be prepared for the Project to address any spills that could occur, following guidelines in 40 CFR 112.

The construction contractor would also develop an SPCC to comply with Invenergy Solar standards that would address any spills during the construction period.

1.3.13 Fire Protection

Vegetation in the project area is sparse enough that the risk of wildfire is relatively low. The solar modules are designed to be resistant to fire and the racks are constructed of non-combustible steel and aluminum. The solar panels and other electrical equipment would meet applicable Underwriters Laboratories and International Electrotechnical Commission (IEC) ratings for their resistance to fire. Specifically, the modules are IEC 61730 certified, which requires tests to assess the potential fire hazard due to operation of a module or failure of its components. Tests are conducted associated with temperature, hot spots, fire resistance bypass diode thermal, and reverse current overload in order to certify the panels.

Fire extinguishers would be available in the control enclosure and at strategic locations throughout the Project site. Access roads within the project area would be approximately 16 to 20 feet wide and would be adequate to allow rescue vehicles to access the Project.

1.3.14 Site Security and Fencing (during Construction and Operations)

An approximately 6-foot-high chain-link fence would be installed around facilities as they are constructed, and access to the site would be controlled by gates (see Appendix B). High-voltage equipment would be separately fenced with warning signage. Motion-activated lighting would be installed on the control enclosure, on the access gates, and throughout the solar arrays for access during non-daylight hours. A motion-activated security camera system would be installed with the lighting to monitor the collector substation, control enclosure, and the solar arrays. During construction, temporary lighting facilities may be used if necessary.

1.3.15 Electrical Components, New Equipment, and Existing System Upgrades

Solar modules are connected in series to form strings, and electricity from these strings is aggregated in combiner boxes. A single circuit then leaves each combiner box, which is installed underground and connects to the inverter.

The current produced by solar modules is in the form of direct current (DC). In order to be sent to the electrical grid, the DC current must be converted into alternating current (AC) power, and inverters serve this function. The conversion is accomplished by rapidly switching the DC power supply. By varying the length of time that the switch is on, as well as the polarity, the positive and negative swells of an AC wave are created. This waveform is then smoothed with an output filter. Inverters employ several advanced control systems, switching algorithms, and ancillary services for both the input and output stages. For the input stage, the inverters can manipulate the DC voltage to ensure maximum power harvest of input, and on the output various sensors ensure that AC power production is in accordance with regulatory requirements. The initial Project design considers the use of 167 SMA (Cathodic Protection) CP 800 US inverters. The SMA inverter is designed to fully comply with the applicable requirements of the National Electrical Code and Institute of Electrical and Electronics Engineers standards.

The inverter AC output voltage (800 volts) would then be stepped up to a higher voltage (34.5 kV) using pad-mounted transformers located next to two inverters. Invenergy Solar has used Prolec GE transformers at many of its facilities and would use these or a comparable transformer for this Project. Underground collection cables, buried to a minimum of 3 feet, would connect the electrical output to the Project collector substation. The cables would be arranged in several branch circuits, each circuit consisting of

34.5-kV three triplexed single-conductor cables with PVC jackets that connect groups of solar modules to an open-air isolation switch in the collector substation.

At the Project collector substation, the voltage would again be stepped up (from 34.5 to 230 kV) to prepare it to connect to the grid at the substation. The collector substation would include several 34.5-kV branch circuit breakers in combination with open-air type isolation switches to connect the collection system feeders to the main 34.5-kV substation bus, a 34.5-kV main bus open-air isolation switch, a 34.5- to 345-kV step-up transformer, and a 345-kV circuit breaker and open-air isolation switch. The collector substation would also include protective relay and metering equipment, utility and customer revenue metering, and a 34.5-kV to 480-volt station service transformer to provide power to the collector substation service load and the control enclosure.

The power output would then flow through the 230-kV isolation switch at the Project collector substation onto a single-circuit, 230-kV line to the point of interconnection.

1.3.16 Interconnection to Electrical Grid

The 230-kV line from the Project collector substation will be connect to the proposed NV Energy Ft. Churchill to Harry Allen line at the new NV Energy Esmeralda collector substation located on BLM variance land.

1.3.17 Health and Safety Program

Potential safety issues for the Project include safe work practices, site security, emergency response procedures, fire control, heavy equipment use and transportation, traffic control, and others. A detailed and complete health and safety program that meets all requirements under the federal Occupational Safety and Health Administration regulations would be developed for the protection of both workers and the general public during the construction and operational phases of the Project. The health and safety program would be developed, implemented, and administered by the contractors during construction and by the owner during operations.

1.4 Alternatives Considered by Applicant

Invenergy Solar selected this location based on its proximity to the proposed Greenlink transmission system, available land and minimal environmental resource conflicts.

1.5 Other Federal, State, and Local Agency Permits Requirements

BLM permitting is required since the Project is being proposed in part on federal land managed by the BLM, and this PPOD has been prepared to comply with BLM ROW regulations as set forth at 43 CFR 2800, and various provisions described in the PEIS. Other federal, state, and local agency involvement have been completed through the National Environmental Policy Act (NEPA) process led by the BLM, and include stakeholders such as the U.S. Fish and Wildlife Service (USFWS) and Nevada Department of Wildlife. Table 2 lists permits and authorizations that may be required prior to the commencement of construction.

Table 2. Permits, Certifications, and Authorizations

Authorization	Status	Statutory Reference	Permit or Authorization Trigger
Federal			
BLM ROW	Will submit application in 2022.	Federal Land Policy and Management Act of 1976 (Public Law [PL] 94-579; 43 United States Code [USC] 1761–1771; 43 CFR 2800); NEPA (PL 91-190, 42 USC 4321−4347, January 1, 1970, as amended by PL 94-52, July 3, 1975; PL 94-83, August 9, 1975; and PL 97-258, 4[b], September 13, 1982)	Federal land, federal permit
BLM National Historic Preservation Act Compliance	To be completed by BLM.	National Historic Preservation Act (36 CFR 800)	Cultural resources on federal land that are eligible for listing on the National Register of Historic Places
Endangered Species Act	No surveys have yet been completed.	Endangered Species Act (PL 93-205, as amended by PL 100-478 [16 USC 1531, *et seq*.])	Section 7 consultation
USFWS Migratory Bird Treaty Act	No surveys have yet been completed.	16 USC 703–711; 50 CFR Subchapter B	Potential to take migratory birds. An incidental take permit is not available; however, the USFWS recommends preparation of a Bird and Bat Conservation Strategy to inform the decision making process
Clean Water Act	No surveys have yet been completed.	Clean Water Act Section 404	Placement of dredged or fill materials in waters of the U.S. or wetlands requires a federal permit.
State			
Nevada State Historic Preservation Office (SHPO)	To be completed.		Consultation required under 36 CFR 800
Nevada Department of Public Safety Uniform Permit (for Transportation of Hazardous Materials)	Permit will be obtained prior to commencement of construction.	NAC 459.979	Transportation of hazardous materials in a vehicle on a public highway
Utility Environmental Protection Act, Permit to Construct	Permit will be obtained prior to commencement of construction.	NRS 704.820 to 704.900	Construction of energy-generating facility with nameplate capacity >70 MW, and/or transmission lines >200 kV
County			
Special Use Permit	Permit will be obtained prior to commencement of construction.	Lander County Title 17.14	Special use permit for a renewable energy facility
Building Permit	Permit will be obtained prior to commencement of construction.	Lander County Title 15.08	Construction of a building in Lander County

1.6 Financial and Technical Capability of Applicant

Invenergy has developed 27,500 MW of utility-scale solar, wind, storage and gas-fueled power generation projects in the United States, Canada, and Europe.

Invenergy plans on using a project financing structure for this Project. The company has numerous examples of this successful approach based on the number and types of projects currently operating or under construction. Invenergy has raised more than $40 billion of capital in support of renewable and gas generation project financings in the last 15 years. Various financing structures have been used with differing debt and tax equity participants. Invenergy LLC typically secures project financing after all of the major project development components are in place (i.e., power purchase agreement, interconnect agreement, lease agreement, construction agreement).

2.0 CONSTRUCTION OF FACILITIES

2.1 Solar Field Design, Layout, Installation, and Construction Processes

2.1.1 Solar Field Design and Layout

The solar panel arrays (as described in Section 1.3.5) would be oriented north to south and track the sun from east to west to optimize energy production.

2.1.2 Installation and Construction Processes

An engineering, procurement, and construction (EPC) contractor would be selected to complete construction of the Project. Construction of specific Project components would be completed by subcontractors under the direction of the EPC contractor and Invenergy Solar. The EPC contractor would prepare a construction plan that it and its subcontractors would follow, that would provide detailed guidance on Project design, construction process, safety, permitting, schedule, and other related construction items.

Project construction would follow a progressive approach. Construction of the facility would begin with surveying and staking the construction limits. The site would then be graded and fenced with security fencing prior to installation of the roads, solar panels, inverters, collector substation, and control enclosure.

2.2 Approach to Construction and Operations

Several activities must be completed prior to the commercial operation date. The majority of the activities relate to equipment ordering lead time, as well as design and construction of the facility. A construction schedule is shown in Table 3. Pre-construction, construction, and post-construction activities, some of which would occur concurrently, include:

- solar monitoring station to test solar insolation;
- geotechnical analysis for proper foundation design and materials;
- finalize Project design;
- ordering of all necessary components, including solar modules, inverters, and pad-mounted transformers;
- survey to establish locations of structures and roadways;
- construction and improvement of access roads to be used for construction and maintenance;
- installation of rack foundations (vibratory or pile driving);
- installation of racks;
- installation and stringing of modules;
- installation of underground cables;
- construction of underground feeder lines;
- design and construction of Project collector substation;
- commissioning of modules and inverters; and
- commencement of commercial operation.

Table 3. Construction Schedule

Activity	Time Frame
Contractor selection	1 month
Mobilization	2 weeks
Site survey and staking	4 weeks
Site grading and fencing	3 months
Solar array installation	12 months
Collector substation construction	3 months
Energize facility	1 week

Once commercial operation begins, it is expected to continue for 30 years. Invenergy Services LLC operates most projects that are owned by Invenergy LLC–affiliate companies in the United States, and it is anticipated that Invenergy Services LLC would also operate this Project. Project management, including remote monitoring and control, is performed from Chicago, Illinois.

2.3 Access and Transportation System, Component Delivery, and Worker Access

Equipment deliveries and workers would access the Project area from the existing Nevada State Road 265 or Nevada Route 6.

During the construction phase, several types of light and medium construction vehicles would travel to and from the site. Private vehicles would also be used by the construction personnel. At this time, Invenergy Solar estimates that there would be approximately 300 roundtrip truck trips per day in the area during peak construction periods. The highest traffic volume would occur during the peak construction periods when the rack foundation posts, rack, and module assembly are taking place concurrently. Oversize and overweight loads are not expected. During the operations phase, the peak traffic time would be during water haul truck trips for panel washing, during which approximately 200 roundtrip truck trips would be required over the course of 30 days annually. Routine maintenance would require one or two light-duty trucks. Signs reminding construction and maintenance personnel to maintain low vehicle speeds would be posted throughout the project area in order to minimize dust and promote safety.

2.4 Construction Work Force Numbers, Vehicles, Equipment, and Time Frames

Approximately 225 workers per day would be required for construction of the Project and associated facilities. Construction personnel would be from both the local labor force and from outside regions, with an emphasis placed on using local labor, contractors, and suppliers when feasible. Temporary facilities, including office trailers and portable toilets, would be installed in the laydown area. No more than 225 employee vehicles are anticipated on the site at any one time.

Construction would generally occur between 7 a.m. and 7 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Equipment and vehicles that may be used during construction are listed in Table 4.

Table 4. List of Equipment Typically Used for Construction

Equipment	Use
D7 bulldozer	Road and pad construction
Grader	Road and pad construction
Water trucks	Compaction, erosion, and dust control
Roller/compactor	Road and pad construction
Backhoe	Digging foundations and trenches for utilities
Trenching machine	Digging trenches for underground utilities
Truck-mounted drill rig	Drilling pole foundations
Concrete trucks and pumps	Pouring pole and other structure foundations
Dump trucks	Hauling road and pad material
Flatbed trucks	Hauling towers and other equipment
Pickup trucks	General use and hauling minor equipment
Small hydraulic cranes and forklifts	Loading and unloading equipment
Four-wheel-drive all-terrain vehicles	Rough grade access and underground cable installation
Rough terrain forklifts	Lifting equipment
Crane	Framing and erecting poles
Pulling/braking equipment	Stringing and anchoring wires and conductors

2.5 Site Preparation, Surveying, and Staking

Prior to construction, a surveyor would obtain or calculate benchmark data, grades, and alignment of facilities based on information provided in the site plan. Benchmark data, grades, and alignment of facilities would be marked via control staking. The surveyor would reestablish and set additional control staking during construction.

2.6 Site Clearing, Grading, and Excavation

Once site preparation is complete, the Project footprint would be cleared and grubbed of vegetation and debris using D7 or similar bulldozers. Cleared vegetation and debris suitable for compaction would be incorporated and/or stockpiled for later use, while unsuitable materials, such as large rocks and boulders, would be stockpiled, then hauled off-site and disposed of.

Grading may require both excavation and soil compaction in order to achieve desired grades and elevations and ensure proper soil compaction as identified in the detailed design. Grading would be most extensive in areas for the access roads, control enclosure, collector substation, and laydown yard. Grading within the solar footprint would address drainage, erosion control, and slope, and would be minimized to the extent practicable. Stockpiling and grading would require the use of backhoes, graders, and rollers/compactors. Excavation for utility lines and support structure foundations would be completed with truck-mounted drill rigs, backhoes, and trenching machines.

2.7 Solar Array Assembly and Construction

Solar array construction would begin with the installation support structures and foundations. The final support structure design is unknown at this time and would be determined by results of the geotechnical survey, the solar technology, and EPC contractor selected to complete construction.

Once foundations and support structures are in place, tracker assemblies would be constructed on-site and installed on the support structures. Final assembly of the trackers onto the support structures would require a variety of heavy equipment, including small cranes, tractors, welding machines, and forklifts.

2.8 Gravel, Aggregate, and Concrete Needs and Sources

The quantities of construction materials required for the Project, such as gravel, aggregate (or road base), asphalt, and concrete, are dependent on the geotechnical analysis and final arrangements and layouts. These layouts would be part of the detailed design, and the material takeoffs would be estimated at that stage in the Project.

2.9 Electrical Construction Activities

Installation of the collector substation would be done concurrently with the installation of solar trackers. Installation of the electrical infrastructure (as described in Section 1.3.15) would begin after the solar array structural installation is complete.

2.10 Aviation Lighting (Power Towers, Transmission)

No towers, transmission lines, or structures would be tall enough to require aviation lighting.

2.11 Site Stabilization, Protection, and Reclamation Practices

After Project construction, any area that was temporarily disturbed and no longer needed for ongoing operations would be reclaimed using a seed and plant mix as approved by the BLM. At the end of the useful life of the Project, or upon the expiration or termination of the ROW, whichever comes first, the solar panels and all ancillary equipment and facilities would be removed from the site. Any support structures would be demolished and all debris would be removed. After removal of all equipment and structures, the ground and roads would be smoothed by disking and planted with a seed and plant mix as approved by the BLM. These practices would be described in more detail in a forthcoming Decommissioning and Site Reclamation Plan.

3.0 RELATED FACILITIES AND SYSTEMS

3.1 Transmission Systems Interconnect

Connection to the electrical grid would be made on the NV Energy Ft. Churchill to Harry Allen Greenlink line via the proposed 525-kV substation, 230-kV line fold, and associated telecommunication facilities.

3.2 Gas Supply Systems

No gas supply systems would be required.

3.3 Other Related Systems

3.3.1 Communication System

On-site communications during the construction phase of the Project would be accomplished with cellular telephones and two-way radios. Air horns may also be used for emergency communications as necessary. During operations, there would also be a Supervisory Control and Data Acquisition (SCADA) system that would allow Invenergy Services LLC on-site and remote personnel to operate the Project. There would also be certain high-speed communications with NV Energy to support the interconnection agreement.

4.0 OPERATIONS AND MAINTENANCE

4.1 Operation and Maintenance Facility Needs

The Operations Facilities would accommodate operation and maintenance needs.

4.2 Maintenance Activities, including Panel Washing and Road Maintenance

On-site maintenance activities would include inspections, planned and unplanned maintenance, and panel washing. Inspections of the Project's electrical facilities, roads, and grounds would be conducted a minimum of 1 day per month. The equipment is modular and can be easily removed and replaced if necessary. Given the relatively small size, modules can be easily picked up with a small loader and placed on a flatbed truck. Preventative maintenance on the Project solar arrays and inverters would be conducted a minimum of twice per year. Panel washings would occur annually or more to increase the average optical transmittance of the flat panel surface (see Section 1.3.9). Some minor road work and weed control would be performed as needed.

During construction and O&M phases of the project there is also the potential for undesirable invasive insect infestations in project buildings and structures. Invenergy Solar proposed to control undesirable insect infestations by using pesticides. Prior to any use of pesticides, Invenergy Solar would submit a PUP to the BLM proposing protocols and chemicals that can be used in the event that infestations arise during activities associated with the Project. It is anticipated that this would include the use of pesticides including Benzeneacetate and Bifenthrin. Any necessary pesticide use will be restricted to the insides and outsides of, and the immediate vicinity of, small, enclosed buildings, trailers, O&M buildings, and shelters. In addition, Insecticides would not be stored at the facility and would be brought on-site during application periods only.

4.3 Operations Workforce and Equipment

The Project would utilize up to six full-time, on-site staff, and would also be monitored by Invenergy Services LLC 24 hours per day, 7 days per week via the SCADA system. A minimum of two maintenance technicians would be dispatched during inspections, unplanned and planned maintenance. A special crew may be deployed for panel washing, which would consist of four individuals.
The technicians and all contractors during the operations phase would be under the supervision of a regional Invenergy Services LLC operations and maintenance manager. Invenergy Services LLC provides competitive salaries, benefits, and training and strives to hire locally when possible.

Most of the maintenance equipment would be stored on-site in the O&M building, though some equipment and tooling would arrive from off-site with the technicians.

5.0 ENVIRONMENTAL CONSIDERATIONS AND MITIGATION

5.1 Environmental Considerations

Invenergy Solar will complete environmental surveys to help inform a BLM Environmental Assessment and Decision Record.

5.2 Mitigation Measures

All mitigation measures will be detailed in the BLM Decision Record.

6.0 LITERATURE CITED

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