PRELIMINARY APPLICATION
In Accordance with Saguache County 1041 Regulations

San Luis Valley 200 Megawatt Solar Project



Prepared for:

Saguache County, Colorado

Prepared by:

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October 9, 2009

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1.0 PRELIMINARY APPLICATION

APPLICATION FOR A PERMIT TO CONDUCT A DESIGNATED ACTIVITY OF STATE INTEREST OR TO ENGAGE IN DEVELOPMENT IN A DESIGNATED AREA OF STATE INTEREST

To: Permit Authority, Saguache County

Re: San Luis Valley 200 Megawatt Solar Project, as a matter of state interest.

From: Tessera Solar North America
4800 North Scottsdale Road, Suite 5500
Scottsdale, AZ 85251
(603) 535-3588
Representative: Richard Knox

Date Submitted: October 9, 2009
Date Received: _____

1.1 Matter of State Interest

The applicant requests that a permit be issued for each of the items checked below:

A permit to engage in development in one or more of the following areas of state interest:

( ) Mineral Resource Areas

( ) Geologic Hazard Areas

( ) Significant Wildlife Habitat Areas

A permit to conduct one or more of the following activities of state interest:

( ) Site Selection and Construction of Major New Domestic Water and Sewage Treatment Systems

( ) Major Extensions of Existing Domestic Water and Sewage Treatment Systems

(**X**) Site Selection and Construction of Major Facilities of a Public [Private] Utility

( ) Efficient Utilization of Municipal and Industrial Water Projects

1.2 General Description of Proposed Activity or Development

The Applicant is proposing to construct and operate an electric-generating facility with a nominal capacity of 200 megawatts (MW) using concentrating solar power. This preliminary application contains additional information.

1.3 General, Non-legal Description and Popular Name of Proposed Project

The San Luis Valley Solar Project (SLVSP) will be constructed on an approximately 1,525 acres of land owned by George Woodard Ranch Partnership, a Colorado general partnership and located about 8 miles southeast of the Town of Saguache.

1.4 Legal Description

TOWNSHIP 43 NORTH, RANGE 9 EAST, N.M.P.M.

Section 5: E1/2SE1/4 ; Tracts 1, 2, 4, 5, 27, 31, 35, 37, and 60; Tracts 50 through 56, inclusive; Tracts 73 through 78, inclusive; Tracts 83 through 110, inclusive; Tracts 115 through 124, inclusive; Tracts 133 through 141, inclusive; Tracts 147 through 156, inclusive; Tract 159; and Tracts 165 through 175, inclusive; Lots 4 and 5

Section 6: All

1.5 Owners and Interests

Set out below are the names of those persons holding recorded legal, equitable, contractual and option interests and any other person known to the applicant having an interest in the property described in Section 1.4, above, as well as the nature and extent of those interests for each person, provided that such recorded interests shall be limited to those which are recorded in the County Recorder's Office of this jurisdiction, the land office of the State Board of Land Management for this State, the Office of the State Board of Land Commissioners of the Department of Natural Resources, or the Secretary of State's Office of this State (Attach additional sheets if necessary):

The entity holding legal title to the property described in Section 1.4 is the George Woodard Ranch Partnership, a Colorado general partnership. The partnership holds a fee simple interest in the property and has permits for several artesian wells located on the property. The partnership has granted a purchase option for the property to San Luis Valley Solar, LLC, a Colorado limited liability company. In addition, the partnership has granted a grazing lease on the property to Coleman Ranches, Inc., a Colorado corporation, as lessee. A copy of the Memorandum of Purchase Option is included as Appendix A.

1.6 Submission Requirements

Attached to this to this application are the submission requirements described in the regulations which have been adopted by this jurisdiction for each of the activities or areas checked in Section 1.1 above.

This complete preliminary application includes the following materials: Appendix A – Memorandum of Purchase Option; Appendix B - SunCatcher™ Technology; Appendix C - Maps; Appendix D - Project Operation and Maintenance Personnel Requirements and Trade by Construction Month Tables; and Appendix E - Citizen Participation Results Report.

1.7 Design and Performance Standards

The attached analyses show that each of the design and performance standards set forth in the regulations for each of the activities or areas checked in Section 1.1 above will be met. The individual analyses are identified by reference to the appropriate paragraph or section numbers corresponding to each standard in the appropriate regulations adopted by this jurisdiction.

1.8 Master Plan

a. Does the activity or development comply with the master plan of this jurisdiction?

Yes_____ No_____ Not Applicable_____**X**_____

b. If it does not comply, please explain how it does not comply.

Saguache County does not currently have a Master Plan that is applicable to this proposed development.

1.9 Additional Information Required by Local Government

Tessera Solar has not identified any other required additional information by local governments.

1.10 Duration of Permits

The applicant requests a permit for a period of Perpetual Use (30 years).

1.11 Application Fee

An application fee of TBD* will accompany this application.

APPLICANT:

By: Richard Knox, Tessera Solar

Title: Permitting Director

*Within ten (10) days following receipt of a completed application for a permit, the Permit Authority shall determine and set a fee in an amount necessary to cover the costs incurred in the review and approval of the permit application, including all hearings conducted therefore, and shall notify the applicant in writing of said fee and its amount. Not later than ten (10) days following his receipt of such notice, the applicant shall present to the Permit Authority non-refundable certified funds in the amount as set. Until the fee is paid to the Permit Authority, the application for a permit shall not be further processed.

2.0 DESCRIPTION OF PROPOSED FACILITY AND SITE

2.1 The Project and Technology

The primary objective of the SLVSP and its ancillary facilities is to provide clean, renewable, solar-powered electricity and to assist Xcel Energy in meeting its legislatively mandated obligations under Colorado's Renewable Portfolio Standard (RPS) Program. A secondary goal is to assist Xcel Energy in reducing its greenhouse gas emissions in the production of electrical power. The project will utilize the SunCatcher™ technology of Stirling Energy Systems, Inc. (SES). This technology is innovative, technically proven, non-polluting, and cost-effective in large utility-scale deployment. A 12-foot access road will be included between the rows for mirror washing. The SunCatcher™ is a proprietary concentrating solar system that is based on the Stirling engine and developed by SES. Each SunCatcher™ consists of a 25-kilowatt solar power generating system. The system is designed to track the sun automatically and to focus solar energy onto a Power Conversion Unit (PCU), which generates electricity. The system consists of an approximately 38-foot diameter solar concentrator dish that supports an array of curved glass mirror facets. These mirrors collect and focus solar energy onto the heat exchanger of the PCU. The PCU converts the solar thermal energy into electricity. Each SunCatcher™ operates independently and generates grid-quality electricity.

Approximately 8,000 SunCatchers™ will be required for the proposed SLVSP spaced in a grid pattern with approximately 56 feet and 112 feet between each SunCatcher™. Additional information on SunCatcher™ technology can be found in Appendix B.

2.2 The Facility

The electric-generating facility will include the construction of a new 230kV substation that will interconnect with the existing Poncha Pass Substation to San Luis Valley Substation 230kV transmission line adjacent to Section 5 (approximately 500-feet in length). The project design will minimize land disturbance and will operate with no fossil-fuel emissions from the electric generation process. Water will be used from existing surface water rights on the property. Most stormwater will be passed through the site utilizing existing dry washes and without any significant diversions or retention. A very small amount of rainfall runoff will be collected and percolated into the ground by the use of debris basins located throughout the site and the retention facility. The retention facility will be located at the Main Services Complex, where key buildings and parking areas will be located. Main roads will be constructed with a combination of roadway dips (at grade crossings) and elevated sections where 100-year flood access is required across the dry washes. The sanitary system will consist of a buried septic tank system with a dual sanitary leach field.

2.3 The Site

The Applicant intends to develop an electric-generating facility with a nominal capacity of 200 MW using concentrating solar power. The SLVSP will be constructed on an approximately 1,525-acre site located in the San Luis Valley, Colorado. The project site is approximately 8 miles southeast of Saguache, Colorado; and 40 miles north of Alamosa, Colorado in Township 43N, Range 9W Sections 5 and 6.

The proposed site plan for the SLVSP was developed by initially placing SunCatchers™ over the entire project area in a grid pattern and then excluding areas that had the following features:

- Areas for Construction**.** Space was reserved for a 25 acres laydown/facilities area in the center of the property and 5 acres for a proposed substation at the southeast corner of the property.

- Areas of Potentially Eligible Cultural Sites. Buffering was included around areas that may have potentially eligible cultural sites as delineated by professional ground surveys.

- Areas of Potential Wetlands. Areas that identified through ground surveys and aerial photography were buffered. Areas with artesian spring sources wetlands were not buffered based on consultation with the U.S. Army Corp of Engineers.

- Areas with Second Order Drainages. Using data from the National Hydrographic Dataset flowlines, second order drainages were buffered by 100 feet.

- Areas with Potential Habitat for Endangered Species. Areas that indicated potential habitat as evidenced by the presence of prairie dog burrows were buffered by 15 feet to avoid potential black-tailed prairie dog habitat. An area in the south-central portion of project site was buffered due to the presence of a significant Cottonwood grove that may provide non-regulated habitat for raptors and other avian species.

Any SunCatcher™ that fell within or overlapped (an approximate 20-foot buffer from the pole location) an exclusion area was eliminated from consideration. This resulted in 9,169 potential SunCatcher™ locations. As the Applicant has identified the need for only 8,000 SunCatchers™ to generate 200 MW of nominal power, the Applicant eliminated 924 locations by buffering other potentially eligible cultural sites, wetlands, and cottonwood groves by 100 feet to increase protection of biological resources and minimize the possibility of construction related sub-surface discovery of cultural items. An additional 245 potential locations were eliminated to maximize engineering efficiency by minimizing isolated locations, areas that would require wetland crossing to access, or to minimizing visual impacts to residences on the south side of County Road T. The road network was designed to minimize total length of roads and impacts to biological or cultural resources while still allowing access to each SunCatcher™ location with a minimum of driving mileage. See Map 1 in Appendix C for the proposed site plan. Photographs of the project site from County Road T and from the Russell Lakes Wildlife Refuge are included below.

View of the project site looking north from County Road T.

View looking northeast from Russell Lakes Wildlife Refuge trailhead off Highway 285 approximately 9 miles south of Saguache. The project site is approximately 6 miles northeast of this trailhead site.

3.0 DESCRIPTION OF THE PRESENT USE AND ZONING

A majority of the 1,525 acres that is leased for the project is currently used for seasonal rangeland. The entire property is within Saguache County and is zoned Agricultural Use by a 1979 Resolution of the Board of County Commissioners. This zoning district is comprised of areas which are primarily in a natural state or areas utilized for growing crops, raising of livestock, preservation and production of timber resources and other similar farming, ranching and resource-conservation activities. The principal purpose of this district, as stated in the Saguache County Land Use Code, is the "preservation and protection of irrigated croplands, rangelands, and watershed and wildlife habitats in Saguache County." Under this zoning category, as provided in the Amended Land Use Code dated November 4, 2008, Section IV.2.1.2.8. utility installations such as electric substations, electric generating stations, sewer lift stations, telephone exchanges, gas regulators, major transmission lines, and irrigation ditch right-of-way (not including utility offices, repair, storage and production facilities), require the review and approval of a conditional use permit, or in this case and as directed by the Land Use Administrator, the submittal, review and approval of a Saguache County 1041 application.

3.1 Location Map

Map 2, found in Appendix C, shows the relationship of the proposed project site to surrounding areas within 50 miles of the project site. Map 2 also shows current land status and ownership as well as existing energy infrastructure in the San Luis Valley. Map 3 shows land status and future energy infrastructure in the San Luis Valley based on proposed energy project and transmission facilities. Maps 4 and 5 in Appendix C provide the regional context of the project site. Map 4 shows land use status for the areas within 10 miles of the project site including rooftops and energy facilities. Map 5 shows land use status and future projects including the proposed project. Consultations between the Applicant and the Saguache County Land Use Administrator, BLM and other agencies have identified that other parties may have interest in developing alternative energy projects within the San Luis Valley region; however, no other additional major facility is currently being proposed within Saguache County.

3.2 Type of Facility

Each of the approximately 8,000 SunCatchers^{TM} will produce up to 25 kW net of grid-quality electricity at 575 volts AC (alternating current). The Generator Step-Up (GSU) transformer will step the voltage up to 34.5 kV. Each groups of 60 SunCatchers^{TM} totaling 1.5 MW will be connected by underground electrical cables to create the 3-, 6-, and 9-MW solar groups. Five 9-MW groups and one 3-MW group will be connected by underground electrical cables and a pole riser to an overhead collector line rated for 48 MW. Five 9-MW groups and one 6-MW solar group will be connected by underground electrical cables and a pole riser to an overhead collector line rated for 51 MW. The overhead collector groups will deliver the solar electric–generated power to the SLVSP Substation.

The solar groups will operate daily from sunrise to sunset; they move from a stowed position after sunrise once the solar insolation reaches a minimum of 250 watts per square meter (W/m^2). The solar field will operate until dusk unless adverse weather events occur (e.g., storms, periods of sustained clouds, or sustained wind conditions greater than approximately 35 miles per hour). At dusk or when clouds reduce solar insolation to below a minimum of 250 W/m^2, the SunCatchers^{TM} will move into the night-stow position. During periods of sustained

high winds (exceeding 35 miles per hour), the SunCatchers™ will move into the wind stow position (same as night-stow position).

3.3 Floor Space of Office Building

The main services complex will be approximately 5,000 square feet (50x100) in size.

3.4 Voltage and Length

The project will generate 200 MW of power. In order to transmit the power from the generation source to the electric transmission grid a short (approximately 500 feet) 230kV line will be constructed to interconnect this facility with the existing Poncha Pass to San Luis Valley 230kV transmission line owned by Xcel Energy.

3.5 Power Source and Generating Capacity

The power source for the project is Concentrating Solar Power (CSP) technology, which converts energy from the sun to electricity using SunCatchers™ technology as developed by Stirling Energy Systems.

3.6 Function and Size of Substation

The proposed SLVSP Substation will transmit DC (direct current) electrical energy from the solar field to the San Luis Valley to Poncha Pass 230kV existing AC transmission line at 230kV. An approximate 5-acre substation site would be constructed on the south eastern boundary of the project site.

3.7 Diameter and Length of Pipeline

This project will not be using a pipeline for transport of energy. Transmission lines, as previously discussed will be used for the transport of energy from this project. Separate from energy transmission, the project will require a small diameter pipeline to supply water to the main services complex. Additionally, an approximately 7 mile long water supply line from the Rio Grande Canal west of the site is being considered as an alternative water source.

3.8 Capacity of Storage Tanks and Type of Petroleum Derivatives to be Stored

Tanks will not be used for the storage of liquids or materials. Storage tanks will, however, be located on the site for use in the project's water treatment system and for chemical storage, as discussed below.

Project yard tanks will be at-grade steel tank reservoirs and/or polyethylene tanks. The proposed water treatment system will consist of a raw water tank with a permanent booster pump station, a potable water treatment system, ground-set steel or polyethylene potable water and a fire water storage tank, a booster pump station to accommodate potable water needs and fire-flow requirements, a disinfection system, a demineralized water treatment system for mirror washing water, a polyethylene storage tank for demineralized water storage, chemical storage, reject water and sludge disposal and evaporation ponds, and various support piping, valves, and miscellaneous equipment to support the system. Conceptual tank sizing for water and other uses is as follows:

- One 45,000-gallon raw water storage tank;
- One 45,000-gallon demineralized water storage tank to contain both fire suppression water and SunCatcher™ mirror washing water;

- One 4,000-gallon potable water storage tank;
- Two 1,500-gallon double-walled fuel storage tanks mounted horizontally within a containment pad; and
- One 2,500-gallon underground septic holding tank for off-site sanitary sewer off-site disposal or a smaller septic tank with dual leach fields.

The steel water storage tanks, if selected, will be vertical, round, field-erected steel tanks with suitable stem wall foundations and interior reinforced-concrete mats with coatings and grounding corrosion control. All tanks, foundations, and piping connections will be designed and constructed to the appropriate standards for contents and seismic zone considerations. Anchor bolts will be used as required.

Chemical storage tanks will be of shop-fabricated, double-walled construction that meets all applicable laws, ordinances, regulations and standards (LORS). These tanks, as well as any portable drums, will be provided with appropriate anchors or cradles and placed within spill containment basins.

3.9 Service Area

This project is located within Xcel Energy's service area. More information about Xcel Energy Inc and their operations and service area can be found at www.xcelenergy.com.

3.10 Resource Area

The source of power will be solar energy produced from the SunCatcher™.

4.0 PROJECT DEVELOPMENT SCHEDULE

4.1 Estimated Maximum Number of Employees, Number of Shifts and Employees per Shift During the Construction, Operation and Maintenance

Estimated number of employees for project construction, operation and maintenance are as follows:

- Construction Employees. It is expected that between 160 and 200 full- and part-time construction employees will be required for SunCatcher™ assembly and facility construction.
- Operation and Maintenance Employees. It is expected that between 35 and 50 full- and part-time operational employees will be required for the ongoing operations and maintenance of this facility.

Specific breakdown of operation and maintenance employees by project month and timeline can be found in Appendix D of this application. A table listing trade by construction is also included in Appendix D.

4.2 Future Phases or Extensions of the Facility and Relationship of the Facility to Larger Programs and Plans

Tessera Solar currently has no plans to expand the proposed 200 MW facility; however, Tessera Solar is considering the purchase or lease of lands (up to 5000 acres) adjacent to and nearby the project site. In regards to the relationship of the facility to large programs and plans, this project will assist Xcel Energy in meeting its legislatively mandated obligations under Colorado's RPS Program to provide 20% renewable energy by 2020, of which 4% must be provided from solar-electric generation technologies. A secondary goal is to assist Xcel Energy in reducing its greenhouse gas emissions in the production of electrical power.

4.3 Timetable for Planning (e.g., Federal Permits, State Permits, Local Zoning, etc.)

County, State and Federal permitting for the project has commenced (e.g., scoping and data gathering) and is anticipated to conclude in the summer of 2010. More specifically, Tessera Solar plans to complete the Saguache County 1041 process by second quarter, 2010, the Department of Energy's required NEPA compliance by first quarter 2010. Additional planning documents will be required to be completed with Xcel Energy and include a Power Purchase Agreement, System Impact Study and Facility Study and an Interconnection Agreement all of which are planned to be completed by the third quarter of 2010.

4.4 Estimated Beginning and Completion of Construction and Beginning of Operation of Facility

The SLVSP will be developed in two phases. The schedule will be approximately 18 to 24 months in duration for full project completion. County and Federal permitting for the project is expected to conclude in the summer of 2010 and construction of the first 9MW (Phase I) is planned to be completed by December 2010. The remaining 191MW (Phase II) is anticipated to be completed and online by April 2012.

4.5 Support Facilities (e.g., Pollution Control, Parking Areas, Landscaping, etc.)

- Buildings, General. All buildings will be constructed in accordance with the appropriate edition of the Colorado Building Code (CBC) and other applicable LORS. All site buildings will be painted using matching grassland earth tones and will be manufactured buildings.

- Administration Offices and Personnel Facilities. The Main Services Complex will be located within the project site in a central location that provides for efficient access routes for maintenance vehicles servicing the SunCatcher™ solar field. The Complex will contain meeting and training rooms, maintenance and engineering offices, and administrative offices. The operation and administration building will be approximately 45,000 square feet and measure 200 feet long by 150 feet wide by 14 feet high.

- Maintenance, Warehouse and Shop Spaces. Warehouse and shop spaces will provide work areas and storage for spare parts for project maintenance. The project maintenance facilities, shop, and warehouse storage will be located adjacent to the operation and administration building. The maintenance building be approximately 30,000 square feet and will measure 180 feet wide by 250 feet long by 44 feet in height. This building will contain maintenance shops and offices, PCU rebuild areas, maintenance vehicle servicing bays, chemical storage rooms, the main electrical room, and warehouse storage for maintenance parts to service the SunCatchers™.

- Water Treatment Facility. A water treatment shade structure will be located next to the Main Services Complex and to the northeast side of the Main Services Complex. The water treatment structure will be approximately 1,600 square feet and measure approximately 40 feet long by 40 feet wide by 14 feet in height; the structure will be constructed with a metal roof. The water treatment structure will house water treatment equipment and safe storage areas for water treatment chemicals. A motor control center for the water treatment equipment and pumps will be located within this structure. One wastewater evaporative ponds designed for water treatment wastewater containment will be located north of the water treatment structure. A control building will be located near the project substation. This building will contain relay and control systems for the substation in one room and the project operations control room in another room or rooms. A diesel-powered fire water pump and a diesel operated standby power generator will be located adjacent to the operation and administration building on the north side.

- Temporary Structures. SunCatchers™ assembly will be performed on-site in temporary structures. These buildings will be decommissioned after all project SunCatchers™ are assembled and installed. The three assembly buildings will be located beside the Main Services Complex. Each assembly building will be approximately 35,870 square feet and will measure 170 feet wide by 211 feet long by 78 feet in height and will contain two assembly lines. Each assembly building will be located on a concrete pad for the storage of SunCatchers™ components and assembled SunCatchers™ staging before field installation.

The primary purpose of the SunCatcher™ assembly buildings will be the assembly of the SunCatcher™ superstructure, the main beam assembly and trusses, the pedestal trunnion, mirrors, wire harnesses, control systems, drive position motors, and the calibration of the mirrors and control systems before field installation. Each assembly bay will be equipped with an automated platform on locating rails to move each SunCatcher™ through the assembly process. The exterior material for the assembly buildings will be a fire-retardant vinyl fluoride film with ultraviolet blocking characteristics and will be chemical and weather resistant. The building exteriors will be painted grassland sand to match the other structures.

A 25,500 square-foot concrete pad with the dimensions 50 feet by 510 feet will be located north of the assembly buildings for staging the assembled SunCatchers™ before field installation.

Transport trailer storage will be located south of the assembly bays. This storage facility will accommodate approximately 75 to 100 trailers, maintaining a three- to five-day of inventory of SunCatcher™ parts during the assembly phase of construction. These assembly buildings will be decommissioned and salvaged after all SunCatchers™ for the project are installed.

- Site Security. An on-site security system will be installed as part of the SLVSP. Controlled access gates will be maintained at the main construction entrance to the site on County Road T and will serve as the main entry and exit gate during project construction operations. Twenty-four hour site security monitoring will be provided in the control room via closed-circuit television and intercom system.

- Perimeter Security Fencing. Fencing and access gates will be provided for the project site, including additional fencing and gates around the main buildings, the electrical substation, and construction laydown areas. The security fencing will be provided with warning reflective signage. All site security monitoring will be able to be displayed on a real-time as well as a recorded basis. Security monitoring cameras and active detection systems will be provided for all project buildings, support areas, and the entire site perimeter. Regular site security vehicular patrols will be conducted to provide additional site security. Site access will be provided to off-site emergency response teams that respond in the event of an "after-hours emergency." Entry into the project site by fire department or emergency units will be managed on a manual override basis by 24-hour security officers stationed at both entrances.

- Erosion Control and Stormwater Drainage. The site layout will maintain the local pre-development drainage patterns where feasible, and water discharge from the site will remain at the eastern boundary. The paved roadways will have a low-flow, unpaved swale or roadway dip as needed to convey nuisance runoff to existing drainage channels/swales, and will utilize low-flow culverts. It is expected that stormwater runoff will flow over the crown of the paved roadways, which are typically less than 6 inches from swale flow line to crown at centerline of roadway, thus maintaining existing local drainage patterns during storms.

  Localized channel grading will take place on a limited basis to improve channel hydraulics within the dry washes and to control flow direction where buildings and roadways are proposed. The Main Services Complex will be protected from a 100-year

flood by berms or channels that will direct the flow around the perimeter of the building site, if required. Arizona Crossings (roadway dips) will be placed along the roadways or low-flow culverts consisting of a storm culverts, as needed to cross the minor or major channels/swales where 100-year storm event access (all weather) is required. These designs will be based on Best Management Practices (BMPs) for erosion and sediment control. Arizona Crossings will be used for major washes where the all weather access is required. The roadway section at the channel flow line will be without a crown.

The proposed east-west on-site paved arterial roadway section between the Main Services Complex and County Road T will be designed as a designated evacuation route. As such, the culverts for this roadway will be designed such that the roadway section shall have its driving surface constructed above the projected profile of a maximum of 6 inches below the 100-year water surface elevation.

Building sites will be developed according to County drainage criteria, with provision for soft-bottom stormwater retention basins. Except for the building sites, the majority of the project site will remain completely pervious, as only a negligible portion of the site will be affected by pavement and SunCatcher™ foundations. The increased runoff expected from the building sites will be over-mitigated by capturing 100 percent of the runoff in a retention basin, where the storm runoff will be infiltrated or evaporate to the atmosphere.

- Site Preparation and Maintenance. The proposed site development will slightly alter the land areas of the site. Existing sparse vegetation will be removed as required during site preparation. The general preparation of the overall site will be followed by the grading activities required for the construction of the roadways and buildings. Grading for the construction of the roadways and buildings may include application of earth-binding materials to disturbed areas not occupied by project facilities or surfaced with concrete, asphalt, or crushed aggregate.

  Temporary erosion and sedimentation control measures to be used during construction will be designed to prevent sediment from being displaced and carried off site by stormwater runoff. Before beginning excavation activities, a silt fence, straw bales, or other BMP will be installed along the perimeter of the project, where minor runoff to off-site areas could occur. The silt fence will filter sediments from construction runoff. Berms with perforated risers will be used at road crossings and other locations as needed to control sediment transportation. During construction, the extent of earth disturbances will be minimized as much as is practical. A sediment trap will be constructed for the major site runoff discharge. The debris basins will be located upstream of the property boundary.

  Diversion ditches and/or berms will be constructed as necessary to divert runoff from off-site areas around the construction site. Temporary BMP control measures will be maintained as necessary throughout the construction period.

  Brush trimming will be conducted between alternating rows. Brush trimming consists of cutting the top of the existing brush while leaving the existing native plant root system in place to minimize soil erosion. To minimize shading on SunCatchers™ and prevent potential brush fire hazards, natural vegetation trimmings will be cleared in

the area of each SunCatcher™ as well as on either side of the paved arterial roadways. After vegetation has been trimmed, blading for roadways and foundations will be conducted between alternating rows to provide access to individual SunCatchers™. Blading will consist of limited removal of terrain undulations and will remove localized rises or depressions within the individual 1.5-MW solar groups to provide for proper alignment and operation of the individual SunCatchers™. In general, ground disturbance will be minimized wherever possible.

Paved roadways will be constructed as close to the existing topography as possible, with limited cut-and-fill operations to maintain roadway design slope to within a maximum of 10 percent.

4.6 Describe Any Feasible "Non-structural" Alternatives to Meet the Objectives of the Proposed Site Selection and Construction

Various alternatives sites were evaluated during the development of this proposal. See Map 6, Alternative Solar Sites Considered, in Appendix C for additional detail. Specifically, five alternative sites were compared and ranked based on the following considerations:

- Land availability. A contiguous land area is required to maximize land use efficiency and engineering feasibility.
- Proximity to existing available transmission. Because of the high cost of transmission lines, it was advantageous to minimize the distance between the SLVSP and existing available transmission.
- Water availability. While the water requirements for the SLVSP are very low (up to 10 acre-feet per year for a 200MW facility) it was necessary to have a full understanding of the permitting regime to obtain water rights. Currently, Tessera Solar is evaluating three alternatives water sources for the project as follows:

    a. Well water augmented with Surface water – on site/adjacent rights held by the Woodards
    b. Well water augmented with Surface water – from the Rio Grande River via ditch system/recharge pit on site
    c. Truck water (least preferred alternative)

- Surrounding land uses. Certain land users may have concerns about an array 8,000 SunCatchers™ sited within close proximity to them. Sites with fewer adjacent land uses are preferred.
- Environmental consequences. The appropriate siting of the SLVS Project considered the likely potential impacts on environmental, social, and cultural resources.

Based on the above considerations, Tessera Solar selected the project site as proposed in this application. Appendix E contains the Citizen Participation Results Report compiled after the Public Open House held on August 31, 2009, in Saguache. This report discusses the public's issues and concerns associated with the preferred alternative site.

5.0 HAZARDS AND EMERGENCY PROCEDURES

5.1 Procedures Addressing Potential Hazard to the Health, Safety, and Welfare of Employees and the General Public from Fire, Explosion and Other Dangers

Fire Hazards**.** The SLVSP site is located in a moderate fire hazard zone; the project site is outside of regions where the risk of wild land fires is considered significant. SLVSP will implement programs to ensure compliance with the requirements of federal and state occupational safety and health programs. SLVSP will also identify and implement project-specific programs that effectively assess potential hazards and mitigate them on a routine basis. The SLVSP will have on-site fire-protection systems and will be supported by local fire protection services. The Main Services Complex will include a location for an approximately 45,000-gallon tank that will be used to store water for SunCatcher™ mirror washing and fire protection applications. The project will include both portable and fixed fire suppression equipment and systems. Portable fire extinguishers will be located at strategic locations throughout the project site. The fixed fire protection system will provide a wet, water-based sprinkler fire-suppression system for the buildings. Employees will be given fire safety training, including instruction in fire prevention, the use of portable fire extinguishers and hose stations, and the reporting of fires to the local fire department. Employees will only attempt to suppress fires in their incipient phase. Fire drills will be conducted at least twice each year for each work area. The project fire protection and safety systems will be designed to limit personnel injury, property loss, and project downtime as a result of fire or other event. The systems will be designed in accordance with Federal, state, and local fire codes, occupational health and safety regulations, and other jurisdictional requirements, and NFPA standard practices.

5.2 Describe Hazards, if any, of Environmental Damage and Contamination Due to Materials Used at or Activities Taking Place at the Proposed Facility

The SLVSP will generate a variety of non-hazardous and hazardous wastes during construction and operation. Tables A and B outline these solid wastes, which include liquids and solids from the wastewater system, replaceable parts, rags, and other waste materials and chemicals produced from the maintenance activities, including equipment and vehicle maintenance and waste management methods for each. More detailed discussion of these materials and methods of treatment are provided in subsequent sections.

Water Treatment Wastewater. The water treatment wastewater generated by the Reverse Osmosis (RO) unit contains relatively high concentrations of total dissolved solids (TDS). Wastewater or brine generated by the RO unit will be discharged to a poly vinyl chloride (pvc)-lined evaporation pond or equivalent. Each pond will be sized to contain one year of discharge flow, approximately 2.44 million gallons. A minimum of one year would be required for the water treatment waste to undergo the evaporation process. The second pond will be in operation while the first is undergoing evaporation. The two ponds will alternate their functions on an annual basis. The solids will be scheduled for removal during the summer months, when the concentration of solids is at its greatest due to an increase in evaporation rates, in order to achieve maximum solids removal. Solids removed from the ponds will be disposed of in a permitted facility.

Table A: Summary of Construction Waste Streams and Management Methods					
Waste Stream and Classification	**Origin and Composition**	**Estimated Amount**	**Estimated Frequency of Generation**	**On-Site Treatment**	**Waste Management Method**
Construction waste: non-hazardous recyclable	Scrap wood, steel, glass, plastic, and paper	80 cubic yards per week	Intermittent during construction period	Segregation into composition type; store for less than 30 days	Recycling facility
Construction waste: hazardous	Empty hazardous material containers	2 cubic yards per week	Intermittent	Store for less than 90 days	Return to vendor or to hazardous waste disposal facility
Construction waste: hazardous	Solvents, used oils, paint, oily rags, cleaners, and adhesives	200 gallons	Every 90 days	Store for less than 90 days	Recycle if possible, otherwise dispose at permitted hazardous waste disposal facility
Construction vehicles: hazardous	Waste oil including used motor oil, transmission fluid, hydraulic fluid, and antifreeze	200 gallons	Every 90 days	Store for less than 90 days	Recycle if possible, otherwise dispose at permitted hazardous waste disposal facility
Spent batteries: hazardous	Lead acid and alkaline	40 per year	Intermittent	Store for less than 90 days	Dispose to recycling facility
Stormwater from construction: non-hazardous	Surface runoff (water, inert material, dirt and concrete particles)	15 gallons per day	Intermittent	None	Water will percolate into on-site soils
Residual solids from retention pond: non-hazardous	Dirt and concrete particles	50 cubic yards one time at end of construction	One time	None	Excavate and dispose of at a permitted facility as needed

Table A: Summary of Construction Waste Streams and Management Methods					
Waste Stream and Classification	**Origin and Composition**	**Estimated Amount**	**Estimated Frequency of Generation**	**On-Site Treatment**	**Waste Management Method**
Sanitary waste: non-hazardous	Portable chemical toilets sanitary waste	400 gallons per day	Periodically pumped to tanker truck by licensed contractor	None	Ship to sanitary water treatment plant

Table B: Summary of Operation Waste Streams and Management Methods					
Waste Stream and Classification	**Origin and Composition**	**Estimated Amount**	**Estimated Frequency of Generation**	**On-Site Treatment**	**Waste Management Method**
Office and packaging materials from supplies deliveries: non-hazardous	Paper, wood, plastic, and cardboard	10 cubic yards per week	Intermittent	Segregation into composition type; store for less than 30 days	Weekly collection for recycling and/or approved waste disposal
Sanitary wastewater solids: non-hazardous	Restrooms and sanitary waste	5,000 gallons per month	Intermittent	None	Dispose to sanitary leach field
Spent batteries: hazardous, recyclable	Lead acid, alkaline, gel cell, nickel, and cadmium	30 units per week	Intermittent	Store for less than 30 days	Dispose to authorized waste recycling facility
PCU oil, motor oil: hazardous, recyclable	PCU overhaul	18 gallons per month	Intermittent	Two 100-gallon tanks for filtering and reuse in PCU	Recycle
PCU coolant, ethylene glycol: hazardous	PCU overhaul	18 gallons per month	Intermittent	Store for less than 90 days	Dispose to authorized waste disposal facility
PCU hydrogen gas: non-hazardous, recyclable	Refill k-bottles in place	5,000 k-bottles per month	2 times per year per SunCatcher™	Refill k-bottles on-site	Empty k-bottles returned through supplier

Table B: Summary of Operation Waste Streams and Management Methods					
Waste Stream and Classification	**Origin and Composition**	**Estimated Amount**	**Estimated Frequency of Generation**	**On-Site Treatment**	**Waste Management Method**
Oily absorbent and spent oil filters: hazardous, recyclable	PCU and hydraulic equipment overhauls	One 55-gallon drum per month	Intermittent	Store for less than 90 days	Dispose to authorized recycle facility
Oily rags: non-hazardous	PCU and hydraulic equipment overhauls	One 55-gallon drum per month	Intermittent	Store for less than 90 days	Launder at authorized recycle facility
Used hydraulic fluid, oils and grease: hazardous, recyclable	PCU and hydraulic equipment overhauls	Less than 11 gallons per month	Intermittent	Store for less than 90 days	Dispose to authorized recycle facility
De-mineralized water treatment wastewater salt cake: non-hazardous or designated waste	Zero discharge system; naturally occurring salt compounds	60,000 pounds per year	Intermittent	Evaporative pond containment	Non-hazardous waste disposal facility

Sanitary Wastewater**.** Wastewater generated at the Main Services Complex will be discharged into a septic system with sanitary leach fields, and will be designed and permitted in accordance with applicable County and Colorado Department of Public Health and Environment requirements. The septic tank will be located at the Main Services Complex; the leach fields will be located adjacent to the Main Services Complex, utilizing the open space between nearby SunCatchers™.

Non-Hazardous Construction Waste**.** Inert solid wastes resulting from construction activities may include recyclable items such as paper, cardboard, solid concrete and block, metals, wire, glass, Type 1 to 4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, roofing materials, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. Management of these wastes will be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup of wastes with disposal at a permitted landfill.

It is expected that a 40-cubic-yard container will need to be emptied on a weekly basis during the construction of the buildings and once a month thereafter. Recyclable materials will be separated into labeled bins and removed from the site as needed. This construction waste is not expected to have a significant effect on public health or cause adverse effects on local landfill capacity. Any wastes classified as hazardous,

such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers, will be stored and disposed of as required by local, state and federal regulations. Waste oil generated from the construction vehicles will be recycled at an approved recycling facility.

Non-Hazardous Operation Waste**.** Inert solid wastes generated at the project during operation will be predominantly office wastes and routine maintenance wastes, such as scrap metal, wood, and plastic from surplus and deactivated equipment and parts. Scrap materials such as paper, packing materials, glass, metals, and plastics will be segregated and managed for recycling. Non-recyclable inert wastes will be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in a permitted landfill.

Non-Hazardous Liquid Waste. Non-hazardous liquid wastes produced for the project consist of water treatment system wastes. Skim oil collected from oil/water interceptor and other liquids from equipment maintenance will be transported by an authorized carrier to a certified recycling facility.

Hazardous Waste**.** SLVSP will implement a Hazardous Materials Management Program (HMMP) developed for the project construction and operation phases. At a minimum, the HMMP will include procedures for hazardous materials handling, use and storage, emergency response, spill control and prevention, employee training; and recordkeeping and reporting. The HMMP will be developed and implemented before the start of construction. The program will be revised and updated as required in a timely manner, and employees will be trained and the program will be implemented before the start of commercial operation.

The procedures outlined in the HMMP will be in accordance with all applicable LORS. Key aspects of project waste management activities are listed below.

- The Applicant will secure an EPA Hazardous Waste Generator ID number before turnover of site management from the construction contractor to the operating company.
- All hazardous wastes will be stored in appropriate bulk storage containers or in labeled 55-gallon drums equipped with secondary containment and closed tops with bungs for liquid wastes.
- All waste drums will be stored in accordance with good practice and applicable LORS, and will be protected from environmental conditions; including rain, wind, and direct heat; and physical hazards such as vehicle traffic and sources of heat and impact.
- Storage of hazardous waste will at no time exceed 90 days from the date of initial accumulation of a total of 55 gallons of hazardous waste or more on site.
- PCU engine oil will be stored in 150-gallon double-walled storage tanks on site in accordance with good engineering practices and applicable LORS. Two tanks will contain recovered oil from PCU overhauls to be filtered for reuse in PCU operation. Filtered oil will be contained in two additional 150-gallon double-walled tanks for storage.
- Elevation and azimuth gearbox oil will be stored in 150-gallon double-walled storage tanks on site in accordance with good engineering practices and applicable LORS. One tank will contain recovered oil from PCU overhauls to be filtered for

reuse in PCU operation. Filtered oil will be contained in a second 150-gallon double-walled tank for storage.

- Waste lubricating oils will be recovered and reclaimed by a waste oil-recycling contractor.
- Used hydrogen gas k-bottles will be stored to the specific requirements outlined in NFPA 50A following good engineering practices and applicable LORS. The cylinder storage location will be in a well-ventilated, dry compound, secured from unauthorized access, well protected from vehicle, pedestrian, and other potential sources of impact, and separated from other potentially combustible materials or other oxidizers by a barrier of noncombustible material.
- Spent lubricating oil filters from PCUs and vehicles will be disposed at an authorized waste disposal facility.
- Batteries will be reclaimed and recycled by authorized facilities.
- Colorado-authorized and certified hazardous waste haulers will transport hazardous wastes to registered waste treatment, storage, disposal, and recycling facilities.
- Hazardous waste generation, handling, and storage areas will be inspected and monitored on a regular basis.
- Emergency response and reporting will be performed per written procedures that follow government and industry requirements and standards.
- Workers will be trained to handle hazardous wastes generated at the site.

Table C lists the chemicals to be used, handled, and stored at the project site during project operation.

The storage, use, and handling of these hazardous materials will be in accordance with applicable LORS and will be conducted as listed below.

- An HMMP will be developed and implemented before turnover of site management from the construction contractor to the operating company.
- Project personnel will be trained in hazardous materials and hazardous waste awareness, handling, and management as required for their level of responsibility.
- Bulk chemicals will be stored in the original shipping container provided by and returned to the chemical provider.
- Hydrogen gas will be generated on site and distributed via a piped system to the SunCatchers™.
- Chemical storage areas and feed/transfer areas will be equipped with secondary containment sufficient to contain the volume of the largest container or tank including an allowance for rainwater.
- Small-quantity chemicals used for maintenance tasks will be kept in appropriate flammable material or corrosive material storage lockers per all applicable LORS.
- Periodic inspections will ensure that all containers are secure and properly marked.

Table C: Summary of Non-Water Treatment Materials Usage and Storage				
Chemical	Application	Storage Location	Storage or Usage Quantity	
			Average	Maximum
Insulating oil (heat transfer)	Electric equipment	Not applicable	50,000 gallons, initial fill	Not stored on site, initial fill quantity is brought to site at the time of replacement
Lubricating oil	Solar Stirling Engine/dish drives	Maintenance buildings	108,333 gallons, initial fill with usage of 46 gallons per month	300-gallon recycle tank located in the Maintenance Building
Hydrogen	PCU working fluid	Distributed system	Usage of 50,000 cubic feet per day	Initial fill
Ethylene glycol	Inlet air chiller loop – alternating	Maintenance buildings	110,000 gallons, initial fill, with usage of 46 gallons per month	Initial fill
Various solvents, detergents, paints, and other cleaners	Building maintenance and equipment cleaning	Maintenance buildings	Three 55-gallon drums, commercial 1-gallon containers	Ten 55-gallon drums, commercial 1-gallon containers
Gasoline	Maintenance vehicles	Double-wall 5,000 gallon refueling station with containment	2,500 to 5,000 gallon refueling stations	Full tank of 5,000 gallons
Diesel fuel	Fire water pump and maintenance vehicles	Fire water skid double-wall 5,000 gallon refueling station with containment	100 gallons for initial fill, 2,500 to 5,000 gallon refueling stations	Maintain full diesel tank of 5,000 gallons

5.3 Emergency Procedures to be Used in the Event of Fire, Explosion or Other Event Which May Endanger the Public Health, Safety and Welfare

Emergency procedures, treatment and prevention protocol including the creation of a HMMP have been previously identified within this application for most hazards, including materials, wastes and fire.

Spill Prevention and Containment for Construction and Operation of Facility. Four types of hazardous materials that pose a risk of accidental release will be used at the project site during the operational phase: hydrogen gas, gasoline, diesel fuel, and transformer insulating oil.

The most likely cause of an accidental release would be gasoline or diesel fuel leakage due to a collision or a spill while refueling a maintenance vehicle. A less likely possibility of tank leakage is aging tank material and/or oxidation of the tank structure. Protective measures to be adopted during a gasoline spill include the following.

- Eliminate all sources of ignition in the vicinity of the spill or released vapor.
- If the material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.
- Stop the source of the release if it can be done without risk.
- Contain the release to prevent further contamination of soil, surface water, or groundwater.
- Clean up the spill as soon as possible, observing precautions in exposure controls/personal protection.
- Use appropriate techniques such as applying non-combustible absorbent materials or pumping.
- Ensure that all equipment used when handling the product is grounded.
- Use vapor-suppressing foam to reduce vapors.
- Use clean, non-sparking tools to collect absorbed material.
- Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable LORS.
- Report gasoline spills to local authorities as appropriate or required. This material is covered under the EPA-administered Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) Petroleum Exclusion. Therefore, gasoline releases to the environment may not be reportable under CERCLA.

A second cause of accidental release could occur during the refilling of a SunCatcher™ hydrogen k-bottle cylinder. These cylinders contain 196 cubic feet and the engine contains 14 cubic feet for a total of 210 cubic feet of hydrogen. This amount is below the 400-cubic-foot threshold defined in 29 Code of Federal Regulations 1910.103 and NFPA-55, Chapter 10. Only experienced and properly instructed personnel will handle compressed hydrogen gas. During filling, the cylinders will be secured in an upright position. The valve protection cap will be removed only just before connecting the cylinder to the manifold. The cylinder units will be electrically bonded to the system before discharging hydrogen. Personnel will ensure all connections will remain gas-tight during filling. If a release were to occur, personnel would be required to evacuate the immediate area then eliminate any possible sources of ignition, provide necessary ventilation, and shut off the source of hydrogen, if possible. If hydrogen is leaking from a cylinder or valve, personnel would be required to call the supplier's emergency phone number. Since this type of incident would most likely occur at an individual SunCatcher™ location, personnel would likely be instructed to allow the hydrogen gas to dissipate to the atmosphere. Hydrogen gas poses no threat of adverse effects to the environment. The risk of fire is minimized because refilling operations occur outdoors, preventing hydrogen from attaining the minimum 4 percent lower explosive limit.

Transformer oil poses a minor risk of accidental spill. Transformer oil is not stored on-site except in the transformers. Each substation transformer contains approximately

12,000 gallons of insulating oil. Each GSU contains approximately 530 gallons of oil. The total transformer oil contained in all of the transformers amounts to approximately 100,000 gallons. Substation transformers will be delivered to the site without the oil. The oil will be inserted into the transformer tanks from delivery tankers on site. Precautions will be taken during oil transfer to prevent spills. Adsorbent materials will be carried on the supply truck for quick response to an inadvertent oil spill. Any soil contaminated by a spill will be removed to an off-site hazardous waste disposal facility. Substation transformer pads will be designed for containment of the transformer oil in the event the tank is breached. GSUs will be filled with oil when they are delivered to the project site. During project operation, samples of transformer oil will be drawn for testing from a test port on each transformer tank approximately every three months. Oil will be removed from the tank for maintenance on intervals of 10 to 15 years.

Construction Health and Safety Program. To protect the health and safety of workers during construction, the Applicant (or construction contractor) will ensure compliance with the project Construction Health and Safety Program, and all federal, state, and local health standards that pertain to worker health and safety. The program will include:

- A written Code of Safe Practices that relates to construction activities;
- Identification of the person or persons responsible for implementing the program;
- Posting of the Code of Safe Practices at a conspicuous location at each job site office or providing it to each supervisor, who shall have it readily available;
- A system for identifying workplace hazards, including inspections;
- A system of ensuring employee and subcontractor compliance;
- "Toolbox" or "tailgate" meetings conducted by supervisors with employees to discuss job hazards and mitigation measures;
- Methods of communicating with employees that encourage employees to expose unsafe activities; and
- Procedures for correcting unsafe conditions.

When workers are first employed, they will be given instruction regarding the hazards and safety precautions applicable to the type of work in question; workers will also be directed to read the Code of Safe Practices. When employees are required to work near known job site hazards, they will be instructed in the recognition of the hazard, the procedures for protecting themselves from injury, and the first aid procedures in the event of injury.

5.4 Any Prevalent Natural Hazards that Will Affect or be Affected by Development, and Mitigating Measures to be Taken to Reduce Danger Due to Such Natural Hazards.

Flood Hazards**.** A number of minor washes and/or drainage swales cross the project site. Flooding conditions likely occur periodically following intense thunderstorms which are usually short duration. Since thunderstorms typically cover small geographic areas, it is possible that localized flooding may occur in some parts of the site while other parts remain unaffected. Localized channel grading will take place on a limited basis to improve surface hydraulics and control flow direction where

buildings and roadways are proposed. The Main Services Complex will be protected from flooding by berms or channels that will direct the flow around the perimeter of the building site, if required.

Roadway dips, culverts, and Arizona crossings will be used to reduce flood hazards on roadways. The proposed east-west on-site paved arterial roadway section between the Main Services Complex and County Road T will be designed as a designated evacuation route. As such, culverts for this roadway will be designed such that the roadway section shall have its driving surface constructed 6 inches above the projected profile of a 100-year event. Hydraulic analysis will be performed on the channels between the boundaries of the two-year event and the 100-year event to determine the depth and speed of flows. This information will be used to locate SunCatchers™ so as to minimize scour and deposition around their foundations.

APPENDIX A

MEMORANDUM OF OPTION

APPENDIX B

SUNCATCHER™ TECHNOLOGY

APPENDIX C

MAPS

APPENDIX D

PROJECT MAINTENANCE AND OPERATIONS PERSONNEL REQUIREMENTS

AND

TRADE BY CONSTRUCTION TABLES

APPENDIX E

CITIZEN PARTICIPATION RESULTS REPORT