

Final Report for DOE of the TEDI Feasibility Study for Utility-Scale Solar

Executive Summary:

To'Hajiilee Economic Development, Inc. (TEDI) is the economic development entity representing the To'Hajiilee Chapter of the Navajo Nation, also known as the Cañoncito Band of Navajo (CBN). Using DOE funding, TEDI assembled a team of qualified advisors to conduct a feasibility study for a utility-scale 30 MW Photovoltaic (PV) solar power generation facility on TEDI trust lands.

The To'Hajiilee Chapter is located approximately 20 miles west of Albuquerque, New Mexico—the largest electricity demand center in the state. TEDI is the economic development organization authorized by the To'Hajiilee Chapter to develop the utility-scale solar project as described in the completed feasibility document. The activity generated by TEDI and described in this report was funded by a grant from the U.S. Department of Energy (DOE) awarded to TEDI under Funding Announcement Number DE-PS36-09G099024.

The goal for this project has been to gather information and practical business commitments to successfully complete the feasibility analysis. The TEDI approach was to successively make informed decisions to select an appropriate technology best suited to the site, determine environmental viability of the site, secure options for the sale of generated power, determine practicality of transmission and interconnection of power to the local grid, and secure preliminary commitments on project financing. The feasibility study has been completed and provides TEDI with a practical understanding of its business options in moving forward with developing a solar project on CBN tribal lands. Funding from DOE has allowed TEDI and its team of professional advisors to carefully select technology and business partners and build a business model to develop this utility-scale solar project. As a result of the positive feasibility findings, TEDI is moving forward with finalizing all pre-construction activities for its major renewable energy project.

TEDI's team approach to the project engaged professional advisors including Rob Burpo as financial advisor to TEDI, RCI-Rural Community Innovations as feasibility study coordinator and writer, SunPower Corporation as technology advisor, RBC Capital Markets as finance partner, and legal counsel from both Ater Wynne LLP and Janov Law Offices, P.C.

Project Overview

In May 2009, TEDI contracted with RCI-Rural Community Innovations (RCI) to organize the study team and coordinate the practical elements of study work. Work on the study commenced in the spring of 2010 when DOE funding was granted. TEDI and RCI agreed that the feasibility study would be a group effort using a team of qualified professional partners. In short, RCI and TEDI agreed to simultaneously study the critical feasibility issues and move as many of the predevelopment milestones forward as possible. The theory behind this was two-

fold. First, some study elements would not actually be feasible unless predevelopment progress was made on finalizing those elements. Second, positive momentum on project elements allowed for progress toward feasibility on other project elements. RCI began by locating the best-fit technology partner from among at least a dozen solar PV technology companies. SunPower Corporation of Richmond, California was selected.

TEDI and its team of service providers have determined that constructing a 30 Megawatt utility-scale photovoltaic solar electrical generation facility (solar project) on tribal trust lands held by the Cañoncito Band of Navajos (To'Hajiilee Chapter of the Navajo Nation) is in fact feasible. TEDI has also created a project development company to partner with the appropriate providers for ultimate success. That development company has been named Sháńdíín Solar LLC. (Sháńdíín is the Navajo word for sunlight.) The Chapter will benefit from the project in terms of economic impact on the local population, potential for job creation, and Chapter-sustaining revenue.

The To'Hajiilee Chapter and the Navajo people desire to increase production of renewable energy to promote economic development and meet local energy demands. They are fortunate to have Albuquerque, New Mexico, as a neighbor. Economic modeling and energy price forecasting undertaken by RBC Capital Markets as a part of the feasibility study shows that renewable energy from the Project can be sold at a competitive wholesale rates to an investor-owned electric utility such as Public Service of New Mexico (PNM), to publicly owned non-profit utilities or a municipal utility with adequate price margins to create a viable renewable energy business.

SunPower's efficient PV technologies will produce energy that can compete at the price point in this market with fossil fuel power. In addition, TEDI is blessed with immediate access to transmission lines connected directly to Albuquerque. Through DOE support of this in-depth study, TEDI has determined that these transmission lines have unused available capacity. While this 30MW solar project is the focus of our feasibility study, we have identified the potential for additional renewable energy capacity on CBN tribal lands that can be developed in the future. The To'Hajiilee Chapter has expressed great interest as a community in the potential for this solar project. The production of sustainable, renewable power from the sun is very much in line with our culture's ethos of respect for the earth and a sustainable way of life. It is our Native way.

Project Objectives:

Objectives of the feasibility analysis and modeling included:

- 1) Site-specific resource assessment of solar potential;
- 2) Identification of viability of demand markets;
- 3) Assessment of transmission and interconnection capacity and costs;
- 4) Technology analysis and selection of best commercially available technology partner;
- 5) Assessment of environmental viability of the preferred site;
- 6) Economic modeling and price forecasting allowing for sale of power into the local or regional demand markets;
- 7) A preliminary analysis of potential Chapter benefits;

- 8) Assessment of potential business structures [and recruitment of development and management partners to provide long-term operations/maintenance and training plans for the site].

Completion of all these basic predevelopment tasks indicates that the TEDI project is feasible and competitive at the anticipated cost range of \$140,000,000. This is a substantial undertaking for a small and very impoverished Native community. In the initial planning stages of the project, it was assumed that predevelopment costs might ultimately exceed \$1 million for all predevelopment activities. TEDI has successfully utilized this first \$250,000 grant from DOE and leveraged an additional \$250,000 to move project feasibility and development forward.

Description of Activities

Some of the accomplishments during the term of this grant include the following:

- TEDI has secured a formal To'Hajiilee Chapter Resolution designating TEDI as the energy and economic development entity for the Chapter and designating approximately 500 acres of Chapter Trust land for the solar project purposes.
- A project team of knowledgeable professionals was assembled, including TEDI advisor First American Financial Advisors, Inc., Rural Community Innovations, Ater Wynne LLP law firm specializing in Indian and Energy law, TEDI legal counsel Janov Law Offices, P.C., solar PV manufacturing technology partner SunPower, and RBC Capital Markets, LLC as financing partner.
- TEDI applied for and received the *Pre-Feasibility Assessment of Renewable Energy Generation* from Western States Energy Solutions (WSES). The 2009 study was paid for with DOE funds in cooperation with the Western Area Power Administration (WAPA).
- The site survey was completed by Red Valley Survey of Shiprock, New Mexico.
- Land lease and sublease agreements for TEDI to control the subject property are under negotiation with BIA.
- On behalf of the project, RCI engaged the nationally recognized environmental consulting firm SWCA to conduct an Environmental Assessment (EA) of the site, which has been completed and has been awarded a Finding of No Significant Environmental Impact (FONSI) from the BIA.
- Of all the dozen potential technology partners evaluated, SunPower of Richmond, California, was ultimately selected. TEDI has entered into a non-disclosure agreement and term sheet with SunPower for potential development of the project.
- SunPower contracted with a professional hydrology-engineering firm, Bohannon Huston, to study drainage on the proposed development site.
- SunPower has completed various iterations of site engineering and completed site design and facility costing for descriptions that were included in the EA and included in financial modeling.

- TEDI has selected RBC Capital Markets, LLC as its investment banker and financing partner for the project. RBC has completed and updated its proprietary financial modeling. This modeling indicates an all-in equivalent cost of approximately less than \$.10 cents per kWh for power sales based upon construction costs provided by SunPower and finance costs.
- TEDI has established a Delaware-based limited liability company—Shándiín Solar LLC—to carry out and coordinate energy development activities and relationships with project partners.
- Up to four potential Power Purchase Agreement (PPA) partners have been identified. Active negotiations with these potential partners for power sales are underway including a completed response to an April 2011 RFP for renewable energy from Public Service of New Mexico (PNM).
- The PPA negotiations were made possible only because of the successful completion of all the above steps allowing TEDI to demonstrate site control, positive environmental assessment, practical and efficient site design, cost-effective financing, real potential for transmission interconnect, and competitive energy pricing.

Project Challenges and Next Steps

Initially TEDI identified a few of the barriers to successful construction of the solar project that included:

Adequate construction financing – The ultimate cost to finance the solar project will vary upon a number of factors, including the availability of bond financing, credit support from sources such as federal loan guarantees, renewal of federal tax-based incentives and other variables. Final negotiations must be completed to address these significant issues and obtain the best priced financing for the Project. However, TEDI has successfully secured professional support from First American Financial Advisors and RBC Capital Markets as well as its attorneys to make significant progress to completing these steps.

Successful completion of the environmental assessment – TEDI received the FONSI from the United States Department of the Interior dated May 31, 2011.

Success in securing interconnection agreements – On TEDI's/Shandiin Solar's behalf SunPower Corporation has submitted the Large Generation Interconnection Application (LGIA) to PNM. We anticipate that there will be a successful interconnection agreement once the scoping meeting and the Interconnection System Impact Study (ISIS) have been completed. TEDI is still seeking partial funding for PNM ISIS.

Final Securing of PPA. TEDI/Shandiin Solar has responded to the recent Request for Proposals for Renewable Energy Resources to PNM as of June 10, 2011. The PNM scoping meeting is scheduled for June 21, 2011.

Lessons Learned:

A Native American project of this magnitude and complexity needs to be handled somewhat outside the scope of standard feasibility studies performed on a more typical project. A small tribal community must first attract the interest of an experienced team of project advisors. The project team should include technology experts, financial advisors, project coordinators who can help demonstrate site control and environmental viability and legal advisors to negotiate regulatory matters and business agreements including power sales contracts, transmission interconnect agreements, leases and subleases to be approved by the Bureau of Indian Affairs (BIA). Real negotiations with potential power purchasers and transmission providers can produce contractual agreements ensuring project viability. Predevelopment financial support from DOE and the Tribal Energy Program are critical for a project development for impoverished communities.

Conclusion:

As a result of federal funding for the Sháńdíín Solar Project, TEDI and its advisors have proven project feasibility and are well positioned to move forward to complete all predevelopment activities. The project team is actively pursuing an additional \$500,000 to complete the pre-construction phase.