

Recipient Organization: Pueblo of Laguna

Project Title: Community Solar

Date of Report: June 13, 2024

Award Number: Award No. DE-IE0000165

Total Project Costs: \$1,243.98

DOE Share: \$1,064.40

Recipient Cost Share: \$179.58

Project Manager: Anne Oandasan

Project Partner(s):

ACKNOWLEDGMENT

This material is based upon work supported by the Department of Energy, Office of Indian Energy Policy and Programs, under Award Number DE-IE0000165.

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1.0 Executive Summary

The project was to install approximately 11.44 kilowatts (kW) rooftop solar photovoltaic (PV) system on the Mesita Village Community Center, an approximately 9.24 kW rooftop solar PV system on the Paguete Village Community Center, an approximately 21.56 kW rooftop solar PV system on the Paraje Village Community Center, and an approximately 11.00 kW rooftop solar PV system on the Seama Community Center, for a total of about 53.24 kW on four village community centers.

The systems were expected to generate approximately 93,329 kWh annually. Installing solar PV systems on the four village community centers would have helped achieve the Pueblo of Laguna's six energy objectives: community development (decreased utility bills, funds for other needs), economic development (training and participation in the renewable energy economy), energy reliability (future storage), community resilience (alternative sources), relationship to people and the natural world (reducing fossil fuel use), and energy sovereignty (Pueblo decision-making).

Installing solar PV systems would have also met specific project goals to offset not less than 85% of each selected building's annual electricity use, ranging from 87% to 103% of demand; save a minimum of 70% of the cost of utility bills per year for each building, ranging from 75% to 77% percent (including service charges); and would have had payback periods shorter than the estimated useful life of the project

2.0 Background

The Pueblo of Laguna is a federally-recognized Tribe located on its ancestral lands in west-central New Mexico. The Pueblo has six energy objectives: community development, economic development, energy reliability, community resilience, relationships to people and the natural world, and energy sovereignty. The Pueblo contracted for a Renewable Energy Feasibility Study in 2008, and for an updated Renewable Energy Feasibility Study Update and Plan that was completed in 2018. The Renewable Energy Feasibility Study Update and Plan confirmed the feasibility of solar PV development and recommended that the Pueblo implement distributed solar PV projects as stage one of its renewable energy development, with a focus on community centers and use of utility net-metering programs.

In 2020, the Pueblo contracted with vendors to assess eleven Pueblo buildings for their suitability for solar PV systems with net-metering through Continental Divide Electric Cooperative's (CDEC) program, in the Solar PV Assessment. The assessment included: calculations of current building energy usage and projected electrical demand; preliminary estimate of the solar PV system capacity needed to meet electrical demand; preliminary estimate of the solar PV system capacity needed to meet electrical demand; rooftop shade analysis; rooftop orientation analysis; roof structural analysis; existing electrical system capacity analysis and electrical code evaluation; assessment of alternate solar PV system locations and configurations, where rooftops are deemed inadequate; preliminary cost estimates for construction of solar PV system; cost estimates for design of solar PV systems, and prioritization for development of solar PV systems. The Mesita, Paguete, Paraje, and Seama Village Community Centers, as well as five other buildings, were determined to be technically and economically feasible for solar PV systems. The vendor team has designed the solar PV systems.

3.0 Project Objectives

The Pueblo of Laguna initiated this project using a plan-design-construct methodology. The design phase was comprised of preparation of engineering designs and cost estimates for the Mesita, Paguate, Paraje, and Seama Village Community Centers. The Pueblo requested proposals for the installation to ensure competitive pricing. The Pueblo provided prospective proposers with the assessment document and designs, but they could have chosen to update the designs and resubmit interconnection requests to CDEC. In this case, the project would have shifted to a design-build methodology. The completed project would have been owned by the Pueblo of Laguna and operated by the four villages of Mesita, Paguate, Paraje, and Seama.

The Pueblo of Laguna team, with roles and responsibilities, included:

Project Manager (PM) – The Planning Program Manager would have been responsible for coordinating all project efforts. This person will manage the request for proposals (RFP) process, coordinate with the Engineering Program Manager for installation and commissioning, coordinate with the villages for training and monitoring energy generation and cost savings and be responsible for the verification phase.

Construction Manager – The Engineering Program Manager would have been responsible for all aspects of the installation and commissioning process, and oversight of contractual work.

Project Oversight – The Public Works Director would have provided oversight for project management and construction management functions, as the supervisor of the Planning and Engineering Program Managers.

Operational Oversight – The Chief of Operations would have provided final oversight for project objectives, contracts and agreements, and budget administration, with signature authority for contracts. This person supervises the Public Works Department, which includes the Planning and Engineering programs, and three other departments, and works directly with the Pueblo's Chief Financial Officer.

There are critical interdependencies between project management and construction management. The project manager and construction manager would have met, at a minimum, weekly, to review project progress and any challenges.

Risk management addresses challenges that can occur in any of the three legs of project management: schedule, cost, and quality. The Pueblo would have developed a RFP upon notice of award to allow increased time for contracting. The Pueblo has already submitted designs for interconnection approval, which, even if a different installation firm is selected and the applications are resubmitted, will familiarize CDEC staff with the projects. The current design would have used newer commercially available products to ensure availability upon award. The Pueblo would have completed certain tasks, such as seeking trainees for system monitoring and scheduling training sessions, simultaneously with installation. The Pueblo has taken steps to reduce costs by bundling four village community center projects together. If it is necessary to seek additional funds. Any barriers or obstacles that may arise would have been addressed through weekly project meetings, by phone, video conference, or in person.

Recommendations for project changes would have been made at the appropriate level of management based on the task: by either the Project Manager or Construction Manager during procurement; by the Construction Manager during installation; by the Project Manager for community engagement, training,

verification, and progress presentations. Recommendations from the Construction Manager would have been made to the Project Manager, as the main point of contact. Recommendations would proceed from the Project Manager to Project Oversight and then to Operational Oversight for approval.

4.0 Description of Activities Performed

Procurement would have included all aspects of soliciting and awarding a contract for installation, from finalizing a RFP, advertising the RFP, responding to questions through addenda, receiving proposals by the deadline, tabulating bids, and reviewing supplemental information, recommending award, presenting to the Pueblo Council for a decision on award, executing the contract and issuing the notice to proceed.

Installation preparation would have included the project kickoff meeting, issuing access permits to allow work on site at the Pueblo, design changes if proposed by the installation contractor, review and approval of design changes, and resubmitted and approved interconnection agreements if required by design changes.

Installation would have included ordering materials, delivery of materials to the site, placement, and installation of panel support structures (racking) according to manufacturer's specifications, installation of panels and wiring on the support structure; completed electrical work including the installed inverter, and inspection, with documented testing and results provided to the Pueblo, ending with commissioning.

Community engagement would have included consist of an event or events celebrating the installation of the solar panels.

The project would have collected quarterly data on energy generation, energy use, and costs from web-based monitoring, utility bills, and through coordination with CDEC for a period of not less than one year following installation. Note that verification can occur only after billing cycles are complete.

The Pueblo would have documented progress and financial status in quarterly reports and a comprehensive final report that will include the project results, data collected, and other documentation as required. Reports and other deliverables would have been provided in accordance with the Federal Assistance Reporting Checklist (FARC). Further, the Pueblo would have also presented project progress at annual Program Reviews to be held each year in Lakewood, Colorado.

5.0 Conclusions and Recommendations

Unfortunately, the Pueblo decided to return the award. The project was an excellent pilot program. Due to staff turnover and additional obstacles associated with the timing of this project (COVID); there was significant time loss during the middle of the project. The major challenge was the previously identified community center roofs that were not built with sufficient capacity to hold the PV panels and equipment. Other options were examined such as ground mounting, but unfortunately, there was not sufficient time to enter into the contract with the parking lot owner, enter into another Professional and Executive Recruitment (PER) bidding process and actual PER work for the new site, and begin the construction for placement.

6.0 Lessons Learned

The major challenge was the previously identified community center rooftops that were not built with sufficient capacity to hold PV panels and equipment. Other options were examined such as ground mounting, but unfortunately, there was not sufficient time to enter into the contract with the parking lot owner, enter into another PER for the new site, and begin the construction for placement. Better approaches to address planning, and staff transitions would have benefited this project greatly.