

Tribal Renewable Energy - Final Report

Recipient Organization:	Bishop Paiute Tribe
Project Title:	Residential Solar Program Phase II
Date of Report:	September 4, 2020
Award Number:	Award DE-IE0000041
Total Project Costs:	\$683,635
Technical Contact:	Bishop Tribal Environmental Director, Brian Adkins, brian.adkins@bishoppaiute.org
Project Partner:	GRID Alternatives Inland Empire, Jaime Alonso, Jalonso@gridalternatives.org

ACKNOWLEDGMENT

This material is based upon work supported by the Department of Energy, Office of Indian Energy Policy and Programs, under Award Number DE- IE0000041.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Table of Contents:

Project Overview	3
Objectives	3
Description of Activities Performed	4
Conclusions and recommendations	4-9
Lessons Learned	10-11

2. Executive Summary: Bishop Paiute Tribe Residential Solar Program Phase 2: Award Number: DE-EE0000041

The project consisted of the design, installation, inspection, and interconnection of **35** grid-tied, solar electric systems, totaled **123** kW rated capacity, on qualified existing low-income single-family homes located within the Bishop Paiute Reservation, which provide at least 65-79% savings in displaced electricity. Tribal job trainees were hired for each installation, gaining valuable job experience. Additionally, each homeowner was educated on energy efficiency and renewable energy. The overall project goal was to deploy clean energy systems in order to achieve the Bishop Paiute Tribe's long-term goals of energy self-sufficiency, environmental protection, and better lives for our Tribal members and community. The energy displaced was 82.4 percent of total electricity used (exceeding estimated 65-79%) or over **170,000** kWh/year generating approximately **\$1.29** million worth of power for low-income families over their lifespans, while eliminating an estimated **2,640** tons of greenhouse gas emissions. This reduction makes a significant difference on the reservation giving more families money to spend on other essential items, while reducing their carbon footprint in this beautiful mountain community. Also, implementing these **35** systems provided a approximately **132** hours of paid solar installation work for tribal members. Training and good paying jobs are scarce on the reservation and solar is the fastest growing industry in CA and this training offered our members a real chance to learn and then get paid. The program is very significant to the family who qualified, as most families fall below the federal poverty guidelines, and many are living paycheck to paycheck. Overall, the triple impact of the Bishop Paiute Tribe Residential Solar Program Phase II—affordable energy for low-income families, on-site clean energy production, and hands-on solar installation jobs for local workers—these all help build the Tribe's energy, economic, environmental, and social self-sufficiency and sovereignty amongst the most needy on the Reservation.

3. Project Objectives:

The overall project goal was to deploy clean energy systems in order to achieve the Bishop Paiute Tribe's long-term goals of energy self-sufficiency, environmental protection, and better lives for our Tribal members and community. Project goals were to:

- 1) Install **34** grid-tied, net-metered rooftop solar electric systems on owner-occupied, single-family homes of low-income families living on the Reservation while at the same time hiring tribal job trainees as installers for a minimum of **132** hours of paid work
- 2) The new clean energy systems deployed have at least **120** kW rated capacity
- 3) The energy displaced should be at least **65-79** percent of total electricity used (or **170,000** kWh/year or **1,819,000** kBtu). The installed **120** kW will produce **170,000** kWh/year, displacing at least **65-79** percent of the **34** homes' total electricity use of **215,148** kWh/year (reduced to **45,148**), generating approximately **\$1.29** million worth of power for low-income families over their lifespans, while eliminating an estimated **2,640** tons of greenhouse gas emissions.

4. Description of Activities Performed:

The project consisted of the design, installation, inspection, and interconnection of **35** (one more than originally planned) grid-tied, solar electric systems, totaling at least **123 kW** rated capacity, on qualified existing low-income single-family homes located within the Bishop Paiute Reservation, which provided 82.4 % (exceeding estimated 65-79%) savings in displaced electricity. Tribal job trainees hired for each installation, gained valuable job experience. Additionally, each homeowner was provided information and educated on energy efficiency tips and renewable energy guide sheets.

The period of performance is estimated at 30 months, including verification of the actual annual electricity displacement for each installed system, approximately as follows:

- Months 1-5: Homeowner clients re-qualified and educated. Months 6-14: System design site visits conducted. Systems designed. Homeowner client contracts signed. Solar rebates reserved. Interconnection and net-metering application submitted. TERO Compliance Plan and fee completed. Equipment and materials procured. Systems installed. Job trainees hired and supervised.
- Months 9-21: Systems interconnected (clients received Permission to Operate [PTO])
- Months 12-28: Warranty training provided. Systems performance verified.
- Months 29-30: Final reports completed.

During the completion phase there was additional funding remaining in the budget due to the Tribal Rights Employment Office (TERO) tax that was waived. The Tribe and GRID decided to apply funding [04/1/19 through 12/31/19] and another home was added with the remaining funding balance in the contract. The system had been installed, interconnected on 03/2019 and monitoring began 4/1/2019 and ended 4/1/2020. This brought the total number to 35 projects equaling 123 kW.

5. Conclusions and Recommendations: Including photos and chart

After the completion of the installations, GRID completed the warranty training with homeowners for all 35 installed systems. System monitoring was then started for all 35 installed solar electric systems. This monitoring continued throughout the remainder of the grant cycle. Here is that data:

Total kWh Historic Usage	233467
Total Annual kWh Electric Offset	192454
Total Annual Savings	82.4%

Below are internet links to articles that mention the Bishop Paiute Tribe as a forward-thinking tribe and about their energy goals and plans and bringing energy saving programs to their members. There is also a video of a happy tribal member who received a DOE funded solar system installed by GRID.

<https://www.energy.gov/indianenergy/articles/bishop-paiute-tribe-celebrates-milestone-quest-energy-self-sufficiency>

<https://www.scientificamerican.com/article/solar-powers-benefits-dont-shine-equally-on-everyone/>

<https://gridalternatives.org/headquarters/news/earth-day-marks-completion-56-new-solar-systems-bishop-paiute-reservation>

<https://www.facebook.com/GRIDAlternativesIE/posts/647151155935841>

<https://energy.gov/indianenergy/articles/bishop-paiute-tribe-celebrates-milestone-quest-energy-self-sufficiency>
<https://gridalternatives.org/headquarters/news/earth-day-marks-completion-56-new-solar-systems-bishop-paiute-reservation>

<https://www.educationdive.com/news/partnership-grid-alternatives-dive-awards/565165/>



Getting set up, unloading vans: safety always in mind!



Roof training with Tribal trainees



Inverter wiring training with Tribal members



Only GRID Solar Installation Supervisor is allowed near the main service panel and full safe gear.



Tribal trainees and GRID crew with finishing solar system on Bishop Paiute Tribal member home. GRID always has safety binders handy on all solar installations.



Booth set up at Bishop Earth Day, Mr. Dewey job trainee, GRID Tribal Director Tim Willink, Construction Manager Mr. Graham, Marketing Manager Mr. LeBlanc



Environmental Director Brian Adkins and Lisa Castilone at DOE conference

6. Lessons Learned - There were lessons learned in four areas: participant selection, site selection, energy conservation, and volunteer training:

Project participant selection - This project is for low-income tribal homeowners. Early in the overall project the Tribe deliberated on applicant selection process and after careful review, the tribe decided to rollout the program on a first come first serve basis for low-income tribal members. The Tribe worked together with GRID to create an outreach campaign to get information out to all tribal members through mailers, flyers, radio and social media to insure it was a fair process.

Project site selection – Many people applied that live in travel trailers, mobile homes with wheels etc. and these homes do not qualify for solar installation, due to current CA codes. Special inspections were completed, and those who did qualify with modular units that only needed minor ground disturbance had to

be approved by Tribal historic preservation office to do so. GRID completed a full site inspection on all applicants. We learned to pre-screen all applicants prior to them submitting their application documents and clearly communicated that the application was only a place holder until the home could be inspected.

Energy Conservation - Once having the families apply for the program and discussing about solar energy and looking at individual utility bills, GRID outreach staff coordinated with the tribal resource ROSS department and tribal Environmental department to do more outreach in the community about other energy efficient measures to help save money while reducing their carbon footprints. The Bishop Paiute tribe printed GRID flyers and handouts to help educate the homeowners electricity and especially the vampire load (which many folks did not know about). The Tribe and GRID assisted with signing up families for other utility energy saving low income programs to reduce bills and a no cost program to replace older electric appliances with newer ones. Many families signed up and saved even more!

Volunteer Training- The interest and cooperation from tribal community to volunteer was very positive. Towards the end of the training, it was slightly more challenging retaining some volunteers. The Tribe's TERO department made an agreement the trainees signed stating that if they agree to work, they will complete full days, show up on time, and the tribe set some clear expectations for the volunteers. Afterwards the volunteers and staff were communicating much better and the trainings went much smoother. GRID was very valuable in everything from helping with education, outreach, and to arranging meeting rooms for trainings and orientations, to going to tribal council for approvals on what homes to select. Every tribal member who volunteered and trained in solar installation was able to have an opportunity to get a paying job, even if only for one day. This was a good incentive for trainees to keep coming back as jobs are very scare on the reservation.

Recommendations - For future phases of solar implementation it was agreed to maintain a partnership with GRID Alternatives while keeping community apprised of future opportunities. The GRID applications will be kept in tribal offices and folks will be encouraged to apply throughout the year, so there will be an interest list of active projects ready. The tribe will also post job training notices about future training opportunities at GRID offices outside of the reservation. GRID offers internships, apprenticeships and virtual trainings, these will hopefully keep interested trainees in the loop for future installation projects on the reservation. This outreach will be valuable in keeping the interest going until further funding can be found, as outreach is difficult with the GRID office located in Riverside, CA and tribal offices already busy.