CASE STUDY

Distributed Energy Resources for Rural Communities:
Pilot Point, Alaska

Project Name:
Pilot Point Grocery Store Off-Grid Energy

Developer:
BoxPower Inc.

Customer:
Pilot Point Native Corporation

Date Contracted:
March 2019

Date Commissioned:
April 2020

Contact:
info@boxpower.io

Project Summary:

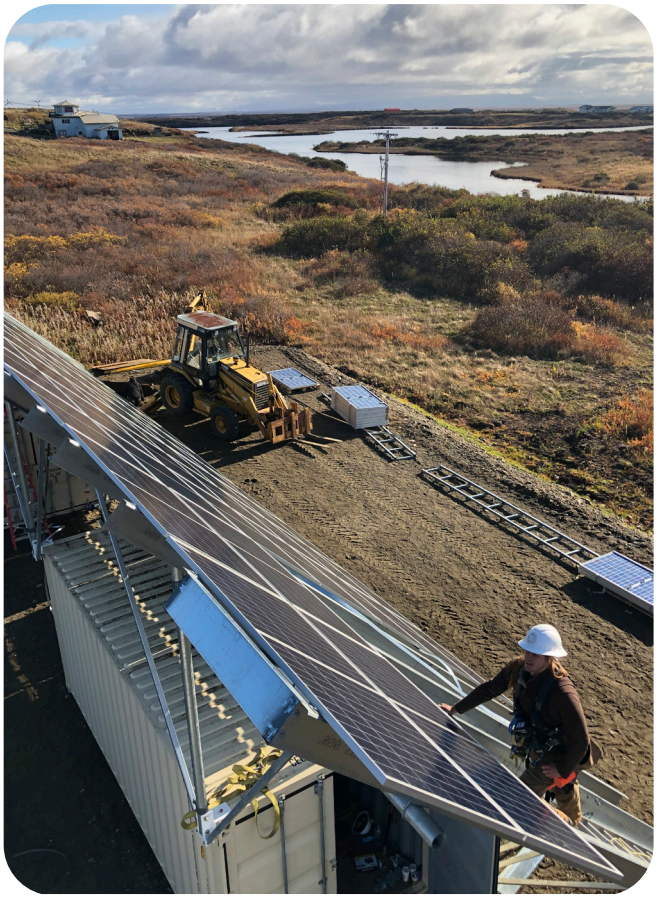
The Pilot Point Native Corporation in rural Alaska sought an alternative energy solution for the community grocery store that would lower their electricity costs and decarbonize their energy consumption. BoxPower proposed a containerized solar microgrid solution that addressed both needs. With support from BoxPower and Solstice Alaska, Pilot Point Native Corporation successfully secured a USDA Rural Energy Savings (RES) Program grant for over $219,000 to procure the integrated solar power and battery storage microgrid system.

The Problem:

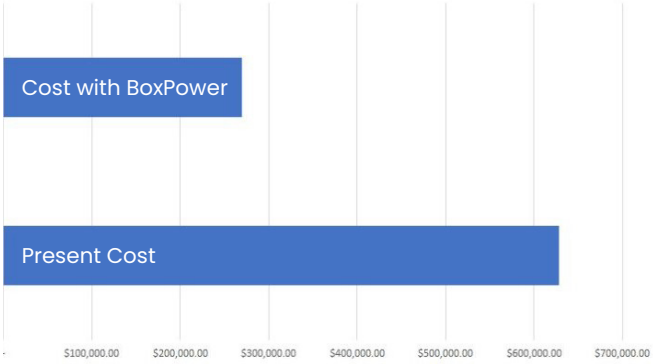
Pilot Point, Alaska is an isolated community on the Aleutian Peninsula. It is not connected to the centralized electrical grid, and therefore must rely on diesel generators for their primary source of power. Diesel generators are a common option for rural power, but high annual fuel consumption and maintenance needs make them expensive for remote customers. With continual carbon outputs, they also present an environmental problem, particularly for communities relying on subsistence lifestyles. Nonetheless, rural communities in Alaska have often turned to diesel generators because volatile weather conditions and extremely low winter temperatures can pose mechanical challenges for many conventional renewable energy systems.

The Solution:

BoxPower provided a containerized solar microgrid with 30kW of PV, 54 kWh battery capacity, and a 20kW battery inverter. This solution was able to offset roughly 57 percent of the facility's energy consumption. BoxPower implemented a rugged solar racking design mounted on a standard shipping container to ensure that the system could withstand the extreme wind, snow, temperature conditions. BoxPower's engineering team utilized the EASI system optimization software to determine the appropriate system sizing to maximize the customer's financial ROI. BoxPower also provided turnkey system installation and project management service, using a combination of BoxPower personnel and local contractors.



Utility Cost Comparison Over 20 Years:
Savings of $358,197



Financial Performance:

By replacing their diesel generator with a solar microgrid, the Pilot Point grocery store accrued a 20-year savings estimate of over $350,000. Installing the solar microgrid benefitted the grocery store by reducing their overall energy expenditure, which will, in turn, reduce the food prices for the community.

Opportunities for Replication:

Remote areas are often challenging environments for most renewable energy providers. BoxPower has streamlined its design and installation process to better serve rural and remote sites with rough terrain. BoxPower's containerized solutions present an affordable option for other off-grid locations where transporting power is typically expensive and burdensome for rural communities. BoxPower may identify and manage feasible grants and funding opportunities respective to specific "out-of-the-box" projects for rural consumers.

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