



Feasibility of Expanding Pechanga Western Electric Service Territory to Residential Loads on the Reservation

1

December 7, 2018

United States Department of Energy Office of Indian Energy

Background Information

- The Pechanga Band of Luiseño Indians established a tribal electric utility, which they have named Pechanga Western Electric (PWE).
- PWE began service to the tribe's casino, government center and approximately 21 residences near the government center in October 2017.
- These loads are now electrically connected to the tribally owned electrical infrastructure. They were previously served by Southern California Edison (SCE).



The "Residential Area"

3

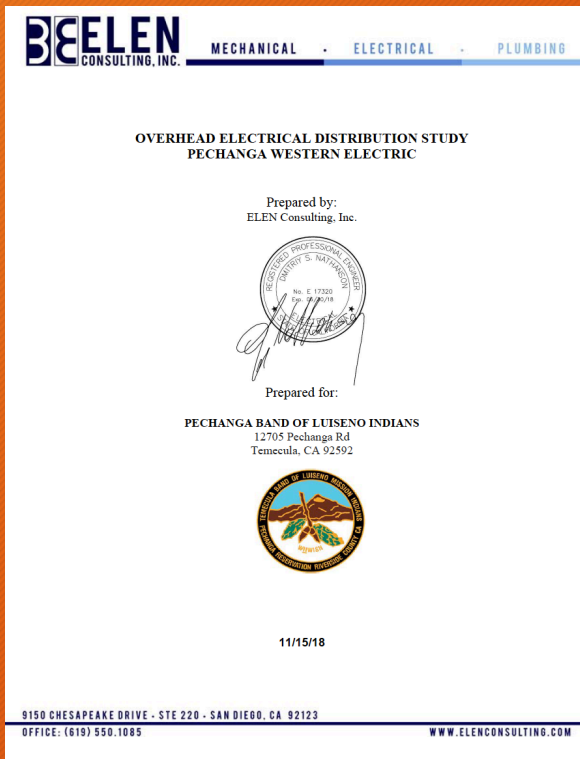
- As of December of 2018, SCE continues to serve a number of other loads on the Pechanga Reservation, including 207 additional residences and three commercial loads, herein called the "Residential Area".
- The electrical infrastructure in the Residential Area is owned by SCE. It is a mixture of above-ground and underground facilities and is in some cases new and in others needs maintenance.
- This report provides information necessary to assist the tribal staff in making recommendations to the tribe's General Council regarding whether PWE should acquire the SCE infrastructure or in some other manner expand its electrical utility services to the Residential Area.

Assessment of the electrical loads in the Residential Area

- Tribal staff and consultants instituted a visual inspection and survey of all utility facilities and buildings on the reservation. The visual survey included a detailed GIS mapping effort.
- Based on the limited data available, the annual energy requirements of the target loads are approximately 2MWH, with a non-coincident peak of approximately 500KW.
- This would be a relatively small incremental change to PWE's current annual energy usage of approximately 32MWH and its current peak demand of approximately 15MW.

A survey and valuation of the existing distribution system in the Residential Area

5



- Elen toured the Residential Area with tribal staff and were also given access to the tribe's detailed GIS mapping data and related photographs.
- Elen also obtained SCE's system drawings and reconciled the data to include height, voltages and feeder sizes.
- Through this process, Elen was able to create spreadsheets with detailed listings of all the overhead assets and all the underground assets.
- Elen then reviewed SCE's previous valuation of similar assets which SCE provided to the tribe during PWE's initial acquisition of assets from SCE.
- Elen used that asset sale to create comparable numbers for the SCE assets in the Residential Area.

A review of the options for acquiring additional wholesale power resources to serve the Residential Area and the costs of each option

6

1. Market Power Study
2. Expansion of Existing 8MW Cogeneration Facility Study
3. On-site Large Scale Solar
4. Demand-Side Efficiency Options
5. Demand-Side Renewable Options

5 Studies Performed

Market Power Study

7

The easiest way to serve load in the Residential Area would be to slightly increase PWE's purchase of market power from commercial wholesale power resources.

All California entities buying power from outside their own system must do so from the California Independent System Operator (CAISO).

CAISO sells power using locational marginal pricing, which is based on the location of the buyer and the lowest offered price available to that area from all regional generators.

PWE currently generates some of its power needs in-house using its cogeneration facilities and acquires all additional needed power from CAISO. (PWE also sells its allocations of power from federal dams in Arizona into the CAISO market at the California/Arizona border which offsets its power purchase costs).

Market power purchases currently range from 5MW to 8MW per month. Serving the additional .5MW (or approximately 1MW in load growth over ten years) would simply require updating our load forecasts and schedules for purchases with CAISO.

Expansion of Cogeneration

8



- Pechanga currently owns and operates a 4.6MW natural gas fired Cogeneration Plant.
- Cogeneration (cogen) through combined heat and power (CHP) is the simultaneous production of electricity with the recovery and utilization of heat. Cogeneration is a highly efficient form of energy conversion and it can achieve primary energy savings of approximately 40% compared to the separate purchase of electricity from the national electricity grid and a gas boiler for onsite heating.

- Two Options Considered (Either or Both)
 - 400kW gas fired CHP at Government Center
 - 5MW gas fired CHP at Resort
- Both options include study of other efficiency and reliability upgrades and microgrid functionality.

Onsite Large Scale Solar

9

- Limited land base
- 1 MW Solar Under Construction on Garage Rooftop
- Will require back-up with market power resources.

Residential Energy Efficiency

10

- PWE has the option of creating an energy efficiency program which can mitigate the new residential loads and can slow load growth in the Residential Area.
- To test the likelihood of success for such a program, the grant effort sought to perform energy efficiency audits on 10 residential homes at Pechanga.
- **This exercise indicated that residents' privacy interests exceeds any interest they have in energy efficiency. Any efficiency measures offered in the Residential Area must therefore be non-intrusive and consider the important privacy interests of residents.**

Options being considered:

1. A free energy efficient lightbulb exchange program.
2. A free or subsidized energy efficient appliance program.
3. A free or subsidized energy efficient building materials program.
4. Individual measures to be considered on a case by case basis.

Demand Side Renewable Options

11

Options Studied:

- Grid Connected Solar
- Off-grid with battery back-up
- Community Solar
- Passive Solar/Shade Cooling
- Solar Heating/Cooling
- Geothermal Ground-Source Heat Pumps

Options for Offering Services Identified

- Website information
- Net Metering for PWE Customers
- Tribal Funding
- Residential Energy Reviews
- Need-based Programs
- Programs for New Structures
- Energy Services Businesses
- Regulate SCE's programs
- Partnerships