SUPPLEMENT TO EBKI REQUEST FOR PROPOSAL 2025-02-DOI IA TEP

EXISTING ENERGY SYSTEM SUMMARY FOR EBKI BIG EWIIAAPAAYP SECTION OF THE EWIIAAPAAYP INDIAN RESERVATION

The Ewiiaapaayp Band of Kumeyaay Indians (EBKI) submitted EBKI Request for Proposal 2025-02-DOI IA TEP on March 17, 2025 with the Project site within the Big Ewiiaapaayp section of the Ewiiaapaayp Indian Reservation. The EBKI understands the Tesla Powerwall 3 system described in the RFP section 2. Scope of Work is not feasible for the off-grid Project Site (see section 1.(c)). Therefore, the EBKI provides this supplement to the RFP to provide an example of a solar system equivalence to the Tesla Powerwall 3 system based on the one existing solar system operating on the Reservation.

The equivalent system would be a solar system with rooftop photovoltaic panels and inverters that replicate the renewable energy system now providing energy to one of the existing eight (8) Tribal buildings. The equivalent solar system should provide a solar array system composed of the following: up to twenty-four (24) panels, each of which can generate 400 W at 49 volts (V); two (2) inverters; a battery storage system providing a minimum 70-amp, 12 V with 100-hour operational rate; and a 22 kW, 6-Hz single phase propane-powered generator. Installation of solar arrays will include rooftop and ground mounted panels, poured concrete 10'x10'x'x5' rooms for the inverters, battery arrays, and a 5'x5'x4' cage for backup generators.

When implemented, EBKI expects each of its solar arrays to generate power sufficient for the eight home sites, which is up to 9.6 kW at each of the eight (8) locations, or 76.8 kW aggregate maximum capacity.

Existing Solar System

The existing solar power system serves one (1) housing unit by a small solar panel array with solar batteries and inverter, and emergency back-up power from a propane generator.

This solar system is an array of twenty-four (24) 275W solar panels, twenty-four (24) Surrette lead acid watered batteries, and one (1) 25 kW Kohler propane generator for emergency power backup. This solar system serves a peak load of approximately 7.7 kw with a 120/240 inverter, solar batteries, and a balance of system components. The system serves a submersible well pump and a booster pump. The electrical load is from a two (2) ton HVAC, two (2) hp booster pump, three (3) hp well pump, Energy Star refrigerator-freezer, energy efficient lighting, small appliance loads for the kitchen, and washing machine. Propane serves the kitchen stove, kitchen cook top, propane clothes dryer, and furnace with a twenty (20) amp A coil for the AC. The 7000 watt inverter is 14,000 watts at 120 volts (58 amps) and 7000 watts at 240 volts (30 amps). The main breaker in the inverter is a 60 amp double pole breaker, and the 240 volt loads have soft starts. The inverter system is set up to handle 150% of its name plate for two cycles or about 150 seconds for starting motors. The pressure for the home sprinkler system and booster pump are from the same 2hp pump, and the same due to the special sprinkler circulation system with the toilets. When the booster pump runs it does not allow the AC or submersible pump to run and visa versa. This is an interlock strategy used for small solar systems with multiple large motors (3hp well pump and 2hp booster pump). It is intended to operate seamlessly behind the scenes helping to manage the power. The 25 kW propane fueled, liquid cooled, single phase, standby generator is backup to the primary power from the solar battery array.

Expected Power Load for Equivalent Solar System

Ground water well: 3HP 18 GPM single phase, 230 V, 17 Amp, submersible pump, 86 gallon pressure tank, 2 HP booster pump.
AC: One ton air conditioning for 840 square foot housing units and 6,000 square foot anchor institutions
Lighting: area lighting
Refrigerator/freezer: one (1) refrigerator/freezer
Appliances: televisions, microwave, toaster oven, blender, hair dryer, desktop and laptop computers, handheld computer devices (ipads, smartphones).

Notes: Presently there is no electrical or water infrastructure for the home sites or anchor institutions. Contractor will dig trenches from the battery/inverter room and generator enclosure to the house and from the house to the well for each unit. A pressure pump will be located by the home to take advantage of back pressure from the tank. A 30-amp circuit will be provided for the pressure pump based. Provide and install 3/4 inch water pipe for ground assurance watering system gravity fed from a 2 inch line from the water tank to pressure pump run from timer at battery room. Install a separate timer at the house ground.

There is a 2" sweep from the 200 amp electric service built into the house, with space in the electric service for the submersible pump breaker and pressure pump. Power for House, Well and power will be installed at the battery/inverter room and generator enclosure. Includes conduit, wire, concrete hand holes, with wiring run to the well head, and hook up to the well pump and mechanical float.

Equivalent Solar System Components

Solar Panels: Up to twenty-four (24) solar panels per unit of Q-CELLS Q.PEAK DUO L-65.3 400 solar panels, 400 W, 49 V – for a total of up to 192.

Inverter: Up to two (2) inverters for each unit of Radian GS8048A Inverters for a total of up to sixteen (16).

Batteries: Up to twenty-four (24) batteries for each of six (6) housing units and two (2) anchor institutions of DEKA Solar 8G34-DEKA, Gel Deep Cycle Battery, 12 V, 70 Ah@C/100 Hr Rate, FT Terminal – total of up to 192.

Generator Housing Units: One (1) generator for each of the four (4) housing units equivalent to the GENERAC Protector QS Series, Liquid-Cooled Gaseous Engine, 22 KW 60 Hz, Single Phase – total of four (4).

Generator Anchor Institutions: One (1) generator for each of three (3) anchor institutions equivalent to the GENERAC Protector QS Series, Liquid Cooled Gaseous Engine, 30 KW 60 Hz, Single Phase – total of three (3).