

Karuk Tribe Solar & Storage Project

Casino, Elder Homes, and
Wellness Center



Completion Update 11.16.23

ABOUT KARUK TRIBE

The Karuk Tribe is one of the largest Tribes in CA, whose federal relation was reestablished in 1979 and have 4,800 members. They have demonstrated their ability to administer a multitude of social, cultural and economic programs effectively, earning the status of a "Self-Governance Tribe."

The mission of the Karuk Tribal Council is to promote the general welfare of all Karuk people, to establish equality and justice for our tribe, to restore and preserve Tribal traditions, customs, language and ancestral rights, and to secure to ourselves and our descendants the power to exercise the inherent rights of self-governance.

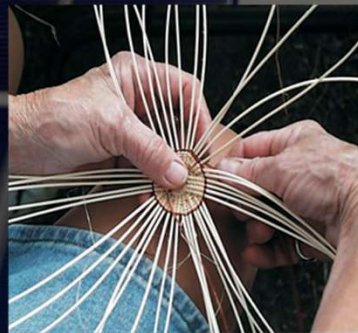
To accomplish that mission, The Tribal government currently employs more than 320 in administrative, child welfare, community/economic development, education, elders, energy assistance, health, housing, human services and natural resources programs in Orleans, Happy Camp and Yreka, its three major population centers. Additionally, the Karuk Tribe has developed tribal housing, dental and health clinics, and Head Start programs. Our tribal housing authority employees another 50 employees while the tribe's Rain Rock Casino employees 120.

Karuk Tribe Highlights

- 2nd Largest Tribe in CA
- Leading the Klamath Dam decommissioning effort, largest in Nation
- Working to restore fire to the landscape



Karuk, the “Upriver People”



An aerial photograph of a large, modern building with a complex, multi-faceted roof structure. A large array of solar panels is installed on the roof. The building is surrounded by a parking lot and some landscaping. The image is in black and white, with the text overlaid in white.

Project Summary Statement

The Karuk Tribe located in Northern California has embarked on achieving clean energy goals, as well as reducing the Tribal buildings dependence on traditional grid energy. Through the development of grid tied solar photovoltaic systems, as well as solar + storage for the Elder Homes, the Karuk Tribe will deploy a 948kW ground mounted solar PV system for the Tribal Casino and administrative trailers, as well as install solar + storage systems on each of their 39 tribally owned Elder Homes. Solar + storage will solve major problems during grid outages to maintain critical load equipment for the elders. Lastly, the Karuk Tribe shall power a new Wellness Center with solar PV. In aggregate, solar will provide 92% of their energy usage for a substantial amount of tribally owned buildings. Year one savings is estimated to be \$259,658 and \$13,404,241 over a 30 year outlook.

KEY TEAM MEMBERS

Business Contact Joshua Saxon, Executive Director

Technical Contact Scott Quinn, Land Management

Casino Contact Michael Rose, GM (presenter)

Housing Contact Sara Spence, Director of Housing

CFO Lara Mayton

Developer Contact John McDonnell (presenter)

EPC Contact Barry Coe (presenter)

INSTALLTION PARTNER

EPC:



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www.sunrenu.com

855-767-5551

support@sunrenu.com



PROJECT #1 Casino

Rain Rock Casino & Casino
Office Ground Mount Solar PV

Casino & Office Ground Mount 948kW-DC

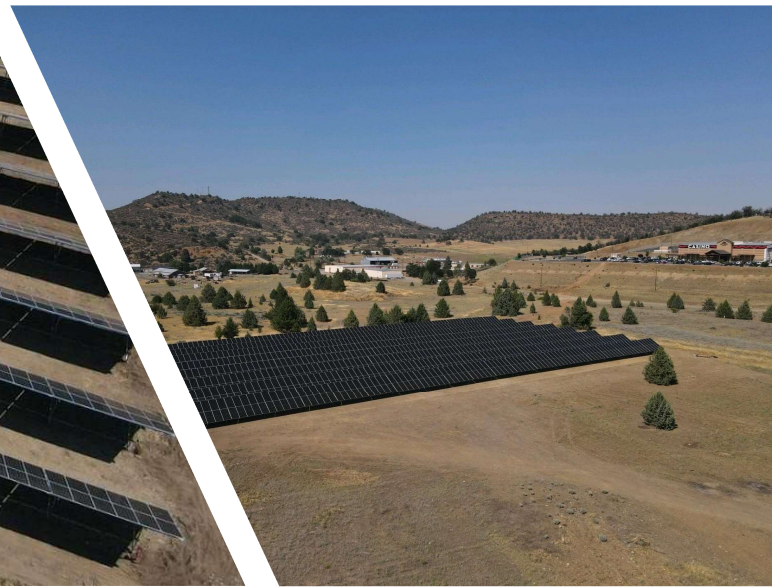
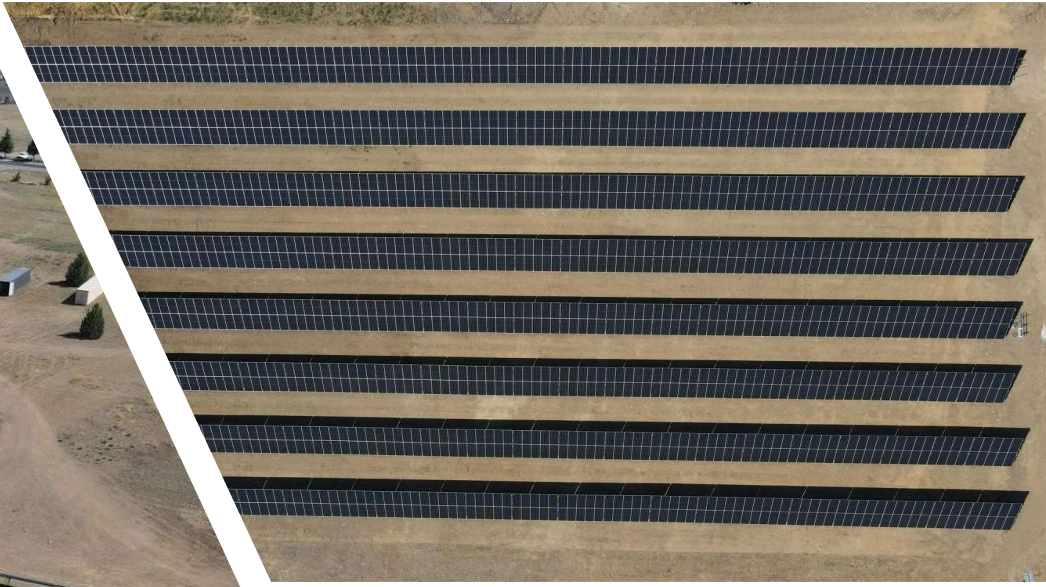
Project Overview:

948	kW-DC
1755	Panels
540	Watts/panel
30	Tilt Racking

Highlights:

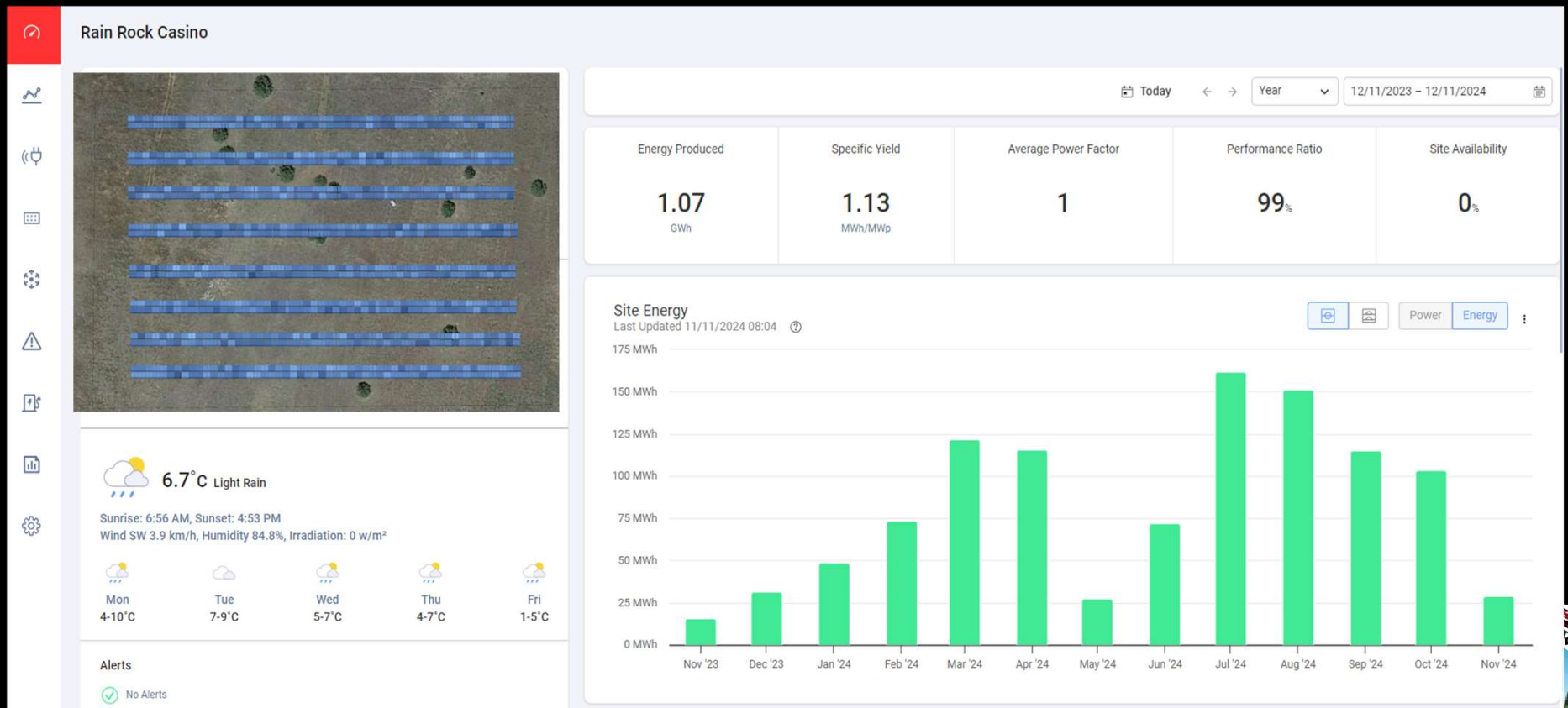
1,575,464	Yr 1 Production
\$182,210	Yr 1 Savings
\$9,406,168	30 Yr Savings
\$.115	Av. kWh Savings







RainRock Casino Monitoring



PROJECT #2 Elder Homes

(39) Elder Homes Solar + Storage Energy Resilience

Kit 1
4.2 kW
10 kWh



Kit 3
8 kW
15 kWh



Kit 2
6 kW
10 kWh



Kit 4
11 kW
20 kWh



Elder Homes 310kW PV + 580 kWh BESS

Project Overview:

310 kW-DC (combined)

816 Panels

380 Watts/panel

Roof Mounted

580 BESS kWh

Highlights:

473,811 Yr 1 Production

\$74,308 Yr 1 Savings

\$3,835,978 30 Yr Savings

48 Av. Backup Hrs

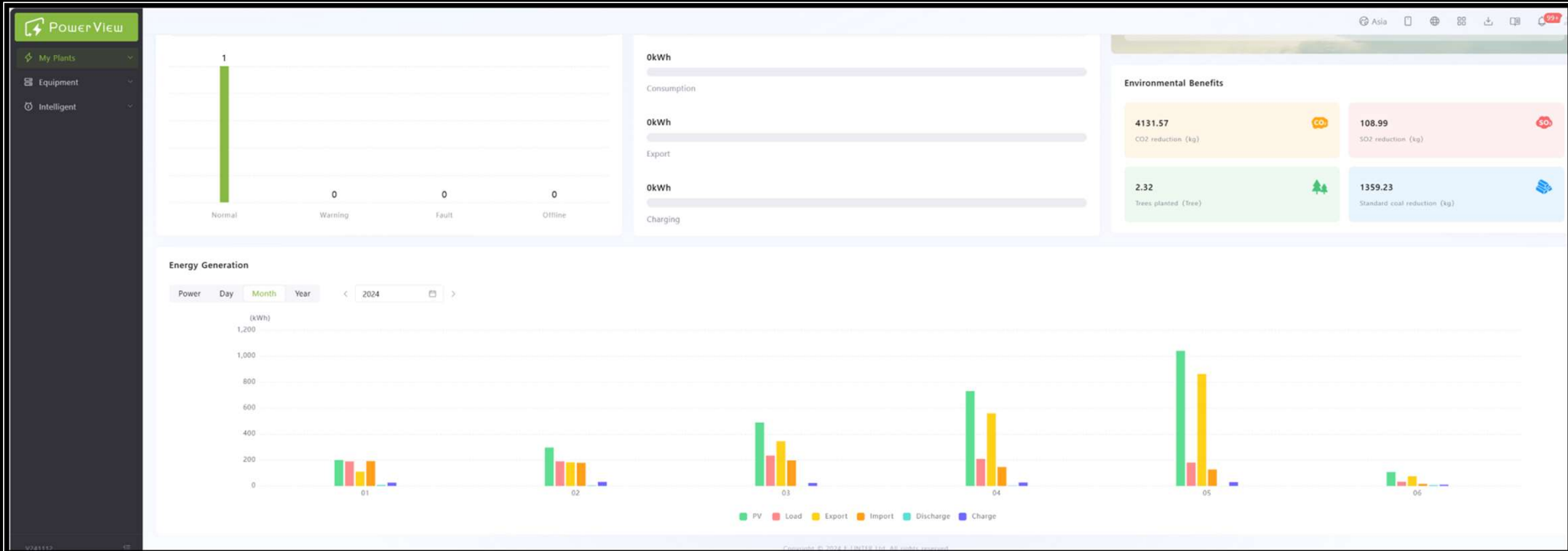
\$.16 Av. kWh Savings







Elder Home Monitoring – Power View - SolArk





PROJECT #3 Wellness Center

Happy Camp, CA Wellness
Center Solar PV

Wellness Center 18kW-DC

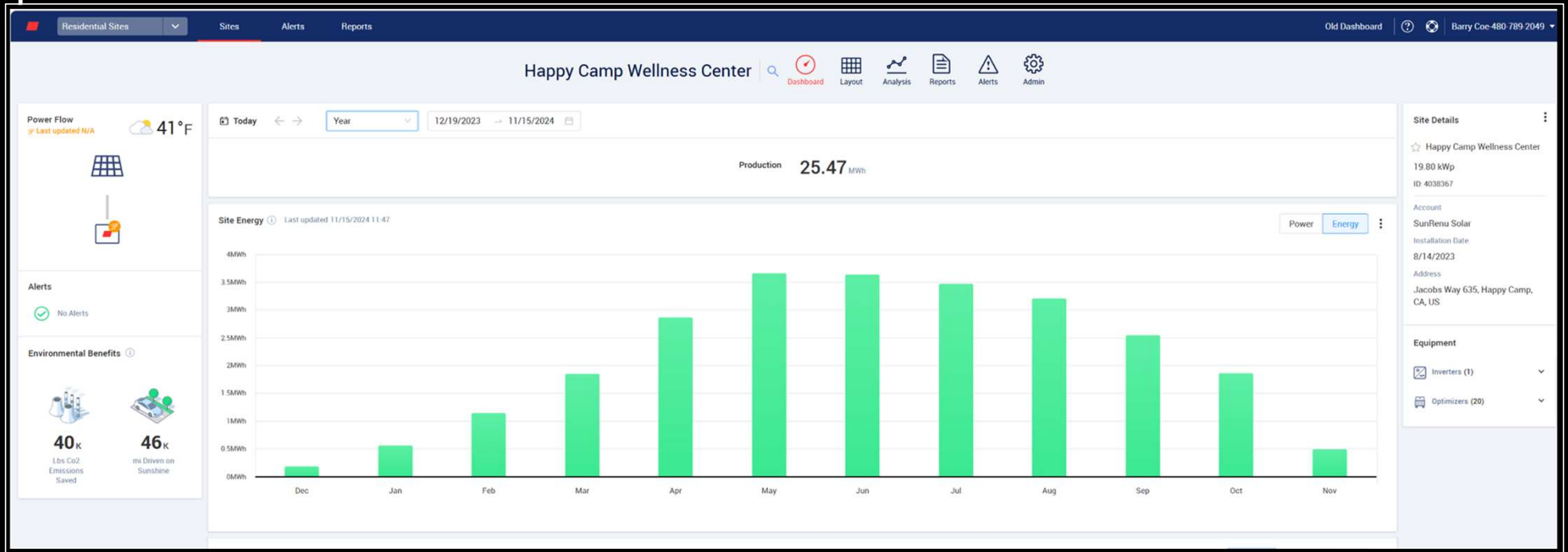
Project Overview:

18 kW-DC
48 Panels
380 Watts/panel
Roof Mounted

Highlights:

26,130 Yr 1 Production
\$3,503 Yr 1 Savings
\$180,834 30 Yr Savings
\$.134 Av. kWh Savings

Wellness Center Monitoring – Solar Edge Portal



Installation Follow Up

Goals:

2023	Casino 948kW
2023	Wellness 18kW
2023	Elder Homes (39) PV + ESS

Challenges:

- Timing / Equipment Lead times
- Remote locations – Phones and internet, Weather
- Utility Changed Net Metering

The Budget and Cost Share

Karuk Tribe Solar Project Budget Comparison

	Original Budget June 2020	Updated Budget July 2022		Original Cost Share	Updated Cost Share
Casino	\$ 2,074,368	\$ 2,386,056	59.9%	\$ 1,037,184	\$ 1,193,028
Elder Homes	\$ 1,472,402	\$ 1,550,152	38.9%	\$ 736,201	\$ 775,076
Wellness	\$ 85,204	\$ 45,524	1.1%	\$ 42,602	\$ 22,762
TOTALS	\$ 3,631,974	\$ 3,981,732		\$ 1,815,987	\$ 1,990,866

Results

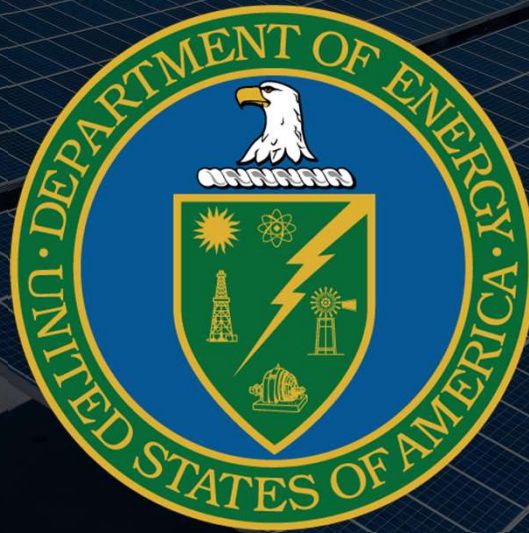
- Systems commissioned 2023/2024
- Tree removal in Happy Camp alleviating shade issues
- All systems granted PTO
- Additional inverters/storage programming required
 - Completed mid 2024 to optimize storage value
 - On site and remote programming
- Monitoring review monthly on all systems
 - Systems producing kWh's as expected

Lessons learned

- Remote locations are a challenge for many reasons
- No internet or phone service creates challenges with tech
- Weather can always be a factor
- The terrain can present install challenges
- Utilities are always changing and not always transparent
- Monitoring is critical to full systems optimization
- Procurement can be a challenge to make timelines



Thank you !!



www.watthub.com
480-580-6839
contact@watthub.com

www.sunrenu.com
855-767-5551
support@sunrenu.com