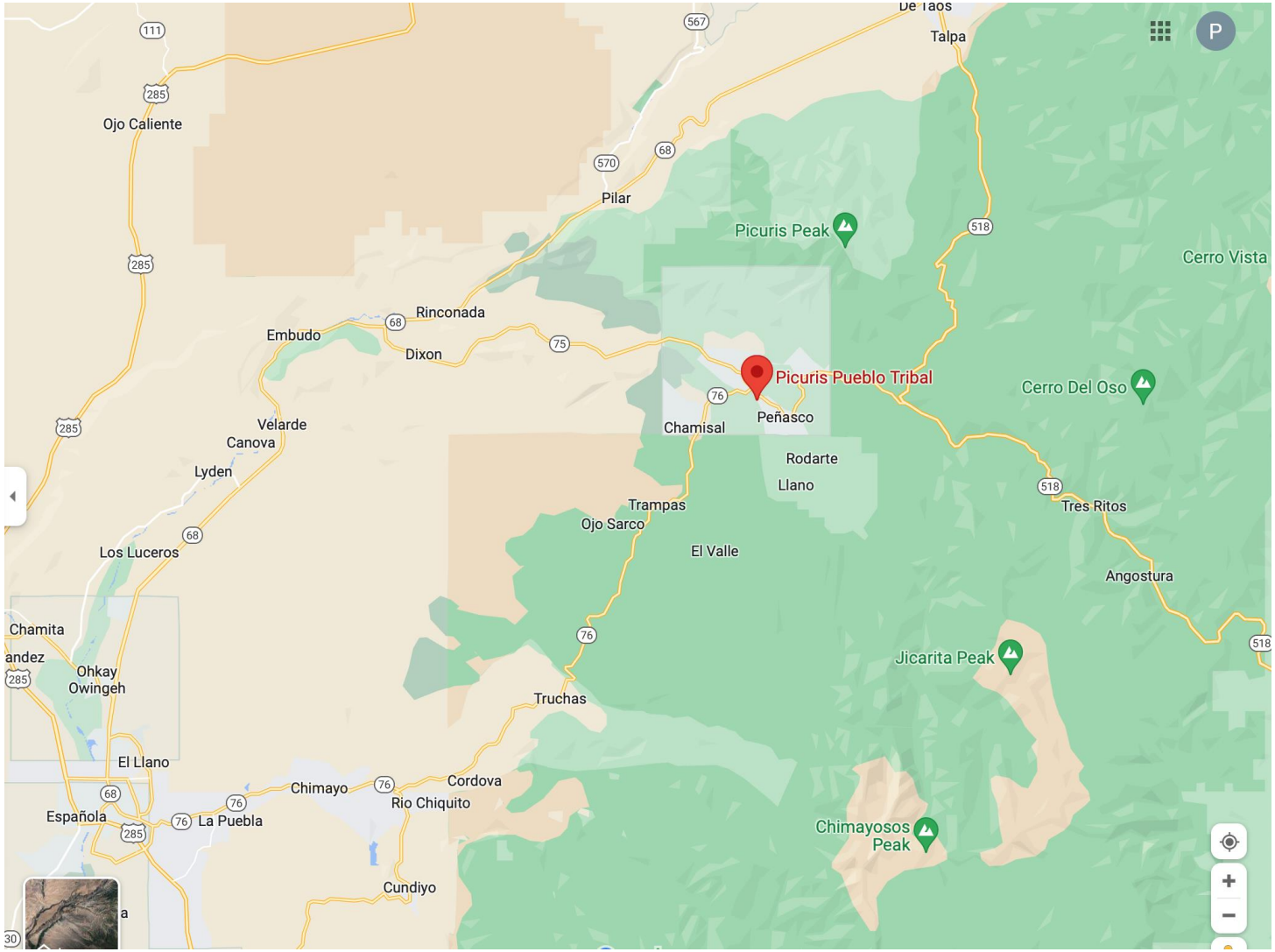
PICURIS COMMUNITY SOLAR PROJECTS

Pueblo of Picuris
Community
Solar Projects

LOCATION OF PUEBLO OF PICURIS

Northern New Mexico- So Taos County



PICURIS PUEBLO

About Picuris Pueblo

Picuris Pueblo currently has 306 members and 86 homes. Our traditional way of life starts with respect of the land and nature , our natural resource, everyday life consist of farming, hunting, providing for our families and honoring our culture by practicing traditions and beliefs as our ancestors did before us. The Current Governor is Craig Quanchello and the Lt. Governor is TJ Knitter along with six (6) other tribal councilmen and the Director of Utilities is Wayne Yazza Jr. .

Picuris pueblo is nestled in a setting of serene beauty in what is known as the "hidden valley" of the Sangre de Cristo Mountains on Northern New Mexico. Its located 60 miles north of Santa Fe, and 24 miles southeast of Taos on scenic highways 75 & 76.

Our village rests along the banks of the Rio Pueblo river,
which nourishes the evergreens, cottonwoods, aspens, grasses and flowers that blanket our valley and surrounding mountains

Tribal Considerations

- **Traditional Values of the Tribe with its on-going relationship to Mother Earth**
- **Self Determination**
- **Resiliency**
- **Remove its dependency on third party utility Infrastructure**
- **Decrease the overall cost of electricity to households, tribal buildings & economic development endeavors**
- **Protect itself from External Threats:**
  - **Wild Fires that may impact Utility Grid**
  - **Cybersecurity Concerns**

Why is Picuris Following This Path?

Picuris is a non-gaming tribe; approx. 300+ members

Reinforcing their connection to Mother Earth

- Sustainable clean energy

Controlling their destiny with stable supply of low-cost energy

- 17+ cents/kWh vs 5 cents+/kWh (stays constant)
- Economic development opportunities
- Not relying on a 3rd party energy supplier

They are survivors – 85% wiped out by smallpox in the 1600s.

- Resiliency and self reliance is in their DNA

Showcase and training center for other tribal entities

Pre-Feasibility Utility Report-
National Renewable Energy Laboratory

The Pueblo's request states, "We would like to understand the likely next steps to exercise our sovereignty and become electrically self-sufficient on our small Pueblo. We would like a study that gives us an overview of tribal utilities, does an initial assessment of our loads, provides an initial financial and technical feasibility study of the Pueblo providing its own power and operating an electric system, the types of tribal laws that are needed and other related matters."

Phased Approach for Microgrid

Phase I – 1 MW Solar Array – Completed 2018

Phase IIa – 750 kW Solar Array – Groundbreaking today

Phase IIb – 250 kW Solar Array (extension of Phase IIa)

Phase III – 1 MW/4 hour Energy Storage: 2024

Phase IV – Microgrid with Solar, energy storage
with diesel or natural gas generators- 2024/2025

Community Solar Phase I
Completed 2017

The first phase of the Picuris Community Solar commenced commercial operation in January 2018. The 1 MW project utilized a combination of funds from a Department of Energy (DOE) Grant and a conventional loan and all the energy produced goes directly into the Kit Carson Electric Cooperative grid.

The tribe receives its revenue from a power purchase agreement with Kit Carson Coop which pays for each KW generated. The tribal buildings, tribal member homes and economic development buildings are billed by Kit Carson as any other consumer subject to the PRC approved rates.

The surplus generated by the difference of the monthly revenue received and the monthly loan payments has allowed for a $ 75 subsidy per household for the four winter months and $ 50 subsidy per household for the remaining eight months.


Existing 1 MW Solar Array

Community Solar Phase II
(Under Construction)

The Pueblo has secured another DOE grant for a Solar Microgrid project that would provide electricity directly into the tribal buildings, tribal member homes and economic development buildings that would include the new travel center complex. The matching requirements for the tribe has been reached from funds from Wells Fargo and from 11th Hour Project Foundation.

The microgrid design includes energy storage that would support the electricity needs when the solar array is not generating and would be available for backup if the utility grid is off line. The tribe partnered with Sandia National Labs to provide an energy analysis that would be used as the basis for requesting grant funds.

The microgrid will reduce the cost of electricity and will be significantly less than the present cost that uses the Kit Carson Coop system. The goal is that with both solar projects, the tribal household members would have their electric bills completely subsidized.

Phase II - Community Solar

- 750 kWac with 500+ Watts bi-facial panels
- Ground mount, fixed tilt racks for solar panels
- Connects to Pueblo loads via 2.5 mile underground 12.47 kV feeder
- Annual energy production: 1.6 GWH
- Project completion by September 30, 2024

- Both Phase I and II are located on 10-acres tribal Lands

Electric Infrastructure and Supply

Homes and admin buildings are metered individually

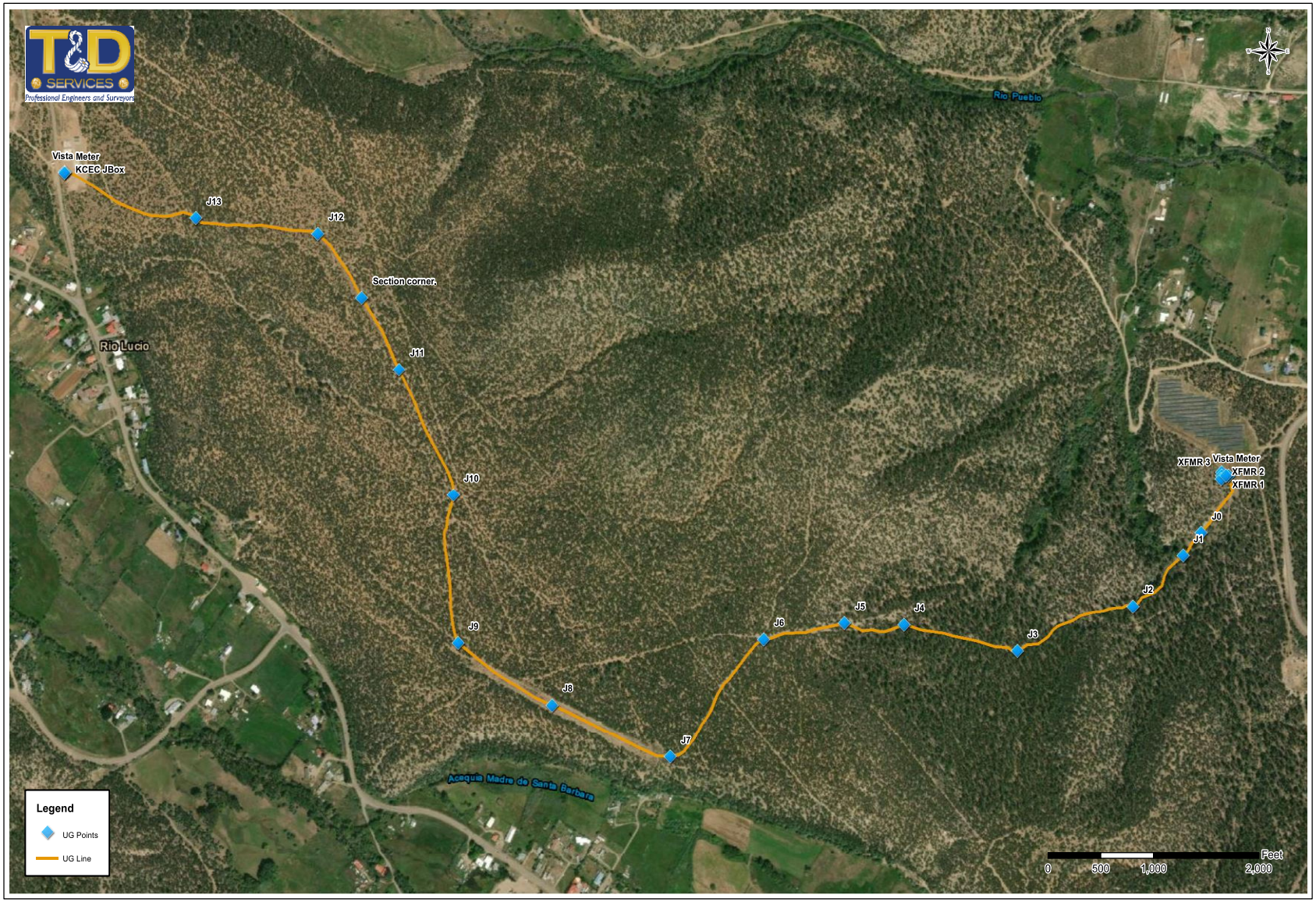
- Approx 100 customer meters
- Annual average load 500 kW

Electric service by Kit Carson Electric Co-operative

All Pueblo loads are served by underground service within the Pueblo boundary

Phase IIa and Phase IIb Solar Arrays

Route of Dedicated Feeder from Solar Array to Pueblo Buildings & Households



Scope of the Sandia Lab Analysis

- Energy storage will be used to provide two applications:
  - Emergency backup power and Buying and Selling Energy
- Emergency backup power capability of Energy Storage plus proposed 1 MW solar:
  - In the entire year of 2019, Kit Carson customers experience an average of 6.5 hours of outages
- Revenue with energy buying and selling power
  - Absorb excess solar energy during the day, sell energy at night
  - Assuming Pueblo has setup its Tribal Utility
  - Depends on:
    - Price of electricity sold, and
    - How much energy capacity will be dedicated to backup power
      - The capacity of the resource (battery) is limited and has to be shared between applications
      - There is a tradeoff between backup time and use for economic benefit

Project Partners and Sponsors

US Department of Energy Office of Indian Energy

US DOE Office of Electricity Energy Storage Program

11th Hour Project Foundation/Wells Fargo Bank

Southern Methodist University/Barnard College/Univ of Arizona/ Univ of Toronto, North Carolina State/Dartmouth College

Sandia National Laboratories

Electric Power Research Institute (EPRI)

Kit Carson Electric Cooperative

Sol Luna Solar