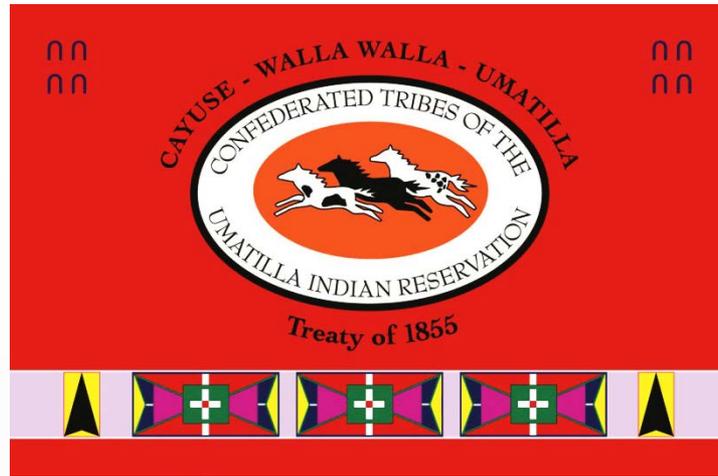


Confederated Tribes of the Umatilla Indian Reservation



Solar PV Array and LED Lighting Retrofit

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U.S. DEPARTMENT OF
ENERGY

Office of
Indian Energy

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Program Review

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR)

- The CTUIR consists of the Cayuse, Umatilla and Walla-Walla Tribes
- Treaty of 1855 with US Government reserved rights and resources for members of the three tribes
- More than 3,000 enrolled Tribal Members
- Umatilla Indian Reservation:
 - Located in northeastern Oregon
 - Established by Treaty of 1855
 - Area reduced in late 1800s due to Federal legislation
 - Final area roughly 270 sq. miles
 - Home to nearly 1,500 Tribal Members as of Jan. 2014

The Confederated Tribes of the Umatilla Indian Reservation – Tribal Government

- The CTUIR is governed by a Constitution and By-laws adopted in 1949
- The governing body is the nine member Board of Trustees, elected every two years by the General Council (Tribal Members age 18 and older)
- The CTUIR is now a full service tribal government (for a complete listing, visit <http://ctuir.org/>)
 - Children and Family Services
 - Economic and Community Development
 - Education
 - Housing
 - Planning and public transportation
 - Public Safety
 - Public Works
 - Natural Resources (Energy and Environmental Sciences, Water Resources, Fisheries, etc.)

Project Overview and Objectives

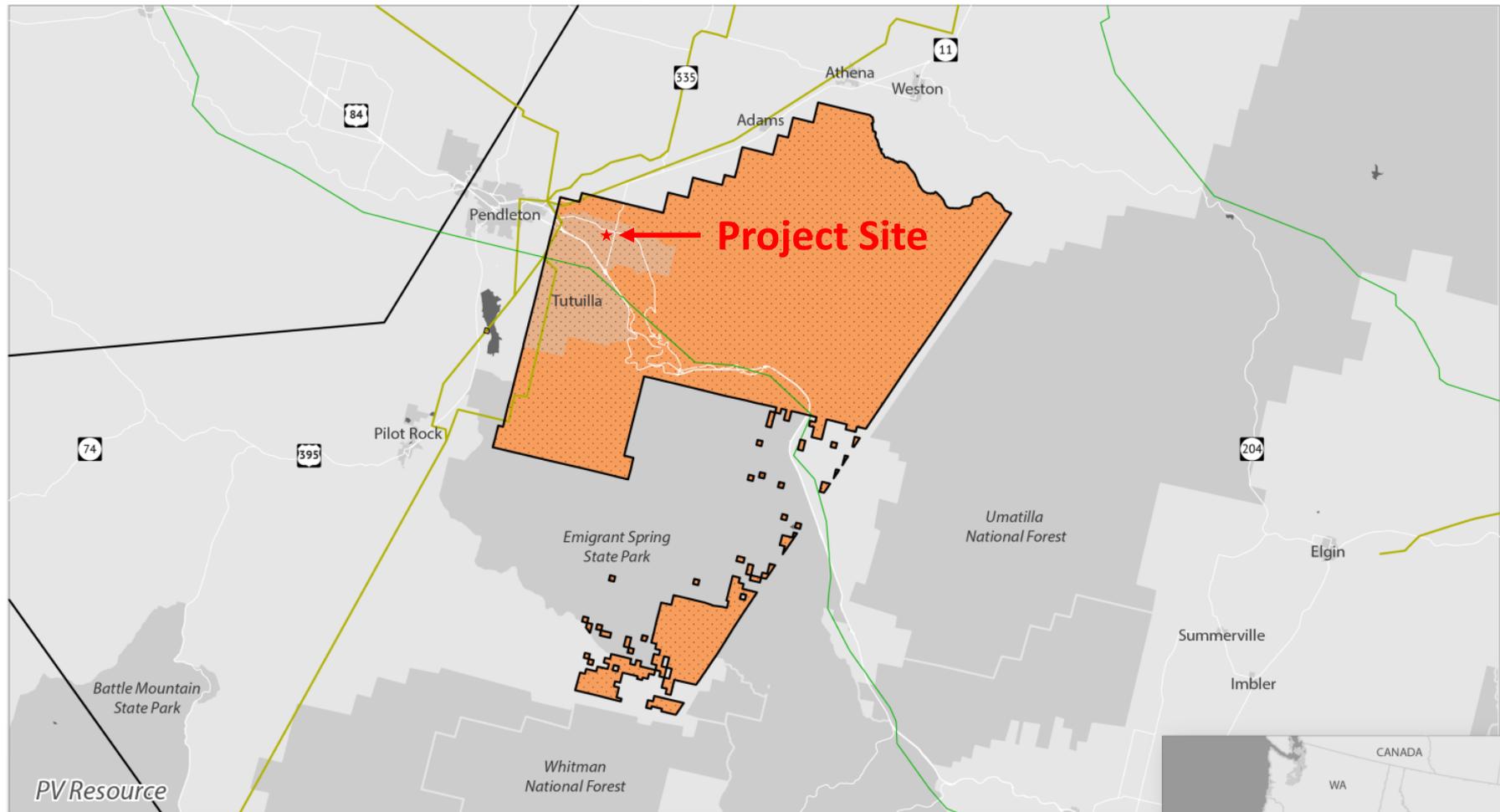
1. Replace fluorescent lighting with high efficiency LED lighting in three tribal buildings (Field Station Science and Engineering Laboratory, Public Transit Center Bus Barn, Public Transit Center Maintenance Shop)
 - 332 individual lights
 - 23,635 kW-h of energy saved annually
2. Install 97 kW-DC nameplate capacity solar photovoltaic (PV) array
 - Aggregated net metering agreement with local utility
 - 276 solar panels
 - Footprint approximately 300 ft by 20 ft
 - Fixed/stationary ground-mounted racking
3. Develop custom operations and maintenance (O&M) manual for solar array system and monitor actual system performance for 12 months and compare against estimates

Project Overview and Objectives Cont.

- Estimated annual net energy demand reduction: 149,203 kW-h
 - Equates to nearly 22.8 tons per year of reduced CO₂ emissions
- Estimated net annual savings: \$12,361
- Funding: CTUIR (\$57,084), DOE (\$133,706), Other (\$91,128)
- Total project budget: \$281,918

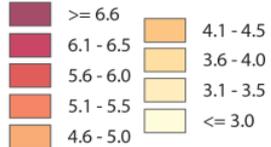


Project Location

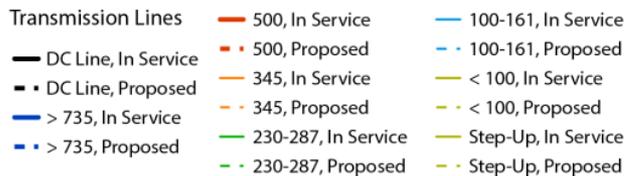


PV Resource

kWh/m²/day



Tribal Boundary



Data Source: Transmission data from HSIP Gold 2010.

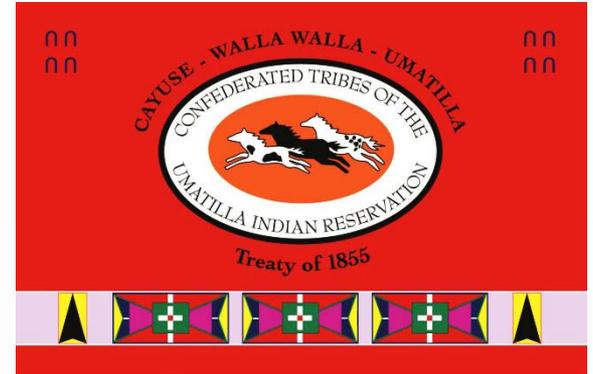


This map was produced by the National Renewable Energy Laboratory for the US Department of Energy. September, 2016.



Project Participants

- The Confederated Tribes of the Umatilla Indian Reservation – Project Management and support
- Elemental Energy, LLC – Solar PV array system installer
- Gordon's Electric, Inc. – Lighting replacement specialists



Project Status Update – Solar PV Array Installation

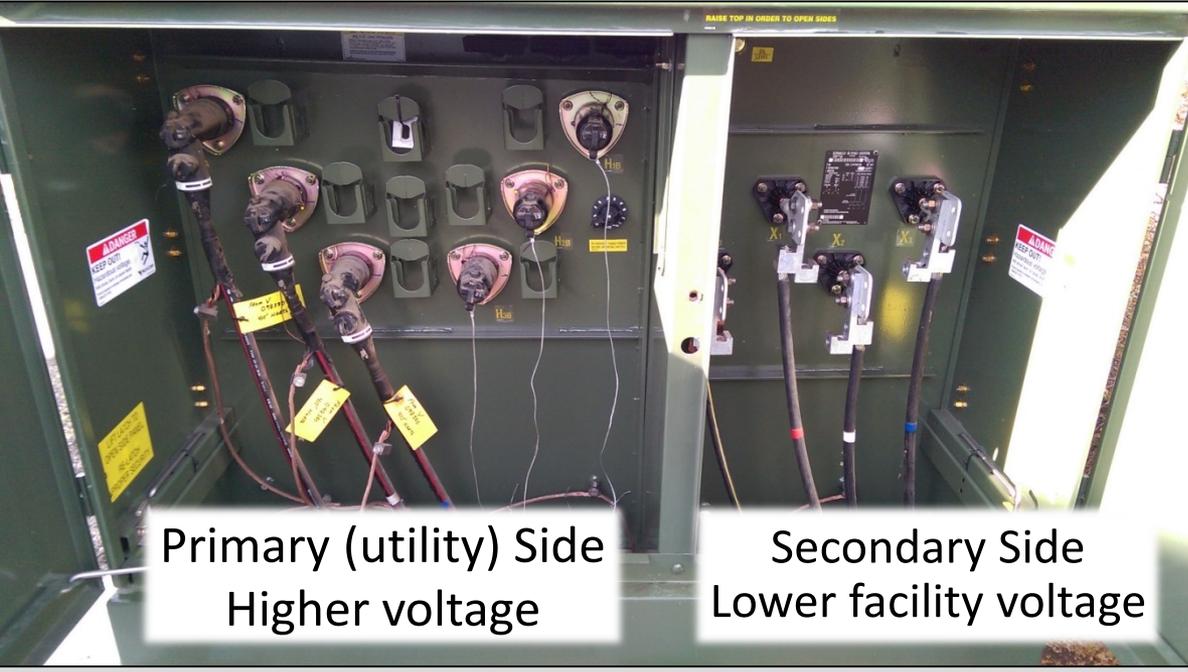
- Geotechnical survey complete
- Fence moved and site cleared



*(Top) Taking core samples for geotechnical survey.
(Right) Fence dismantled prior to relocation.*

Project Status Update – Solar PV Array Installation Cont.

- Transformer upgrade complete (needed for array interconnect)
- Array racking design complete



Primary (utility) Side
Higher voltage

Secondary Side
Lower facility voltage



*(Top) Interior of new transformer.
(Right) New transformer positioning.*

Project Status Update – LED Lighting Retrofit

- Task complete at Field Station
- Public Transit buildings to be completed in coming weeks



Image of Field Station environmental laboratory lit using newly installed high efficiency LEDs.

Background Information and Past Activities

- Strategic Energy Planning Workshop with NREL (2016)
- Professional energy audit of tribal facilities (2016)
- CTUIR involvement with other renewable energy projects:
 - Investment into 103 MW [Rattlesnake Road Wind Farm](#) (2005)
 - Installation of 50 kW wind turbine at [Tamástslíkt Cultural Institute](#) (2014)
 - Installation of 123 kW solar PV array at [Tamástslíkt Cultural Institute](#) (2016)
 - Umatilla Indian Reservation Geothermal Resources Assessment (ongoing)
- Environmental restoration service investments:
 - ORELAP/NELAP accredited environmental laboratory
 - Native plant revegetation capabilities

Questions?

Confederated Tribes of the Umatilla Indian Reservation

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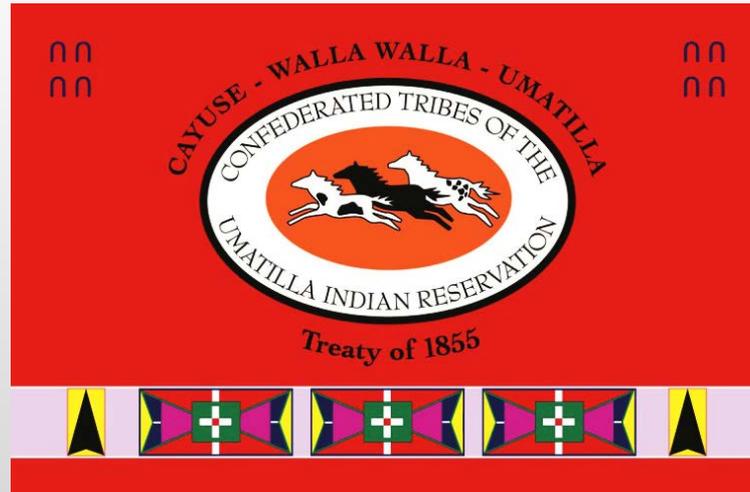
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Building a legacy of environmental stewardship