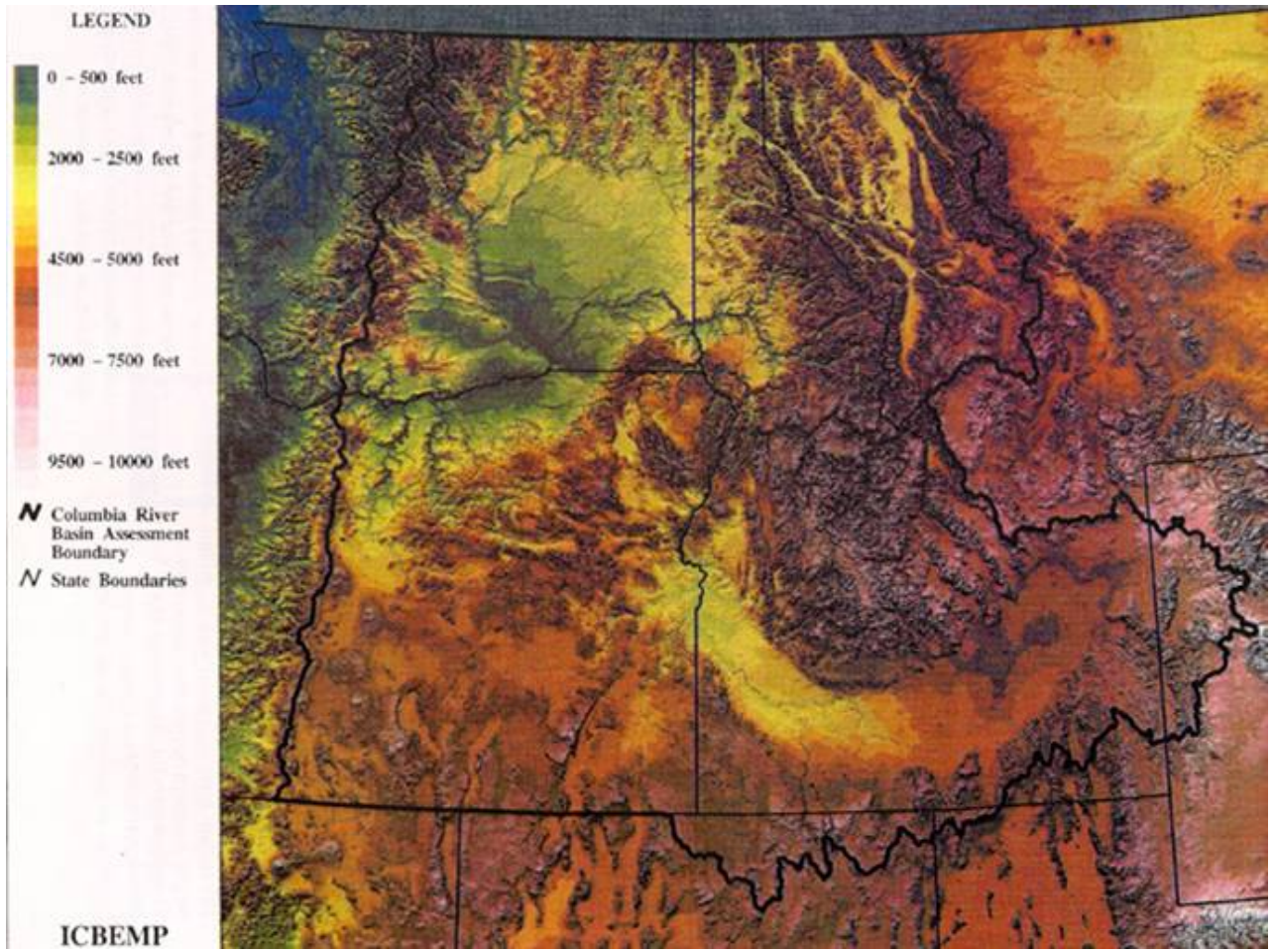
Renewable Energy Feasibility Study

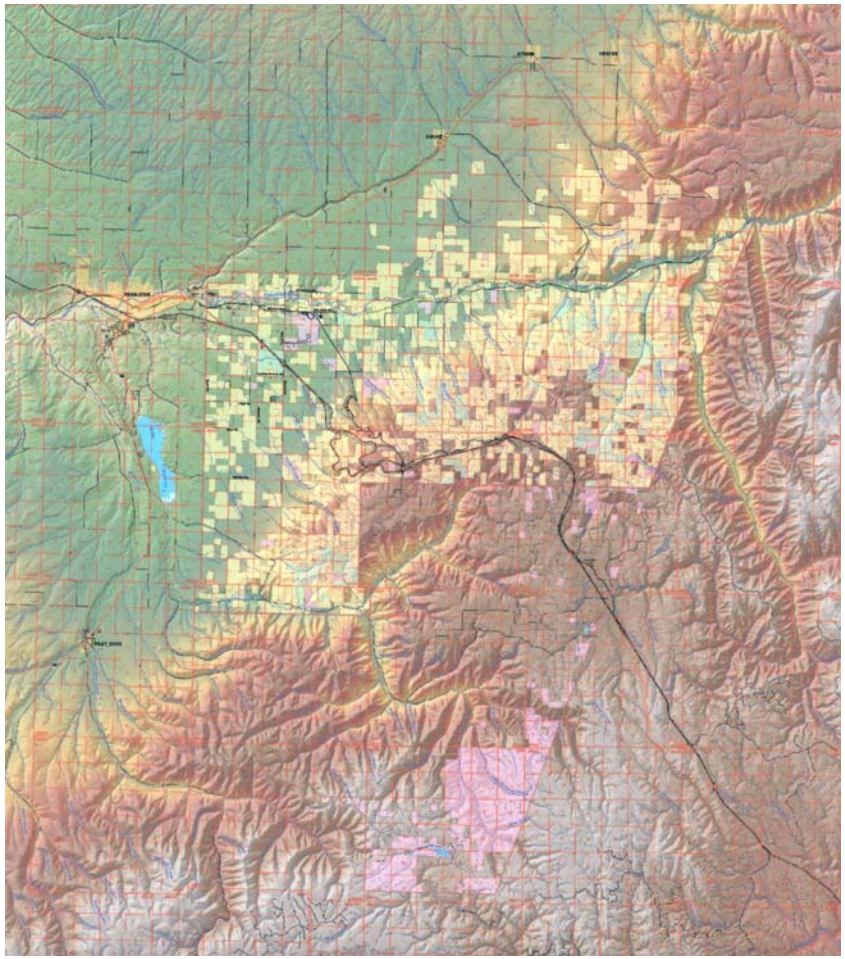
Confederated Tribes of the Umatilla Indian Reservation

Department of Science and Engineering

Project Location



Project Location cont.



Umatilla Indian Reservation

Project Overview

- Solar (solar thermal, photovoltaic)
- Wind
- Biomass
- Biofuel (bio diesel, ethanol)

- Conservation
- Efficiency

Objectives

- Promote renewable energy for sustaining natural resources (including Air quality)
- Asses selected renewable technologies for use on the Umatilla Indian Reservation
  - Solar, Wind and Biomass
- Initiate renewable energy into planning
- Determine economic viability of selected renewable technologies
- Develop energy diversity, sustainability and energy independence for the CTUIR

Project Participants

- CTUIR
  - Department of Science and Engineering
  - Department of Economic and Community Development
  - Planning/GIS
- DOE BPA /NREL
- BPA
- PNNL
- Oregon Energy Trust
- Integrated Energy Services
  - Bill Clumpner bjclumpner@aol.com

Tamastlikt Cultural Institute

- 45,000 square feet (exhibits, archives, offices)
- Re-commissioned the building
- Between 03-04 saved $25,685
  - 351130kw 15052 thermal units
- Goal 50% reduction by 05
- -05 $12,000 savings more to trim
- Treaty 1855 exhibit
- Gas price an issue (boiler repair)
- Lights (exotic lights expensive fixtures)

Solar Opportunities

-Tamástslikt Cultural Institute Solar Thermal

-Wildhorse Resort

Solar Thermal for potential hotel expansion

Photovoltaic for golf cart shed

well pumps

-Field Equipment and operation

I.e. data loggers

Biomass Opportunities

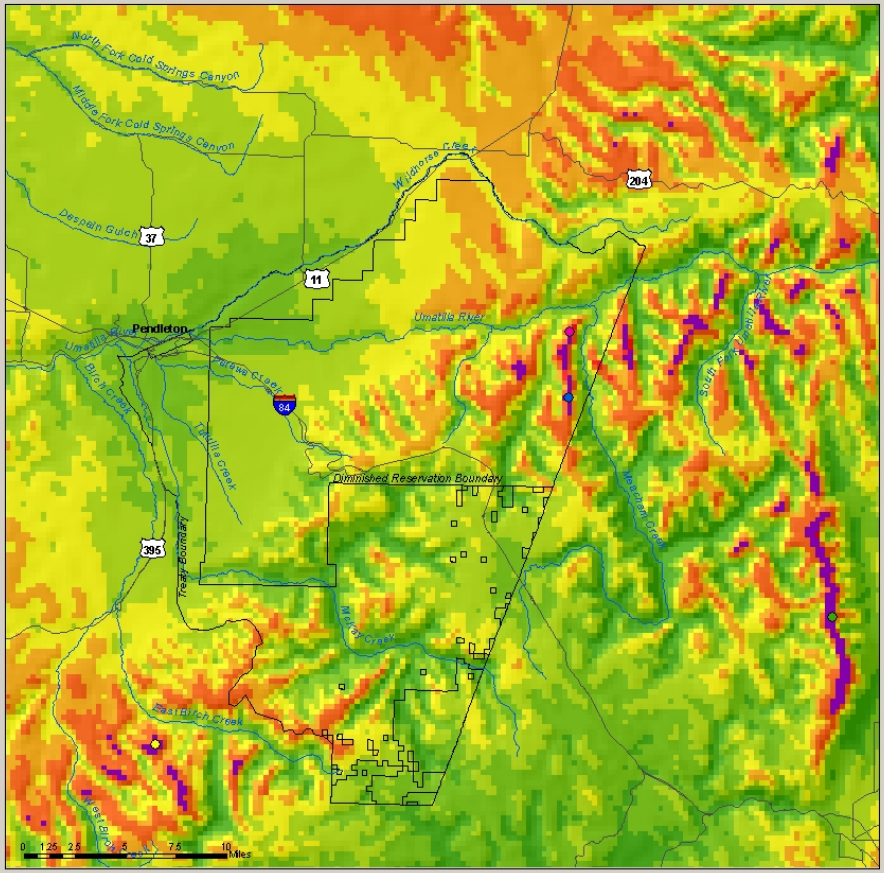
- Biomass
  - Pellet production from organics at Tribal Environmental Recycling Facility
  - Pellet production from forest fire fuel as part of forest management and air management objectives
  - Pellet production from wheat straw

Biofuel

- Biofuel
  - Actively seeking facility to produce and certify fuel
  - Produce bio diesel from cooking oil at CTUIR enterprises.
  - Incorporate bio-diesel into CTUIR farm enterprise
  - Fuel CTUIR Diesel Fleet, solid waste, fire, police. (emergency self sufficiency for homeland security)
  - Exploring potential of ethanol (wheat and wood)
  - Bio diesel/ethanol sales at Tribal truck stop

ARROWHEAD
TRAVEL PLAZA
202°204°

Wind Power at 50 Meters Above the Surface
Confederated Tribes of the Umatilla Indian Reservation



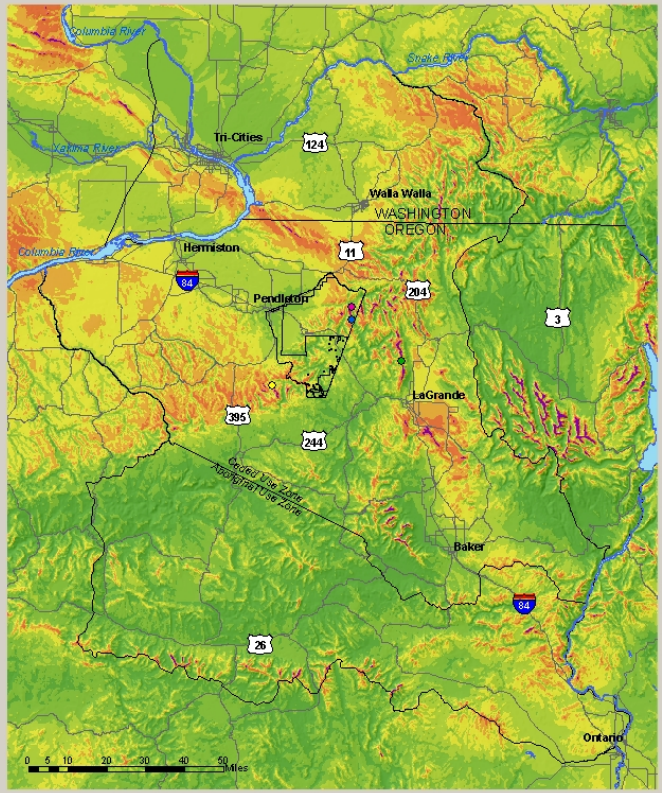
Legend

- Location 1
- Location 2
- Location 3
- Location 4
- Road
- River
- CTUIR Lands

Wind Power

- Poor
- Marginal
- Fair
- Good
- Excellent
- Outstanding
- Superb

- Combined Best Locations



Location	Wind Power W/m2	Wind Speed at 50 meters	Wind Speed at 30 meters
1	Superb	Outstanding	Outstanding
2	Outstanding	Outstanding	Outstanding
3	Superb	Superb	Superb
4	Outstanding	Outstanding	Outstanding

Wind power data developed by The Wind Solutions using Meso Map, a mesoscale atmospheric information system at a spatial resolution of 40 meters/one-quarter mile. Data was acquired from National Renewable Energy Laboratory (NREL).

Data depicted here is preliminary and has not been field verified. No Warranty is made for this information beyond the purpose intended by the GIS staff of the Confederated Tribes of the Umatilla Indian Reservation.

GIS 02: Wind_Data

Wind

- Wind potential
- Currently going through policy commissions to get wind energy direction
  - Known cultural and visibility issues
  - Multiple land owner issues
- Currently building an air monitoring network
  - One 50 meter tower (BPA)
  - Emergency Operation tower
  - Loan programs (PNNL and Oregon Energy Trust)
- Air quality program seeking conditional use permit to site meteorological towers and air quality PM2.5, PM10, nephelometer stations
  - 2 year Limits on CUP we will site temporary base stations and seek more permanent research platform

Technical and Management Issues

-Coordinating and cooperating on Energy Opportunities appropriately throughout the organization and region

-Education as the Tribe becomes more aware of itself and an energy entity (consumer /producer)

-Prioritization of energy solutions and opportunities and identifying funding/reinvestment resources.

-Diversity of grant sources, USDI, USDOE, USDA

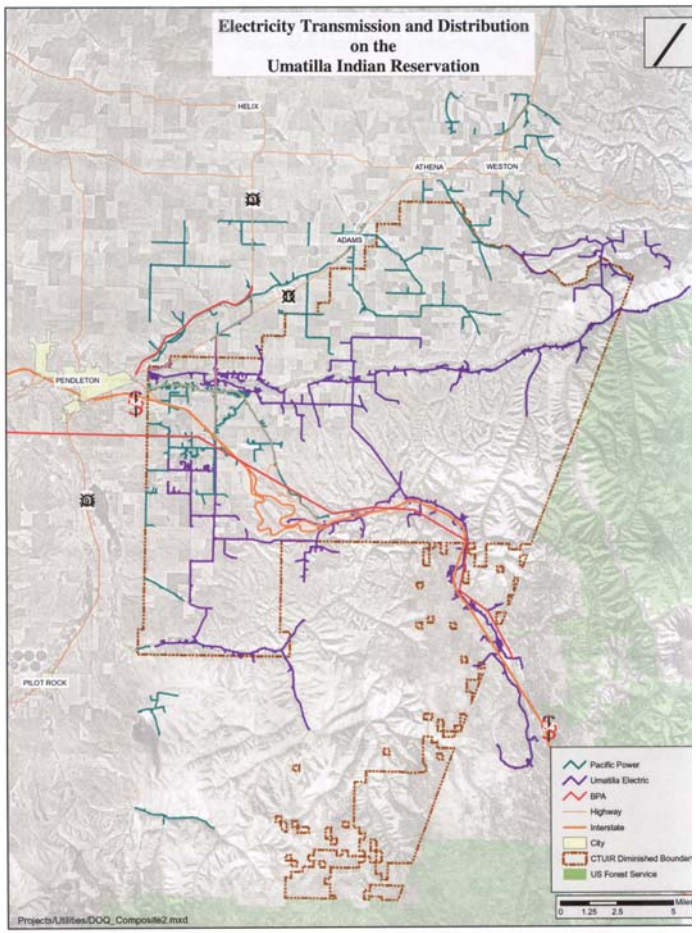
-Grant Funding limitations

-Developing tribal energy program(s)

(production, efficiency/conservation, service)

Developing partnerships in surrounding community

Technical and Management Issues cont. Transmission/Distribution



Complementing Efforts

- Arlington Wind Project (108 MW)
  - NREL
- Arrowhead Travel Plaza
- CTUIR Governance Center
  - CERT
- CTUIR Energy Development
  - Timina
    - Wanapa
    - Yaka
  - Tribal Government
- Utility Formation

Eskulpa Creek Overlook

Energy and the Rest of the World