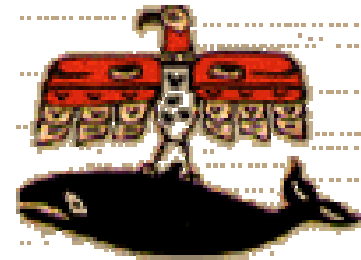


WINDynamics

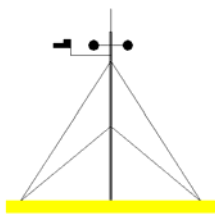
Makah Nation Renewable Energy Development on Tribal Lands Project

November, 2003



**U.S. DOE Grant Number:
DE-PS36-03GO93002**





Project Overview



- Set up Makah Tribal utility organization capable of carrying out utility business functions of the tribe.



- Develop markets for the power from the Makah Wind Plant.

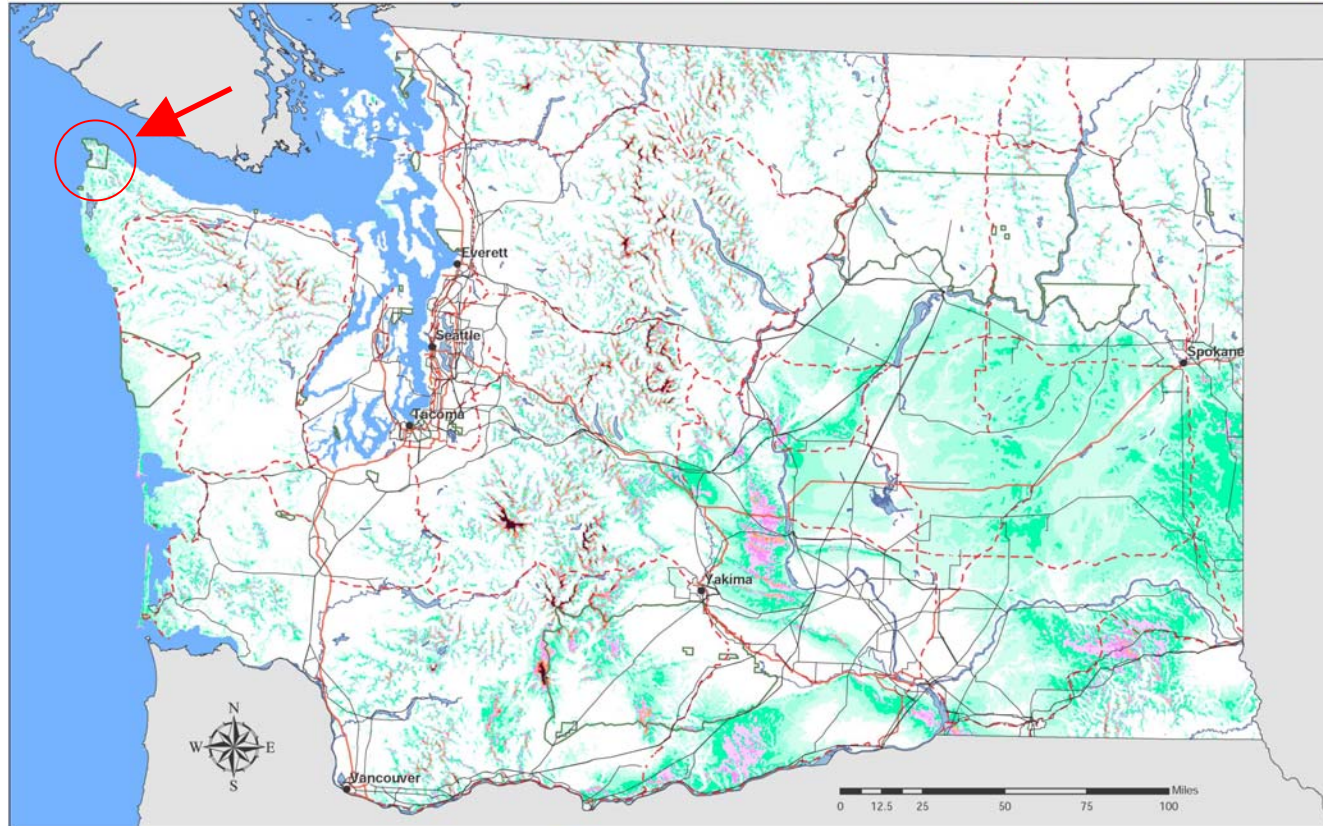


- Finalize development tasks presently underway
- Installation of 30 MW of wind generation capacity.

Project Location

WINDPOWERMAPS.org

Washington State Wind Speed at 50 Meters



Wind Speed at 50 meters		
	m/s	mph
	0 - 5.0	0 - 11.2
	5.0 - 5.5	11.2 - 12.3
	5.5 - 6.0	12.3 - 13.4
	6.0 - 6.5	13.4 - 14.5
	6.5 - 7.0	14.5 - 15.7
	7.0 - 7.5	15.7 - 16.8
	7.5 - 8.0	16.8 - 17.9
	8.0 - 8.5	17.9 - 19.0
	8.5 - 9.0	19.0 - 20.1
	9.0 - 9.5	20.1 - 21.3
	9.5 - 10.0	21.3 - 22.4
	>10.0	>22.4

- Major Cities
- Transmission Lines > 115 KW
- Limited Access Highway
- - - Highway
- ▭ Tribal Reservations

The wind resource estimates presented on this map were developed by TrueWind Solutions using MesoMap, a mesoscale atmospheric simulation system, at a spatial grid resolution of 400 meters (one-quarter mile). The estimates have been validated by the National Renewable Energy Laboratory (NREL) and independent meteorologist but should be confirmed by direct measurement according to wind energy industry standards.



Project Sponsors

NREL, the Bonneville Power Administration, Northwestern Energy, the Wyoming Business Council, enXco, the Northwest Power Planning Council, Zilkha Renewable Energy, Klickitat County, EnronWind, ABB, Renewable Energy Systems (USA) Inc., Chelan Public Utility District, Idaho Power, Windland, Inc., WSACAA Energy Project, Vestas, Jones & Stokes, CH2M Hill, Suzlon Energy, Northwest Wildlife Consultants, Inc., and Cielo Wind Power.

For more information see www.windpowermaps.org



Summary of the Project Objectives



Objective 1) - Formation of Tribal Utility Authority– Analysis of local energy usage patterns


Objective 2) - Wind data analysis, Economics/pricing Studies

Objective 3) - Transmission/Wheeling Tariff Evaluation – Economics/pricing Studies



Objective 4) - Complete Environmental Profile and Mitigation Strategy

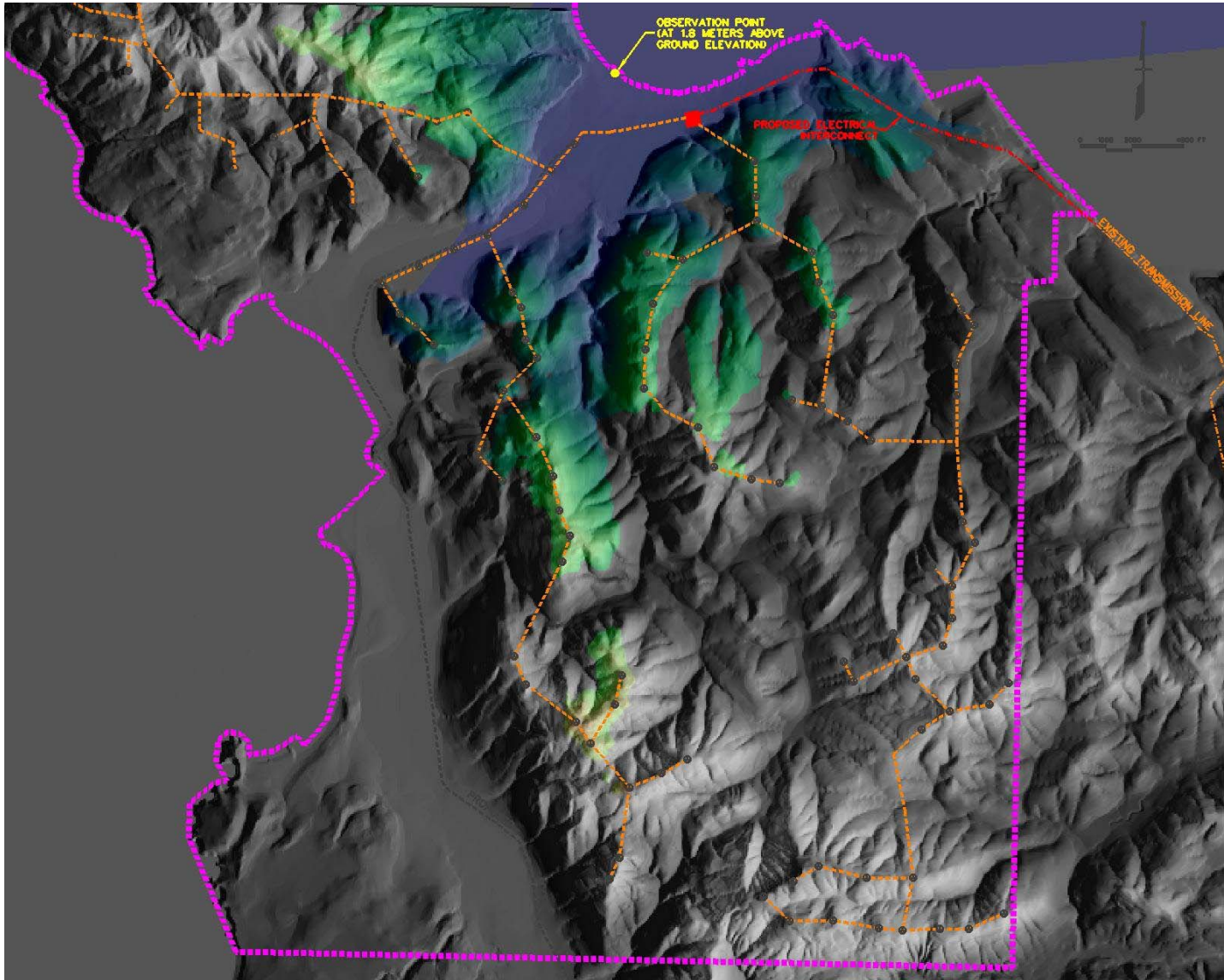
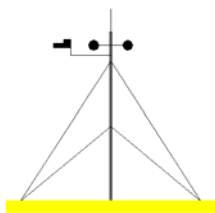
Objective 5) - Marketing of Power

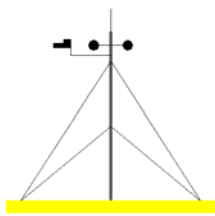


Objective 6) - Negotiate Commercial Deal with Wind Developer (Cielo) to initiate construction

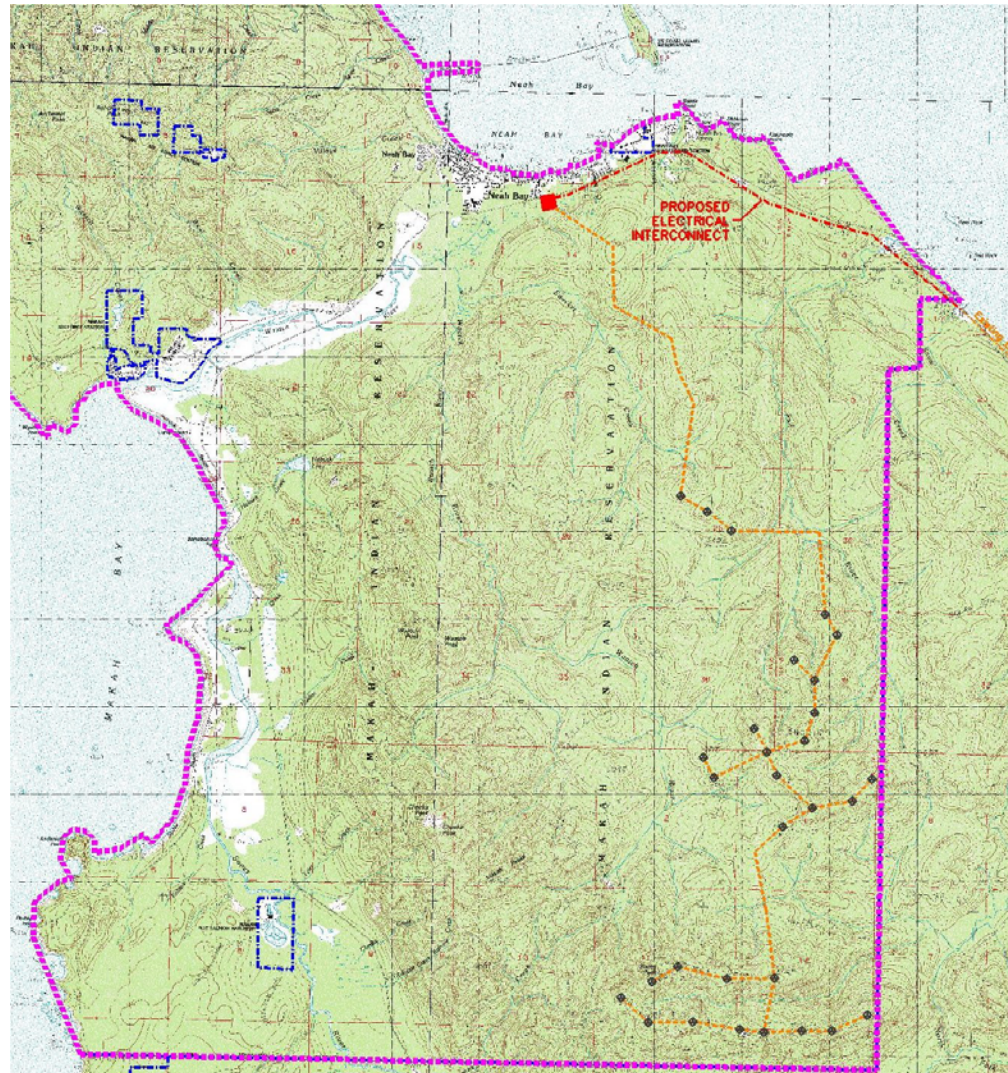
Objective 7) - Reporting to DOE and project partners

Project Site





Project Site



Background on Tribal Utilities

- Legal summary and other cases
- Tactical approaches with LDCs
- Importance of council unity
- Often times a “win - win” outcome

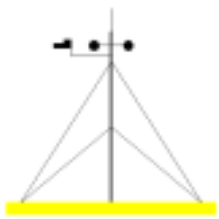


Tribal Utility Benefits



- **Exercise tribal sovereignty**
- **Develop infra-structural self-sufficiency**
- **Diversify tribal assets**
- **Create an entity that facilitates development**
- **Create a sustainable profit center**



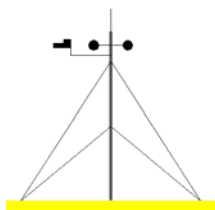


Steps toward Utility Formation



- Information gathering on load and economics
- Appraisal of distribution assets
- Negotiation with incumbent utilities
- Negotiation of power/maintenance contracts
- Utility formation





Project Participants



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•**Makah Tribal Chairman**

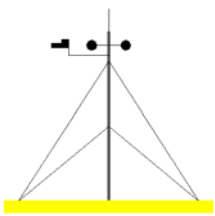
Nathan Tyler

•**Wind Company Representative**

Zeina El-Azzi, Cielo Wind Power, Austin, Texas 78701

Relevant Background Information

- Makah Tribal has been approached before
- Existing relationship with Cielo Wind Power
- 2002 DOE grant for preliminary work
- Economic need
- Clallam County PUD is interested
- Clallam is BPA full service customer



Questions

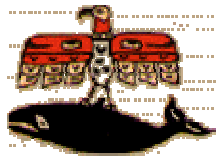


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