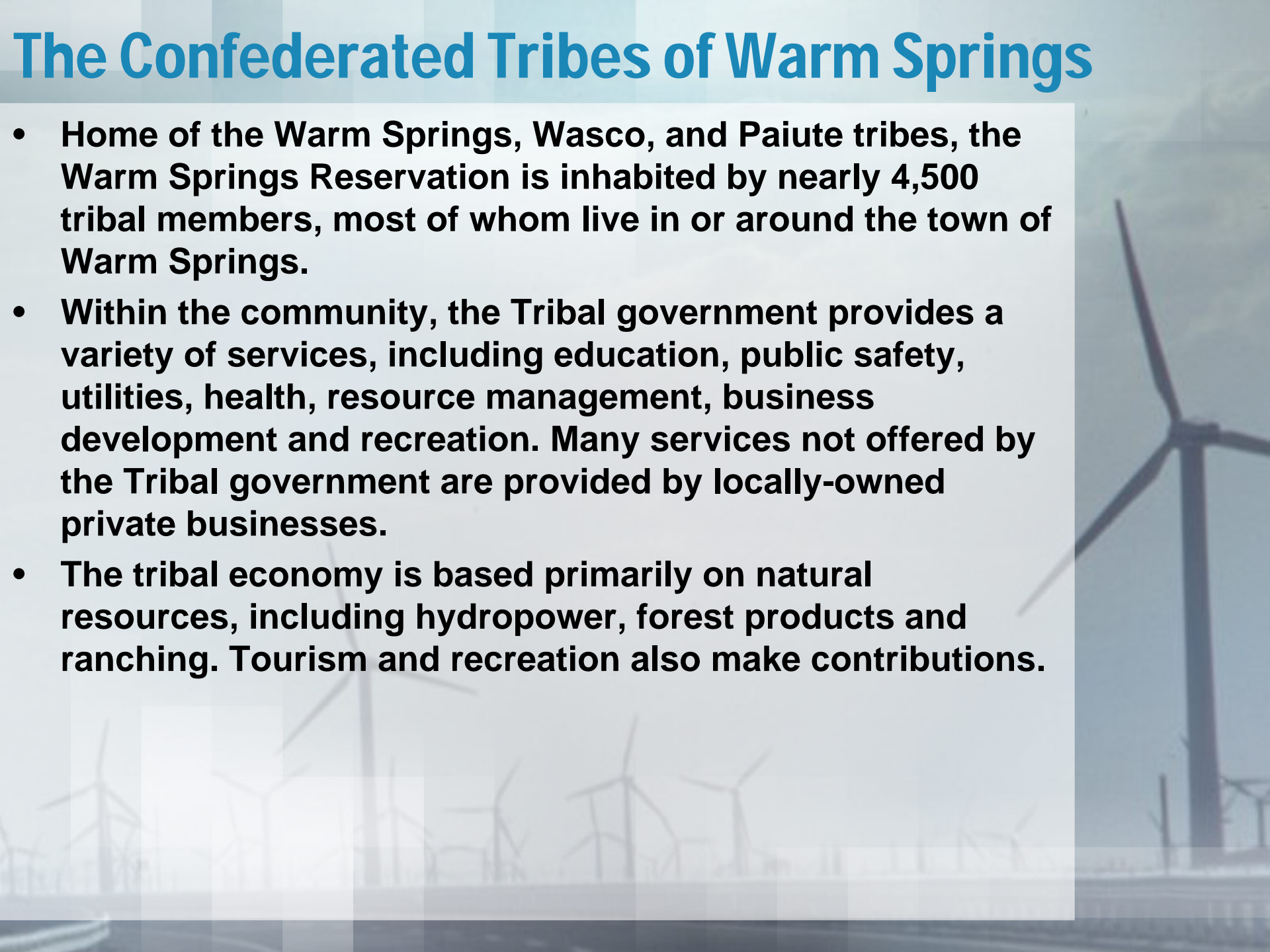


Warm Springs Power and Water Enterprise

**Use of DOE Grant DE-PS36-06GO96037
For Engineering Cost Assessment
For
Wind Energy Power Development
On The Warm Springs Indian Reservation of
Oregon.**

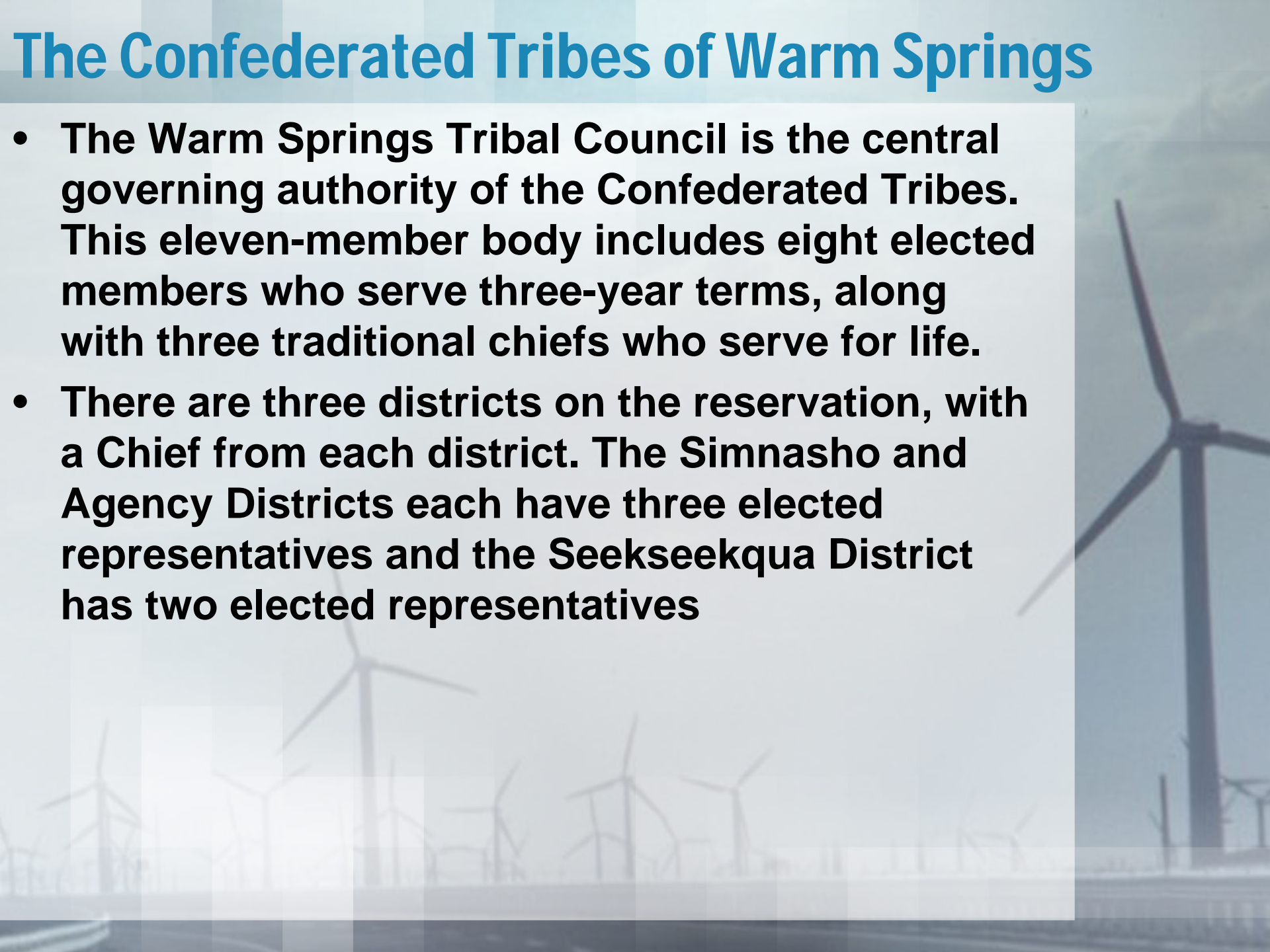
The Confederated Tribes of Warm Springs

- Home of the Warm Springs, Wasco, and Paiute tribes, the Warm Springs Reservation is inhabited by nearly 4,500 tribal members, most of whom live in or around the town of Warm Springs.
- Within the community, the Tribal government provides a variety of services, including education, public safety, utilities, health, resource management, business development and recreation. Many services not offered by the Tribal government are provided by locally-owned private businesses.
- The tribal economy is based primarily on natural resources, including hydropower, forest products and ranching. Tourism and recreation also make contributions.



The Confederated Tribes of Warm Springs

- **The Warm Springs Tribal Council is the central governing authority of the Confederated Tribes. This eleven-member body includes eight elected members who serve three-year terms, along with three traditional chiefs who serve for life.**
- **There are three districts on the reservation, with a Chief from each district. The Simnasho and Agency Districts each have three elected representatives and the Seekseekqua District has two elected representatives**



History Warm Springs Power and Water Enterprise

- **Warm Springs Power and Water Enterprise is a Corporate Entity owned by the Confederated Tribes of the Warm Springs Reservation.**
- **Warm Springs Power Enterprises is responsible for managing the Tribes' interest in the largest hydroelectric project within the State of Oregon; The Pelton/Round Butte Hydroelectric Project located on the Deschutes River.**



History of Warm Springs Power and Water Enterprise

- In 1955 the Tribes approved the building of the first powerhouse, the Pelton Dam. Also installed at this time was the Reregulating Dam. In 1964 the Tribes approved the construction of the third dam, the Round Butte Dam.
- With the construction of the Reregulating Dam in 1955, the Tribes reserved the exclusive right to develop power generation at the dam if it was ever found to be economically feasible. It wasn't until 1979, when the energy market moved upward and federal law was passed allowing private developers to develop hydroelectric sites that the Tribes elected to exercise their option to construct a hydroelectric project at the Reregulating Dam.



History of Warm Springs Power and Water Enterprise

- In 2001 the federal license for this hydroelectric complex ended. With that the Tribes & PGE entered into a Global Settlement Agreement to form a partnership to jointly own the Pelton/Round Butte Hydroelectric Project.
- The Tribes retained 100% ownership of the Reregulating Dam and Portland General Electric retained 100% of some of the transmission out of the project.
- The partnership has proven beneficial to both parties and has committed to establish a salmon run above the project and has also purchased several thousand acres for wildlife use.



Renewable Energy Activates

- **Wind energy**
- **Geothermal**
- **Biomass**

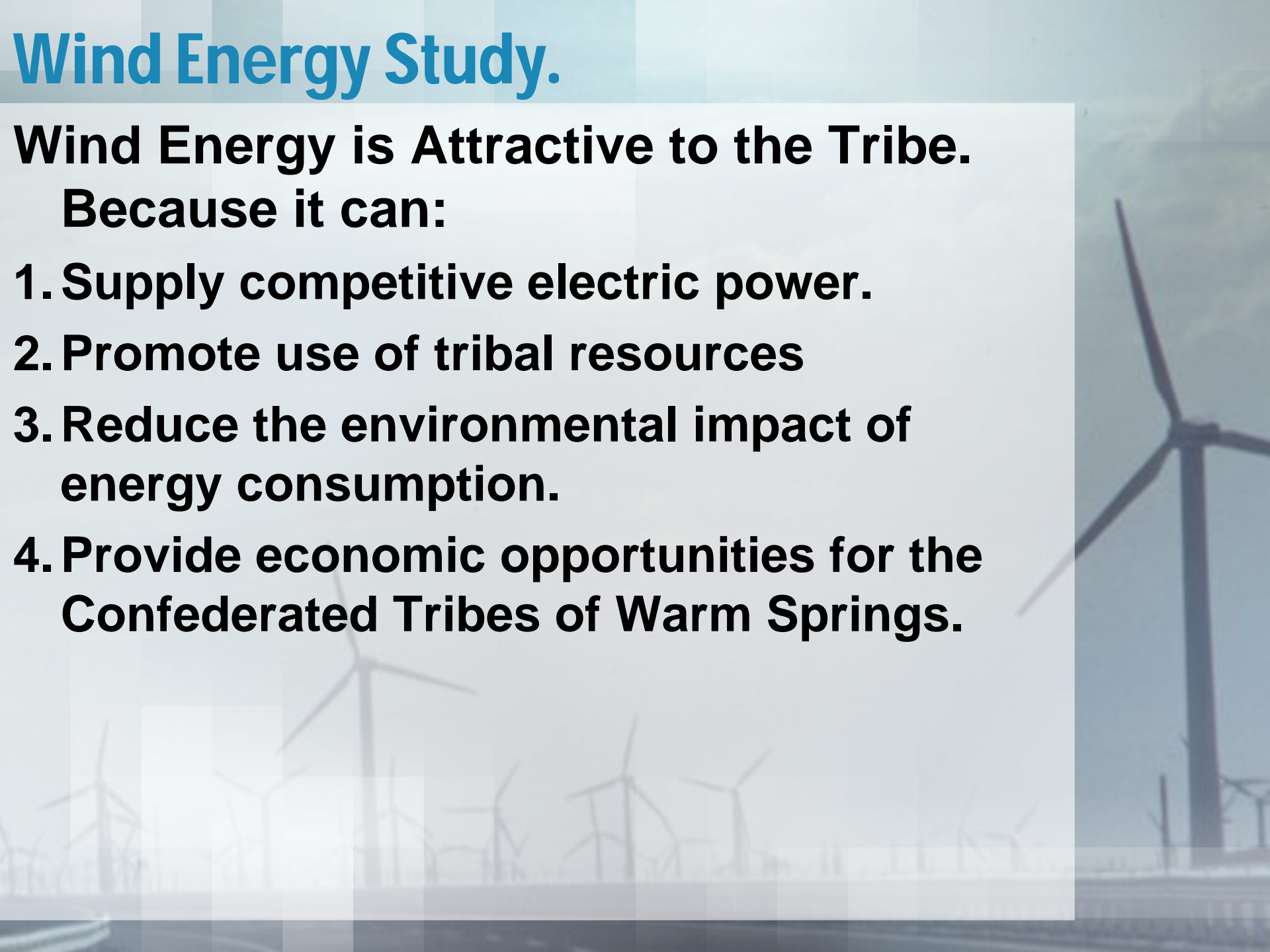


Wind Energy Study.

Wind Energy is Attractive to the Tribe.

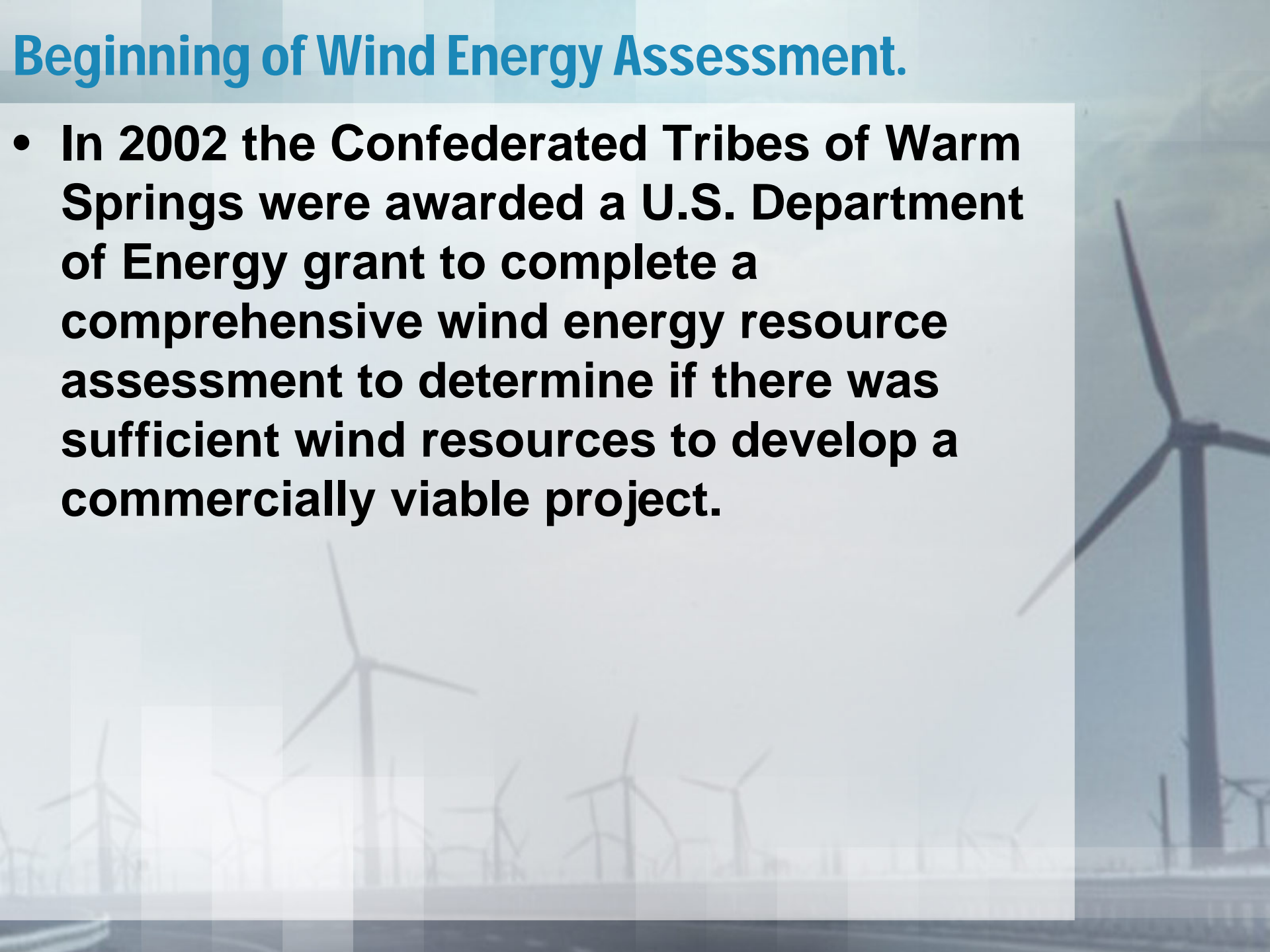
Because it can:

- 1. Supply competitive electric power.**
- 2. Promote use of tribal resources**
- 3. Reduce the environmental impact of energy consumption.**
- 4. Provide economic opportunities for the Confederated Tribes of Warm Springs.**

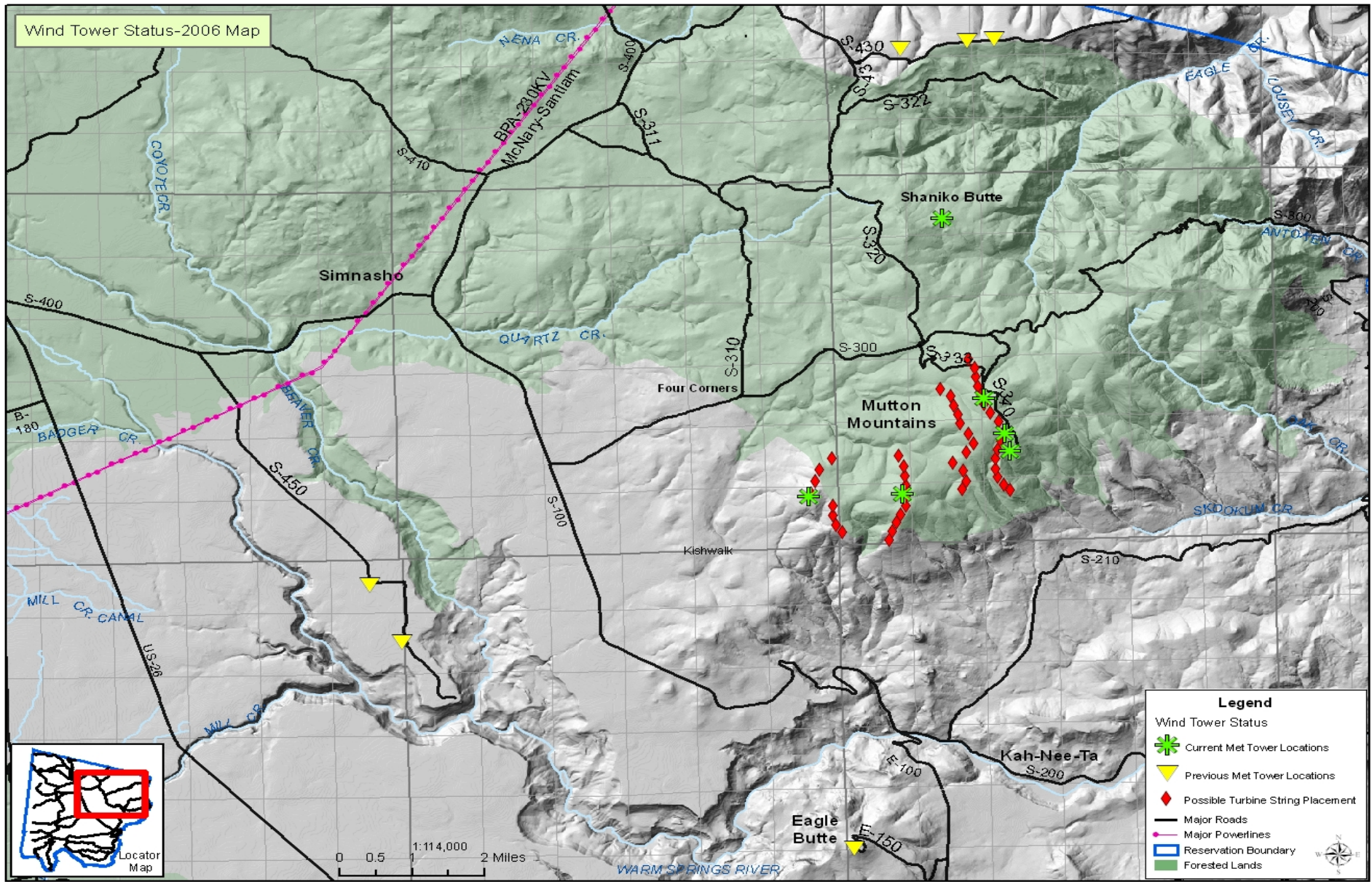


Beginning of Wind Energy Assessment.

- **In 2002 the Confederated Tribes of Warm Springs were awarded a U.S. Department of Energy grant to complete a comprehensive wind energy resource assessment to determine if there was sufficient wind resources to develop a commercially viable project.**



Met tower sites.



Wind Energy Study-Mutton Mountains.

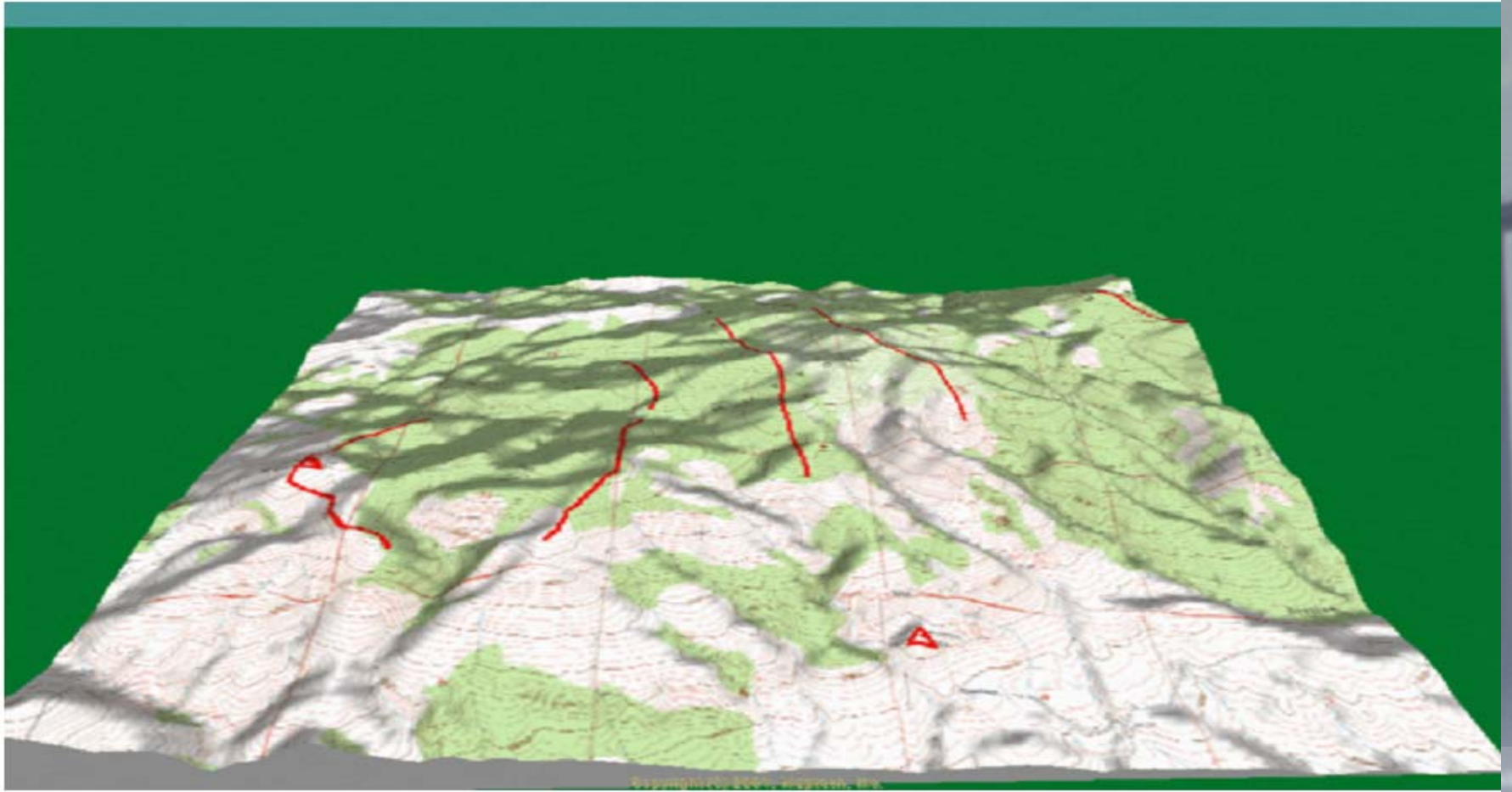
For two years data collection and monitoring was performed, to identify the area with the greatest potential for a wind energy project, it was determined that the Mutton Mountains located on the northern side of the Warm Springs Reservation had the greatest potential.

After a detailed wind energy monitoring study with met towers was finished it was estimated that the Mutton Mountains had a annual estimated average capacity factor of 29-33%.

Conclusions of the study found that there sufficient wind resources to advance to the next phase.



3 D View of the Mutton Mountain Area



Next Step

A large-scale wind farm with many wind turbines under a cloudy sky. The text "Next Step" is overlaid in the center in a bold blue font.

Use of funds

- To evaluate road improvements required for a wind project development.
- Determine best transmission line route.
- Substation improvement requirements for load export and cost of improvements.
- Power plant equipment cost for different turbine options.
- Preliminary Environmental assessment.

These are key issues that need to be looked into during this 12 month assessment.

12 Month cost Assessment for Wind Energy on The Confederated Tribes of Warm Sprigs Tribal lands

- **During our 12 month study we intend to do a comprehensive conceptual engineering study and cost estimate for the development of a 70MW to 150MW wind energy power project at location on tribal lands in the Mutton Mountains.**
- **The Project team, for the 12 month study will consist of-**
- **WSPWE Staff, Jim Manion, Mike Lofting, Mark Johnson Jr, Laurie Danzuka, Heather Alford**
- **WS Natural Resources staff.**
- **Researchers from Oregon State University**
- **David Mclain, Principal Investigator and technical point of contact.**
- **Randy Goff, HDR consulting**
- **Michael Unger, of Elcon Engineering, Transmission Engineering Consultant.**



Project Roles: Warm Springs Power and Water Enterprise.

- **WSPWE**
 - **WSPWE will be responsible for the overall management of the feasibility study.**
 - **WSPWE will be responsible for the administration of the project including all reporting and cost controls we will also coordinate the subcontractors and interface with the tribal natural resource department, Tribal Council.**
 - *(Tribal Council has the final say in all tribal projects)*

DW McClain and Associates.

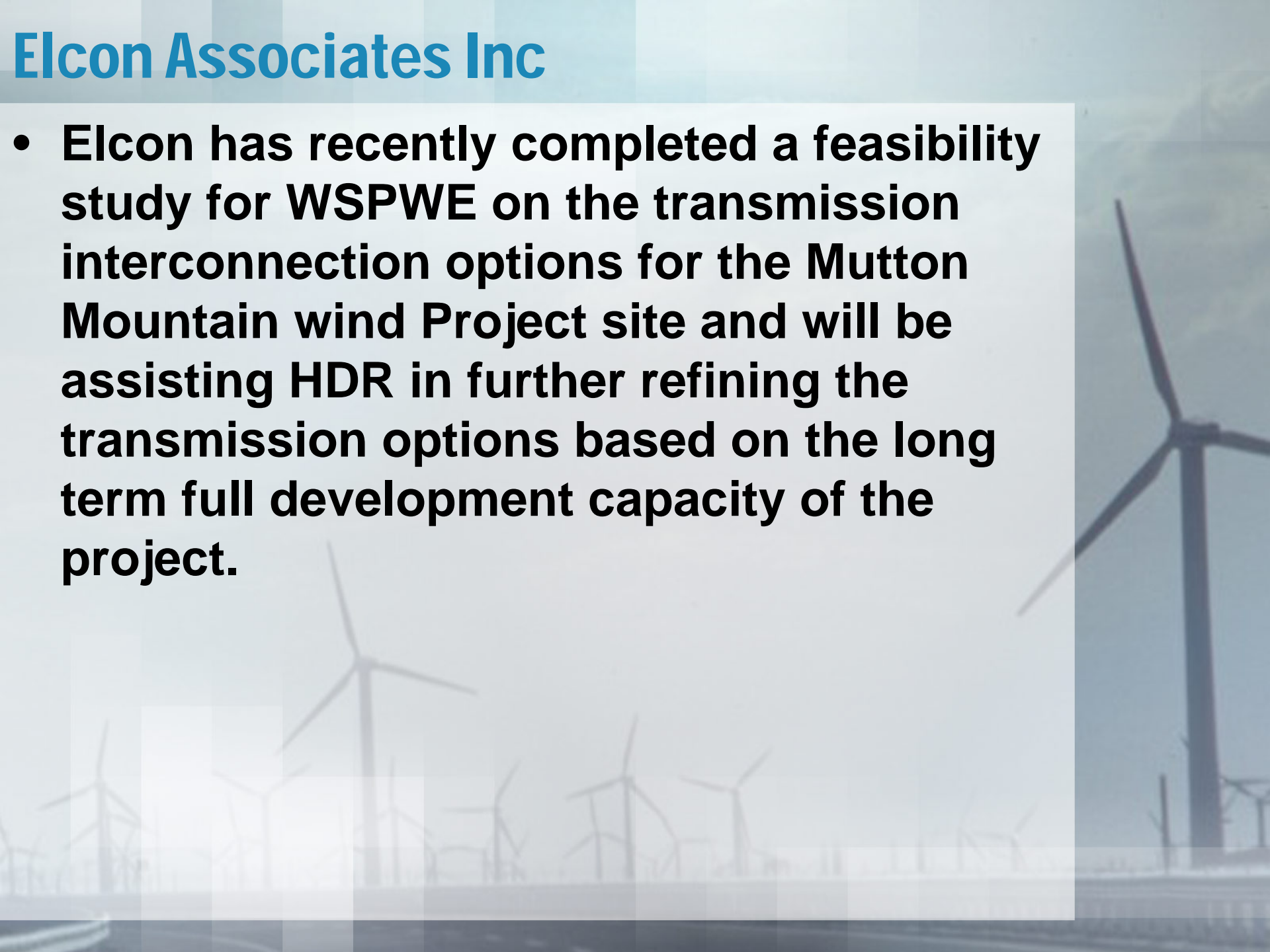
- **McClain associates is WSPWE's renewable energy consultant.**
 - **McClain will be the principal investigator for the study, he will establish the general scope of the engineering studies and oversee the division of work tasks between the other consultants and contractors and be responsible for the integration of the cost and schedule factors into comprehensive evaluation.**
 - **Back Ground-**
 - **Mr. McClain has been the principle investigator for the prior wind energy assessments on the reservation and has extensive experience in developing renewable energy projects.**

HDR/EES

- **HDR is an architectural, engineering and consulting firm that specializes in managing complex projects.**
- **HDR is an integrated engineering firm that provides a total spectrum of services for clients with hundreds of professional and registered engineers, scientist, planners and economists.**
- **HDR purchased Economics and Engineering services Inc. HDR/EES will assist WSPWE in developing the preliminary design and cost, and estimate an economic model for the feasibility study.**

Elcon Associates Inc

- **Elcon has recently completed a feasibility study for WSPWE on the transmission interconnection options for the Mutton Mountain wind Project site and will be assisting HDR in further refining the transmission options based on the long term full development capacity of the project.**



Ten Steps for 12 Month study

- **Step one:**
 - The Finalization of the ridge line selection for development.
- **Step Two:**
 - Provide copies of all prior data sets to the project teams.
- **Step Three:**
 - Arrange a field trip for all team members to Mutton Mountain site.
- **Step Four:**
 - Road Improvement review and cost estimates.
- **Step Five:**
 - Balance of Plant capital cost estimate.



Ten Steps for 12 Month study

- **Step Six:**
 - **Transmission System Cost Estimate.**
- **Step Seven:**
 - **Environmental assessment and licensing cost estimate.**
- **Step Eight:**
 - **Put together a realistic project schedule based on design and costs.**
- **Step Nine:**
 - **Financial modeling and business plan.**
- **Final Step Ten:**
 - **Collect all reports, and Finalize project assessment.**

Completion of 12 Month Study

- **After all steps are completed WSPWE will submit a Full report to WSPWE Board of Directors & Tribal Council and DOE**
- **The final report will include all information on studies done by all teams involved and will include a cost analysis for:**
 - **Road improvement**
 - **Balance of plant**
 - **Transmission and interconnection**
 - **Environmental**
 - **Licensing**
 - **Financial models**

