

Wind Energy Development Environmental Compliance

***Presented by
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Commissioner***

***Native American Energy & Mineral
Institute Short Course:
Renewable Energy Development for
Oklahoma Tribes
Cherokee Casino-Resort, Catoosa, OK
18-21 Sep 2007***

The Wind People



Briefing Outline

- ***Distinguishing Features of Wind Farms***
- ***Permitting Process Structure***
- ***Specific Permitting Considerations & Strategies***
- ***Environmental Assessment Outline***
- ***Ongoing Wind Project Activities***
- ***Kaw Wind Energy Project Update***
 - ***Recent Activities Update***
 - ***2006 Wind Resource Summary***
 - ***Feasibility Geotech Findings***
 - ***Environmental & Cultural Activities***
- ***Next Steps for project***
- ***Q&A***

Distinguishing Features of Wind Farms

- *Located in rural or remote areas*
 - *Extend over large area & have broad area of influence*
 - *But physically occupy only 3-5% of land area (turbine towers, assoc. infrastructure. & roads)*
- *Rest of land largely undisturbed & available for continued or other uses*

Distinguishing Features of Wind Farms (cont.)

- **Wind Farm Project Anatomy**
 - **Wind turbines**
 - **Anemometers**
 - **Power Collection & Transmission System**
 - **Supervisory Control & Data Acquisition (SCADA) System**
 - **Maintenance Facility**
 - **Access Roads**

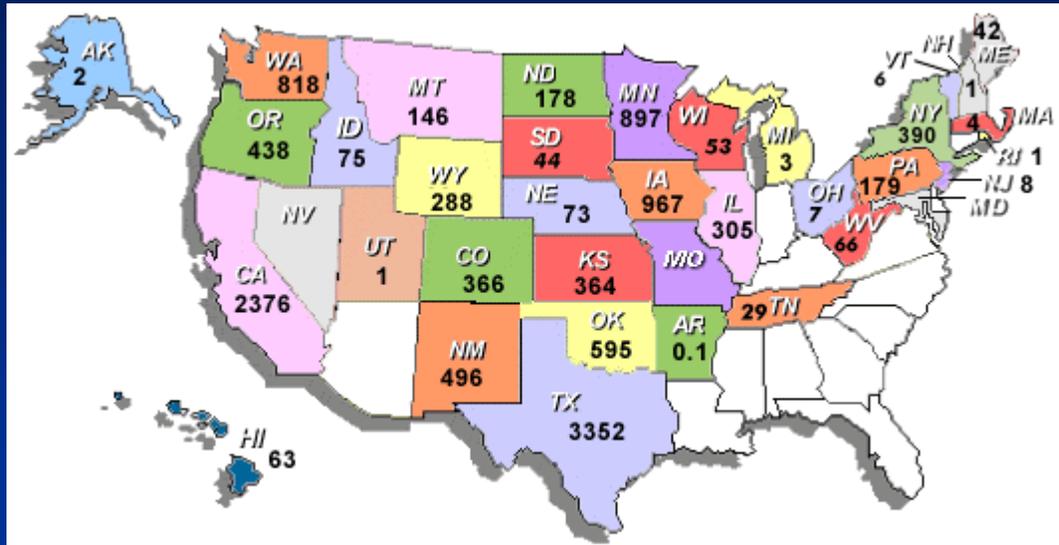


Project Development Steps

- *Planning (Resource & Feasibility Assessments)*
- *Permitting*
- *Financing*
- *Power Purchase & Transmission Agreements (Business Agreements)*
- *Construction*
- *Operation*
- *Repowering /Decommissioning*

Wind Energy Projects Throughout the United States of America

Installed MW for each state in black.



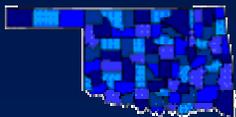
Oklahoma Wind Energy Development



Wind Energy ... Clean Energy for Our Environment and Economy

Wind Project Data Base

[home](#) [contact area](#)



State Summary:

Total installed = 595 MW*
Under Construction
= 94.5 MW

Wind Energy Potential:
Average Power
Output (MW): 82,700
Annual kWh: 725
Billion
Rank in US: 8th**

*Updated: June 30, 2007

Existing Project or Area	Owner	Date Online	MW	Power Purchaser/ User	Turbine / Units
Oklahoma Wind Power Center	FPL Energy	2003	102	Oklahoma Municipal Power Authority; Oklahoma Gas & Electric	GE Wind 1.5 MW (68)
Blue Canyon Wind Power (North of Lawton)	consortium	2003	74.25	Western Farmers' Elec Coop	NEG Micon 1.65 MW (45)
Weatherford Wind Energy Center	FPL Energy	2005	147	Public Service Co. of Oklahoma (AEP)	GE Wind 1.5 MW (98)
Bergey Windpower Headquarters	Bergey Windpower	2005	0.05	Bergey Windpower Headquarters	Bergey Windpower 50 kW (1)
Blue Canyon II	Horizon Wind Energy	2005	151.2	Public Service Co. of Oklahoma (AEP)	Vestas 1.8 MW (84)
Centennial Wind Energy Project (2006 portion)	Invenergy	2006 - 2007	120	Oklahoma Gas & Electric	GE Energy 1.5- MW (80)

Proposed Wind Projects in Oklahoma

Project	Utility/Developer	Location	Status	MW Capacity	On Line By / Turbines
<i>Sleeping Bear</i>	<i>Chermac Energy Corp./Edison Mission Group</i>	<i>Harper County</i>	<i>Under Construction</i>	<i>94.5</i>	<i>Suzlon 2.1 MW (45)</i>

Permitting Process Structure

- **Five Phases:**
 - **Pre-Application (land lease)**
 - **Application Review (EA)**
 - **Decision-making**
 - **Admin & Judicial Review (NEPA)**
 - **Permit Compliance (Approval by DOI – FONSI)**
- **For NA Projects on Trust lands: BIA is permitting agency**
- **Consultation with BIA necessary since Environmental Compliance is on the critical path of NA wind projects**
- **Follows NEPA-like process**

Principles Common to Successful Permitting Processes

- 1) Significant Public Involvement***
- 2) Issue-Oriented Process***
- 3) Clear Decision Criteria***
- 4) Coordinated Permitting Process***
- 5) Reasonable Time Frames***
- 6) Advance Planning***
- 7) Timely Administrative & Judicial Review***
- 8) Active Compliance Monitoring***

Specific Permitting Considerations

- ❖ *Land Use (BIA)*
- ❖ *Noise*
- ❖ *Birds & other biological resources*
- ❖ *Visual Resources*
- ❖ *Soil erosion & water quality*
- ❖ *Public Health & Safety*
- ❖ *Cultural, archeology & paleontological resources*
- ❖ *Solid & Hazardous wastes*
- ❖ *Air quality & climate*

Environmental Assessment Compliance Outline

1.0 Introduction

- 1.1 Purpose and Need**
- 1.2 Scope of Analysis**
- 1.3 Organization of the Project**

2.0 Proposed Action and Alternatives

- 2.1 Description of the potential Development Scenario**
- 2.2 Phases of Wind Energy Development**
- 2.3 Description of the No Action Alternative**
- 2.4 Alternatives & Issues considered but eliminated.**

3.0 Overview of Wind Energy projects

- 3.1 Description of Wind Energy projects**
- 3.2 Regulatory requirements for Wind Energy**
- 3.3 Public Health and Safety aspects of Wind Energy**

4.0 Affected Environment

- 4.1 Geologic Resources and**
- 4.2 Paleontological Resources**
- 4.3 Water Resources (Soil Erosion & Water Quality)**
- 4.4 Air Quality and Climate**
- 4.5 Noise**

4.6 Ecological Resources

- 4.6.1 Wildlife- Birds, Amphibians, Reptiles, Mammals**
- 4.6.2 Aquatic Biota and Habitats**
- 4.6.3 Wetlands**
- 4.6.4 Threatened and Endangered Species**
- 4.6.5 Eco-Regional Distribution and Associated Vegetation**

4.7. Land use

4.8 Visual Resources

4.9 Cultural Resources

4.10 Socio Economics/Public Services Infrastructure

4.11 Environmental Justice (Solid and Hazardous Waste)

5.0 Environmental Consequences

6.0 Consultation & Coordination

6.1 Public Scoping

6.2 Government to Government Consultation

7.0 List of Preparers

8.0 References (see Table for example federal laws related to environmental protection)

9.0 Glossary

Ongoing Activities & Future Plans

Environmental Studies

- NEPA Studies include:
 - Proposed Action & Alternatives
 - Overview of Wind Energy Project
 - Affected Environment
 - Geological & Paleontological Resources
 - Water Resources
 - Air Quality
 - Noise
 - Ecological Resources (see insert)
 - Land Use
 - Visual Resources
 - Cultural Resources
 - Socio Economics
 - Environmental Justice
 - Environmental Consequences
 - Consultation & Coordination
 - List of Preparers
 - References & Glossary
- Affected Environment
 - Ecological Resources
 - Wildlife, Birds, Amphibians, Reptiles & Mammals
 - Aquatic Biota & Habitat
 - Wetlands & Grasslands
 - Threatened & Endangered Species
 - Eco-Regional Distribution and Associated Vegetation

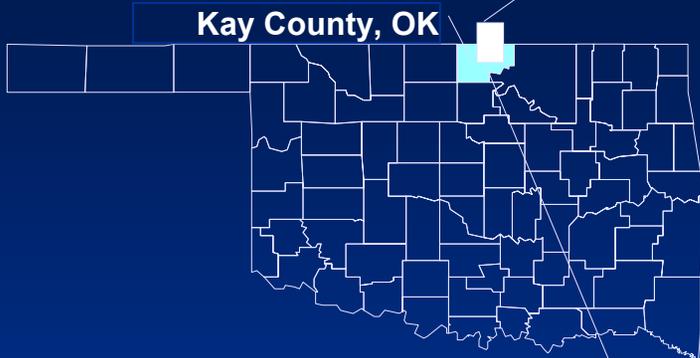
Ongoing Activities & Future Plans

Cultural Studies

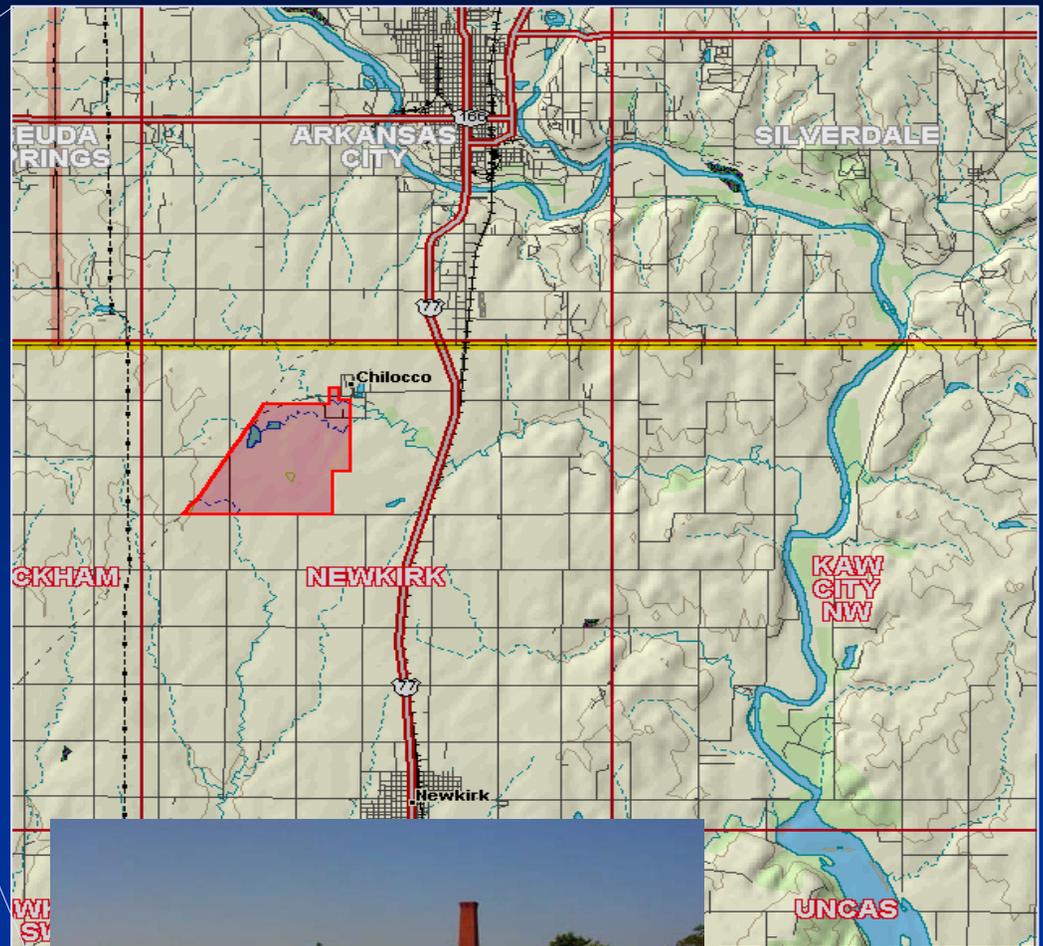
- **Form Inter-Tribal Cultural Committee for Chilocco**
- **Follow NHPA 1966, amend 1980 & 1992 Section 106 Process**
- **NHPA Section 106 Process**
 - **Step 1: ID of Known CRs**
 - **Step 2: ID of Potential CRs**
 - **Archaeological Surveys***
 - **Uncontrolled-exclusive**
 - **Controlled –exclusive**
 - **Nonexclusive**
 - **Predictive**
 - **Fieldwork & Survey Reporting**
 - **Step 3: Determine Significance of CRs**
 - **Step 4: Determination of Impacts on CRs**
 - **Step 5: Selection of Proposed Action & Impact Mitigation**
 - **Step 6: Procedures for Construction Phase Findings**

* After King, 1978, HCRS, DOI

Project Location (continued)



Kay County, OK



Chilocco, OK

Intertribal Ownership

*Kaw... Ponca... Pawnee
Otoe-Missouria... Tonkawa*

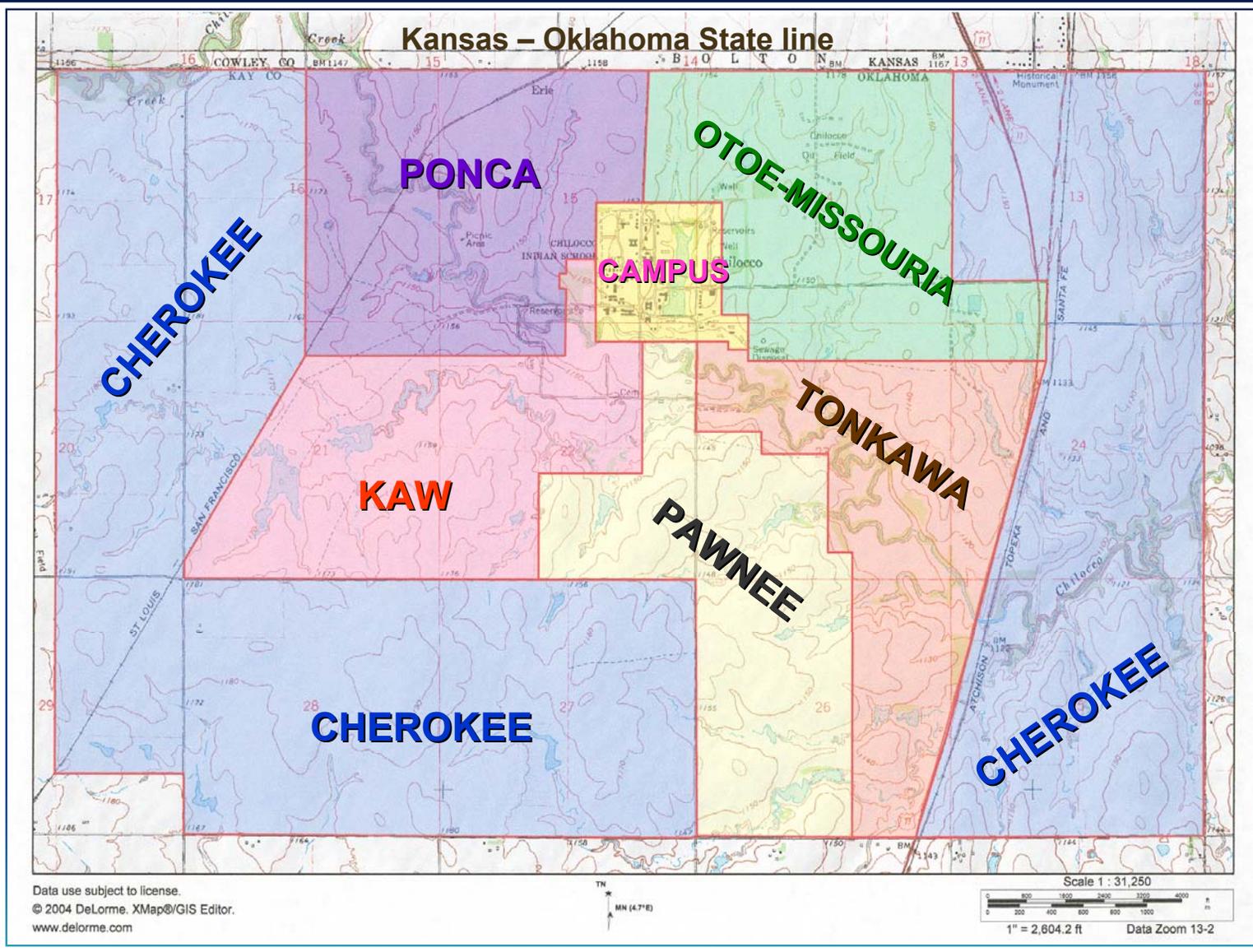
Adjacent Ownership

Cherokees

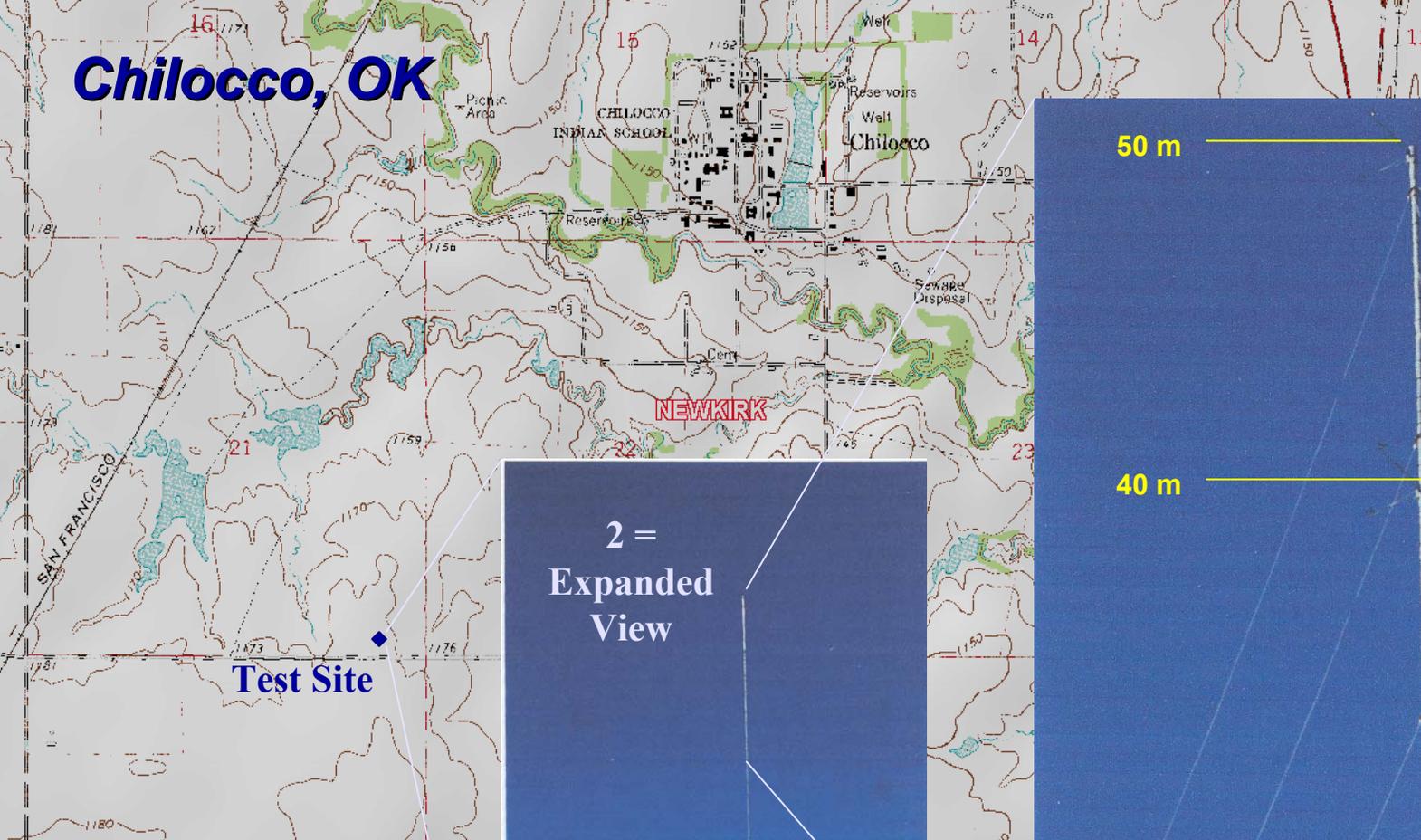


**Chilocco
Location Map
showing
Land
Ownership of
All Tribal Nations**

**Campus Area
common to
Five Tribes**



Chilocco, OK

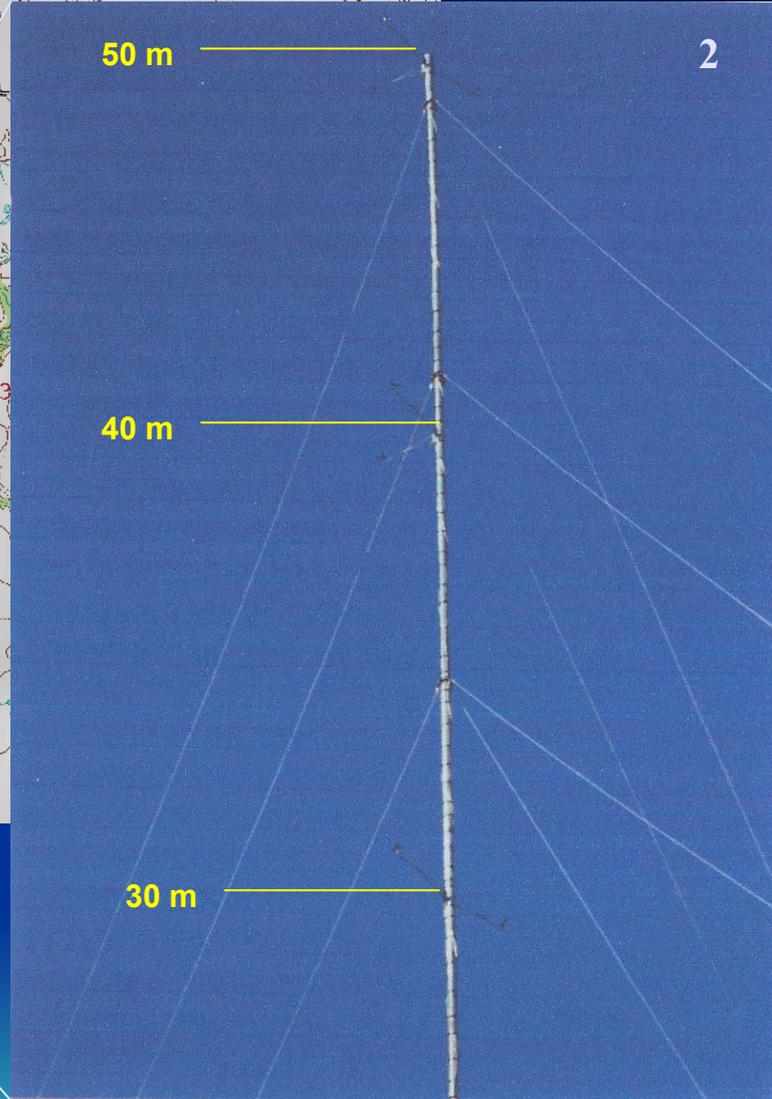


Test Site

2 =
Expanded
View

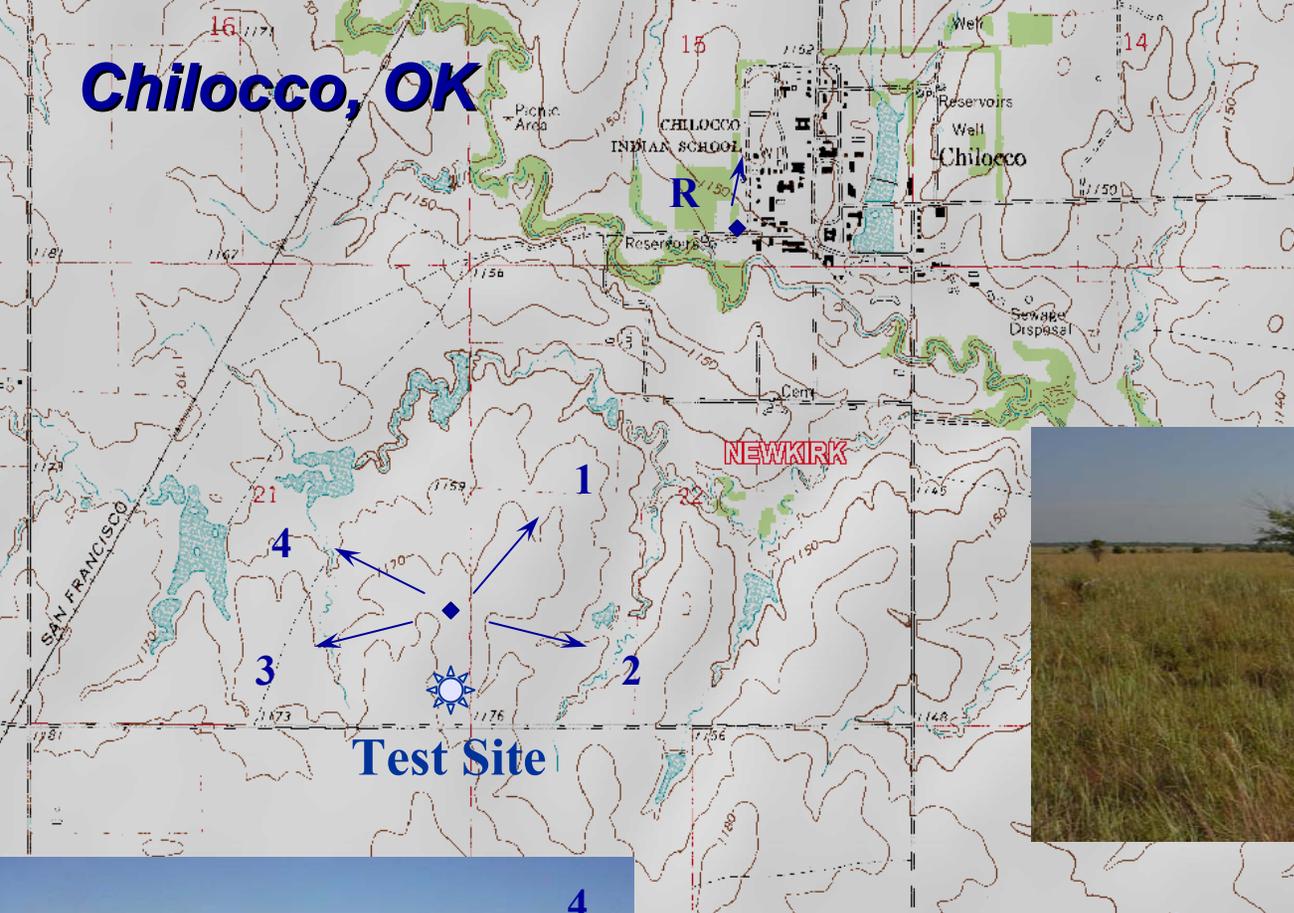


Chilocco 50-m Aerometer



Project Location (continued) Wind Monitoring Site

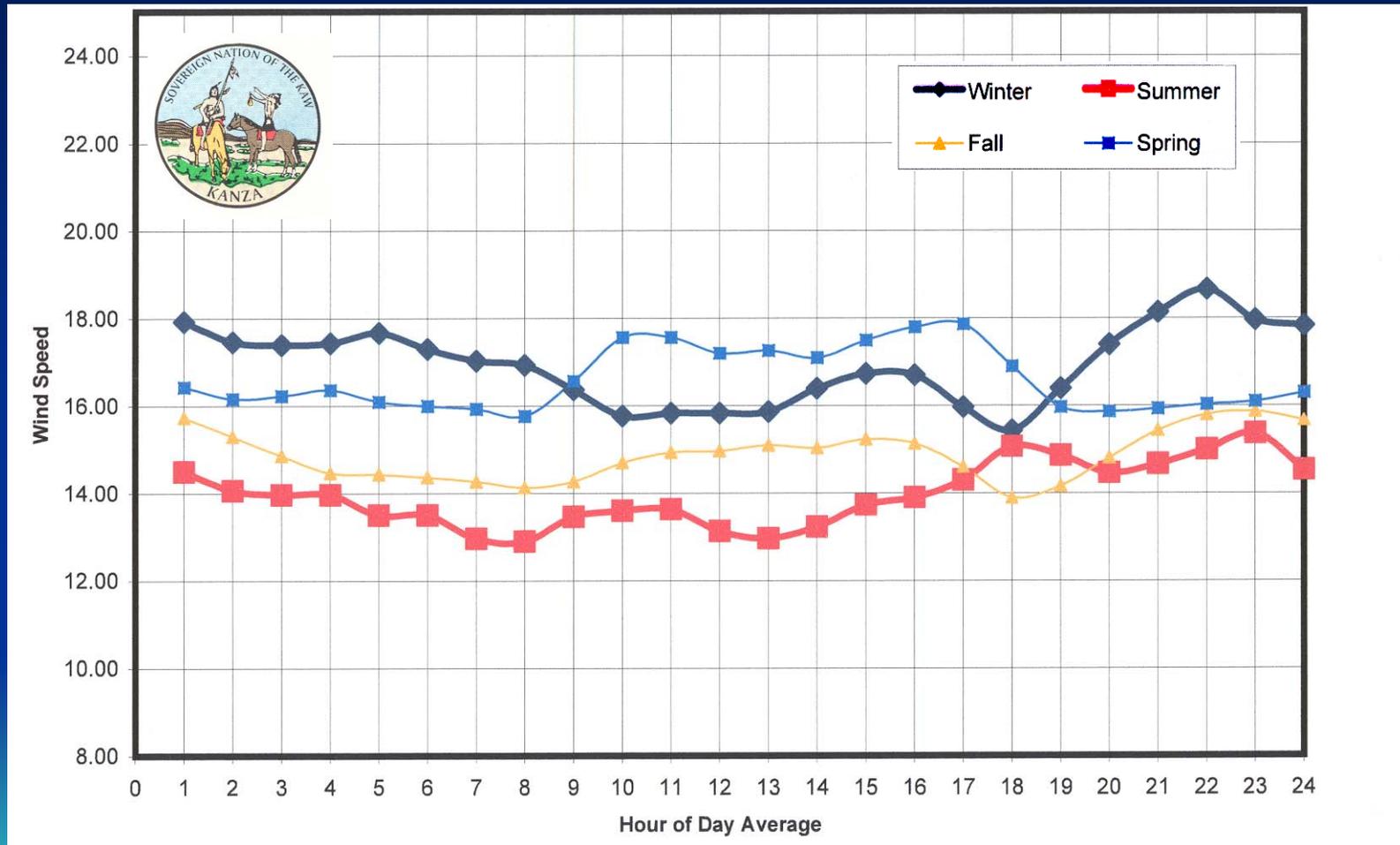
Chilocco, OK



Kaw Nation Wind Energy Project Updates

- ***Wind Summary 2006: Ave ~ 16 mph @50m***
- ***Feasibility Geotechnical Study Findings***
- ***Project Development Environmental & Cultural Activities***
- ***Ongoing Activities & Future Plans***

AVERAGE ANNUAL WIND SPEED, 2006

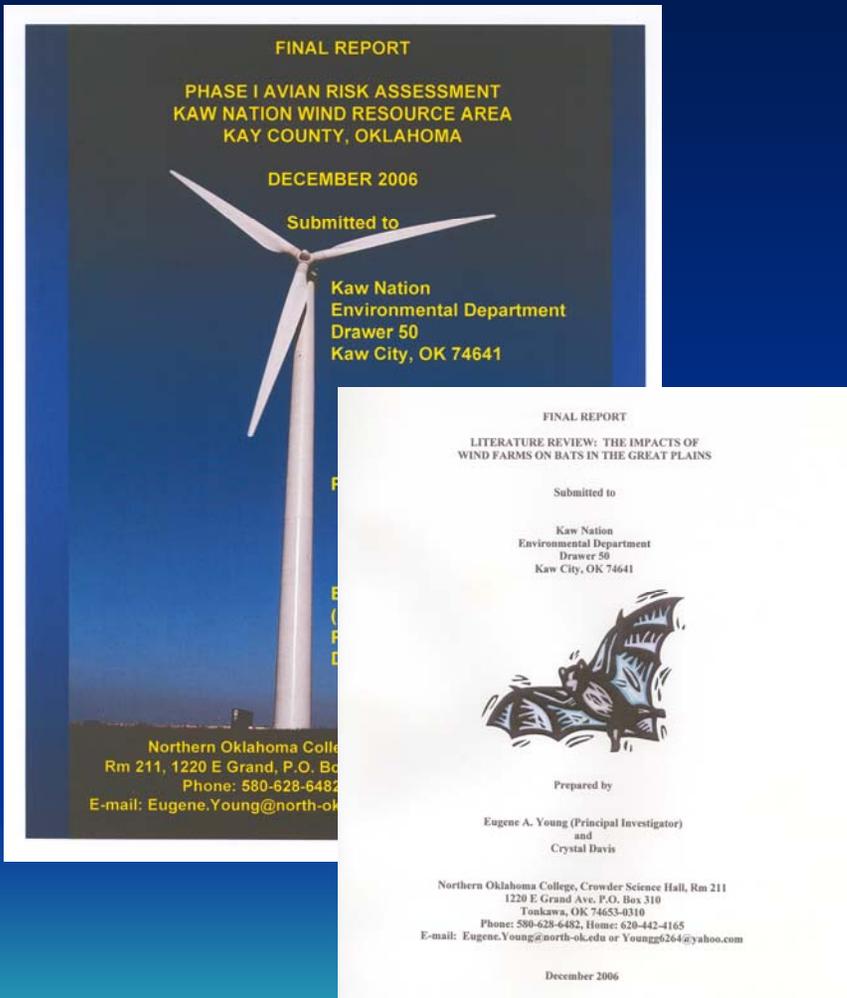


Geotechnical Studies



- **Feasibility Findings**
 - Site suitable for wind farm development
 - Requires proper grading
 - Foundation specs provided
 - **Main Geotech issue:**
 - Massive Spread footing foundation recom.
 - Consolidation under spread footings
 - High gw conditions in low areas
 - Earthwork:
 - proper site preparation & grading (provided recom.)
 - Proper groundwater drainage & mgmt
 - Roadwork: Provided recommendations

Environmental Studies



- **Feasibility Findings**
 - Site suitable for wind farm development (BIA & USF&WLS)
 - Additional Avian study completed
 - Bat Literature Review Completed
 - American Burying Beetle study (ABA pre-development) completed
 - From Avian Study:
 - Coordinated with BIA Regional Office and USF&WS (May 2005 to May 2006)
 - 19 of 33 birds of prey on or within 3 mi (4.8 km) WRA (LNI)
 - Little use of site by Eagles (farther east along Ark. R.)
 - 183 avian species identified (200 possible based on habitat)
 - Tall Grass Prairie habitat biologically fragmented but little impact
 - Most fed & state listed birds not impacted at sign. biological level
 - Some habitat displacement of sensitive species (e.g.: Amer. Golden-Plover, Upland Sandpiper); No collision mortality expected to be sign.
 - Will use BMP's prior & during construction
 - ABA studies 1-yr prior to ground breaking of project & during project approved by USF&WS
 - Small mammal study to be considered

Cultural Studies

Wind Project at Chilocco
Cultural Impact Study
Mail-In Questionnaire

Directions: Please answer the questions below as fully and as honestly as possible. Attach additional numbered sheets as necessary. When complete, please sign and date the attached release form and mail the questionnaire and any added sheets to the following address:

Wind Project at Chilocco
Cultural Impact Study
New House
Drews St.
New City, OK 74641

Please return the completed questionnaire to us by September 30, 2006. We will prepare a planning document summarizing your responses and those of others. It is our hope that the final document will not reflect any personal information from participants. However, we may choose to quote selected passages from your responses for use in the document. So, please do not refer to yourself by name or provide detailed personal information that may identify you from the other participants (your signed release form will be removed from the pages containing your responses and kept separately on file). Thank you for your participation.

1. Please state your tribal affiliation(s).

2. How old were you when you attended Chilocco, and how long were you there?

3. Whose decision was it for you to attend Chilocco, and what do you suppose were the reasons behind the decision?

of your classmates?

of your classmates?

- **Interview Findings**
 - **Developed Questionnaire for Chilocco tribal members**
 - Conducted Interviews from Jun 2006 to present
 - On going & Compiling results
 - **Main Feedback:**
 - Favorable development opinion from all members surveyed thus far
 - No sacred sites or concerns

Ongoing Activities & Future Plans

- 1) Continuing Chilocco Wind Monitoring and tower maintenance activities. New evaluations underway.***
- 2) Cooperating with Cherokees on correlation of tower data with SoDAR data and further project development.***
- 3) Pre-development Phase DOI-EAP Grant report to be submitted in Sept 2007.***
- 4) Intertribal Chilocco Council Meetings continue on mineral management and campus projects. Chilocco Campus is now a National Historic Site (Mar 2007).***
- 5) Developing coordination plan with Intertribal Council members to develop surface use land map.***
- 6) KN Executive Council providing tribal funding for Environmental & Cultural Studies which have accounts.***

Ongoing Activities & Future Plans (continued)

- 7) Kaw DOI 2007 Grant Status and DOE 2007 Grant aimed at Energy Use, Efficiency and Demand Optimization – No funding; however Cherokees were funded for transmission studies***
- 8) Negotiation with Utilities will be undertaken by Kaw Nation & Cherokee Nation***
- 9) Environmental & Cultural studies continuing***
- 10) Responded to OG&E Transmission Project within Kaw Service Area***

OG&E –Weststar Energy Announce Partnership

OG&E deal to provide energy boost

New line called 'win-win'

By Adam Wilmoth Business Writer
Oklahoman, Saturday, September 15, 2007
Page 1B

A partnership between the largest electric utilities in Oklahoma and Kansas could help keep the lights on throughout the region, Oklahoma Gas and Electric Co. said Friday.

OG&E and Topeka, Kan.-based Westar Energy announced plans for a nearly 80-mile transmission line that will connect OG&E's Sooner Power Plant near Red Rock to a Westar substation near Wichita, Kan. The new line will make it easier for power to transfer between the two systems, OG&E spokesman Brian Alford said.

"It's a benefit to OG&E customers in that it adds yet another avenue for the support of the system on a regional basis," he said. "By building this line, it helps improve the flow of energy off of our system to a neighboring system. It can also provide support to us when we may need it, such as if a major ice storm affects the system and we need to bring additional generation on the system from other areas."

'Cost-effective power transfers'

OG&E will be responsible for building the 40-mile segment south of the state line while Westar will construct the power system in Kansas.

The cost of the \$80 million project will be distributed among the members of the Southwest Power Pool, which covers Oklahoma and parts of seven surrounding states.

"This new line is truly a win-win for everyone," said Mel Perkins, OG&E's vice president of power delivery. "It will improve the reliability of the system and allow for cost-effective power transfers."

Because the upgrade is considered a reliability improvement, one-third of the costs will be spread out over all consumers in the region.

The remaining two-thirds will be shared among consumers in the zone that will receive the most direct benefit, including most customers in Oklahoma and Kansas, power pool spokeswoman Stacy Duckett said.

The cost of the project is divided throughout the region because all consumers in the area receive at least some benefit or reliability upgrades, Alford said.

"We're all integrated," he said. "As you can see from issues like the blackouts in the northeast a few years back, what affects our neighbors affects us. So it's always useful to enhance those pathways and enhance reliability."

What's next

OG&E and Westar still are working to finalize the route for the new line. The project is expected to be operational by late 2010.

- **Partnership between largest electric utilities in Oklahoma and Kansas**
- **OG&E will be responsible for building the 40-mile segment south of the state line while Westar will construct the power system in Kansas.**
- **Project Cost = \$80 million will be distributed among members of the Southwest Power Pool (covers Oklahoma and parts of seven surrounding states)**
- **Upgrade considered a reliability improvement, one-third of the costs spread out over all consumers in region**
- **Remaining two-thirds shared among consumers in zone receiving most direct benefit, including most customers in Oklahoma and Kansas**
- **Operational 2010**

Next Steps

- **Complete funding of Pre-construction Phase Activities (Utilities Agmts. & Bus Plan)**
- **Complete EA's and integrate into Project Rpt (NEPA action unlikely so far)**
- **Develop Business Plan**
 - **For financing and construction**
 - **Establish Operating Partner Agreement for benefit by PTC**



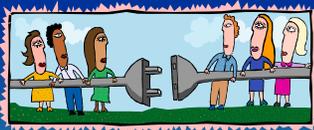
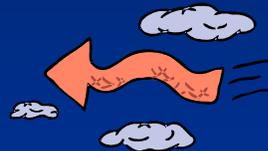
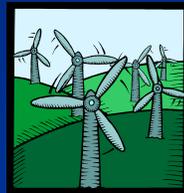
? Questions ?

Your Turn



Wiblahan

(Thank You)



BALANCE



Upcoming Energy Meetings

- ***AWEA WIND ENERGY FALL SYMPOSIUM, La Costa Resort & Spa, Carlsbad, California
November 1-2, 2007***
- ***COUNCIL OF ENERGY RESOURCE TRIBES
INDIAN ENERGY SOLUTIONS 2007
CONFERENCE, Pechanga Resort & Casino,
Temecula, California, November 28-30, 2007***