Objectives

- Assess wind resources on tribal lands
- Assess development costs/impacts:
  - Environmental
  - Cultural
  - Wildlife
  - Aesthetics
- Assess transmission capacity now & projected
- Assess gas co-generation feasibility
- Prepare economic models for tribal leaders
- Educate tribal members on project benefits
- Prepare DOE final report
Project Participants

- Landowners / Project Developers
  - Eastern Shoshone Tribe
  - Northern Arapaho Tribe

- Funding Assistance
  - DOE Tribal Energy grant $190,405

- Technical Assistance
  - Disgen

- Met Towers & Anemometry
  - DOE NREL
  - Wyoming Business Council
2.4M acre Wind River Reservation
2 High Wind Areas

3,938 Shoshone Members

• 8,806 Arapaho members
50m Met Tower – Sheldon Dome

18 months of meteorological measurements of wind speed at three levels, wind direction at two levels and temperature.
Wind Data Gathering

- 2 sites were evaluated
  - Bighorn Flats
  - Sheldon Dome
  - 3rd tower on Boysen Peak was blown over
- 4 more sites to be evaluated
  - Crow Creek (upper)
  - Crow Creek (lower)
  - Stagner Mountain (near WAPA line)
  - Mexican Pass (near RMP line)
Met Tower Locations

- Crow Creek upper
- Crow Creek lower
- Mexican Pass
- Big Horn Flats
- Stagner Mtn.
- Boysen Peak
Accomplishments

- Site visits by meteorologist
- Site visits by cultural expert
- Avian study completed
- 18 months of meteorological measurements
- Consistent wind direction
- Steady wind speed Class 4 and above
Wind Rose – Sheldon Dome

Percentage of Time at Speed & Direction

[Diagram showing wind direction and percentage of time spent at each speed and direction]
Wind Speed at 30m & 50m
Average Speed by Time of Day

Hourly Average Wind Speed

Hour of Day Averaged Over 12 Months
Lessons Learned So Far

- The NREL’s wind power classification for the Sheldon Dome area is Class 3 (Fair) 12 miles West/North would likely result in significant speed increases.
- Virtually all 60 sq mi west and north is tribal land.
- Most is level with sandy soil that is amenable to wind farm construction.
Activities Yet to Be Completed

- Collect 1+ year of wind data
  - Crow Creek (upper & lower)
  - Stagner Mountain & Mexican Pass
- Transmission Capability Review
  - Evaluate construction costs & options
- Pre-Market Review
  - Local utility has indicated interest
- Wider cultural/archaeological Review
- Evaluate Co-generation with Gas Turbine
Wyoming Proposed Transmission
Development Steps for 2 Projects

- Educate Tribal & community members on wind energy
- Get the regulatory colossus in motion
- Current & projected transmission status
- Firm up gas turbine co-generation feasibility
- Identify likely power purchasers
- Identify possible construction companies
- Identify likely investors including Native American
- Develop a Business Plan
- Prepare RFPs
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