U.S.D.O.E. Tribal Energy Program Review

Energy Options Analysis and Organization Development:

A First Steps Project Overview

October 20, 2005

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Discussion Outline

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- Project Objectives
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- Project Approach
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  - Utility Organization Analysis
  - Project Benefits Assessment
  - Implementation Plan
- Project Contacts

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WINNEBAGO TRIBE OF NEBRASKA

Background

The Winnebago Tribe of Nebraska

- Located ~ 20 miles south of Sioux City, IA and 80 miles north of Omaha, NE
- Home to ~ 2,600 residents of the Reservation (and ~ 80 bison)
- Consists of 120,000 acres of cropland, woodland, and pasture in northern Thurston County; ~ 1,800 acres spans into western Iowa
- Tribal members own ~ 30% of Reservation acreage
- Reservation employment sectors include:
  - Health & education services
  - Manufacturing
  - Agriculture
  - Public administration
  - Retail trade

- Tribal enterprise entity, Ho-Chunk, Inc. has been successful economic development resource – casino & convenience stores significant contributors
- Current & future expansion efforts include housing, RV park & motel, and 18-hole golf course
- Next frontier: *energy*

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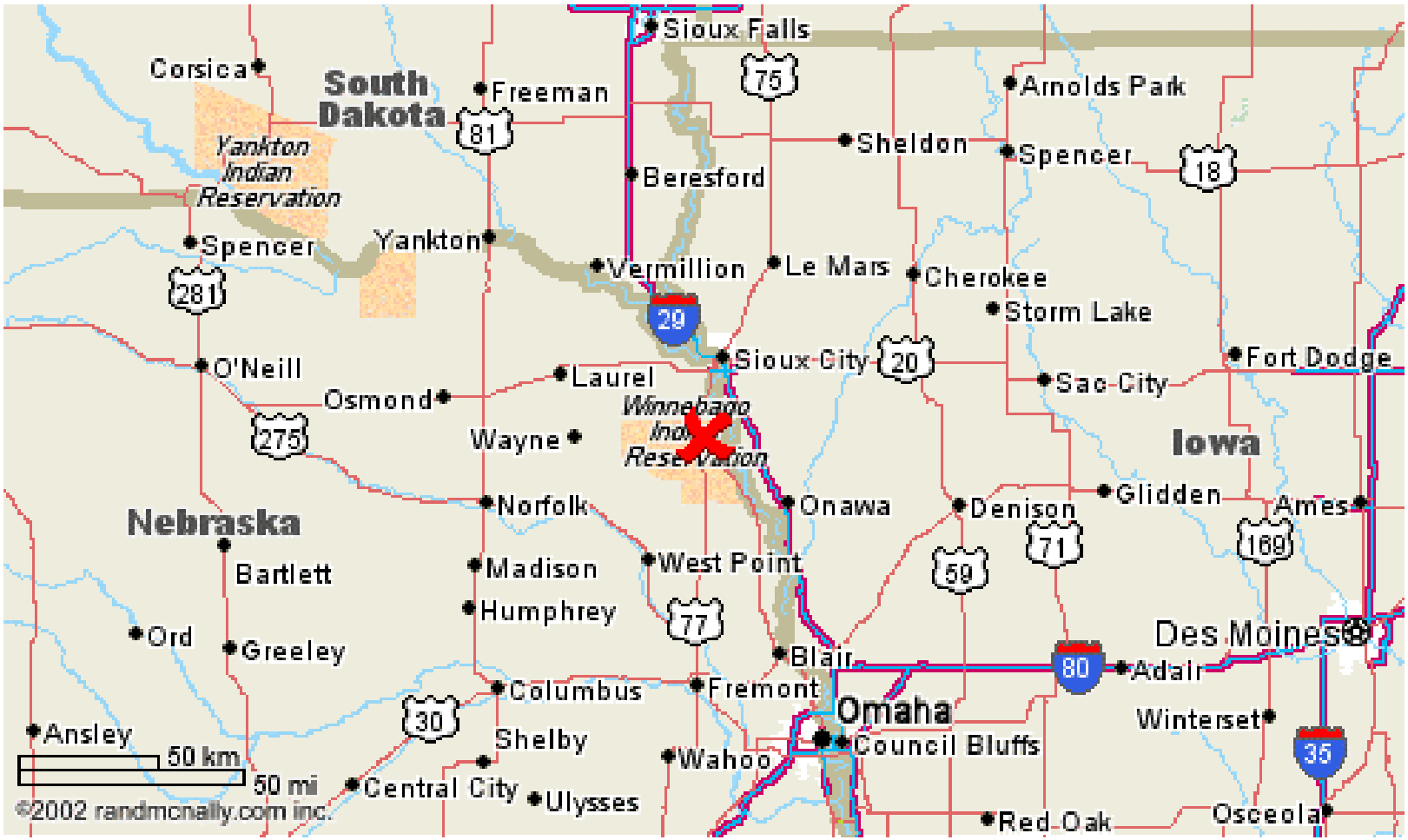
WINNEBAGO TRIBE OF NEBRASKA

Background: Winnebago Area Map



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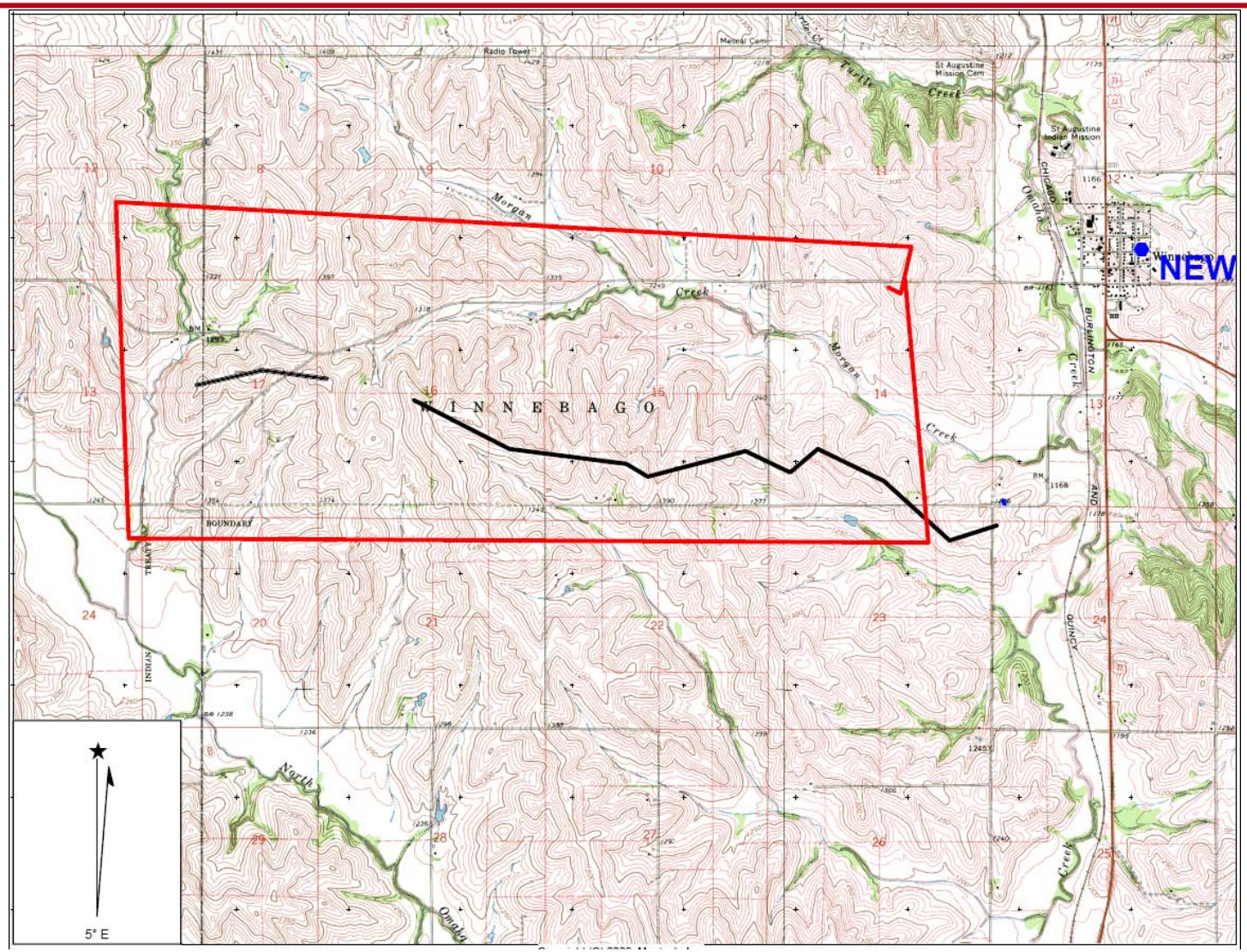
Background: Winnebago Topographical Map



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Background

Leveraging Prior and Future Work

- **Prior Work Conducted:**
  - BIA grant awarded to the Tribe in 2004
  - "Energy Needs Analysis and Impact Assessment for the Winnebago Tribe of Nebraska" completed in September 2004; deliverables included:
    - basic energy primer
    - reusable data/information collection tool for energy resource planning
    - Tribe-specific resource data
    - comprehensive listing of federal and state leveraging resources (grants, loans, incentives) available to assist Tribes in energy matters
    - project development and utility formation guidebooks
  - Previous work provided foundation for executable plan
- **"First Steps" Project** will provide specific roadmap and prerequisite for ultimate project feasibility/development

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Background

Leveraging Prior and Future Work

- **Prior Work Conducted, Continued:**
  - 20 Meter Anemometry Conducted Under NREL Native American Anemometer Loan Program in 2001/2002
    - single turbine considered to serve Winnavegas Casino
    - average monthly load of 20,000 kWh warranted 50-150kW size
    - economic analysis suggested marginally break-even proposition
  - New Considerations:
    - Casino, and therefore 20 meter met tower, located at suboptimal site
    - newer regional wind data indicates Class 4 wind on Reservation and Class 6 in surrounding area
    - improvements in 2006 turbine technology expected to yield 30%+ capacity factors in Class 3 wind and higher
    - competing energy costs increasing
    - significant transmission capacity suggests export viability

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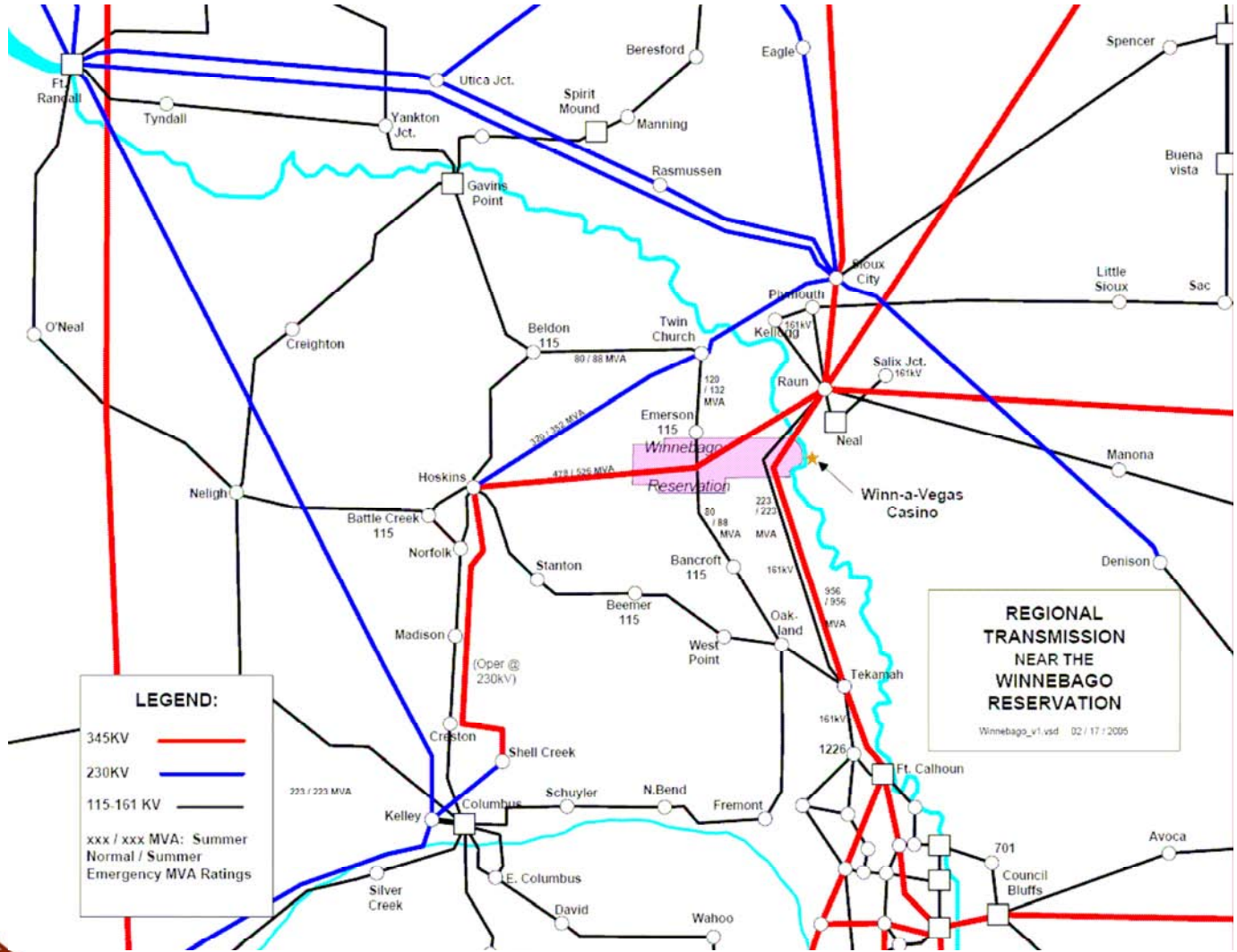
Background: Regional Transmission



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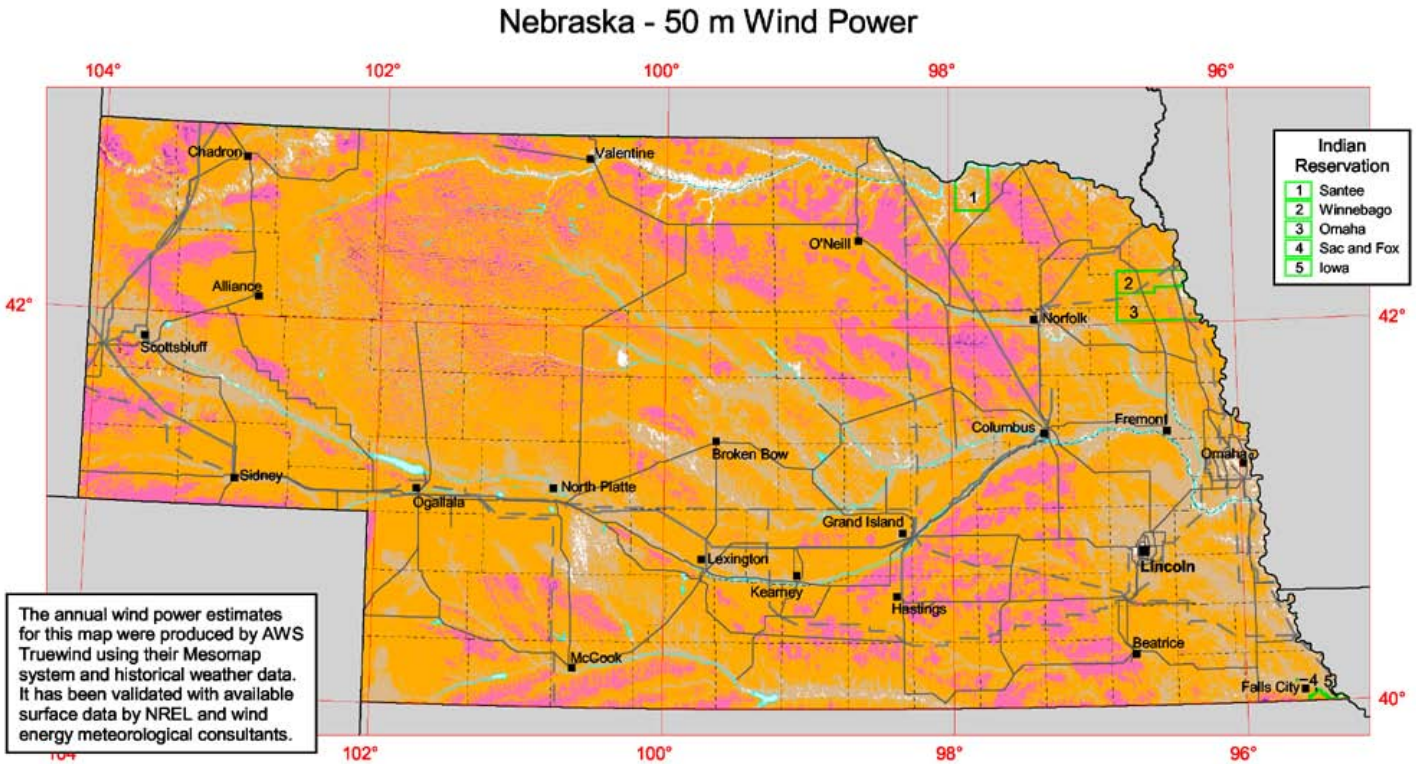
Background: Wind Resource



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Background

Leveraging Prior and Future Work

- **Ongoing and Future Work:**
  - NREL Tall Anemometer Loan secured in August 2005
  - Tribal Energy Committee examining both self-supply and power export options for wind generation
  - Further feasibility analysis will be required
    - Design Projected Output report
    - turbine specification
    - power market assessment (if export warranted)
    - transmission studies
    - project architecture
      - pro forma analysis
      - partnership, structure
      - leveraging instruments
      - project finance
  - Utility organization, other resource planning options TBD as part of “First Steps”

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WINNEBAGO TRIBE OF NEBRASKA

Project Objectives: The Winnebago Strategic Energy Vision

WINNEBAGO TRIBE OF NEBRASKA

MISSION, VISION & GOALS

energy

Energy Vision:

The Winnebago Tribe of Nebraska is committed to assure availability of safe, reliable, affordable, and clean energy to all its members; To further the Tribe's goals for self-sufficiency and self-determination through empowerment in the Tribe's energy interests; to ensure adequate supply and quality of energy to meet the Reservation's present and future needs; and, thereby, contribute to the economy of the Winnebago Tribe of Nebraska, consistent with the Tribe's dedication to improvement of health, welfare, and social and economic self-sufficiency of the Winnebago People.

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Project Objectives

Project Objectives in Support of the Strategic Energy Vision

1. Analyze energy management options as a whole, with goals of improving reliability, safety, and lowering *electricity* costs in particular.
2. Analyze options for formation of a Tribal energy organization, which can best enable the Tribe to achieve its energy management goals.
3. Validate the recommended options for execution, based on a Benefits Assessment that examines utility service quality, local and regional environmental benefit, employment growth, economic and community development, and contribution to Tribal knowledge base, self-sufficiency, human and/or organizational capacity.
4. Develop an Implementation Plan to carry out the ideal options discovered during the course of the study.

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Project Approach

Task 1: Energy Options Analysis

- Assessment of overall energy resource options:
  - Conservation, demand management, and energy efficiency;
  - Self-supply through on-Reservation renewable generation;
  - Fuel volatility hedging through renewable generation; and
  - Power export from on-Reservation renewable generation.
- Evaluation of current and forecasted Reservation load
- A high-level (pre-feasibility) examination of:
  - generation technologies
  - power export feasibility
  - potential power markets
  - finance alternatives
  - leveraging incentives
  - estimates of achievable levelized energy costs

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Project Approach

Task 2: Utility Organization Development

The scope of this study will include evaluation of three potential organizational configurations, and will consider whether an optimum approach for each would also entail authority over non-energy services (water, waste, telecommunications).

- A Utility Authority or Tribal Energy Office (“Oversight Authority”) that oversees/regulates some or all energy and non-energy Reservation utility services;
- A Utility Authority (“Operating Authority”) that manages and operates some or all energy and non-energy Reservation utility services; and
- A Utility Authority (“Generation Authority”) that takes part in developing/operating renewable generation. This option may also include delivery system ownership/operation.

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Project Approach

Task 3: Benefits Assessment

The purpose of Task 3 will be to assess the overall benefits of the recommended energy management options (the ideal mix of generation, energy efficiency, and load management) as identified in Task 1, and the recommended energy organization as identified in Task 2.

- not intended to be a rigorous cost/benefit analysis or overall pro forma
- rather, will comprise a qualitative assessment of benefits, including consideration of comparative implementation costs, as well as benefits associated with recommended project options

Overall factors for consideration will include (but not be limited to):

- local and regional environmental benefits
- improved employment conditions
- enhanced economic and community development
- contribution to self-sufficiency and human capacity, and
- benefits to Tribal electricity users through lower bills and enhanced reliability

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Project Approach

Task 4: Implementation Plan

Task 4 will comprise the development of an Implementation Plan to carry out the recommended energy options identified in Task 1, and formation of the optimum energy organization identified in Task 2.

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Project Contacts

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