WIND GENERATION FEASIBILITY STUDY IN BETHEL, ALASKA: Status Report

Presented to:
U. S. Department of Energy
November 18, 2003

YKHC Wind Generation Feasibility Study:

Agenda

- Project Overview
- Project Location
- Project Participants
- Objectives
- Project Status
- Future Plans
- Questions

YKHC Wind Generation Feasibility Study:

Project Overview - Purpose

- Feasibility study for installation of wind turbines in Bethel, Alaska and surrounding Alaska Native communities in YKHC territory.
- Power produced will serve YKHC facilities.
- Energy cost savings resulting from this project would allow the YKHC to direct more money toward its core mission of providing quality health care to the Alaska Native communities in the Yukon-Kuskokwim Delta region

YKHC Wind Generation Feasibility Study:

Project Overview - Project Description

- 12 months of wind monitoring at 4 locations.
- Analysis of wind energy feasibility at each of three YKHC facility types (i.e. Regional Hospital, Sub Regional Clinic, and Village Clinics.
- Quantification of financial costs and benefits.
- Research and analysis of non-quantifiable costs and benefits.
- Preliminary design.
- Implementation plan/Business case.

YKHC Wind Generation Feasibility Study:

Project Overview - Project Benefits

Economic

- Reduced energy costs
- Short-term and long-term employment opportunities

Environmental

- reduced emissions
- reduced fuel handling and transport

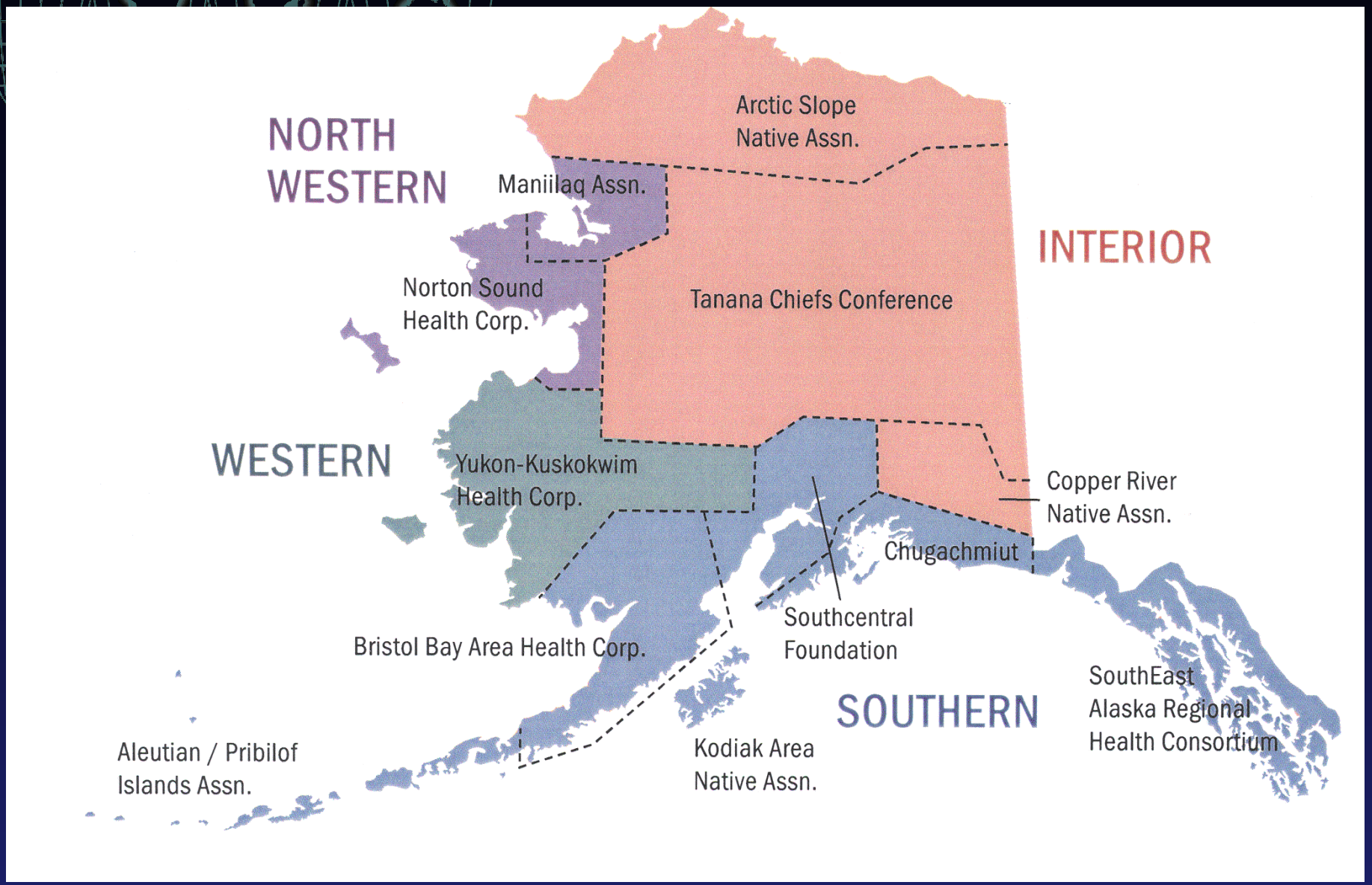
Social and Cultural

- greater self-sufficiency

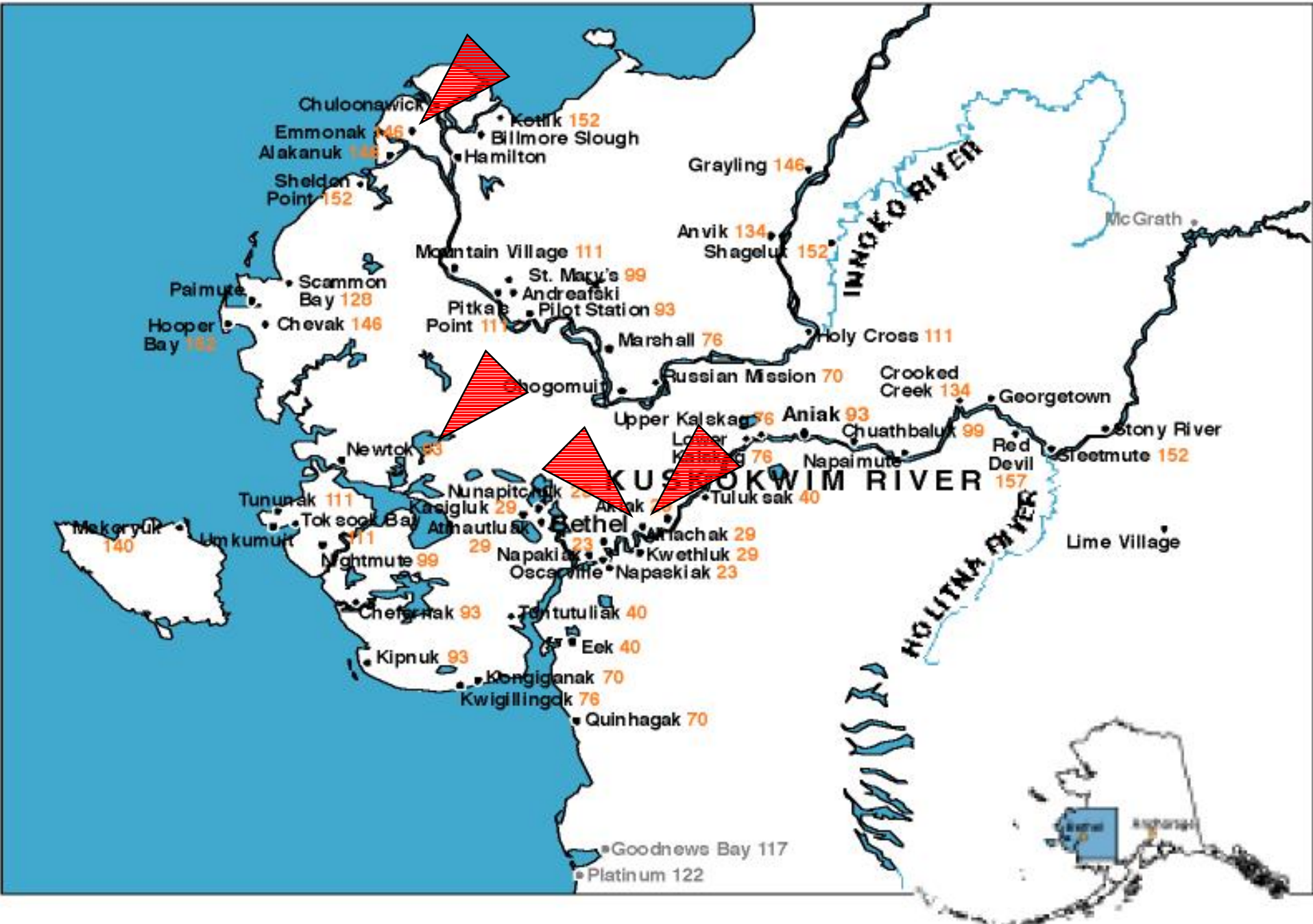
YKHC Wind Generation Feasibility Study:

Project Location

YKHC Wind Generation Feasibility Study:
Project Location



Air Miles from Bethel



YKHC Wind Generation Feasibility Study:
Project Participants

- Yukon – Kuskokwim Health Corporation
- Alaska Native Tribal Health Consortium
- Newcomb Anderson Associates

YKHC Wind Generation Feasibility Study:

Project Participants - Yukon-Kuskokwim Health Corporation

YKHC administers a comprehensive health care delivery system for 58 rural communities in southwest Alaska. The system includes community clinics, sub-regional clinics, a regional hospital, dental services, behavioral health services including substance abuse counseling and treatment, health promotion and disease prevention programs, and environmental health services.

YKHC Wind Generation Feasibility Study:

Project Participants - Yukon-Kuskokwim Health Corporation

YKHC Wind Generation Feasibility Study:

Project Participants - Yukon-Kuskokwim Health Corporation

YKHC is a tribal organization. Each of the 58 communities is its service area is a federally recognized Tribe. Each Tribe's governing council has authorized YKHC to act in it's behalf in negotiating with the Federal Indian Health Service to provide health care services under Title III of the Indian Self-Determination and Education Assistance Act of 1975.

YKHC Wind Generation Feasibility Study:

Project Participants - Yukon-Kuskokwim Health Corporation

<-Nightmute Clinic

McCann Center ->
(Inhalant Treatment)

YKHC Wind Generation Feasibility Study:

Project Participants - Yukon-Kuskokwim Health Corporation

YKHC, along with 12 other Tribal Organizations, is a co-signer to the Alaska Tribal Health Compact, a consortium which negotiates annual funding agreements with the federal government to provide health care services to Alaska Natives and Native Americans throughout the state.

YKHC Wind Generation Feasibility Study:

Project Participants - Alaska Native Tribal Health Consortium

- ANTHC is a statewide non-profit consortium of Alaska Native Tribes and Tribal Health Organizations
- 1,350 Full Time Staff

YKHC Wind Generation Feasibility Study:

Project Participants - Alaska Native Tribal Health Consortium

Department of Environmental Health & Engineering (DEHE)

Sustained Operations	Environmnetal Health Services	Central Engineering Services	Regional Facilities Programs
O&M Central Supply RUC	Institutional Envron Consult Injury Prevention Safety Fluoridation	Statewide Standards & Processes Advisory Committees	Sanitation Projects M&I Projects Clinic Projects

In partnership with the Native communities we serve, DEHE:

Promotes sustainable economies

Develop community infrastructure

YKHC Wind Generation Feasibility Study:

Project Participants - Newcomb Anderson Associates

- Newcomb Anderson Associates has been a leader in energy engineering and consulting, program development, full service implementation, follow-up services and specialty products since 1983
- The firm offers a full array of energy engineering, consulting, program development and implementation products and services
- Performed thousands of energy audits for utilities, local, state and federal governments, and private sector clients
- Instrumental in helping ANTHC identify over $560,000 in annual energy savings at three sites.

NEWCOMB ANDERSON ASSOCIATES

YKHC Wind Generation Feasibility Study:

Project Objectives

- Analyze/verify the economic, environmental, social and cultural benefits of initiating a market shift to the development of renewable/sustainable energy generation on Tribal Lands
- Develop a road map for the successful implementation of a wind generation project if the results of the feasibility study so warrant

YKHC Wind Generation Feasibility Study:

Project Status

- Four anemometer towers erected and began collecting wind data in February - April 2003
- Sites chosen such that threatened bird species are not affected. Successfully preventing non-threatened migratory birds from colliding with towers using “Bird-flight Diverters” on tower support wires
- Search for appropriate wind turbine technology converging on specific 50 kW, 10 kW, and 1 kW units, should the feasibility study warrant plant construction

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Transporting anemometer equipment to Bethel

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Top of an anemometer tower in Bethel, prior to raising

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Raising the anemometer tower in Emmonak

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Tower base and support wire anchoring

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Operating anemometer in Bethel and Data Collection

YKHC Wind Generation Feasibility Study:

Project Status - Anemometer Installation

- Operating anemometer in Newtok with Bird Diverters

YKHC Wind Generation Feasibility Study:

Project Status - Impact on Endangered Species

- Endangered Species in YKHC region:
  - Spectacled Eider
    Endangered Species Act Status: Threatened
  - Steller's Eider
    Endangered Species Act Status: Threatened

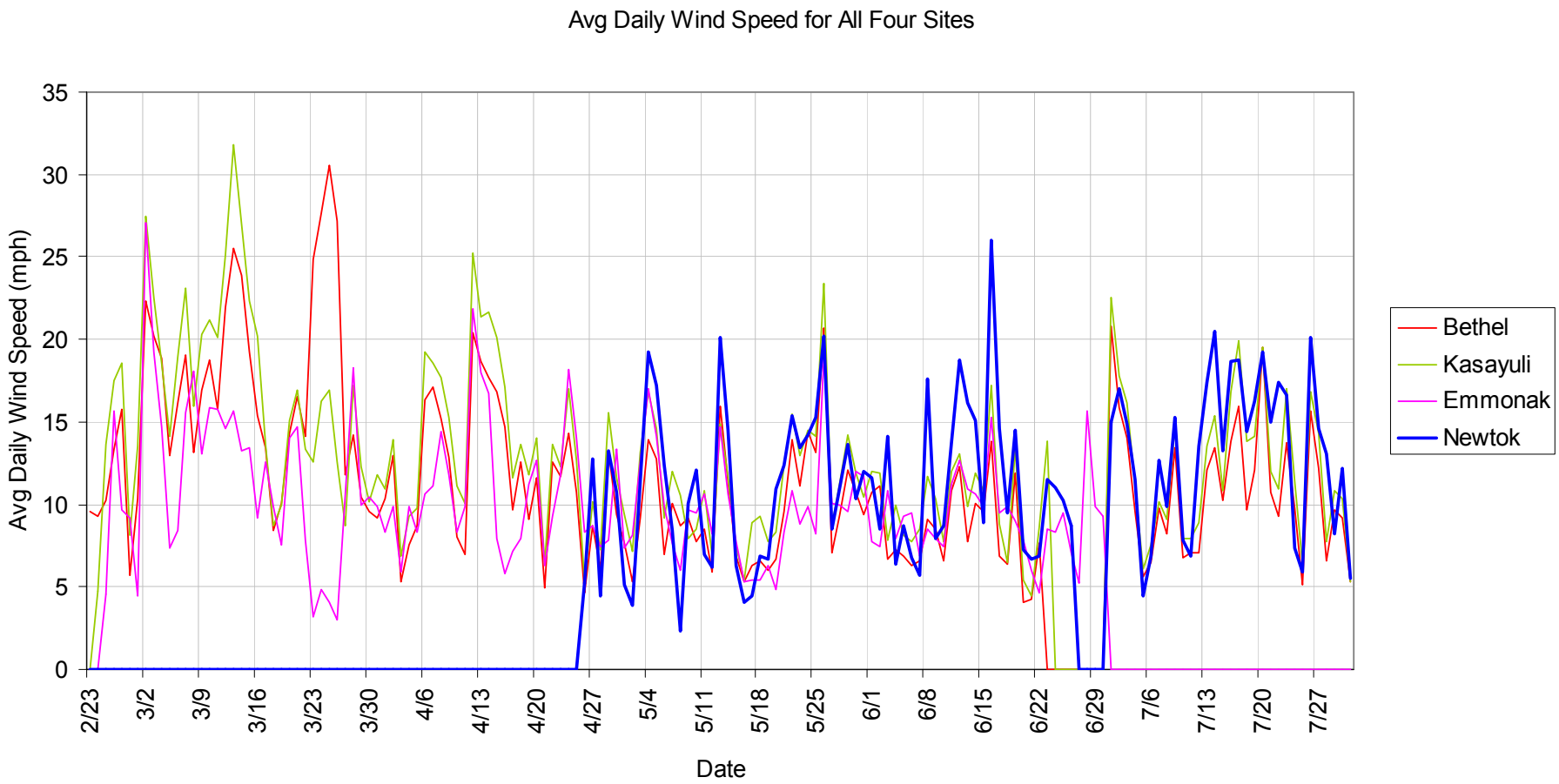
YKHC Wind Generation Feasibility Study:

Project Status - Impact on Endangered Species

- Sites chosen based on United States Fish and Wildlife Service's "Low Concern" for eider-related issues
  - Low concern for Newtok, Emmonak, and Bethel

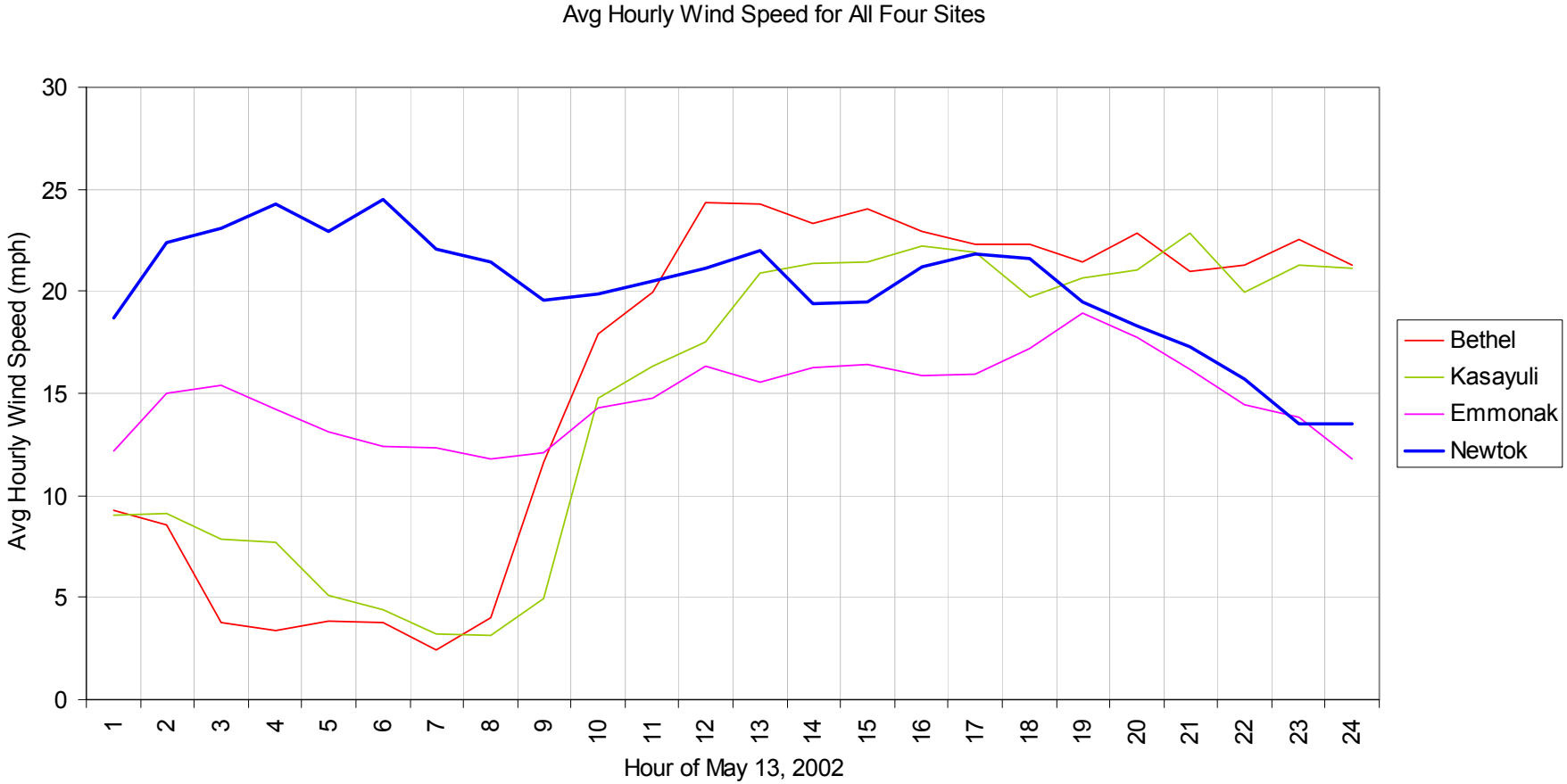
- U.S. Fish and Wildlife Service indicates that the 20-meter anemometer towers at these sites will have no affect upon threatened species

YKHC Wind Generation Feasibility Study:
Project Status - Collected Wind Data



YKHC Wind Generation Feasibility Study:

Project Status - Typical Daily Wind Data



YKHC Wind Generation Feasibility Study:

Activities Yet to be Completed and Future Plans

- Continue to collect wind data until a full year's worth is gathered.
  - Wind speed and direction continuously at 10-minute intervals
- Use compiled year's worth of data to determine generation potential at the four anemometer sites and quantify benefits.
- If resources warrant, propose appropriate wind turbine power plants at the sites.

YKHC Wind Generation Feasibility Study

- Questions?