Report on Grant # 2195377

2nd reporting period ending 31th July 2010

Grantee : Northwest Arctic Borough

Project name :

Buckland, Deering, Noorvik Wind Farm Construction

-Ingemar Mathiasson, Energy Coordinator, NWAB, Kotzebue

prepared by:

-Matt Bergan, PE WHPacific, Inc. – Kotzebue

Milestone 1 Progress

Work on Milestone 1 for the NWAB wind-diesel power systems project in Noorvik, Buckland and Deering is progressing.

The project will proceed in accordance with the AEA-NWAB grant agreement in terms of sequentially completing project "milestones". WHPacific is working on milestone 1 and will be accomplishing the following:

- ***Updating and completing the project execution plan (PEP)***. A draft plan had been assembled in 2009 and the update will take into account the new schedule and and scope variations.
- ***Updating and completing wind resource assessments for each community and conducting feasibility reports for each***. WHPacific estimates that sufficient data has been collected for Deering and Buckland but additional data will be needed in Noorvik.
- ***Re-deploying met towers***. A met tower will be redeployed in Noorvik in July 2010 and possibly in Buckland at a location closer to the village along the gravel pit road.
- ***De-mobilizing towers back to AEA once wind studies are complete***. Towers will be taken down once sufficient data is collected and has been analyzed.

The PEP (project execution plan) is being updated and will be complete in August for review and comment.

Work has begun on tabulating all available wind data from each site and summarizing the data. V3 Energy, LLC is working with WHPacific on this portion of work. The format and content of the feasibility study is being analyzed for compliance with the requirements of the AEA milestone. Financial and energy data are being collected that will be used with the wind resource data to begin modeling and other analysis, including HOMER.

Milestone 1 will be completed for Deering and Buckland in Fall 2010 based on enough wind data capture over the preceding years. Noorvik wind data collection will need to resume until sufficient data is collected. Noorvik Milestone 1 completion is expected in Spring/Summer 2011.

Individual Community Updates

Buckland

Teleconference with City of Buckland Electric utility and Kotzebue Electric Association (utility support organization) is planned for Summer 2010 to discuss the project in more depth as to the role of the utility and how the project will be operated and supported once commissioned.

WHPacific will continue to work with Tim Gavin of Buckland to collect data from the met tower. New data card will be changed out in August 2010. V3 Energy tabulating Clem Mountain data into a site resource summary.

Figure 1. End of the single phase 15kV power line leading towards Clem Mountain (gravel pit and met tower location). Existing line will need three phase conversion depending on turbine selection.

Deering

A brief meeting was held with the Ipnatchiaq Electric manager Ruth Moto-Hingsbergen following the NWAB Energy Steering Committee meeting on July 16, 2010. Ipnatchiaq reminded the project team that they need to be consulted on all decisions in the project and be involved with information flow. As the feasibility study progresses, Ipnatchiaq input and comment will be more frequent when considering wind-diesel system options and scenarios. Ipnatchiaq's concern about keeping the diesel generators operating within the manufacturer's load parameters was reiterated. Ipnatchiaq also expressed concern about O&M support of the wind-diesel equipment.

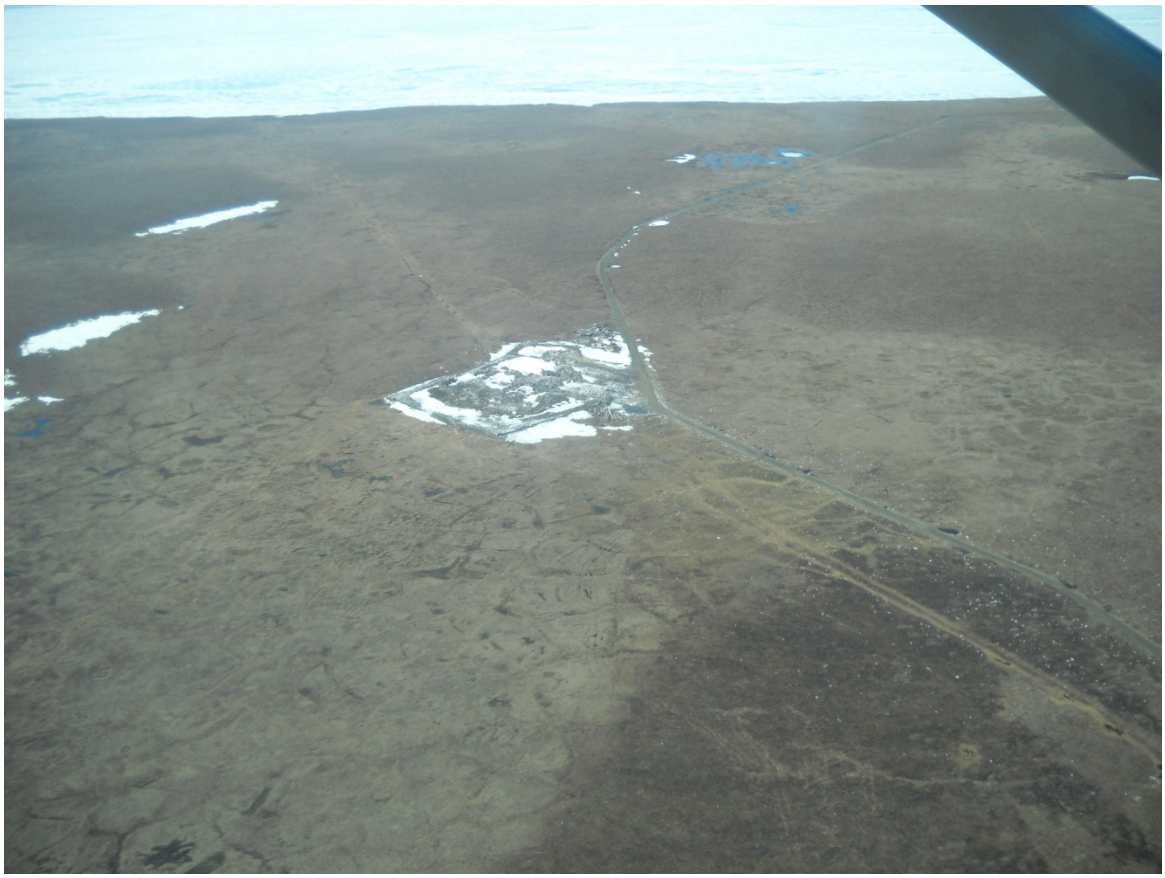

Figure 2. Aerial view of potential Deering wind turbine site (current location of met tower). Site is just above center of picture.

A teleconference with Ipnatchiaq Electric utility is planned for Summer 2010 to discuss the project in more depth as to the role of the utility and how the project will be operated and supported once commissioned.

Figure 3. Discussion about the existing diesel control system during May 2010 site visit.

Noorvik

The community informational meeting planned for July 15, 2010 was postponed due to scheduling conflicts with other regional meetings (Maniilaq Association). AVEC is planning to attend the rescheduled meeting on August 3rd in Noorvik.

Met tower move to the original met tower location now planned for early-August, 2010. A turbine site closer to town with a favorable wind resource may provide the best means of balancing power line extension cost with overall project cost.

AVEC, NWAB and WHPacific discussed the Noorvik wind regime and other project topics on July 7, 2010. AVEC is working with turbine manufacturers to develop rotor designs for improved low wind speed energy capture. AVEC serves many villages that have moderate/good wind regimes that have very high fuel costs. Utilizing a turbine that is tuned for lower wind regimes can make wind-diesel projects in these communities more successful.

Also discussed on July 7th :

1) NWAB Title 9. Met tower site is currently permitted. Once turbine site is selected the Title 9 process will need to begin as early as possible. FAA permit/communication is an input to the title 9 application. Noorvik gravel site is now permitted for use.
2) FAA permitting. New FAA obstructions rep in Anch (Robert VanHastert) will be better to work with in determining a turbine site in the vicinity of the Noorvik airport. Need to find optimum site in terms of powerline cost and wind resource potential along gravel pit road. By first determining what the FAA is ***not*** OK with will expedite that selection process.
3) FWS permitting. AVEC has good experience with FWS at inland sites like Noorvik. Robin Reich with Solstice Consulting has worked this process on other AVEC wind projects. At least a 30 day process.
4) NWAB-Utility MOU. MOU will be resent to the City of Noorvik so they are informed on the project.
5) Turbine selection. AVEC working with Northern Power to investigate a low-wind regime B model NW100. Alternative to the NW100 could be the Vestas V-17 (remanufactured). Vestas V-15 model at KEA wind farm (similar to V-17) has worked well since install (2007). V-17 has an induction generator which is a consideration for system integration. V-17 available at less cost than NW100, but integration into a small grid in a manner that avoids power quality issues associated with a large induction load will be an additional cost and maintenance issue.
6) Noorvik meeting will take place on July 15th (now rescheduled for August 3rd) to try to utilize the summer season as best as possible.