

## Bethel Wind Farm Construction

<b>Grantees</b>	City of Bethel (Local Government)
<b>Technology Type</b>	WIND
<b>Region</b>	Lower Yukon-Kuskokwim
<b>AEDG Project Code</b>	10069

### REF Grants Received

Round	App	Grant Title	Grant #	AEA Project #	Phase	Start Date	End Date	Status
1	122	Bethel Wind Farm	2195432	410034	Final Design	8/20/08	9/30/16	Active

### Grant 2195432: Bethel Wind Farm

**Project Scope:** This grant was fully funded and contains \$399,777 from a Round 0 Denali Commission grant, \$2,598,320 from Round I of the Renewable Energy Fund (REF) and \$199,889 from the grantee. The grant includes funding for the conceptual design, final design, and construction of a wind farm in the City of Bethel. The Denali Commission application proposed the installation of one Northern Power NW100b wind turbine and the Round I application proposed an additional three NW100b turbines. The electrical demand in Bethel warrants investigating wind turbines larger than the NW100b and the project will analyze multiple turbine sizes and types as part of the conceptual design. The final design will be based on the conceptual design. It is anticipated that the conceptual and final designs will recommend megawatt scale wind turbines and that additional funding will be sought to complete an expanded project.

**Project Status:** The City of Bethel was the applicant for the Denali Commission and Round I REF grants. The purchase of Bethel Utilities Corporation (BUC) by Alaska Village Electric Cooperative (AVEC) has been approved by the Regulatory Commission of Alaska (RCA) and completed. The City of Bethel has transferred this grant to AVEC. The City of Bethel (COB) is using Legislative Appropriation Grant #2195257 at the direction of AVEC to perform feasibility analysis of the wind resource in support of the project. TDX Corporation is performing feasibility analysis and conceptual design work funded through Round IV of the Renewable Energy Fund under a Memorandum of Understanding (MOU) with AVEC. The funds from this grant will be used to complete 65% and 95% designs with the balance going toward construction of a wind turbine and integration controls in the community. It is anticipated that AVEC will be seeking additional funds for construction of an expanded project.

Site control discussions for the location of met towers and wind turbines between AVEC and COB have been ongoing. TDX has completed an initial analysis of the Bethel electrical grid and power plant along with a baseline feasibility analysis of low, medium, and high penetration conceptual designs for the Wind-Diesel System. A proposal from AVEC to upgrade the switchgear at the power plant using the Denali Commission funds, prior to completion of the TDX feasibility study, is has been approved. A typical wind-diesel system would use electrically governed generators and automatic switchgear. Due to the age of the generators, and the expense of replacing them, fully modernizing the system is not feasible. While limited by the mechanically governed generators, the switchgear can be upgraded to incorporate greater amounts of wind generated electricity and testing an upgraded system would help identify additional necessary components prior to completion of the final design; this would reduce the amount of uncertainty in the cost and risk associated with construction.

As of Nov. 30, 2013	Budget	Expenditures
Renewable Energy Funding	\$2,598,320.00	\$2,030.80
Other State Funding	\$399,777.00	\$0.00
<b>Total State</b>	<b>\$2,598,320.00</b>	<b>\$2,030.80</b>
Required Local Match	\$199,889.00	\$17,655.00
Federal Grant Funding	\$399,777.00	\$19,253.20
<b>Total Project Costs</b>	<b>\$3,197,986.00</b>	<b>\$38,939.00</b>