

## Tazimina Hydroelectric Project Capacity Increase

<b>Grantees</b>	Iliamna, Newhalen, Nondalton Electrical Coop. (Utility-Cooperative)
<b>Technology Type</b>	HYDRO
<b>Region</b>	Bristol Bay
<b>AEDG Project Code</b>	10414

### REF Grants Received

Round	App	Grant Title	Grant #	AEA Project #	Phase	Start Date	End Date	Status
6	908	Tazimina Hydroelectric Project Capacity Increase	7060908	407098	Final Design	7/1/13	6/30/16	Active

### Grant 7060908: Tazimina Hydroelectric Project Capacity Increase

**Project Scope:** Iliamna Newhalen and Nondalton Electric Cooperative (INNEC) will conduct a feasibility study to determine if the capacity of the existing Tazimina Hydroelectric Project should be increased by replacing either one or both of the existing turbine-generator units with larger generating units. Increased generation capacity will allow INNEC to capture additional energy that is available at the project site. Current annual generation is in excess of 4 million kWhs. Of this amount, hydropower generation currently supplies an average of 82% of the power generated, with diesel gensets providing the balance. The potential increase in available annual energy is conceptually estimated to be between 2 and 2.6 million kWhs. The existing hydropower nameplate capacity is 824 kW and it is anticipated the new total capacity could be increased up to 1,500 kW. This feasibility study will provide a detailed analysis of this estimate. Additionally, the study will analyze the existing and future markets for this new hydro energy and estimate the revenue and impact of an expanded project upon the existing INNEC power sales rate structure. Additionally, a procurement package will be prepared for the new equipment if the project is found to be feasible. The pros of this project are that the hydroelectric project has already been constructed and provisions were included in the original design to allow for a future expansion in capacity. As such, there will be no modifications required for the intake, penstock, powerhouse or tailrace. As such, the \$/kW for the additional capacity is expected to be low. The con is that there might not be enough load in the three communities to economically justify the project. There are many potential customers in the service area that would benefit from excess power sales, potentially in the form of dispatchable heating. A few are, Iliamna Air Taxi, Pebble Limited Partnership, State of Alaska, City of Newhalen, City of Nondalton, Iliamna Trading and other local businesses.

At this time, INNEC has an interruptible power sales agreement with Lake and Peninsula School District for the Newhalen School and Nondalton School. The Tazimina River provides the water for most of the electrical energy needs of INNEC. The Tazimina Hydroelectric Project is a conventional run-of-river hydroelectric operation that uses the natural flow of the Tazimina River. The project has no impoundment; river flows are diverted into a penstock, through turbine-generators installed in a powerhouse, and returned to the river at the base of the falls. The Tazimina hydro plant currently has two Francis turbines made by Gilkes. Each are connected to 412 kW Kato Generators. These units are 17 years old. The remaining energy resource is diesel which is brought in intermittently by barge in the summer months and mostly flown in. The existing project is subject to regulations of both State and Federal agencies. As there will be no land disturbing activities, a minor permitting effort is expected related to replacement of the existing generating units. Authorization is expected to be required from Alaska Department of Natural Resources (ADNR), Alaska Department of Fish and Game (ADF&G) and the Federal Energy Regulatory Commission (FERC).

The total anticipated project cost is currently estimated at \$2.6 million.

**Project Status:** The grant agreement was signed on 7/29/2013. The grant was amended in 9/15 to change the final scope, after the feasibility study, from a turbine generator replacement to increase capacity to improvements to the intake and powerhouse efficiency.

The reimbursement request of Jun 2015 indicates approximately 60k in grant funds remain with the next steps continued assessment of improvements aimed at increasing the water intake during winter months and reducing powerhouse energy consumption.

In December of 2016 consultants for the Grantee performed load and water measurements while onsite to better characterize and strategize on potential hydraulic improvements. While onsite consultants also discussed potential energy efficiency measures for the powerhouse.

<b>As of Nov. 30, 2013</b>	<b>Budget</b>	<b>Expenditures</b>
Renewable Energy Funding	\$160,000.00	\$99,859.55
Other State Funding	\$0.00	\$0.00
<b>Total State</b>	<b>\$160,000.00</b>	<b>\$99,859.55</b>
Required Local Match	\$30,000.00	\$5,382.38
Federal Grant Funding	\$0.00	\$0.00
<b>Total Project Costs</b>	<b>\$190,000.00</b>	<b>\$105,241.93</b>