

Snettisham Transmission Line Avalanche Mitigation

Grantees	Alaska Electric Light & Power Company (Utility-Cooperative)
Technology Type	TRANSMISSION
Region	Southeast
AEDG Project Code	10313

REF Grants Received

Round	App	Grant Title	Grant #	AEA Project #	Phase	Start Date	End Date	Status
4	672	Snettisham Transmission Line Avalanche Mitigation	7040039	409030	Construction	7/1/11	12/31/12	Closed

Grant 7040039: Snettisham Transmission Line Avalanche Mitigation

Project Scope: The project is to provide avalanche protection to six aluminum towers in the Snettisham transmission line. This will greatly improve reliable delivery of a hydroelectric resource and lessen the financial impacts of diesel fuel generation. The Snettisham Transmission Line extends 43.5 miles to the southeast of Juneau, Alaska and provides the only power connection to this community's primary hydroelectric resource. There are multiple areas of avalanche concern along this line; however, the highest priority is a section from 3 to 5 miles from the Snettisham Hydroelectric powerhouse.

The Snettisham Hydroelectric Power Plant is a State owned project administered by the Alaska Industrial Development and Export Authority (AIDEA) and operated by AELP. This is a 78 MW power plant serving the primary electrical needs for Juneau. It is connected through a single 43.5 mile 138 KV transmission line in very rugged coastal mountain terrain. The line is located on federally owned US Forest Service (USFS) lands of the Tongass National Forest. In 2008 and 2009, this line was hit by massive avalanches that accounted for 66 days of hydroelectric interruption. The community of Juneau was placed in economic shock when electric service rates rose nearly five hundred percent to \$0.52/kWh in 2008 and \$0.24/kWh in 2009 due to the cost associated with using 3,800,000 gallons of diesel fuel. The total fuel, repair, and mitigation efforts have exceeded \$17.4M since 2008, in addition to \$400,000 in annual forecasting and control work.

A conceptual design report was completed in 2010 for the six towers of highest avalanche risk. The report was based upon experience and engineering solutions gained during the 2008 and 2009 emergency repairs to other sections of the transmission line from avalanches. It outlines \$4,019,600 in construction costs needed to complete the improvements.

AELP proposes to complete design and construct the mitigation improvements to the towers in two phases over a two-year period, from 2011-2012. Because grant funds can only reimburse for expenses incurred after July 1, 2011, there will be some expenses incurred which will be ineligible for these funds. Phase 1 work will include the 2011 design and construction of the replacement of tower 3/4 and structural modifications to existing towers 4/1 and 4/2 for an estimated \$1,562,000. Phase 2 work will include the 2012 design and construction of a large diversion structure above tower 4/5 similar to the one constructed in 2009 above tower 4/6. There would also be a smaller diversion structure constructed above tower 4/4. The total estimated cost of this phase is \$2,457,600.

AELP will be responsible for the project costs incurred before the grant eligibility date of July 1, 2011. Their match to this grant will provide the balance of funding needed to complete the two phases of work, estimated at \$2,019,600.

To date, AELP has conducted the following studies: LIDAR survey, avalanche potential force models, biological assessments, geotechnical considerations and conceptual design. A USFS amended permit was obtained covering the scope of this construction. AELP does not anticipate that additional permitting would be necessary other than agency scoping/advisory meetings.

Project Status: The project is to protect the Snettisham transmission line that carries the majority of Juneau-Douglas area power from failing because of avalanches. Two transmission towers will be protected with avalanche diversion structures. To date the foundations are completed for both diversion structures (4-4 & 4-5) and the heavy equipment required for the foundation preparation have been removed. The steel has been flown to the sites and the steel is being welded together. The project has had approximately four weeks of weather delays. The diversion structure for tower 4-5 should be completed by winter. Because of weather delays and materials costs expenses have been higher than budgeted.