

**Agency: Commerce, Community and Economic Development****Grant Recipient: Community & Economic Dev****Project Title:****Project Type:** Remodel, Reconstruction and Upgrades

# Alaska Energy Authority - Tuntutuliak Power System Upgrade

**State Funding Requested: \$1,832,595**  
One-Time Need**House District: 38 / S****Brief Project Description:**

Electrical distribution power system upgrade.

**Funding Plan:**

Total Project Cost:	\$1,832,595
Funding Already Secured:	(\$0)
FY2013 State Funding Request:	<u>(\$1,832,595)</u>
Project Deficit:	\$0

**Detailed Project Description and Justification:**

The community's current wind-diesel power system dates back to the 1970's. Now, the village experiences year-round power outages due to rotten and falling poles, worn and sagging conductors, and overloaded transformers. As time passes, the outages' severity and length quickly worsen.

The community has developed a cost estimate and project plan; upgrades will include pole, transformer, and conductor installation throughout the community. Major physical work will be completed during the winter when the tundra is frozen hard enough to support heavy equipment. Project labor will come primarily from local electrical crews from Tuntutuliak and surrounding communities, guided by experienced management.

The upgrades will improve safety and efficiency. See attached backup for further information.

**Project Timeline:**

Expenditures will begin immediately upon receipt of funds, and will be complete as soon as possible. Much of the physical work will occur during the winter, when the frozen tundra is hard enough to support the equipment's significant weight.

**Entity Responsible for the Ongoing Operation and Maintenance of this Project:**

Tuntutuliak Community Services Association

**Grant Recipient Contact Information:**

Name:	Carl Andrew
Title:	General Manager
Address:	P.O. Box 8127 Tuntutuliak, Alaska 99680
Phone Number:	(907)256-2529
Email:	

Has this project been through a public review process at the local level and is it a community priority? ☐ Yes ☒ No

**2012 Legislative Request – Electrical Distribution Systems  
Tuntutuliak Community Services Association  
Electrical Utility  
Tuntutuliak**

**General Manager: Carl Andrew  
907-256-2529  
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Total project request - \$1,832,595

This project will replace the electric power distribution system in the village of Tuntutuliak, Alaska.

The electrical distribution grid in Tuntutuliak was installed in the late 1970's. Currently the village experiences repeated frequent power outages due to rotten and falling power poles, worn and sagging conductors, and over-loaded transformers. These outages are occurring at all times of the year and with increasing severity and length during the winter. The electrical distribution system represents serious safety hazards for repair personnel and members of the community.

In some instances, summer distribution problems have become irreparable due to inability of the ground, and weakness of the poles to support equipment and personnel. The growing number of distribution faults has significantly reduced the reliability of the community power system. Winter conditions represent an increasingly serious safety hazard as conductors don't have sufficient safe clearance above the ground. While power poles, transformers and conductors have been replaced and repaired on an emergency basis, the communities have grown beyond the capacity of the current distribution systems. The layout of the distribution system must be completely reconfigured and all of the power poles, conductors and a majority of the transformers must be replaced to ensure grid reliability and stability. Besides safety the distribution upgrades are estimated to increase power system efficiency up to 4%.

A field survey level cost estimate and project plan has been developed. The project will involve the installation of 96 power poles, 40 transformers, and 36,000 feet of conductor throughout the village of Tuntutuliak. To prevent frost jacking the poles must be installed on 30' to 40' driven steel H piles. The power poles will then be bolted to pilings, and new conductors and transformers installed. This installation will involve the redistribution and partial replacement of a limited number of residential service drops. The work must be completed during the winter when the ground is frozen and will support heavy equipment.

The project will be completed primarily with multi-village local electrical crews under the guidance of an experienced project manager and electrical superintendent. The project will create between 6 to 8 well paid jobs lasting six to eight months for local residents, in villages, with 30%+ unemployed and with 26% of families are below the poverty line. These jobs will build local capacity to install and service electrical distribution systems throughout the region.

Replacement of the distribution system is necessary due to improve safety and increase the energy efficiency of the community's wind-diesel system. The distribution replacement will enable a higher displacement of diesel fuel, saving money for all local residents.

Cost items for the new distribution systems are described in the attached sheet:

Total project cost - \$1,832,595

Tuntutuliak Community Services Powerline Replacement Project										UNIT MATERIAL	TOTAL	UNIT WEIGHT	TOTAL	UNIT LABOR	TOTAL COST
1.)	38,000	FT	4-5 weeks	#2 ACSR SPARE						\$0.48	\$18,240.00	.105 LBS FT	3,990.00 LBS	\$2.00	\$76,000.00
2.)	96	EA	7 weeks	35' CLASS 4 FULL LENGTH TREATED PENTA DOUGLAS FIR POLE PER ANSI-RUS						\$869.00	\$83,424.00	875. LBS EA.	84,000.00 LBS	\$4,000.00	\$384,000.00
3.)	96	EA	STOCK	C1.41, 15KV-30 4W FLAT TANGENT SUPPORT NEUTRAL ON CROSSARM						\$284.00	\$27,264.00	85. LBS EA.	8160.00 LBS	\$250.00	\$24,000.00
4.)	192	EA	STOCK	C2.51, 15KV-30 4W FLAT DOUBLE SUPPORT - SMALL ANGLE, NEUTRAL ON CROSSARM						\$345.00	\$66,240.00	167. LBS EA.	32064.00 LBS	\$315.00	\$60,480.00
5.)	96	EA	STOCK	C3.2X, 15KV-30 SUSPENSION ANGLE						\$245.00	\$23,520.00	40. LBS EA.	3840.00 LBS	\$125.00	\$12,000.00
6.)	96	EA	STOCK	C5.31X, 15KV-30 SINGLE DEADEND - 3/ARM						\$395.00	\$37,920.00	200. LBS EA.	19200.00 LBS	\$300.00	\$28,800.00
7.)	192	EA	STOCK	E1.1X, SINGLE DOWN GUY ASSY.						\$165.00	\$31,680.00	35. LBS EA.	6720.00 LBS	\$312.00	\$59,904.00
8.)	192	EA	STOCK	E2.2X, DOUBLE DOWN GUY ASSY.						\$310.00	\$59,520.00	80. LBS EA.	15360.00 LBS	\$225.00	\$43,200.00
9.)	96	EA	STOCK	Screw pile anchor assembly, Hubble						\$125.00	\$12,000.00	35. LBS EA.	3360.00 LBS	\$175.00	\$16,800.00
10.)	96	EA	STOCK	H1.1, POLE GROUND ASSY.						\$65.00	\$6,240.00	15. LBS EA.	1440.00 LBS	\$50.00	\$4,800.00
11.)	384	EA	STOCK	A1.011, PIN AND GLASS ASSY.						\$15.50	\$5,952.00	6. LBS EA.	2304.00 LBS	\$35.00	\$13,440.00
12.)	3	EA		3 PHASE FUSE CUTOUT						\$870.00	\$2,610.00	250	750.00 LBS	\$1,975.00	\$5,925.00
13.)	40	EA		35 KVA TRANSFORMER 480V TO 12.47KV						\$1,576.00	\$63,040.00	3000	120000.00 LBS	\$2,200.00	\$88,000.00
14.)	96	EA		10x 57 steel piling x 40 foot						\$3,280.00	\$1,500.00	2280	218880.00 LBS	\$700.00	\$67,200.00
15.)	1	EA	SHIPPING	Approximate Shipping costs to Kwigillingok						\$260,034.00	\$260,034.00				
										TOTAL	\$699,184.00	TOTAL WT.	520,068.00 LBS		\$884,549.00
										Subtotal cost	\$1,583,733.00				
										Equipment rental					\$65,000.00
										Travel					\$12,000.00
										Room board, per diem					\$6,500.00
										Subtotal					\$1,667,233.00
										Contingency			5%		\$83,361.65
										Engineering and Inspections					\$22,000.00
										Project Management and Supervision					\$60,000.00
										Total					\$1,832,594.65