

Agency: Commerce, Community and Economic Development**Grants to Named Recipients (AS 37.05.316)****Grant Recipient: Alaska Gateway School District****Federal Tax ID: 920058369****Project Title:****Project Type: Remodel, Reconstruction and Upgrades**

Alaska Gateway School District - Districtwide Energy Efficiency Measures

State Funding Requested: \$110,000**House District: 39 / T**

One-Time Need

Brief Project Description:

To utilize energy efficiency measures (EEMs) from an audit report contracted by the State and completed by Nortech to reduce annual energy costs.

Funding Plan:

Total Project Cost:	\$130,000
Funding Already Secured:	(\$20,000)
FY2014 State Funding Request:	<u>(\$110,000)</u>
Project Deficit:	\$0

Funding Details:

The District will utilize designated local funds to complete these projects.

Detailed Project Description and Justification:

An energy audit was conducted within the District during the 2011-2012 school year, by Nortech, and paid for by the State. The District is requesting funds to complete the first few energy efficiency measures (EEMs) on the Districtwide ranked list, by estimated savings, produced by Nortech. The District would utilize the funds to complete EEMs that produce the quickest EEM payback. The EEMs summarized on the attached list can be implemented to reduce operation costs for the next few years. Energy costs continue to rise and any District funds saved can be utilized to enhance student learning opportunities Districtwide.

Project Timeline:

The project was approved during the January 21, 2013 Regional School Board meeting.

The project would begin as soon as the appropriation was awarded and be completed by June 30, 2014.

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

Alaska Gateway School District

Grant Recipient Contact Information:

Name:	Todd Poage
Title:	Superintendent
Address:	1313.5 Alaska Highway Tok, Alaska 99780
Phone Number:	(907)883-5151
Email:	tpoage@agsd.us

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



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District Wide EEM Ranking by Estimated Savings

Rank	School	EEMDescription	EEMSavings	EEMCost	EEMPayBack
1	Tok Sch	Install demand control ventilation and reduce outside air	\$59,559.00	\$10,000.00	0.20
2	Tok Sch	Implement a temperature setback	\$31,256.00	\$1,200.00	0.00
3	Northway Sch	Put restroom exhaust fans on timers, repair controls and minimize outside air	\$28,232.00	\$10,000.00	0.40
4	Northway Sch	Upgrade lighting to LED fixtures	\$24,907.00	\$73,800.00	3.00
5	Eagle School	T12 to LED, HPS to LED, Exterior to LED	\$17,592.00	\$57,400.00	3.30
6	Tok Sch Athletic Fac	Install LED lighting throughtout the building	\$16,053.00	\$69,300.00	4.30
7	Tok Sch	Install vent dampers on chimneys, replace DHW circ pump with smart pump	\$6,715.00	\$2,700.00	0.40
8	Northway Sch	Implement a temperature setback	\$6,448.00	\$4,200.00	0.70
9	Northway Sch	Replace fan motors with more efficient motors, Replace circulation pumps with variable speed pumps, install vent dampers on chimneys	\$5,737.00	\$9,500.00	1.70
10	Mentasta Lake Sch	Balance ventilation system, reduce time on for restroom exhaust fans, install thermostat on boiler room supply fan	\$5,392.00	\$8,000.00	1.50
11	Eagle School	Programmable t-stats and set-back	\$5,169.00	\$8,200.00	1.60
12	Eagle School	VFD pumping, efficient fan motor, timer on dhw	\$5,067.00	\$15,000.00	3.00
13	Tok Sch Athletic Fac	Install rigid board insultion to walls (mechanical, shooting range)	\$4,052.00	\$10,750.00	2.70
14	Tok Sch	Replace multi-purpose track lights and exterior HIDs with LEDs	\$2,932.00	\$5,350.00	1.80
15	Tanacross School	Replace T12 with LEDs	\$2,569.00	\$18,835.00	7.30
16	Mentasta Lake Sch	Implement a temperature setback	\$2,475.00	\$2,000.00	0.80
17	Tanacross School	Implement a temperature setback	\$1,744.00	\$700.00	0.40
18	Tok Sch Athletic Fac	Remove DHW pump, replace furnace, replace circulation pumps with smart pumps	\$1,457.00	\$10,000.00	8.00
19	Tok Sch Athletic Fac	Implement seasonal shutdown	\$1,405.00	\$0.00	0.00
20	Eagle School	Upgrade refrigerators to Energy Star & off in summer	\$1,389.00	\$2,400.00	1.70
21	Mentasta Lake Sch	Replace exterior lights with LEDs	\$1,379.00	\$1,310.00	0.90





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22	Tanacross School	Replace furnace motors, install vent damer, apply mastic to ducts in crawlspace	\$1,086.00	\$10,000.00	9.20
23	Northway Sch	Install timer for headbolt heater outlets	\$883.00	\$250.00	0.30
24	Tanacross School	Install insulation on perimeter of crawlspace floor	\$798.00	\$2,441.00	3.10
25	Tok Sch	Install timer on vending machine	\$644.00	\$25.00	0.00
26	Tok Sch Athletic Fac	Add insulation to attic (Food service and locker rooms)	\$224.00	\$3,200.00	14.00
27	Eagle School	Add insulation & weather striping to garage door	\$109.00	\$367.00	3.40
28	Mentasta Lake Sch	Install insuated blanket on garage door	\$103.00	\$154.00	1.50
29	Tanacross School	replace incandescent with CFL	\$26.00	\$18.00	0.70

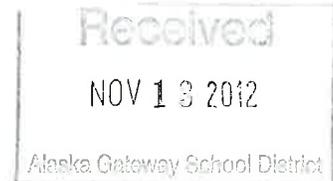




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November 6, 2012

Alaska Gateway School District
P.O. Box 226
Tok, Alaska, 99780



ATTN: Mr. Randy Warren
AGSD Maintenance Coordinator

**RE: Alaska Gateway School District Energy Audits
Implementation and Design Recommendations**

Mr. Randy Warren,

By now, you should have received the final energy audit reports **NORTECH** completed for the Alaska Gateway School District (AGSD) under contract to the Alaska Housing Finance Corporation (AHFC). We hope that you have found these audits helpful and started implementing the straightforward energy efficiency measures (EEMs). At this point, we would like to offer the opportunity to meet with you and/or your staff to answer any questions you may have about the audits and share our vision for energy management within your facilities.

As noted in the letter that accompanied the audits, implementation of all the recommended AGSD EEMs at the audited buildings is estimated to result in an **annual savings in energy costs of over \$250,000/year**. With energy costs continuing to rise, every reduction in energy consumption will save even more money. We believe that many of these EEMs summarized below can be implemented and reduce operating costs this school year. **NORTECH** would like to help the District form a plan to implement the desired audit recommendations through AGSD maintenance or capital projects that can be funded through state-backed programs that are currently available.

Low cost/no cost EEMs

The best place to start is through implementation of no cost/low cost EEMs identified in the audits, those that can be completed for under \$200, can usually be completed by in-house staff. Those EEMs should be implemented as soon as possible.

Temperature Setback

Implementation of temperature setbacks can be accomplished in every building operated by the AGSD and save money by reducing temperatures during unoccupied periods. This can be accomplished through the installation of programmable thermostats in buildings with simple controls or system programming in buildings with Building Automation Systems (BASs).

- Standard Buildings
 - Replacement of non-programmable electrical thermostats with programmable thermostats
 - These start at about \$50 each
 - Easily installed and programmed by maintenance personnel, less than 30 minutes each





- Buildings with BASs
 - Requires programing but no hardware installation or cost
 - Maintenance personnel often have the expertise required to program the BAS
 - District's controls contractor may be able to perform the programming remotely
- Pneumatic Systems
 - Pneumatic controls were once widely used but are seldom seen in newer construction
 - Replacement of pneumatic thermostats requires the addition of control air piping
 - The controllers are high maintenance and require re-calibration
 - The air systems are energy intensive and often leak and care must be taken to ensure water does not contaminate the controls system.
 - Upgrades may be beyond the capabilities of maintenance personnel.
 - Pneumatic systems may be candidates for complete control system upgrades which will require engineering and contractor installation.

Lighting Efficiency Upgrades

Implementation of energy efficiency lighting upgrades may be performed in one of two ways, or a combination of both:

- Lamp Replacement
 - Replacement of T-12, T-8 and exit lighting with LED lighting can be:
 - accomplished through lamp replacement in existing fixtures
 - completed using maintenance personnel
 - Will usually provide lower lighting levels in the rooms served
 - Most rooms are over-lit and the reduced lighting levels are not a problem for users
 - Lighting levels should be verified after replacement
 - Additional savings can be achieved by removed lamps if light levels are still higher than required
 - This approach is a slower more trial-and-error approach
 - Eliminates the need for engineering or contractor participation
 - Allows occupant feed-back during the process
 - Can be accomplished with maintenance personnel.
 - This can usually be undertaken as a maintenance project at the individual schools
- Full Lighting System Design and Upgrade
 - A lighting designer can perform a lighting re-design to optimize the number of fixtures and lamps to meet recommended lighting levels
 - This approach requires engineering services and may require replacement of some or all of the existing fixtures.
 - This is expected to be a capital project
 - Multiple schools can be bundled together

Motor and Pump Replacement and Ventilation Demand Control EEMs

- Maintenance personnel may be able to undertake the following
 - replacement of old or failed units with higher efficiency models
 - Installation of simple controls on small systems





- Installation of timers to shutdown systems after hours
- Advice from designers is recommended for
 - Changing horsepower or the addition of variable speed/frequency devices
 - Installation of controls on systems with interdependencies
- Design is required for:
 - Replacement and/or rerouting of significant portions of a system
 - Installation of multiple controls
 - Any work on proprietary and remote control systems
- These EEMs could be bundled for a district wide design and installation contract(s).

In addition to the audited buildings, many of the same ideas and energy/cost reduction concepts also apply to the Dot Lake and Tetlin schools that were not audited. An inexpensive analysis of the utility data for those facilities will determine their energy performance for comparison to other Alaska educational and AGSD facilities. **NORTECH** can assist your energy coordinator through this benchmarking process or, complete the review for those AGSD facilities. Based on the data from the other AGSD schools, an Energy Utilization Index (EUI) over 100,000 Btu/SF in those facilities indicates that a more thorough energy audit would pay for itself with relatively simple EEMs. Even without any additional review, those two facilities could almost certainly benefit from several of the EEMs detailed in the reports for the schools that were audited.

Overall, the AGSD facilities are all located on the road system and relatively inexpensive to reach from hubs and each other. The most cost effective means of design and installation of non-maintenance EEMs would be to bundle as much the work into a single project. The larger scale of this project would have the advantage of providing a contractor with a larger volume of work and reduce the effort required for bid selection and contracting. EEMs could also be bundled with non-EEM related upgrades that are currently on the district's 'wish list'.

The **NORTECH** energy staff can provide consultation, design, project management and construction administration services for all aspects of these EEM upgrades. **NORTECH** is staffed with Alaskan engineers with real Alaska experience and has a proven track record with AGSD on a variety of other projects. Please call me at your earliest convenience to discuss any question you may have regarding the energy audits or implementation strategies.

Sincerely,
NORTECH

Dave Scherer, P.E.
Sr. Mechanical Engineer

Attachment: **NORTECH** Energy Service Description
District Wide Recommended EEM table
AHFC White Paper Executive Summary

CC: Todd Poage, AGSD Superintendent

