

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: New Construction and Land Acquisition**

Alaska Gateway School District - Districtwide Greenhouse and Processing Facility Utilizing Surplus Heat

State Funding Requested: \$135,000**House District: 6 / C**

One-Time Need

Brief Project Description:

Greenhouse and Processing Facility utilizing surplus heat to provide fresh produce to all schools in the district. The project will include extending a new hot water heating/ return loop from the recently completed Biomass Heating Plant to a new 24'-0" x 100'-0" greenhouse and 20'-0" x 30'-0" processing facility on the Tok School Campus

Funding Plan:

Total Project Cost:	\$139,000
Funding Already Secured:	(\$4,000)
FY2013 State Funding Request:	<u>(\$135,000)</u>
Project Deficit:	\$0

Funding Details:

The district will utilize local funds to complete the project.

Detailed Project Description and Justification:

The greenhouse and processing facility would only use surplus heat from the Biomass Plant and would benefit from the electrical generation of the Combined Heat and Power (CHP) system. Produce would initially be used to supplement the schools Food Service Program, providing fresh vegetables to student who otherwise would not have access. The Biomass Plant has capacity to support additional greenhouses in the future if the demand for local produce in the region exceeds the anticipated yield capacity of the first greenhouse.

Each year AGSD spends \$18,500 on fresh produce as part of the school meal programs for the entire School District. Due to the high cost of fresh produce, the school district relies upon frozen and processed foods to meet most of the needs of the school meal programs. It is anticipated that additional substitution of these products with fresh produce would be possible if the cost was reduced. Current estimations are that one 2,400 sq.ft. greenhouse could supplement and supply fresh produce for the entire School District. Research indicates that a greenhouse in Alaska will yield between 1.5-3 lbs. per square foot per planting depending on crop type. There can be 1-3 plantings in a typical 7-9 month Alaska growing season (March- November). It is estimated that a 2,400 square foot greenhouse would produce roughly 3,600-7,200 lbs of fresh produce per planting or 10,800- 21,600 lbs per growing season. At a conservative average price of \$1.00 per lb. of produce the greenhouse would supplement \$10,800-\$21,600 of fresh produce per year.

The production, processing, and distribution of the fresh produce would create local jobs that would allow AGSD to keep school funds in the local communities. The addition of the greenhouse would also open the possibilities to start an agriculture program at the Tok School, through a partnership with the University of Alaska Fairbanks. All of the communities that are part of the Alaska Gateway School District which include Dot Lake, Eagle, Tetlin, Tanacross, Tok, Mentasta Lake, and Northway will directly benefit from the availability of fresh produce grown in the greenhouse.

The completion of the Tok School Biomass Heating Plant, which was funded using AEA Round I Grant funding, implemented the initial steps in meeting Alaska Gateway School District's (AGSD) long term energy vision of reducing the negative impact of the rising and volatile cost of energy on the School District's budget. Since the completion of the Biomass Heating Plant a steam turbine and electrical generator will be added to create a Combined Heat and Power system to help further offset the impact of rising utility costs. The addition of the CHP system will create surplus heat, a byproduct of the electrical generation process, which will need to be dissipated. The heat will be dissipated through condensers (rejected to the atmosphere) or additional heating demand loads will have to be connected to the system, such as a greenhouse, to recapture the surplus heat. AGSD will be the first school district in the nation to generate power thru hazardous biomass and was the first school district in the state to construct, own and operate a wood-fired boiler large enough to provide 100% of the heating needs for a school thru hazardous biomass.

The Tok School Biomass project has no known opposition, and has ever increased support following the grand opening and first year of operation. The Tok Area Forestry Office remains a strong supporter, and has been working with the school district on this project from the beginning. We are working out a long-term use contract for biomass that is the result of road right of ways that are being cut, and wildfire remediation efforts. A recent presentation was made by the school district at the local forestry office to a meeting of the State Forestry Board and then the Tok community in conjunction with Tok Forestry and the local utility company, AP&T. A lengthy question and answer session followed along with tours of the facility. Everyone in attendance commented that this was the kind of project that the state needed to develop more of. The Tok Umbrella Corporation, our local government organization, has also been a consistent supporter of the project, and continues to be a partner by providing shared equipment. The Tok Umbrella Corporation also purchased, for the district, a Case 700 Series loader with a 6 yard bucket and a log grapple for handling biomass to increase the efficiency of this project. The district has also been working with AP&T to establish procedures and protocols for the generation of power thru the biomass plant.

Project Timeline:

The project would begin this May or as soon as the appropriation was awarded and be completed by the end of October, 2012. All funds would be spent by November 1, 2012.

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

Alaska Gateway School District

Grant Recipient Contact Information:

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 Tok, Alaska 99780
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Total Project Snapshot Report

2012 Legislature

TPS Report 57451v1

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

For use by Co-chair Staff Only:

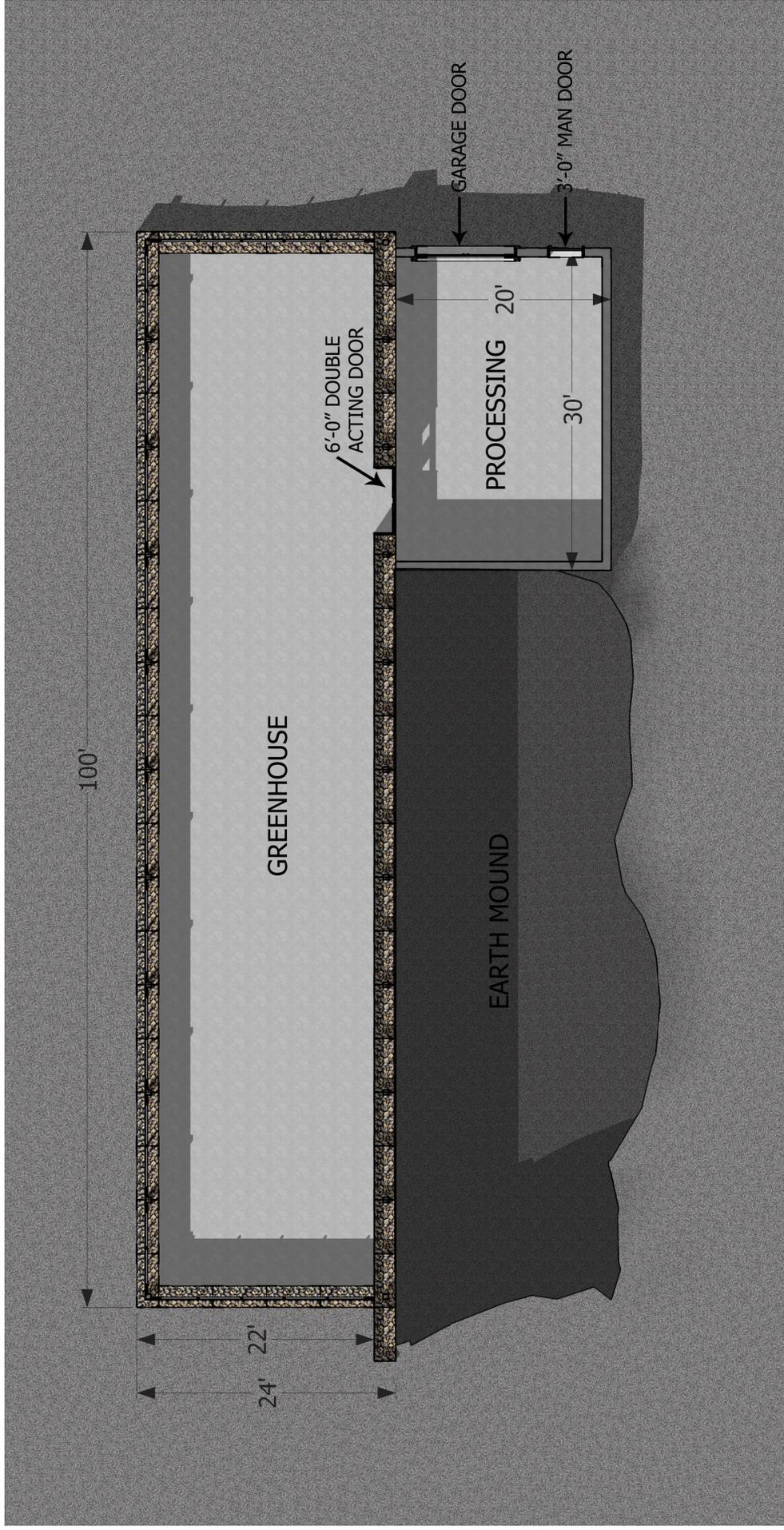
TOTAL PROJECT COSTS

24-Aug-11

Greenhouse and Processing Facility Tok, Alaska					
	QUANTITY		MATERIAL AND LABOR		TOTAL COST
	No. Units	Unit Meas.	Per Unit	TOTAL	
Hot water heating loop to addiotnal outbuilding on campus					
Greenhouse	2400	sq.ft	\$10.00	\$24,000	
Processing Building	600	sq.ft	\$100.00	\$60,000	
Extension of Heat Loop	170	LF	\$150.00	\$25,500	
Sub Total					\$109,500
Project Contingency	15.00%				\$16,425.00
Project Construction Costs Total					\$125,925
<i>A/E Design Services</i>	9%				\$9,900.00
<i>Feasibility Study (completed)</i>					\$4,000
Soft Costs Total					\$13,900
TOTAL PROJECT COSTS					\$139,825

Greenhouse and Processing Facility

Concept Plan – Level I



Perspective

