

HB

606

COMMITTEE REPORT

HOUSE

FURTHER: FINANCE

1/23/80

Date: 2-1-80

Mr. Speaker:

The Committee on STATE AFFAIRS has had HB 606

"An Act making a supplemental appropriation to the Alaska Council on Science and Technology for the northern technology grants program; and providing for an effective date."

under consideration and (a majority of the committee) (the committee) reports it back with the following recommendations:

- do pass do not pass
- do pass with attached amendments(s)
- replace with CS for _____ same title
 new title
- and recommends _____
- AND attaches a "Letter of Intent" New Fiscal Note
- reports it back without recommendation
- referred to the _____ Committee

**MEMBERS SIGNING
DO PASS**

[Handwritten signatures]

**MEMBERS HAVING
OTHER RECOMMENDATIONS:**

CHAIRMAN



THE ALASKA COUNCIL ON SCIENCE AND TECHNOLOGY

January 17, 1980

Representative Mike Miller
Alaska State House of
Representatives
Pouch V
Juneau, Alaska 99811

Dear Representative Miller:

Although the Council's annual report will be out shortly, I thought you would be interested in the details of the Northern Technology Grants Program. Therefore, I have enclosed a listing of this year's grant "winners" accompanied by a short description of what technologies they intend to demonstrate in 1980.

The Council expects most of the projects to be completed by Fall and will forward the results of the entire program or individual projects to persons or groups on request.

Please call if I may answer any question about the program.

Sincerely,

Christopher Noah
Executive Director

Enclosure

CN. jm

NORTHERN TECHNOLOGY GRANTS PROGRAM

The purpose of the Northern Technology Grants Program is to help develop and encourage the use of low-cost and small-scale technologies appropriate to Alaska.

In July, 1979, \$50,000 in grant funds was appropriated by Alaska's state government to be awarded by the Alaska Council on Science and Technology (ACST) in grants of up to \$5,000 each.

Proposals were solicited in the areas of "energy generation, waste disposal, recycling, food production, transportation, building design, or any residential or industrial enterprise which might be more efficient, less costly or less energy-intensive than methods now in use." Appropriateness to the Alaskan environment was required. The first year's program closed for receipt of applications on August 15, 1979.

The Alaska Council on Science and Technology received 178 proposals and selection of winning proposals was made in mid-September. Proposals were judged on innovativeness, potential benefit to Alaskans, and soundness of use of funds. Grant awards ranged from \$200 to \$5,000. Results will be published as projects are completed.

For more information on the program, please contact:

Alaska Council on Science & Technology
Pouch AV
Juneau, Alaska 99811
(907) 4653510



#0162 TIDAL/CURRENT HYDRAULIC
SUCTION DREDGE

O. Alexander Hoke \$5,000
Juneau, Alaska

Mr. Hoke will design and develop a working model of a tidal/current hydraulic suction dredge. A tide or current powered low velocity hydraulic turbine will drive a centrifugal water pump after the high-torque, low-RPM turbine energy has been translated into low-torque, high-RPM energy by a water tight gear box. The high-velocity discharge of water will be injected through a reduction nozzle and create a vacuum at the suction head. This vacuum will lift sand and gravel through a flexible hose to a sediment stockpile on the bank. Mr. Hoke will also consider methods of achieving a regular, automatic sweep of a channel by the dredge.

#0139 SOLAR GREENHOUSE

Steve and Cyndie \$5,000
Tack
Fairbanks, Alaska

Steve and Cyndie Tack will build a greenhouse which combines several of the better greenhouse construction and energy conservation principles now in use. The structure will be similar to a large cold frame with solar storage in the back wall and in the soil. Some of the features expected to make the greenhouse free of dependence on fuel heat from mid-April to late September include:

- a) Burying the north wall and parts of the other three walls to moderate the effect of very cold and very hot weather;
- b) Using solar collectors and an underground array of pipes to heat the soil;
- c) Using a massive north wall to store heat during the day and radiate heat at night;
- d) Glazing the greenhouse with a twin-wall stressed material;
- e) Making an easily-used blanket to cover the glazed surfaces at night.

#0083 BEE-OVERWINTERING BUILDING David W. Stoops \$3,775
Kasilof, Alaska

Mr. Stoops will construct a building in which he will over-winter bees in a controlled environment. Presently the state's 250 beekeepers have no alternative but to kill their bees each fall and face the difficulty and expense of shipping in new bees each spring.

#0029 WASTE-HEAT-CLAIMING GREENHOUSE Galena Regional \$2,570
Learning Center
Galena, Alaska

GRLC is a rural extension of the University of Alaska involved in facilitating subsistence gardening programs in 17 villages along the Yukon and Koyukuk Rivers. The group will use grant money to build a 1,500 square foot greenhouse heated by waste heat from the local power plant. The Galena Air Force Site will provide access to the glycol solution in the plant's cooling system. The hot glycol will be piped to a unit heater inside the greenhouse as well as through the soil bed of a garden behind the power plant.

#0089 SOLAR HOT WATER HEATER Julie Scott \$1,200
Camp Bingle, Alaska

Camp Bingle Harding Lake Camp is a non-profit camp operating at Harding Lake, a recreational area 40 miles east of Fairbanks. The camp is used by various children's groups and its program is educational in nature. The staff will build a solar collector into the camp's hot water system to help offset operating expenses and incorporate energy awareness into the camp's educational program.

#0144 INSULATED SHUTTERS Rob Walton \$1,100
Fairbanks, Alaska

Mr. Walton will design and construct insulating shutters that can be used to cover large window areas to reduce heat loss. The shutters will take advantage of garage door technology and photoelectric or temperature sensing switches to achieve ease of operation.

#0098 ELECTRIC CAR

David Grove \$5,000
Fairbanks, Alaska

Mr. Grove will build and test an electric car for operation in cold climates. The plans for the vehicle will be purchased, but modifications will be incorporated, such as the use of light weight aircraft steel, an insulated battery compartment, and solid state devices for startup. Mr. Grove expects to demonstrate that the electric car is uniquely suited to Alaska for three reasons: first, gasoline is generally priced higher here; second, because pollution, especially ice fog, is a serious problem; and finally, because much of Alaska's road system is disconnected, the auto's 60-mile range per charge will not be a serious limitation.

#0074 SOLAR GREENHOUSE

Jeremy and Linda \$5,000
Weld
Gakona, Alaska

The Welds will build an add-on solar greenhouse which will utilize a thick gravel pad to store heat from the greenhouse for later use in the greenhouse and in the attached cabin. The gravel pad will be insulated from the ground around it and a heat collector at the greenhouse ridge will pump warm air into it. In addition, a rain water collection system will be incorporated into the greenhouse such that the stored water will also bank heat.

#0027 AMBULANCE SPLINT

Steven J. Carney \$200
Fairbanks, Alaska

Mr. Carney will build a modification of the long spine board used by ambulances which he expects to be an improvement. His patient stabilization system will utilize vacuum "bean bags" in conjunction with conventional straps. The vacuum bags would rely on the same principal as the vacuum splints, be adjustable, and would attach to the board with velcro.

#0129 HYDROELECTRIC GENERATOR

Ted Neville \$350
Fairbanks, Alaska

Mr. Neville will build a small-scale water-powered electric generator to be powered by a river. A paddle wheel's rotation will be translated by a 2:1 ratio gearbox, and then drive an electric motor. The electric motor, when driven, produces current. Mr. Neville hopes to produce enough current to run small power tools.

#0145 OIL-FIRED CLOTHES DRYER Mike Potter \$500
Fairbanks, Alaska

Mr. Potter will convert a standard household dryer from electric to oil-fired hot water heat to take advantage of the oil-fired boiler which heats his house. Hot water will be piped to a radiator core which will be mounted on the rear of the dryer; air forced across the radiator will dry the clothes. The energy requirements and cost of drying clothes with an electric dryer will be measured before the conversion; when the oil-fired system is installed, its heat requirements will also be tested. Mr. Potter says the high cost of electricity and gas, and the fact that a large number of Alaskan homes use hot water heat suggest significant potential savings.

#0165 METHYL-FUEL PLANT Douglas R. Grimm \$5,000
Auke Bay, Alaska

Mr. Grimm will build a scale model of a system capable of accommodating the electrical and automotive energy needs of a typical urban or rural residence in southeast Alaska. The methyl-fuel plant will produce approximately one gallon of methyl-fuel for every 20 pounds of waste material. This project will make use of the large quantity of sawmill wood chips available in southeast Alaska. Experimentation will also be done with many other forms of "garbage." The fuel produced will then be applied to a modified 4 H.P. internal combustion engine driving an 1800 watt generator. This scale model should supply about 1/10 of the electrical energy requirement of a typical residence.

#0155 HYDROELECTRIC GENERATOR Richard V. Ford \$2,500
Copper Center, Alaska

Mr. Ford will build a small-scale hydroelectric system to reduce his family's dependence on a diesel generator. The system will be mounted on a raft in the Copper River and provide enough electricity to the residence for 8 months of the year.

#0136 WOOD FURNACE Donald M. Ruef \$2,109
Palmer, Alaska

Mr. Ruef will build, instrument and test a wood-coal furnace with a fluid-filled jacket. The fluid tube will store heat and be controlled to produce a low-pressure hot fluid and not vapor. Mr. Ruef expects the furnace to deliver 100,000 BTU/H, provide long-term even heat, require no electricity, and be marketable at less than \$1,500 each.

LIST OF GRANT RECIPIENTS

#0011	\$3,100	Kevin McDougall (Regenerative Freezer) P. O. Box 503 Delta, Alaska 99737
#0027	\$200	Steven J. Carney (Ambulance Stretcher) University of Alaska Fire Department Fairbanks, Alaska 99701
#0029	\$2,570	Galena Regional Learning Center (Waste-heat-claiming-greenhouse) P. O. Box 181 Galena, Alaska 99741
#0065	\$600	Chris Johansen (Solar Heater) P. O. Box 81162 College, Alaska 99708
#0074	\$5,000	Jeremy & Linda Weld (Solar Greenhouse) P. O. Box 165 Mile 128 Richardson Highway Gakona, Alaska 99586
#0083	\$3,775	David W. Stoops (Winter Beehouse) Mile 2.8 Kalifonsky Loop S.R. 2 Box 707 Kasilof, Alaska 99610
#0089	\$1,200	Julie Scott (Solar Water Heater) Camp Property Committee c/o Box 80435 College, Alaska 99708
#0098	\$5,000	David Grove (Electric Car) 214 Harwood Hall University of Alaska Fairbanks, Alaska 99701
#0106	\$250	Donald C. Pendergrast (Waste-oil Heater) S.R. Box 50342 Fairbanks, Alaska 99701
#0107	\$3,250	M. Michael Rowcroft (Juice Bottling) R. 3 Box 3323 Juneau, Alaska 99801
#0129	\$350	Ted Neville (Hydroelectric Generator) 313 Lakeview Trailer Court Fairbanks, Alaska 99701
#0136	\$2,109	Donald M. Ruef (Wood Furnace) P. O. Box 1906 Palmer, Alaska 99645

#0065 SOLAR HEATER

Chris Johansen \$600
Fairbanks, Alaska

Mr. Johansen will use grant money to build a simple solar air heater which could be placed in window openings. The heater would consist of a plastic panel which would admit fresh cold air from outside, allow the sun to heat it as it rises toward the window opening, and have a simple thermostatic device at the top to allow air to pass in only when it is warmer than the ambient room temperature.

#0106 WASTE-OIL HEATER

Donald C. \$250
Pendergrast
Fairbanks, Alaska

Mr. Pendergrast will build a stove that burns waste crankcase oil. The stove will provide a more complete use of a scarce resource and an efficient method of waste disposal. The design utilizes a discarded electric water heater, several frying pans, and generally available and inexpensive hardware.

#0180 EXPERIMENTAL GREENHOUSES

Jim Donally \$1,000
Anchorage, Alaska

Mr. Donally will build three greenhouses to test the efficiency of a plastic product, called ACPS, as a greenhouse wall material. ACPS is commercially available in long sheets or on rolls. Its common purpose is as a packing stock for fragile merchandise. It is a clear plastic film with little bubbles in it which, Mr. Donally notes, when squeezed "give a satisfying little pop." But, the bubbles also seem ideally suited to provide insulating dead air space for greenhouse walls. The first greenhouse built will have only a 6-mil visqueen covering. The second greenhouse will have ACPS, and the third, ACPS plus an insulated north wall. Maximum-minimum thermometers will be installed in each greenhouse and daily readings taken to determine the length of frost-free season.

#0139	\$5,000	Cyndie & Steve Tack (Experimental Greenhouse) S.R. Box 51113 Mile 24 Chena Hot Springs Road Fairbanks, Alaska 99701
#0144	\$1,100	Rob Walton (Insulated Shutters) P. O. Box 1480 Fairbanks, Alaska 99707
#0145	\$500	Mike Potter (Oil-fired Clothes Dryer) P. O. Box 80293 Fairbanks, Alaska 99708
#0146	\$4,045	Bert Bingham (Hydraulic-powered Auto) 1650 Beaver Road Fairbanks, Alaska 99701
#0155	\$2,500	Richard V. Ford (Hydroelectric Generator) P. O. Box 158 Copper Center, Alaska 99573
#0162	\$5,000	O. Alexander Hoke (Tidal-powered Dredge) P. O. Box 963 Juneau, Alaska 99802
#0165	\$5,000	Douglas R. Grimm (Methyl-fuel Plant) S. E. Applied Electronics P. O. Box 324 Auke Bay, Alaska 99821
#0180	\$1,000	Jim Donally (Experimental Greenhouses) 1014 East 11th, #4 Anchorage, Alaska 99501