

SCOMM

#44:12



POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

MEMO: April 30, 1980
TO: Rep. Bill Miles, Chairman
House Resources Committee
FROM: Bob Speed, Adm. Assistant
RE: HB 687 Alaska Energy Center
Section analysis

SECTION ANALYSIS

SECTION 1: FINDINGS. An independent energy resource development center, directed toward assistance to the private sector, can help develop Alaska's energy resources so as to stimulate employment and also new industries based on use of those resources, while helping solve state energy problems. Also, Alaska has a responsibility to use part of its nonrenewable energy resource revenues to help accomplish these goals, and to foster technologies that will help the nation as a whole.

SECTION 2: INTENT. The energy center is to become financially self reliant for its operating expenses at the earliest possible date.

SECTION 3: ESTABLISHES the Alaska Energy Center as a public nonprofit corporation, legally independent, but an instrumentality of the state under the Department of Administration, as described below:

PURPOSE. Creation of employment opportunities for Alaskans is given a high priority, using state energy resources as a mechanism to create economically viable industries and businesses based on use of those resources and hardware necessary for their use. In doing this, the Energy Center is to determine and promote appropriate energy technologies; benefit state citizens by stabilizing energy costs; reducing dependence on nonrenewable energy sources, and through creation of new industries, businesses and jobs; and develop commercially feasible businesses related to those technologies.

9 BOARD OF DIRECTORS: The governing body shall be a board of directors (appointed by the governor).

COMPOSITION OF THE BOARD: The board consists of nine members, seven of whom are appointed by the governor as confirmed by the legislature in joint session. Two members of the legislature also serve, appointed at the beginning of each legislature by the presiding officers; they are ex-officio and cannot vote.

*had talk about energy, job to
this day something about it.*
Alaska State Legislature
House of Representatives

- ① Jobs, 1987 line
- ② R: D → return to country & would save of resource new industries
- ③ Public Service
- ④ NEW RESULT new industry jobs

TERM OF OFFICE: Ex officio nonvoting members (legislators) serve for the duration of the legislature during which they are appointed.

Governor's appointments serve three-year terms and may be reappointed; terms are staggered. Officers elected among the directors serve in those positions for three years.

REMOVAL AND VACANCIES: The governor may remove board members from their office with the consent of a majority of legislators in joint session; if the legislature is not in session, members can be suspended with loss of rights of participation, subject to review by the legislature within 30 days of the beginning of the next session.

Vacancies are filled by appointment and confirmation, as above, with the new appointment serving the duration of the term to which he is appointed.

QUALIFICATIONS OF BOARD MEMBERS: At least four of the board members appointed shall be state residents with experience in energy technology or energy development. At least three of the board members appointed must be nationally recognized experts in energy technology or energy development.

QUORUM: Four voting board members constitute a quorum.

COMPENSATION of board members: \$350 a day plus per diem and travel expenses relative to board meetings.

CONFLICTS OF INTEREST: Board members are subject to the state conflict of interest provisions.

EMPLOYMENT OF PERSONNEL: The board shall employ an executive director and determine his salary. The executive director shall be responsible, with approval of the board, for other staff.

POWERS: Standard corporate powers assigned by the State of Alaska. Also: to contract with private and governmental entities for projects, accept grants and loans, hold patents, copyrights, trademarks, royalties, etc.

DUTIES: Promote commercial development and use of appropriate energy technologies, sponsor research, oversee demonstrations of technology, provide financial and other support to inventors and businesses engaged in the development, demonstration and commercialization of energy technologies; and to manage projects appropriated by the legislature.

BUDGET AND APPROPRIATIONS: The Center is subject to the Executive Budget Act. *high cost*

ANNUAL REPORT: The board is responsible for preparation and submittal of an annual report to the legislature, which shall include project descriptions and the number of new jobs which have been created, the number of businesses assisted or created.

COOPERATION: The center is directed to cooperate with other state agencies, and the University of Alaska.

DEFINITIONS: Definition of terms used in the foregoing sections and subsections of the bill.

SECTION 4: Center employees are in the exempt category of the State Personnel Act.

SECTION 5: the Center is classified as a "commission or board"

SECTION 6: Projects funded by the legislature are appropriated for the full expected duration of the project; this is to ensure that projects begun with legislative appropriations are not harmed by budget reductions in the future. This provision applies to research, development or demonstration projects under either the operating or capital budgets.

SECTION 7: Alaska Council on Science and Technology is to advise the governor and legislature on priority issues, and recommendations for projects which should be conducted or supported by the energy center.

SECTION 8: First board of directors are staggered according to the following formula: three serving a one-year term; two serving two years, and two serving three years.

SECTION 9: Effective date is immediate, except for Section 7, which takes effect later.

SECTION 10: Effective date for Section 7 is July 1, 1980

legis.
handli

Replaces
Sep
Council
w orig.
met

Location not specified

4.4.80 P1

Energy Center plan reworked

By SUSAN FISHER
News-Miner Bureau

JUNEAU—A bill to set up an independent Alaska Energy Center has been rewritten and signed off by the House Resources Committee.

But it hasn't been reported out of committee yet, as Resource members work on other aspects in a package of energy-related bills.

Originally the bill said the center's main office would be in Fairbanks. That has been removed, leaving location open to the board of directors.

While no major substantive changes have been made to the original House Bill 687, some of the committee's changes are:

- Requiring that three of the seven board members be "nationally recognized" energy experts, and that four be Alaskans.

- Upping the pay to board members from \$200 to \$350 per day during board

meetings, plus per diem and travel costs.

- Reducing the number needed for a board quorum from five to four.

- Requiring the board to meet twice a year with representatives of the Alaska Council on Science and Technology, the Alaska Power Authority, the Alaska Renewable Resources Corp., Department of Commerce's Division of Energy and Power Development, Department of Natural Resources and the University of Alaska.

- Mandating an annual report to the governor and Legislature on all research needs, recommendations on projects under consideration, progress of ongoing research, and the relationship of that research to Alaska's needs and priorities.

Rep. Brian Rogers, D-Fairbanks, said the change in requiring three nationally recognized experts as board members is intended to spur

recognition of the center outside Alaska.

The board would be composed of seven members appointed by the governor and confirmed by the Legislature, plus two non-voting legislative members appointed by the House Speaker and Senate President.

HB 687 initially was sponsored by 25 representatives, and now will appear as a committee substitute.

Reps. Bill Miles, D-Anchorage, and Alvin Osterback, D-Sand Point, co-chairmen, and Reps. Jack Fuller, D-Nome; Chat Chatterton, R-Anchorage, and Sam Cotten, D-Eagle River, signed to pass recommendations on the committee substitute.

But two of the original 25 sponsors, Resource members Rick Halford, R-Chugiack, and Pat Carney, D-Wasilla, signed no recommendation.

The bill has a second committee

referral to the House Finance Committee.

Original purposes of the bill remain the same: create jobs, promote efficient and appropriate technologies based on Alaska's energy resources, reduce energy imports, and make new technologies useful to businesses.

The Resources Committee added a paragraph saying the Legislature intends the center "act to achieve self-reliance at the earliest possible date."

About \$1.4 million in anticipated funding is expected to be contracted to the University of Alaska for research, and the bill says such contracting with the UA shall be done when feasible.

Both the original and revised versions of the bill stipulate that board members are subject to the state's conflict-of-interest laws, shall hold staggered terms, and may employ an executive director and staff.

(See *ENERGY*, page 7)

ENERGY . . .

(Continued from page 1)

The center and board may accept grants, loans and contracts; hold patents, copyrights, trademarks, royalties or other protection on rights; sue and be sued; adopt regulations for its governance, and provide financial and other support to inventors and businesses.



Alaska State Legislature House of Representatives

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

MEMO: Feb. 29, 1980

TO: Milt Barker
Legislative Finance

FROM: Rep. Terry Gardiner / Speaker
by Bob Speed, A.A. /

RE: Fiscal note: HB 687 creating the Alaska Energy Center

Milt --

attached is a budgetary breakdown anticipated for the first year of operations of an Alaska Energy Center as proposed in HB 687. The center would be semi-autonomous in its relationship with the Administration and Legislature, in that it would be set up as a non-profit corporation (such as ARRC).

There are a couple things to consider as you prepare the fiscal note:

- 1) Salaries are drawn from my own estimates of the amount needed to obtain qualified people from the private sector, or with private-sector experience. However, I ask that you also consider figures now paid, or proposed to be paid under the new state pay bill. The position of executive director of the energy center would be roughly equivalent to that of departmental commissioners, the university president, or trustees of the Alaska Renewable Resources Corp. Staff under the executive director would be stepped in increments analogous to similar positions in other agencies.
- 2) To ensure rapid start-up of the AEC, there has been some discussion of the possibility of putting out bids for a management contract with organizations now involved in similar programs; in that event, adjustment might be needed in the categories having to do with personal services: specifically, there would be a need for more money in subcontracting and consequently less in labor; overhead and fringe budget components would also have to be adjusted in taking that into account. I figure there should be a 20 to 30 percent leeway in the various components to allow for the alternatives of either permanent staff hire or management contracting. I estimate there would be no change in the total for the operating budget of \$5.5 million.

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Alaska State Legislature House of Representatives

MEMORANDUM

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

To: Legislative Committees
From: Terry Gardiner
Date: February 29, 1980
Re: HB 687

HB 687 FISCAL NOTE Operating Budget FY 81

Salaries:	<u>1st Qtr</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
Ex Dir	\$20,000	\$20,000	\$20,000	\$20,000
Dep Dir	17,500	17,500	17,500	35,000
Sen Staff	60,000	90,000	120,000	150,000
Staff member	67,500	112,500	157,500	225,000
Tech/Jr. Staff	33,500	57,500	77,000	96,250
Sec	<u>16,500</u>	<u>22,000</u>	<u>27,500</u>	<u>38,500</u>
LABOR				
SUB TOTAL	\$215,000	\$319,500	\$419,500	\$564,750
Fringe & Over- head (80%)	<u>172,000</u>	<u>255,600</u>	<u>335,600</u>	<u>451,800</u>
	\$387,000	\$575,100	\$755,100	\$1,016,550
Travel	\$ 85,000	\$ 60,000	\$ 85,000	\$105,000
Subcontracts	100,000	300,000	400,000	700,000
Equipment	<u>50,000</u>	<u>100,000</u>	<u>200,000</u>	<u>200,000</u>
SUBTOTAL	\$532,000	\$1,035,100	\$1,440,100	\$2,021,500
Gen admin-10%	<u>53,200</u>	<u>103,510</u>	<u>144,010</u>	<u>202,155</u>
TOTAL	\$585,200	\$1,138,610	\$1,584,110	\$2,223,705
NET TOTAL	\$5,513,625.			

II: HB 687 FISCAL NOTE

ORGANIZATIONAL STUDY:	\$65,000	} <i>TOTAL</i> <i>breakdown of budget total</i>
CONTRACTUAL:	\$45,000	
TRAVEL:	\$10,000	
INCIDENTAL & CONTINGENCY	\$10,000	

III: PROJECTS BUDGET

<u>Project</u>	<u>Duration</u>	<u>Total Cost</u>	<u>State Share</u>
Geothermal	1 yr	\$1,200,000	\$1,200,000
Wind	1 yr	1,100,000	1,200,000
Hydro (micro)	1 yr	500,000	300,000
Feedlot or dairy methane	1 yr	1,500,000	750,000
Electric transportation		500,000	250,000
Diesel transition to coal	2 yr	1,000,000	1,000,000
Hydrogen engine	2 yr	1,500,000	1,500,000
Wood alcohol (barge/SE)	2 yr	4,500,000	3,000,000
Sawmill alcohol (interior)	2 yr	2,500,000	1,500,000

TG/mh



Pacific Northwest Laboratories
P. O. Box 999
Richland, Washington U.S.A. 99352
Telephone (509) 375-3796
Telex 15-2874

December 27, 1979

Mr. Bob Speed
Administrative Assistant
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Bob:

Thanks again for stopping by Battelle on the 19th and discussing your interests in Alaskan energy development.

As discussed, Battelle's "Delta Biomass Project" has identified several economically attractive options for utilizing the biomass that has resulted from clearing the Delta Agricultural Project. Because of the benefits to be derived by the Ag Project and potential energy use of this material, I feel that it is very important that development work leading to demonstration and/or commercialization be continued in 1980. Although our project was specific to the present 60,000 acre clearing project the information can be used as an integral part of the plans for other land clearing projects as well as for biomass utilization in Alaska in general. Your commitment to achieving energy self-sufficiency on the Delta Ag project is a logical extension of our biomass project and I will continue to explore the potential in more detail with you and others in the coming weeks.

The results of the Delta Biomass project could also benefit the U.S. Department of Energy (DOE). DOE's interests in fuels from biomass include identification of research initiatives leading to demonstration and/or commercialization possibilities. The Delta site could potentially be used as a proving ground for harvesting, transportation, conversion and utilization of biomass resources. Although Battelle can not make a commitment for DOE, we are confident that they would be receptive to ideas for participation if a similar commitment is there from an Alaskan entity. We would be glad to help you pursue this as an extension of our just completed work for the State of Alaska on the Delta Ag Project.

X Mr. Ted E. Divine and I also appreciated the opportunity to discuss Alaska's plans for an energy institute or energy initiatives corporation. As discussed,

Mr. Bob Speed
December 27, 1979
Page 2

Battelle has the capabilities and interests to aid in setting up such an organization based on our institute building experience with the Industrial Technology Research Institute (ITRI) project in Taiwan, the Korean Institute of Science and Technology (KIST) and others. Because of the nature of these projects we are not able to provide you with written detailed information at this time. However, we will send you additional background on these capabilities when it can be released. Please keep us informed of developments on the subject of the energy institute/corporation and certainly include us on the RFP distribution if the state decides to go that route.

I have included some additional information for your reference. I look forward to keeping in touch.

Sincerely,

David E. Eakin

David E. Eakin, P.E.
Senior Development Engineer
Food and Agriculture Section

DEE:gmh

HOUSE JOURNAL SUPPLEMENT

May 2, 1980

Friday

No. 60

FISCAL NOTE

CSHB
125

I. REQUEST

(Page 1 of 2)

Bill/Resolution No. CS for HB 125

Title An act relating to daycare centers and multipurpose youth centers

Requested by House Health, Education & Social Services Comm. Date 4-25-80

II. FISCAL DETAIL

Agency Affected Community and Regional Affairs

Program Category Affected Social Services

BRU, Program, or Subprogram(s) Affected Local Government Assistance

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	0	0	0	0	0	0

FUNDING (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	0	0	0	0	0	0
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

There will be no fiscal impact until such time as money is appropriated to the grant program established by this bill.

The following breakdown assumes a funding level of \$6,000,000 for FY 81 (per staff of House H&SS Committee):

1 Local Government Specialist IV	Range 19	\$40,735
1 Account Technician I	Range 12	25,006
1 Clerk Typist III	Range 8	19,615

Total Personal Services \$85,356*

Travel	15 Trips @ 500	\$ 7,500
	30 Days per deim @ 65	1,950
	TOTAL	\$ 9,450

IV. DATE 4-25-80

PREPARED BY

AGENCY State Assessor

PHONE 465-4730

Original: Legislative Finance

CSHB
125

Page 2 of 2

Central Office Space 1000 sq. ft. @ 1.50	=	\$18,000
Mag Card @ 300 x 12	=	3,600
Telephone	=	5,000
Postage	=	2,000
Printing	=	5,000
Copier	=	<u>1,500</u>
		\$35,100
Commodities		\$ 3,000
Equipment		<u>\$ 3,500</u>
GRAND TOTAL		\$136,406

*Salaries include 28% for fringe benefits. Equipment includes one time start up costs.

FISCAL NOTE

I. REQUEST

Bill/Resolution No. HOUSE BILL NO. 529Title An Act relating to fish disease control

Requested by _____

Date _____

II. FISCAL DETAIL

Agency Affected Department of Fish and GameProgram Category Affected Natural ResourcesBRU, Program, or Subprogram(s) Affected Division of F.R.E.D.

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		57.8	62.4	67.4	72.8	78.6
200 TRAVEL		19.0	20.5	22.2	23.9	25.8
300 CONTRACTUAL		5.0	5.4	5.8	6.3	6.8
400 COMMODITIES		18.2	19.7	21.2	22.9	24.8
500 EQUIPMENT		5.0	5.4	5.8	6.3	6.8
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		105.0	113.4	122.4	132.2	142.8

FUNDING (Thousands of Dollars)

GENERAL FUND		105.0	113.4	122.4	132.2	142.8
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		2.0	2.0	2.0	2.0	2.0
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

To implement comprehensive fish disease control program which will provide diagnostic screening and prevention programs for twenty (20) scientific/educational Aquaculture permit and fifteen (15) Private Non-Profit (PNP) Aquaculture permits.

100	2 Microbiologists, range 16 @ 28.9 each.	57.8
200	Travel and per diem for 35 annual on-site diagnostic screening visits and additional visits/prevention and control programs.	19.0
300	Private laboratory testing.	5.0
400	Scientific supplies.	18.2
500	Laboratory equipment.	5.0
	Inflation at 8% per year for following years.	

TOTAL: \$105.0

IV. DATE 1/10/80PREPARED BY Russell H. ClarkAGENCY Department of Fish and Game

Original: Legislative Finance

PHONE #465-4120

HE
637FISCAL NOTE

I. REQUEST

Bill/Resolution No. House Bill 637

(Page 1 of 2)

Title "An Act relating to the purchase of services by the state for persons under itsRequested by House ITSSDate 4/16/80

Title cont.

responsibility; and providing for an effective date."

II. FISCAL DETAIL

Department of Health and Social Services

Agency Affected

Program Category Affected Social Services, Justice, HealthBRU, Program, or Subprogram(s) Affected Admin. and Support - Audit

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		125.8	99.0	111.0	124.0	140.0
200 TRAVEL		20.1	10.0	21.0	23.0	25.0
300 CONTRACTUAL		1.0	1.1	1.3	1.4	1.6
400 COMMODITIES		1.0	.5	.0	1.0	1.1
500 EQUIPMENT		2.5				
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.		1) See Note 1 below				
TOTAL		150.3 *	118.0 *	134.2 *	149.4 *	167.7 *

*Does not include costs in 700 lines as result of cost settling.

FUNDING (Thousands of Dollars)

GENERAL FUND		150.3*	118.0*	134.2*	149.4*	167.7*
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		3	2	2	2	2
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Note 1:

During 1978 rate hearings were held for "full-cost-of-care" as required in AS 47.40.70. Inflationary rate increases were established and the costs for the first six months of that year were reviewed. Based on that information rates were believed to be sufficient to pay for the full-cost-of-care. A review of FY 1979 provider costs revealed costs exceeded actual payments by \$352,723.81. It may be reasonable to assume that the FY 81 cost settlement would be at least equal and probably greater.

Assumptions:

1. Actual impact cannot be estimated for expenditures related to costs to be allowed under this bill, as no data base exists. Other line items reflect 7% inflation.

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)

Prepared by: Cedrick B. B. Date: April 16, 1980
Division/Office: PH:
Department of Health & Social Services

Approval DHSS Mgt. & Bdgt John DeLuz Date: 4/16/80Page 1 of 2

2. Costs above reflect increase in administrative expense only.
3. All positions full year budgeted.
4. Salaries reflect current contracts plus 7% increase in calendar year 1982.

Program:

1. Personal Services

- a. Two range 18 Field Auditors
Salary FY 81
2465 increases to 2640 1-1-81

FY 82
2736 increases to 2928 1-1-82
Benefits total 28%

Program:

- b. Social Worker IV Position for FY 81 only.

This position is needed to enable the Department to promulgate regulations this fiscal year, including levels of care and standards of allowable costs. The position would also carry out an implementation plan including developing facility forms, guidelines, and information packets. Finally, the position would provide ongoing expertise in residential child care and develop strategies to enable providers to upgrade the quality of their treatment programs.

2. Program Plan

These additional auditors will be required to perform lengthy and complex fiscal audits to establish and revise rates of reimbursement for contract providers of service.

The complex financial arrangements made by some current providers include holding companies, lease back agreements, donated property and similar complications, all of which preclude an accurate cost estimate.

CSHB
653AMENDED
FISCAL NOTE

I. REQUEST

Bill/Resolution No. CSHB 653 #1

Title An Act Establishing a Fuel Emergency Fund & a Bulk Fuel Distribution & Storage ProgramRequested by Mary Holloran, House Resources CommitteeDate 4-21-80

II. FISCAL DETAIL

Agency Affected Department of Commerce and Economic DevelopmentProgram Category Affected DevelopmentBRU, Program, or Subprogram(s) Affected Division of Business Loans

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES	-0-	-0-	-0-	-0-	-0-	-0-
200 TRAVEL	-0-					
300 CONTRACTUAL	-0-					
400 COMMODITIES	-0-					
500 EQUIPMENT	-0-					
600 LAND & STRUCTURES	-0-					
700 GRANTS, CLAIMS, ETC.	1,500.0					
CAPITALIZE LOAN FUND	1,500.0					
TOTAL	3,000.0	-0-	-0-	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND	3,000.0	-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	-0-	-0-	-0-	-0-	-0-	-0-
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

This fiscal note is amended to reflect the addition of Sec. 45.87.050 which states that the department shall contract for the administration of the grant and loan programs. It assumes the person or agency who administers the programs will take the contract costs out of the grant or loan appropriation.

If contract costs must be defined and appropriated separately, a new fiscal note will be submitted.

IV. DATE Amended 4-21-80

Original: Legislative Finance

PREPARED BY Sharon R. Traylor, Director
AGENCY Div. of Business Loans, Dept. of Commerce & Econ.
 PHONE 465-2510

May 2, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 60

CSHB
653FISCAL NOTE

I. REQUEST

Bill/Resolution No. CSHB 653 # 2Title An Act establishing a fuel emergency fund and a bulk fuel distributionRequested by storage program Resources _____ Date 4/21/80

II. FISCAL DETAIL

Agency Affected Office of the GovernorProgram Category Affected Disaster and Emergency Relief FundsBRU, Program, or Subprogram(s) Affected Fuel Emergency Fund

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.	250.0					
TOTAL	250.0					

FUNDING (Thousands of Dollars)

GENERAL FUND	250.0					
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

The sum of \$250,000 is appropriated from the general fund to the Office of the Governor, Fuel Emergency Fund. The unexpended and unobligated portion of this appropriation does not lapse at the end of the fiscal year.

IV. DATE 4-21-80PREPARED BY House Resources/Halloran

AGENCY _____

Original: Legislative Finance

PHONE 465-3779

HB
653FISCAL NOTE

I. REQUEST

Bill/Resolution No. HB 653 4-3Title An Act making appropriations to the Department of Commerce & Economic Dev.

Requested by _____

Date _____

Title: the Department of Community & Regional Affairs, and the Office of the Governor, for bulk fuel matters; and providing for an effective date.

II. FISCAL DETAIL

Agency Affected Department of Community and Regional AffairsProgram Category Affected Community DevelopmentBRU, Program, or Subprogram(s) Affected Local Government Assistance

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 81	FY 82	FY 83	FY 84	FY 85	FY 86
100 PERSONAL SERVICES	40.7	43.9	47.5	51.3	55.4	59.8
200 TRAVEL	10.6	19.1	31.5	35.2	41.0	45.6
300 CONTRACTUAL	1.8	1.9	2.0	2.2	2.3	2.6
400 COMMODITIES						
500 EQUIPMENT	.7	0	0	0	0	0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL	53.8	64.9	81.0	88.7	98.7	108.0

FUNDING (Thousands of Dollars)

GENERAL FUND	53.8	64.9	81.0	88.7	98.7	108.0
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	1	1	1	1	1	1
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Personal Services: LGS IV (range 19) with special emphasis on business & loan skills. (See Comments for fuller detail)

Travel: FY '81 assumes 15 grants at 1.5 trips per grant; 3 days per diem

FY '82 assumes 15 grants at 1.5 trips per grant; 2 days per diem

15 business setups & loan preparation at 15 trips

3 days per diem

FY '83 assumes 15 grants at 1.5 trips per grant; 2 days per diem

15 business setups & loan preparation at 15 trips

3 days per diem

15 monitor/update at 15 trips per 1/2 days per diem

FY '84 same assumption as FY '83 with inflation

FY '85 same assumption as FY '83, with inflation

Contractual: Primarily telephone tolls and cost of advertising for bids.

Equipment: Desk, chair, bookcase, calculator, desk equipment, One time cost

IV. DATE 3/7/80PREPARED BY Ms. LareAGENCY Community & Regional Affairs

Original: Legislative Finance

PHONE (Anchorage) 276-1721 (Juneau) 465-4735

REVISED
FISCAL NOTE

I. REQUEST

Bill/Resolution No. CSHB 653 # 4 (Page 1 of 2)Title An Act relating to fuel and fuel shortages; establishing a fuel emergency fund and
Requested by Mary Halloran, House Resources Committee Date 4-18-80a bulk fuel acquisition and storage program; and providing for
an effective date.

II. FISCAL DETAIL

Agency Affected Department of Commerce and Economic DevelopmentProgram Category Affected DevelopmentBRU, Program, or Subprogram(s) Affected Division of Business Loans(Note: If more than one budget component is affected, separate line-item amounts and funding for each
component in the analysis section.)EXPENDITURES (Thousands of Dollars)

		3 Mos.					
		FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100	PERSONAL SERVICES	22.9	91.5	100.2	110.8	121.9	134.1
200	TRAVEL	2.9	11.3	12.4	13.6	15.0	16.5
300	CONTRACTUAL	3.1	12.4	13.6	15.0	16.5	18.1
400	COMMODITIES	.1	.5	.6	.7	.8	.9
500	EQUIPMENT	6.3	-	-	-	-	-
600	LAND & STRUCTURES	-	-	-	-	-	-
700	GRANTS, CLAIMS, ETC	1,500.0	-	-	-	-	-
	Capitalize Loan Fund	1,500.0	-	-	-	-	-
	TOTAL	3,035.3	115.7	127.3	140.1	154.2	169.6

FUNDING (Thousands of Dollars)

GENERAL FUND	3,035.3	115.7	127.3	140.1	154.2	169.6
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME	3	3	3	3	3	3
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

To increase staff to handle processing, closing and accounting for
bulk fuel revolving loan fund and for bulk fuel storage facilities grant fund.

See attached breakdown of fiscal note figures.

The figures have been revised to reflect the increases in wages and
per diem.This fiscal note assumes grants totaling \$1.5 million and loans totaling
\$1.5 million in the first year.*Sharon R. Traylor*IV. DATE Revised 4-18-80PREPARED BY Sharon R. Traylor, Director
AGENCY Div. of Business Loans, Dept. Comm. & Eco. Dev.
PHONE 465-2510

Original: Legislative Finance

CS
Breakdown of Fiscal Note Figures for HB 653:

Page 2 of 2

	<u>3 Months</u>	<u>12 Months</u>	
100. 1 Loan Examiner III @ \$2,652/mo.	8.0	31.8	
1 Documents Processing Clerk III @ \$1,440/mo.	4.3	17.3	
1 Accounting Technician II @ \$1,850/mo.	<u>5.6</u>	<u>22.2</u>	
Sub-Total	17.9	71.3	
Standard Benefits (Wages x .1529)	2.7	10.9	
Supplemental Benefits (Wages x .0665)	1.2	4.7	
Health Insurance (Man Mos. x 127)	<u>1.1</u>	<u>4.6</u>	91.5
200. Travel to Villages:			
20 Trips @ \$430	2.2	8.6	
40 Days Per Diem @ \$67	<u>.7</u>	<u>2.9</u>	11.3
300. Telephone, Postage, Printing, Advertising	2.5	10.0	
Additional Office Space @ \$200/Mo.	<u>.6</u>	<u>2.4</u>	12.4
400. Office Supplies	<u>.1</u>	<u>.5</u>	
Total Operating Expenses	29.0	115.7	
500. 3 Desks @ \$333	\$ 1.0		
2 Credenzas @ \$390	.8		
1 Typist Extension @ \$350	.4		
2 Secretarial Chairs @ \$137	.3		
1 Executive Chair @ \$180	.2		
2 Side Chairs @ \$125	.3		
4 File Cabinets @ \$247	.9		
2 Typewriters @ \$810	1.6		
3 Calculators @ \$225	.7		
3 Wastebaskets @ \$10, 1 Coat Rack @ \$60	<u>.1</u>	<u>6.3</u>	
TOTAL		35.3	

10% Inflation for Succeeding Years

May 2, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 60

SSHB
800FISCAL NOTE

I. REQUEST

Bill/Resolution No. SS HB 800

(Page 1 of 2)

Title Unitization of Oil and Gas Leases/Oil and Gas ConservationRequested by House Resources CommitteeDate 4/17/80

II. FISCAL DETAIL

Agency Affected Natural Resources/Oil and Gas Conservation CommissionProgram Category Affected NRRECBRU, Program, or Subprogram(s) Affected Management and Administration

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		53.0	53.0	143.0		
200 TRAVEL						
300 CONTRACTUAL		40.0				
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		93.0	53.0	143.0		

FUNDING (Thousands of Dollars)

GENERAL FUND		93.0	53.0	143.0		
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME		1	1	3		
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

Within the next year, basic unit agreement forms must be revised and designed to cover net profit share lease accounting under unit agreements, as well as to reflect changes proposed in SS HB 800 and in regulations. Forms that must be revised include the State Unit Agreement Form; the State-Federal Unit Agreement Form; Unit Operating Agreement Form and its exhibits. The \$53,000 proposed for FY 81 would add one position in DNR, an economist, to do policy analysis and research on issues affecting unitization negotiations and approvals and to oversee revisions of the forms. The \$40,000 in contractual money is needed to acquire legal assistance on form revisions and for review of the forms and procedures by an accounting firm. Two additional positions, an accountant and a geologist, would be needed in FY 83 (or possibly earlier or later, depending on the timing of Beaufort Sea [continued on attached sheet])

IV. DATE 4/17/80PREPARED BY Jeff Haynes, deputy commissionerAGENCY Natural ResourcesPHONE 465-2400

Original: Legislative Finance.

cc: Budget and Management

Prime Sponsor (First Legislator Named)

SS HB 800 Page 2 of 2

unitization negotiations) to represent the State in negotiations on the Unit Operating Agreements proposed for Beaufort Sea leases and in other units containing a net profit share lease or leases with more than one royalty rate or provision.

FISCAL NOTE

I. REQUEST

Bill/Resolution No. House Bill No. 981
 Title Authorizing advisory vote re right of state to own & control public
 Requested by Rep. Charles H. Parr Date 4-28-80

II. FISCAL DETAIL

Agency Affected _____
 Program Category Affected _____
 BRU, Program, or Subprogram(s) Affected _____
 (Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES	-0-	-0-	-0-	-0-	-0-	-0-
200 TRAVEL	-0-	-0-	-0-	-0-	-0-	-0-
300 CONTRACTUAL	-0-	-0-	-0-	-0-	-0-	-0-
400 COMMODITIES	-0-	-0-	-0-	-0-	-0-	-0-
500 EQUIPMENT	-0-	-0-	-0-	-0-	-0-	-0-
600 LAND & STRUCTURES	-0-	-0-	-0-	-0-	-0-	-0-
700 GRANTS, CLAIMS, ETC.	-0-	-0-	-0-	-0-	-0-	-0-
TOTAL	-0-	-0-	-0-	-0-	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND	-0-	-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS	-0-	-0-	-0-	-0-	-0-	-0-
OTHER (Specify Fund Source)	-0-	-0-	-0-	-0-	-0-	-0-

POSITIONS

FULL TIME	-0-	-0-	-0-	-0-	-0-	-0-
PART TIME	-0-	-0-	-0-	-0-	-0-	-0-
TEMPORARY	-0-	-0-	-0-	-0-	-0-	-0-

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

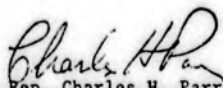
IV. DATE 4-28-80

Original: Legislative Finance

PREPARED BY

AGENCY

PHONE



Rep. Charles H. Parr

House Judiciary Committee

465-3718

CSHB
687REVISED FISCAL NOTE

I. REQUEST
 Bill/Resolution No. Committee substitute for House Bill 687 (Page 1 of 3)
 Title An Act creating the Alaska Energy Center
 Requested by _____ Date _____

II. FISCAL DETAIL
 Agency Affected Department of Administration
 Program Category Affected Development
 Budget Request Unit(s) Affected Alaska Energy Center

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		1183.6	2733.2	2924.5	3129.2	3348.3
200 TRAVEL		280.0	380.0	406.6	435.1	465.5
300 CONTRACTUAL		1687.6	4761.6	5166.3	5527.9	5914.9
400 COMMODITIES		60.0	160.0	171.2	183.2	196.0
500 EQUIPMENT		350.0	800.0	856.0	915.9	980.0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.		1445.0	1546.1	1654.4	1770.2	1894.1
PROJECT FUNDING		15000.0	18750.0	20062.5	21466.8	22969.6
TOTAL		20006.2	29130.9	31241.5	33428.3	35766.1

FUNDING (Thousands of Dollars)

GENERAL FUND		10006.2	16880.7	17227.3	14552.5	12456.8
FEDERAL FUNDS		10000.0	12250.0	13107.5	14025.0	15006.8
OTHER (Specify)				906.7	4850.8	8304.5

POSITIONS

FULL TIME		38.0	50.0	50.0	50.0	50.0
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

See attached for expenditure summary.

Assumptions: FY 81 is startup; FY 82 full operations

FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent

Federal funding \$10 million FY 81; \$12,250 million FY 82;

FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent
 General funding for non-federal portion of operations 100 per cent in
 FY 81 and FY 82; 95 per cent in FY 83; 75 per cent
 in FY 84; 60 per cent in FY 85; continuing declineOther funds include royalties, private contracts, additional federal
 funds; 5 per cent of non-federal operation in FY 83;
 25 per cent in FY 84; 40 per cent in FY 85Grants and claims includes subcontracts to University of Alaska for
 alternative energy research in FY 81; inflation at
 7 per cent for FY 82, FY 83, FY 84, FY 85.

IV. DATE April 24, 1980 PREPARED BY Terry Anderson
 AGENCY Legislature
 Original: Legislative Finance PHONE 465-5720

ALASKA ENERGY CENTER - CSHB 687

Page 2 of 3

Project Funding - FY 81

Project funding for FY 81 includes \$5 million in general funds and \$10 million in anticipated federal and other receipts. Up to \$2.5 million of the general funds may be used to match other receipts. The Board of Directors of the Energy Center shall submit a plan for expenditure of the remaining \$2.5 million in general funds to the Speaker of the House and the President of the Senate before these funds are encumbered.

Grants & Claims - FY 81

Grants and claims includes \$1,445,000 for the following subcontracts to the University of Alaska Alternative Energy Research Program:

Fuels research program	180,000
Solar technology program	315,000
Heat pump demonstrations	65,000
Biomass fuels research	130,000
Energy economics research	80,000
Coal utilization research	230,000
Wind energy data collection and wind energy atlas	110,000
Waste heat research center	275,000
Fuel cell demonstrations	60,000
	<u>1,445,000</u>

Grants and claims for FY 82 - FY 85 includes continuation of alternative energy research projects by the University of Alaska under contract to the Alaska Energy Center, with specific projects to be determined by the Board of Directors of the Alaska Energy Center. The legislature intends that technology development and demonstration projects currently being conducted by the following agencies be transferred to the Alaska Energy Center in the FY 82 and subsequent budgets:

- University of Alaska
- Division of Energy and Power Development
- Alaska Power Authority
- Department of Transportation and Public Facilities
- all other energy technology development projects

The Board of Directors of the Alaska Energy Center may subcontract to the University of Alaska, other state agencies, or private research firms from the project funding line item for any projects selected by the board.

Appropriations for project funding made to the Alaska Energy Center are for capital projects and are subject to AS 37.25.020.

ALASKA ENERGY CENTER - CSHB 687
OPERATING BUDGET - FISCAL YEARS 1981 & 1982

	<u>1st Quarter</u>		<u>2nd Quarter</u>		<u>3d Quarter</u>		<u>4th Quarter</u>		<u>FY 82 Full Operat</u>	
	<u>Expen.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Posit</u>
<u>PERSONAL SERVICES</u>										
Salaries										
Exec. Director	20.0	1	20.0	1	20.0	1	20.0	1	80.0	1
Dept. Directors			17.5	1	17.5	1	17.5	1	140.0	2
Senior Staff			60.0	4	90.0	6	120.0	8	600.0	10
Professional Staff			67.5	6	112.5	10	157.5	14	900.0	20
Tech/Junior Staff			33.5	4	57.5	6	77.0	8	384.8	10
Secretarial Staff	4.2	1	16.5	4	22.0	5	27.5	6	154.0	7
Total Salaries	<u>24.2</u>	<u>2</u>	<u>215.0</u>	<u>20</u>	<u>319.5</u>	<u>29</u>	<u>419.5</u>	<u>38</u>	<u>2258.8</u>	<u>50</u>
Benefits @ 21%	<u>5.1</u>		<u>45.1</u>		<u>67.1</u>		<u>88.1</u>		<u>474.4</u>	
Total Personal Services	29.3		260.1		386.6		507.6		2733.2	
<u>TRAVEL</u>	50.0		85.0		60.0		85.0		380.0	
<u>CONTRACTUAL</u>										
Rent	48.2		126.8		188.5		247.5		1333.2	
Subcontracts	25.0		100.0		300.0		400.0		2800.0	
Phone/Xerox/Other	<u>10.9</u>		<u>43.2</u>		<u>83.5</u>		<u>114.0</u>		<u>648.4</u>	
Total Contractual	54.9		335.0		572.0		761.5		4761.6	
<u>COMMODITIES</u>			10.0		20.0		30.0		160.0	
<u>EQUIPMENT</u>	<u>==</u>		<u>50.0</u>		<u>100.0</u>		<u>200.0</u>		<u>800.0</u>	
TOTAL OPERATING	134.2		740.1		1138.6		1584.1		8894.8	

May 2, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 60

CSHB
687

To: Rep. Terry Gardiner
Speaker of the House

From: Rep. Bill Miles, Chairman *BW*
House Resources Committee

Date: May 1, 1980

Re: CS HB 687/ Alaska Energy Center
LETTER OF INTENT

The establishment of an Alaska Energy Center is intended to accomplish several major goals, both social and economic. The primary purpose is to use Alaska's energy resources and technology to create jobs in Alaska. A parallel goal is to help solve energy cost and supply problems for Alaskans.

We recognize that energy consumption patterns will undergo dramatic change during the remainder of this century, and into the next. One goal for the Alaska Energy Center is to be a recognized leader in the research and development which will accompany this change, and also which will help conserve the depletable fossil fuels we depend upon, and enhance the economic recoverability of known reserves. This recognized leadership status will be reflected by the number of grants and contracts awarded to the center from government and industry for fossil fuel recovery, development of new energy forms from renewable resources, better use of existing technologies, as well as the practical demonstration of ways to use alternative energy resources economically. In achieving this goal, the energy center shall contribute to the resolution of energy problems faced by Alaskan residents and the communities they live in.

A second major goal recognizes that Alaska has historically been an exporter of raw materials and an importer of finished goods. We believe that while Alaska seeks to resolve its energy price and supply problems over the long term by converting to renewable energy resource use, the opportunity exists to create new industries and employment in the state based on locally available energy resources and the technologies associated with them. Rather than continue to import energy resources and the technology necessary to utilize them, the state should help establish local industries to accomplish the same thing. Direct employment, the "ripple effect" of indirect employment, and recirculation of dollars used to pay for local resources rather than exported to import traditional fuels, will all have profound effects on the economies of Alaskan communities and of the state as a whole. Many of the jobs created will be in demonstration projects carrying some risk of success; but many will be in small businesses spread throughout the state in local resource procurement, hardware assembly and maintenance, plant operations and marketing.

The net result will be new industries and jobs for communities and their residents, as well as greater energy independence for all Alaskans. The Energy Center will help bring about this change through demonstration of economically feasible alternative forms of producing energy and direct technical assistance to local entrepreneurs in creation of local businesses to manufacture, process, harvest or assemble the locally available energy resource or the equipment needed to utilize it. In helping commercialize such ventures, a fundamental role of the center shall be to train inexperienced entrepreneurs in operations and accounting principles needed to make a success of those venture found to be economically feasible; and to work closely with the Alaska Renewable Resources Corp., the Alaska Fisheries and Agriculture Bank, the state business loan programs, private financial institutions and other appropriate funding sources to provide sufficient capital to establish the new business.

A third major goal for the Alaska Energy Center, and one which will provide a check on the success of its activities, is for it to become economically self-sufficient in its operating budget over a maximum period of ten years. We believe this can be accomplished in several ways. First, its research and development activity should be financed from grants and contracts, patent licensing fees and royalties. Although it is probable that the State of Alaska shall continue to be a significant source of contract work, the Legislature expects the Center to initiate from its inception and to maintain a strong ability to compete in the marketplace for an ever-increasing percentage of its operating money. To this end, the Legislature's intent is to capitalize the operational budget with a strong investment in the beginning, and to gradually phase out funding of operations by 1990. Project funding approved by the Legislature is intended to be in advance for full projected costs, to insure that continuity of projects in progress shall not be jeopardized in event of unanticipated budget reductions in succeeding years.

A fourth goal for the energy center recognizes the public service responsibility of the institution. The Alaska Energy Center is established as a private nonprofit corporation to perform an essential service to the People of Alaska. It is to be expected that some of this benefit should be provided as a public service at no cost, to those who request it, while the center is also charged with the responsibility to protect its proprietary interests on which it will depend for an ever-increasing share of its operating and project revenues.

In regard to projects undertaken within Alaska, the energy center shall consider local cultural, social and economic factors, and the aspirations and ways of life of people in existing communities, when determining whether a project or technology is appropriate to local needs. These considerations shall be given equal weight in matching resources and needs.

No corporate structure is established in HB 687. The Legislature recognizes that this vital decision is best left to the board of directors. To that end, the Legislature has appropriated \$100,000 for a comparative study of the organization of similar institutions, public and private, around the country. The first part of that study, to be conducted by the Office of the Governor, shall be to determine the best composition of the board itself, to aid the governor in appointing board members. The second phase, to be directed in part by the board itself, shall be to determine the best management system for the Alaska center.

Although the study remains to be done, and the Legislature lacks the direction which the document will offer when final decisions are made, there are a number of concerns the Legislature intends to be addressed in establishing the enabling legislation in HB 687. These can be broken down into four basic areas of need:

- 1) fossil fuel recovery and related environmental problems
- 2) renewable energy and transportation
- 3) energy conservation and building design
- 4) Innovation Center

The two areas of greatest energy consumption in Alaska are transportation and space heating of buildings, so it follows that these are areas where the Energy Center could provide some of the greatest contributions to energy conservation and replacement of fossil fuels. An "innovation center" would not be limited exclusively to energy but would provide a service to all Alaskan inventors and innovators with marketable ideas. Among the services the Innovation Center would provide would be assistance in determining whether Alaskan inventions are marketable, patent searches and patenting, and business and capital formation if that is the desires of the inventor, or obtaining manufacturing licenses and royalty agreements if the inventor prefers, and marketing.

It is expected that the Innovation Center would perform these services at no initial cost to the client; but that if the product proves commercially successful the Innovation Center would be entitled to a royalty for its services at a standard rate. Wherever feasible, the Center would give preference to manufacture in Alaska.

by Bob Speed

ENERGY INSTITUTE

Realizing that it is felt to be politically impossible, I advocate establishment of a comprehensive development institute, with emphasis on development of private-sector resource industries in Alaska based on our raw resources. Two underlying objectives would be creation of new resource industries appropriate to Alaska, and development of jobs appropriate to the skills of resident Alaskans. This is the underlying philosophy of MERDI, and I think it's one that makes sense. In addition to creation of the industries and jobs, part of the function of the institute would be to coordinate with the high schools, junior and senior college systems and skill centers to develop juvenile and adult training programs appropriate to projects the institute is working on.

Whatever the type of industry or problem, many of the key management and development problems and solutions are the same. As an example, Jack Milnes was able to translate his knowledge of capital formation in the steel industry to fishery development in Alaska; despite dis-similarity of resources, common denominators are such problems to be solved as marketing, transportation systems and corridors, processing capability and construction, and resource harvest or extraction. It may also be true that only by coordinated planning for multiple resource bases will some of these necessary functions prove economic; for example, some of the transportation systems established for seafood products may also be appropriate to timber, minerals, agricultural products or other resources.

It may also be found that there is some connection between the development institute concept and that of the general stock ownership (GSO or AgSOC) concept.

Given those philosophical premises and biases, let's get down to the pragmatic problems and ideas of setting up an Alaska Energy Research and Development Institute (AERDI):

The institute will start out as an energy institute; I think we all agree that it should not be limited to renewable energy, but that emphasis for in-state use should be placed on development of renewable energy resources. Non-renewable energy research should emphasize how to maximize benefit to Alaska for recovery of fossil fuels -- oil & gas, and environmentally sound ways of developing coal resources. It is also to be assumed that the institute would recommend best utilization of these resources; for coal the question might be whether to develop coal for in-state consumption or for sale on the world market, using the revenues to develop appropriate industries (renewable) in Alaska. It is also assumed to be a basic premise that the Institute is intended to benefit the entire nation, not just Alaska, with one objective being to de-fuse the "blue-eyed Arab" stereotype.

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Although the institute starts out as an energy institute, the door should be left open to expand into other sectors of the Alaska economy. Development of biomass fuel resources will result in an immediate interface with some of these sectors, especially agriculture, timber, and possibly fisheries.

I prefer the name Alaska Research and Development Institute (ARDI) for that reason; but realize that the word "Energy" will have to be inserted.

In the event anything comes of the ideas of creating other institutes in Alaska (fisheries, law and humanities, minerals and mining or whatever) any legislation creating any of these should clearly state the legislative intent that it may prove desirable in the future to put some or all administrative functions under one roof, combining to form the Alaska Research and Development Institute.

(NOTE: Battelle Northwest is set up this way; while Battelle's energy programs are concentrated in Richland, Wash., they have close ties with Battelle's humanities foundation based in Seattle. When Battelle reorganized the various institutes in Korea and Taiwan, they worked closely with the humanities foundation to ensure that the human factor was considered in restructuring the academic-economic basis of the countries.)

ORGANIZATION:

- contract with MERDI to help us develop the legislation
- contact and possibly visit other state energy institutes in the country to help us work out the best model possible, and hopefully avoid their mistakes. Although I am impressed with MERDI, I am not willing to say theirs is the best model without looking at others. Let's not reinvent the wheel.
- Leave the legislation open to the possibility of a management-contract by experienced organizations, leading to transition of control to Alaska (MERDI and Battelle would be potential bidders I know of off the top of my head) to get the institute started off on the right track.
- NCSL may have some ideas to offer on how to legislate it, or otherwise be of assistance.

MANAGEMENT:

- one executive director answerable to Board of Directors with legislative oversight
- BOARD of DIRECTORS
 1. Should not be limited to Alaska residents; I don't agree with that type of provincialism, for reasons we all have discussed before: lack of experienced people, narrow outlook, etc.
 2. Board should be predominantly Alaskan, so state has control of it, but with outside expertise available at the highest levels, not just as staff or consultants.

(Board of Directors, continued)

I would like to see organizations of the status of MERDI and Battelle represented on the board; someone from the Wall Street scene (the Sam Plaia's of the world or whoever); and possibly have a major foundation (Ford Foundation, for example) represented. Those are just examples of the type and quality of resources we should draw on for the board of directors if we are to achieve the results we want from the energy institute.

- close ties should be established from the outset with the federal Department of Energy; but at arm's length.
- there should also be very close ties with the Alaska Council on Science and Technology and Alaska Renewable Resources Corp., as well as with any other institutes the Legislature may establish. It may be advisable to have one of the ARRC commissioners and an ACS&T board member on the AERDI board and visa versa (in other words "share" a board member.

LEGISLATION should be written in such a way to allow for later incorporation of other areas of function, in addition to energy; and if other institutes are established that consideration is given to eventual merging of their functions under one coordinated management roof. MERDI was not set up this way, and that is one area where MERDI management feel they made a mistake.

Battelle, being a private, profit-making company, is set up as an integrated and diversified company; they have a non-profit foundation which they can call on to work with the company in regard to social impact.

The energy institute must have the latitude to get involved in agriculture, timber and fisheries to the extent that those sectors of the economy all may have a role in Alaska's energy future in regard to biomass energy forms. Indeed, crops grown for fuels may have greater impact on growth of the Alaska agricultural industry than food crops, and may be an essential factor in whether agriculture can be made to be economic here.

PURPOSE OF AERDI:

1. Stimulation of new resource industry and appropriate jobs for Alaska residents, using energy research and development as the primary catalyst.
2. Solution of Alaska's in-state energy problems in the areas of municipal power, commercial use and conservation, domestic and institutional space heating and conservation, transportation fuels and other energy problems; using appropriate technology and directed primarily at renewable energy sources for in-state use.
3. Research on energy problems which will benefit not only Alaska but the nation and world at large; whether this be in renewable or non-renewable energy resource development.
4. Increase the stature and credibility of Alaska in the eyes of the nation (self-oriented as well as altruistic motives).

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by Bob Speck

BASIC OUTLINE OF MERDI'S OPERATIONAL AND FINANCIAL STRUCTURE AND COMPARISON OF THAT WITH THE PROPOSED AERDI MODEL.

Montana has no equivalent of the Permanent Fund, and the Montana Legislature did not see fit to develop any permanent source of funding for MERDI when the institute was formed. As a result, founders of MERDI found it necessary to develop an energy project of national importance to hang their hat on, which would provide most of their initial operating capital. Butte, Montana, therefore became the national center for research on a futuristic energy technology called magneto-hydro-dynamics (MHD); since Montana has vast coal deposits already being exploited, and since there is a crucial need to find cleaner ways of burning coal for energy, MHD was deemed an "appropriate" technology which would fortuitously bring in large amounts of federal energy research money.

MHD research currently provides the vast bulk of MERDI's cash flow; using this capital source, MERDI has been able to establish a large and talented core of R&D personnel. This reservoir of talent is also available for the other two key areas of MERDI's operations which are (1) renewable energy development and (2) its Center for Innovation. Thus, using the talent pool established by the MHD program, MERDI is able to develop its renewable energy and CFI programs at a much reduced administrative cost.

MERDI didn't choose renewable energy by accident. In analyzing Montana's basic economic problems MERDI founders determined that the state's dependence on raw resource extraction relegated its young people to a harsh choice: work in the mines the rest of their life or go to college to escape. The problem was that there were few jobs for college graduates in Montana (relative to the number of young people needing them); so that escaping the mines also meant leaving the state to find better work. The result was a brain drain.

They also determined that the type of jobs needed to benefit resident Montanans were ones of moderate skill. The electronics industry would be a bad choice for Montana because it would require importing trained people because Montanans didn't possess the skills; and Montanans would consequently not benefit.

MERDI was already engaged in energy (MHD) research, so energy was a logical focus for providing employment. Renewable energy development filled the bill for helping stimulate job development for resident Alaskans and helping resolve energy problems: renewable energy technology is generally no more complicated than that of an automobile and often more simple; anyone who could be trained to fix a Chevrolet could be trained to build and service wind generators.

I might add that the parallels between Alaska and Montana are striking, in terms of economy (both are raw resource extraction economies with little fabrication industry), climate (severe winters, diverse geography), and population (sparse settlement with a blue-collar dominance); and probably in character and attitude as well -- fierce independence, Yankee ingenuity, etc. I think that close ties with that state might prove that of all the states Montana is among the closest in nature to Alaska.

3



Alaska State Legislature House of Representatives

February 7, 1980

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

P R E S S R E L E A S E

With bi-partisan support, a bill to create an energy development center in Alaska has been introduced simultaneously in the House and the Senate today.

"This is one of the most significant new ideas introduced to date in Alaska," said House Speaker Terry Gardiner, one of the three original sponsors of the bill in the House. Prime sponsor for the bill in the Senate is Sen. Mike Colletta, R-Anchorage. Other original sponsors on the House side are Rep. Brian Rogers, D-Fairbanks, and Rep. Margaret Branson, R-Cooper Landing.

The institute will have a national role as envisioned by the legislators who conceived the idea, but its focus will be on issues central to Alaska's future -- employment, development of industry appropriate to Alaska using energy problems as its focus, and development of Alaska's renewable and non-renewable energy resources.

The primary focus for in-state use will be directed at the renewable energy resources that can be harnessed in Alaska -- water, wind, wood and other biomass perhaps in the form of alcohol fuels, the sun and the internal heat of the earth. The development center is one key element in a legislative drive to start the transition to a renewable

energy-based society in Alaska, while using that effort to create jobs.

"The principal mission of the energy center," according to Rogers, "is the creation of new energy - related jobs through technological development. It is our hope that we can make progress in both advanced and intermediate technologies."

Another important role of the Center will be to encourage Alaskan inventors in patenting processes and manufacture of marketable products in the State by Alaskan workers. Rep. Branson stated she had long advocated and urged that small industries and manufacturers employing up to 25 or 30 workers be given some of the red carpet treatment and encouragement that the "large industrial developers" receive from Alaskan communities.

However, the energy center will also have a national mandate, and that is to use some of Alaska's oil wealth to develop technologies that could be useful in solving both short-term and long-term energy needs of the United States. Although some of the renewable energy technology may provide some innovations useful outside Alaska, the main focus for national attention will be directed toward Alaska's huge reserves of petroleum and coal.

One of the problems Alaska will one day face at Prudhoe Bay and other petroleum reserves, according to Rep. "Chat" Chatterton, R-Anchorage, will be decline in productivity. Chatterton sees the proposed energy center as a place to

focus national attention on technology and techniques to recover more oil from fields in decline. Known as "enhanced recovery," several methods of extracting more oil from the ground are known, but are expensive and uncertain of results. Breakthroughs in enhanced recovery would extend the life of Alaskan wells, and benefit oil technology throughout the nation and the world.

"One of the things we hope to achieve with the energy center is proof to the rest of the country that Alaskans can be responsible with our revenues from oil and gas development," Gardiner said. "There are already people in the Lower '48 referring to Alaskans as 'the blue-eyed Arabs' and we need to show that the Alaska oil resource can benefit all Americans."

Chatterton agreed, explaining that with existing technology only about 40 percent of the oil originally in place will be recovered; the rest will stay in the ground unless ways are developed to recover a greater portion profitably. Any advance in enhanced recovery technology made in Alaska will benefit the entire national energy picture.

Sen. Colletta emphasized that the energy center can also help devise ways to develop Alaska's extensive coal reserves, for both domestic use and overseas sale. Environmentally sound coal mining could make Alaska's coal reserves particularly attractive for the Japanese market because a large part of the coal is much closer to sea transport than Western States' coal. Colletta noted that this could be one time when Alaska's geography would give the state a cost advantage.

"If Alaska's effort would parallel the efforts in Montana," Colletta said, "the new Energy Center will have been responsible for developing Alaska's and one of the nation's most extensive coal reserves. This could provide an uninterrupted source of energy for the next 200 years."

Under current thinking, the energy center would be capitalized at the beginning by the state, with the intent that eventually -- say, within ten years -- the energy center would stand on its own economically, and become self-supporting. The model for this idea is a similar research and development institute in Butte, Montana, set up with the help of former Sen. Mike Mansfield of that state. Senator Mansfield is now ambassador to Japan.

The Montana Energy Research and Development Institute (MERDI) was established with a \$15,000 grant from a private utility in Montana, and has grown by its own efforts to a \$15 million budget in five years. The institute is the national center for development of a sophisticated and futuristic coal technology that may one day produce more energy with less pollution than current combustion methods.

It is envisioned that a state investment over a period of years would enable the energy center to become self-supporting with federal and private contracts, and any royalties from its own innovations. The state would gradually phase out funding.

The energy center would be based on a novel approach begun by MERDI, in which all the center's efforts would be

directed at energy technologies which could produce jobs and new industry appropriate to Alaskan skills, desires of the people and the environment and resources available.

This concept of using "appropriate technology" to solve employment problems as well as energy problems was developed by MERDI's director, Dr. Jeremy Plunkett. Indeed, Plunkett is credited with having popularized the term "appropriate technology" and also founded the National Center for Appropriate Technology, also located in Butte. Using these concepts, Plunkett and MERDI have created some 400 new permanent jobs in Montana while having stabilized the population of Butte, which had been a dying mining town.

If developed after the model, Alaska's would be the second such energy "development institute" in the nation.

Energy development could have any number of spin-off benefits in the industries of timber, agriculture, and light manufacture if the energy center works as well as the MERDI model. MERDI has identified wind and agriculturally derived fuel alcohol as two renewable energy technologies appropriate to Montana, for example. Extrapolating, growing grain or other crops for alcohol fuels could be a way of stimulating agricultural development in the Delta farming project. Alcohol fuels could help offset energy costs on the farm, provide gasohol for regional consumption, and -- using the high-protein "mash" left over after the carbohydrates are converted to alcohol -- perhaps stimulate an in-state cattle market. Each level of this example creates new jobs, new

dollars, and helps decrease the flow of dollars out of the state.

MERDI also reasons that since wind generators are basically less complicated than automobile technology, an industry could be developed building and maintaining wind generators using existing skills and without extensive retraining. Such an industry is also less likely to attract out-of-state workers, because of the small scale of the production.

Legislators who have considered the issues involved have concluded that the same type of approach can work just as well in Alaska, benefiting people who already live here.

^{F6 3-5-80} Energy center plan mostly praised

By JEAN KIZER

Associated Press Writer

JUNEAU—Because Alaska's abundance of potential energy sources makes the state a good laboratory, House lawmakers are proposing a multi-million dollar energy development center they say could help solve the nation's energy crisis.

The proposal, termed "one of the most exciting concepts to come before the state of Alaska in a million years" by Anchorage Democrat Bill Miles, had its first airing Tuesday before the House Resources Committee.

Legislation to establish the center, which would be fueled by an estimated \$100 million in state money over the next few years, was introduced a few weeks ago in the House and Senate with bi-partisan sponsors.

The center, proposed to be headquartered in Fairbanks, would sub-contract for research and would aim at finding the best uses of existing resources while developing alternative energy and renewable resources.

One of the center's chief purposes

would be to help solve the long-term energy needs of the United States, partially through development of Alaska's huge coal and petroleum reserves.

House Speaker Terry Gardiner, D-Ketchikan, told the committee Alaska is a natural laboratory for energy research and development.

Citing a lack of energy research nationwide, Gardiner said Alaska would be a good laboratory to look at potential energy sources such as geothermal, hydroelectric, solar, wind, tidal and others, as well as coal, oil and gas.

Gardiner said Alaska should adopt a "mature attitude" and put some of the state's oil wealth to work to benefit not just Alaska, but the nation.

He said the center probably would attract substantial amounts of private and federal funding, as has been the case with a similar research and development institute in Montana, the model for the Alaskan center.

Rep. Brian Rogers, D-Fairbanks and one of the architects of the proposal, said it would bring about more efficient and advanced energy

technologies, would create jobs, and would show the federal government that Alaska is committed to helping solve the nation's energy problems.

The center "hopefully would be able to attract U.S.-renowned, world-renowned people," said Rep. Chat Chatterton, R-Anchorage.

But Chris Noah, director of the Alaska Council on Science and Technology, told lawmakers the council supports the concept, but some members question the need for a new institution.

He said there might be some overlap in the functions of the center and the University of Alaska. The UA's research arm currently does some energy-related research.

The UA has proposed an Alternative Energy Center as an independent unit within the UA.

Clarissa Quinlan, director of the state Division of Energy and Power Development, said several state agencies are doing energy-related work, but she said there is "no formal coordination" between them.

The legislation, HB 687, establishing the energy center calls for a nine-member board of directors appointed by the governor.



Alaska State Legislature House of Representatives

....DRAFT.....DRAFT....

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

MEMO: March 21, 1980

TO: Rep. Bill Miles, Chairman
House Resources Committee

FROM: Rep. Terry Gardiner
Rep. Brian Rogers
by Bob Speed, A.A.

RE: HB 687/Draft intent statement
at the request of Committee Counsel

At David Rogers' request, I have prepared the following intent statement for your consideration in respect to HB 687 creating the Alaska Energy Center.

The statement has been seen, revised and authorized by the lead sponsors of the bill, Rep. Gardiner and Rep. Rogers.

It is the intent of the Legislature that the Alaska Energy Center shall conduct and sponsor research, demonstration projects, and development of feasible technologies in such a way as to benefit Alaskans directly, both in terms of realistic solutions to state energy needs and economically. While a key purpose of the Energy Center shall be to conserve fossil fuels and stabilize residential and community energy costs, it is logical to conclude that transition to non-traditional renewable energy resources will result in commercialization of new technologies in the private sector. Jobs will result from this effort. A primary responsibility of the Energy Center shall be to ensure that wherever it can be justified economically, that those technologies which prove to be feasible are commercialized in Alaska, and that the jobs created benefit resident Alaskans.

Historically, Alaska has been a producer of raw resources and a consumer of finished products purchased directly from outside the state. This has resulted in loss of dollars within the Alaska economy. It also has been proven that dollars spent for products and services within Alaska recirculate several times before they leave the state, providing direct and spin-off economies with residual benefit to the Alaska economy.

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It is also fact that Alaskans have a variety of skills and abilities matching those needed by many low-technology renewable energy manufacture and service needs; and that many renewable energy technologies are small in scale and not not of a variety likely to receive widespread publicity or wild imaginings of wealth to be gained. (NOTE: THIS MEANS THAT WE'RE NOT EXPECTING THESE JOBS TO BE ANOTHER PIPELINE PROJECT BRINGING OKIES INTO ALASKA TO WORK FOR A WHILE, AMASS A BANK ACCOUNT AND THEN LEAVE TO SPEND IT OUTSIDE; THERE'S NOTHING ROMANTIC ABOUT WORKING IN A PULP MILL OR SEWAGE TREATMENT PLANT, OR A CAR REPAIR SHOP, BUT THOSE ALL REPRESENT INDUSTRY APPROPRIATE TO ALASKA OR NECESSARY COMMUNITY SERVICES WHICH MUST BE DONE AND PROVIDE LONG-TERM EMPLOYMENT; THE ANALOGY IS, SO WOULD ALCOHOL DISTILLERIES OR A WINDMILL ASSEMBLY PLANT OR A SERVICE INDUSTRY FOR WIND FARMS.) The Energy Center shall wherever possible search for linkages between human and natural resources, logistical and economic problems in the state and its communities, and the desires of resident Alaskans, to provide appropriate solutions to community energy needs that will match the economic and social needs and desires of the communities served.

-- DRAFT.....DRAFT --

that will fit into the existing character and economic base of Alaskan communities.

Brian - For your review Mark

DRAFT

HB 687
intent letter

The legislature intends to have the Energy Center closely coordinate its efforts with the University of Alaska. The University ~~xx~~ has developed a wide range in both the conventional and alternative energy areas. We intend for the Energy Center to draw from and complement that expertise, and to locate its offices to encourage this coordination.

~~The legislation~~ ^{HB 687} states that one of the Energy Center's guiding purposes is the creation of jobs through the development of more efficient technologies. Many of these jobs will be scattered throughout the state, in various small businesses or as part of demonstration projects. The Energy Center itself will also provide a significant number of jobs. To maximize the employment benefits, the legislature intends for the Energy Center to locate its main office in an area of high unemployment, if feasible.

No corporate structure for the Energy Center is set out in HB 687. Although the legislature intends for corporate organization to be determined by the Board of Directors, we would like to make a recommendation. We propose that the Energy Center establish four divisions or sections, corresponding to its assigned functions:

- 1) fossil fuels and transportation
- 2) renewable energy
- 3) conservation and building design
- 4) Innovation Center

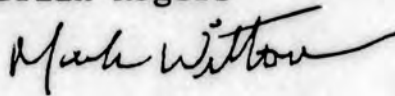
The two areas of largest energy consumption in the state are for transportation and space heating of buildings, while an "Innovation Center" should provide ~~xxx~~ a direct link to the private sector. The actual assignment of staff to these areas will depend on the types of projects authorized by the legislature.

March 3, 1980

MEMORANDUM

To: Representative Brian Rogers

From: Mark Wittow



Re: Critical Comments on HB 687

1. On the Purpose of the Center (Section .020)

In HB 687, the "primary purpose" of the center is declared to be "to create employment opportunities in the state through the development of more efficient and advanced technologies."

We have little evidence to show that the activities of the center can, or will, do this. How will it create more jobs, aside from funding them directly with state revenues? What industries will begin, if more efficient energy technologies are developed? Are they likely to actually operate in Alaska?

In looking at the activities of MERDI, I find no "creation" of jobs, except through government funding. Their Center for Innovation has helped a few products and businesses get started, and can possibly take some credit for job creation. But the energy work of MERDI has created jobs only through its direct funding of research and development projects. Whether or not that work will help initiate activity in the private sector is still open to question.

The real purpose of the center is stated following the primary purpose: "In addition, the center is to (1) promote the most efficient and appropriate technologies for use of the state's energy resources." This purpose directly expresses what the center will actually be doing. It may help create jobs. We should not expect the center to orient its programs around an uncertain goal.

If the center is promoting the use of the best technologies for resource use, ^{that} it can be justified as a redirection of a small

portion of the public's resource wealth to meet a long term public purpose. A great deal of popular support exists for the development of alternative energy technologies. Federal programs in this area, run by the Dept. of Energy, have a variety of failings that have been well documented elsewhere. This state effort may succeed by having a clearer focus, less bureaucracy and more distance from the industrial/military mind dominating much of the national energy program. In Alaska, there are clear mandates -- a cold climate, dispersed population and a more limited number of energy projects.

The work of the center in developing energy technologies fulfills the goals expressed in the legislative findings: to help both Alaskans and those Outside use energy more effectively. By putting money into the center, the legislature is trying to speed up the private sector's development of efficient, effective energy technologies. Because northern markets are small and dispersed, the center may be doing research and development work in ^{an} area deserving of a greater effort than private industry is willing to give -- a technology gap.

If the center is directed to do something amorphous such as "create jobs," it may have problems similar to those of ARRC. It may find that there aren't many jobs ready to be created, just as ARRC is finding that there are not a lot of deserving renewable resource projects that only await financing from ARRC to make them viable. A clear, achievable purpose is necessary.

Another agency to consider is the Alaska Power Authority. The authority has a broad mandate to develop power for the state.

They have all but ignored the most immediate and serious problems of rural power supply in favor of developing several politically popular large hydroelectric projects. Possessing the power to do almost anything, the authority has taken the path of least resistance and left important sections of their mandate unattended. If the legislature tells the center to "create jobs," it may miss the goal of developing efficient energy technologies in favor of pursuing economically ^{unsound} development programs.

2. Constituency

The center needs to have some kind of direct connection with the Alaskan public, if it is to continue to exist. Without public support for its activities, it may be overly sensitive to a variety of special interest pressures. One answer would be to have the center coordinate some badly needed efforts in technical assistance for conservation and renewable energy information. This function is ostensibly being performed by DEPD, with federal funding, but I have not heard a tremendous amount of praise for their efforts. There may be other answers to the constituency problem, but it is a question that should be kept in the forefront.

3. Structure and Budget

Some consideration needs to be given to the concrete structure of the center before a final fiscal note is prepared. If the legislature contracts out the management design, it should provide clear guidelines for the consultants.

One possibility would have an executive director overseeing ~~for~~ sections, each headed by a deputy: fossil fuels, renewable energy, conservation and building design and a center for innova-

tion. Each section would have a small staff to oversee projects within its purview, with shared clerical support. Each project would also have particular staffing requirements, which will be temporary. If project employees are temporary, they will be available for the next phase of work in the areas of their expertise. If they are carried as fulltime employees by the center, they may have to spend too much time thinking up projects to justify their existence.

The individual projects need more backup information than has been provided to date. It would be wise to have a range of projects that legislature could select.

Serious consideration should be given to providing the center with 2.3 million dollars in the "grants" column, for research by the University of Alaska as proposed in their Alternative Energy Research Institute program request. The center would be expected to coordinate these projects (which are the most detailed energy research proposals in the hands of the legislature) with its program.

4. Other points

Direction should be given to ensure that staff positions are filled ^{by} people with northern and professional experience in the area of their work. Competent engineers should fill most of the positions, not leftovers from other departments. A position for a *qualified* economist should be placed under the director. The center needs to have someone capable of analyzing the relative economic merits of various proposals. The lack of such a position in the A.P.A. has seriously hampered their ability to comparatively analyze a range of projects.

A specific prohibition against nuclear energy^{development} activities should be considered.

5. Suggestions from Others

Vic Fischer has proposed that a "northern building design" section exist within the center. He states that a number of architects and planners have told him that a gap exists in research and development work for building design in northern climates, and that such a program would provide a useful technical service. This idea fits in with the center's mandate to work on energy conservation. It is also an area that could provide recognizable public benefits.

Neil Davis points out that many of the personnel of the center may come from the University of Alaska, and that some provision should be made so that these people are not wrenched out of their retirement system and related programs.

Davis and others have pointed out the unwieldiness of the advisory board. They suggest eliminating the advisory board, and placing its more important members directly on the board of directors. More expertise in energy technology (perhaps someone for each of the four program areas) should be required within the board. Davis also had a number of other suggestions that I will not describe, since you have his letter.

3.6.80 They all like energy center idea but . . .

By SUSAN FISHER
News-Miner Bureau

JUNEAU—They love the concept, but beyond that a parade of speakers have diverse opinions about a bill to set up an Alaska Energy Center, and about what role the center should take.

Following two days of hearings before the House Resources Committee, chairman Bill Miles, D-Anchorage, said the committee will rewrite House Bill 687, which sets up the center.

House Speaker Terry Gardiner, D-Ketchikan, and 24 co-sponsors are backing the bill.

Its primary purpose is to create jobs through development of more efficient and advanced energy technologies.

Sponsors envision the center's turning alternate energy research and technology into workable forms for business, industry and residences.

But a push from the University of Alaska to have the concept of the center placed within the UA met with legislative resistance.

Sponsors say any necessary research would be contracted to the UA, but they want the center to operate independent of the academic-research arena.

Various persons already in energy fields in Alaska urged the committee to spell out a need to communicate and avoid duplication of efforts.

Other speakers want the center to focus on small-scale projects, helping individuals rather than working solely on projects for commerce and industry.

Gardiner and Rep. Brian Rogers, D-Fairbanks, who are the prime movers behind the Alaska Energy Center concept, prefer to locate the center in Fairbanks, both because of proximity to the UA scientific community and to stimulate jobs.

But several committee members said Wednesday they don't want the location spelled out in the bill.

Among speakers pressing for the center to be within the University of Alaska were UA-Fairbanks Chancellor Howard Cutler and Richard Seifert of the Institute of Water Resources.

Cutler told the committee that the university, with its land-grant system and established Cooperative Extension Service, plus research facilities, is an

(See ENERGY, page 7)

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ENERGY . . .

(Continued from page 1)

already-established system for the energy center.

"I recommend to you the passage of the intent, and suggest to you the best organization you can use is the university land-grant system," Cutler said Wednesday. He told committee members they don't need to "re-invent the wheel."

Cutler said extension agents could be trained to take energy information to communities and individuals.

But asked the cost to employ a single extension agent, Cutler estimated it to be \$75,000 to \$100,000, including pay, travel and secretarial support.

Seifert chaired a UA committee that has drafted a proposal for a UA Alaska Center for Alternative Energy.

In testimony before the committee, Seifert said the UA has 50 employees working in various energy-related fields or projects.

But committee members balked at the idea of putting a center within the UA, thus losing financial and project control.

Rep. Chat Chatterton, R-Anchorage, said the Board of Regents, not the Legislature, would oversee the center if it were within the UA system.

On Tuesday, speakers representing the Council on Science and Technology and the Division of Energy and Power Development urged that the bill spell out precisely what the center will do.

They said it should not duplicate the many energy-related efforts already going on, and added that if the bill is not specific, there will be "turf" battles among state agencies and others.

Fairbanksan Alex Scala of Alaska Federation for Community Self-Reliance, said the center must allow access and information to all citizens, and focus on helping individuals.

"There's a problem with people at the

3.6.80
UA who are doing very valuable research that the local citizenry could use . . . and for some reason they refuse to help me. They say they cannot divulge data to the local citizenry," Scala said.

Denny Mehner, a Fairbanks building contractor, said the center should not be located within the university.

Mehner said that as a former UA researcher, the administration "freaked out" over a Department of Defense contract he had to research LSD.

Mehner supported the energy center concept. "Energy terrorism is going to exist for a few years," he said.

Joe Geldhof, a lobbyist for various environmental and conservation groups, said conservation should be a main thrust of the center, since it is a proven way to quickly reduce consumption and cost.

Alaska House of Representatives



COMMITTEE ON NATURAL RESOURCES

POUCH V • JUNEAU, ALASKA 99811

To: Rep. Terry Gardiner
Speaker of the House

From: Rep. Bill Miles, Chairman *BW*
House Resources Committee

Date: May 1, 1980

Re: CS HB 687/ Alaska Energy Center
LETTER OF INTENT

The establishment of an Alaska Energy Center is intended to accomplish several major goals, both social and economic. The primary purpose is to use Alaska's energy resources and technology to create jobs in Alaska. A parallel goal is to help solve energy cost and supply problems for Alaskans.

We recognize that energy consumption patterns will undergo dramatic change during the remainder of this century, and into the next. One goal for the Alaska Energy Center is to be a recognized leader in the research and development which will accompany this change, and also which will help conserve the depletable fossil fuels we depend upon, and enhance the economic recoverability of known reserves. This recognized leadership status will be reflected by the number of grants and contracts awarded to the center from government and industry for fossil fuel recovery, development of new energy forms from renewable resources, better use of existing technologies, as well as the practical demonstration of ways to use alternative energy resources economically. In achieving this goal, the energy center shall contribute to the resolution of energy problems faced by Alaskan residents and the communities they live in.

A second major goal recognizes that Alaska has historically been an exporter of raw materials and an importer of finished goods. We believe that while Alaska seeks to resolve its energy price and supply problems over the long term by converting to renewable energy resource use, the opportunity exists to create new industries and employment in the state based on locally available energy resources and the technologies associated with them. Rather than continue to import energy resources and the technology necessary to utilize them, the state should help establish local industries

CO-CHAIRMEN

REP. ALVIN OSTERBACK (465-3715) • REP. BILL MILES (465-3779)

VICE-CHAIRMAN

REP. FRED ZHAROFF

REP. PAT CARNEY • REP. C.V. "CHAT" CHATTERTON • REP. SAM COTTEN
REP. DICK ELIASON • REP. JACK FULLER • REP. RICK HALFORD

to accomplish the same thing. Direct employment, the "ripple effect" of indirect employment, and recirculation of dollars used to pay for local resources rather than exported to import traditional fuels, will all have profound effects on the economies of Alaskan communities and of the state as a whole. Many of the jobs created will be in demonstration projects carrying some risk of success; but many will be in small businesses spread throughout the state in local resource procurement, hardware assembly and maintenance, plant operations and marketing.

The net result will be new industries and jobs for communities and their residents, as well as greater energy independence for all Alaskans. The Energy Center will help bring about this change through demonstration of economically feasible alternative forms of producing energy and direct technical assistance to local entrepreneurs in creation of local businesses to manufacture, process, harvest or assemble the locally available energy resource or the equipment needed to utilize it. In helping commercialize such ventures, a fundamental role of the center shall be to train inexperienced entrepreneurs in operations and accounting principles needed to make a success of those venture found to be economically feasible; and to work closely with the Alaska Renewable Resources Corp., the Alaska Fisheries and Agriculture Bank, the state business loan programs, private financial institutions and other appropriate funding sources to provide sufficient capital to establish the new business.

A third major goal for the Alaska Energy Center, and one which will provide a check on the success of its activities, is for it to become economically self-sufficient in its operating budget over a maximum period of ten years. We believe this can be accomplished in several ways. First, its research and development activity should be financed from grants and contracts, patent licensing fees and royalties. Although it is probable that the State of Alaska shall continue to be a significant source of contract work, the Legislature expects the Center to initiate from its inception and to maintain a strong ability to compete in the marketplace for an ever-increasing percentage of its operating money. To this end, the Legislature's intent is to capitalize the operational budget with a strong investment in the beginning, and to gradually phase out funding of operations by 1990. Project funding approved by the Legislature is intended to be in advance for full projected costs, to insure that continuity of projects in progress shall not be jeopardized in event of unanticipated budget reductions in succeeding years.

A fourth goal for the energy center recognizes the public service responsibility of the institution. The Alaska Energy Center is established as a private nonprofit corporation to perform an essential service to the People of

Alaska. It is to be expected that some of this benefit should be provided as a public service at no cost, to those who request it, while the center is also charged with the responsibility to protect its proprietary interests on which it will depend for an ever-increasing share of its operating and project revenues.

In regard to projects undertaken within Alaska, the energy center shall consider local cultural, social and economic factors, and the aspirations and ways of life of people in existing communities, when determining whether a project or technology is appropriate to local needs. These considerations shall be given equal weight in matching resources and needs.

No corporate structure is established in HB 687. The Legislature recognizes that this vital decision is best left to the board of directors. To that end, the Legislature has appropriated \$100,000 for a comparative study of the organization of similar institutions, public and private, around the country. The first part of that study, to be conducted by the Office of the Governor, shall be to determine the best composition of the board itself, to aid the governor in appointing board members. The second phase, to be directed in part by the board itself, shall be to determine the best management system for the Alaska center.

Although the study remains to be done, and the Legislature lacks the direction which the document will offer when final decisions are made, there are a number of concerns the Legislature intends to be addressed in establishing the enabling legislation in HB 687. These can be broken down into four basic areas of need:

- 1) fossil fuel recovery and related environmental problems
- 2) renewable energy and transportation
- 3) energy conservation and building design
- 4) Innovation Center

The two areas of greatest energy consumption in Alaska are transportation and space heating of buildings, so it follows that these are areas where the Energy Center could provide some of the greatest contributions to energy conservation and replacement of fossil fuels. An "innovation center" would not be limited exclusively to energy but would provide a service to all Alaskan inventors and innovators with marketable ideas. Among the services the Innovation Center would provide would be assistance in determining whether Alaskan inventions are marketable, patent searches and patenting, and business and capital formation if that is the desire of the inventor, or obtaining manufacturing licenses and royalty agreements if the inventor prefers, and marketing.

It is expected that the Innovation Center would perform these services at no initial cost to the client; but that if the product proves commercially successful the Innovation Center would be entitled to a royalty for its services at a standard rate. Wherever feasible, the Center would give preference to manufacture in Alaska.

REVISED FISCAL NOTE

I. REQUEST

Bill/Resolution No. Committee substitute for House Bill 687

(Page 1 of 3)

Title An Act creating the Alaska Energy Center

Requested by _____ Date _____

II. FISCAL DETAIL

Agency Affected Department of AdministrationProgram Category Affected DevelopmentBudget Request Unit(s) Affected Alaska Energy CenterEXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		1183.6	2733.2	2924.5	3129.2	3348.3
200 TRAVEL		280.0	380.0	406.6	435.1	465.5
300 CONTRACTUAL		1687.6	4761.6	5166.3	5527.9	5914.9
400 COMMODITIES		60.0	160.0	171.2	183.2	196.0
500 EQUIPMENT		350.0	800.0	856.0	915.9	980.0
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.		1445.0	1546.1	1654.4	1770.2	1894.1
PROJECT FUNDING		15000.0	18750.0	20062.5	21466.8	22969.6
TOTAL		20006.2	29130.9	31241.5	33428.3	35768.1

FUNDING (Thousands of Dollars)

GENERAL FUND		10006.2	16880.7	17227.3	14552.5	12456.8
FEDERAL FUNDS		10000.0	12250.0	13107.5	14025.0	15006.8
OTHER (Specify)				906.7	4850.8	8304.5

POSITIONS

FULL TIME		38.0	50.0	50.0	50.0	50.0
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

See attached for expenditure summary.

Assumptions: FY 81 is startup; FY 82 full operations

FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent

Federal funding \$10 million FY 81; \$12.250 million FY 82;

FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent

General funding for non-federal portion of operations 100 per cent in

FY 81 and FY 82; 95 per cent in FY 83; 75 per cent

in FY 84; 60 per cent in FY 85; continuing decline

Other funds include royalties, private contracts, additional federal

funds; 5 per cent of non-federal operation in FY 83;

25 per cent in FY 84; 40 per cent in FY 85

Grants and claims includes subcontracts to University of Alaska for

alternative energy research in FY 81; inflation at

7 per cent for FY 82, FY 83, FY 84, FY 85.

IV. DATE April 24, 1980PREPARED BY Tony H. AndersonAGENCY LegislaturePHONE 465-5720

Original: Legislative Finance

cc: Budget and Management

Prime Sponsor (First Legislator Named)

Project Funding - FY 81

Project funding for FY 81 includes \$5 million in general funds and \$10 million in anticipated federal and other receipts. Up to \$2.5 million of the general funds may be used to match other receipts. The Board of Directors of the Energy Center shall submit a plan for expenditure of the remaining \$2.5 million in general funds to the Speaker of the House and the President of the Senate before these funds are encumbered.

Grants & Claims - FY 81

Grants and claims includes \$1,445,000 for the following subcontracts to the University of Alaska Alternative Energy Research Program:

Fuels research program	180,000
Solar technology program	315,000
Heat pump demonstrations	65,000
Biomass fuels research	130,000
Energy economics research	80,000
Coal utilization research	230,000
Wind energy data collection and wind energy atlas	110,000
Waste heat research center	275,000
Fuel cell demonstrations	60,000
	<u>1,445,000</u>

Grants and claims for FY 82 - FY 85 includes continuation of alternative energy research projects by the University of Alaska under contract to the Alaska Energy Center, with specific projects to be determined by the Board of Directors of the Alaska Energy Center. The legislature intends that technology development and demonstration projects currently being conducted by the following agencies be transferred to the Alaska Energy Center in the FY 82 and subsequent budgets:

- University of Alaska
- Division of Energy and Power Development
- Alaska Power Authority
- Department of Transportation and Public Facilities
- all other energy technology development projects

The Board of Directors of the Alaska Energy Center may subcontract to the University of Alaska, other state agencies, or private research firms from the project funding line item for any projects selected by the board.

Appropriations for project funding made to the Alaska Energy Center are for capital projects and are subject to AS 37.25.020.

ALASKA ENERGY CENTER - CSHB 687
OPERATING BUDGET - FISCAL YEARS 1981 & 1982

	<u>1st Quarter</u>		<u>2nd Quarter</u>		<u>3d Quarter</u>		<u>4th Quarter</u>		<u>FY 82 Full Ope</u>
	<u>Expen.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>	<u>Pos.</u>	<u>Expend.</u>
<u>PERSONAL SERVICES</u>									
Salaries									
Exec. Director	20.0	1	20.0	1	20.0	1	20.0	1	80.0
Dept. Directors			17.5	1	17.5	1	17.5	1	140.0
Senior Staff			60.0	4	90.0	6	120.0	8	600.0
Professional Staff			67.5	6	112.5	10	157.5	14	900.0
Tech/Junior Staff			33.5	4	57.5	6	77.0	8	384.8
Secretarial Staff	4.2	1	16.5	4	22.0	5	27.5	6	154.0
Total Salaries	<u>24.2</u>	<u>2</u>	<u>215.0</u>	<u>20</u>	<u>319.5</u>	<u>29</u>	<u>419.5</u>	<u>38</u>	<u>2258.8</u>
Benefits @ 21%	<u>5.1</u>		<u>45.1</u>		<u>67.1</u>		<u>88.1</u>		<u>474.4</u>
Total Personal Services	29.3		260.1		386.6		507.6		2733.2
<u>TRAVEL</u>	50.0		85.0		60.0		85.0		380.0
<u>CONTRACTUAL</u>									
Rent	48.2		126.8		188.5		247.5		1333.2
Subcontracts	25.0		100.0		300.0		400.0		2800.0
Phone/Xerox/Other	<u>10.9</u>		<u>43.2</u>		<u>83.5</u>		<u>114.0</u>		<u>648.4</u>
Total Contractual	54.9		335.0		572.0		761.5		4761.6
<u>COMMODITIES</u>			10.0		20.0		30.0		160.0
<u>EQUIPMENT</u>	<u> </u>		<u>50.0</u>		<u>100.0</u>		<u>200.0</u>		<u>800.0</u>
TOTAL OPERATING	134.2		740.1		1138.6		1584.1		8894.8

I. REQUEST
Bill/Resolution No. CSHB 687
Title "An Act establishing the Alaska Energy Center; and providing for an
Requested by effective date." Date

II. FISCAL DETAIL
Agency Affected Administration
Program Category Affected General Government
BRU, Program, or Subprogram(s) Affected Administrative Services
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)
EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		44.0				
200 TRAVEL		1.0				
300 CONTRACTUAL		1.2				
400 COMMODITIES		.6				
500 EQUIPMENT		-0-				
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		46.8				

FUNDING (Thousands of Dollars)

GENERAL FUND		46.8	-0-	-0-	-0-	
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY		2	-0-	-0-	-0-	

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)


Oral Freeman, Vice Chairman
House Finance Committee
April 24, 1980

IV. DATE PREPARED BY
AGENCY
Original: Legislative Finance PHONE

Original sponsors: Gardiner, Rogers,
Branson, et al

Offered: 4/11/80
Referred: Finance

1 IN THE HOUSE

BY THE RESOURCES COMMITTEE

2 CS FOR HOUSE BILL NO. 687

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 ELEVENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act establishing the Alaska Energy Center, amending
7 the Science and Technology Act, and adding fiscal
8 provisions relating to appropriations for the work of
9 the Alaska Energy Center; and providing for an effec-
10 tive date."

11 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

12 * Section 1. FINDINGS. The legislature finds that the State of Alaska is
13 currently receiving substantial revenues from the sale of nonrenewable energy
14 resources to consumers in other states of the nation. The legislature recog-
15 nizes that bringing more efficient and advanced energy technologies to the
16 stage of commercial development may result in lower energy costs to consumers
17 throughout the state and the nation. The legislature believes Alaska has a
18 responsibility to use part of its nonrenewable energy resource revenues to
19 help accomplish this goal. The legislature finds that an independent energy
20 resource development center, initially established under the direction of the
21 state, can best accomplish the aid to individuals and businesses necessary to
22 develop and implement advanced energy technologies. The legislature further
23 finds that the work of the center will provide significant employment
24 benefits to the citizens of the state and will stimulate the development of
25 the state's energy resources.

26 * Sec. 2. INTENT. In establishing an Alaska Energy Center and providing
27 money for its operation, it is the intent of the legislature that the center
28 act to achieve self-reliance at the earliest possible date.

29 * Sec. 3. AS 45 is amended by adding a new chapter to read:

1 CHAPTER 89. ALASKA ENERGY CENTER.

2 Sec. 45.89.010. ALASKA ENERGY CENTER ESTABLISHED. There is estab-
3 lished the Alaska Energy Center. The center is a public corporation of
4 the state. It is an instrumentality of the state in the Department of
5 Administration, but has a legal existence independent of and separate
6 from the state. Exercise by the center of the powers conferred by this
7 chapter is an essential governmental function of the state.

8 Sec. 45.89.020. PURPOSE. The primary purpose of the center is to
9 create employment opportunities and other benefits in the state through
10 the development and use of more efficient technologies. The center
11 shall

- 12 (1) promote the most efficient and appropriate technologies
13 for the use and conservation of the state's energy resources;
14 (2) provide economic benefits to state citizens;
15 (3) promote the effective use of the state's resources;
16 (4) promote diversification of employment opportunities;
17 (5) reduce state energy imports; and
18 (6) bring existing and new technologies to a stage of com-
19 mercial feasibility.

20 Sec. 45.89.030. BOARD OF DIRECTORS. A board of directors of the
21 center is established as its governing body.

22 Sec. 45.89.040. COMPOSITION OF BOARD OF DIRECTORS. (a) The board
23 of directors consists of nine members as follows:

- 24 (1) seven members appointed by the governor and confirmed by
25 a majority of the members of the legislature in joint session;
26 (2) two members of the legislature jointly appointed by the
27 president of the senate and the speaker of the house of representatives
28 at the beginning of each legislature.

29 (b) The board shall elect a chairman and other necessary officers

1 from among its members.

2 Sec. 45.89.050. TERM OF OFFICE. (a) The members of the legisla-
3 ture appointed to the board serve ex officio as nonvoting members of the
4 board for the duration of the legislature during which they were ap-
5 pointed.

6 (b) The members of the board appointed by the governor serve
7 three-year terms and may be reappointed. Terms shall be staggered.

8 (c) The officers of the board elected under AS 45.89.040(b) serve
9 a term of three years.

10 Sec. 45.89.060. REMOVAL AND VACANCIES. (a) The governor may
11 remove from office a board member appointed under AS 45.89.040(a)(1)
12 with the consent of a majority of the members of the legislature in
13 joint session. A removal by the governor shall be in writing and state
14 the reason for removal. If the legislature is not in session, the
15 governor may suspend a member of the board. After suspension, a board
16 member may not participate in board business and may not be counted for
17 the purpose of establishing a quorum. The joint session shall be held
18 within 10 days from the date of removal, if the removal occurs while the
19 legislature is in session, or within 30 days of convening of the next
20 regular session of the legislature, if the legislature is not in session.
21 If the legislature refuses to consent to removal, the suspension of the
22 board member is terminated and the member shall be reinstated to the
23 office by the governor.

24 (b) A vacancy on the board among the members appointed under
25 AS 45.89.040(a)(1) shall be filled by appointment by the governor and
26 confirmation by a majority of members of the legislature in joint ses-
27 sion. An appointee to fill a vacancy shall hold office for the balance
28 of the term for which his predecessor on the board was appointed. If a
29 vacancy arises on the board while the legislature is not in session, the

1 governor may appoint an interim member, until the legislature has the
2 opportunity to confirm the appointment.

3 (c) A vacancy on the board among the members appointed under
4 AS 45.89.040(a)(2) shall be filled by appointment by the presiding
5 officer of the house of the legislature to which the vacating board
6 member belonged.

7 (d) A vacancy on the board does not impair the authority of a
8 quorum of the board to exercise all the powers and perform all the
9 duties of the board.

10 Sec. 45.89.070. QUALIFICATIONS OF BOARD MEMBERS. (a) At least
11 four of the board members appointed under AS 45.89.040(a)(1) shall be
12 residents of the state and shall have had experience in energy tech-
13 nology or energy development.

14 (b) At least three of the board members appointed under AS 45.89.-
15 040(a)(1) shall be nationally recognized experts in energy technology or
16 energy development.

17 Sec. 45.89.080. QUORUM. Four members of the board appointed under
18 AS 45.89.040(a)(1) constitute a quorum for the transaction of business
19 and the exercise of the powers and duties of the board.

20 Sec. 45.89.090. COMPENSATION OF BOARD MEMBERS. (a) Board members
21 appointed under AS 45.89.040(a)(1) receive \$350 per day while in attend-
22 ance at and traveling to and from meetings of the board.

23 (b) Board members may receive a per diem allowance and trans-
24 portation expenses in carrying out the duties under this chapter.

25 Sec. 45.89.100. CONFLICTS OF INTEREST. Members of the board are
26 subject to AS 39.50.

27 Sec. 45.89.110. EMPLOYMENT OF PERSONNEL. The board shall employ
28 and determine the salary of an executive director. The executive direc-
29 tor may, with the approval of the board, select and employ additional

1 staff as necessary. The executive director and all employees of the
2 board are in the exempt service under AS 39.25.

3 Sec. 45.89.120. POWERS. In carrying out the powers of the center,
4 the board may

- 5 (1) adopt, alter, and use a corporate seal;
- 6 (2) prescribe, adopt, amend, and repeal bylaws;
- 7 (3) sue and be sued in the name of the center;
- 8 (4) enter into any agreements necessary to the exercise of
9 its powers and functions;
- 10 (5) accept grants from and contract with the federal govern-
11 ment and the state or its political subdivisions and to that end comply
12 with the provisions of federal, state, or local programs when necessary,
13 except that it may not enter into any agreements whereby a permanent
14 state or local government position is financed or partially financed in
15 connection with a project;
- 16 (6) accept grants and loans from and contract with sources
17 other than those in (5) of this section for the purposes of the work of
18 the center;
- 19 (7) appear in behalf of the center before boards, commis-
20 sions, departments, or other agencies of municipal, state, or federal
21 government;
- 22 (8) acquire, hold, use, lease, sell, or otherwise dispose of
23 property of any kind, real, personal, or mixed, or an interest in it;
- 24 (9) conduct or sponsor applied research, development and
25 demonstration projects, and prepare, publish, and distribute technical
26 studies, reports, bulletins and other materials it considers appro-
27 priate;
- 28 (10) hold patents, copyrights, trademarks, royalties or other
29 evidences of protection or exclusivity issued under the laws of the

1 United States or any state or nation obtained by persons receiving
2 assistance from the center;

3 (11) adopt regulations governing the exercise of its powers;

4 (12) do everything necessary or desirable to carry out the
5 purposes of the center.

6 Sec. 45.89.130. DUTIES. The board shall

7 (1) promote the commercial development and use of more effi-
8 cient energy technologies;

9 (2) subject to the availability of money,

10 (A) sponsor energy research projects intended to accom-
11 plish the purposes of the center;

12 (B) conduct and sponsor applied research, development,
13 and demonstration projects of energy technologies;

14 (C) provide financial and other support to inventors and
15 businesses engaged in the development, demonstration, and commer-
16 cialization of energy technologies;

17 (3) manage projects for which financing has been appropriated
18 by the legislature;

19 (4) in developing its programs, consult with the Alaska Council
20 on Science and Technology, the Alaska Power Authority, the Alaska Renew-
21 able Resources Corporation, the division of energy and power development
22 of the Department of Commerce and Economic Development, the Department
23 of Natural Resources, and the University of Alaska; the board shall meet
24 with responsible officials and representatives of these organizations
25 and agencies at least twice each year;

26 (5) consult with other energy research and development or-
27 ganizations.

28 Sec. 45.89.140. BUDGET AND APPROPRIATIONS. (a) The center is
29 subject to the Executive Budget Act (AS 37.07), except as provided in

1 (b) of this section and in AS 37.25.030.

2 (b) The budget of the center shall include a description of and
3 amount of proposed financing for projects to be conducted or supported
4 by the center. Requests in the budget for project financing shall
5 include a statement of the objectives and goals of the project, includ-
6 ing, but not limited to, the number of jobs to be created and the number
7 of businesses to be assisted by the project. The amount of the center's
8 operating budget shall be specified separately from proposed project
9 financing.

10 Sec. 45.89.150. ANNUAL REPORT. The board shall prepare an annual
11 report of its activities and submit a copy of the report to the legisla-
12 ture. The annual report shall be transmitted to the legislature at the
13 beginning of each regular session. The report shall include a descrip-
14 tion of the work conducted or supported by the center, the number of
15 jobs which have been created, the number of businesses which have been
16 assisted, and any other information which the board determines should be
17 included to describe the work of the center.

18 Sec. 45.89.160. COOPERATION WITH OTHER STATE AGENCIES AND THE
19 UNIVERSITY OF ALASKA. (a) All departments, agencies, and public cor-
20 porations of the state, including the University of Alaska, shall pro-
21 vide information, services, and facilities to the center on its request.
22 The center shall reimburse the department, agency, or corporation for
23 expenses reasonably incurred on the center's behalf.

24 (b) When feasible, the center shall contract with the University
25 of Alaska or an organization which is based in Alaska for research.

26 Sec. 45.89.200. DEFINITIONS. In this chapter

27 (1) "board" means the Board of Directors of the Alaska Energy
28 Center;

29 (2) "center" means the Alaska Energy Center;

1 (3) "energy technology" means technological developments and
2 innovations which are appropriate for

3 (A) production of energy through the use of renewable
4 and alternative energy sources;

5 (B) energy conservation;

6 (C) development of facilities for the use of waste heat
7 and the cogeneration of electricity and heat;

8 (D) the reduction of dependence on fossil fuels;

9 (E) efficient recovery and use of fossil fuels.

10 * Sec. 4. AS 39.25.110 is amended by adding a new paragraph to read:

11 (22) employees of the Alaska Energy Center.

12 * Sec. 5. AS 39.50.200(9) is amended by adding a new subparagraph to
13 read:

14 (SS) Alaska Energy Center (AS 45.89).

15 * Sec. 6. AS 37.25 is amended by adding a new section to read:

16 Sec. 37.25.030. APPROPRIATIONS FOR PROJECTS OF THE ALASKA ENERGY
17 CENTER. An appropriation to the Alaska Energy Center for a research,
18 development, or demonstration project under AS 45.89.130(2) is valid for
19 the duration of the project and the unexpended balance for the project
20 shall be carried forward to subsequent fiscal years.

21 * Sec. 7. AS 44.46.080(c)(3) is amended to read:

22 (3) annually submit to the governor and the legislature the
23 findings of the council, including

24 (A) a listing, description, ranking, and justification
25 of research needs; [, AND]

26 (B) its recommendations for projects which should be con-
27 ducted or supported by the Alaska Energy Center;

28 (C) a commentary on significant research activities of
29 the preceding year funded by the state; and [INCLUDING]

1 (D) the relationship of that research to the state's
2 needs and priorities;

3 * Sec. 8. APPOINTMENT OF FIRST BOARD OF DIRECTORS OF ALASKA ENERGY CEN-
4 TER. The governor shall designate the terms of the members of the Board of
5 Directors of the Alaska Energy Center first appointed under AS 45.89.-
6 040(a)(1). Of the seven members first appointed

- 7 (1) three shall serve a term of one year;
8 (2) two shall serve a term of two years; and
9 (3) two shall serve a term of three years.

10 * Sec. 9. Sections 1 - 6 and 8 of this Act take effect immediately in
11 accordance with AS 01.10.070(c).

12 * Sec. 10. Section 7 of this Act takes effect July 1, 1980.

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HOUSE RESEARCH AGENCY
Pouch Y - State Capitol
Juneau, Alaska 99811
465-3991

MEMORANDUM

March 12, 1980

TO: Representative Terry Gardiner
ATTN: Bob Speed

FROM: Duncan L. Read, Director *D&R*

RE: Organizational Study for Alaska Energy Center
Research Request No. 105

In this memorandum, a request for proposals for an organizational study for an Alaska Energy Center, as provided for in HB 687, is outlined. Included are the components, time frames, and cost estimates of a contractual study. In addition, appropriate procedures for competitive bidding are briefly discussed.

The major components of the proposed study are:

- Phase I identification of the functions of a board of directors; its relationships to the executive and legislative branches of State government, the State university system, and the private sector; and criteria for the selection of directors and persons residing outside Alaska who may meet those criteria.
- Phase II analysis of alternative means of start-up, including a management contract with an existing research and development organization.
- Phase III preparation of a job description with appropriate salary ranges and benefits for the Center's executive director with a follow-up executive search effort.
- Phase IV development of a three to five-year work program with budgets.

In performing each of the above tasks, the organization and practices of other similar research and development institutions including public non-profit, private and university entities will be investigated.

The contract will be administered through the Office of the Governor. Oversight will be provided by a small group of legislative and executive policymakers. Five to ten national management consulting firms will be

Representative Terry Gardiner
March 12, 1980
Page 2

invited to submit bid proposals. Firms will be chosen based on prior experience with existing research and development institutions comparable to the proposed Alaska Energy Center. A formal request for proposals will be sent to each of the firms identified, and proposals will be formally evaluated by a committee according to pre-set, weighted criteria. [The House Research Agency will be available to assist in the development of a request for proposal (RFP) and the evaluation of bids.]

It is assumed that authority for the study will be granted in mid-March and that a request for proposals can be designed and transmitted to selected firms by April 7. Allowing three weeks for response and two weeks for evaluation of bids and a contract award, work could commence as early as May 12. Phase I and the general investigative work on other research and development institutions could be completed by early June.

Succeeding phases (Phases II and III), if enabling legislation is passed, would best be undertaken after directors had been appointed and could be performed in consultation with them. If directors were appointed immediately after passage of enabling legislation and began serving in July, the second and third phases could be completed by September 1. Preferably, the executive director should be involved in the work program development and budget preparation called for in Phase IV. Assuming that an executive director was hired and on board by October 1, Phase IV work could be performed during that month on-site in Alaska. A final, complete product could be available by November 1. A composite time frame is attached.

The contract should have provisions specifying frequent on-site consultation with related travel to Alaska. Estimated costs of the contract range from \$75,000 to \$100,000.

DLR/dp



Alaska State Legislature

House of Representatives

MEMORANDUM

5:05 P.M.

316180

assigned to
Read

Official Business

Pouch V
State Capitol
Juneau, Alaska 99811

To: Duncan Read
Director, House Research Agency

From: Rep. Terry Gardiner
by Bob Speed, A.A. *T.G.*

Date: March 6, 1980

Re: Feasibility study for Alaska Energy Center
ref: HB 687

Duncan

I have Terry's concurrence that a feasibility study is needed in regard to establishment of the proposed Alaska Energy Center. The idea of the study would be to investigate what the internal organization of a proposed center could be, based on existing institutes of a similar nature in other states; and of the relationship between such a center and the state government.

As perceived by us, the energy center would be a public, nonprofit institution with the primary goals of solution of state energy problems through use of "appropriate technology," with emphasis on renewable energy development for the non-renewable energy resources existing in the state which would have application in, but also beyond, Alaska. Examples would be wind or geothermal or biomass energy systems in-state, and enhanced recovery of petroleum and appropriate technologies of coal development for in-state and export use. The second goal, which should not be considered secondary, would be development of permanent jobs, industries and economies of scale in Alaska based on these energy technologies, which would develop as a natural by-product of resource development, or which could be put into place as a link of commercialization, creating local markets and transportation linkages, etc.

The institute therefore is to be considered primarily as a development institute to promote energy systems and industrial development that will benefit resident Alaskans without major disruption of their lives and communities. Research needs will be contracted out, largely to the university it is assumed, and to other Alaska-based businesses.

It is also to be considered a "world-class" institution which could be in a position to hire top-flight people capable of major contributions to science and engineering, as well as development of private-sector economies within Alaska.

Our need in the proposed organizational/feasibility study would be to investigate other research and development institutions, of which there are three basic models of which I give the following examples:

- university research institute model (MIT, Stanford institutes, U. of Alaska)
- public non-profit institute model (Montana Energy Research and Development Institute (MERDI) and the New York State Energy Research and Development Authority (NYSERDA)).
- private research and development institutions (Battelle Northwest, a profit-making model, and Battelle institute models established as privately endowed not-for-profit institutional models).

There are also federal models, such as the Solar Energy Research Institute (SERI), but we are less interested in those because of the lack of success of the federal models.

The proposed organizational/feasibility study should consist of a contract for investigative services including a travel budget big enough to allow travel to various institutions around the country found to be worth more than cursory investigation. I estimate total cost of such a study to be in the neighborhood of \$100,000.

The study should be directed at the following issues, but also need to expand this first cut:

- organizational structure of a board of directors: what relationships should they have to the state administration, the Legislature, the University system, the private sector both in-state and nationally, and to other similar institutions. Points we want to keep in mind are the expressed desire to keep the board relatively small so as not to be unwieldy; having a board consisting of a majority of Alaska residents, but with the out-of-state members being dynamic leaders with a proven track record.
- The qualification we should look for in someone to be executive director of the institute plus an idea of how much we should expect to pay for such a person.

- an organizational model for start-up of the organization:
There are basically two ways the center could be started up:

- 1) appoint board of directors who hire executive director who hires his staff
- 2) fast track: management contract with existing R&D organization on bid basis to start organization off for first one to three years.

The energy center will have the following responsibilities:

1. renewable energy resource research, development, demonstration and the linkages leading to commercialization of a given industry based on demonstrated need and technical/economic feasibility. It would be assumed that the center would aid entrepreneurs through the process of business development to the point that the businessman could apply to the Renewable Resources Corporation or private-sector financiers and get venture capital to compete on the private market.
2. research into oil, coal and other energy technologies that could provide breakthroughs which would have national/international import as well as application here in Alaska. This would be part of an expressed commitment on the part of the State of Alaska to use part of our resource wealth for the benefit of the world at large.
3. an innovation center, designed to help Alaska residents with development, demonstration, promotion, legal work such as patents and copyrights, accounting and business formation, including licensing of products or processes for commercial production. This aspect of the energy center operation would not necessarily be energy related but could apply to any type of idea or invention found to be feasible. A model for this is the innovation center connected with MERDI.

Attached is a first draft of a proposed fiscal note, based on a hypothetical first-year operation of the operation of the proposed energy center. This document is very rough and is to be considered confidential and not necessarily an accurate representation of how the organization might develop.

Also attached is a copy of the annual report of NYSERDA, which should be helpful in getting a grasp of the intent behind the energy center.

Bob Speed will be available to work with you on this project.

We are looking for a rough estimate of the cost of such a study, and potential methods of conducting it in time for a meeting with the Governor's Office staff and the Lieutenant Governor on Thursday, March 13, at 2:30 p.m. Please let me know if this is possible.

TG/mh

May 2, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 60

CSHB
687

To: Rep. Terry Gardiner
Speaker of the House

From: Rep. Bill Miles, Chairman *BM*
House Resources Committee

Date: May 1, 1980

Re: CS HB 687/ Alaska Energy Center
LETTER OF INTENT

The establishment of an Alaska Energy Center is intended to accomplish several major goals, both social and economic. The primary purpose is to use Alaska's energy resources and technology to create jobs in Alaska. A parallel goal is to help solve energy cost and supply problems for Alaskans.

We recognize that energy consumption patterns will undergo dramatic change during the remainder of this century, and into the next. One goal for the Alaska Energy Center is to be a recognized leader in the research and development which will accompany this change, and also which will help conserve the depletable fossil fuels we depend upon, and enhance the economic recoverability of known reserves. This recognized leadership status will be reflected by the number of grants and contracts awarded to the center from government and industry for fossil fuel recovery, development of new energy forms from renewable resources, better use of existing technologies, as well as the practical demonstration of ways to use alternative energy resources economically. In achieving this goal, the energy center shall contribute to the resolution of energy problems faced by Alaskan residents and the communities they live in.

A second major goal recognizes that Alaska has historically been an exporter of raw materials and an importer of finished goods. We believe that while Alaska seeks to resolve its energy price and supply problems over the long term by converting to renewable energy resource use, the opportunity exists to create new industries and employment in the state based on locally available energy resources and the technologies associated with them. Rather than continue to import energy resources and the technology necessary to utilize them, the state should help establish local industries to accomplish the same thing. Direct employment, the "ripple effect" of indirect employment, and recirculation of dollars used to pay for local resources rather than exported to import traditional fuels, will all have profound effects on the economies of Alaskan communities and of the state as a whole. Many of the jobs created will be in demonstration projects carrying some risk of success; but many will be in small businesses spread throughout the state in local resource procurement, hardware assembly and maintenance, plant operations and marketing.

The net result will be new industries and jobs for communities and their residents, as well as greater energy independence for all Alaskans. The Energy Center will help bring about this change through demonstration of economically feasible alternative forms of producing energy and direct technical assistance to local entrepreneurs in creation of local businesses to manufacture, process, harvest or assemble the locally available energy resource or the equipment needed to utilize it. In helping commercialize such ventures, a fundamental role of the center shall be to train inexperienced entrepreneurs in operations and accounting principles needed to make a success of those venture found to be economically feasible; and to work closely with the Alaska Renewable Resources Corp., the Alaska Fisheries and Agriculture Bank, the state business loan programs, private financial institutions and other appropriate funding sources to provide sufficient capital to establish the new business.

A third major goal for the Alaska Energy Center, and one which will provide a check on the success of its activities, is for it to become economically self-sufficient in its operating budget over a maximum period of ten years. We believe this can be accomplished in several ways. First, its research and development activity should be financed from grants and contracts, patent licensing fees and royalties. Although it is probable that the State of Alaska shall continue to be a significant source of contract work, the Legislature expects the Center to initiate from its inception and to maintain a strong ability to compete in the marketplace for an ever-increasing percentage of its operating money. To this end, the Legislature's intent is to capitalize the operational budget with a strong investment in the beginning, and to gradually phase out funding of operations by 1990. Project funding approved by the Legislature is intended to be in advance for full projected costs, to insure that continuity of projects in progress shall not be jeopardized in event of unanticipated budget reductions in succeeding years.

A fourth goal for the energy center recognizes the public service responsibility of the institution. The Alaska Energy Center is established as a private nonprofit corporation to perform an essential service to the People of Alaska. It is to be expected that some of this benefit should be provided as a public service at no cost, to those who request it, while the center is also charged with the responsibility to protect its proprietary interests on which it will depend for an ever-increasing share of its operating and project revenues.

In regard to projects undertaken within Alaska, the energy center shall consider local cultural, social and economic factors, and the aspirations and ways of life of people in existing communities, when determining whether a project or technology is appropriate to local needs. These considerations shall be given equal weight in matching resources and needs.

No corporate structure is established in HB 687. The Legislature recognizes that this vital decision is best left to the board of directors. To that end, the Legislature has appropriated \$100,000 for a comparative study of the organization of similar institutions, public and private, around the country. The first part of that study, to be conducted by the Office of the Governor, shall be to determine the best composition of the board itself, to aid the governor in appointing board members. The second phase, to be directed in part by the board itself, shall be to determine the best management system for the Alaska Center.

Although the study remains to be done, and the Legislature lacks the direction which the document will offer when final decisions are made, there are a number of concerns the Legislature intends to be addressed in establishing the enabling legislation in HB 687. These can be broken down into four basic areas of need:

- 1) fossil fuel recovery and related environmental problems
- 2) renewable energy and transportation
- 3) energy conservation and building design
- 4) Innovation Center

The two areas of greatest energy consumption in Alaska are transportation and space heating of buildings, so it follows that these are areas where the Energy Center could provide some of the greatest contributions to energy conservation and replacement of fossil fuels. An "innovation center" would not be limited exclusively to energy but would provide a service to all Alaskan inventors and innovators with marketable ideas. Among the services the Innovation Center would provide would be assistance in determining whether Alaskan inventions are marketable, patent searches and patenting, and business and capital formation if that is the desire of the inventor, or obtaining manufacturing licenses and royalty agreements if the inventor prefers, and marketing.

It is expected that the Innovation Center would perform these services at no initial cost to the client; but that if the product proves commercially successful, the innovation Center would be entitled to a royalty for its services at a standard rate. Wherever feasible, the Center would give preference to manufacture in Alaska.

responsibility to protect its proprietary interest in which it will depend for an ever-increasing share of its operating and project revenues.

In regard to projects undertaken within Alaska, the Energy Center shall consider local, cultural, social and economic factors, and the applications and ways of life of people in existing communities, when determining whether a project or technology is appropriate to local needs. These considerations shall be given equal weight in matching resources and needs.

No. 60

CSHB
687HOUSE JOURNAL
SUPPLEMENT

May 2, 1980

REVISED FISCAL NOTE

I. REQUEST
 Bill/Resolution No. Committee substitute for House Bill 687 (Page 1 of 3)
 Title An Act creating the Alaska Energy Center
 Requested by _____ Date _____

II. FISCAL DETAIL
 Agency Affected Department of Administration
 Program Category Affected Development
 Budget Request Unit(s) Affected Alaska Energy Center

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES	1183.6	2733.2	2924.5	3129.2	3348.3	
200 TRAVEL	280.0	380.0	406.6	435.1	465.5	
300 CONTRACTUAL	1687.6	4761.6	5166.3	5527.9	5914.9	
400 COMMODITIES	60.0	160.0	171.2	183.2	196.0	
500 EQUIPMENT	350.0	800.0	856.0	913.9	980.0	
600 LAND & STRUCTURES						
700 GRANTS CLAIMS ETC.	1445.0	1546.1	1654.4	1770.2	1894.1	
PROJECT FUNDING	15000.0	18750.0	20362.3	21466.8	22969.6	
TOTAL	20006.2	29130.9	31241.5	33428.3	35768.1	

FUNDING (Thousands of Dollars)

GENERAL FUND	10006.2	16880.7	17227.3	16552.5	12456.8	
FEDERAL FUNDS	10000.0	12250.0	13107.5	14025.0	15006.8	
OTHER (Specify)		906.7		4850.8	8304.5	

POSITIONS

FULL TIME	38.0	50.0	50.0	50.0	50.0	
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)

See attached for expenditure summary.

Assumptions: FY 81 is startup; FY 82 full operations
 FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent
 Federal funding \$10 million FY 81; \$12.250 million FY 82;
 FY 83, FY 84, FY 85 inflation from FY 82 at 7 per cent
 General funding for non-federal portion of operations 100 per cent in
 FY 81 and FY 82; 95 per cent in FY 83; 75 per cent
 in FY 84; 60 per cent in FY 85; continuing decline
 Other funds include royalties, private contracts, additional federal
 funds; 5 per cent of non-federal operation in FY 83;
 25 per cent in FY 84; 40 per cent in FY 85
 Grants and claims includes subcontracts to University of Alaska for
 alternative energy research in FY 81; inflation at
 7 per cent for FY 82, FY 83, FY 84, FY 85.

IV. DATE April 24, 1980

PREPARED BY Steve DavidsonAGENCY LegislativeOriginal: Legislative Finance PHONE 465-1720

No. 60 May 2, 1980

HOUSE JOURNAL May 2, 1980

No. 60

CSHB
687CSHB
687

REVISED FISCAL NOTE

REQUEST

Bill/Resolution No.

ALASKA ENERGY CENTER - CSHB 687

(Page 1 of 3)

Page 2 of 3

Title

Requesting by

Project Funding - FY 81

- II. FISCAL DATA: Project funding for FY 81 includes \$5 million in general funds and \$10 million in anticipated federal and other receipts. Agency Affected: Up to \$2.5 million of the general funds may be used to match other receipts. Program Category: The Board of Directors of the Energy Center shall submit a plan for expenditure of the remaining \$2.5 million in general funds to the Speaker of the House and the President of the Senate before these funds are encumbered. Budget Request: EXHIBIT

Grants & Claims - FY 81

Grants and claims includes \$1,445,000 for the following subcontracts to the University of Alaska Alternative Energy Research Program:

Fuels research program	180,000
Solar technology program	315,000
Heat pump demonstrations	65,000
Biomass fuels research	130,000
Energy economics research	80,000
Coal utilization research	230,000
Wind energy data collection and wind energy atlas	110,000
Waste heat research center	275,000
Fuel cell demonstrations	60,000
TOTAL	1,445,000

Grants and claims for FY 82 - FY 85 includes continuation of alternative energy research projects by the University of Alaska under contract to the Alaska Energy Center, with specific projects to be determined by the Board of Directors of the Alaska Energy Center. The legislature intends that technology development and demonstration projects currently being conducted by the following agencies be transferred to the Alaska Energy Center in the FY 82 and subsequent budgets:

- See attached for details:
 University of Alaska
 Division of Energy and Power Development
 Alaska Power Authority
 Department of Transportation and Public Facilities
 Federal all other energy technology development projects

The Board of Directors of the Alaska Energy Center may subcontract to the University of Alaska, other state agencies, or private research firms from the project funding line item for any projects selected by the board.

Appropriations for project funding made to the Alaska Energy Center are for capital projects and are subject to AS 37.25.020.

IV. DATE: April 24, 1980

PREPARED BY

Original Legislative Packet

AGENCY

PHONE

May 2, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 60

CSHB
687ALASKA ENERGY CENTER - CSHB 687
OPERATING BUDGET - FISCAL YEARS 1981 & 1982

	1st Quarter		2nd Quarter		3d Quarter		4th Quarter		FY 82 Full Operat	
	Expen.	Pos.	Expend.	Pos.	Expend.	Pos.	Expend.	Pos.	Expend.	Posit
<u>PERSONAL SERVICES</u>										
Salaries									80.0	1
Exec. Director	20.0	1	20.0	1	20.0	1	20.0	1	140.0	2
Dept. Directors			17.5	1	17.5	1	17.5	1	600.0	10
Senior Staff			60.0	4	90.0	6	120.0	8	900.0	20
Professional Staff			67.5	6	112.5	10	157.5	14	384.8	10
Tech/Junior Staff			33.5	4	57.5	6	77.0	8	154.0	7
Secretarial Staff	4.2	1	16.5	4	22.0	5	27.5	6	2258.8	30
Total Salaries	24.2	2	215.0	20	319.5	29	419.5	38		
Benefits @ 21%	5.1		45.1		67.1		88.1		474.4	
Total Personal Services	29.3		260.1		386.6		507.6		2733.2	
<u>TRAVEL</u>	50.0		85.0		60.0		85.0		380.0	
<u>CONTRACTUAL</u>									1333.2	
Rent	48.2		126.8		188.5		247.5		2800.0	
Subcontracts	25.0		100.0		300.0		400.0		648.4	
Phone/Xerox/Other	10.9		43.2		83.5		114.0			
Total Contractual	54.9		335.0		572.0		761.5		4761.6	
<u>COMMODITIES</u>			10.0		20.0		30.0		160.0	
<u>EQUIPMENT</u>			50.0		100.0		200.0		800.0	
TOTAL OPERATING	134.2		740.1		1138.6		1584.1		8894.8	

ALASKA ENERGY CENTER - CSHB 687

OPERATING BUDGET - FISCAL YEARS 1981 & 1982

	<u>1st QTR</u>		<u>2nd QTR</u>		<u>3rd QTR</u>		<u>4th QTR</u>		<u>FY 82 TOTAL</u>	
<u>PERSONAL SERVICES</u>	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.
<u>Salaries</u>										
Exec. Director	20.0	1	20.0	1	20.0	1	20.0	1	80.0	1
Dep. Director			17.5	1	17.5	1	17.5	1	70.1	1
Senior Director			15.0	1	30.0	2	45.0	3	240.0	4
Professional Staff			22.5	2	22.5	2	33.75	3	180.0	4
Technical Staff			16.75	2	16.75	2	50.25	6	268.0	8
Secretarial	4.125	1	8.25	2	8.0	2	12.375	3	66.0	4
	-----		-----		-----		-----		-----	
Total Salaries	\$24.125	2	100.0	9	115.0	10	178.875	17	904.0	22
Benefits @ 21%	5.1		21.0		24.2		37.65		190.0	
Total Personal Serv.	29.225		121.0		139.2		216.475		1,094.0	
<u>TRAVEL</u>	25.0		40.0		50.0		50.0		200.0	
<u>CONTRACTUAL</u>										
Rent	25.0		75.0		80.0		130.0		520.0	
Subcontracts	50.0		50.0		100.0		200.0		800.0	
Phone/Xerox/Other	10.0		30.0		35.0		65.0		260.0	
	-----		-----		-----		-----		-----	
Total Contractual	85.0		155.0		215.0		395.0		1,580.0	
<u>COMMODITIES</u>	5		10.0		15.0		20.0		80.0	
<u>EQUIPMENT</u>			15		20.0		30.0		120.0	
	-----		-----		-----		-----		-----	
<u>TOTAL</u>	144.225		341.0		439.2		71.475		3,074.0	
TOTAL OPERATING BUDGET, FY 81:			\$1,635,900							
TOTAL CAPITAL BUDGET, FY 81:			3,700,000							
*TOTAL BUDGET REQUEST, CSHB 687:			\$5,335,900							
University of Alaska research:			1,500,000							
TOTAL ENERGY R&D PROGRAM:			\$6,835,900							

SCS CSHB 687

ALASKA ENERGY CENTER

OPERATING & CAPITAL BUDGET

FISCAL YEARS 1981 & 1982

<u>BUDGET COMPONENT</u>	<u>FY 81</u>	<u>FY 82</u>
<u>PERSONAL SERVICES</u>		
Salaries	\$418,000	\$904,000
Benefits @ 21%	<u>88,000</u>	<u>190,000</u>
Total Personal Services	\$506,000	\$1,094,000
<u>TRAVEL</u>	165,000	200,000
<u>CONTRACTUAL</u>		
Rent	310,000	520,000
Subcontracts	394,000	1,100,000
Phone/Xerox/Other	<u>140,000</u>	<u>800,000</u>
Total Contractual	844,000	260,000
<u>COMMODITIES</u>	50,000	80,000
<u>EQUIPMENT</u>	65,000	120,000

TOTAL OPERATING BUDGET	\$1,630,000	\$3,074,000
TOTAL CAPITAL BUDGET	4,370,000	\$8,000,000
** TOTAL FISCAL NOTE (BUDGET)	\$6,000,000	\$11,074,000

ALASKA ENERGY CENTER - CSHB 687

OPERATING BUDGET - FISCAL YEARS 1981 & 1982

	<u>1st QRTR</u>		<u>2nd QRTR</u>		<u>3rd QRTR</u>		<u>4th QRTR</u>		<u>FY 82 TOTAL</u>	
<u>PERSONAL SERVICES</u>	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.	Expen.	Pos.
Salaries										
Exec. Director	20.0	1	20.0	1	20.0	1	20.0	1	80.0	1
Dep. Director			17.5	1	17.5	1	17.5	1	70.1	1
Senior Director			15.0	1	30.0	2	45.0	3	240.0	4
Professional Staff			22.5	2	22.5	2	33.75	3	180.0	4
Technical Staff			16.75	2	16.75	2	50.25	6	268.0	8
Secretarial	4.125	1	8.25	2	8.0	2	12.375	3	66.0	4
	-----		-----		-----		-----		-----	
Total Salaries	\$24.125	2	100.0	9	115.0	10	178.875	17	904.0	22
Benefits @ 21%	5.1		21.0		24.2		37.65		190.0	
Total Personal Serv.	29.225		121.0		139.2		216.475		1,094.0	
<u>TRAVEL</u>	25.0		40.0		50.0		50.0		200.0	
<u>CONTRACTUAL</u>										
Rent	25.0		75.0		80.0		130.0		520.0	
Subcontracts	50.0		50.0		100.0		200.0		800.0	
Phone/Xerox/Other	10.0		30.0		35.0		65.0		260.0	
	-----		-----		-----		-----		-----	
Total Contractual	85.0		155.0		215.0		395.0		1,580.0	
<u>COMMODITIES</u>	5		10.0		15.0		20.0		80.0	
<u>EQUIPMENT</u>			15		20.0		30.0		120.0	
	-----		-----		-----		-----		-----	
<u>TOTAL</u>	144.225		341.0		439.2		71.475		3,074.0	

TOTAL OPERATING BUDGET, FY 81: \$1,635,900
TOTAL CAPITAL BUDGET, FY 81: 3,700,000

*TOTAL BUDGET REQUEST, CSHB 687: \$5,335,900

University of Alaska research: 1,500,000

TOTAL ENERGY R&D PROGRAM: \$6,835,900

ALASKA ENERGY CENTER
CAPITAL BUDGET
PAGE 1

PROJECT TYPE	DESCRIPTION & ALLOCATION	APPROPRIATION
<u>GEOHERMAL:</u>	Pilgrim Hot Springs deep drilling	\$250,000
<u>MICRO-HYDRO:</u>	Hydroelectric projects less than 1.5 MegaWatt	300,000
	1. Grant to Seward General Hospital to install a hydroelectric power generation facility: (\$102,000)	
	2. Village micro-hydro demonstration project(s) (198,000)	
	Intent: To include analysis of cost payback period, compared to other alternative power supply resources, including but not limited to diesel, coal, larger hydro-electric plants and other renewable energy alternatives.	
<u>WIND, PHOTOVOLTAICS AND HYDROGEN PROJECTS:</u>		900,000
	1. Village-scale demonstration project for use of solar electric energy as a primary or back-up domestic or utility energy source (250,000)	
	2. Utility-scale wind energy demonstration (25KW to 40KW wind machine in municipal utility systems, to be constructed in areas highly visible to a significant number of state residents, such as a view of roadways. (450,000)	
	3. Wind-solar electric-hydrogen electrolysis demonstration project to develop a hybrid renewable energy system directed at solving problems of energy storage. (200,000)	
	Intent: These three projects may be combined in any manner deemed feasible, with cost savings to be reinvested in additional equipment or solution of related problems, or kept for later reallocation.	
<u>AGRICULTURAL FUEL ALCOHOL:</u>	Use of agricultural products or by-products to generate fuel alcohol, in conjunction with feedlot operating using high-protein process residues as cattle feed.	100,000
<u>INTERIOR SAWMILL FUEL ALCOHOL:</u>	Use of wood and wood wastes from sawmill operation or other sources, to generate fuel alcohol.	350,000
<u>SOUTHEASTERN BARGE-BASED FUEL ALCOHOL:</u>	Use of wood and wood wastes from existing logging operations to generate fuel alcohol, develop a barge-based system and method of fuel transport; including procurement of barges and development of wood chippers adapted to barge operation.	800,000

ALASKA ENERGY CENTER
CAPITAL BUDGET
PAGE 2

PROJECT TYPE	DESCRIPTION & ALLOCATION	APPROPRIATION
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Intent: All alcohol projects are to be considered matching funds for use with any money procured from federal or other sources. The Southeastern operation may be done in conjunction with, or supplanted by, wood gasification and is to be done in cooperation with U.S. Forest Service.

<u>ELECTRIC TRANSPORTATION:</u>	Battery powered commuter car pool vehicles at two cities in Alaska, one a cold dry climate (Fairbanks) and the other a wet climate (Juneau). As many vehicles as possible should be tested in each area. Vehicle owners/operators will be expected to contribute useful data in return for use of the vehicles.	250,000
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Intent: To determine the feasibility of short-term electric transportation in Alaska climates, both technologically and economically, and to determine the potential of electric transportation in terms of consumer acceptance in Alaska, the potential for electric transportation to use excess generating capacity in Juneau, and to reduce air pollution in Fairbanks.

<u>SOLAR CONSERVATION ARCHETECTURE:</u>	Development of passive solar and energy-conserving (super-insulated) architectural styles and methods, and land-use patterns, adapted to northern latitudes and varying Alaska climates; equal consideration is to be given to urban designs adaptable to subdivision needs of municipalities, and to rural housing sensitive to cultural needs.	300,000
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Intent: Rural housing design should take into consideration options accommodating energy conserving greenhouses for food production as an integral part of housing design, and should recognize the goal of resolution of three crucial Bush problems: housing, energy and nutritional quality.

The architectural project is to include actual construction of passive solar residences in Southeastern and Interior Alaskan municipalities, and of residences or community buildings in one or more Bush villages, depending on funds available. Except for the Bush construction, homes constructed may be sold at fair market value to recoup construction and related project expenses. The amount recouped may be used to fund design and engineering of an energy-conserving permanent facility to be the headquarters of the Alaska Energy Center.

<u>DIESEL CONVERSION TO COAL:</u>	Demonstration of technologies to convert diesel engines of varying sizes to coal combustion or to develop same.	150,000
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ALASKA ENERGY CENTER
CAPITAL BUDGET
PAGE 3

PROJECT TYPE	DESCRIPTION & ALLOCATION	APPROPRIATION
(University of Alaska Contract Research)		
<u>FUEL RESEARCH:</u>	Basic research on encapsulation of hydrogen and natural gas in Alaska zeolites, storage of hydrogen, methane and ethanol with zeolite applications.	90,000
<u>SOLAR TECHNOLOGY:</u>	Testing of different collector types, investigation of seasonal storage technologies, solar grain drying and test plot heating. Obtain reliable data set for direct and indirect solar radiation, photovoltaic research if additional funding is available.	215,000
<u>HEAT PUMP DEMONSTRATION:</u>	Development of electric and non-electric heat pump systems suited for urban and rural monitoring and performance evaluation, publication of results.	65,000
<u>BIOMASS REDUCTION PROGRAM:</u>	Investigations to determine most technologically and economically appropriate reduction technologies for Alaska's climate. Includes research on wood product combustion and conversion of fibrous material and animal biomass (animal waste) to liquid fuels.	85,000
<u>ARCTIC COAL UTILIZATION:</u>	Investigation and demonstration of local coal use on the North Slope. By Naval Arctic Research Laboratory.	130,000
<u>WIND DATA:</u>	Revision of wind atlas data in regional format; expansion of data base and reporting of results.	110,000
<u>WASTE HEAT:</u>	Development of a waste heat use research center. Involves clearing, piping construction of greenhouses, and evaluation of differing methods of utilizing low temperature water for greenhouse use.	275,000
		<u>\$4,370,000</u>

UNIVERSITY OF ALASKA

MEMORANDUM

TO: Drs. Barton, Cutler and Mather

FROM: Rich Seifert, Chairman *Rich Seifert*
Energy Center Proposal Development Committee
Institute of Water Resources

SUBJECT: Clarification and explanatory notes concerning attached proposal draft for Alaska Center for Alternative Energy

DATE: January 10, 1980

Gentlemen:

Attached you will find the draft proposal for the Alaska Center for Alternative Energy. This proposal culminates a series of events begun in September, 1979. President Jay Barton outlined an alternative energy center at the University as his second priority for development of the University in a memo to the Board of Regents. This memo prompted a Chancellor's faculty luncheon with President Barton and nine faculty members from the Fairbanks campus on October 19. After this meeting, with the support of President Barton, a brainstorming session on the idea was organized by Richard Seifert of the Institute of Water Resources. Approximately 25 staff members from the University attended this session and indicated strong interest in the establishment of an alternative energy center. In addition, legislators Brian Rogers and Russ Meekins expressed great interest and support of the establishment of an alternative energy organization within the University system. As result Dr. Keith Mather appointed Richard Seifert to chair a committee to develop a proposal for such an organization. The names of appointed committee members and their affiliations follow:

Richard Seifert, Chairman	Institute of Water Resources
Charles Hartman	School of Agriculture
Daniel Hawkins	Geosciences
Carol Lewis	School of Agriculture
Belle Mickleson	Agricultural Experiment Station
Tunis Wentink	Geophysical Institute
John Zarling	School of Engineering
<u>Donald Turner</u>	<u>Geophysical Institute</u>

The attached proposal is the result of this committee's efforts.

A few further explanatory comments are necessary. In many cases on policy matters we simply left final statements of intent up to legislative action. In others we respectfully solicit your oversight. What is presented here is a working paper and draft which you may consider a statement of our priorities. Further, it contains a suggested organizational structure well suited to our mission statement for the Center.

Drs. Barton, Cutler, and Mather
Page 2
January 10, 1980

Note that the word "renewable" does not specifically appear in the name. It was clearly the intent of this committee to focus on a center for renewable energy resources, but it was also the consensus of the committee to make the first sentence of the mission statement read "including but not limited to solar, geothermal, wind, tidal, biomass and hydro-electric. . ." This was considered very important because the committee felt strongly that technological demonstrations should include fuel technologies, for example. Most present research within the state and university system is resource-oriented, not technology-oriented, and we felt that a fuel research system was within the auspices of our center proposal. This is especially important since the energy use in Alaska is presently about 90% liquid fuels, and that is one of our critical problems.

A special item of concern expressed by some committee members is item b under the Director's responsibilities heading, in the section on Administration and Organization. It involves the question as to whether the center will entertain proposals only from within the University or will receive proposals from other entities within the state. As the proposal now states, the center is open to all proposers within the state. It was the consensus of the committee that it be so, and not be kept only within the University system.

The establishment of the Alaska Center for Alternative Energy presents a unique opportunity to the University and the state to maintain a focal position in the wise, efficient, and appropriate use of the natural resources and technological expertise of Alaska. Alternative energy will be a critical element in the ultimate survival of Alaska in the post-petroleum era. It is not too early to consider the value of alternative energy technologies now and continue our search for a quality way of life.

mh

A PROPOSAL
TO THE LEGISLATURE
OF THE STATE OF ALASKA

TO ESTABLISH
THE ALASKA CENTER FOR ALTERNATIVE ENERGY
WITHIN THE UNIVERSITY OF ALASKA
STATEWIDE SYSTEM

JANUARY, 1980

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A. WHY WE NEED AN ALASKA CENTER FOR ALTERNATIVE ENERGY

Alaska's climate, scattered population, and physical remoteness from the political and commercial centers of the United States have led to one of the highest per capita rates of energy consumption in the world--perhaps the highest. Although energy crises confront the entire nation, the physical, economic, and social differences between Alaska and its sister states often mean that those solutions found elsewhere are not adequate for Alaska. Alaskan solutions cannot be expected to emerge from any other state but our own. As the nation has slowly mobilized to solve its energy problems, it focussed on the needs of the continental U.S. To those who have followed these efforts since 1973, it becomes eminently clear that most of the federal research and development has not been appropriate to Alaska's needs.

It is incumbent upon Alaska to solve its own energy problems, if this State is to outlive its petroleum resources. Alaska cannot wait passively for energy answers which may never come. The State must invest in its own future energy security and begin to clear a path through the complex, but opportune, set of energy alternatives it has. The most critical element in this process is the technological link between the resource base and the energy consumer. What is required is a development scheme directed toward the technology needed to use Alaskan resources in Alaska for Alaskans. This proposal describes one element of that scheme, an organization within the University of Alaska statewide system called the Alaska Center for Alternative Energy.

B. ESTABLISHMENT OF THE ALASKA CENTER FOR ALTERNATIVE ENERGY

The establishment of the Alaska Center for Alternative Energy is hereby proposed, to respond to the pressing need to develop an appropriate Alaska-oriented base of energy technology. The Center will function as an independent unit within the University of Alaska statewide system, unaffiliated with any present division of the University.

The creation of the Center within the University's statewide system will match the largest base of technical expertise in the State of Alaska with the problems, demonstrations, development projects, and research which will fill the technological gap now existing between identified alternative energy resources and their beneficial use by the citizens of Alaska. The availability of the human resources within the University and State, working through the Alaska Center for Alternative Energy, constitutes a major opportunity for Alaska to achieve further reliance on in-state energy resources.

C. MISSION STATEMENT

The Alaska Center for Alternative Energy will be administered to achieve the following objectives and provide the following services to the people of Alaska:

1. Establish the structure and priorities for appropriate development, demonstration, testing and research projects in alternative energy technologies, including but not limited to, fuel alternatives, solar, wind, geothermal, tidal, biomass, hydro-electric, energy storage and conservation (suggested appropriate programs are further outlined in Appendix I).
2. Provide a mechanism for citizen participation in determining the energy technology needs of Alaskans.
3. Provide an objective review process for proposals to achieve the highest quality and performance levels possible in all of the technological endeavors of the Center.
4. Provide an active interface with the University's educational efforts, as well as all community educational systems statewide, to allow the work and developments of the Center to be understood by, and communicated and useful to, Alaska's citizens.
5. Determine through development, demonstration, testing and research those technologies which are most appropriate for application on a regional and local basis in Alaska.
6. Develop and make available a data base for energy development efforts.
7. Disperse funds from State, Federal, or other appropriate funding sources to accomplish items 1 through 6.

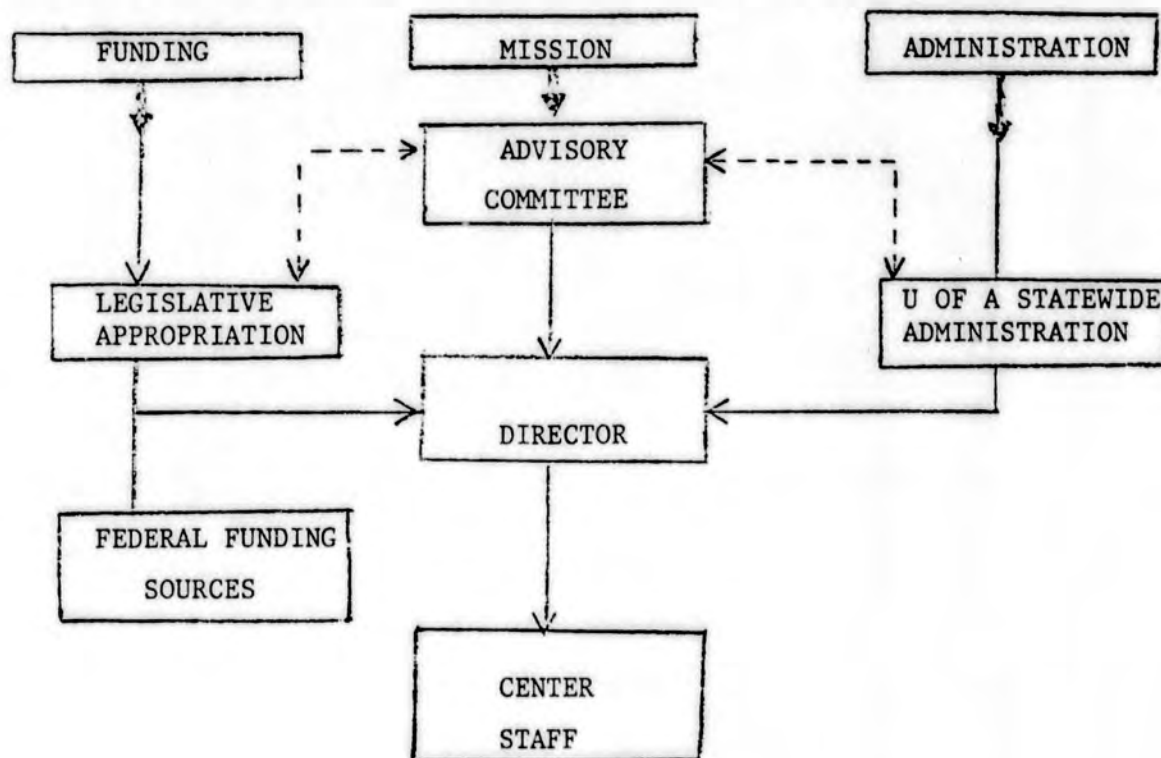
D. AFFILIATION WITHIN THE UNIVERSITY OF ALASKA STATEWIDE SYSTEM

The Center will function best as an entity of the University of Alaska statewide system, unaffiliated with any present division of the University. It will be located in Fairbanks to take best advantage of the largest base of technical and scientific expertise within the state and to facilitate the interdisciplinary work required to fill the technological gap between the identified alternative energy resources and their beneficial use by the citizens of Alaska.

A list of University staff members with alternative energy expertise and interest is given in Appendix 2.

E. ADMINISTRATION AND ORGANIZATION

The administration of the Alaska Center for Alternative Energy is modelled after the Alaska Sea Grant Program. It will serve as an interdisciplinary coordination unit to administer projects contracted to other University departments and institutes, as well as other entities within the State. The Center will not, itself, engage in projects but rather issue requests for proposals, oversee contracted projects, and carry out its education and outreach mission. An organizational chart is shown below.



The Alaska Center for Alternative Energy will fund and oversee development, demonstration, testing and research projects consistent with its mission. The Center will receive funds from State and federal sources and issue appropriate requests for proposals (RFP's) to complete the work described in those RFP's within the University of Alaska statewide system or elsewhere within Alaska. As funding permits, the Center will also entertain unsolicited proposals to do necessary demonstrations, development projects or educational projects. The funding of research work organized in a problem-solving manner, such as a task force approach, may also be accomplished through the Center.

1. DIRECTOR

A salaried Director will be employed by the University of Alaska statewide administration responsible to the President of the University. The director will be a person technically and administratively qualified to perform the following duties.

- a. Work in a leadership role to develop specific programs and projects, in cooperation with the advisory board, necessary to fulfill the mission of the Center
- b. receive proposals and establish an appropriate review process. Proposals shall be entertained from within the University of Alaska statewide system, and from appropriate entities within the State of Alaska. Appropriate entities may be further defined by legislative intent.
- c. Fund worthy proposals and administer funded projects by contract between the Center and the proposer, according to established University of Alaska financial procedures.
- d. Report annually on the progress of the Center
- e. Coordinate the activities of the Center with other energy-related programs and agencies within the State.
- f. Define the responsibilities and oversee the activities of the staff.

2. ADVISORY BOARD

A non-salaried advisory board will be appointed (see Appendix 3 for a list of suggested membership). The board will interact with the organization as follows: The committee will

- a. Assist the director in establishing specific programs consistent with the general mission of the Center.

- b. Review and critique the performance of the director and staff and report to the funding source on the conduct and performance of the Center.
- c. Assist in proposal review as appropriate.
- d. Act as a check on the power of the director in the following manner:
The authority to fund specific projects is vested in the director. However, the board may choose to exercise a veto over the director's decision to fund a specific project. The board may not override the director's decision not to fund however. Therefore, veto power to fund a project is vested in both the advisory board and the director. This negative check and balance system assures that questionable proposals and projects are unlikely to be funded.

F. FINANCIAL SUPPORT

The operating budget for the Center is considered to require an annual legislative appropriation of the order of \$150,000 for each year as a line item in the University of Alaska budget request. This administrative appropriation will include funds for:

- 1) Staff salaries, benefits, leave and overhead.
- 2) Travel and per diem for the staff and advisory board members.
- 3) Operational costs.

A second sum of money is necessary to support the funding of demonstrations, educational outreach programs, and technology development projects of the Center, as described in the detailed program descriptions included in Appendix 1. The sum of these needed project funds is of the order of \$3.7 million annually. These monies need to be made available to the Center through appropriation of general fund monies or from other State funds in the form of a capital appropriation. A one-time capital appropriation would provide for the establishment of the Center and the early period of program development. The appropriation should permit a minimum of support for five years. As the Center develops, a provision for funding beyond the initial period can be negotiated through appropriate State agencies.

It is clear that the Center as outlined in this proposal cannot function without both of these monies being made available. The availability of these funds shall in no way restrict or discourage the Center from seeking funds from federal or private sources to achieve its mandate and accomplish its mission.

The reviewer is referred to Appendix 1 for detailed outlines of the types of energy technology development programs which the Center would undertake.

APPENDIX 1

SUGGESTED PROGRAM LISTINGS

The following is a series of detailed program listings describing the possible energy technology development programs which would be undertaken by the Center. Programs are generally outlined within a five-year time frame to show the importance of continuity and building an experience base. Programs listed here are responses to solicitations for alternative energy development programs given by University staff members. Budget figures are their estimates and should not be considered binding. They were used to arrive at the annual estimated budget requirement stated in the financing section.

FUELS RESEARCH PROGRAM

(Program Years)

The objectives of the fuels-research program are to complement studies dealing with various means of energy production. The specific objectives of the fuels-research program are:

- A. To study alternative means of energy production and utilization of various energy sources.
 - 1. Basic research on the encapsulation of hydrogen and natural gas on Alaska zeolites*. (1-5)
 - 2. Research and engineering studies of the storage of hydrogen and production of oxygen by zeolites for use in fuel cells.
 - 3. Engineering studies of the behavior of zeolite-bound hydrogen and natural gas in experimental engines and vehicles. (2-5)
 - 4. Basic research and engineering studies of oxygen production over Alaska zeolites for use in coal gasification leading to hydrogen production. (2-5)
- B. To investigate possible solutions to problems associated with energy production.
 - 1. Research and engineering studies of the use of Alaska zeolites in the beneficiation of methane produced from sewage, dairy waste and sanitary landfills. (3-5)
 - 2. Research and engineering studies on the use of Alaska zeolites for the removal of SO₂ and other pollutants from stack gases of coal-fired power plants. (4-5)
 - 3. Research and engineering studies of the applications of Alaska zeolites in beneficiation of ethanol and other chemicals produced from Alaskan grains. (3-5)
- C. To investigate the use of Alaska's resources for Alaska's energy production.
 - 1. Included in items A and B.

Suggested annual funding level: \$180,000 - \$200,000

* Already begun under Department of Transportation and Public Facilities Program.

GEOTHERMAL ENERGY PROGRAM

FIVE-YEAR PLAN

(Program Years)

The objectives of a geothermal energy program are:

- A. To determine the location, extent and quality of the individual Alaskan geothermal reservoirs most suitable for near-future economic development. (1-5)
 - 1. Select sites for geological and geophysical reservoir definition studies based on recommendations of the Alaskan geothermal resources assessment map and report to be published jointly by the Geophysical Institute and the U.S. Department of Energy in early 1980. (1)
 - 2. Conduct integrated geological and geophysical reservoir definition studies of selected sites. (1-5)
 - a) This should be done as a cooperative program between the University and the Alaska Division of Geological and Geophysical Surveys.
 - b) Field studies:
 - 1) Geologic mapping
 - 2) Ground resistivity and electromagnetic surveys
 - 3) Ground and water temperature surveys
 - 4) hydrologic surveys
 - 5) Seismic surveys
 - 6) Gravity surveys
 - 7) Geochemical surveys
 - 8) Other methods as appropriate to individual sites
 - c) Analysis of data and production of reports on each site. (2-5)
 - 1) Scientific analysis and conclusions
 - 2) Analysis and conclusions written in non-technical language for use of State and local government planners and interested citizens
 - 3) Specific drilling site recommendations based on above
 - 3. Develop and test geothermal exploration techniques uniquely suited to the arctic environment.
- B. Drilling of sites to be conducted under the supervision of the State Division of Geological Surveys and the State Division of Oil and Gas. (No budget request) (2-5)

1. Funding for drilling to be by separate legislative appropriations to the State Division of Geological and Geophysical Surveys.
 - a) e.g., Pilgrim Springs geothermal drilling project in 1979
- C. Conduct engineering applications analyses of each site after such sites have been geologically and geophysically studied and drilled. (2-5)
 1. Engineering analyses to be based on actual reservoir parameters as determined by drilling and flow testing of wells.
 2. Recommend appropriate technologies and designs for local energy utilization.
 - a) Electrical generation
 - b) Direct heat utilization
- D. Economic studies of individual sites (2-5)
 1. Energy production
 2. Agricultural
 3. Marketing, etc.
- E. Interfacing with Federal, State and local agencies
 1. Ensure effective interagency communication and planning
 2. Minimize duplication of effort
- F. Outreach/Extension and Education programs (1-5)
 1. To be administered by the Outreach/Education program of the Center. (No budget requested in Geothermal Program)
 - a) To be budgeted separately

Recommended yearly funding level: \$600,000

SOLAR TECHNOLOGY PROGRAM

(Program Years)

The objectives of a solar energy program are:

- A. Determine the most economical, reliable, appropriate and durable solar technologies, and their optimum combination with energy conservation to best use solar energy for space heating in Alaska:
 - 1. test different collector types (1-5)
 - 2. set up passive solar commercial and residential applications demonstration program. *
 - 3. investigate seasonal storage solar heating technologies. (3-5)
- B. Undertake five-year plan to develop solar soil heating methodologies for Alaskan agricultural applications:
 - 1. soil heating test plots (1-3)
 - 2. solar grain drying (2-4)
- C.
 - 1. Obtain for all four climatic regions of Alaska (a/south maritime, b/transition, c/interior--subarctic continental and d/the North Slope arctic) a reliable data set (1-3 years). This should include: (1-3)
 - a) global radiation
 - b) global radiation on a south slope inclined to latitude
 - c) global radiation on a south wall
 - d) direct solar radiation.

At the present all of these measurements are only carried out in Fairbanks.
 - 2. Use these data sets to test existing models which derive radiation data from other meteorological parameters (e.g. the Machta model). These models are developed for lower latitudes and their applicability for high latitudes has never been tested systematically. (2-4)

* Already begun under Department of Transportation and Public Facilities Program.

3. Modify the existing models if necessary so that they apply for the Alaska climatic zones, e.g., multiple reflection and radiation for low sun angles are important. (3-5)
4. Use these modified models and the existing meteorological data of the National Weather Service (which is available for many stations in Alaska) to obtain a radiation climatology for Alaska. (3-5)
5. Make detailed measurements of the solar spectrum. Preliminary results show that in spring there is a relatively higher percentage in the shorter end of the visible spectrum than in summer when the snow has melted. However, for detailed measurements special instrumentation is necessary. Such measurements should be made for: (2-4)
 - a) different climatic zones in Alaska
 - b) under different cloud conditions and
 - c) for different seasons
- D. Photovoltaic, solar electric program (dependent upon outside research and cost evolution). (4-5)
- E. Optimize fenestration, use of windows in Alaska structures. (1-3)
- F. Develop solar energy education program (part of five-year plan). (1-5)
 1. computer simulation currency, publications updates, etc.

Recommended funding level: \$315,000

ENERGY STORAGE TECHNOLOGY PROGRAM

(Program Years)

- | | | |
|----|---|-------|
| A. | Develop a thermal energy storage test laboratory facility: | (1-2) |
| 1. | set up lab and procure facility in an existing institute | (1) |
| 2. | begin scientific investigation of storage media, options, and types of energy storage by energy type | (1-3) |
| 3. | integrate storage technologies into other energy technology investigations within the Center
i.e., batteries, mass thermal storage, compressed air storage, gas storage, hydroelectric pumped storage. | (2-5) |

HEAT PUMP DEMONSTRATION PROGRAM

FIVE-YEAR PLAN

The ground (frozen or not), a lake, a river or the sea provide heat reservoirs which may be tapped for residential or industrial space heating. Perhaps most important for Alaskan conditions, these heat reservoirs maintain a near constant temperature year-round. The heat transfer is through well-known heat-pump techniques; using data from Scandinavia, effect factors of almost 5 may be reached (e.g., heating costs that are 20% of all-electric). The heat-pump system operates automatically and should require little, if any, operational attention or service; there are no atmospheric emissions associated with its operation.

We request funds for a full-scale demonstration project. Because Alaskan soil temperatures often are close to the freezing point, a major investigation will be the response of the soil to the heat extraction.

Five-year plan:

Years

- | | | |
|----|---|-----|
| A. | Develop ground-heat pump systems suited for Alaskan conditions: | |
| 1. | Electrically driven (suburban areas) | 1-2 |
| 2. | Non-electric (bush and rural communities) | 2-3 |
| B. | Install system and monitor its operation (3 systems installed in successive years) | |
| 1. | Site selection. Installation. | 1-3 |
| 2. | Monitor system (heat delivered, power used, thermal response of ground, effects of possible frost action in the ground, reliability of system, etc.) | 1-5 |
| C. | System performance evaluation. Models aimed to aid site evaluating, estimating operating costs and minimizing installation costs. Models to be refined as actual performance data accumulate. | |
| 1. | Efficiency of heat-exchangers and heat-pump | 1-4 |
| 2. | Response of the reservoir to the extraction of heat | 1-4 |
| 3. | Optimizing ground collector size and design | |
| D. | Publication of results. Recommendations for use in various parts of Alaska. | 1-5 |

Recommended yearly funding level: \$65,000

BIOMASS REDUCTION PROGRAM

FIVE-YEAR PLAN

(Program Years)

The five-year plan will include investigations of both vegetative and animal biomass reduction technologies. The objectives will be to determine appropriate, both technologically and economically, reduction technologies for Alaskan climatic conditions. This will be accomplished through technology development as well as adaptation of available technologies.

- | | |
|--|---------|
| A. Vegetative biomass | 5 years |
| 1. Wood product conversion technologies | |
| a. Direct combustion | |
| 1) whole product | 2 years |
| 2) processed product | 4 years |
| b. Conversion to liquid fuel | |
| 1) digestive processes | 3 years |
| 2) gasification processes | 3 years |
| 2. Fibrous material conversion technologies | |
| a. Direct combustion | |
| 1) processed product | 4 years |
| b. Conversion to liquid fuel | 3 years |
| 1) digestive processes | 3 years |
| 2) gasification processes | 3 years |
| 3. Methods of residue disposal | 5 years |
| 4. Quality of fuel obtained | 3 years |
| 5. Energy ratios (energy in versus energy out) | 2 years |
| 6. Environmental impact | |
| a. Removal of products from land areas | 5 years |
| b. Deposit or removal of residues | 5 years |
| c. Air quality | 2 years |
| B. Animal biomass | |
| 1. Conversion technologies for liquid fuels | |
| a. Raw material as non-solid | 3 years |
| b. Raw material as solid | 3 years |

2.	Methods of residue disposal	5 years
3.	Quality of fuel obtained	3 years
4.	Energy ratios	2 years
5.	Environmental impact	
	a. Deposit or removal of residues	5 years
	b. Air quality	2 years
c.	Economic evaluation of alternate technologies	Begun in year 1
	1. Economies of scale	
	2. Capital investment	
	3. Cost of production	
	4. Product markets	
	5. Institutional constraints	
D.	Development/demonstration projects	Begun after completion of economic evaluation
	1. Vegetative biomass*	
	2. Animal biomass**	

* A suggested applicable area(s) are the Delta Agricultural Project or on a smaller scale, Minto.

** As above but in the proposed state dairy project at Point MacKenzie near Anchorage.

ECONOMICS PROGRAM
FIVE-YEAR PLAN

(Program Years)

- A. Comparison among alternate energy sources 5 years

Optimum alternate energy system: As well as considering the results of the economic analysis for each particular option, the studies will include: seasonal constraints, quality of fuels, energy ratios (energy in versus energy out) and appropriateness of application.

- B. Comparison among alternate and conventional energy sources 5 years

Optimum energy system: The analysis in A. above will be included as will the appropriateness of application in a specific area.

FUELWOOD PROGRAM

Assessing the Supply of Fuelwood Resources in the Fairbanks Area

(Program Years)

A five year research plan would assess the capability of forest lands in the Fairbanks area to produce fuelwood on a sustained basis.

1. At varying distances from Fairbanks, identify State and federal forest lands that could be managed for a sustained supply of fuelwood. (1)
2. Determine the various forest types on these lands and estimate the standing stock of firewood for each type. (1-2)
3. Determine the productive capacity of each forest type and from this determine the annual allowable cut for all forest types within varying distances of Fairbanks. (1-4)
4. Using cost/benefit analysis determine which forest types should be managed intensively for the continued production of fuelwood. (1-3)
5. Evaluate the environmental effects of fuelwood harvesting and burning. (4-5)
6. Develop a fuelwood management plan for State and Federal lands in the Fairbanks area. (1)
7. Investigate the implications of eliminating free use of fuelwood and charging an array of user fees. (2)
8. Develop alternative models of fuelwood harvesting and transport systems that could be used under varying conditions to minimize production costs. (1-5)

It is estimated that this research would cost approximately \$150,000 annually.

ARCTIC ENERGY PROGRAM

ALTERNATE ENERGY RESOURCES FOR ARCTIC NORTH SLOPE REGIONS OF ALASKA

John J. Kelley
Director, NARL

In the Arctic Regions, energy sources such as oil, gasoline, and gas (natural and propane) are becoming more expensive due to numerous causes. In addition, standards of living are changing in response to modernization of community life which brings with it a desire and need for new commodities in almost every sector such as transportation, housing, food, etc. Although subsistence hunting still plays an important role in remote arctic village life, new energy sources and the means and methods for the utilization of such sources must be developed to provide an alternate energy subsistence lifestyle.

Seminars have been conducted at the Naval Arctic Research Laboratory for the past two years directed to the elucidation of means and methods of development of new cost-effective energy sources for North Slope communities. These seminars were attended by NARL staff members, North Slope Borough school staff, representatives from consulting firms (in particular, Seton, Johnson, and Odell, Portland), University of Alaska staff members, and residents of the Barrow community. Although a large number of concerns were expressed, emphasis was placed on long-term benefits that could be derived through well-conceived demonstration projects. For Example:

- ° There is an abundance of coal throughout the North Slope region of Alaska. Most of it is within reasonable utilization distance of the villages. The coal which occurs near Wainwright Village on the Kuk River, for example, has been known since 1869. It is one of the best coals in the nation--low in ash and sulfur. One plan advised (A. W. Moody, Harstad Associates, Seattle) that an initial project consider a plant size of 200 kw (electrical) output. The preliminary design is suitable for expansion to 400 kw. The small coal field electric plant demonstration project would affirm a future alternate energy potential and would offer training to community participants.
- ° If the coal is used as an alternate fuel, an unusual utilization of the so-called waste products of combustion is possible. This entails the construction of double-walled greenhouse structures which would utilize the waste heat, water, products of combustion, and solid residues in an agronomic endeavor. One suggestion (AES, UofA) would be to use the CO₂ gas derived from exhaust products to promote growth of plants and the waste heat to maintain

proper temperatures in a tundra soil-growing media. Such a plan could provide a number of types of fresh vegetables and, perhaps, some fruits to the local areas at a cost comparative with or less than the same products which are currently imported.

- ° Solar energy can be harnessed with existing hardware and technology. It would not be dependent on any other outside energy source. It is, however, ineffective during that part of the year when no sunlight can be utilized. During that time, sunlight can be utilized, the energy from the sun can supplement and sometimes replace other energy sources. The use of solar energy in a demonstration project must be more than just the conversion of a standard dwelling with off-the-shelf technology. A demonstration project must, in some way, relate to a total energy architectural concept relative to regional requirements, including training.

To implement projects based on the above concepts will involve a multiyear funding program. The amount of funding needed will depend upon the extent of the project(s) and the length of time each will be allowed to continue; until 1) they are voluntarily terminated; or 2) they prove successful and are taken over by either government or commercial entities.

An estimated table of costs and milestones for anticipated greatest net return per project has been prepared (C. Hoar, Seton, Johnson, Odell) and modified for this report based on the comments of other participants:

COAL UTILIZATION--PILOT PROGRAM

<u>Task</u>	<u>Estimated Time</u>	(1979 Dollars) <u>Estimated Cost</u>
1. Research, engineering, mobilization, basic training	6 months	\$ 120,000
2. Materials/Equipment		110,000
3. Site prep, equipment erection, training	6 months	200,000
4. Materials/Equipment		150,000
5. Operation of mine site, delivery system/training	1 year	250,000
6. Materials/Equipment		100,000
7. Ancillary labor and spare parts		100,000
Total for Two-year Program		<u>\$1,030,000</u>

ARCTIC GREENHOUSE--PILOT PROGRAM

<u>Task</u>	<u>Estimated Time</u>	(1979 Dollars) <u>Estimated Cost</u>
1. Research, engineering, mobilization, training	6 months	\$ 90,000
2. Materials/Equipment		60,000
3. Site preparation, equipment, installation, training	3 months	45,000
4. Materials/Equipment		75,000
5. Operation of Greenhouse and distribution	1 year	175,000
6. Materials/Equipment		50,000
Total for Two-year Program		<u>\$500,000</u>

SOLAR ENERGY/ARCHITECTURE CONCEPT--PILOT PROGRAM

<u>Task</u>	<u>Estimated Time</u>	(1979 Dollars) <u>Estimated Cost</u>
1. Research, engineering, mobilization, equipment	6 months	\$120,000
2. Materials/Equipment		50,000
3. Site prep, erection of test structure(s), training	6 months	120,000
4. Materials/Equipment		160,000
5. Operation of Model	18 months	200,000
6. Materials/Equipment		120,000
7. Retrofit/installation and training	6 months	100,000
8. Materials/Equipment		50,000
Total for 3½-year Program		<u>\$920,000</u>

It is emphasized that these estimates could change substantially based on level-of-effort and location of the demonstration site.

Success in any endeavor of this kind must involve full participation of members of the local community. The participants are the potential managers and employees of any commercial venture that may result from the project. Training is an essential element and must be accomplished both on-the-job and in a classroom environment. Unless all who participate are adequately trained, there is little hope for the success of the projects.

WIND ENERGY PROGRAM

FIVE-YEAR OUTLINE

(Program Years)

The objectives of the wind energy program are to supply reliable wind information for Alaskan planners and to evaluate and publicize suitable wind machines (or WECS) for Alaskan use. The ultimate goal is always to establish (through cooperative programs) operational wind energy systems in communities, with emphasis on rural and small village. To achieve this, we propose to:

- A. Revise and distribute the wind atlas data in regional formats (e.g., the Regional Corporation boundaries), for all communities within those boundaries (native or otherwise). (1-3)
 1. Establish (or guide others in) further measurement stations to fill wind data gaps. (1-3)
 2. Expand the present data base and resulting reports to include machine productivity predictions (presently not part of the wind atlas). (1-2)
- B. Establish and operate a wind machine test facility (1-5)
 1. Purchase, install and test two machines (10 kW and 40 to 60 kW rated), at a hill site near Fairbanks. (1-3)
 - a) When operational, provide training for visitors from Alaskan communities; e.g., teachers and village operators. (1-5)
 - b) Invite visiting manufacturers, utility representatives, private industrialists and government agencies to use the facility (on a cooperating cost-sharing basis). (2-5)
- C. Install, in cooperation with others (recall B-2-b), machines (or clusters of machines) in communities to provide significant electric power for general use. (2-5)
- D. Test energy storage devices, developed by others (recall Solar Section above), adapted for WECS. (3-5)
- E. Prepare and distribute all results from the test facility for public use, especially in Alaska. (2-5)

Budget*

1st year	\$260,000	
2nd year	260,000	
3rd year	185,000**,†	
4th year	180,000**,†	
5th year	180,000**,†	
	<u>\$1,065,000</u>	(\$213,000/year)

* In 1979 dollars, not corrected for inflation or increase in UAF rates.

** Assumes any new WECS will be funded by manufacturer, special appropriation, or non-UA agencies.

† Assumes any WECS demonstrators outside the UAF test facility will be funded (including sub-contracts from industry, or local labor) by on-site users or special appropriations.

APPENDIX 2

HUMAN RESOURCES AVAILABLE TO THE CENTER

The following is a listing of the human resources of the University of Alaska statewide system relating to alternative energy technological expertise. The first page is a resource list, included to facilitate contacts and communication among all interested parties.

The second section is a detailed tabular listing of university staff members giving their degrees, areas of expertise, recent experience, and scientific equipment which they have at their disposal. Also included is a column to indicate how many months during the past year (1979) each staff member was funded to do alternative energy work. For the 49 people listed, a maximum possible effort of 588 man months could have been devoted to alternative energy development work. As can be tallied from the table however, only 106 man months were in fact funded.

WASTE HEAT PROGRAM

(Program Years)

Research Proposal is as follows:

- I. Develop a waste heat use research center (1-5)
 - A. Agriculture
 - 1) Set up 2 ea 40' x 100' double poly greenhouses (1-2)
 - 2) Piping of warm water from physical plant to area (1)
 - 3) Clearing 2-3 acres of ground (1)
 - 4) Install PVC pipe in soil heated plots (2)
 - 5) Compare methods of utilizing low temperature H₂O for greenhouse use (2-5)
 - 6) Evaluate types of crops and develop markets for greenhouses using low temperature H₂O (2-5)

Estimated support \$275,000/year

CENTER FOR ALTERNATIVE ENERGY

RESOURCE LIST

<u>Name</u>	<u>Affiliation</u>	<u>Telephone</u>	<u>Areas of Expertise</u>
Allan, Lee	AES-Palmer	745-3257	solar, heat flow radiation, agricultural equipment
Aspnes, John	Elec. Eng.	479-7137	passive solar, electrical
Barnhardt, Ray	CXCS	479-7143	energy education
Barsdate, Robert	IMS	479-7707	solar, wood
Behlke, Charles	Eng.	479-7330	hydropower, tidal
Benson, Carl	GI	479-7450	geothermal--calorimetry, volcanic systems
Button, Don	IMS	479-7709	microbiology kinetics
Carlson, Axel	Coop. Ext.	479-7201	energy conservation in buildings
Carlson, Bob	IWR	479-7775	hydropower
Colonell, Joe	IMS	479-7832	wind, waves, tides
Dickason, Gene	Eng./UAA	263-1859	environmental quality engineering, methane
Dinkel, Don	AES	479-7187	waste heat, geothermal & solar (agricultural applications)
Forbes, Robert	GI	206-468-2453	geothermal
Gasbarro, Tony	AES	479-7433	biomass (wood)
Goldsmith, Scott	ISER/UAA	278-4621	geothermal
Gosink, Joan	GI	479-7460	hydrodynamics, turbulence, heat transport
Harrington, John	Chem./UAA	263-1714	thermodynamics
Harrison, William	GI	479-7706	geothermal, heat flow
Hawkins, Dan	Geology	479-7809	geochemistry of hydrothermal fluids, gas sorption on zeolites
Johnson, Ron	Eng.	479-7777	thermodynamics, fluid mechanics, environmental modeling
Kane, Doug	IWR/Eng.	479-7808	water resources, fluid mechanics, hydrology
Kienle, Juergen	GI	479-7467	geothermal, volcanic systems
Leonard, Lee	DOT/UAF	479-2241	wind, solar, geothermal (engineering applications)
Lewis, Carol	AES	479-7670	production economics, biomass, waste heat
McRoy, Peter	IMS	479-7783	biomass
Merritt, Bob	Eng./GI	479-7137	solar, nuclear engineering
Metzner, Ron	GI	479-7369	stirling engine, heat pumps
Mickelson, Belle	AES	479-7631	energy education
Nelson, William	Eng./UAA	263-1859	energy conservation in buildings
Nevé, Dick	IMS	479-7977	photovoltaics, tides, current, wind
Nielsen, Hans	GI	479-7414	heat pump, thermodynamics
Osterkamp, Tom	GI	479-7543	hydroelectric, geothermal
Reeburgh, Bill	IMS	479-7830	methane
Reichardt, Paul	Chem.	479-7986	biomass
Remus, Emil	ACC/Diesel	263-1468	wind turbines, diesel & wind co-generation
Rice, Eb	Civil Eng.	479-7241	energy conservation in buildings
Royer, Tom	IMS	479-7835	currents, waves, tides
Sackinger, Bill	GI	479-7472	energy conservation in homes, wind
Sheridan, Roger	GI/Physics	479-7339	thermoelectric, photovoltaics, MHD, nuclear
Seifert, Richard	IWR	479-7987	solar, energy conservation technology
Stone, David	GI/Geology	479-7565	flywheels
Tiedemann, Jim	Mech. Eng.	479-7209	solar, heat pump
Turner, Don	GI	479-7198	geothermal
Van Cleve, Keith	AES	479-7114	production capacity of soil sites
Wise, Jim	AEIDC/UAA	279-4523	solar, wind, temperature, humidity
Wendler, Gerd	GI	479-7378	solar
Wentink, Tunis	GI	479-7607	wind, solar
Wescott, Gene	GI	479-7576	geothermal
Workman, William	AES/DOE	479-7119	energy economics
Zarling, John	Eng.	479-7209	solar, energy conservation in buildings

Staff and Facilities Available for Center for Alternative Energy

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Aspnes, John	Elec. Eng.	PhD Elec. Eng.	Passive solar Control systems & energy systems for electrical power	Passive solar design of buildings Co-generation--waste heat scavenging	---	electrical power lab
Dickason, Gene	Eng./UAA	PhD Civil Eng.	Environmental quality engineering Resource recovery from solid waste Anerobic digestion (methane)	Methane production in waste in dumps	---	
Johnson, Ron	Engineering	PhD Fluid Mechanics	Thermodynamics Fluid mechanics Environmental modeling	Co-PI: Ice fog abatement Teaching thermodynamics Geothermal energy	---	
Merritt, Robert	Elec. Eng./ GI	MS Elec. Eng. MS Communica- tions & astro- physics	Solar Nuclear engineering	Solar panel to measure solar constants Applications of solar panel for villages	1/2	
Nelson, William	Eng./UAA	PhD Mech. Eng.	Energy conservation--heat loss	PI: Budget studies of energy loss from dwellings (1K) Heat loss through multiple pane windows	1/2	lab--low tempera- ture box heat flux measur- ing plates hot water anemom- eter
Tiedemann, Jim	Mech. Eng.	PhD Mech. Eng.	Self-powered heat pump Solar Collectors	Great Inflatable Automobile		
Zarling, John	Engineering	PhD Mech. Eng.	Active & passive solar design Energy conservation in buildings Air infiltration rates	PI: DOTPF computer modeling of passive solar structures (20K) PI: Air infiltration measurements (30K) PI: Passive freezer Grant for solar energy resources	3	solar radiation measurement

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Carlson, Robert	IWR	PhD Civil. Eng.	Hydrology Water resources Air pollution	Hydraulic research as applied to flood control & hydropower Air pollution research		
Kane, Doug	IWR/ Civil Eng.	PhD Civil Eng.	Water resources engineering Fluid mechanics Groundwater hydraulics	Teaching & research in water resources problems--hydrological cycles	---	river & stream flow measurement water quality analysis
Seifert, Richard	IWR	MS Eng. Physics	Energy conservation technology Solar energy applications Solar energy assessment	PI: Dept. of Transportation & Public Facilities- design & advise fire company on solar energy (6.6K) PI: DOTPF solar energy design manual for AK (39K) PI: Solar component of Susitna alternative study (5.5K) Taught classes in renewable energy resource assessment & history of technology & energy resources (8.8K) Solar energy resources potential assessment for state Ellerbe-IWR solar retrofit of Fbks Federal Bldg. USDOE consumer affairs advisory committee	10	solar collector radiation meter
Benson, Carl	GI	PhD Physics	Geothermal heat flow & calorimetry Volcanic geothermal systems	PI: Mt. Wrangell project (80K)	4	research lab
Forbes, Robert	GI	PhD Geology	Geological & geophysical exploration for geothermal resources	PI: Pilgrim Springs geothermal exploration project (60K) Co-PI: DOE Alaska Geothermal Assessment Project	4	
Gosink, Joan	GI	PhD Mech. Eng.	Hydrodynamics Turbulence Mass and heat transport Numerical modeling	Analysis of geothermal systems Heat transport problems in ice-bound rivers Analysis of turbulent mixing in heated water from hydroelectric plants	---	
Harrison, William	GI	PhD Nuclear Physics	Geothermal--heat mass flow processes	Studies of Pilgrim Springs, Chena Hot Springs Studies of Mt. Wrangell	---	

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Kienle, Juergen	GI	PhD Geophysics	Geophysical prospecting for geothermal resources: seismic (active & passive) & gravity	Co-PI: Pilgrim Springs geothermal exploration project ERDA look for magma energy at Augustine volcano	5	gravimeter refraction seismograph
Metzner, Ron	GI	MS Geophysics	Stirling engines & heat pumps Fusion of water for heat storage	Literature search on stirling engines & heat pumps Calculations of heat storage in buried water tanks	---	model engines
Nielsen, Hans	GI	MS Elec. Eng. & Physics	Heat pump Thermodynamics	Investigation & demonstration of heat storage unit in ground for home	---	
Osterkamp, Tom	GI	PhD Physics	Classical & environmental physics Materials science Application of small-scale hydro- electric systems to the arctic Heat transfer	Hydroelectric--examining systems in cold regions Heat & mass transport problems in geothermal systems Geophysical exploration of geothermal systems		hydroelectric & geothermal la
Sackinger, William	GI	PhD Elec. Eng.	Small energy systems in villages Energy conservation Wind power	Energy conservation in homes Studies of wind power for remote research stations	---	electrical measurement temperature measurement
Sheridan, Roger	GI/ Physics	PhD Physics	Thermoelectric Photovoltaics Magnetohydrodynamics (MHD) power generation Nuclear power Electrostatic power generation	Engineering studies with Boeing	---	research lab
Stone, David	GI/ Geology	PhD Geophysics	Flywheels	Literature search & paper on flywheels Solar heated swimming pool	---	

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Turner, Don	GI	PhD Geology	Geothermal energy--geological & geophysical exploration, assessment & development Geothermal project management-- interagency liason	PI: DOE geothermal resource definition project for Alaska (320K) PI: DOE AK Geothermal Assessment Project (100K) Coordinator for Energy Resources Research at GI Participant in Pilgrim Hot Springs geothermal exploration project	9	geochronology
Wendler, Gerd	GI	PhD Meteorology	Solar	PI: DOE program to measure solar radiation(200K) DOE reviewer for small technology & technical aspects Built solar collector	5	10 radiation measurement centers at GI
Wentink, Tunis	GI	PhD Physical Chemistry	Wind power Solar	PI: AK Power Admin. Bristol Bay wind power survey (5.5K) PI: BIA wind survey of Calista region (10K) PI: DOTPF users manual for wind power (10K) PI: DOE study of AK wind power & application (77K) Teaching course in energy	12	wind measurement data bank of wi characteristic in UA computer
Wescott, Gene	GI	PhD Geophysics	Geophysical exploration for geothermal resources using electrical & seismic methods	Co-PI: Pilgrim Springs geothermal explora- tion project Co-PI: DOE AK Geothermal Assessment Project Electrical resistivity	4½	resistivity & electromagnet prospecting equipment computer analys for geophysical modeling magnetometer
Allan, Lee	AES/Palmer	MS Agric. Eng.	Solar bins Agricultural equipment design Grain drying Heat flow radiation	PI: Renewable energy & solar applications-- solar grain drying bins (40K) PI: Engineering problems--buildings & machinery (18K) PI: Environmental conditions (39K)	6	AES--farms & equipment

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Dinkel, Don	AES	PhD Horticulture & Plant Physiology	Waste heat Geothermal Solar	PI: Wainwright greenhouse production & soil heating (50K) PI: HATCH fund for waste heat (17K) AK DOE report on geothermal & wind resources Controlled environment growing for villages--diesel generator Waste heat from gas & oil lines for growing	7	greenhouse & horticultural equipment in
Gasbarro, Tony	AES	MS Land Resources	Biomass (fuel wood): availability & future problems for Fbks area	Study of fuel wood available in Fbks area	---	measure caloric values of wood & biomass (forest soils lab)
Lewis, Carol	AES	PhD Physics	Energy consumption in tillage & harvest operations & farm Use of biomass Waste heat Greenhouse & controlled environment economics	PI: Waste heat--rose production (80K) PI: Waste heat--greenhouse soil PI: Grain drying (10K) PI: Fuel wood use (10K) Co-PI: Conservation tillage (280K) Production economist--primarily agricultural applications	4	AES farm & equipment
Mickelson, Belle	AES	MS Conservation	Energy education	PI: Investigating energy alternatives for northern climates (50K) HEW community schools energy education Community workshops & energy handbook; curriculum materials, teacher workshops, & courses on a pilot basis	4½	
Van Cleve, Keith	AES	PhD Forest-Soil Relationships	Productive capacity of soil sites to grow trees	Assessment of forest production in relation to site quality	---	forest soils lab
Workman, William	AES/DOE	PhD Economics	Energy economics	Teaching energy economics	---	

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Barsdate, Robert	IMS	PhD Geochemistry	Solar heating Wood heat	Analysis of heat budget in lakes (not for alternative energy applications)	---	
Button, Don	IMS	PhD Biochemistry	Kinetics of microbiological processes Energetics of food production	Alaska diesel tree--hydrocarbon injected into aquatic systems Energetics of conversion of nutrients into foodstuff	---	microbial bio- chemistry lab
Colonell, Joe	IMS	PhD Civil. Eng.	Wind & wave power Tidal power generation		---	
McRoy, Peter	IMS	PhD Oceanography	Biomass productivity	PI: NSF study of primary production in ocean & fresh water plants (200K)	6	
Nevé, Dick	IMS	PhD Biochemistry	Photovoltaics Tidal, current & wind	Assessment of alternate energy sources in an artificial upwelling system	---	permit to use F Island, Resurre tion Bay for aq culture
Reeburgh, Bill	IMS	PhD Chemical Oceanography	Methane	PI: Control & manufacture of methane through marine sediment. (50K) Methane in land fills	---	gas analysis la
Royer, Tom	IMS	PhD Physical Oceanography	Temperature & salinity gradients Currents, waves & tides		---	sampling to develop theor
Leonard, Lee	Dept. of Trans./UAF	BS Elec. Eng.	Wind Solar Geothermal	PI: DOE engineering & economic potential of hot springs in Alaska (41K) DOT develop solar heating for rural schools Gasohol--alternate fuels Development of experimental runway lighting for rural villages Electricity from hot springs	1½	

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Hawkins, Dan	Geology	PhD Geochemistry	Geochemistry of hydrothermal fluids Use of minerals in beneficiation schemes Radioactive waste disposal & treatment	PI: DOT study of gas sorption on zeolites as an energy storage device Chemistry of geothermal fluids PI: AK Div. Geol. & Geophys. Surveys part of cooperative geothermal resource definition study with GI (DOE)	3	gas sorption of zeolites at low & high pressure study geothermal fluids
Harrington, John	Chemistry/ UAA	PhD Biophysical Chemistry	Thermodynamics		---	chemistry & research lab
Reichardt, Paul	Chemistry	PhD Organic Chem.	Production of energy from biomass		---	
Carlson, Axel	Coop. Ext.	MS Agricultural Engineering	Insulation Heating systems Environmental control of buildings-- design construction & maintenance Energy education	Developing publications & lectures on construction of arctic buildings	12	computer program for heating load & ventilation of buildings measurement of heat loss through walls
Barnhardt, Ray	CXCS	PhD Anthropology & Education	Rural education & self-sufficiency Energy education	PI: environmental education for small high school curricula (50K)	---	
Wise, Jim	AEIDC/ UAA	MS Meteorology	Physical measurements of applicable data--insulation, wind measurements, temperature, precipitation + derived data	PI: wind power atlas for Alaska (150K) DOE solar meteorological observation & training site Analysis of solar insulation measurements Teaching of solar & wind power Workshops on data available on alternative energy	4	measurement of radiation & wind, humidity temperature library on alternative energy

<u>Name</u>	<u>Affiliation</u> (UAF unless indicated)	<u>Degree</u>	<u>Areas of Expertise</u>	<u>Recent Experience</u>	<u>No. months funded alt. energy work in 1979</u>	<u>Equipment</u>
Goldsmith, Scott	ISER/UAA	PhD Economics	Geothermal	PI: DOE analysis of economic feasibility of geothermal demonstration project at Pilgrim Springs (20K) Economic studies of consumption patterns & demands for fuel Studies of electrical generation by tidal & geothermal	1	computer for economic & energy use data base
Remus, Emil	ACC/Diesel Technology	BA Vocational Education	Wind turbines Co-generation with diesel & wind	14 wind turbines in Alaska (private) Diesel generation using biomass waste (methane) (private)	---	engine dyno room-- diesel engine & turbines
Brown, Edward	IWR	PhD Bacteriology	Microbial ecology Inorganic chemistry Water resource management	Growth & nutrition of autotrophs (primarily phytoplankton) Arsenic chemistry Biological oceanography Teaching microbiology & water chemistry		fully equipped lab including walk-in incubators, autoclaves, scintillation counters, electronic particle counters, etc.

APPENDIX 3

SUGGESTED ADVISORY BOARD MEMBERSHIP

The following is a suggested listing of members for the advisory board to the Alaska Center for Alternative Energy.

1. One appointed representative of the University of Alaska, appointed by the President of the University.
2. A representative of the State Department of Commerce and Economic Development, Division of Energy and Power Development, appointed by the Commissioner (or Director).
3. A member of the Alaska Council on Science & Technology, nominated by that Council.
4. A representative of the concerns and interest of rural Alaska, nominated from the public, and selected by the Center's director.
5. A member of the professional/technical community, nominated by the professional/technical community in Alaska, and approved by the director of the Center.
6. A member of the State of Alaska's Department of Transportation and Public Facilities, nominated by the commissioner of that department.
7. A trustee of the Alaska Renewable Resources Corporation, or a designated representative of that corporation.

An Act creating the University of Alaska Renewable Energy Institute, and providing for an effective date.

FINDINGS + PURPOSE. The legislature finds that ~~that~~ the State of Alaska ~~cannot~~ is now receiving substantial revenues from the sale of petroleum resources to consumers in the ~~remainder~~ other United States. The legislature finds the higher costs of ~~the~~ petroleum fuels is a burden on American consumers, and recognizes Alaska's moral responsibility to help alleviate that burden. The legislature finds that research and development of ~~alternative~~ energy and energy conservation technologies will ~~fulfill~~ meet our responsibilities, ~~that~~ increase the material well-being of Alaskans and Americans, and lower energy costs to American consumers.

SEC. 1. A.S. — — — is amended by adding new sections to read:

There is created ~~within the University of Alaska~~ the Renewable Energy Institute. The Institute is a public corporation having a separate legal existence within the University of Alaska. The corporation's board of directors shall be the University of Alaska Board of Regents.

Sec. (A) Corporation created

question - public - state funding, grants awarded through B + A
private - no ^{direct public} ~~leg.~~ control; ~~possibly~~ would be dependent on grants (i.e. no (independent) operating budget)
within Dept. of
independent legal existence

(B) Purposes - PRIMARY

- (1) Creation of employment opportunities through development of energy technologies
- (2) Provide economic benefit to state citizens
- (3) " effective use of state resources
- (4) Diversification of employment opportunities
- (5) Reduction in dependence on gas & employment
- (6) Reduction of state imports
- (7) Increase in state exports
- (8) Promote the most efficient, technologically advanced methods of utilizing state's energy resources

(C) Funding Allocation - choices - if public - endowment

~~Board~~ Budget App

as app by leg
see ARRL
exempt

(1) Start up costs + succeeding years
budget in later years

(2) detailed planning study
report next year

(D) Bd of Directors

Governing body

7

exp. in energy technology

1 member for 1 year, 3 for 3 years, 2 for 5 years + 2 for 7 years
thereafter 7 years

app gov, and by leg / annual election of chairman

Removal - same as ARRL / 4 member quorum

Bd - no pay, per diem and travel

May employ executive director and personnel -
exempt from Alaska State Salary limits

⑤ Powers - standard for corporate

Standard - see ARRC

can receive + give \$ to ^{all} public + private entities

⑥ Duties / to achieve purposes by developing
sponsoring research + projects

in following areas including, but not limited to:

enhanced problem recovery

Coal - development ^{alternates} for rural areas + high technology applications

Hydrogen, other liquid fuels Heat Pumps

Waste Heat

Wind

Solar

Fuel Cells

Conservation ^{energy}

Small-scale Hydro

inventor and entrepreneurial support

evaluation of business plans + inventions

assist in status preparation of requests for
equity + loan assistance

⑦ Objectives

Provide 150 KW of generating capacity by year

2000, 10,000 KW (via hydrogen, small hydro)

Inventor review 200 500 600

assist 10 35 60

~~Hydrogen~~

need funding + more detailed work

⑧ Cooperation - DEPD, Council
UAK Research, etc.

Criticisms - duplication of efforts by DEPD
ARRC

Energy

Terry Gardiner

Box 6092, Ketchikan, Alaska 99901 Pouch V, Juneau, Alaska 99811

Brian —

Met with Plunkett & O'Hair from Montana. They certainly reinforce the thought that we are on to a good idea. I hope you are making this your No. 1 Priority - it will be a major plank in the Dem. program this time. I'm counting on you to handle this both policy & strategy wise. It probably should move thru the house as part of the energy package. You should work with Mike in this regard since he has most of the other energy legislation.

After talking to Plunkett the points I see are:

- (1) Put it in Fairbanks - with future outposts in other places
- (2) Make it Associated with the University but not under the control of the Board or the University.
a. close physical location may be good
- (3) It will be able to attract substantial amounts of non-state funds
- (4) It should have a base level funding of \$5 to \$10 million operation for the 1st 5 years then possibly phased down
a. startup year may be less
- (5) The goals of the Institute must be clearly spelled out
- (6) We would have to pay a maximum of \$75,000 to get a top class Institute director
a. therefore may want to keep them out of state pay scales.

Please give me a status report on how you are doing + estimated time of completion.

Sin — Terry

F 1

January 15, 1979

To: Representative Brian Rogers
From: Mark Wittow
Re: Alaska Energy Resource Development Institute

I have outlined, in rough form, some of the key features of a bill to create an Alaska Energy Resource Development Institute (AERDI). Where several options ^{are possible} ~~are possible~~, I have tried to list some of the pros and cons of the choices.

A. Creation of the Institute

The Institute can be set up as either a public or private corporation, whose existence is independent of, and separate from, the state. If the corporation were public, ~~xxxx~~ its operating budget would be subject to the Exec. Budget Act. Interim grants from federal or private sources would have to approved by the Governor and Budget and Audit (usually automatic). Because the legislature passes its operating budget, AERDI would be subject to a fair amount of public scrutiny, ~~xxxxxxxxxxxxxxxxxxxxxxxx~~ The governor would have the power to veto or reduce appropriations to the Institute. All independent corporations within the structure of state gov't (~~EE~~ ARRC, AHFC, the Municipal Bond Bank Authority, etc.) are public orporations.

No precedent currently exists for a private corporation chartered and funded by the state, although one is contemplated in AGSOC. A private corporation would only have accountability to the extent that ~~xx~~ it is written ~~xxxx~~ into the initial charter. It would have great freedom of action, depending on the limitations of the initial authorization and its ability to obtain funding.

B. Purposes

primary -- to create employment opportunities through the development of energy technologies.

secondary--promote the most efficient, technologically appropriate of utilizing the state's energy resources.

~~to help bring these technologies~~

Within
Dept of
commerce?
other choices:
resources
revenue

- provide economic benefits to the state's citizens
 - ~~promote~~ promote effective use of the ~~xxx~~ state's resources.
 - promote diversification of employment opportunities
 - reduce dependence on gov't employment
 - reduce state energy imports
 - increase state energy exports
- bring technologies
to a commercial stage.*

C. Board of Directors

Seven members; at least two must have experience with energy technology; at least four must reside in the State of Alaska. When appointed, three directors would serve for three years, two for five years and two for seven years. All subsequent appointees would serve for seven years. Directors may be reappointed. Members would be appointed by the governor and confirmed by the legislature.

Chairman of Council

Board members would receive no pay, but would receive standard state travel and per diem rates. Four member quorum.

Standard removal procedures (ie, same as for ARRC).

Same conflict of interest provisions as ARRC.

Board has power to employ and executive director and personnel. Employees of AERDI would be exempt from state salary standards.

-- also, a public advisory board

D. Powers

The INstitute would have all the standard corporate powers. It would have the power to receive money from all public and private entities, and to make grants to public and private bodies.

E. Duties

To sponsor research and administer projects as necessary to achieve the primary and secondary purposes of the Institute.

To provide support for inventors, entrepreneurs and small businesses engaged in the development of energy technology.

The Institute's program shall include work in the areas of:

- enhanced petroleum recovery
- improved coal use (*inc. FBT*)
- wind power, small hydro and hydrogen

as funds are appropriated
energy conservation

The Institute's program may also include, but not be limited to, work in these areas:

- alternative liquid fuels and improved liquid fuel efficiency
- waste heat utilization, cogeneration of electricity and heat
- fuel cells --energy generation from solid wastes
- heat pumps
- other energy technologies particularly appropriate for use in rural and urban areas of Alaska and other northern territories.

F. Objectives

MERDI has suggested that specific goals be set out for the Institute. For example, AERDI could be required to have installed 200KW of capacity in the first year, 500 KW in the second etc. Other goals: number of inventor aid requests reviewed and assisted, number of small business aid requests reviewed and assisted.

G. Budget and appropriations

1. Initial funding -- endowment -- the legislature could appropriate a large lump sum (eg, 100 million) to AERDI, which could then use the sum's earnings to operate and fund programs. Additional funding would come from grants for specific projects. If the corporation is set up as a private entity, this would be a way to get it started without leaving project funding for future years up in the air.

--year by year appropriation -- AERDI could simply come in for ^{each year} money/ If it is a public corporation, it would come under the provisions of the Executive Budget Act. + *project capital funding*
--^{design}~~feasibility~~ study -- if immediate startup of the Institute is not desired, enabling legislation could be passed and a comprehensive study done to design the research institute and its programs

2. Budget process

The Institute budget should be broken down by program. The operating budget should be specified separately.. An annual audit should be done.

Unexpended and unobligated portions of appropriations should not lapse at the end of the fiscal year.

The Institute should be allowed to receive non-state funds without authorization, but not create permanent positions.

If the Institute is a public corporation, counsel advises that all appropriations, whatever their source, must have the approval of the Governor and the Budget and Audit Committee or the legislature.

The INstitute should submit program requests as capital budget items whenever possible, so that programs would be funded for the full time to completion.

H. Cooperation with the University of Alaska

Whenever possible, the Institute should contract with the Univ. of Alaska for all research activities. The Insitute shold be located as near to energy research personnel at the University as is possible. (AERDI should have the authority to open other offices, such as a financing office in Anchorage, coal research in Barrow, etc.)

I. Cooperation with state agencies

AERDI should be required to specifically work with the Alaska Council on Science and Technology and the Division of Power Development in developing its programs.

The standard clause requiring all state agencies, etc to provide information and services should be included.

J. Standard clauses on tax exemption and public access to information.

Cooperation with ARRC in financing projects of commercial potential?

*Council may shall recs
to*

AERDI RECEIVE recs fr Council

POINTS FOR DISCUSSION

Opposition to a proposed energy development institute exists in some state agencies, and is based on the following arguments:

1. several agencies/^{or other public bodies}are already doing the same work that the institute would undertake. These would include the Division of POver, the Dept. of Transportation (among others); the University; the Council on Science and Technology; and the Alaska Renewable Resources Corporation. Any gaps in their work should be filled by proper direction to these bodies, and not by the establishment of a new bureaucracy.
2. an independent corporation, like the Institute, has too little public accountability, and is too hard for the legislature to control.

State agencies are not the best place to work on the type of technology development contemplated with the Institite, and their record demonstrates that. Only an independent institute can maintain the ties to the private sector and expertise inside and outside the state with the flexibility necessary to accomplish the goals contemplated for the Institute. Public acctability can be maintained in a number of ways, besides having a program under the direct control of the governor or legislature.

oddenda

Legislative findings --

The legislature finds that ~~although~~ the State of Alaska is now receiving substantial revenues from the sale of nonrenewable energy resources to consumers in the other states of our nation.

The legislature recognizes that ~~despite the fact that~~ ~~bringing~~ more efficient and advanced energy technologies to the stage of potential commercial development will result in lower energy costs to consumers, and that Alaska should use part of its energy resource revenues to help accomplish this goal.

The legislature finds that an independent institute, under the direction of state law, can best accomplish the aid to individuals and businesses necessary to develop and implement better energy technologies.

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED
AS A UNIT IN THE ORIGINAL DOCUMENT.



Alaska State Legislature House of Representatives

M E M O R A N D U M

POUCH V
JUNEAU, ALASKA 99811
OFFICIAL BUSINESS

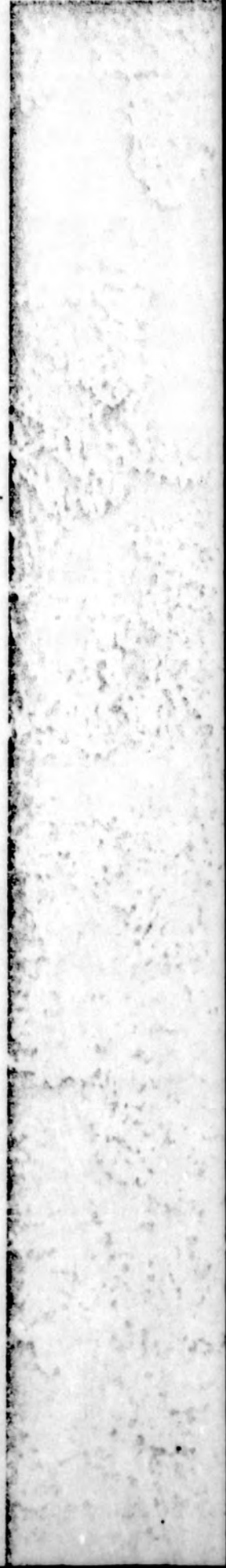
To: All House Members
From: Representative Gardiner *T.G.*
Re: Alaska Energy Center HB 687

The attached information is from the annual report of the New York State Energy Research and Development Authority. While the proposed Alaska Energy Center is not identical to NYSERDA it would be very similar in purpose and function.

Some important points are:

1. Out of a \$99 million 1979 budget \$72 million were outside funds.
2. After 5 years of operation NYSERDA, through its projects, has successfully produced beneficial technologies and jobs.

TG/mh



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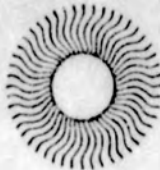
This NYSERDA Annual Report was produced by the New York State Energy Research and Development Authority, a public benefit corporation chartered by the New York State Legislature.

Additional information and copies can be obtained by writing Charles D. McKinney, Technology Transfer Director, or Judith Barton, Communications Manager, NYSERDA, Rockefeller Plaza, Albany, N.Y. 12223.

Editor
Judith Barton

Design
Envision Communications

The photographs on the front and back covers of this report symbolize the basic energy technologies NYSERDA is developing. Shown are: (from left to right) wind (photo-J. Graves), coal (photo-Dynecology, Incorporated), biomass, hydropower (photo-J. Graves), and solar (photo-J. Graves).



**New York State
Energy Research and Development Authority**
Rockefeller Plaza • Albany, New York 12223
(518) 465-6251

TO: The Honorable Hugh L. Carey
Governor of the State of New York

The Honorable John J. Marchi
Chairman of the Senate Finance Committee

The Honorable Arthur J. Kremer
Chairperson of the Assembly Ways and Means Committee

The Honorable Edward V. Regan
State Comptroller

In the fiscal year that ended March 31, 1979, NYSERDA continued development of a balanced energy research, development, and demonstration (RD&D) program geared to the present and future energy needs of New York State. NYSERDA's many accomplishments included furthering the use of indigenous and renewable resources, developing technologies to diversify the state's fuel source options, conserving energy resources, and reducing the detrimental impacts of energy use.

The state received a broad range of benefits from this energy research: the projects brought not only more jobs for New Yorkers participating in them but also the potential for a broader base of energy supplies and reduced fuel use in all geographic areas. These benefits touched all types of energy-users -- schools, hospitals, houses, apartments, businesses, and industry. In addition, the development of and participation in projects jointly funded with other organizations has provided RD&D funding totaling several times the amount of NYSERDA's budget.

Through distribution of reports and newsletters and organization of meetings, seminars, and conferences, NYSERDA's efforts have been well publicized in an attempt to speed their acceptance by the public.

I am pleased to transmit herewith the annual NYSERDA report describing our accomplishments during the fiscal year 1978-79.

Sincerely,


James L. Larocca
Chairman

JLL/dc

The New York State Energy Research and Development Authority (NYSERDA) is a public benefit corporation of the State of New York created by Chapter 864 of the Laws of 1975. Its functions and duties are set forth in Title 9 of Article 8 of the Public Authorities Law.

The purposes of NYSERDA, specifically enumerated in § 1854 of the statute, are "to develop and implement new energy technologies consistent with economic, social, and environmental objectives, and to develop and encourage energy conservation technologies."

This statement of purpose follows upon a legislative declaration that expresses the deep concern of all New Yorkers that there be an "adequate and continuous supply of safe, dependable and economical power and energy . . ." (§ 1850-a of the statute).

What NYSERDA Does

During the fiscal year 1978-79, the New York State Energy Research and Development Authority (NYSERDA) supported a broad range of technical research and demonstration projects to develop future energy supplies and to promote efficient energy use for New York State. These projects were aimed at providing alternative clean energy sources to reduce the state's dependence on increasingly expensive foreign oil and to advance conservation technologies that use present energy sources more efficiently.

Tangible results of these projects are highlighted in this annual report. In some cases, these results consist of reports that explain the economic and technical feasibility of new methods. In other cases, the results are actual operating demonstrations of equipment showing how the energy needs of homes, businesses, and institutions can be met more efficiently across the state (a residential gas-fired heat pump is shown on page 3). In all cases, NYSERDA has emphasized increased use of indigenous, renewable state resources, such as hydropower; reduction of the detrimental environmental impact of the more plentiful national sources of energy, such as coal; or conservation of expensive fuels through improved efficiency, such as waste-heat recovery.

NYSERDA's accomplishments during the year included not only concrete examples of progress, such as reports published and demonstrations in place, but also aggressive efforts to promote development of new energy sources and the adoption of conservation technologies by disseminating RD&D results directly to user groups.

Besides the direct benefits of NYSERDA's RD&D program other facets of benefit to the state include:

- NYSERDA's Saratoga Research and Development Center in Malta, which currently is undergoing studies for expansion of its facilities to foster additional R&D within the state.
- NYSERDA's emphasis on adding to the number of jobs in the state, a natural by-product of its search for clean and abundant energy sources that will help slow the escalating costs of living and doing business in New York State.
- NYSERDA's efforts to support industry in New York State, including using New York contractors and stressing growth opportunities for businesses that are able to contribute to fulfilling the state's energy needs.

The role of NYSERDA in furthering energy research, development, and demonstration projects is vital in reducing the state's energy dependency and vulnerability. As new energy technologies are perfected, the state's reliance on foreign imports will decline. The four-year-old agency already can point to numerous successes in the areas of conservation techniques, solar power, use of biomass, and methane recovery from landfills, among others. Projects now being funded and implemented by NYSERDA are an important investment in the state's energy future. The potential benefits are enormous: the state gains both the immediate economic benefit of attracting additional outside funding support and the continuing benefits of expanded energy supplies and energy savings.

An Immediate Fiscal Benefit to the State: Federal and Private RD&D Funds Attracted

NYSERDA derives its basic revenue from assessments on the intrastate sales of New York State gas and electric utilities. It also obtains income from investing retained earnings and from leasing property. It finances pollution control facilities through bond sales.

These sources provide only a portion of the funding for projects. A large part of the total research, development, and demonstration in which NYSERDA is participating is funded by private organizations and the federal government. On these projects NYSERDA acts either as prime contractor or as a co-sponsor on joint ventures.

For example, as a prime contractor for the U.S. Department of Energy, NYSERDA manages a broad range of projects, including such diverse areas as statewide testing of electric vehicles and demonstration of equipment at a hydropower site in Potsdam that produces hydrogen and oxygen from water.

Of more than 80 projects in progress for the FY 1977-78 and 1978-79 programs, 48 involve joint sponsorship and funding by other organizations. Included in this number are 23 projects with federal funding; three projects with private research funding from the Electric Power Research Institute, the Gas Research Institute, and corporations; and 13 projects with both federal and private out-of-state funding. The total amount of co-funding in the projects is summarized below:

Project Sponsors	Number of Projects	Amount of Co-Funding
Federal Agencies	23	\$41,833,000
Private Out-of-State	3	} 31,547,000
Joint Federal/ Private Out-of-State	13	
Private In-State	9	25,295,000
Totals	48	\$98,675,000

The total approaches \$99 million. More than \$72 million of this is from federal and private funds from outside New York State. NYSERDA's own program budget for the two fiscal years combined totaled \$16.5 million, for a ratio of outside funds to NYSERDA funds of 6-to-1.

Thus, as a result of a growing reputation for productive RD&D, NYSERDA is successfully soliciting other funding to expand the effectiveness of programs. These funds produce the immediate benefit of providing jobs for New Yorkers as well as the near and long term benefits of technology aimed specifically at the energy needs of the state. NYSERDA is a wise investment in both the present and the future.

NYSERDA's policy and direction are mapped by a 12-member board of directors. The board members are shown on this page and the following two pages.

James L. Larocca, in his capacity as state energy commissioner, serves as NYSERDA chairman. Prior to his appointment, he was deputy secretary to the governor and director of the New York State Office of Federal Affairs in Washington, D.C. (Photo A)

Frederick R. Clark, executive vice president of Key Banks Incorporated, served as chairman of the Power Authority of the State of New York and a member of the NYSERDA board until August 1, 1979. (Photo B)

John S. Dyson, former state commerce commissioner and commissioner of the Department of Agriculture and Markets, was appointed chairman of the Power Authority of the State of New York on August 1, 1979 and succeeded Mr. Clark on the NYSERDA board. (Photo C)

David J. Richardson was confirmed as a member of the NYSERDA board in June 1976. Mr. Richardson is secretary-treasurer of the Building and Construction Trades Council of Nassau and Suffolk Counties (Photo D)

Alan McGowan, a noted environmentalist, is president of the Scientists' Institute for Public Information. A former college teacher, Mr. McGowan also serves as a trustee and vice president of the Institute for Environmental Education in Cleveland, Ohio. (Photo E, left)

Robert F. Flacke was appointed commissioner of the New York State Department of Environmental Conservation in January 1979. Prior to his appointment, Mr. Flacke was chairman of the Adirondack Park Agency, a position he held since 1975. (Photo E, right)

Joanna Underwood, founder and executive director of INFORM, served as editor-in-chief and co-director of the Council on Economic Priorities. Ms. Underwood, a former magazine reporter and college teacher, has written extensively. (Photo F)

William A. Lyons is chairman of the Executive and Finance Committee of the New York State Gas and Electric Corporation. He is also a trustee of Yeshiva College and a director of the Raymond Corporation and Great American Industries. He has been a member of the NYSERDA board since August 1976. (Photo G)

Charles A. Zielinski is chairman of the New York Public Service Commission and the Department of Public Service. Mr. Zielinski, a member of the New York bar, has spent his entire professional career in the field of regulated industries. (Photo H)



A



B



C





Roy W. Bahl, Jr., was appointed to the NYSERDA board in July 1979. A renowned expert in the field of state and local public finance, Mr. Bahl is an economist and professor of economics at the Maxwell School of Citizenship and Public Affairs at Syracuse University. (Photo I)

David Sive, a partner of the law firm of Winer, Neuburger and Sive, is a director of the Environmental Law Institute and a member of the executive committee of Friends of the Earth, Incorporated. (Photo J)



Daniel G. Schuman is chairman of the board of directors of Bausch and Lomb. Mr. Schuman sits on the boards of directors of a number of domestic and international companies and organizations. (Photo K)

Elizabeth Thorndike is founder and executive director of the Center for Environmental Information. Long active in environmental affairs, Mrs. Thorndike received a special award for environmental education efforts from the U.S. Environmental Protection Agency. (Photo L)

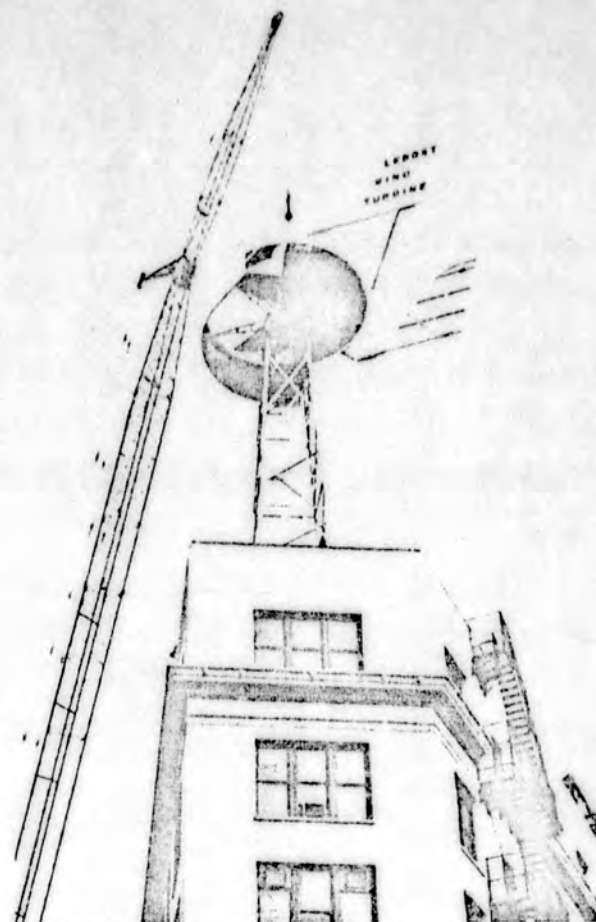


NYSERDA's research, development, and demonstration program has four goals:

- To develop the state's indigenous and renewable energy sources.
- To perfect advanced energy technologies that will increase the state's fuel diversity and reduce reliance on imported energy sources.
- To increase the efficiency in using energy resources, which includes not only conservation but also improving the management and economic efficiency of energy systems.
- To minimize detrimental environmental impacts.

Together, these goals provide the basis of an RD&D program that will contribute significantly toward improving the state's energy situation. NYSERDA generally stresses projects based on technology with potential for commercialization and implementation within five to 10 years.

During fiscal year 1978-79, work was done on numerous projects to further these aims. The following is a survey of NYSERDA's accomplishments in these areas.



New York University



New York State has only a few indigenous and renewable energy alternatives to oil and nuclear power. Nevertheless, the important potential of these resources must be tapped. They consist of hydropower, solar power, wind power, and biomass (which includes wood and natural gas from landfills). Devonian shale gas and geothermal energy are other indigenous energy resources; they are included in the section on advanced energy technologies.

Hydropower

New York State once supported hundreds of mills powered by falling water, but by 1910 coal and oil replaced water power as a leading source of energy in the state. NYSERDA has identified 1,672 New York sites that may be capable of contributing to the state's energy supply. Half of them have existing dams, many of these producing water power at an earlier time, and half do not. Together the sites could produce 3,000 megawatts of power. NYSERDA estimates that as many as 1,000 of these megawatts could be developed in the next 10 to 15 years.

To encourage development of the sites by the utilities, municipalities, and individuals that own them, NYSERDA's small hydropower demonstration program is proving that it can be done. Under the program, feasibility studies and demonstration projects are under way at some 20 of the sites (see map) in all parts of the state. Also, additional feasibility studies are being jointly sponsored, four with the U.S. Department of Energy (DOE) and one with the Appalachian Regional Commission, at sites in Albany, Essex, Otsego, Putnam, and Ulster Counties. The purpose of the demonstrations is to put into operation engineering and technical concepts and monitor the results to learn the full economic benefits.

In another cooperative project, involving DOE and the village of Potsdam, NYSERDA is supporting a pioneering method of producing hydrogen economically from water rather than

from fossil fuel. The demonstration site is a small dam that is part of the Potsdam municipal utility. All energy needed to produce the hydrogen will be generated at the site. Information gained in Potsdam could be used at similar sites across the state to produce extremely pure research-grade hydrogen for use as a chemical feed stock and in manufacturing processes. The hydrogen, used heavily in the electronics and food industry, will be available at competitive prices, and the oxygen generated in the process will be used in a water treatment plant.



Bill Pierce

As a means of providing guidance and coordination in the development of small hydropower sites in the state, NYSERDA has formed a small hydropower task force. It consists of representatives from key state agencies and the private sector that play a role in small hydropower development. In addition to NYSERDA, other agencies represented are the State Energy Office, the Power Authority of the State of New York, the Public Service Commission, the State Department of Environmental Conservation, the State Department of Transportation, the U.S. Fish and Wildlife Service, the Federal Energy Regulatory Commission, Niagara Mohawk Power Corporation, and the New York State Electric and Gas Corporation.

Solar Power

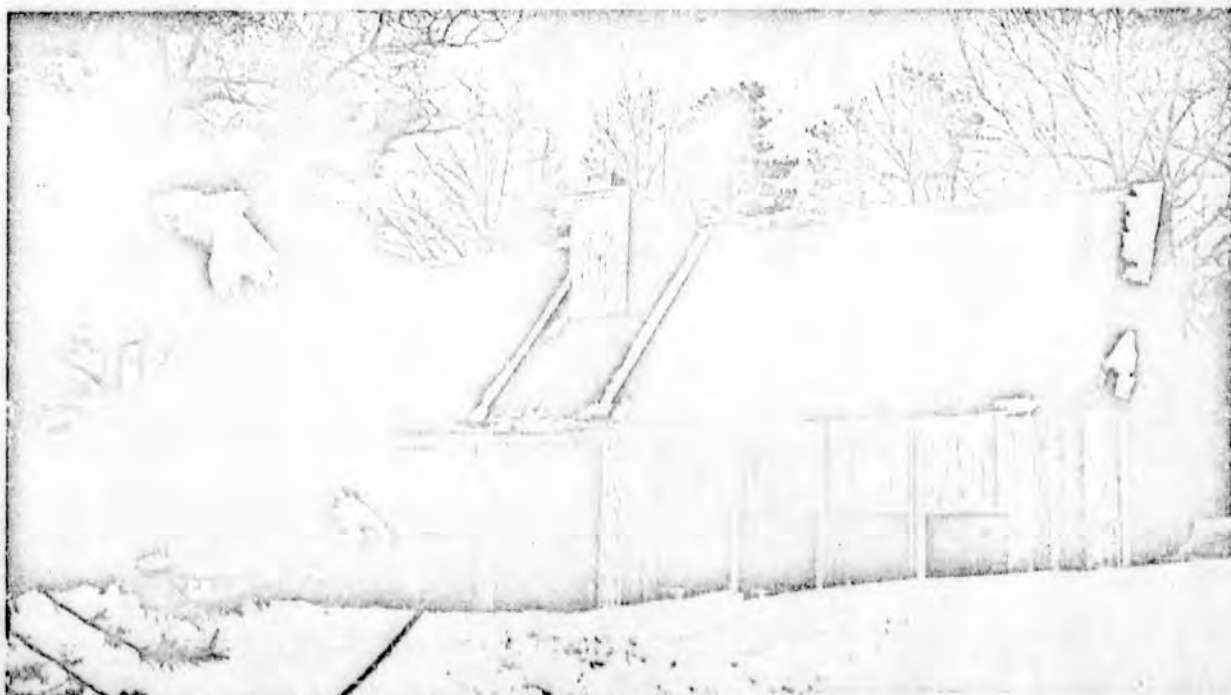
Solar energy is the basic energy form on which all life on earth relies. Much of the sun's enormous energy output, however, is unused. To capture the benefits of this extensive but diffuse energy source, NYSERDA has launched some 17 solar RD&D projects, from data collection to demonstration. To identify the state's potential, research projects include collecting information pertinent to the amount of solar energy received at different times of year at locations around the state that vary in latitude, altitude, weather, and atmospheric turbidity such as fog and smog. This information was published as an atlas that is available to the public. It can help designers of solar energy systems, builders, and interested amateurs predict the performance of active (mechanical) and passive (non-mechanical) solar hot water, space heating, and cooling systems.

One problem with using the sun's energy is that it is diffuse. It therefore must be collected, and the collectors can require extensive, unobstructed space. Increased efficiency in concentrating the sun's rays can reduce this problem. In support of research in this area, NYSERDA is sponsoring development of two different heliostats, one at Brookhaven National Laboratory on Long Island, the other at Rensselaer Polytechnic Institute.

Water heating and space heating and cooling are the usual applications of solar energy. To assess the cost-effectiveness of these solar energy technologies in New York, NYSERDA is funding 12 demonstration projects for residential, educational, and commercial buildings, largely in conjunction with other institutions (see map). These project sites include the Ballston Spa Middle School, the Butler Town Hall, the New Rochelle Public Library, the State University of New York at Albany (shown below), Ithaca College, Wagner College, an administration building of the Port Authority of New York and New Jersey on Staten Island, a fast-food restaurant in Colonie, and an apartment building and a commercial-residential building, both in New York City.

Two other projects are comparing results from equipment installed at 40 buildings in Westchester, Nassau, Suffolk, Orange, and Rockland Counties and New York City. Each project involves 20 buildings.

In a statewide effort to encourage implementation of passive solar ideas in single, two-family, and townhouse residences, NYSERDA is sponsoring a competition to design and construct housing that is traditional in style except for passive solar and conscientious energy conservation features.



Atmospheric Sciences Research Center, State University of New York at Albany

Wind

NYSERDA is working to develop innovative-design turbines that harness the wind even more efficiently than the familiar Dutch windmill. Although wind strength can vary with topography and other factors, many areas of the state may possess some wind potential.

Among the wind projects that NYSERDA is sponsoring are two demonstrations of modern wind generators, one at a rural dairy farm in Potsdam and the other at an urban site of New York University. Two additional projects involve development of unique designs, one to incorporate wind systems in existing tower-type structures and another to test vortex wind system concepts. (See map on page 8).

In addition, as a first step in determining areas in the state with high potential for wind generation, NYSERDA is sponsoring a general study to find the best areas in the state for wind power and a specific study of the wind power available at the Southtowns Sewage Treatment Plant in Hamburg. If the site has potential, a wind system for electrical generation could be installed to help power the plant.

Urban areas, in particular, are prone to gusts of wind that can be harnessed. These areas, however, also present special problems in siting wind energy systems. Another project involves studying institutional barriers to the application of wind energy conversion systems in urban settings.

Biomass

Living plants capture and store the sun's energy in a form that can be released later. Biomass resources, therefore, include both forest and agricultural crop production and also solid waste resulting from the use of organic materials by society.



Three NYSERDA projects propose to increase the amount of energy obtained from the approximately 14.3 million acres of forest land in the state, a resource with great potential. NYSERDA is compiling a dry biomass atlas for the state, which will include information on the non-depletable productivity available from a given tract of commercial timberland. Present data suggest that the equivalent of several thousand thermal megawatts are available from these forests.

Wood fuel can be cheaper than oil or natural gas in many rural areas of the state. To develop this potential, NYSERDA is investigating the possible formation of non-profit wood fuel cooperatives, using Ulster County as a model for other rural areas of the state. The cooperative could promote the use of wood as a fuel by selecting, cutting, collecting, processing, seasoning, and distributing wood for its members. The buyer would be assured of top-quality, seasoned wood at an economical price in terms of labor or money. Professionally supervised forest management services could be incorporated into the program.

In areas of the state where wood is abundant, large oil and gas based heating systems could be converted to wood burning systems. A project assessing the requirements and costs involved in converting a heating system at an educational institution will provide technological information to determine the feasibility of such a conversion. An additional dimension of the study is to determine the wood supply, economics, and market development necessary to expand the use of wood in forested regions of the state. The results will help residents of other rural areas of the state decide if wood conversion is worthwhile.

Biomass includes not only wood but also grains and organic solid wastes. A state as populous as New York is rich in municipal solid waste, sewage sludge, crop wastes, and animal wastes. All these residues, plus wood and grain, are being considered as potential sources for energy. For example, studies are considering the technology and economics of using these materials to produce alcohol, methane, and other alternative fuels. Also, shredded solid waste is being considered as a supplementary fuel in systems using oil. A study at the Arthur Kill Power Plant on Staten Island is investigating the technical and economic feasibility of conserving oil by co-firing it with shredded waste.

These projects all have potential for the statewide reduction in costs for fuel and for waste disposal.

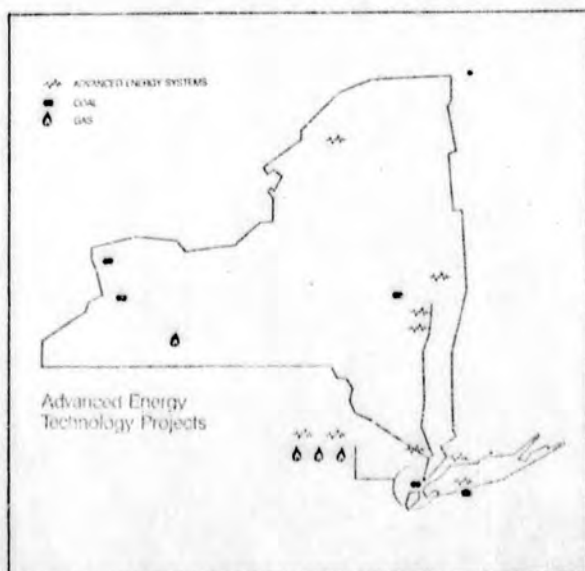
NYSERDA is emphasizing projects that could result in advanced technological systems using fuels other than foreign imported oil. Research in this area especially emphasizes expanding the use of coal, the nation's most abundant fossil energy resource, and the development of unconventional sources of methane. Of similar importance is the development of advanced technologies, such as fuel cells, which extract energy from these fuels in an environmentally acceptable way.

Coal

Although New York State has no coal resources of its own, nearby states have major deposits, and increased use of coal could greatly reduce the state's dependence on foreign oil and natural gas. Although plentiful, coal is inconvenient. Bulk coal is hard, if not impossible, to store in urban areas because of the large amount of space required. Handling and transportation also pose problems. So does pollution.

For these reasons, cities especially can benefit from NYSERDA's efforts to convert coal into a more convenient form — a liquid or gas. Liquefaction and gasification of coal have the additional economic benefits of reducing retrofit conversion costs, since much of the equipment used to burn oil or gas is still usable.

Seven NYSERDA projects are aimed at developing new, environmentally sound ways to use coal (see map). They include research into the best equipment and designs for plants using coal-oil mixtures and the best composition of that liquid, which could substitute for oil. A test in New York City demonstrated the suitability of liquefied coal as a substitute for petroleum derivatives in large boilers and determined the environmental impact of burning this liquefied form.



Other projects are aimed at developing coal systems that could produce a substitute for natural gas, a form that also is more easily handled and transported to a wide variety of users than bulk coal. Clean burning of coal is also a major problem to be solved in expanding the use of this fuel. Fluidized-bed combustion (below) represents one of the most promising technologies to achieve this. A fluidized-bed boiler operates by suspending coal and mineral particles in an upward current of air in the combustion chamber. The process could greatly reduce air pollutants and improve combustion efficiency. NYSERDA also is co-sponsoring a demonstration of regenerable flue gas desulfurization on a coal-fired boiler. This study has the potential to reduce substantially the waste produced in meeting air pollution regulations through flue gas desulfurization.



Combustion by Johns Limited

New Gas Sources

In addition to coal, other potential sources of natural gas substitutes are wood, landfills, and Devonian shale rock (see map). Gasification of wood and solid wastes with coal is one promising way of producing methane in-state. To accomplish this, researchers are investigating the optimal composition of briquettes composed of wood and coal that could be used for gasification in rural areas.

Decomposition of organic waste at landfills around the state produces methane; recovery of this gas from landfills provides an additional source of indigenous energy. Among NYSERDA's solid waste projects is one at the Fresh Kills Landfill on Staten Island, which is being studied to find the best methods of well development and extraction. It will demonstrate use of the gas to run equipment at the site.

Shale gas is a potentially large resource in the state, but the gas is in small pores in the shale formation and difficult to recover. An important effort in tapping this potential resource is at Houghton College, where a well has been bored to test a foam fracturing technique to release gas from the shale. Every 5,600 cubic feet of natural gas can replace one barrel of imported oil.

Advanced Energy Systems

NYSERDA also is sponsoring a variety of projects to find new techniques for capturing or storing energy (see map). Many of these projects are aimed at improving the efficiency of industrial processes, which too often waste considerable amounts of heat to the environment. Recovery of usable energy from this heat can conserve significant quantities of fuel.

Heat pumps are highly efficient at capturing energy for both heating and cooling. They work in a manner similar to a refrigerator, extracting heat from air that might otherwise be considered cool, from outside air in winter and from inside air in summer. NYSERDA has launched two projects to assess the potential of heat pumps for recovering industrial waste heat and is sponsoring development of a gas-fired heat pump for residences (shown below).

NYSERDA's research also recognizes that two-thirds of the heat released during a diesel engine's combustion process is not converted into electricity. Waste heat recovery systems can save a company money by reducing the amount of fuel it must buy.

A cogeneration project, at the Rockville Centre Municipal Power Plant, shows the effectiveness of a waste-heat recovery system there. That system uses the waste heat to



operate turbines that drive a generator. NYSERDA has identified 19 other potential industries where a similar waste heat recovery system could be implemented, including steel plants, petroleum refineries, paper mills, textile plants, and cement plants.

Because finding an accessible source of geothermal heat would provide a valuable indigenous substitute for expensive imported heating fuels, the geothermal potential of two areas of upstate New York is under study. The project is based on the known existence of warm water and carbonated springs in the region.

Another advanced energy technology, the fuel cell, can help conserve fuel. The concept of a fuel cell dates back to the early 18th

century, when Sir Humphrey Davy experimented with electrolysis, using an electric current to split water into hydrogen and oxygen. A fuel cell performs electrolysis in reverse: hydrogen and oxygen are combined in the process and an electric current is produced.

Current technology enables fuel cells to be powered by natural gas, light distillates, methanol, naphtha, and low-, medium-, and high-Btu gas with only slight adjustments to valves and controls. This flexibility can reduce the user's concern about fuel availability.

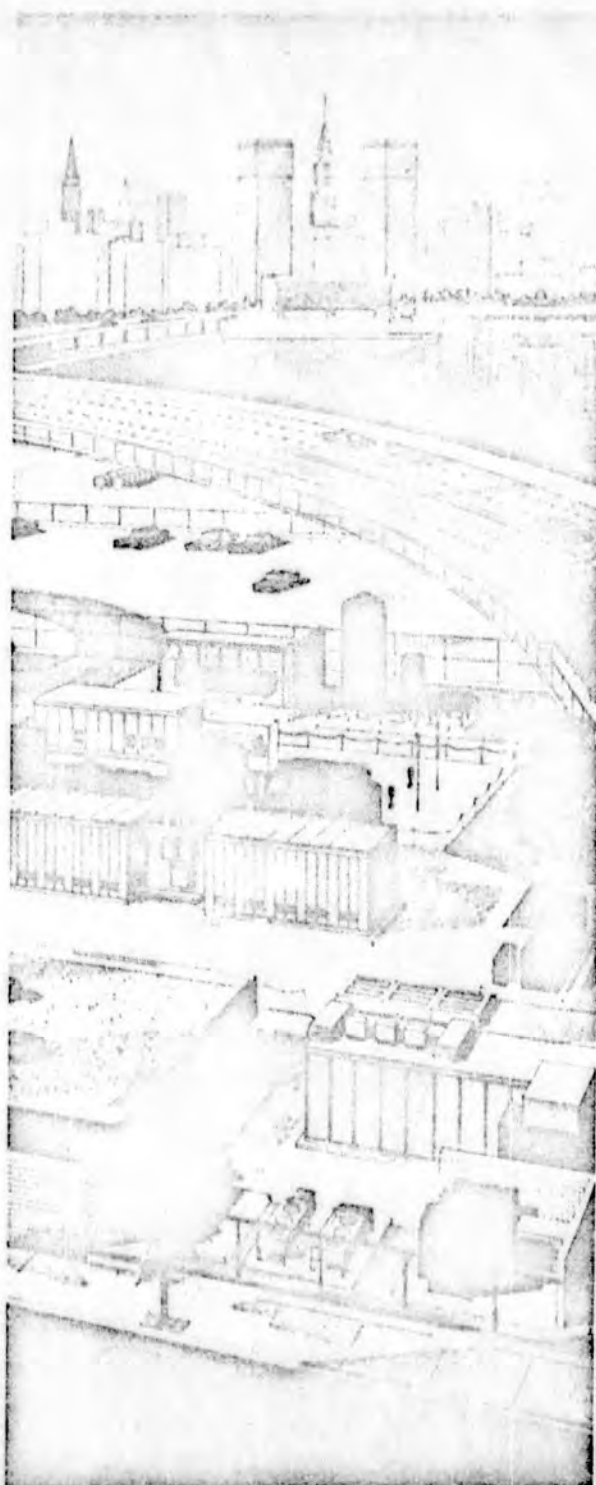
NYSERDA is co-sponsoring two fuel cell demonstration projects. One involves demonstration of a 4.8 megawatt fuel cell in New York City (left) that will work under actual operating conditions in the Consolidated Edison Company grid. The cell will be powered by light distillates and natural gas.

In a residential project involving fuel cells, NYSERDA is helping the Brooklyn Union Gas Company do site selection and evaluation in preparation for a demonstration of four 40 kilowatt fuel cells that have the potential for significant energy conservation. The fuel cells, powered by natural gas, can provide the total electrical, heating, and cooling requirements of buildings on-site.

The efficiency of this total energy system, which recaptures waste heat, is significantly greater than that obtained using utility electricity and on-site combustion of heating fuel. The fuel cell is particularly suited to an urban setting because it imposes no adverse environmental effects.

Another advanced energy technology supported by NYSERDA, development of a solid polymer electrolyzer for producing hydrogen from water, has other possible uses in addition to its planned installation at a Potsdam hydropower site. This new hydrolyzer has the potential to produce hydrogen more efficiently and cheaply from water than conventional methods do from fossil fuels. Hydrogen is used in numerous industrial processes in the state and, if inexpensive enough, could be used in the utility sector as a fuel supplement to natural gas and as a feedstock for fuel cell systems that store energy in decentralized power generating stations.

In another innovative program, NYSERDA has been chosen by the U.S. Department of Energy to test 45 vehicles powered totally or in part by electric motors. The State Office of General Services, the Port Authority of New York and New Jersey, and Westchester County by September 1980 will be provided with 15 vehicles each to be used as part of their regular fleets.



Consolidated Edison Company

Increasing Energy Efficiency

New York State will continue to use oil and natural gas from conventional sources until replacements can be found for them, and that will still be some years in the future. Therefore to extend use of these non-renewable resources, which are increasing substantially in cost, NYSERDA is sponsoring numerous projects aimed at conserving fuel (see map). These attempts to increase the efficiency with which energy resources are used also stress improving the management and economic efficiency of energy systems.

Conservation

Energy conservation projects cover a broad range of activities and energy related uses. Two major conservative targets are schools and hospitals. In cooperation with the State Energy Office (SEO) and the State Department of Education, NYSERDA developed a model energy conservation program for schools in New York State. The model program is based on energy-use data obtained on 169 elementary and secondary schools in 22 city, suburban, and rural school districts in the state (see table).

A study at Peekskill Community Hospital (right), also done in cooperation with SEO, was aimed at developing rigorous conservation measures for hospitals, which consume more energy per square foot than any other building type (see table). Another hospital conservation project, at Binghamton General Hospital, is determin-



Peekskill Community Hospital

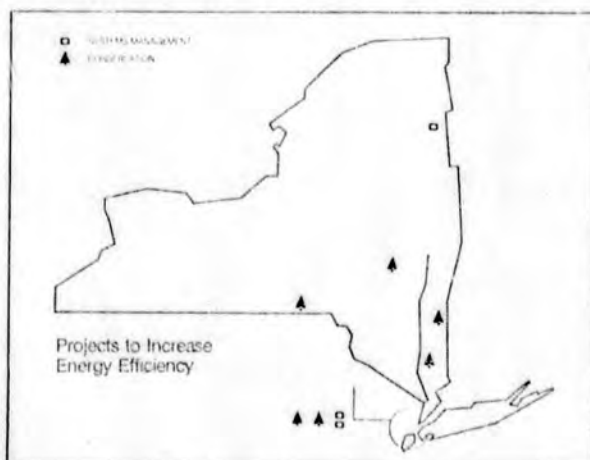
ing the feasibility of recovering hot air from flue gas for use by laundry or other equipment.

Energy conservation and heat recovery equipment is being demonstrated at a fast-food restaurant, and its performance is being carefully monitored. Other conservation projects are aimed at museums, historic buildings, greenhouses, high-rise apartments, and brownstones.

In another joint NYSERDA-SEO study, researchers are developing techniques for the aerial measurement of heat loss from buildings. The thermal radiation characteristics of various common building materials are being determined, and the analysis of thermal photographs based on these characteristics is being refined.

The Plant Science Building at the Cary Arboretum in Millbrook is being analyzed to determine the incremental value of each building system in this well designed structure.

Another project is assessing the potential use of an aquifer at JFK Airport on Long Island for storing winter cold for use during the air conditioning season.



Statewide Potential Energy Savings Through Energy Conservation

Project	Sites	Potential Energy Reduction	Potential Energy Savings	Statewide Potential Energy Reduction in %	Statewide Potential Energy Savings Annual
Hospital Energy Conservation Study	Peekskill Hospital	37%	2,424 bbls.	25-30%	3.2 mill. bbls. of oil equivalent
Model Energy Conservation Program for NYS Schools	22 School Districts	—	—	32% Elementary level 26% Secondary level	1.3 mill. bbls. of oil equivalent
Low Level Heat Recovery Applicable in NYS	19 Industries	5.9%	1.8 bbls. of oil or equivalent	31%	12.2 mill. bbls.*

*Represents 26 New York industries purchasing 54 percent of industrial fossil fuel within the state.

System Management and Economics

No energy systems are isolated, so eight NYSERDA projects are analyzing the impact of changes in one system on other systems (see map). The transportation system in the state is a prime example. A statewide survey has determined the energy use, efficiency, and environmental impact of the industrial, commercial, and private transportation sectors. Targets were identified for use in implementing conservation and environmental projects in the future.

In another systems management project, a committee of experts on state and municipal requirements bearing on energy use in buildings is working to identify items in New York City and state regulations that have an impact on energy consumption and to recommend changes where desirable.

The expanded use of ground water as a source of energy for heat pumps must take into account the environmental consequences of thermally altering ground water and the legal problems associated with withdrawing ground water or altering its temperature. A study considered these problems and projected state energy requirements and costs.

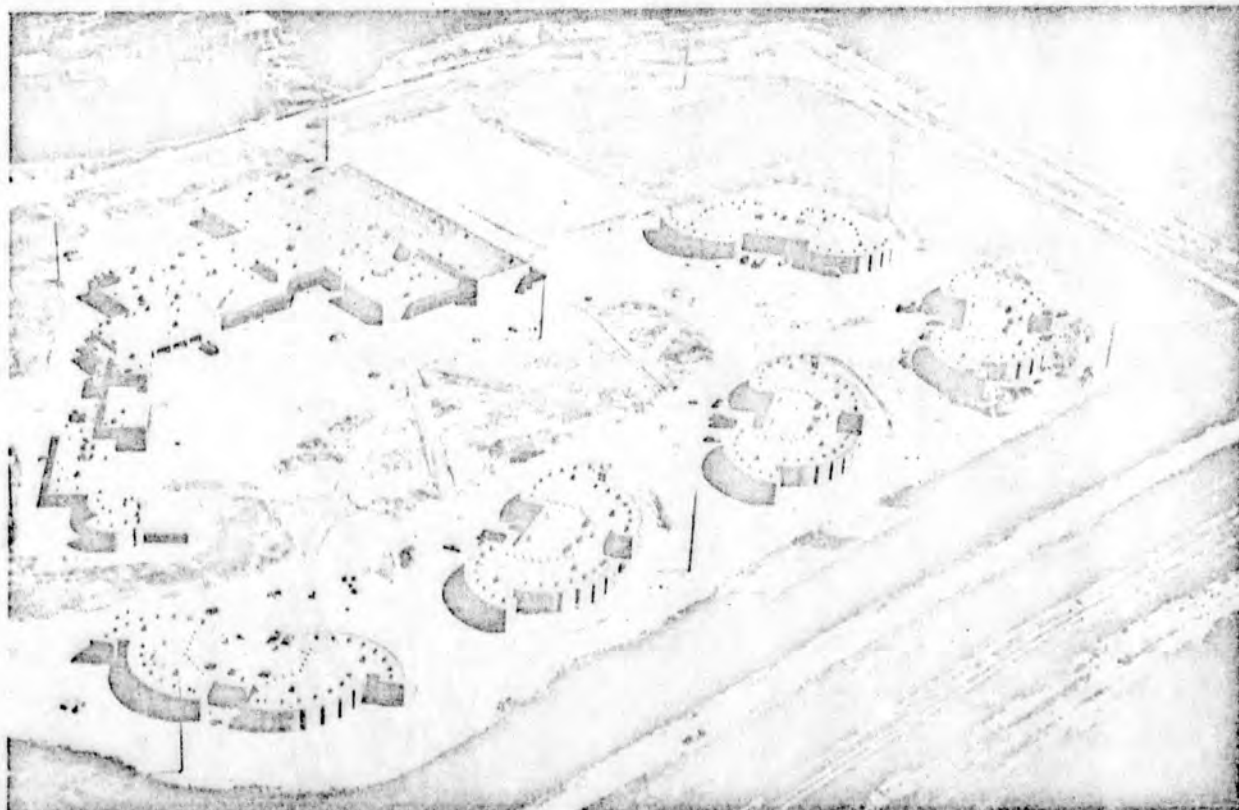
In New York City, the application of technology that will efficiently supply both electric power and hot and cold water for domestic heating and cooling will be studied. The expectation is that combined heat and power technology will supply these two services with considerably greater efficiency than can be achieved by supplying them separately.

The Olympic Village at Lake Placid (below) is the site for testing an electric load-management demonstration. The principle underlying the concept is that some portion of an electric system's energy requirements can be removed from the normal peak-load period and replaced in the low-demand period. This can reduce costs for electric customers whose bills are based on maximum simultaneous use.

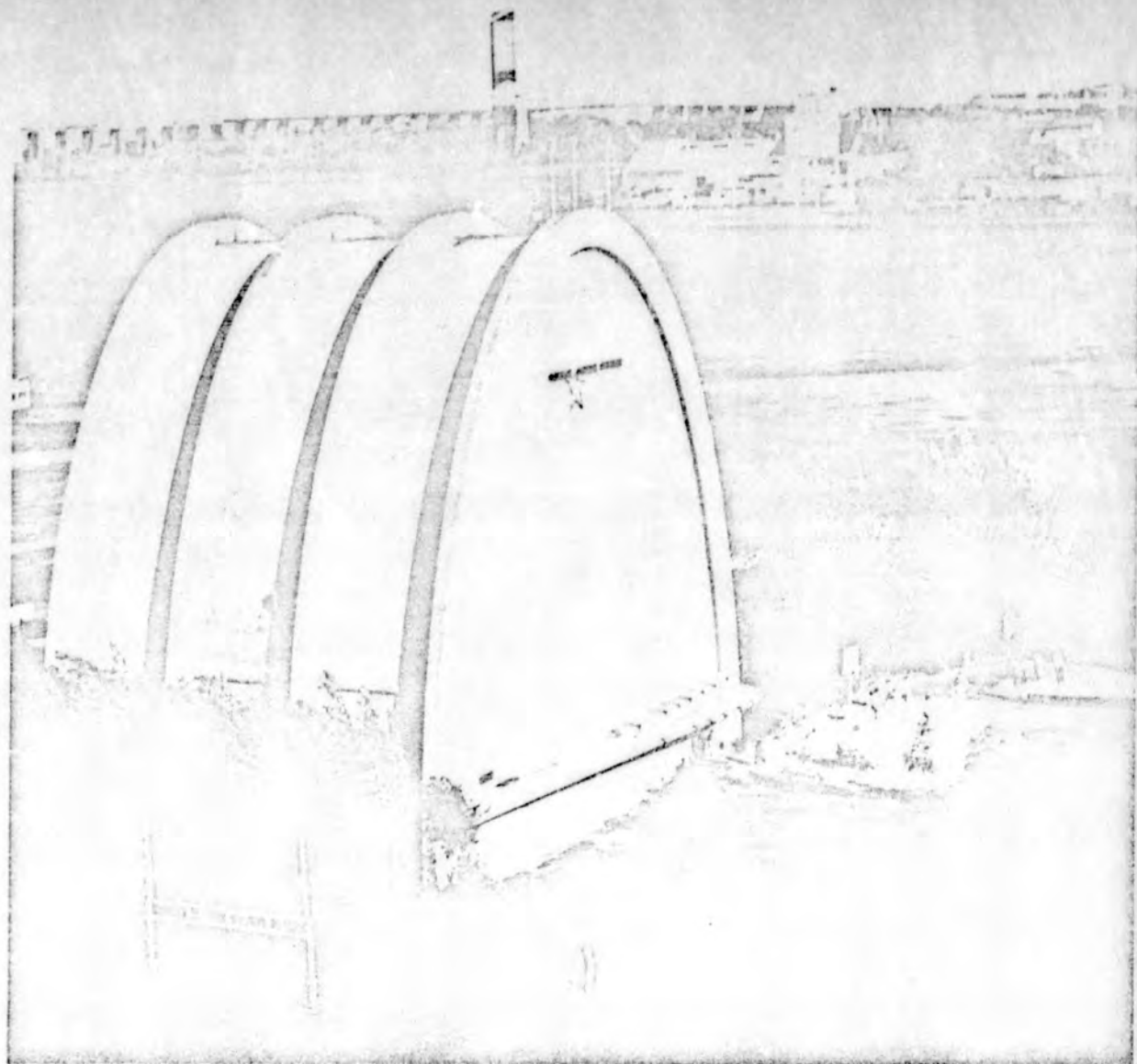
Another systems study is aimed at using the electric power generated or stored at dispersed sites by means of fuel cells, batteries, cogeneration, solar, wind, and small hydro-power. The project will determine the kinds of power processing, communication, monitoring, and safety equipment that will be necessary to incorporate these dispersed power sources most effectively into the statewide electric grid.

Two economic analyses have been launched. One has developed a draft report that estimates the total social costs of obtaining energy from the sun, water, wind, biomass, and other renewable resources in New York State. These estimates, which cover 1980 to 1995, reflect such factors as technological change and economics of production. They will help NYSERDA determine its research and development priorities and strategies.

The other project has developed a computerized model designed to simulate the least costly electrical generation plan for the state based on forecast electrical demands. The result is a tool for planners of electrical generation capacity in the state.



Lake Placid Olympic Organizing Committee



Dr. George Murphy, Chairman, Neighborhood Committee for the Asphalt Green

Integrated Community Energy Systems

The efficient use of a community's energy sources must involve both the integration of the various energy using systems and supplies and the commitment and cooperation of that community. For these reasons, NYSERDA has undertaken projects that will show how to optimize the application of various energy supply and conservation options to obtain the lowest overall costs for supplying the energy requirements of community structures. The state boasts numerous landmark buildings, many of them beautiful but unused as a result of changing community needs. In many cases these older buildings might be put to productive use if only the costs of heating and cooling their cavernous interiors could be reduced.

Innovative designs to reduce operating costs while publicizing the potential of solar and other modern technologies are being incorporated in one demonstration project in the Yorkville section of Manhattan. Residents there are cooperating in the plan to recycle one of the buildings, an architecturally striking former municipal asphalt plant (above) into an educational and recreational complex having as low fuel bills as possible. The project will enable the second building, a nearby fireboat house, to serve as an environmental and energy studies center to raise people's awareness of potential benefits from solar and wind power.

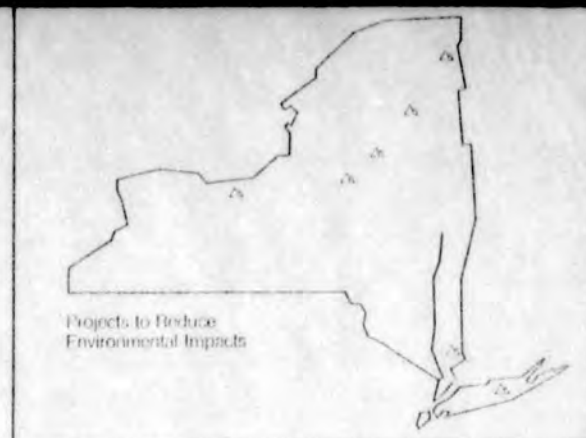
The goal of another project is to emphasize the use of local materials and resources. The public was urged to participate in the New York State segment of a federally sponsored appropriate technology small grants program. Individuals, local non-profit organizations and institutions, state and local agencies, small businesses, and one Indian tribe submitted applications.

All energy use affects the environment, although use of some fuels has a greater effect than use of others. NYSERDA is sponsoring several projects aimed at reducing the detrimental effects from energy production and conversion.

Burning Coal

Projects are under way to make the use of coal compatible with protection of the environment. The two major concerns are the effects of coal on air and on precipitation quality and the disposal of solid waste produced by combustion and by cleaning flue gas.

Evidence suggests that burning coal creates acidic residue that is carried by the winds and clouds and eventually dropped to earth. Few data are available on the residue itself and on how it affects the plants and organisms inhabiting the land and water where it falls. If coal is to become a preferred fuel, these effects, if detrimental, must be known and corrected. To increase understanding of this acid precipitation, NYSERDA has launched three coordinated projects that are studying the effects of the precipitation on lakes and land in the Adirondack region. The aim is to perfect techniques for measuring acid precipitation on-site and by remote sensing devices. The studies are being done in Herkimer County at Panther and Woods Lakes, in Hamilton County at Sagamore Lake, and in Essex County at Huntington Forest in the town of Newcomb. NYSERDA also has launched a project to study acidic cloud droplets. After calibration of the special instrumentation required, the project location will be moved to the summit of Whiteface Mountain and eventually to the three lakes in the Adirondacks where the other experiments are being conducted. (A healthy lake is shown below.)



Finding an acceptable method for disposing of coal wastes is an acute problem. Air pollution standards limit the amount of pollutants coal-burning plants may discharge into the atmosphere. Yet, although flue-gas scrubbers remove the fly ash and harmful sulfur oxides, they create a new problem by producing coal wastes equal to 30 percent or more of the volume of the coal burned, depending on the amount of sulfur the coal contained. A sizable plant burns 7,000 tons of coal a day. Estimates are that by the year 2000 the nation's coal-burning power plants will probably produce more than 100 million tons of waste a year. The disposal problem is compounded in southeastern New York State, where land is scarce and too costly for the large landfills needed to accommodate the thousands of tons of sludge and fly ash produced daily. NYSERDA is demonstrating the feasibility of forming the coal waste into blocks that can be submerged in the ocean to form reefs off Long Island. This study is assessing the possible toxic effect of the blocks on marine life; the effect appears to be minor and harmless. The reefs could have a beneficial effect, in fact, of providing habitats for fish and other organisms. (See photo next page.)



Calspan Corporation

Water Intake and Discharge

NYSERDA has developed a condenser tube simulator for use at a power plant in the lower Hudson River. The simulator will assess the causes of death of small aquatic organisms that are captured by the cooling water system of the plant.

Two projects deal with the effects of thermal discharges. In one, a report was drafted on a model for evaluating thermally induced biological effects at Indian Point; thermal resistance curves have been compiled for the eggs and larvae of four fish species. In a study at the Ginna Generating Station in Ontario, the distribution of water temperature with depth and distance from the point of discharge is being predicted.



Marine Sciences Research Center, State University of New York at Stony Brook

Money spent for research is wasted if the results of that research remain buried in a file. The goal of the technology transfer program is to bring the results of NYSERDA's research, development, and demonstration projects to potential users throughout the state. NYSERDA does this by stimulating the public to adopt proven technologies and conservation practices and by urging companies to commercialize the new technologies.

The technical and financial benefits resulting from NYSERDA's projects are advertised through the mass media and on a person-to-person basis.

Examples of recent information dissemination activities are:

Public Events

Rockville Centre: 100 persons attended dedication ceremonies and a tour of a waste-heat recovery system at the local municipal utility. Afterward, 19 industries were invited to learn how the system can benefit them.

Malta: Ground breaking ceremonies were held in the fall for expansion of the Saratoga Research and Development Center.

Staten Island: Governor Carey and state legislators representing the area attended ceremonies announcing conversion of the Wagner College Science Complex to solar energy.

Buffalo: Contract signing ceremonies marked the beginning of a coal gasification project involving Bell Aerospace Division of Textron, Incorporated.

Public Information

NYSERDA prepares and distributes information on research projects to state and national circulation technical and trade publications as well as to the general interest media. It also coordinates the release of information with the various co-sponsors of NYSERDA projects.

News releases are mailed approximately once a week to daily and weekly newspapers, radio and television stations, and selected journals.

Publication of releases frequently prompts requests for additional information from the media and from private individuals. In addition to responding to media questions, NYSERDA provides contacts with appropriate staff. Special mailings go to individuals known to be interested in certain projects. For example, the appropriate technology competition was advertised by means of mailings to selected individuals as well as through information aimed at the general public.

Reports

Reports on research are a primary communication tool in explaining the results of projects to agencies and individuals interested in specific technology. Published reports are sent to 55 key depository libraries in the state. NYSERDA files a copy of most reports with the National Technical Information Service, a branch of the U.S. Department of Commerce, which fills requests for written or microfiche copies from individuals.

In addition to the depository libraries, NYSERDA sends reports to groups it has determined are potential users of technology and to interested members of the general public. See the inside back cover for a complete list of NYSERDA reports completed during FY 1978-79.

Newsletter

Another major tool for disseminating information on agency programs is the *NYSERDA Review*. The newsletter, written in-house, describes NYSERDA projects and updates information on current developments within the agency.

Copies of the *NYSERDA Review* are mailed quarterly to all media, organizations, selected public officials, certain libraries, and about 3,000 individuals who have expressed interest in NYSERDA programs. Three issues were published in fiscal year 1978-79.

Annual Report

The report you hold is another means of disseminating information on NYSERDA programs. The previous annual report was distributed during fiscal year 1978-79 to 3,000 persons.



Saratoga Research and Development Center

NYSERDA broke ground in the fall of 1978 for expansion of its Saratoga Research and Development Center in Malta. Four companies currently rent facilities at the 455-acre tract, located 25 miles north of Albany. They are Exxon Nuclear Company, Incorporated; Mechanical Technology, Incorporated (MTI); Power Technology, Incorporated; and Wright-Malta Corporation. The initial expansion is at the MTI and Exxon test facilities.

Increasing available R&D facilities can attract and retain industrial jobs in the state and strengthen local economies. In addition, it can generate income-producing activities for NYSERDA that will help fund NYSERDA's own projects.

Since NYSERDA's predecessor bought the center from the federal government in 1964, the program there has shifted from space-vehicle testing to energy research. In order to plan the center's technical and fiscal future, NYSERDA is assessing the potential for expansion. A study has identified energy-related industries and high-technology and research-related industries that could benefit from installing research and development facilities at the center.

At the same time, another study has identified physical characteristics of the center that will affect site planning. These include site geography, location, environment, and business and personal benefits, such as the availability of highways, housing, and cultural resources in the Saratoga and Albany areas. The information gained in these two studies will allow NYSERDA to predict realistic short-term and longer-term demands for space and other requirements at the center and to choose a course of development to match its objectives.



Stephen Burke

West Valley

In 1961, New York State acquired 3,345 acres at West Valley to develop the Western New York Nuclear Services Center. Under lease with NYSERDA, Nuclear Fuel Services, Incorporated, a subsidiary of Getty Oil Company, operated a nuclear fuel reprocessing plant and waste storage facility at the site through 1972. A commercial low-level burial ground was in use until 1975. The facility has not operated commercially since then. In 1976, the company announced its intention to surrender the site to the state when the term of its lease ends in 1980.

More than 15 studies have attempted to resolve the difficult technical and financial problems associated with surrender of the site. The most recent assessment is a Congressionally mandated study, undertaken by Argonne National Laboratory for the U.S. Department of Energy (DOE), which was submitted to Congress early in 1979. Options addressed in the study range from total decontamination of the facilities to limited use of the site.

New Developments

In a letter dated June 7, 1979, DOE told Governor Hugh L. Carey that it was prepared to accept overall management responsibility for cleaning up the major problem at the West Valley site — the high-level radioactive liquid wastes. This is the first time that the federal government has acknowledged any responsibility for the problems at West Valley. This historic commitment includes implementing a program to manage the decontamination and decommissioning of all facilities used in the cleanup. The letter acknowledged that the federal government will bear a portion of the cost of the waste solidification program. Its share and those of the state and commercial operator of the site are not yet determined.

The DOE letter also said that the West Valley site will receive no further federal consideration as a potential nuclear waste storage site unless state officials are consulted first. The letter suggested that the state consider resuming burial at West Valley of low-level radioactive wastes from medical, research, industrial, and other uses.

The NYSERDA chairman is continuing to work with federal officials to narrow and resolve the differences that remain on a program for the disposition of the facilities at West Valley.

NYSERDA's policy and direction are mapped by the Board of Directors, who represent a variety of agencies and organizations having a central interest in the state's future energy course.

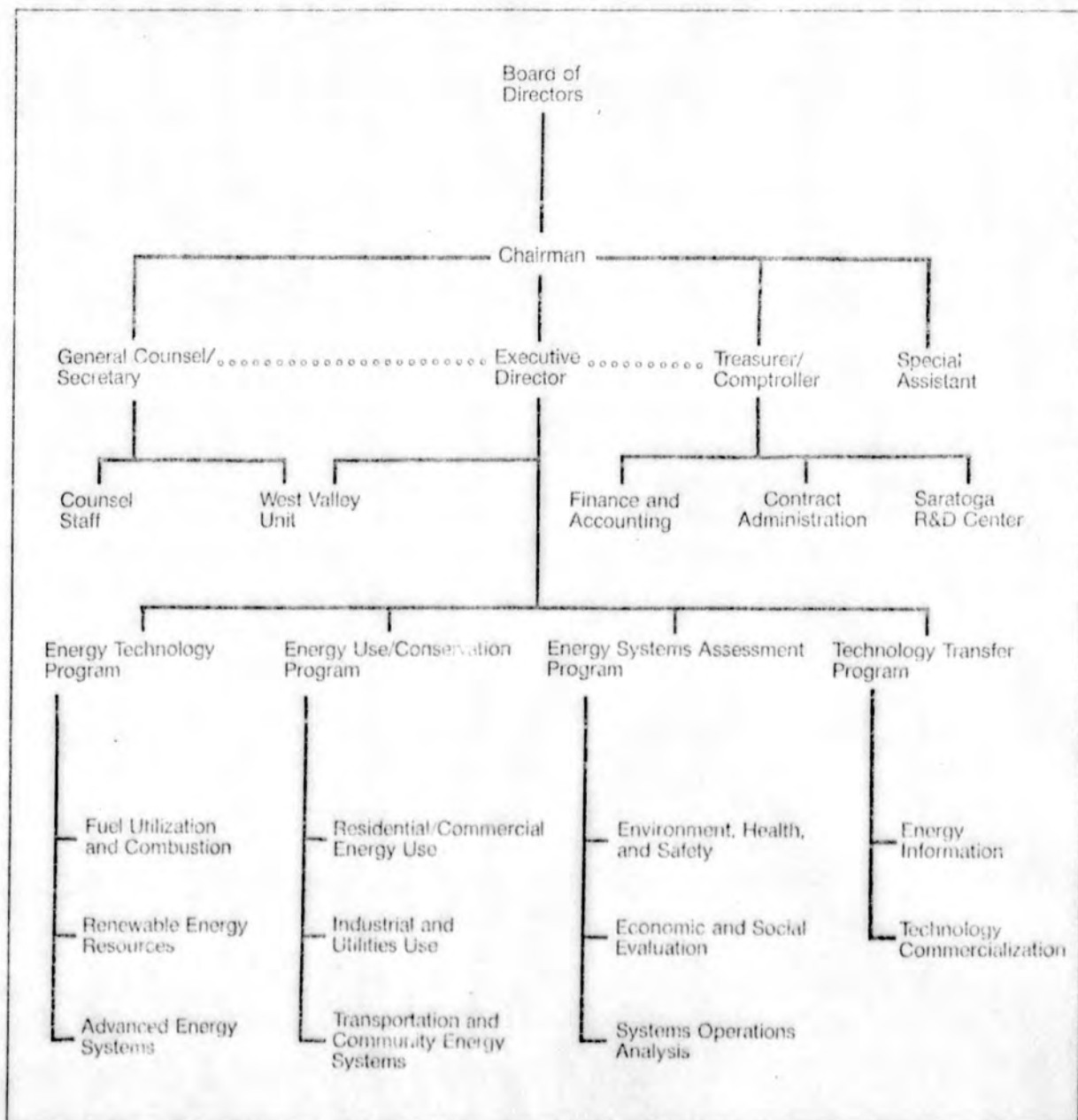
Day-to-day operations are overseen by the executive director, who is in charge of a staff with expertise in physics, mechanical, electrical, civil, and environmental engineering; energetics; geology; chemistry; economics; planning; mathematics; biology; environmental studies; and public management. This broad range of disciplines is necessary to develop and manage the variety of technical projects with which NYSERDA is involved.

NYSERDA's work force consists of 44 employees in clerical, professional, and administrative positions. Approximately 43 percent of this work force consists of people with expertise in at least one of the fields noted above. About 36 percent of the positions are clerical, and the remainder include executive, legal, and financial positions.

Affirmative Action

NYSERDA offers women, the handicapped, and members of racial and ethnic minorities an equal opportunity to secure employment. It participates in New York State's commitment (as expressed in Governor Carey's Executive Order 40) actively to recruit and retain qualified candidates from these groups.

Inquiries concerning career opportunities with NYSERDA are always welcome and should be directed to William G. Carter, Director of Affirmative Recruiting, NYSERDA, Agency Building 2, Rockefeller Plaza, Albany, NY 12223.



Geoff -

leave resource assessment functions
in DNR.

big problem - what resources do we have,
before we sell

NASA satellite program - remote sensing
tied with ALARJ

million of dollars of information for \$47,000

used for land disposal

\$1,066,000 → integrated mapping for 100 million acres

Introduced: 3/4/80
Referred: Resources

BY THE RULES COMMITTEE
BY REQUEST

1 IN THE HOUSE

2 HOUSE JOINT RESOLUTION NO. 81

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 ELEVENTH LEGISLATURE - SECOND SESSION

5 Relating to decontrol of the price of
6 oil produced from Upper Cook Inlet
7 fields.

8 BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

9 WHEREAS oil and gas development in Upper Cook Inlet pioneered the de-
10 velopment of the oil and gas industry in Alaska, and provided information
11 which contributed substantially to the technology of deepwater drilling in
12 severe climate production areas such as the North Sea; and

13 WHEREAS production of oil from Upper Cook Inlet fields has provided
14 Alaskans and other Americans with refined petroleum products such as gasoline,
15 diesel and fuel oil; and

16 WHEREAS drilling and production costs for Cook Inlet wells are among the
17 highest in the world; and

18 WHEREAS production from Cook Inlet fields is rapidly declining; and

19 WHEREAS, though the price of most oil produced from Upper Cook Inlet
20 fields is currently controlled by the federal government at the "lower tier"
21 level, the Department of Energy has granted some Cook Inlet producers price
22 relief in recognition of higher drilling and operating costs; and

23 WHEREAS the most equitable and beneficial means of maintaining Cook
24 Inlet production would be to provide for the decontrol of Upper Cook Inlet
25 production, allowing the product to be sold at market prices;

26 BE IT RESOLVED by the Alaska State Legislature that it urges the United
27 States Congress and the Department of Energy to address the production
28 problems and higher operating costs presented by oil production in Upper Cook
29 Inlet by decontrolling the price of oil pumped from Cook Inlet fields.

1 COPIES of this resolution shall be sent to the Honorable Charles W.
2 Duncan, Jr., Secretary of Energy, and to the Honorable Ted Stevens and the
3 Honorable Mike Gravel, U. S. Senators, and the Honorable Don Young, U. S.
4 Representative, members of the Alaska delegation in Congress.

3/5 House Resources

HB 687

Alex Scala - public info, at definition

Howard Cutter - chancellor, UA, FL

"God is the source of all energy"

Man identifies, defines, harnesses & directs energy
Q - where will future energy come from?

University can
do it best
already doing it;
existing systems,
administration is
in place

Margaret Branson -

don't want Bd tied to Regent
want 14 member board (Theroff concurs)

instead have UA people on bd.
pres of UA & two private colleges

St Jackson & APU, dir. of research for UA

financial, union, engineers, utility people,
life insurance exec, humanities comm -

another board as example

Elhara - conservation society, too, should be on.

Joe Geldoff - ACS

want concept implemented

intent / Center should concentrate on smaller technologies
specify work for each area

(Chat - probably would
support UA energy
center)

Chat - what is small-scale technology?

existing technology, adopted, or new technology.

Judy Crowell - Adm. Services

Why put it with us?

neither support or oppose it?

How about Dept. Commerce?

Chat - That's why we want

Denny M^{chner} ~~Ma~~ - for UA faculty
appropriate not always small
leary of leaving at UA - because of experience

research not total purpose

ideas in use - from former hippies

Miles - CS points

concept fine; avoid duplication, have communication instead

Clarify nature of boards, composition

Primary question - jobs / prioritization of projects, discretionary funds

Sunset clause. Quantity results

pursue Every Extension service

Chat - have advisory
council, limit it to 5 members

quarterly
meetings

I know that doesn't
work to give to former hippies

PLEASE NOTE: THE PRECEDING PAGES WERE TREATED
AS A UNIT IN THE ORIGINAL DOCUMENT.

A.S. 14. is amended by adding a new section to read:

AS. 14. . ALASKA ^{Institute} ~~CENTER~~ FOR ALTERNATIVE ENERGY RESEARCH. The Alaska ~~Center~~ for Alternative Energy Research is established as a research unit (1) in the University of Alaska statewide system. The center shall, as funds are appropriated, administer research projects in alternative energy technologies, including but not limited to fuel alternatives, solar, wind, geothermal, tidal, biomass, hydroelectric, energy storage and conservation ; (2) provide a mechanism for citizen participation in determining energy technology research needs of Alaskans; (3) provide an objective review process for proposals to achieve the highest quality and performance levels possible in all technological endeavors of the center; (4) coordinate research projects with the University's educational efforts, as well as all community educational systems statewide; (5) develop and make available a data base for energy development efforts; (6) provide a research support base for the energy technology development efforts of the Alaska Energy Center established in A.S. 45.89; (7) ~~disperse funds from appropriate funding sources to accomplish (1) through (6).~~ The center shall cooperate with the Alaska Council on Science and Technology, the Division of Energy and Power Development, the Alaska Power Authority, the Department of Natural Resources, the Alaska Energy Center, and other Alaska energy agencies in determining energy research priorities.

Feb. 1, 1980

FEB 6 RECD

Representative Brian Rogers
Alaska Legislature
Pouch V
Juneau, Ak 99811

Re: Northern Technology

Dear Rep. Rogers:

Thank you for sharing a copy of enabling legislation for the Northern Technology Grants Program, an initiative I find equally intriguing.

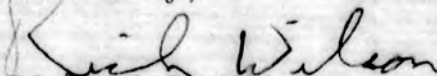
In reading the bill I am struck by a couple of things: While ARRC is presently reviewing our Fisheries Technology Awards Program proposal, Bill Spear is interested in an all-sector approach, not simply one for fishing alone. Their initial bent is also toward assisting in commercializing products which have already reached the testing stage.

Secondly, the Northern Technology Grants Program appears to be aimed at small scale technological innovation, that is projects whose cost does not exceed \$5,000 or so. I endorse the concept of working with individuals and not large organizations (and giving the inventor all patent and royalty rights as one incentive), but there may be some cases where meaningful innovation simply cannot be accomplished at under \$100,000 in grants. We cannot afford to put too many limits on the range of possible grant amounts.

A final thought: the loan program needs to be increased to provide for higher maximum loan amounts, in the range of \$200,000 over multi-year periods. Again, this does not suggest that all loans be made at the maximum level any more than grants should be made predominantly at maximum.

Speaking from the viewpoint of a potential recipient of NTGP assistance, I would close with a suggestion that there is a possible danger in that the NTGP and the program contemplated by ARRC could overlap and result in confusion to applicants. I am sure the parties are working to avoid this.

Sincerely,


Richard G. Wilson

cc: William Spear, Trustee
Alaska Renewable Resources Corporation

University of Alaska Alternative Energy Research Institute Proposal

annual operating costs -- 150,000 dollars/year (+ startup costs)

<u>Programs</u>	<u>Type</u>	<u>amount requested</u>
★ Fuels Research	basic & applied research	\$200,000
Geothermal	assessment, research, coordination	\$600,000
★ Solar ^{Solar} Technology	assessment, research, XXXXXXXXXX education, some demo	\$315,000
★ Energy Storage	test lab	—
Heat Pump	demonstration	65,000
Biomass Reduction	evaluation, demo	—
★ Economic Analysis	evaluation of alternatives	—
Fuelwood	assessment and management plan	150,000 /yr.
Arctic Coal Utilization	demonstrations	1,030,000
Arctic Greenhouse	"	500,000
Arctic Solar Architecture	"	920,000
★ Wind Energy	assessment, demo, info/educ.	1,065,000 (213,000/yr.)
Waste Heat	research center	275,000 /yr.

Alaska House of Representatives



COMMITTEE ON NATURAL RESOURCES
POUCH V • JUNEAU, ALASKA 99811

MEMORANDUM

TO: Jack Chenoweth
FROM: David Rogers *D.R.*
RE: Changes to House Bill 687
DATE: March 10, 1980

The following changes are requested:

1. Page 2, line 4 delete the words "In addition"; change "is to" to "shall"; and a : .
2. Page 2, line 6 after "for use" add the words "and conservation".
3. Page 2, line 11 delete subsection 6.
4. Page 2, lines 16 through 24 - "COMPOSITION OF BOARD OF DIRECTORS": reverse order of 1 and 2; change current subsection 1 with a requirement that two legislators be appointed jointly by the President and the Speaker.
5. Page 2, line 26 - add the words "non voting" between serve and ex officio; or something like that which clearly indicates the legislators are non voting ex officio members.
6. Page 2, Line 28 change 7 to 3; line 29 change 1 member to 3 members; change 1 member to 2 members; Page 3, line 1 change 1 member to 2 members; stop sentence after years on line 1; delete the rest of line 1 and all of line 2 and 3.
7. Page 3, line 13 change "of" to "after".
8. Page 4, line 5 add "and must have experience in the field of energy technology or development."
9. Page 4, lines 6 through 8 - require the three additional members to be nationally recognized experts in development and promotion of energy technology.

CO. CHAIRMEN

REP. ALVIN OSTERBACK (465-3715) • REP. BILL MILES (465-3779)

VICE-CHAIRMAN

REP. FRED ZHAROFF

REP. PAT CARNEY • REP. C.V. "CHAT" CHATTERTON • REP. SAM COTTEN
REP. DICK ELIASON • REP. JACK FULLER • REP. RICK HALFORD

10. Page 4, line 13 change "(a) (2)" to (a) (1).
11. Page 4, line 9 - change "five" to "four"; politicians don't count for quorums.
12. Page 4, lines 24 through 29, Page 5, lines 1 through 10 - delete (ENERGY TECHNOLOGY ADVISORY COUNCIL). Require council on Science and Technology to report to the legislature yearly with recommendations for projects to be developed by the Energy Center; amend Council statute to achieve this result.
13. Page 5, lines 11 through 14 - delete (PRINCIPAL OFFICE)
14. Page 6, Line 29 - after consult add the words "and maintain liaison" (or something like it).
15. Page 6, line 6 after conduct add "applied"; after research add the words "development and demonstration projects" and continue with the rest of the sentence.
16. Page 6, line 22 after conduct add the word "applied".
17. Page 7, line 4 add "University of Alaska and the Department of Natural Resources". Require these groups to meet with the Alaska Energy Center Board at least twice a year.
18. Page 7, line 16 and 17 - delete the words "and administration".
19. Page 7, lines 10 through 17 add a requirement that they annually report to the legislature on progress, job created, etc. In other words, they must tell us how well they have accomplished their goals and objectives. The report should accompany the budget.
20. Page 7, line 27 replace "possible" with "feasible".
21. Page 8, in definition of energy technology make sure it does not include nuclear research.
22. Page 8, Sunset the bill on July 1, 1986.
23. Retirement system problems; needs work - see Mark Wittow.

OK

BY GARDINER, ROGERS, BRANSON, ANDERSON,
BARNES, BETTISWORTH, BROWN, CARNEY,
CHATTERTON, COTTEN, ELIASON, HALFORD,
HAYES, MCKINNON, MALONE, MARTIN, MEEKINS,
METCALFE, MILES, MILLER, MOSS, MUNSON,
PARKER, PHILLIPS AND SMITH

1 IN THE HOUSE

2 HOUSE BILL NO. 687

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 ELEVENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act establishing the Alaska Energy Center; and
7 providing for an effective date."

8 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

9 * Section 1. FINDINGS. The legislature finds that the State of Alaska is
10 currently receiving substantial revenues from the sale of nonrenewable energy
11 resources to consumers in other states of the nation. The legislature recog-
12 nizes that bringing more efficient and advanced energy technologies to the
13 stage of commercial development will result in lower energy costs to con-
14 sumers throughout the state and the nation. The legislature believes Alaska
15 has a responsibility to use part of its nonrenewable energy resource revenues
16 to help accomplish this goal. The legislature finds that an independent
17 energy resource development center under the direction of the state, can best
18 accomplish the aid to individuals and businesses necessary to develop and
19 implement advanced energy technologies. The legislature further finds that
20 the work of the center will provide significant employment benefits to the
21 citizens of the state and will stimulate the development of the state's
22 energy resources.

23 * Sec. 2. AS 45 is amended by adding a new chapter to read:

24 CHAPTER 89. ALASKA ENERGY CENTER.

25 Sec. 45.89.010. ALASKA ENERGY CENTER CREATED. There is created
26 the Alaska Energy Center. The center is a public corporation of the
27 state. It is an instrumentality of the state in the Department of
28 Administration, but has a legal existence independent of and separate
29 from the state. Exercise by the center of the powers conferred by this

promote conservation?

chapter is an essential governmental function of the state.

Sec. 45.89.020. PURPOSE. ~~The primary purpose of The center~~ *As to* create employment opportunities in the state through the development of more efficient and advanced technologies. In addition, the center ~~is to~~ *shall*

(1) promote the most efficient and appropriate technologies for use ^{and conservation} of the state's energy resources; - *intent - 90% private firms -*

(2) provide economic benefits to state citizens;

(3) promote the effective use of the state's resources;

(4) promote diversification of employment opportunities;

(5) reduce state energy imports; - *??*

(6) increase state energy and technology exports; and

(7) bring existing and new technologies to a stage of commercial feasibility. *through cooperation w/...*

Sec. 45.89.030. BOARD OF DIRECTORS. A board of directors of the center is established as its governing body.

Sec. 45.89.040. COMPOSITION OF BOARD OF DIRECTORS. (a) The board of directors consists of ¹⁵ ~~nine~~ members as follows:

(1) one state senator appointed by the president of the senate and one state representative appointed by the speaker of the house of representatives; *(2) 2 legislators without vote*

(4) seven members appointed by the governor and confirmed by a majority of the members of the legislature in joint session.

(b) The board shall elect a chairman and other necessary officers from among its members.

Sec. 45.89.050. TERM OF OFFICE. (a) The members of the board appointed from the legislature serve ex officio. *and without vote*

3 (b) The members of the board appointed by the governor serve ~~seven~~ *3* year terms and may be reappointed. Terms shall be staggered. The initial terms are one member serving for one year, ~~one~~ member serving

*2 - 2 year
2 - 3 year*

drastically revise 40.

1 for two years, one member serving for three years, one member serving
2 for four years, one member serving for five years, one member serving
3 for six years, and one member serving for seven years.

4 Sec. 45.89.060. REMOVAL AND VACANCIES. (a) The governor may
5 remove from office a board member appointed by him with the consent of a
6 majority of the members of the legislature in joint session. A removal
7 by the governor shall be in writing and state the reason for removal.
8 If the legislature is not in session, the governor may suspend a member
9 of the board. After suspension, a board member may not participate in
10 board business and may not be counted for the purpose of establishing a
11 quorum. The joint session shall be held within 10 days from the date of
12 removal if the removal occurs while the legislature is in session or
13 within 30 days ^{after} ~~of~~ convening of the next regular session of the legisla-
14 ture if the legislature is not in session. If the legislature refuses
15 to consent to his removal, the board member shall be reinstated to his
16 position by the governor.

17 (b) A vacancy on the board among the members appointed under
18 AS 45.89.040(a)(2) shall be filled by appointment by the governor and
19 confirmation by a majority of members of the legislature in joint ses-
20 sion. An appointee to fill a vacancy shall hold office for the balance
21 of the term for which his predecessor on the board was appointed. If a
22 vacancy arises on the board while the legislature is not in session, the
23 governor may appoint an interim member, until the legislature has the
24 opportunity to confirm the appointment.

25 (c) A vacancy on the board among the members appointed under
26 AS 45.89.040(a)(1) shall be filled by appointment by the presiding
27 officer of the house of the legislature to which the vacating board
28 member belonged.

29 (d) A vacancy on the board does not impair the authority of a

Division -
letter of intent

1 quorum of the board to exercise all the powers and perform all the
2 duties of the board.

3 Sec. 45.89.070. QUALIFICATIONS OF BOARD MEMBERS. (a) At least
4 four of the board members appointed under AS 45.89.040(a)(2) must be
5 residents of the state. *3 familiar with energy technology or development*

6 (b) At least *3* ~~two~~ of the board members appointed under AS 45.89.-
7 040(a)(2) must have *national reputation* ~~experience~~ in the field of energy technology or de-
8 velopment.

9 Sec. 45.89.080. QUORUM. *4* ~~Five~~ members of the board constitute a
10 quorum for the transaction of business and the exercise of the powers
11 and duties of the board.

12 Sec. 45.89.090. COMPENSATION OF BOARD MEMBERS. (a) Board members
13 appointed under AS 45.89.040(a)(1) receive \$200 per day while in attend-
14 ance at meetings of the board.

15 (b) All board members may receive a per diem allowance and trans-
16 portation expenses in carrying out the duties under this chapter.

17 Sec. 45.89.100. CONFLICTS OF INTEREST. Members of the board are
18 subject to the provisions of AS 39.50.

19 Sec. 45.89.110. EMPLOYMENT OF PERSONNEL. The board shall employ
20 and determine the salary of an executive director. The executive direc-
21 tor may, with the approval of the board, select and employ additional
22 staff as necessary. The executive director and all employees of the
23 board are in the exempt service under AS 39.25.

24 Sec. 45.89.120. ENERGY TECHNOLOGY ADVISORY COUNCIL. (a) An
25 Energy Technology Advisory Council is established to advise the board on
26 desirable energy technologies.

27 (b) The members of the Energy Technology Advisory Council are:
28 (1) the executive directors of the Alaska Power Authority
29 (AS 44.56) and the Alaska Council on Science and Technology (AS 44.-

19.181 - 44.19.188);

(2) the director of the division of energy and power development of the Department of Commerce and Economic Development;

(3) a person appointed by and serving at the pleasure of the president of the University of Alaska;

(4) a member of the Board of Trustees of the Alaska Renewable Resources Corporation (AS 37.12) appointed by that board;

(5) six persons appointed by the board and representing business, energy, research, public interest, environmental, and government groups.

Sec. 45.89.130. PRINCIPAL OFFICE. The principal office of the center shall be located in Fairbanks. The board may authorize the establishment of other offices of the center in other areas of the state. Liaison with research, ARRC, DEPD, Council, APA, DNR

Sec. 45.89.140. POWERS. In carrying out the powers of the center, the board may

(1) adopt, alter, and use a corporate seal;

(2) prescribe, adopt, amend, and repeal bylaws;

(3) sue and be sued in the name of the center;

(4) enter into any agreements necessary to the exercise of

its powers and functions;

(5) accept grants from and contract with the federal government and the state or its political subdivisions and to that end comply with the provisions of federal, state, or local programs when necessary, except that it may not enter into any agreements whereby a permanent state or local government position is funded or partially funded in connection with a project;

(6) accept grants and loans from sources other than those in (5) of this section to be held and used for the purposes of the center;

private
sources

need for public information office

(7) appear in behalf of the center before boards, commissions, departments, or other agencies of municipal, state, or federal government;

(8) acquire, hold, use, lease, sell, or otherwise dispose of property of any kind, real, personal, or mixed, or an interest in it;

(9) conduct ^{applied} research ^{development & demonstration} and prepare, publish, and distribute technical studies, reports, bulletins and other materials it considers appropriate;

(10) hold patents, copyrights, trademarks, royalties or other evidences of protection or exclusivity issued under the laws of the United States or any state or nation obtained by persons receiving assistance from the center;

(11) adopt regulations governing the exercise of its powers;

(12) do everything necessary or desirable to carry out the purposes of the center.

Sec. 45.89.150. DUTIES. The board shall

(1) promote the commercial development of efficient and advanced energy technologies;

(2) subject to the availability of funds,

(A) sponsor energy research projects intended to accomplish the purposes of the center;

(B) conduct ^{applied} research, development, and demonstration projects of energy technologies;

(C) provide financial and other support to inventors and businesses engaged in the development, demonstration, and commercialization of energy technologies;

(3) manage projects for which funding has been appropriated by the legislature; ^{maintain}

(4) consult with the Alaska Council on Science and Technology

☆ — Shall meet at least twice

*Report is meeting
of goals & objectives*

+ DNR UAF Research

(AS 44.19.181 - 44.19.188), Alaska Power Authority (AS 44.56), Alaska Renewable Resources Corporation (AS 37.12), and the division of energy and power development of the Department of Commerce and Economic Development in developing its programs;

(5) consult with other energy research and development organizations.

Sec. 45.89.160. BUDGET AND APPROPRIATIONS. (a) The center is subject to the Executive Budget Act (AS 37.07) except as provided in (b) and (c) of this section.

(b) The budget of the center shall include a description and amount of proposed funding for projects to be conducted or supported by the center. Requests for project funding shall include a statement of the objectives and goals of the project, including, but not limited to, the number of jobs to be created and the number of businesses to be assisted by the project. The amount of the center's operating budget shall be specified separately from proposed project funding ~~and administration.~~ *Discretionary Fund*

(c) An appropriation for a project under AS 45.89.150(2) is valid for the life of the project and the unexpended balance shall be carried forward to subsequent fiscal years.

Sec. 45.89.170. COOPERATION WITH OTHER STATE AGENCIES AND THE UNIVERSITY OF ALASKA. (a) All departments, agencies, and public corporations of the state, including the University of Alaska, shall provide information, services, and facilities to the center on its request. The center shall reimburse the department, agency, or corporation for expenses reasonably incurred on the center's behalf.

(b) When ~~possible~~ *feasible* the center shall contract with the University of Alaska or private organizations for research activities.

Sec. 45.89.200. DEFINITIONS. In this chapter

Include what has been accomplished as well

Add responsibility for cooperation & research

1 (1) "board" means the Board of Directors of the Alaska Energy
2 Center;

3 (2) "energy technology" means technological developments and
4 innovations for

5 (A) efficient recovery and use of fossil fuels;

6 (B) production of energy through the use of renewable
7 and alternative energy sources;

8 (C) energy conservation;

9 (D) development of facilities for the use of waste heat
10 and the cogeneration of electricity and heat;

11 (E) the reduction of dependence on fossil fuels and
12 which are appropriate for use in the state and other northern
13 environments;

14 (3) "center" means the Alaska Energy Center.

15 * Sec. 3. AS 39.25.110 is amended by adding a new paragraph to read:

16 (22) employees of the Alaska Energy Center.

17 * Sec. 4. AS 39.50.200(9) is amended by adding a new subparagraph to
18 read:

19 (SS) Alaska Energy Center (AS 45.89).

20 * Sec. 5. This Act takes effect immediately in accordance with AS 01.10.-
21 070(c).

22 *make sure all employees are exempt*

23
24
25 *Sunset after 7 years*
26
27
28
29

Energy Center w/ DPDP
+HB687

5/31/80

re: organizational study - will be done by DPDP

understand the failures ~~as~~ as well as the successes

Study - 1) Bd of Directors, staff & (pre. Bd)
2) Management alternatives
eg inhouse v. contracting

I

Call Maria about B Ward gasohol project

ALASKA ENERGY CENTER -- CAPITAL PROJECTS

PROJECT TYPE	DESCRIPTION AND ALLOCATION	APPROPRIATION
(University of Alaska Contract Research)		
<u>FUELS RESEARCH:</u>	Basic research on encapsulation of hydrogen and natural gas in Alaska zeolites, storage of hydrogen, methane and ethanol with zeolite applications.	\$ 90,000.
<u>SOLAR TECHNOLOGY:</u>	Testing of different collector types, investigation of seasonal storage technologies, solar grain drying and test plot heating. Obtain reliable data set for direct and indirect solar radiation, photovoltaic research if additional funding is available.	215,000
<u>HEAT PUMP DEMONSTRATION:</u>	development of electric and non-electric heat pump systems suited for Alaska; monitoring and performance evaluation, publication of results.	65,000
<u>BIOMASS REDUCTION PROGRAM:</u>	Investigations to determine most technologically and economically appropriate reduction technologies for Alaska's climate. Includes wood product combustion and conversion to liquid fuel, fibrous material and animal biomass.	85,000
<u>ARCTIC COAL UTILIZATION:</u>	Investigation and demonstration of local coal use on the North Slope. By Naval Arctic Research Laboratory.	130,000.
<u>WIND DATA:</u>	Revision of wind atlas data in regional format; expansion of data base and replotting.	110,000
<u>WASTE HEAT:</u>	Development of a waste heat use research center. Involves clearing, piping, construction of greenhouse, and evaluation of differing methods of utilizing low temperature water for greenhouse use.	275,000

ENERGY CENTER CAPITAL PROJECTS:

ALASKA ENERGY CENTER
CAPITAL BUDGET
PAGE TWO

PROJECT TYPE	DESCRIPTION & ALLOCATION	APPROPRIATION
<u>GEOTHERMAL:</u>	Pilgrim Hot Springs deep drilling	\$ 250,000
<u>MICRO-HYDRO:</u>	Hydroelectric projects less than 1.5 MegaWatt	300,000
	1. Grant to Seward General Hospital to install a hydroelectric power generation facility: (\$102,000)	
	2. Village micro-hydro demonstration project(s) (198,000)	
	Intent: To include analysis of cost payback period, compared to other alternative power supply resources, including but not limited to diesel, coal, larger hydroelectric plants and other renewable energy alternatives.	
<u>WIND, PHOTOVOLTAICS AND HYDROGEN PROJECTS:</u>		900,000
	1. Village-scale demonstration project for use of solar electric energy as a primary or back-up domestic or utility energy source (250,000)	
	2. Utility-scale wind energy demonstration (25KW to 40KW wind machines in municipal utility systems, to be constructed in areas highly visible to a significant number of state residents, such as in view of roadways. (450,000)	
	3. Wind-solar electric-hydrogen electrolysis demonstration project to develop a hybrid renewable energy system directed at solving problems of energy storage (200,000)	
	Intent: These three projects may be combined in any manner deemed feasible, with cost savings to be reinvested in additional equipment or solution of related problems, or kept for later reallocation.	
<u>AGRICULTURAL FUEL ALCOHOL:</u>	Use of agricultural products or by-products to generate fuel alcohol, in conjunction with feedlot operating using high-protein process residues as cattle feed	100,000
<u>INTERIOR SAWMILL FUEL ALCOHOL:</u>	Use of wood and wood wastes from sawmill operation or other sources, to generate fuel alcohol.	350,000
<u>SOUTHEASTERN BARGE-BASED FUEL ALCOHOL:</u>	Use of wood and wood wastes from existing logging operations to generate fuel alcohol, develop a barge-based system and method of fuel transport; including procurement of barges and development of wood chippers adapted to barge operation.	800,000
	Intent: All alcohol projects are to be considered matching funds for use with any money procured from federal or other sources. The Southeastern operation may be done in conjunction with, or supplanted by, wood gasification and is to be done in cooperation with the U. S. Forest Service.	

ALASKA ENERGY CENTER
CAPITAL BUDGET
PAGE THREE

PROJECT TYPE	DESCRIPTION & ALLOCATION	APPROPRIATION
<u>ELECTRIC TRANSPORTATION:</u>	Battery powered commuter car pool vehicles at two cities in Alaska, one a cold dry climate (Fairbanks) and the other a wet climate (Juneau). As many vehicles as possible should be tested in each area. Vehicle owners/operators will be expected to contribute useful data in return for use of the vehicles. Intent: to determine the feasibility of short-run electric transportation in Alaska climates, both technologically and economically; and to determine the potential of electric transportation in terms of consumer acceptance in Alaska, the potential for electric transportation to use excess generating capacity in Juneau, and to reduce air pollution problems in Fairbanks.	250,000
<u>SOLAR CONSERVATION ARCHETECTURE:</u>	Development of passive solar and energy-conserving (super-insulated) architectural styles and methods, and land-use patterns, adapted to northern latitudes and varying Alaska climates; equal consideration is to be given to urban designs adaptable to subdivision needs of municipalities, and to rural housing sensitive to cultural needs. Intent: Rural housing design should take into consideration options accommodating energy conserving greenhouses for food production as an integral part of housing design, and should recognize the goal of resolution of three crucial Bush problems: housing, energy and nutritional quality. The architectural project is to include actual construction of passive solar residences in Southeastern and Interior Alaskan municipalities, and of residences or community buildings in one or more Bush villages, depending on funds available. Except for the Bush construction, homes constructed may be sold at fair market value to recoup construction and related project expenses. The amount recouped may be used to fund design and engineering of an energy-conserving permanent facility to be the headquarters of the Alaska Energy Center.	300,000
<u>DIESEL CONVERSION TO COAL:</u>	Demonstration of technologies to convert diesel engines of varying sizes to coal combustion or to develop same.	150,000
<u>*TOTAL PROJECT (CAPITAL) BUDGET:</u>		\$ 4,370,000

5/16/80

ENERGY CENTER

Seifert fallback position on 1.4 Million UA contract research.

NEW TOTAL 970.0

	Old	New
Fuels Research	180.0	90.0
Solar Tech	315.0	215.0
Heat Pump	65.0	65.0
Biomass	135.0	85.0
Energy Economics	80.0	00
Coal Utilization	230.0	130.0±?*
Wind Data	110.0	110.0
Waste Heat	275.0	275.0
Fuel Cell Demo	60.0	00
	1450.0	970.0

*Rich says he doesn't know enough about coal utilization to judge properly.



Jay Barton
President

UNIVERSITY OF ALASKA
FAIRBANKS, ALASKA 99701

March 24, 1980

Dear Brian:

For your information I am enclosing a copy of draft federal legislation regarding the development of state energy centers. It is difficult to say whether this legislation will pass given the concern of Congress for cutting the federal budget. However, it had been received with very favorable and strong support. The intent of the bill is to use universities as centers for the development and transfer of appropriate alternative energy technology. This is the classic land-grant concept that I have spoken about so often.

Certainly, the federally established programs which may come on line in a year or two would complement the programs you and your colleagues are planning for Alaska. I think you will find the language of the bill of help to you as you refine and perfect the bill you are presently considering.

Cordially,

A handwritten signature in cursive script, appearing to read "Jay".

Jay Barton
President

JB:dm

cc: Legislators: Gardiner, Anderson, Bettisworth,
Brown, Carney, Malone, Meekins,
Moss, Smith, Hackney

The Honorable Brian Rogers
Alaska State Legislature
Pouch V
Juneau, Alaska

UNIVERSITY OF ALASKA

MEMORANDUM

rw 3/19/80

DATE: March 19, 1980
TO: President Jay Barton
FROM: Donald H. Rosenberg, Director *Lonk.*
Alaska Sea Grant Program
SUBJECT: Energy Centers

Enclosed is the draft of the Land Grant Energy Research and Education Center bill. We should follow this very carefully and support it when necessary.

DHR/brm

cc: H. A. Cutler

Bills - 2/6/80

A BILL

To encourage the establishment of, and to assist State energy research and education centers.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

"SHORT TITLE"

"Sec. 101. This act may be cited as the University Energy Centers Act of 1980.

"POLICY AND PURPOSES"

"Sec. 102. (a) It is the policy of the Congress to develop, manage and maintain the energy resources of the United States. It is also the policy of Congress to ensure an adequate national supply of technical manpower in order to improve the quality of energy research, development, planning and management such that energy supplies and distribution does not adversely impact the United States economy and national security. Historically, university centered basic and applied research, planning, management, education and extension has been an invaluable resource in assisting the federal government to solve national problems.

"(b) The purposes of this act are to stimulate, sponsor, provide for, and supplement existing programs for the conduct, by educational institutions, of basic and applied research, investigations, and experiments relating to energy; to provide for concentrated interdisciplinary study of energy problems of particular importance to the several States and regions of the nation; to provide for the widest dissemination of energy information; to assist in the training of professionals in fields related to energy; and to authorize and

1 direct the Department of Energy to cooperate with the universities
2 of the nation for the purpose of encouraging and assisting them in
3 carrying out comprehensive energy programs having due regard to the
4 varying conditions and needs of the respective states and regions.

5 "(c) This act re-emphasizes the recommendations made in the
6 Department of Energy Organization Act of 1977 (P.L. 95-91) (Section
7 657 (7)) that substantive measures shall be taken by the Department
8 of Energy to stimulate and encourage the development of new manpower
9 resources through the national colleges and universities and to involve
10 these institutions in execution of research and development programs.
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"DEFINITIONS"

Sec. 103. As used in this act--

"(1) The term Secretary means the secretary of the Department of Energy.

"(2) The term 'educational institution' means a public or private institution of higher education, or a consortium of public or private, or public and private institutions of higher education.

"(3) The term 'energy research and education center' means a State energy center established pursuant to this title.

"(4) The term 'other research education and extension facilities' means the research, education and extension facilities of (A) any educational institution in which a State energy center is not located, (B) public or private foundations, agencies and institutions, and (C) private industry.

"(5) The term 'director' means the director of the University Energy Research and Education program within the Department of Energy.

"(6) The term 'State' means any State, the District of Columbia, the Commonwealth of Puerto Rico, or any territory or possession of the United States.

"(7) The term 'State energy research and education center' means an organization which, on a statewide basis, carries out research, education, training, extension, and other functions described in section 108 of this Act related to energy.

1 "(8) The term 'Energy Research and Education Institute' means
2 specially designated energy research and education centers as
3 described in section 109 (c) of this act.

4 "ADMINISTRATION OF ENERGY RESEARCH AND EDUCATION CENTER ACT.

5 "Sec. 104. (a) The Secretary shall maintain within the
6 Department of Energy a program to be known as the University
7 Energy Research and Education program. This program shall
8 consist of the financial assistance and other activities
9 provided for in this Title and such other existing and future
10 activities as the Secretary shall determine. The Secretary shall
11 establish long-range planning guidelines and priorities for, and shall
12 adequately evaluate, this program, with an annual review of the guide-
13 lines and priorities.

14 "(b) (1) The Secretary shall appoint a Director of the University Energy
15 Research and Education program who shall report to the Director of Office
16 of Energy Research and be a qualified individual who has:

17 "(A) Knowledge or expertise in fields related to energy,

18 "(B) Appropriate university and other administrative
19 experience, and

20 "(C) Knowledge or expertise in manpower planning and/or
21 higher education

22 "(2) The Director shall be appointed and compensated,
23 without regard to the provisions of title 5, United States
24 Code, governing appointments in the competitive service, at
25 the rate provided for level V of the Executive Schedule
26 under section 5316 title 5, United States Code.

27 "(c) The Director shall administer the University Energy
28 Research and Education program subject to the supervision of
29 the Secretary. In addition to any other duty prescribed by

1 law or assigned by the Secretary, the Director shall--

2 "(1) apply the long-range planning guidelines and the priorities
3 established by the Secretary under subsection (a);

4 "(2) advise the Secretary and other administrators with
5 respect to the expertise and capabilities which are available
6 within or through the University Energy Research and Education
7 program.

8 "(3) evaluate activities conducted under grants and contracts
9 awarded pursuant to sections 106 and 108 to assure that the
10 objectives set forth in section 102(b) and 102 (c) are implemented;

11 "(4) encourage other Federal departments, agencies, and
12 instrumentalities to use and take advantage of the expertise and
13 capabilities which are available through the University Energy
14 Research and Education program, on a cooperative or other basis;

15 "(5) encourage the formation and growth of energy research
16 and education centers.

17 "(6) Make certain the programs of the centers are coordinated with
18 other university and Federal activities such as the programs of the
19 University Coal Research Labs, the State Mining Institutes, and the
20 Federal Energy Research Centers.

21 "(7) prepare and submit to the Secretary information that
22 will provide a concise assessment of prevailing and projected
23 supply and demand of trained professional manpower with appropriate
24 recommendations to ensure availability of qualified manpower
25 for energy programs.

26 "(d) To carry out the provisions of this act, the Secretary shall

27 "(1) Appoint, assign the duties, transfer, and fix the
28 compensation of such personnel as may be necessary, in accordance
29 with the civil service laws, but the pay rates for such positions

1 . may not exceed the maximun rate for Level V of the General Schedule
2 under section 5316 of title 5, United States Code;

3 "(2) make appointments with respect to temporary and
4 intermittent services to the same extent as is authorized
5 by section 3109 of title 5, United States Code;

6 "(3) publish or arrange for the publication of, and otherwise
7 disseminate, in cooperation with other services, offices, and
8 programs in the Department, any information of research,
9 educational, training, and other value in fields related to
10 energy without regard to section 501 of title 44, United
11 States Code;

12 "(4) enter into contracts, cooperative agreements, and other
13 transactions without regard to section 3709 of the Revised
14 Statutes of the United States (41 U.S.C. 5);

15 "(5) accept donations and voluntary and uncompensated services,
16 notwithstanding section 3679 of the Revised Statues of the
17 United States (31 U.S.C. 665 (b)); and

18 "(6) issue such rules and regulations as may be necessary
19 and appropriate.

20 "DESIGNATION AND APPROVAL OF ENERGY RESEARCH AND EDUCATION CENTERS"
21 "Sec. 105. (a) The Secretary shall provide financial assistance under
22 this act for the purpose of establishing and operating energy
23 research and education centers that meet the following require-
24 ments

25 "(1) such State energy research and education center is, or will be--

26 "(A) located in an educational institution(s) within the State, ar

27 "(B) administered by such educational institution(s);

28 "(2) such education institution(s) is (are) designated by the Secreta
29 to be a state energy research and education center; and

1 "(3) the Secretary determines that such State energy research
2 and education center--

3 "(A) meets, or will meet, the requirements set forth in
4 section 107 of this act; and

5 "(B) has, or will have, the capability to carry out the
6 functions set forth in section 108 of this act.

7 "(b) The Secretary may provide financial assistance under
8 this act for the purpose of enabling two or more institutions administer
9 energy research and education centers assisted under this act,
10 to establish and operate regional cooperative programs on
11 problems of mutual interest

12 "(c) The Secretary shall provide financial assistance under
13 this act to permit periodical assessments of the supply of trained
14 professional manpower and the projections for future demand of such
15 manpower for energy research and development

16 "(d) The Secretary, in designating an educational institution(s)
17 to be a State energy research and education center or to participate
18 in regional cooperative programs, shall consider as candidates those
19 institutions of higher education in the State which, at that time,
20 are carrying out energy related research, training, education and
21 extension programs.

22 "(e) The Secretary shall provide financial assistance under
23 this act for the purpose of enabling each of the centers to
24 administer energy traineeship programs under guidelines developed
25 by the Director.

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"GRANTS AND CONTRACTS"

"Sec. 106. (a) The amount paid pursuant to any such grant or contract for an energy research and education center under this act may equal 66 2/3 percent, or any lesser percent, of the total cost to establish and operate energy research and education centers.

"(b) (1) The Secretary may make special research and training grants under this subsection to implement the objectives set forth in Sec. 102. The amount of any such grant may equal 100 percent. or any lesser percent, of the total cost of the project involve.

"ELEGIBILITY REQUIREMENTS FOR ENERGY RESEARCH AND EDUCATION CENTERS"
Sec. 107. Each State energy research and education center shall--

"(1) be organized and operated so as to support, augment and implement programs contributing to the solution of the local, State, regional, and national energy problems.

"(2) have a chief administrative officer, as appointed by the chief executive officer(s) of the education institution(s) concerned.

"(3) have a nucleus of administrative, professional, scientific, technical, and other personnel capable of planning, coordinating, and directing interdisciplinary programs related to energy.

"(4) be authorized to employ personnel to carry out appropriate research, development, planning, management, training, extension and education programs;

"(5) be authorized to make contracts and other financial arrangements necessary to implement section 108 (b) of this title; and

"(6) make available to the public all data, publications, studies reports, and other information which result from its programs and activities, except information relating to matters described in section 552 (b) (4) of title 5, United States Code.

1 "FUNCTION OF ENERGY RESEARCH AND EDUCATION CENTERS"

2 "Sec. 108. (a) Each State energy research and education center
3 shall be responsible for the following functions--

4 "(1) the planning and implementing of research, investigations,
5 and experiments relating to the study and resolution of State and
6 regional energy problems and opportunities and to promote and
7 participate in a national effort to develop energy policies.

8 "(2) facilitate the training of energy professionals through such
9 research, investigations, experiments, and traineeship programs the
10 scope of which may include, but is not limited to biological, economic,
11 engineering, environmental, legal, planning, physical, social, and
12 other aspects of energy problems;

13 "(3) the establishment, operation, and maintenance of a compre-
14 hensive energy education program directed at the widest possible
15 segment of the population, which program may include, but is not
16 limited to undergraduate degree programs, graduate programs, non-
17 degree college level course work, professional training, short
18 courses, workshops, and other educational activities directed
19 toward professional training and general education;

20 "(4) the establishment, operation, and maintenance of a state or
21 regional comprehensive energy advisory and extension program res-
22 ponsible for--

23 "(A) dissemination of useful and practical information on
24 subjects relating to energy; and

25 "(B) the establishment and maintenance of a reference
26 service to facilitate the rapid identification, acquisition,
27 retrieval, dissemination and use of such information; and

28 "(C) assistance in the identification of practical research
29 problems that relate to or result from local, State or regional
30 energy needs and opportunities.

1 "(5) the submission, on or before December 1 of each year, of a
2 comprehensive report of its programs and activities during the
3 immediately preceding fiscal year to the chief executive officer
4 of the educational institution, the Governor (s) of the State (s)
5 concerned and the Secretary.

6 "(b) (1) Each State and regional energy research and education
7 center will show evidence of cooperation--

8 "(A) with other State and regional energy research and education
9 centers and with other research, education and extension facilities
10 for the carrying out of any function listed in subsection (a) of
11 this section in order to achieve the most efficient and effective
12 use of institutional, financial, and human resources; and

13 "(B) with other energy related university programs and
14 activities, such as the University Coal Research Labs, the State
15 Mining Institutes and Federal Energy Research Centers.

16 "(C) with all energy extension programs that operate within the
17 State (s) involved with the center. Particularly close cooperation should
18 be established with ongoing or future energy extension projects at the
19 Cooperative Extension Service and/or through the Energy Extension Act.
20 (P.L. 95-39).

21 "(2(Each State energy research and education center may
22 also make grants, contracts, fund matching, or other arrangements
23 with--

24 "(A) other energy research and education centers, educational
25 institutions, research laboratories, the training, experience,
26 and qualifications of which are, in the judgements of the chief
27 administrative officer of the energy research and education
28 center, desirable for the conduct of specific projects to further
29 the purposes of this act, and

1 " (B) local, State, and Federal agencies to undertake research,
2 investigations, and experiments concerning any aspects of energy
3 problems related to the mission of the energy research and education
4 center and the purposes of this act.

5 " (3) Each State energy research and education center may accept
6 support from and enter into cooperative research and educational
7 arrangements with federal agencies, state agencies, private entities,
8 individuals and not-for-profit organizations.

9 " (c) In the carrying out of the functions described in subsection
10 (a) (3) and (4) of this section, the services of private enterprise
11 firms or other publicly supported programs are to be utilized
12 whenever feasible to achieve the most efficient use of public
13 funds invested in the fulfilling of the purposes of this act.

14 " (d) to accomplish the function set forth in this section it is
15 understood that the energy research and education centers will bring
16 to bear the total resources of the institutions (s) involved. The
17 centers role is to act as a focus for the institution (s) efforts in
18 solving energy problems. They will utilize existing research and
19 education programs and personnel whenever possible, and Establish
20 new programs, projects and personnel only when none exists to meet the
21 functions described in this section.

1 "AUTHORIZATION OF APPROPRIATIONS FOR GRANTS"

2 "Sec. 109 (a) There are authorized to be appropriated \$25,000,000
3 for the fiscal year ending September 30, 1981. The appropriated sum
4 shall be disbursed in equal shares to the energy research and
5 education centers by the Director.

6 (b) \$50,000,000 is authorized to be appropriated in FY82. Half
7 of the appropriated sum is to be disbursed as in subsection (a) and
8 half to be disbursed on the basis of merit programs and special
9 projects under guidelines developed by the Director.

10 (c) \$90,000,000 is authorized to be appropriated in FY 83.
11 Two-thirds of the appropriated sum is to be disbursed as in sub-
12 section (b). A few selected centers would be designated by the
13 Secretary, as Energy Research and Education Institutes based on
14 specialization, merit and quality program. With this designation
15 would come the opportunity to apply for the remaining 1/3 of the
16 appropriated funds under guidelines developed by the Director.

17 "ENERGY RESEARCH AND EDUCATION CENTER ADVISORY BOARDS"

18 "Sec. 110 (a) The chief executive officer of the University at
19 which a state energy research and education center is located shall
20 appoint an energy research and education center advisory board
21 which shall--

22 "(1) advise the director of the state energy research and education
23 center with respect to the activities and programs conducted by
24 the center and the coordination of such activities and programs
25 with the activities and programs of Federal, State, and local
26 governments, of other educational institutions (whether or not
27 directly participating in an energy research and education center
28 assisted under this act), and of private industry; and

29 "(2) make such recommendations as it deems appropriate regarding--

1 "(A) the implementation and improvement of research, development,
2 investigations, experiments, training, education, extension, and
3 other activities and programs undertaken by the energy research and
4 education center, and

5 "(B) new activities and programs which the energy research
6 education center could undertake or support.

7 All recommendations made by an advisory board pursuant to clause
8 (2) of this subsection shall be promptly transmitted to the chief
9 administrative officer of the energy research and education center,
10 the chief executive officer of each education institution of the
11 State in which the energy research and education center is located,
12 appropriate State agencies and the Secretary.

13 "(b) (1) Each advisory board appointed pursuant to this section
14 shall consist of representatives of--

15 "(A) the agencies of the State concerned which administer
16 laws relating to energy development, production or management;

17 "(B) the educational institution or institutions in which
18 the energy research and education center is located, and other
19 participating institutions;

20 "(C) the business and industrial community;

21 "(D) not-for-profit organizations the primary objectives
22 of which is the improvement of energy management and other public
23 interest groups; and

24 "(E) municipal and other local governments.

25 The chief administrative officer of the energy research
26 and education center shall be an ex officio member of the advisory
27 board.

28
29 "(2) The term of office of each member appointed to any

1. advisory board shall be for three years; except that of the members
2 initially appointed to any advisory board, the term of office of
3 one-third of the membership shall be for one year, the term of
4 office of one-third of the membership shall be for two years, and
5 the term of office of the remaining members shall be for three years.

6 "(c) All recommendations made by an advisory board pursuant
7 to subsection (a) (2) of this section, and all responses by the
8 chief administrative officer thereto, shall be matters of public
9 record and shall be available to the public at all reasonable times.

10 "(c) Each advisory board appointed pursuant to this section
11 shall meet not less than twice each year.

12 "(e) Funds provided under section 109 of this act may be used
13 to pay the travel and such other related costs, as shall be authorized
14 by the chief administrative officer of the energy research and
15 education center, which are incurred by the members of each advisory
16 board incident to their attendance at meetings of the advisory board;
17 except that the amount of travel and related costs paid under this
18 subsection to any member of an advisory board with respect to his
19 attendance to any meeting of the advisory board may not exceed the
20 amount which would be payable to such member if the law relating
21 to travel expenses for persons intermittently employed in Government
22 service applied to such member.

New agency to help boost technology

Associated Press

Washington — The Carter administration will set up a new office to better use "the nation's sagging inventive genius" and fight "economic anemia," says Commerce Secretary Philip M. Klutznick.

Klutznick said the agency for productivity, technology and innovation will "work with both business and labor to develop precise, strategically significant targets for technological assistance and to provide such assistance."

The announcement was part of a speech Klutznick prepared for delivery to the Chicago Association of Commerce and Industry.

Klutznick noted the move is similar to the recent reorganization of trade programs to spur international trade.

Among its several functions, Klutznick said the new office will:

- Include a center to "actively market federal technology to the private sector."

- Set up technology centers, funded jointly by the government and private industry, to develop "strategic technologies that can have a significant impact on the productivity and competitiveness of a wide range of individual firms and industries."

- Create a mechanism for public input into technological needs.

Klutznick said the new program is part of the administration's efforts to fight inflation.

He said improvement of the nation's productive output and technology would be critical to "our ability to maintain a price and quality competitive with the products of others."

Klutznick admitted the reorganization of the government's international trade functions has not been completed because of "the attention that we have had to give to the Soviet trade embargo since Jan. 4."

Effect of amendments.

The 1977 amendment, effective July 1, 1977, rewrote this section.

Sec. 39.35.380. Early retirement benefits.

Repealed by § 55 ch 128 SLA 1977, effective July 1, 1977.

Editor's note. — The repealed section derived from § 19, ch. 143, SLA 1960; am. § 7, ch. 109, SLA 1970; am. § 8, ch. 159, SLA 1972; am. §§ 11, 12, ch. 205, SLA 1975.

Chapter 205, SLA 1975, which amended this section, was submitted to the voters by referendum and was rejected, effective October 14, 1976.

Sec. 39.35.385. Conditional service retirement benefits. (a) An employee is eligible for a normal retirement benefit at age 55 with at least two years of credited service if the employee also is eligible for a normal retirement salary under the teachers' retirement system (AS 14.25).

(b) An employee is eligible for an early retirement benefit at age 50 with at least two years of credited service if the employee also is eligible for an early retirement salary under the teachers' retirement system (AS 14.25).

(c) Credited service for which contributions were refunded is not creditable under this section unless the refunded contributions have been repaid.

(d) The monthly amount of a normal retirement benefit for a peace officer or fireman is two per cent of the average monthly compensation times the years of service up through 10 years, plus two and one-half per cent of the average monthly compensation times the years of service over 10 years. For all other employees it is two per cent of the average monthly compensation times the number of years of service. An actuarial adjustment of this amount must be made for an early retirement benefit.

(e) Benefits payable under this section accrue from the first day of the month (1) in which the member meets the eligibility requirements of this section, (2) following the date of termination, and (3) following application for retirement, and are payable the last day of the month. If payment is delayed, a retroactive payment shall be made to cover the period of deferment. The last payment shall be made for the month in which the member dies or is no longer eligible for a benefit under this section.

(f) An employee is eligible for a normal retirement benefit at age 55 or an early retirement benefit at age 50 if he has at least 60 days of credited service as a temporary employee of the legislature during each of five legislative sessions. (§ 3 ch 174 SLA 1978; am § 11 ch 82 SLA 1979)

Effect of amendment.
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(c) Credited service for which contributions were refunded is not creditable under this section unless the refunded contributions have been repaid.

(d) The monthly amount of a normal retirement benefit for a peace officer or fireman is two per cent of the average monthly compensation times the years of service up through 10 years, plus two and one-half per cent of the average monthly compensation times the years of service over 10 years. For all other employees it is two per cent of the average monthly compensation times the number of years of service. An actuarial adjustment of this amount must be made for an early retirement benefit.

(e) Benefits payable under this section accrue from the first day of the month (1) in which the member meets the eligibility requirements of this section, (2) following the date of termination, and (3) following application for retirement, and are payable the last day of the month. If payment is delayed, a retroactive payment shall be made to cover the period of deferment. The last payment shall be made for the month in which the member dies or is no longer eligible for a benefit under this section.

(f) An employee is eligible for a normal retirement benefit at age 55 or an early retirement benefit at age 50 if he has at least 60 days of credited service as a temporary employee of the legislature during each

Effect of amendment. — The 1979 amendment, effective July 1, 1979, added subsection (f).

Effective date. — Section 12, ch. 174, SLA 1978, makes this section effective July 1, 1978.

Editor's note. — Section 15, ch. 82, SLA 1979, effective June 2, 1979, provides that

AS 39.35.385 (f) applies to a temporary employee of the Eleventh Legislature, First Session, even though he may not be an employee under the public employee's retirement system on July 1, 1979.

Sec. 39.35.390. Deferred retirement benefit.

Repealed by § 55 ch 128 SLA 1977, effective July 1, 1977.

Editor's note. — The repealed section derived from § 20, ch. 143, SLA 1960; am. § 5, ch. 80, SLA 1964; am. § 8, ch. 155, SLA 1966; am. §§ 6, 7, ch. 235, SLA 1968; am. § 8, ch. 109, SLA 1970; am. § 9, ch. 159, SLA 1972; am. § 3, ch. 81, SLA 1976.

Sec. 39.35.395. Voluntary contribution benefit. The balance of the employee's savings account will be paid in one of the following options as elected by the employee: (1) a lump sum payment; or (2) a life annuity on a full cash refund or term-certain basis; or (3) installments over a designated period of time. (§ 35 ch 128 SLA 1977)

Effective date. — Section 57, ch. 128, SLA 1977, makes this section effective July 1, 1977.

Sec. 39.35.400. Nonoccupational disability pensions. (a) An employee is eligible for a nonoccupational disability pension if his employment is terminated because of a total and apparently permanent nonoccupational disability, as defined in § 680 of this chapter, before his normal retirement date and after five or more years of credited service.

(b) The nonoccupational disability benefits accrue beginning the first day of the month following termination of employment as a result of the disability and are payable the last day of the month. If a final determination granting the benefit is not made in time to pay the benefit when due, a retroactive payment shall be made to cover the period of deferment. Benefits shall be continued after one year from the date of appointment to nonoccupational disability only if the disabled employee fulfills the requirements set out in (e) of this section. The last payment shall be for (1) the month in which the death of the disabled employee occurs, or (2) the month in which the disabled employee recovers from disability, or (3) the month in which the disabled employee ceases to be eligible for disability benefits under the Social Security Act, or (4) the month in which the disabled employee reaches normal retirement age.

REVISED FISCAL NOTE

I. REQUEST

Bill/Resolution No. CSHB 687Title "An Act establishing the Alaska Energy Center; and providing for anRequested by effective date." Date _____

II. FISCAL DETAIL

Agency Affected AdministrationProgram Category Affected General GovernmentBRU, Program, or Subprogram(s) Affected Administrative Services

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		44.0				
200 TRAVEL		1.0				
300 CONTRACTUAL		1.2				
400 COMMODITIES		.6				
500 EQUIPMENT		-0-				
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		46.8				

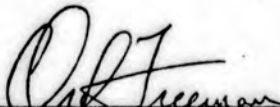
FUNDING (Thousands of Dollars)

GENERAL FUND		46.8	-0-	-0-	-0-	
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY		2	-0-	-0-	-0-	

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)


 Oral Freeman, Vice Chairman
 House Finance Committee
 April 24, 1980

April 28, 1980

HOUSE JOURNAL
SUPPLEMENT

No. 56

CSHB
687REVISED FISCAL NOTE

I. REQUEST

Bill/Resolution No. CSHB 687Title "An Act establishing the Alaska Energy Center; and providing for an
Requested by effective date." Date _____

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Agency Affected AdministrationProgram Category Affected General GovernmentBRU, Program, or Subprogram(s) Affected Administrative Services

(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 80	FY 81	FY 82	FY 83	FY 84	FY 85
100 PERSONAL SERVICES		44.0				
200 TRAVEL		1.0				
300 CONTRACTUAL		1.2				
400 COMMODITIES		.6				
500 EQUIPMENT		-0-				
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL		46.8				

FUNDING (Thousands of Dollars)

GENERAL FUND		46.8	-0-	-0-	-0-	
FEDERAL FUNDS						
OTHER (Specify Fund Source)						

POSITIONS

FULL TIME						
PART TIME						
TEMPORARY		2	-0-	-0-	-0-	

III. ANALYSIS (See Fiscal Note Preparation Instructions, Section III)


 Oral Freeman, Vice Chairman
 House Finance Committee
 April 24, 1980

IV. DATE _____

PREPARED BY _____

Original: Legislative Finance

AGENCY _____
PHONE _____

HB 687

fiscal note

Geothermal

Wind

Microhydro

Feedlot Methane

Elec. Transportation

Diesel & coal

Hydrogen Engine

Wood Alcohol

Sawmill alcohol

Fuels Research 180.00

Solar 315.00

Heat Pump 65.00

Cool - + AEC - 230.

Wind - ? ~~25~~

Waste Heat 25

get figures

Biomass ^{fuel research} led. - get figures

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Gov. 75 / 475
Single Wire Control Return

Specific AEC projects
→ Coal Utilization

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