

ALASKA LEGISLATURE COMMITTEE FILES 1981-1982 86/2

1824 HRES ENERGY - FISH/GAME SENTENCING STUDY 829

3. Advertising program discouraging electric resistance heating, where appropriate.

C. Define building thermal efficiency standards for Alaska regions.

D. Complete a comprehensive analysis of transportation by nature and end-use.

E. Increase use of communication systems instead of transportation. Expand access to and integration of state communication systems.

F. Assess new transport technologies, for example, lighter-than-airships, Hovercraft, and bargetrains.

G. Investigate the feasibility of a South-East, South Central Alaska Ferry system.

H. Purchase of the Alaska Railroad by the State of Alaska.

I. Integrate Alaska railroad to connect with Alaska waterways and the Canadian railways.

J. Develop comprehensive mass transit systems in Anchorage, Fairbanks and Juneau.

K. Provide transit services in other communities as needed. These could include "paratransit" systems utilizing school buses, for example, to take workers to pulp mills, canneries, etc.

GOAL FIVE: DEVELOP REGIONAL AND LOCAL ENERGY PLANS

Community energy planning plays a key role in tying together data gathering and planning processes with public education.

Energy will prove to be a key factor of contemporary life in the next decade. Individuals will be forced by skyrocketing costs to make changes in their lives. Yet the public does not understand the complexity of energy issues. An effective planning process like that used in the Franklin County (Mass.) Energy Study could, for example, show Anchorage how a major portion of the estimated \$350 million that they export from their community each year for energy could be diverted back into the local economy. Such a planning process would assess energy consumption in a fine grained approach by sector and end use; followed by an analysis of renewable resource potential. An assessment of the full environmental, social and cultural impacts of this broad spectrum renewable energy development would be made for comparison with other conventional energy supply scenarios. If effectively implemented, this study would serve not only as a data gathering and planning process but would also educate Alaskans about the energy choices available to them and their communities.

Objectives:

- A. Develop and define an appropriate decentralized energy planning process for rural communities.
- B. Conduct community energy planning seminars for urban and regional planners in local energy planning.
- C. Establish regional energy coordinators as primary outreach agents to coordinate with planners.
- D. Expand and complete comprehensive energy plans for each community in the state.

E. Provide funds for community energy planning processes in each community.

GOAL SIX: COMMERCIALIZE RENEWABLE ENERGY TECHNOLOGY WITH AN AIM TOWARD
SUSTAINED JOB CREATION

A transition to renewable energy based economy will create jobs. Studies have shown that the renewable energy/conservation industry's labor intensive activities create four to seven times the jobs of capital intensive industries.¹ Moreover the jobs created by a shift to renewable energy use are local jobs that feed money back into the local economy.

The success of commercialization of renewables and therefore the creation of jobs depends largely on efforts in the educational and financial spheres. Technicians and professionals must be trained to evaluate, design and install equipment. Financial officers and assessors must have an understanding of renewable energy systems and displaced fuel costs to provide responsible financing for these systems. Property assessors must also share in the same kind of educational process. The capital necessary to support this industry must be made available. Finally, technologies appropriate to Alaska's climate must be designed, tested and marketed through competent Alaska based businesses. The role of the Alaska Energy Center in bringing new technologies to commercial viability is critical.

Objectives:

- A. Provide state funding for high visibility alternative energy projects.
- B. Establish an "Innovation Center."
- C. Provide state assistance in marketing alternative energy technologies.
- D. Modify the existing Alternative Energy Revolving loan fund to take into consideration improved energy conservation in buildings, simplify its process and remove it from the Office of Business Loans.

GOAL SEVEN: ESTABLISH A STATE ENERGY DECISION-MAKING PROCESS WHICH
INCORPORATES ALL INTERNAL AND EXTERNAL COSTS AND BENEFITS IN ENERGY
CHOICES

In order for the transition to renewable energy to be effectively implemented, it is imperative that the decisions relative to all energy production and utilization be made by persons aware of the potential and application of renewable energy.

Life cycle costing in buildings will determine on a competitive basis the savings possible through conservation or solar.

The impact of market imperfections on renewable energy decisions is critical. When all the external costs and benefits are weighed and comparisons are made on a replacement* cost basis renewable energy systems become much more cost effective. Comparison should be made between fossil fuel application and renewables that considers the true environmental and social impacts of each, the hidden and actual subsidies and the replacement costs rather than average cost of present fossil fuel energy production.

Decision makers must be educated to the implications of this information. Legislative and administrative action to rectify these imperfections in the decision-making process should be a high priority.

Objectives:

- A. Enforce life-cycle costing on public building construction and

*To avoid confusion the term "replacement cost" has been substituted for marginal cost. With respect to economic analysis we do not propose extending traditional micro-economic short-run marginal cost analysis to long-run total cost investment decision-making. When comparing energy alternatives emphasis must be put on the replacement costs of current technology rather than current energy costs which may reflect historically low roll-in prices. Public policy makers must be alert to market imperfections and how these impact their analysis.

state financed loans and land disposal programs.

B. Increase state funding for research into external costs of energy development and initiate ways to mitigate these costs.

C. Enforce provisions of SB438 of 1980, particularly as it relates to financial institutions and standards.

D. Amend SB438 to more effectively respond to rural needs.

E. Produce a replacement cost pricing economic analysis for energy development and require use of this methodology for energy decision-making. Establish an energy review process for such decisions at two levels such as Office of Budget and Management and perhaps the Alaska Power Authority and Department of Transportation and Public Facilities as is appropriate.

F. Conduct renewable energy seminars for legislators, administrators, mayors and housing authorities.

GOAL EIGHT: PROVIDE EQUAL ACCESS TO ENERGY CAPITAL WHILE WORKING TOWARD
THE ELIMINATION OF SUBSIDIES

Renewable energy systems can provide appropriate solutions for rural energy needs. Once in place they drastically displace or eliminate costly imported petroleum fuels. However, the development of the new industry to accomplish this task will take several years for data collection, systems testing, technical training and local planning activities to be accomplished. Meanwhile subsidies have been provided to moderate some of the exorbitant costs to rural residents.

The subsidy question has two other dimensions. One is the hidden subsidies within petroleum fuel pricing which skew the cost effectiveness of renewables. Another is the hidden subsidies to urban Alaskans, particularly Anchorage residents who benefit from the rolled in costs of 20 year old natural gas lease agreements.

In many cases rural residents do not qualify on a defacto basis for loans, audits, etc. because they are difficult to reach or lack collateral. A systematic assessment of energy programs to enable participation by rural residents is necessary.

The comprehensive deployment of renewable energy technology could serve ultimately to eliminate the need for energy subsidies. For renewables to be deemed cost effective in comparison to non-renewables we must first determine what subsidies are available to fossil fuels that renewables are not afforded. Then the subsidies must be equalized with the aim of solving the supply problem through implementation of renewables and thus eliminating their need.

Objectives:

- A. Identify existing state and federal subsidies.

B. Consider scenarios for equalization of subsidies.

C. Consider elimination of subsidies.

GOAL NINE: DEVELOP RENEWABLE AGRICULTURAL PROCESSES

Fifty percent of Alaska's energy usage is in the transportation sector, much of that used in importing goods from outside the state. World energy economics will most certainly drive the costs of transportation of food and energy to exorbitant levels for Alaskans. The umbilical cord with which Seattle supplies our basic needs will draw tight indeed. Regional and local Alaska food production coupled with renewable energy technologies can go far toward reducing transportation costs for these commodities. Sweden has already demonstrated that a subarctic country can be largely food self-sufficient.

Application of renewable energy technologies for grain drying, the raising of soil temperatures, compost and fuel production can radically change the economics of small and large scale farms. Renewable energy can greatly increase the quality and varieties of crops that can be grown in Alaska. Fertilizer resulting from methane digestion of fish waste and other distillation processes offers a supply of locally produced organic nutrients. Geothermal energy also has major developmental implications in areas where its heat can be used for greenhouses and raising of soil temperatures.

Striving for food self sufficiency in Alaska does not mean abandoning the world market. Crops can be encouraged that provide for Alaska's needs as well as being valuable on the world market. This approach does not preclude the availability of such specialty items as avocados or pineapples. It can, however, reduce the cost of basic food stuffs to a level that will allow families to maintain a reasonable comfortable standard of living.

Rapidly rising fuel costs make it necessary for Alaska to establish in 20 years an agricultural infrastructure that took 100 years to accomplish in the lower 48. The state's surplus revenues make such a possibility

tenable .

Objectives:

A. Support in-state, renewable agriculture projects that do not depend on fossil fuels.

B. Completely classify all type II and III soils by mid 1982 and designate such soils as agricultural land.

C. Provide state support for community subsistence agriculture including:

1. Village/community gardens and animal husbandry.

2. Community canneries, food processing and storage facilities.

D. Capitalize and develop in-state agricultural processing.

E. Promote agriculture waste recovery.

F. Develop marketing cooperatives.

G. Evaluate the agricultural rights program.

H. Increase funding for a vigorous research program in northern climate agriculture.

I. Investigate problems in reindeer husbandry.

GOAL TEN: FULL RESOURCE RECOVERY

The processes of material extraction, transportation of raw materials, industrial processing, fabrication, labeling, shipping, marketing and delivery are so energy intensive that reuse and recycling of materials is fundamental to wise resource management. The Anchorage Recycling Center and Anchorage Chamber of Commerce recycling project have proven the success of urban recycling efforts in Alaska.

Objectives:

- A. Establish recycling stations in communities throughout the state.
- B. Develop a demonstration project in site source separation collection by municipal sanitation.
- C. Provide low interest capitalization loans for recycling projects.
- D. Legislate a Bottle Bill.
- E. Enforce state government agency recycling requirements.
- F. Establish a market use for waste oil, including setting up a refining plant.
- G. Change back-haul regulations to permit trucking firms to allow reduced rates to recycling firms.
- H. Set up a shredding plant so that sensitive or classified material can be recycled after being destroyed.
- I. Study ways to reuse materials not able to pay their way in shipping to Seattle, i.e., glasphalt, cardboard to prest logs.
- J. Monitor waste associated with the proposed natural gas line, consider back hauling and reuse of waste if possible.

SUMMARY

The Rainbow Retreat proved to be extremely valuable in defining a frame of reference for renewable energy development. The group plans to meet again in April 1981 to expand the objectives outlined in this report into well-defined programs. It will also serve as a forum to define the roles of state agencies and other actors in the field.

Though limited by time, an effort was made at the Rainbow Retreat to define the appropriate state agency to implement various objectives. Opinions were conflicting, pointing up the confusion that exists over the jurisdiction of various state energy agencies. Even when the legislative or administrative mandate of a particular agency is clear, subsequent legislative action frequently does not follow suit. It is imperative for the effective development of renewable energy, that this confusion be addressed.

The Alternative Energy Resource Center is pleased to have had an opportunity to sponsor the Rainbow Retreat. Thanks are extended to Western Sun and the Solar Advisory Group for the necessary financial support they provided. Thanks are also expressed to the participants for their enthusiasm and hard work. Finally, we would like to express our appreciation to John Pursley for the generous offer of the use of his home for the retreat.

This report represents an ongoing process. Any comments, criticisms or suggestions are welcomed and should be forwarded to Nancy Lee, Alternative Energy Resource Center, 1069 West 6th Avenue, Anchorage, Alaska 99501.

PARTICIPANTS IN THE RAINBOW ENERGY RETREAT

Robert Balivet, American Institute of Architects

James Barkshire, Alaska Renewable Energy Associates

Mimi Burbage, Superinsulated Homes, Inc.

Geoff Feiler, Heat Loss Analysis

Bob Gibson, Kuskokwin Community College

Bob Grove, Fairbanks Town and Village Association

Quin Hart, Utility Officer, Elmendorf AFB

John LeMay, Alaska Society of Energy Auditors, Inc.

Nancy Lee, Alternative Energy Resource Center

Bill Leighty, Western Sun Solar Advisory Group

Don Markle, Division of Energy and Power Development

Sherry Modrow, Alaskans for Alternative Energy

Robert Moen, Alaska Power Authority

Eric Myers, Alaska Public Interest Research Group

Mark Newell, Wind Systems Engineering, Inc.

Ron Olsen, RurALCAP

Bill Phiesterer, Energy Alternatives, University of Alaska

Jerry Plunkett, Alaska Energy Center

Peter Poray, Municipality of Anchorage Energy Coordinator

John Pursley, Alaska Energy Center

Clarissa Quinlan, Division of Energy and Power Development

Bob Roggasch, Roggasch and Associates

Representative Brian Rogers, Alaska State House of Representatives

Skip Roy, Alternative Energy Technical Assistance Program

Rich Seifert, Water Resources Institute, University of Alaska

Bob Shipley, Western Sun

Sam Skaggs, Sun-till Systems

Steve Smiley, Alaskans for Alternative Energy

Bob Speed, Legislative Aide to Representative Terry Gardiner

Jack Spratt, Alaska Energy Extension Service

Natalie Stevens, Alternative Energy Resource Center

Senator Terry Stimpson, Alaska State Senate

Sherry Valentine, Formerly with RurALCAP

Logan Wakefield, Anchorage Community College

Jeff Weltzen, Fairbanks Environmental Center

Mark Wittow, Legislative Aide to Representative Hugh Malone

REFERENCES

¹ Ken Bossong: Solar Energy and Jobs. Citizens' Energy Project Report Series Number 49, Washington, D.C. 1980.

Richard Grossman and Gail Daneker: Energy Jobs and the Economy. Alyson Publications, Boston 1979.

Council on Economic Priorities: Jobs and Energy: The Employment and Economic Impacts of Nuclear Power, Conservation and Other Energy Options. Washington, D.C. 1980.

Energy Conservation and Alternative Energy

This proposal includes a revised version of the current Energy Audit Program, plus recommendations for a Technical Advisor Program to be run by the Alaska Energy Center to provide technical advice to financial institutions on Alternative Energy/Energy Conservation Loans as a combined state program.

1. Energy Audit- Program is simplified and cost of an audit is reduced. State reimburses contracted certified auditor @ \$75 per audit. Auditor can charge customer at whatever rate the market will bear. Auditor recommends steps to be taken under refund/grant program, and services of technical advisor where necessary or where an alternative Energy/Energy conservation Loan is desired. 32,000 audits should be completed in FY82 as part of a three year program. Millions
\$2.400
2. Refund/Grant Program for Energy Conservation- For improvements recommended in Energy Audit. 32,000 grants @ \$300+COLA 9.600
3. Technical Advisor Program- Alaska Energy Center contracts with Energy Experts from a variety of fields to provide technical assessment of Alternative Energy/Energy Conservation Loans. State pays Technical Advisors at rates set by the Energy Center by regulation. 13,000 Technical advisor visits @ average \$200. 2.600
4. Alternative Energy/Energy Conservation Loan Combined Program
Loans are available through Financial Institutions with State funds available as a secondary market. Interest rate remains at 5%, loan limited to \$20,000. for individuals and \$50,000 for businesses. (money is also made available under this program for Alternative Energy Business development)

Individual Loans 5000 Loans @ av. \$10,000	50.000
Business Loans	10.000

Energy Conservation and Alternative Energy

5. R&D through Alaska Energy Center- This is an important component of any proposal to insure that the technology to accomplish broad based energy conservation and use of Alternative Energies remains current. millions
Recommendation \$12.000
6. Demonstration Grants combined Northern Technology and DOE Small Grants Program(Federal, discontinued)
400 grants @ average \$4000. 1.600

Projected Power Cost Comparison

(\$/KWH)

*where 0
5.88
follow the
renew
R*

	<u>1st Year of Operation</u>			<u>1991</u>		
	<u>State Funded (CS SB 25)</u>	<u>3% State Loan (SB 25)</u>	<u>Financing w/o Legislation</u>	<u>State Funded (CS SB 25)</u>	<u>3% State Loan (SB 25)</u>	<u>Financing w/o Legislation</u>
Bradley Lake	0.7	3.8	9.1	1.4	4.4	9.8
Green Lake	1.3	7.3	13.0	2.3	6.7	10.9
Port Lions	4.9	12.6	18.0	9.7	17.5	23.0
Solomon Gulch	1.8	9.3	14.8	- 3.7	9.4	14.4
Chester Lake	1.4	5.4	7.9	2.8	6.8	9.4
Terror Lake	1.0	5.6	13.7	1.5	5.0	11.3
Tyee Lake	2.9	11.6	30.8	3.4	8.1	22.0
Swan Lake	2.8	13.8	28.2	2.8	9.1	23.0

*10/21/76
B2 (KSD)*

Original sponsors: Kerttula, Ziegler,
Ferguson, et al

Offered: 3/5/81
Referred: Rules

<u>Funding Information</u>	
General Fund	\$512,500,000
Other Funds	-0-
	<u>\$512,500,000</u>

1 IN THE SENATE

BY THE FINANCE COMMITTEE

2 CS FOR SENATE BILL NO. 26 (Finance)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 TWELFTH LEGISLATURE - FIRST SESSION

5 A BILL

6 For an Act entitled: "An Act making special appropriations to the Alaska
7 Power Authority for energy projects and for the power
8 production cost assistance program; and providing for
9 an effective date."

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

11 * Section 1. The sum of \$354,900,000 is appropriated from the general
12 fund to the power project development fund of the Alaska Power Authority
13 (AS 44.83.400 - 44.83.480), to be expended by the authority in the amounts
14 specified for the following listed power projects:

15	(1) Bradley Lake	<i>needed if Congress turns to state funding</i>	<i>add needed new Fed money could start FY 83</i>	\$40,000,000
16	(2) Chester Lake	<i>metlakatla</i>		6,000,000
17	(3) Green Lake	<i>Redoubt 7 1/2%</i>		46,000,000
18	(4) Port Lions			1,400,000
19	(5) Snettisham	<i>add from</i>		20,000,000
20	(6) Solomon Gulch		<i>Total 65,500,000</i>	62,000,000
21	(7) Swan Lake			53,000,000
22	(8) Terror Lake		<i>115,000,000</i>	81,500,000
23	(9) Tyee Lake	<i>add 100,000,000</i>		45,000,000

Costs exclusive of existing (cont.)

add 5,000,000 to total

24 * Sec. 2. The sum of \$40,000,000 is appropriated from the general fund
25 to the power project development fund of the Alaska Power Authority (AS 44.-
26 83.400 - 44.83.480) to be allocated by the authority to the following areas
27 for development and construction of power projects under AS 44.83.197:

- 28 (1) \$10,000,000 for projects in senate district M
- 29 (2) \$10,000,000 for projects in senate district N

1 (3) \$10,000,000 for projects in senate district P

2 (4) \$10,000,000 for projects in other areas of the state.

3 * Sec. 3. The sum of \$85,000,000 is appropriated from the general fund
4 to the Alaska Power Authority for acquisition of a right-of-way for and
5 design and construction of a high voltage electrical transmission system
6 connecting Anchorage and Fairbanks.

7 * Sec. 4. The sum of \$27,800,000 is appropriated from the general fund
8 to the Alaska Power Authority for feasibility studies under AS 44.83.181, to
9 be allocated to the following proposed power project sites:

10	(1) Black Bear Lake	\$ 1,400,000
11	(2) Grant Lake	1,000,000
12	(3) Kisaralik	1,000,000
13	(4) Kotzebue	850,000
14	(5) Power Creek	700,000
15	(6) Scammon Bay	200,000
16	(7) Susitna	15,000,000
17	(8) Takatz Lake	50,000
18	(9) Tazimina Lake	2,000,000
19	(10) Rural community studies: Akhiok,	
20	Ambler, Angoon, Atka, Chignik, Chignik	
21	Lagoon, Chignik Lake, Cold Bay, Elim,	
22	False Pass, Goodnews Bay, Grayling,	
23	Gustavus, Ivanoff Bay, Kaltag, Karluk,	
24	Kiana, King Cove, Larsen Bay, Nikolski,	
25	Old Harbor, Ozinkie, Perryville,	
26	Shungnak, Tenakee Springs, Togiak,	
27	Unalaska	5,600,000

28 * Sec. 5. The sum of \$4,800,000 is appropriated from the general fund to
29 the Alaska Power Authority for the power production cost assistance fund

1 (AS 4.83.162).

2 * Sec. 6. Sections 1 and 2 of this Act take effect on the effective
3 date of an Act entitled "An Act establishing a power project (pment
4 fund in the Alaska Power Authority and amending the Alaska Power . Authority
5 Act; and providing for an effective date."

6 * Sec. 7. Sections 3 - 5 of this Act take effect immediately in accor-
7 dance with AS 01.10.070(c).

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MEMORANDUM

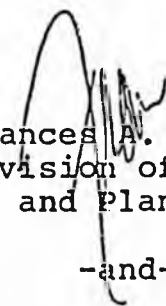
State of Alaska

TO: Governor Jay S. Hammond

DATE: March 18, 1981

FILE NO:

TELEPHONE NO: 465-3573

FROM:  Frances A. Ulmer, Director
Division of Policy Development
and Planning

SUBJECT: Alternative Energy
Systems, Cogeneration
and Conservation Fi-
nancing Proposal.

-and-

Ron Lehr, Director
Division of Budget and Management

-SUMMARY-

You have instructed your staff to develop alternatives and recommendations for State financial assistance for energy development. In making this request, you specifically instructed that individuals or small power producers receive equitable treatment with respect to any subsidies or other incentives which may be offered to utilities. Such equitable treatment not only insures fairness in the distribution of public funds for energy development, but also will tend to minimize distortion of economic choices in this rapidly developing sector of the State's economy.

I ALTERNATIVE ENERGY SYSTEMS

- A. Introduction - Alternative energy systems (AES) produce electric power using renewable sources of energy and/or unconventional but commercially proven technologies. AES can also produce non-electric energy such as space heat, and can conserve energy. Project size is usually small-scale. Common examples of AES include wind turbine generators, low head or micro hydro, biomass, solar, geothermal, etc.
- B. Purpose - To provide comparable and equitable State financial assistance to sponsors of residential or small business alternative energy systems. In recognition of the potential impact AES development may have on utility systems, research was conducted on federal and State opportunities for minimizing negative impacts. Mechanisms are available for insuring equitable and orderly development.

C. Financing Options For AES1. Power Project Equity Fund

- a. Recommendation - Non-utility sponsored alternative energy systems should be eligible for per capita equity grants, but only when the system produces electric power.
- b. Eligibility -
 - i. produces electric power from renewable energy source;
 - ii. based on commercially available technology;
 - iii. conforms to regulations and standards covering utility interconnection; and
 - iv. sponsored by households, groups of households.
- c. Mechanism - Administered by APA in conjunction with utility program. Grant amount limited to number of individual users of project if individuals not already counted for grant for different project.
- d. Funding - Lump sum \$2,000.0 appropriation to be allocated by APA.
- e. Pro's/Con's; Other Options - See full proposal.

2. Alternative Energy Loan Fund

- a. Recommendation - Amend the existing Alternative Technology and Power Resource Revolving Loan Fund to provide debt financing and debt restructure for alternative energy systems.
- b. Eligibility -
 - i. produces energy using renewable resources or unconventional technology or conserves energy;

- ii. based on commercially available technology;
 - iii. conforms to regulations and standards covering utility interconnection; and
 - iv. sponsored by households, groups of households, or small businesses.
- c. Mechanism - Major amendment to existing loan program to provide Energy Center assistance to Division of Business Loans, contracting for private sector loan administration, increased interest rates, and debt restructure.
- d. Funding - FY82 budget request for existing program is \$1,200.0 Given proposed increased scope and uncertain demand, \$5,000.0 is recommended.
- e. Pro's/Con's; Other Options - See full proposal.

II INDUSTRIAL COGENERATION

- A. Introduction - Industrial cogeneration is defined as the use of fuel to generate both useful thermal energy and electricity in a sequential process. Industries generating process steam or creating waste heat may have cogeneration potential. Examples include oil refineries, oil pipeline pump stations, saw mills, pulp mills, and seafood processing facilities.
- B. Purpose - To provide compatible and equitable financial assistance to sponsors of industrial cogeneration projects. Mechanisms exist to govern the interaction between cogenerators and utility systems when interconnected.
- C. Financing Options
- 1. Power Project Equity Fund
 - a. Recommendation - Utility sponsored industrial cogeneration projects should be eligible for per capita equity grants. Waste heat recovery and district heating projects should also be included.

- b. Eligibility -
 - i. sponsored by a utility;
 - ii. conforms to regulations and standards covering utility interconnection; and
 - iii. financed with revenue bonds.
- c. Mechanism - Administered by APA in conjunction with utility program. Grant for cogeneration deducted from total available to utility. Grant proceeds applicable only to electric power portion of project.
- d. Funding - No additional funding necessary.
- e. Pro's/Con's; Other Options - See full proposal.

2. Debt Assistance Loans

- a. Recommendation - Industrial cogeneration projects should be eligible for debt assistance loans if revenue bonds are used for project financing.
- b. Eligibility - same as above except utility sponsorship not required.
- c. Mechanism - Administered by APA in conjunction with utility program. Loans may cover only costs associated with electric power.
- d. Funding - No additional funding necessary.
- e. Pro's/Con's; Other Options - See full proposal.

III RESIDENTIAL ENERGY CONSERVATION

- A. Introduction - The State established a residential energy conservation program in 1980 providing energy audits, grants, and loans from the Residential Energy Conservation Fund. The federal government has provided a low-income weatherization program, but due to budget cutting this program may not receive federal funding in FY82. Results from both of these programs indicate

residential energy conservation is efficient and cost effective. Energy conservation improvements include insulation, weather stripping, and storm windows.

- B. Purpose - To address the most critical short-term energy problem faced by most Alaskans, the cost of space heating. Recommended financial assistance for residential energy conservation includes grants, rebates, and loans and State funding of the low income weatherization grant program.

C. Financing Options

1. Residential Energy Conservation Fund

- a. Recommendation - Provide funding level which allows completion of program within five years. This would cover 25,873 homes in FY82. A five year program would cover approximately 129,400 homes.
- b. Eligibility -
- i. all occupied residential buildings in Alaska; and
 - ii. building receiving weatherization funds ineligible for grants under this program.
- c. Mechanism - Administered by the Division of Energy and Power Development using subcontractors.
- d. Funding - FY82 funding of \$13,116.0. Five year program would require about \$79,565.4.
- e. Pro's/Con's: Other Options - See full proposal.

2. Low-income Weatherization Grants

- a. Recommendation - Provide State financial participation in the low-income weatherization program, in conjunction with administration of the Residential Energy Conservation Fund for operating efficiencies. Consider coordination with statewide energy planning and local or regional reconnaissance studies. About

5,080 homes would receive weatherization in FY82. A five year program would weatherize 25,400 homes.

- b. Elgibility - Low income households based on state-determined low-income.
- c. Mechanism - Administered by the Division of Energy and Power Development using subcontractors.
- d. Funding - FY82 funding of \$13,160.0. Five year program would require about \$80,344.2
- e. Pro's/Con's: Other Options - See full proposal.

Attachment

TO: [Ronald D. Lehr, Director
Division of Budget & Management

DATE: March 24, 1981

FILE NO:

Fran Ulmer, Director
Division of Policy Planning & Development

TELEPHONE NO:

FROM: George Matz, ^{COM} Program Analyst
Division of Budget & Management

SUBJECT: Energy Development Financing

Tom Singer, Policy Analyst
Division of Policy Planning & Development

The Governor has requested that we develop a plan for financing non-utility energy projects as a complement to the power project financing plan which has now been introduced (HB 310) to the Legislature. The intent of this plan is to provide all types of energy generation and conservation systems with nearly equal financial incentive from the State in order to minimize economic distortion of the project selection process. Following is a report which provides details as to the options which can be used to achieve this intent. The options are listed under three categories which include: 1) alternative energy systems, 2) industrial cogeneration and 3) energy conservation.

I. ALTERNATIVE ENERGY SYSTEMS

Purpose - The purpose of this addition to the Governor's Energy Financing Proposal is to provide a means whereby residential or small business alternative energy systems may receive state financial assistance which is comparable to the financial assistance available to utility power projects from the Power Project Equity Fund, Debt Assistance Loans, and the Power Completion Fund. Because of the size of the subsidy for utility power projects, non-utility alternative energy systems which can produce or substitute for electricity would seldom be economic to the end-user unless comparable financial assistance is provided. This would be true even if the actual costs of the system are considerably less than the actual costs of power from a utility.

Financial assistance being proposed for residential alternative energy systems includes grants from the Power Project Equity Fund for small power projects and loans from the Alternative Energy Loan Fund for energy systems which utilize a renewable source of energy. Financial assistance for small businesses includes only loans from the Alternative Energy Loan Fund. The intent of the financial assistance is to provide funding for alternative energy systems which are based on commercially available equipment but not to fund research, development or demonstration projects.

Utility vs Non-Utility - The impact on utilities from non-utility power systems deserves special attention. Two situations are:

1. Non-utility power systems which are connected to a utility grid in order to sell surplus power to the utility and to purchase power when needed.

2. Utility customers who develop their own power system becoming totally self-reliant in meeting their power needs.

Regarding the first situation, the federal Public Utility Regulatory Policies Act of 1978 (PURPA) removes the institutional barriers which have prevented the non-utility or "small power producer" (and cogeneration facility) from competing with a utility. PURPA requires an electric utility to purchase from and sell electric energy to qualified small power production facilities that are not owned by utilities. The "rates for such purchase:

1. shall be just and reasonable to the electric consumers of the electric utility and in the public interest, and
2. shall not discriminate against qualifying cogeneration or qualifying small power producers" and
3. require the qualifying cogeneration or qualifying small power producer to produce electric energy at a rate which is less than the "incremental cost to the electric utility of alternative electric energy" (the buyers avoidance cost)

The Act interprets "just and reasonable to the electric consumers of the utility" in a manner which looks to protecting the interest of the electric consumer in receiving electric energy at equitable rates.

The Federal Energy Regulatory Commission (FERC) has promulgated some rather complex regulations regarding the criteria for qualification that are to be used by state public utility commissions. However, the State of Mississippi has successfully challenged PURPA in District Court claiming that the Act is unconstitutional as an infringement of the prerogative of the state. FERC's response to this is to continue the program but at the discretion of the state. To FERC's knowledge, only the State of Mississippi does not intend to comply with PURPA.

State financial assistance to the small power producer adds to the incentive created by PURPA.

The second situation (self-reliant systems) is not directly affected by PURPA but compliance with relevant APUC regulations (which may be promulgated this spring) could be used as a condition to a grant from the Power Project Equity Fund.

The combination of the two situations could result in a wide range of economic impacts which are described below.

1. A substantial number of utility customers become mostly self-reliant in electrical energy generation, thereby reducing the utilities average energy load and generating efficiency. However, they remain hooked-up for standby power, thereby maintaining or increasing the potential peak load and the reserve capacity that the utility must maintain. This could result in higher rates to remaining customers.

2. A substantial number of utility customers become entirely self-reliant in electrical energy generation and opt-out of the utility system. This reduces both the average energy demand and the peak demand, but leaves the utility with the cost of unused generating capacity. This may be a temporary problem to a utility which is experiencing rapid growth or a long term problem to a utility with little or no growth. Either way, fixed costs would be spread over fewer customers and with fossil fueled generators, operating efficiencies may be less and fuel surcharges greater.
3. The utility may be planning an increase in its generating capacity. The development of self-reliant alternative energy systems may be more cost-effective to the user and the utility than conventional generating systems. Rate increases required to finance conventional generating systems could be avoided.
4. Development of non-utility alternative electrical energy systems may reduce utility peak loads which could reduce fuel surcharges and capital expenditures for reserve capacity.
5. Development of non-utility power systems could delay or eliminate the need for additional utility generating capacity and reduce peak load, resulting in more cost-effective power and more stable costs.

Because every situation is unique, it is impossible to generalize about impact scenarios. Impacts would have to be determined on a case by case basis.

Negative impacts to the utility consumer from connected non-utility power producer should be prevented by:

1. PURPA/APUC regulations which prohibit the hookup of non-utility power systems which are not in the public interest.
2. PURPA/APUC regulations which permit hookup of the non-utility power producer but prohibit double dipping (i.e., a system receives the benefit of a direct grant plus the service area grant.)
3. If APUC decides not to promulgate PURPA regulations, the utility could decide what action best meets their interest and presumably the public interest.

Preventing negative impacts (i.e. demand reduction) from self-reliant customers who opt-out of the utility system is a more ambiguous situation. Options include:

1. AS 42.05.701 defines a public utility as any group of 10 or more customers who purchase a service thereby requiring an APUC certification of convenience and necessity. The APUC could prevent uneconomic competition with an existing utility by enforcing certification requirements where applicable.

2. "Double dipping" could be prevented by requiring a higher hook-up charge if an opt-out customer decides, at some later time, to once again hook into the utility.
3. The entire problem can be prevented by making non-utility power producers ineligible for equity grants if the system is located within a utility service area. However, almost 99% of the States' population lives in communities which have public electric utilities. Not providing equity grants to non-utility power systems would contradict the goal of providing comparable state financial assistance to all power producers.

POWER PROJECT EQUITY FUND

Recommendation - Amend HB 310 to provide a means whereby a non-utility power project can receive a grant from the Power Project Equity Fund.

Eligibility - A non-utility power project, located in Alaska, can qualify for a grant from the Power Project Equity Fund if:

1. The power project is predominantly dependent on the use of a renewable source of energy.
2. The power project is based on commercially available technology.
3. The power project, if connected to a regulated utility, complies with APUC regulations regarding PURPA.
4. The power project, if connected to an unregulated utility, complies with APA grant stipulations regarding PURPA.

Mechanism - Grant applications, including design and cost details, will be submitted to the APA. The APA will determine the technical viability of the project and the amount of grant for which the project is eligible. The amount of the grant will be determined by the number of residents who are committed to using power from the project providing that the per capita subsidy for this service area has not been previously committed either to a utility via a financial plan for a power development project or to other non-utility projects for the same residents. The amount of the grant cannot exceed the cost of purchasing, constructing and installing the project nor be applied to operating, maintenance or fuel costs. The APA will withhold payment of 25% of the grant until it receives notification that the project has been completed.

Funding - An appropriation must be made from the Power Project Equity Fund before grants can be awarded. Since it would not be practical to appropriate the grant for each non-utility project, \$2,000,000 will be appropriated in FY 82 to non-utility projects to be allocated by the APA. This appropriation will be continuing.

Pros:

1. Provides comprehensive and equitable access to Power Project Equity Fund grants. Not providing grants to non-utility power projects could preclude as many as 71 communities (total population of 5,500) which do not have centralized power systems, from receiving

grants.

2. A non-utility power project may be more cost-effective than utility power, but without comparable State financial assistance it might not be competitive.
3. Grants to non-utility power projects can enhance the development of alternative technology in Alaska and provide an incentive to utilities to improve generating efficiencies.

Cons:

1. Utilities may not favor non-utility projects having access to the Power Project Equity Fund since this could reduce the size of their grant and may add an element of uncertainty to financial planning.
2. Non-utility projects may be more difficult to assess and audit than utility projects.
3. Although there are means to mitigate problems that could arise when a non-utility project is developed within a utility service area (see PURPA section for discussion) some problems are inevitable. An absolute solution to the problem would be to not allow grants from the Power Project Equity Fund to uncertified utilities.
4. Non-utility power projects could receive a grant plus the benefits of the utilities grant unless prevented from doing so by hook-up charges.

Other Options:

1. Uncertified utilities are not eligible for Power Project Equity Fund grants.
2. Only individuals who do not reside in a utility service area (about 5,500 people) are eligible for Power Project Equity grants.

ALTERNATIVE ENERGY LOAN FUND

Introduction - The Alternative Technology and Power Resource Revolving Loan Fund was established during the 1980 Legislative session. The program provides loans for the purchase, construction and installation of alternative energy systems which are more efficient, less costly, and less energy intensive than conventional energy systems. Alternative energy systems can be used for a wide variety of energy end-uses, such as electricity, heat or transportation. The program terminates June 30, 1984. Loans may not exceed \$10,000 or have a term longer than 20 years. The interest rate is set at 5% (until Jan 1, 1984) and principal and interest payments are returned to the fund.

Recommendation - Amend the Alternative Technology and Power Resource Revolving Loan Fund to 1) improve the technical assessment of loan applications 2) revoke the loan limits 3) increase the interest rates and 4) reduce administrative costs.

Eligibility - The only clear eligibility requirements given by the present statute is that loans be used "to develop means of energy production utilizing energy sources other than fossil or nuclear fuel." The Eligibility criteria should require that alternative energy systems be economically feasible and based on commercially available technology. Also, if the alternative energy system will generate enough surplus electricity to sell to a regulated utility, it should be in compliance with PURPA regulations. Only projects for residential buildings and small businesses are eligible for loans.

Mechanism - The Alternative Technology and Power Resource Revolving Loan Fund is renamed the Alternative Energy Loan Fund and has no termination date. Principal repayments and interest payments shall return to the general fund rather than revolve.

The Division of Business Loans will contract with the Alaska Energy Center for a technical and economic assessment of each loan, and contract with commercial lending institutions or title companies for the commercial credit search, loan closing and loan servicing.

The current loan limit of \$10,000 is revoked. Principal and interest payments may be deferred or graduated providing that the present value of the principal is not reduced. This provision is comparable to debt assistance loans for bonded projects. The principal of the loan shall not exceed 90% of the value of the collateral. The term will not exceed 75% of the useful life of the system. The interest rate shall be the same as the most recent APA revenue bond interest rates.

Funding - FY 81 funding was \$600,000 and the FY 82 budget request is \$1,200,000. The demand for alternative energy loans is unknown but sufficient funds should be provided to meet the expanded purpose. An increase to \$5,000,000 has been proposed.

Pros:

1. For small-scale energy projects which can't be financed with bond proceeds, the Alternative Energy Fund provides a source of debt capital with repayment assistance comparable to the Debt Assistance Loans Available to utilities.
2. Amendments to the loan conditions are more consistent with the Governor's policies.
3. Technical and economic assessment by Alaska Energy Center can improve the effectiveness of the loan program.
4. Contracting with the private sector for the credit search, loan closing, and servicing of the loan should reduce administrative costs, particularly with small and geographically dispersed loans.
5. Removing loan limit should allow for a greater variety of eligible energy systems.

Cons:

1. Increasing the interest rate will reduce the attractiveness of the loan program.
2. The loan program will need a yearly appropriation and not have the security of a revolving fund.

Other Options

1. Transfer entire loan program to Alaska Energy Center.
2. Transfer entire loan program to APA.
3. Do not contract out technical and economic assessments or credit search, loan closing and loan servicing but change the terms.
4. Do not make any changes to loan program.
5. Technical assessment done by the Division of Energy & Power Development (DEPD). See attached letter.

II. INDUSTRIAL COGENERATION

Introduction - Industrial cogeneration is defined as the use of fuel to generate both useful thermal energy and electricity in a sequential process. When an industry uses process steam, the waste heat can either be disposed of, often resulting in thermal pollution, or beneficially used to generate electricity. Usually, the waste heat amounts to a substantial percentage of the BTU's consumed by the facility. Until recently, if the conversion of waste heat to electricity resulted in surplus power for the industrial facility it was unlikely that a utility would be interested in purchasing it. However, because of the federal Public Utilities Regulatory Policies Act of 1978 (PURPA), utilities are now required to purchase and sell power to qualified cogeneration facilities. The purchase of power is required only at a price which is less than the buyers avoidance cost. On a national scale industrial cogeneration is expected to make a substantial contribution to the amount of new generating capacity that will be developed. Although Alaska is not considered to be heavily industrialized, its oil refineries, oil pipeline pump stations, sawmills, pulp mills and fish processing plants provide significant opportunity for the development of industrial cogeneration. Converting waste heat into electricity could be cost-effective and benefit both the industry and the consumer.

Purpose - The purpose of this addition to the Governors Energy Financing Proposal is to provide State financial assistance for qualified industrial cogeneration facilities which is comparable to the State financial assistance that a utility power project can receive. Without equitable treatment the project selection process would be distorted by the substantial subsidy that the utility power project receives. If this occurs, industrial cogeneration, even if it were more cost-effective, would seldom be a financially attractive option. The recommended State financial assistance for industrial cogeneration consists of grants from the Power Project Equity Fund under certain conditions and Debt Assistance Loans.

POWER PROJECT EQUITY FUND

Recommendation - Amend HB 310 to allow grants from the Power Project Equity Fund to industrial cogeneration facilities which are sponsored by a utility (Also amend HB 310 to allow utilities to use grants from Power Project Equity Fund for waste heat and district heating projects.)

Eligibility - To receive a grant, an industrial cogeneration facility must comply with PURPA regulations and, to meet a public purpose, must be sponsored by the public electric utility which serves the facility.

Mechanism - Identical to the Power Project Equity Fund. A grant to a cogeneration facility will be deducted from the total grant available to that service area. The amount of the grant cannot exceed that portion of the capital costs which is equivalent to that portion of the energy which is to be sold to the utility.

Funding - No additional funding is needed.

Pros:

1. Reduces the distortion that a substantial subsidy for utility power projects could have on the project selection process.
2. Provides an incentive for cost-effective cogeneration at no extra cost to the State.
3. Utilization of waste heat should increase power generation efficiencies and reduce actual costs as well as external costs (i.e. pollution).

Cons:

1. Power from industrial cogeneration could increase the financial difficulties being experienced by proposed hydro projects which have excess capacity.
2. Unless the industrial facility operated 24 hours a day, industrial cogeneration could not be considered as base load.
3. The life cycle of industrial cogeneration may not be as long as conventional power generation systems.

Other Options

1. Industrial cogeneration is not eligible for grants from Power Project Equity Fund.

DEBT ASSISTANCE LOANS

Recommendation - Amend HB 310 to allow industrial cogeneration facilities to qualify for a Debt Assistance Loan.

Eligibility - Industrial cogeneration facilities which comply with PURPA regulations and are financed by revenue bonds are eligible for a Debt Assistance Loan. Utility sponsorship is not required.

Mechanism - A financial plan for the industrial cogeneration facility must be submitted to the APA which then treats this request in the same manner as a utility loan. The amount of the loan can not exceed that portion of the capital costs which is used to generate power for the public utility.

Funding - No additional funding required for FY 82.

Pros:

1. Reduces the distortion that a substantial subsidy for utility power projects could have on the project selection process.
2. State loan would mostly be an investment and increase revenues in future years when oil revenues would be declining.
3. Utilization of waste heat should increase power generation efficiencies and reduce actual costs as well as external costs (i.e. pollution).

Cons:

- 1 - 3 are the same as the Cons for the Power Project Equity Fund.
4. The Debt Assistance Loans do not return to the State 100% of the present value of the principal.

Other Options

1. Provide loans via AIDA
2. Provides no loans for industrial cogeneration.

III. ENERGY CONSERVATION

Purpose - The purpose of this addition to the Governors Energy Financing Program is to address the most critical short-term energy problem faced by most Alaskans; the cost of space heating. A recent report ("The Impact of Rising Energy Costs for Rural Alaska") by ISER states that 77% of the energy costs of residents in rural Alaska is spent on space heating, which indicates the magnitude of the problem.

Financial assistance proposed for energy conservation includes acceleration of the Residential Energy Conservation program and State participation in the low income Weatherization program. A residence could only receive financial assistance from one program.

RESIDENTIAL ENERGY CONSERVATION FUND

Introduction - The Residential Energy Conservation Fund was established during the 1980 Legislative Session. It provides residential buildings with 1) an energy audit for which the resident pays no more than \$10, 2) a grant of up to \$300 for single-family dwellings or \$200 for multi-unit dwellings to pay for the conservation improvements as determined by the energy audit and 3) 5% loan (until January 1, 1984) of up to \$5,000 for residential energy conservation improvements. The grants are based on a

7 year payback and the loans require a 10 year payback. The program requires the development of audit standards as well as the training and certification of auditors. FY 81 funding includes \$1,484,400 for energy audits and \$3,258,700 for refunds and grants. The audits and grants became available in December 1980 and meet with substantial response throughout Alaska. Funds for the program are now depleted, but a supplemental for \$5,288,600 has passed the House. The program has trained about 236 certified auditors who have conducted approximately 7,700 audits. The average cost has been \$175 per residence. The average grant has been \$275 per residence.

Recommendation - Provide funding which allows completion of the Residential Energy Conservation Program within five years.

Eligibility - All occupied residential buildings in Alaska would be eligible for an energy conservation audit and grant except those which have received benefits from a State sponsored weatherization program. All occupied residential buildings would be eligible for the loan program.

Mechanism - DEPD will continue to manage the program. The allowable cost for the grant is updated by the most relevant Consumer Price Index. To encourage the cost-effectiveness of energy audits, the State will rebate up to 90% of the cost of the energy audit. The remainder of the costs are to be paid by the resident.

Funding - FY 82 funding for this option includes:

Energy Auditor Training	\$150,000
Energy Audit Contracts	4,012,000
Refunds/Grants	7,762,000
Other costs	<u>1,192,000</u>
TOTAL	\$13,116,000

Approximately 25,873 homes would receive energy conservation audits and grants with this level of funding.

A five year program would require funding at approximately \$79,565,400 which includes an inflation factor of 10%.

Pros:

1. Provides equitable relief to an energy conservation problem that impacts virtually all Alaskans.
2. Provides a significant number of jobs, particularly in the housing industry, throughout the State. Small vendors, rather than large contractors, receive most of the economic benefits.
3. The private sector will perform most of the effort, thereby minimizing increases in direct State employees.
4. Provides a long-term improvement by reducing the cost of heating to Alaskans.

Cons:

1. Program requires a significant outlay of State funds with no financial returns.
2. Home owners receive the benefits of capital improvements when selling the home but not home renters.
3. The program will require good management to avoid abuses.

WEATHERIZATION

Introduction - The State of Alaska has operated a federally funded weatherization program since 1977. The purpose of the program is to reduce heat loss and the cost of space heating in homes occupied by low income persons. The program provides energy conservation improvements, such as insulation, weatherstripping, and storm windows, at no cost to the residents. Most of the recipients of this program live in rural Alaska.

The future of the US Department of Energy (DOE) sponsored weatherization program is uncertain. The budget cuts proposed by President Reagan eliminates any direct funding for the program in FFY 82. Weatherization grants may be included in FFY 82 block grants but probably at a much reduced level of funding. Also, CETA workers, who provide the bulk of the weatherization labor force, will no longer be available to the program. Although federal funding for Alaska's program for this summer will not be affected by these cuts, the cost of the program will be increased without CETA labor.

The U.S. Department of Housing and Urban Development recently announced that it will spend about \$32 million to improve inadequate native housing it had built in rural Alaska. Many homes are to be totally rebuilt or replaced. Despite the amount of money to be spent, only 347 homes will be affected by the program which is a small percentage of homes eligible for weatherization improvement.

Present Program

Eligibility - Only low-income persons, as determined by federal poverty guidelines, are eligible for weatherization grants. The program's low income guidelines for Alaska, which includes a 25% cost-of-living adjustment, are given below.

<u>Size of Family Unit</u>	<u>Non-Farm Family</u>	<u>Farm Family</u>
1	\$5,950	\$5,113
2	7,850	6,713
3	9,750	8,313
4	11,650	9,913
5	13,550	11,513
6	15,450	13,113

Operation - The weatherization program was initially sponsored by the federal Community Services Administration (CSA) and managed, in Alaska, by the Department of Community and Regional Affairs. When DOE began administering the program, management was transferred to DEPD by administrative order. The attached 4A provides budgetary details on the present program.

The thrust of the weatherization program, that being energy audits followed by purchase and installation of conservation measures, is accomplished by subcontractors or local governments. Regional non-profit organizations such as RurALCAP or the Fairbanks Town and Village Association are typical subcontractors. DEPD provides administration, monitoring of and technical assistance to the subgrantees. Each of these activities are controlled by DOE regulations.

Three problems have been encountered in administering the weatherization program.

1. DOE regulations allow no more than 10% of the states allocation to be spent on state and subcontractor overhead. With smaller contracts, there is not enough overhead to meet minimal costs and some subcontractors have decided to no longer participate.
2. DOE regulations restrict certain repairs and improvements which could substantially reduce heat loss.
3. The income guidelines are disproportionately low for Alaska, particularly for rural Alaska.

Accomplishments - The following chart provides details on accomplishments of the weatherization program.

<u>Year</u>	<u>Homes Weatherized</u>	<u>Individuals Assisted</u>	<u>BTU's Saved</u>
1977	435	1817	231.3 x 10 ⁹
1978	528	2115	269.2 x 10 ⁹
1979	559	2055	261.6 x 10 ⁹
1980	1306	3975	506.0 x 10 ⁹
TOTAL	2828	9962	1,268.1 x 10 ⁹

Based on the type of structure and location, the cost of labor and materials for weatherization is limited to \$1,000 - 1,800 per home. The average cost per home in Alaska has been \$1,550.

Post-weatherization audits of several homes in the Anchorage area indicate that these conservation measures reduce heat loss by about 1/3, which amounts to a savings of about \$1,000 a year for an oil heated home. For rural areas, it is estimated that the heat loss is reduced by at least 1/3 and as much as 2/3. Since the price of oil is higher in the rural areas, the fuel savings is greater than that experienced in Anchorage.

Based on federal poverty guidelines and the preliminary 1980 census, DEPD estimates that 25,400 homes in Alaska qualify for weatherization. About 2/3 of these homes are in rural areas.

Funding - Federal funding for Alaska's weatherization program has been as follows:

<u>Date Awarded</u>	<u>Amount of Grant</u>
11/77	\$318,000
3/78	516,400
9/79	1,247,200
3/80	1,102,810

As of January 1, 1980, carry over and new funds amount to \$2,465,329 which should be sufficient to continue the program during this years construction season.

Future Program

Options - The State has three options for continuing the weatherization program. These are:

1. DOE program without State funding. The federal program will not continue beyond FFY 81.
2. State funding as provided by DEPD
3. State funding as proposed by Alaska Regional Energy Assoc. (AREA)

The DEPD option is recommended. Comparative features of each option are provided below. Costs are for the entire program.

<u>Feature</u>	<u>DOE</u>	<u>DEPD</u>	<u>AREA</u>
Program Years	1	5	4
Income Eligibility (family of 4)	\$11,650	\$15,273	None
Area Covered	Statewide	Statewide	Rural
Homes Improved	750	25,400	40,218
\$ Limit per Home	\$1,800	\$2,200	optimal investment
Admin. Costs	**\$500,000	*\$7,304,000	\$920,000
Energy Audits	----	*\$4,309,500	\$7,720,000
Program Costs	**\$2,000,000	*\$68,230,700	\$80,440,000
Total Funding	**\$2,500,000	\$80,344,200	\$89,080,000
Funding Source	Fed Grants	GF	GF
Other Comments	Possibly no funding for FFY 82. Does not account for CETA cut-backs	Part of Res. Energy Cons. Fund. Accounts for CETA cut-backs.	Proposal also includes energy plans and recon studies. Does not seem to include State agency admin. costs or account for CETA cutbacks.

*includes a 10% inflation factor

**approximate funding to be expended 1981 construction season

DEPD Program - The intent is to include State participation in the weatherization program as part of the ongoing Residential Energy Conservation Fund. This would allow logistical coordination between the low-income weatherization audits and grants and the energy conservation audits and grants available to all homes in the State. FY 82 funding for this option, which benefits 5,080 houses is:

Energy audits	\$ 788,000
Weatherization	11,176,000
Administration	1,196,000
TOTAL	\$13,160,000

AREA Program - AREA is an umbrella organization comprised of regional non-profit Native organizations. Their proposal is to use state agencies to combine the energy audits, weatherization improvements, community energy assessments for the long term energy plan, and APA reconnaissance studies into one effort in order to improve program coordination and cost effectiveness (particularly with transportation of materials). Regional teams would conduct the effort on a village by village basis, selecting the most needy villages first. Residents living in the Anchorage, Mat-Su, Kenai, Fairbanks North Star and Juneau Boroughs would not be eligible for this program. The total cost of this program is estimated to be \$101,530,000. However, these cost estimates were made before the CETA cutback which amounts to about a 16% reduction in the number of homes that can be weatherized for this level of funding. Because of the CETA cutbacks, AREA may provide labor for only the disabled or aged recipients. Other recipients would have to provide their own labor but with AREA supervision to ensure proper workmanship. FY 82 funding for this option is not broken out.

DOE Options

Pros:

1. Requires no State funding
2. Provides weatherization improvements to rural and urban residents
3. Detailed regulations regarding weatherization practices reduces the potential for abuse
4. Has provided, through CETA, substantial seasonal employment opportunities throughout Alaska

Cons:

1. Federal funding will probably not continue beyond FFY 81.
2. Regulations have been too rigid and not well suited for Alaska, particularly the rural areas
3. Although the program has been effective, its pace has not been commensurate with the number of eligible recipients.

DEPD Options

Pros:

1. Expedites program so that all eligible recipients receive relief within the next few years. It would be apparent that the State is playing an active role in solving energy problems.

2. State participation can improve logistical coordination and cost-effectiveness, particularly with other programs.
3. The State can promulgate regulations better suited to Alaskan conditions (i.e., income guidelines) than present federal regulations.
4. Benefits low-income residents in both urban and rural areas.
5. Provides an opportunity to demonstrate nationally how the State of Alaska is using its oil wealth in a responsible manner.

Cons:

1. State investment in weatherization would be expensive and with no financial returns.
2. Low-income residents would be receiving greater assistance than residents who receive Residential Energy Conservation grants.
3. Good program management and timely response will be needed to insure effectiveness and no abuse which may be difficult for state agencies.

AREA Options

Pros:

1. Provides more comprehensive coordination by including the long term energy plan and reconnaissance studies.
2. Program would be very visible and assure rural residents that State is attempting to solve its energy problems.
3. Establishes regional program managers to assure better program direction.
4. Provides priority to most needy villages.

Cons:

1. Does not include urban residents.
2. Regional program managers may lead to another layer of bureaucracy.
3. Does not distinguish between low-income and other residents
4. State would not receive a financial return on this investment.
5. Does not appear to include all costs, particularly state agency administrative costs.

RESIDENTIAL ENERGY CONSERVATION PROGRAM

5 YEAR PLAN

PROJECT	FY 82	FY 83	FY 84	FY 85	FY 86	TOTALS
Energy Auditor Training	150.0	150.0	150.0	-	-	450.0
Energy Audit Contracts	4,800.0 (30,953 audits)	5,280.0 (30,953 audits)	5,808.0 (30,953 audits)	6,388.8 (30,953 audits)	7,027.7 (30,953 audits)	29,314.5 (154,765 audits)
Refunds/Grants	7,761.9	8,538.1	9,391.9	10,331.1	11,364.2	47,387.2
Low-Income Weatherization	11,176.0 (5,080 homes)	12,293.6 (5,080 homes)	13,523.0 (5,080 homes)	14,875.3 (5,080 homes)	16,362.8 (5,080 homes)	68,230.7 (25,400 homes)
Subtotal	23,887.9	26,261.7	28,872.9	31,595.2	34,754.7	145,372.4
10% State Admin. Costs	2,388.7	2,626.2	2,887.3	3,159.5	3,475.5	14,537.2
Total Budget	26,276.6	28,887.9	31,760.2	34,754.7	38,230.2	159,909.6
Total Households Assisted	30,953	30,953	30,953	30,953	30,953	154,765

Assumption: 1. A 10% inflation factor has been added to FY 83-86.
 2. The program is budgeted to meet 100% of estimated need.

Note: Low interest loans have not been addressed in this Plan. However, the moderate income household in Alaska should be considered when developing any residential energy conservation program, especially since a major portion of funds will be expended in grants to low-income persons.

Benefits: Aside from the obvious benefits to the residents of cost savings and the conservation of fuel, this program will provide considerable benefits to Alaskans in other ways. The private business sector will benefit by (1) receiving audit contracts; (2) performing weatherization work on homes; and (3) increased demand for materials. Local contractors and suppliers will be used whenever possible. Local governments and non-profit organizations will participate, thereby, creating local expertise which would otherwise not be available.

CATEGORY: DEVELOPMENT
 AGENCY: DEPARTMENT OF COMMERCE & ECONOMIC DEVELOPMENT

PROGRAM: ENERGY & POWER DEVELOP
 SUB-PROGRAM: WEATHERIZATION

EXPENDITURES & FUNDING	(01) 80 AUTH	(02) 80 FINAL	(03) 80 ACT	(04) 81 AUTH	(05) 81 SUPL	(06) 81 RP	(07) 82 CONT.	(08) 82 ADD.	(09) REQUEST	(10) GOVERNOR	(11) HOUSE	LE
01 PERS. SERV.				144.4			105.5	5.0	110.5	110.5		
02 TRAVEL			5.8	30.0			30.0		30.0	30.0		
03 CONTRACTUAL			13.4	52.3			56.5		56.5	43.1		
04 COMMODITIES			1.4	1.5			2.6		2.6	2.6		
05 EQUIPMENT			3.5	.3			.7		.7	.7		
06 LANDS/BLDGS												
07 GRANTS, CLMS			1132.9	2259.5			2000.0		2000.0	2000.0		
08 MISC.												
** TOTAL EXPEND			1157.0	2488.0			2195.3	5.0	2200.3	2186.9		
09 I-A TRANSFER												
10 FED. RECEIPT			1157.0	2488.0			2195.3	5.0	2200.3	2186.9		
11 G. F. MATCH												
12 GENERAL FUND												
13 PGM RECEIPTS												
14 OTHER FUNDS												
15 FULL-TIME			4.0	3.0			3.0		3.0	3.0		
16 PART-TIME												
17 TEMPORARY												
18 STAFF MONTHS			48.0	36.0			36.0		36.0	36.0		

00496

MEMORANDUM

State of Alaska

TO: George Matz
Program Analyst
Division of Budget and
Management
Office of the Governor

DATE: March 19, 1981

FILE NO:

TELEPHONE NO:

FROM: Clarissa Quinlan, Director
Division of Energy and
Power Development
Department of Commerce and
Economic Development

SUBJECT: Potential Changes in Adminis-
tration of Alternative Tech-
nology and Energy Loan Funds

It has come to my attention that a couple of options relating to changing the technical and economic assessment of the Alternative Technology and Energy Loan Funds are under consideration.

One of these would have the Division of Business Loans contract the work out to another agency with the needed technical expertise. The Alaska Energy Center and the Division of Energy and Power Development have both been mentioned.

As part of the division's public information program and its administration of energy conservation and alternative energy projects, individuals are currently on-staff with in-depth knowledge in a variety of subject areas ranging from solar to wind to energy efficient construction and design. Were adequate funding made available to the division to critique the technical and economic merits of specific applications, existing in-house staff could be used. This availability of a portion of these individuals' time relates to the likelihood of a major reduction or termination of the federal funding upon which they now rely. It is anticipated that this vacuum will be filled by other State funding.

Because of the division's existing capability to carry such reviews, it is requested that serious attention be given to this option. It must also be remembered that the Alaska Energy Center is still in a start-up phase, has just recently hired an executive director and has not yet determined its mode of operation.

CQ/jar3/6

November, 1980

8000520

RENEWABLE ENERGY DEVELOPMENT SOLAR HEATING, WIND POWER AND BIOMASS PROFILE



ALASKA ENERGY PROJECT
NCSL ENERGY PROGRAM

NOTE TO FILE:

For complete copy of this report see:
Legislative Reference Library document no. 8000520

National Conference
of State Legislatures

NOTE TO FILE:

For Complete Copy of this report see:
Legislative Reference Library document no. 8100390

STATE ENERGY

ORGANIZATION

Alaska Energy Project

NCSL Energy Program

National Conference of State Legislatures

November, 1980

RENEWABLE ENERGY
DEVELOPMENT
GEOTHERMAL AND
SMALL-SCALE HYDRO

SUPPLEMENT



NCSL ENERGY PROGRAM:
ALASKA

NOTE TO FILE:

For complete copy of this report see
Legislative Reference Library document no. 8000510

National Conference
of State Legislatures

NOTE TO FILE :

8000420

For Complete Copy of report See:
Legislative Reference Library document no. 8000420

November, 1980

ENERGY EMERGENCY PREPAREDNESS

ALASKA ENERGY PROJECT

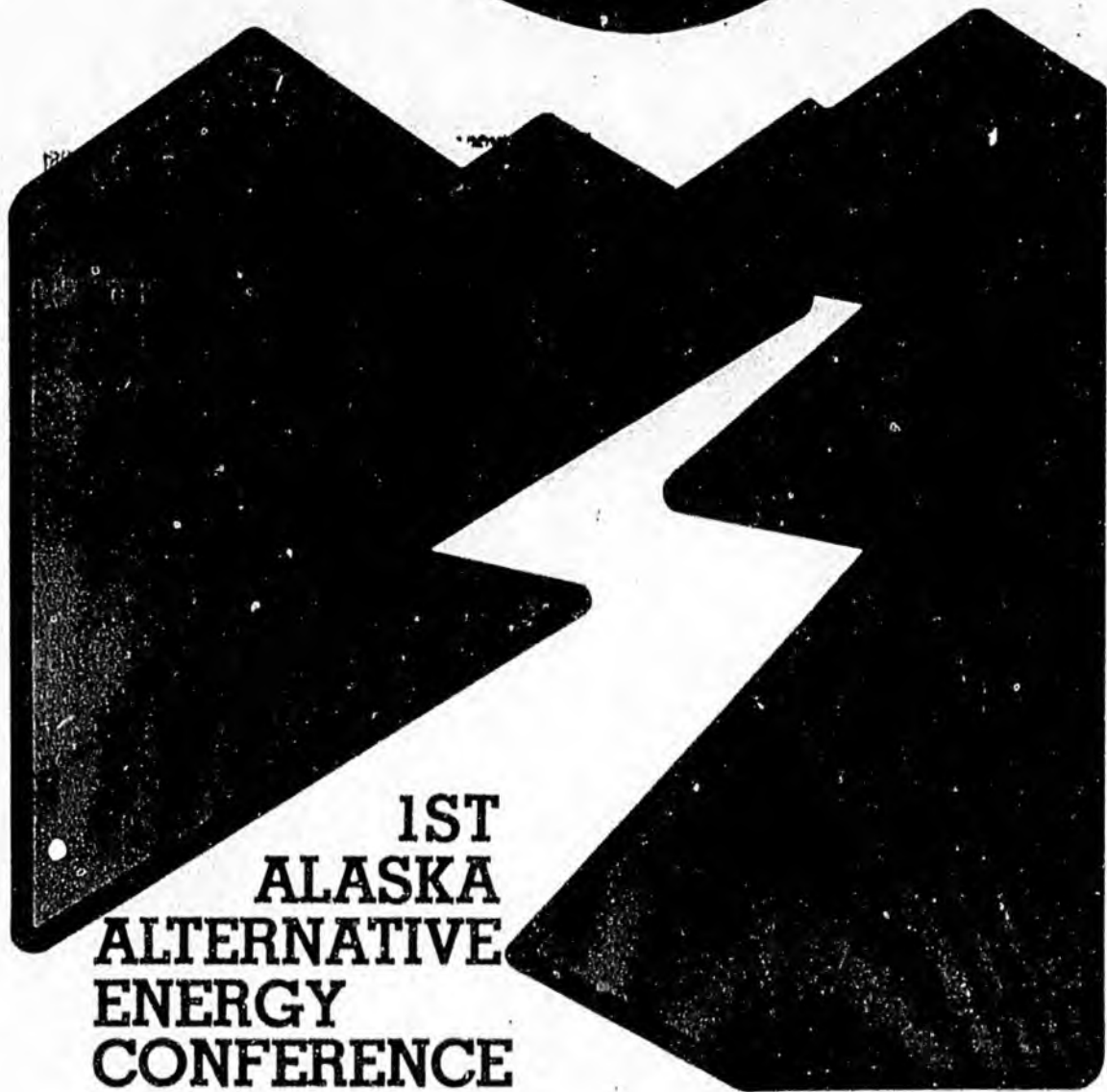
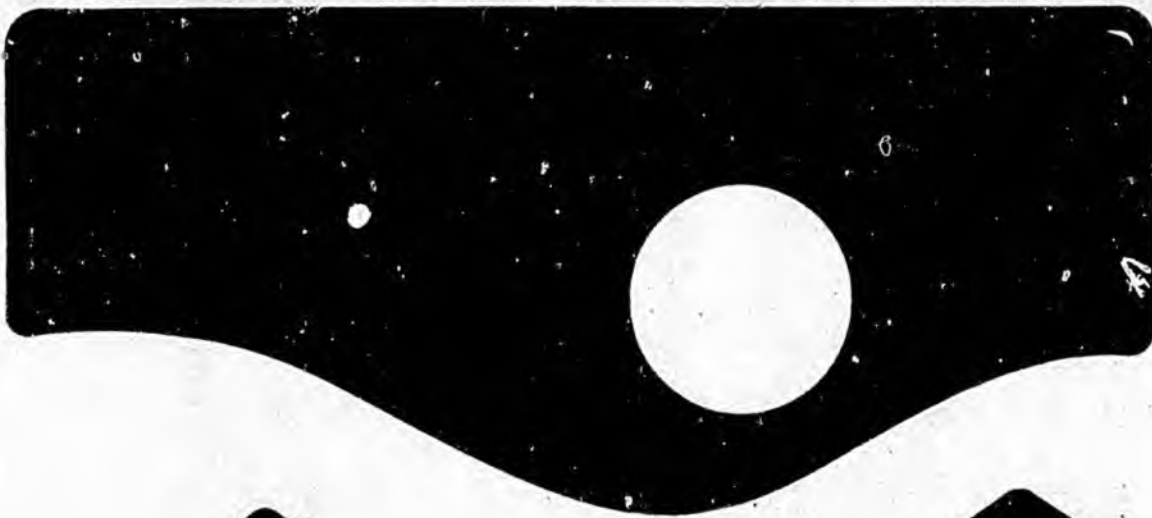
NCSL Energy Program

National Conference of State Legislatures

NOTE REGARDING THE FOLLOWING² FRAME ON MICROFILM:

COMPLETE DOCUMENT IS AVAILABLE IN ORIGINAL FILES
IN ALASKA STATE ARCHIVES. TITLE PAGE^S ONLY HAS
BEEN FILMED.

THE WIND BLOWS, WATER FLOWS, SUN SHINES:
ENERGY FOR AN ALASKAN LIFESTYLE



**1ST
ALASKA
ALTERNATIVE
ENERGY
CONFERENCE**

NOVEMBER 9 - 11

REGISTRATION AT UAA- CUDDY CENTER

SPONSORED BY THE ALASKA CENTER FOR THE ENVIRONMENT



**A Proceedings of the
First Alaska Alternative Energy
Conference**

November 9-11, 1979

Anchorage Community College

sponsored by:

The Alaska Center for the Environment

Proceedings are partially funded by a grant from the
Alaska Renewable Resources Corporation

AUDITORS TRAINED AS OF
JANUARY, 1982

CITY	CURRENTLY CERTIFIED	CERTIFIED/ NOT UPDATED	CURRENTLY CERTIFIED NOT ELIGIBLE TO CONTRACT	TOTAL
Anchorage	92	22	12	126
Auke Bay	1	4		5
Barrow	7	2		9
Bethel	5	1		6
Chugiak	2	1		3
College	8	1		9
Copper Center	1			1
Cordova	3	2		5
Delta Junction	1	1		2
Dillingham	1	3		4
Douglas	4			4
Eagle River	4	2		6
Ester	1			1
Fairbanks	73	35	4	112
Fort Wainwright		1		1
Haines	1			1
Homer	10	1		11
Indian	2			2
Juneau	17	8	2	27
Kenai	1			1
Ketchikan	9	6		15
Kodiak	15	2		17
Kotzebue	3			3
McKinley	1			1
Nenana	1			1
Nome	6	5		11
Palmer	17	5		22
Pelican	1			1
Petersburg	4			4
Portland Oregon (out of State)		1		1
Santa Cruz, Calif. (out of State)		2		2
Seward	3			3
Sitka	7			7
Soldotna	3			3
Sterling	3			3
Talkeetna	1			1
Togiak	1			1
Tok	1	1		2
Valdez	3			3
Wasilla	11	6		17
Willow	1			1
Wrangell				
TOTAL	327	112	18	457

RURAL ENERGY DEPARTMENT

R.O.F.

Alaska Regional Energy Association
Chairman Speaks Out on Rural Energy
Issues:

by Ron Olsen

Bob Brean, Chairman of the Alaska Regional Energy Association (AREA), will be participating on an energy panel with other State leaders at the upcoming Alaska Alternative Energy Conference in Anchorage on November 14th. Moderated by Lt. Governor Terry Miller, panelists will include: Lloyd Fernela, Director of the Division of Energy and Power Development; Senator Ed Dankworth; Representative Brian Rogers; Eric Yould, Director of the Alaska Power Authority; and Jim Scuby, Director of the Division of Policy Development and Planning. Entitled, "Forum on Energy Policy for Alaska," there should be a lively mix of energy ideas coming from this panel.

AREA delegates from 14 regional non-profit associations are the leading proponents of a coherent rural energy policy for the State of Alaska. Representing villages across Alaska, AREA meets periodically to exchange energy ideas, discuss energy issues and to fashion solutions to rural energy problems. AREA delegates then work with the people of their regions to advocate for solutions to those problems with appropriate government entities.

Recognizing the importance of the upcoming legislative session in Juneau, AREA delegates met in October to discuss their legislative priorities. AREA is calling for:

- 1) Regional based energy planning;
- 2) A comprehensive audit/weatherization energy conservation program for villages;

- 3) Energy for village appropriate economic development consistent with subsistence life styles;
- 4) Promotion of village scale agriculture;
- 5) Minimizing the impact of Outer Continental Shelf (OCS) leasing on villages;
- 6) Conservation measures for institutional buildings;
- 7) Expanding bulk fuel storage capability and amending the Division of Business Loans fuel loan program to better meet the needs of villages.

The next meeting of AREA will be in Anchorage, November 16-17. Delegates represent the following organizations:

- Aleutian/Pribilof Islands Assoc.
- Bristol Bay Native Association
- Central Council Tlingit-Haida Indians of Alaska
- Cook Inlet Native Association
- Copper River Native Association
- Kawerak, Incorporated
- Kodiak Area Native Association
- Koyukon Development Corporation TCC
- Mauneluk Association
- The North Pacific Rim
- North Slope Borough
- Nunam Kitlutsisti/ANCP
- Tanana Chiefs Conference TCC
- Upper Tanana Development Corporation TCC

ALASKA REGIONAL ENERGY ASSOCIATIONENERGY WORKSHOPSTATEMENT OF THE ISSUE

The dramatic rise in oil prices since 1973, the small, widely spread population, the high cost of living, and the rapidly rising price of transportation combine to help explain why energy costs so much in a village. Rural residents are forced to commit a large and rapidly increasing share of their income on energy and transportation. The very same source of Alaska's current large budget surpluses is ironically causing the most serious threat ever to the continued existence of remote rural Alaskan communities.

Unfortunately, state and federal agencies have been very narrow in their response to this crisis. They responded simply by expanding their welfare system. In certain rural communities more than 50% of the village income results from welfare payments.

METHOD OF DEALING WITH THE ISSUE

The Alaska Regional Energy Association (AREA) was formed in 1979 to serve as a clearinghouse for the exchange of energy information affecting rural Alaska, and to serve as a conduit for expressing the views of the 14 member non-profit associations on energy-related issues affecting their regions. With RURAL CAP's financial support and technical assistance, AREA has been meeting at least quarterly to accomplish this end. Specifically, the goal of the organization is to increase rural Alaskans' degree of control over energy resource decision-making which has a significant effect on the quality of life of residents of rural Alaska.

During the past year the Alaska Regional Energy Association's emphasis has been shifting from attention toward short-term crisis intervention responses like energy assistance and fuel loans toward longer-run solutions like capital assistance for energy production and conservation.

The workshop was conducted as a regular meeting of AREA, and was chaired by Bob Martin. Each delegate, representing a member non-profit native association or development corporation received a briefing packet in the mail several weeks before the meeting. The packet contained an analysis of the significant issues identified by AREA previously as potential legislative priorities, as well as copies of related bills and resolutions pending in the Alaska State Legislature. These packets were updated in Juneau the first day of the workshop to include the most current information available on each issue.

Several joint meetings were held with the Village Energy Workshop group to discuss and compare legislative priorities. Both groups listened to presentations by Representatives Brian Rogers, Terry

Gardiner and Joe Chuckwuk, and asked these House leaders on energy legislation many questions about their priorities for this year. Also, on the final day of workshops the two workshops met jointly to present their conclusions to each other.

BILL # or
SUBJECT

DESCRIPTION

17
ACTION

Village Energy
Reconnaissance &
Conservation
Program: SSHB 9

Reconnaissance &
Weatherization pro-
gram that will
provide funds to
weatherize every home
in rural Alaska

#1 priority
Resolution
(attached)

Power Production
Cost Assistance
Program

Subsidizes high cost
of electrical energy

motion passed
to support the
program and
expand it to
include co-
mmercial fac-
ilities.

Power Production
Cost Assistance
Program

Subsidizes high cost
of electrical energy

motion passed
that the 40¢/
kwh be region-
alized accord-
ing to the cost
of living.

Alaska Statute
46.11.030 (c)

Residential energy
audit grants and
loans

motion passed
to increase the
amount of ma-
terials made
available in
accord with
actual cost of
transportation
& materials in
rural Alaska

North Slope
Borough
Resolution
#6-81

Energy Conservation
Policy

motion passed to
endorse the
policy and
recommend that
other regions
adopt a similar
approach

North Slope
Borough
Resolution
#6-81

Energy Conservation
Policy

motion passed to
send the policy
to appropriate
state energy
agencies for use
as a model for
state policy on
energy conser-
vation

<u>BILL # or SUBJECT</u>	<u>DESCRIPTION</u>	<u>ACTION</u>
SB 25	Power Project Development Fund	motion passed to support both bills with amendments: to make the factors used to determine economic feasibility of a project set out in Section 5 be more realistic for the rural Alaskan area where the project is to be located and for the time when the project is to be built.
SB 26	Appropriation for Power Project Development Fund	
HB 289	An Act relating to the establishment of Regional Energy Authorities	motion passed to support the bill with an amendment to designate the 14 member non-profit organi- zations of the Alaska Regional Energy Association as eligible to form energy authorities
HB20 and HB21	Providing for the de- velopment of electrical service in rural areas and a special appropri- ation to the Department of Commerce and Economic Development for the Rural Electrification Fund	Motion passed to support both bills
CH001 SLA 1980	Rural CAP fuel loan program	motion passed to support the extension of the expiration date
SB166	An Act amending the eligibility qualifica- tions of an electric utility for power pro- duction cost assistance payable by the Alaska Power Authority	motion passed to support the bill
CSSB174 (Finance)	An Act making supplemen- tal appropriations to the Alaska Power Autho- rity for the Power Production Cost Assistance Program	motion passed to support the bill
CSHB 9	Relating to Departments and programs of State government which are concerned with energy	AREA supports provisions of this bill that would expand the responsibility of the Alaska Power Authority by substituting "energy" for "power" throughout their authorizing legislation

BILL # OR
SUBJECTDESCRIPTIONACTION

SSHB 9

Related to Departments
and programs of state
government which are
concerned with energy

AREA has established
the need for state
funding of regional
energy planners at
the regional non-
profit level. This
is an integral part
of the #1 priority
established by AREA:
the Village Energy
Reconnaissance &
Conservation Program.
This bill would be
an appropriate place
to authorize these
positions.

All of the issues and bills considered by the Alaska Regional Energy Association were rated as high priorities. The delegates identified the Village Energy Reconnaissance and Conservation Program, including full funding of the regional energy planners, as the #1 legislative priority of the organization.

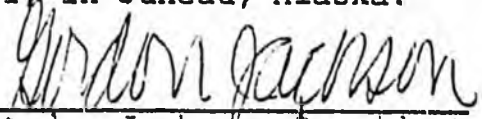
Rural Alaska Community Action Program, Inc.

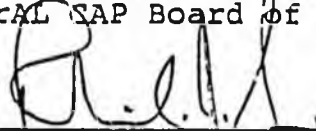
CPC RESOLUTION #81-9

- ENTITLED: Urging Full Funding for the Village Energy Reconnaissance and Conservation Program
- WHEREAS, energy costs of up to 50¢ per kilowatt-hour for electricity and \$3.00 per gallon for fuel oil are distressingly common in rural Alaskan communities, and
- WHEREAS, low-income residents of rural Alaska are unable to bear the impact of these high and steadily rising costs, and
- WHEREAS, the very existence of many communities is threatened by these excessive costs, and
- WHEREAS, state and federal welfare payments make up more than 50% of the total income of some rural communities, including a total of \$10 million per year statewide for direct energy welfare bill-paying assistance, and
- WHEREAS, the need for these energy welfare payments will continue to grow dramatically unless the state acts to lower the cost of energy in rural Alaska, without recourse to operating subsidies, and
- WHEREAS, agencies such as the Alaska Power Authority, the Division of Energy & Power Development, the Department of Community and Regional Affairs, the Institute for Social and Economic Research, the Alaska Regional Energy Association and Rural CAP have joined together to develop a program that would reduce household energy bills by an average of at least 30% per household statewide, and
- WHEREAS, the present value of the net energy savings from this program would be at least \$433 million in avoided energy costs over the next 20 years, and
- WHEREAS, every house in rural Alaska could be properly insulated to meet Alaskan climatic conditions by the fourth and final year of this program, and
- WHEREAS, local and regional non-profit contractors would be used, and local hire would be used exclusively in the installation of weatherization materials in local communities, and

- WHEREAS, this program would provide funding for regional energy planners, which are urgently needed to address regional energy problems, and
- WHEREAS, the reconnaissance studies in this program would gather vital data on the best mix of sources of energy generation, designed to reduce the long-term cost of energy produced in villages for heating, electrical needs and transportation; now, therefore be it
- RESOLVED: That the Alaska Regional Energy Association urges speedy passage by the Alaska State Legislature and the approval by the Governor of the Village Energy Reconnaissance and Conservation Program and be it further
- RESOLVED: That AREA urges the Alaska State Legislature and the Governor to fund this program at a level that will allow each homeowner in rural Alaska to install the optimal quantity of energy saving materials in his/her house over the next four years.

Adopted by the Delegates to the Citizens Participation Conference, March 19, 1981, in Juneau, Alaska.


 Gordon Jackson, President
 Rural CAP Board of Directors

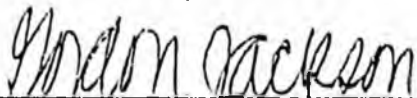

 Philip J. Smith, Executive Director
 Rural CAP

Rural Alaska Community Action Program, Inc.

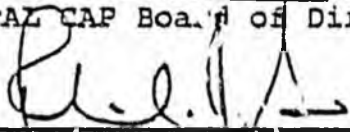
CFC RESOLUTION #81-10

- ENTITLED: "Urging Full Support of House Bill 289, Entitled, 'An Act Relating to Regional Energy Authorities,' with an Amendment to Designate the 14 Member Non-Profit Organizations of the Alaska Regional Energy Association as the Authorized Designees
- WHEREAS, AS 18.57 creates Regional Electrical Authorities limited to the production of electrical energy, and
- WHEREAS, the electrical generation represents only a small part of the energy requirements for rural Alaskans, and
- WHEREAS, there is a need for regional coordination to achieve local planning and development, and
- WHEREAS, there is an urgent need for appropriate alternative energy approaches; now, therefore, be it
- RESOLVED: That the Alaska Regional Energy Association urges speedy passage by the Alaska State Legislature and and the approval by the Governor of House Bill 289, an Act relating to Regional Energy Authorities.

Adopted by the Delegates to the Citizens Participation Conference, March 19, 1981, in Juneau, Alaska.



 Gordon Jackson, President
 Rural CAP Board of Directors



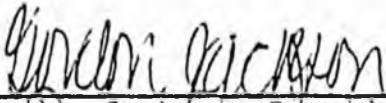
 Phillip J. Smith, Executive Director
 Rural CAP

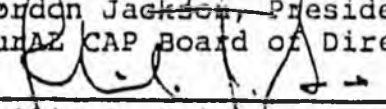
Rural Alaska Community Action Program, Inc.

CPC RESOLUTION #81-11

- ENTITLED:** Supporting Passage of Legislation Establishing the Power Project Development Fund and a Special Appropriation
- WHEREAS,** Energy costs of up to 50¢ per kilowatt hour of electricity and \$3.00 per gallon for fuel oil are distressingly common in rural Alaska communities, and
- WHEREAS,** low income residents of rural Alaska are unable to bear the impact of these high and steadily rising costs, and
- WHEREAS,** the very existence of many communities is threatened by these excessive costs, and
- WHEREAS,** power production development is essential to the reduction of energy costs in Alaska, and
- WHEREAS,** the Power Project Development Fund outlined in Senate Bill 25 provides funding for significant power project development in Alaska, and
- WHEREAS,** the funds may be used for reconnaissance and feasibility studies and power project finance plans, and
- WHEREAS,** the funds may be used for the cost of a project, including the costs of acquiring necessary licenses, preparing engineering designs, obtaining land and constructing the power project; now, therefore, be it
- RESOLVED:** That the Alaska Regional Energy Association supports the passage of Senate Bill 25 and 26, and be it further
- RESOLVED:** That the factors used to determine economic feasibility set out in Section 5 of SB 25 be more realistic for the rural area for which the project is being considered.

Adopted by the Delegates to the Citizens Participation Conference, March 19, 1981, in Juneau, Alaska.


Gordon Jackson, President
RURAL CAP Board of Directors

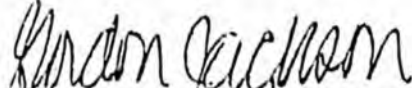

Philip J. Smith, Executive Director
RURAL CAP

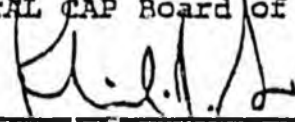
Rural Alaska Community Action Program, Inc.

CPC RESOLUTION #81-12

- ENTITLED: In Support of Continued Funding for the Power Production Cost Assistance Program
- WHEREAS, The cost of power production in rural Alaska is rising disproportionately to rural incomes, and
- WHEREAS, the cost of power is affected by regional circumstances, and
- WHEREAS, commercial facilities in some communities can assist in resolving community energy needs, and
- WHEREAS, financial support of the Power Production Cost Assistance Program is desirable; now, therefore be it
- RESOLVED: That the Alaska Regional Energy Association supports passage of Senate Bill 166 to expand the eligibility qualifications of utilities, and passage of CSSB 174, (\$1,050,000 appropriation), and be it further
- RESOLVED: That the Alaska Regional Energy Association recommends the 40¢/kwh cap on Power Production Cost Assistance be regionalized to reflect cost of living differentials.

Adopted by the Delegates to the Citizens Participation Conference, March 19, 1981, in Juneau, Alaska.


Gordon Jackson, President
RURAL CAP Board of Directors


Philip T. Smith, Executive Director
RURAL CAP

ENERGY WORKSHOPALASKA REGIONAL ENERGY
ASSOCIATION DELEGATES

Pat Petrivelli
 Mark Siegars
 Bob Martin

Pete Ezi
 Clyde Stoltzfus
 Phil Kaluza
 Tom Peterson
 Larry Jones
 Sharon Zandman Zeeman
 Will Theuer
 Bob Brean
 John Quirk
 Kent Grinage
 David Cartier

REPRESENTING

Aleutian/Pribilof Islands Assoc.
 Bristol Bay Native Association
 Central Council, Tlingit-Haida
 Indians of Alaska
 Cook Inlet Native Association
 Copper River Native Association
 Kawerak, Inc.
 Kodiak Area Native Association
 Mauneluk Association
 The North Pacific Rim
 Tanana Chiefs Conference
 Upper Tanana Development Corp.
 Koyukon Development Corporation
 North Slope Borough
 Nunam Kitlutsisti

RESOURCE PERSONS

Representative Brian Rogers
 Representative Terry Gardiner
 Representative Joe Chuckwuk
 Dave Gray
 Nancy Lord
 Bob Speed
 Dave Hutchins
 Alephe Morris

Alaska State Legislature
 Alaska State Legislature
 Alaska State Legislature
 Legislative Liaison
 Rep. Brian Roger's Office
 Rep. Terry Gardiner's Office
 Alaska Rural Energy Cooperative
 Senator John Sackett's Office

GUESTS

Lois Kaufman
 Mary Lee Jones

Energy Consultant
 Central Council, Tlingit-Haida
 Indians of Alaska

RURAL CAP STAFF

Bob Lchr
 Terry Berman
 Naomi Woloshin

Director, Rural Energy
 Energy Consultant
 Energy Researcher

VILLAGE ENERGY RECONNAISSANCE AND CONSERVATION PROGRAM

I. INTRODUCTION

One of the most critical issues facing rural communities in Alaska today is energy. The high cost of energy and the problems associated with delivery of energy have continually plagued rural communities, calling into serious question their continued existence beyond this decade. At present, these communities are dependent on annual operating subsidies of \$9.6 million to meet their energy needs.

The Village Energy Reconnaissance and Conservation Program offers a comprehensive approach to solving the rural energy problem. Its aim is to reduce both the need for annual operating subsidies and the cost of energy to the rural consumer through the use of energy conservation measures and a switch to energy resources that present the lowest possible cost to a given community or region. To this end, the Village Energy Reconnaissance and Conservation Program:

- o assesses the heat and power requirements for each rural community
- o surveys available energy resources and technology
- o develops village and regional energy plans
- o provides energy conservation programs for each rural community.

This program will produce several accomplishments. Rural citizens, utilities, regional organizations and the State of Alaska will have the information necessary to develop solutions for energy problems. On a practical level, the program audits and weatherizes every home in rural Alaska and begins the installation of low-cost energy systems, such as woodburning stoves, which provide alternatives to high-price oil. Weatherization alone results in a 30 percent or more reduction in energy consumption for space heating.

Additional benefits of the program include the creation of more than 350 seasonal construction jobs per year for three years and, through training programs that are part of this program, the creation of a labor force with energy-related skills.

In its coordinated and integrated approach to solving rural energy problems, agencies participating in the development of the VERC program are:

- o Alaska Power Authority
- o Division of Energy and Power Development
- o Alaska Energy Center
- o Institute for Social and Economic Research
- o Rural Alaska Community Action Program, Inc.
- o Regional non-profit organizations

The program operates through several existing agencies with a range of experience and expertise in the energy field.

Although several agencies are involved in the program, the citizens of rural Alaska play a central role in the program, particularly in implementing community programs. At the local level, the program takes a self-help approach, using the available local resources, whether those be labor, materials or, more importantly, ideas.

II. THE RURAL ENERGY PROBLEM

The rural energy problem is linked to reliance on petroleum products as sources of energy. Securing a winter's fuel oil supply is much more difficult and expensive in rural Alaska than in urban Alaska--especially in villages located in the Western, Northern, and Interior regions of the State. There is no road system connecting rural Alaska, and air charter for fuel deliveries is prohibitively expensive. Most villages which are accessible by barge may be reached only in the summer months (June through September). During the few months that the rivers are navigable, barges must deliver the yearly fuel supply for the entire village.

The villages must place orders for fuel supplies in early spring. If villages were to wait any longer, most barge companies would have committed their space to other more lucrative contracts for construction projects, canneries, and local school districts. Low water or early freeze-up may close rivers to barge navigation early enough that barge companies may not be able to complete their scheduled deliveries.

Alaskan villages must pay cash when they place their annual fuel order in the Spring, although village residents usually receive wage income through fishing, cannery work, local construction projects or firefighting only at the end of the summer.

While air charter transportation of fuel is a possibility, such transportation often triples the delivered cost of fuel. The table below shows the cost that three villages presently face for three types of deliveries.

<u>Village</u>	<u>Price (\$ Per Gallon)</u>		
	<u>As of December, 1980:</u>		
	<u>Heating Fuel Oil #1</u>		
	Barge (Bulk)	Air (Bulk)	Air (Drum)
Mekoryuk	\$1.365	\$3.406	\$4.261
Kongiganak	\$1.316	\$2.271	\$2.771
Nightmute	\$1.426	\$2.776	\$3.371

Each petroleum price hike hits rural residents even harder than urban residents. Village residents are affected twice by price increases, paying first for increases in the basic product price and then for transportation costs which are driven higher by rising fuel prices. Transportation costs may add approximately 35% of the price of the heating fuel brought to the village by barge.

Another major problem in the villages is inadequate bulk fuel storage. Villages, already struggling to produce funds to pay for economical barge delivery of fuel, are further hampered

by insufficient storage for an entire winter's heating fuel supply even if sufficient funds for this supply would guarantee its delivery.

III. PREVIOUS AGENCY EXPERIENCE IN RURAL ALASKA

Since the program draws upon the agencies in Alaska with the most experience in rural energy programs, it can build upon past programs and use existing expertise. The program attempts to complement rather than duplicate past work.

The experience of the Alaska Power Authority in performing reconnaissance studies provides substantive background for the program. The Power Authority has completed studies in 31 villages located in the Koniag, NANA, Doyon, Calista, Bering Straits and Bristol Bay regions. These studies provide information on the cost, availability, and suitability of various energy technologies in Alaska.

The program uses existing resource assessments to provide the information base for a comprehensive energy plan. These resource assessments include the Division of Energy and Power Development's long-term energy plan, the Power Authority's survey of northwest Alaska coal resources, the Corps of Engineer's statewide survey of small hydropower potential, the Geophysical Institute's study of geothermal energy resources,

and resource assessments by private firms, including the regional corporations.

The program uses the demonstrated practical skills of direct service agencies in energy conservation techniques. This includes the expertise of Rural CAP in weatherizing rural homes and the experience that the Division of Energy and Power Development has gained through its new energy audit program.

IV. STUDY SCOPE AND COORDINATION

The program addresses the energy problems in every rural Alaska community. To achieve economies of scale, the work program is administered by region with work being performed on both a regional and local basis.

The foundation for the program activities is the work plan. Drawing upon the expertise of the participating agencies, the designated lead agency develops work plans for each region. In order to build on previous studies in developing the work plan, the lead agency conducts extensive literature searches to obtain existing energy-related data and information on appropriate technologies.

The work plan for each region has four steps:

- o preliminary activities
- o site visits
- o energy plans
- o implementation

A. Preliminary Activities

The staff hired by the regional non-profit corporation under contract visits each village in the region to:

- o elicit community views on potential solutions to the energy crisis.
- o coordinate future program activities with the village leadership.
- o identify residents interested in receiving energy-related training.

B. Site Visit

A small team consisting of energy auditors, engineers, and educators visits each village to perform reconnaissance studies. The major tasks of these studies are:

- o the audit of each building in the village to at least state residential energy audit standards.
- o gathering of information to estimate village energy supplies, conversion processes, waste heat and end use.
- o examination of existing space heating and power generation facilities.

C. Energy Plans

The regional planning team prepares a report on an energy plan for the region. In this report, the staff evaluates and compares economic, environmental

and technical factors for each alternative plan. Where additional data is needed to define available energy resources, the staff outlines the required exploration program for the particular resources. Exploration includes such activities as wind speed recording, stream gaging, or coal field exploration. Also included in the report are proposed energy projects and recommendations for feasibility studies.

D. Implementation

The participating agencies (regional non-profit organizations, regional housing authorities, utilities, Division of Energy and Power Development, Alaska Power Authority, Rural CAP) jointly develop regional energy strategies. Village residents then implement those projects where the greatest energy savings are indicated.

V. PROGRAM ELEMENTS

The Village Energy Reconnaissance and Conservation Program includes eight elements:

- o regional energy planning
- o energy auditing
- o reconnaissance studies
- o weatherization
- o community participation and education
- o reporting
- o program management and agency coordination
- o evaluation

panded weatherization programs.

While performing audits, the auditors also attempt to educate the community about energy conservation through activities in which the community can participate.

The third part of energy auditing is the development of a system for computerized data analysis and storage. An automated data processing system performs heat-loss analysis from the audits and processes the resulting data. This facilitates the engineering analysis through which optimal conservation measures are determined.

C. Reconnaissance Studies

The reconnaissance element of the program consists of four primary activities. First is the collection of data on present energy supplies, energy conversion processes, waste heat, and end uses of energy. The purpose of this activity is to develop a village energy balance sheet showing where energy comes from and how it is used. The energy audits are a major source of data for these village energy accounts.

Different agencies have different data requirements.

For example, the Division of Energy and Power Development has specific needs related to its functions in long-term energy and contingency planning. Therefore, coordination of data collection efforts is important to ensure that all cooperating entities gain the specific information needed for their respective activities.

Second, there is a forecast of village energy requirements. It is based on certain assumptions about the future price of energy and explicit projections of the end uses identified in the energy balance. The impact of weatherization and other conservation measures planned as part of this program are accounted for in the forecast. Sectors used in the forecast include the residential, commercial, industrial, public utility, and transportation sectors.

Third, contractors assess local energy resources. To augment their knowledge of local energy resources gained from an exhaustive literature search, they undertake field visits and sampling, as appropriate. The survey of resources includes:

- o wind, solar, hydroelectric and geothermal potential
- o local sources of coal, oil, gas and peat
- o waste
- o regional electric system interties.

Fourth, the region develops alternative energy plans based on energy needs, local preferences, energy resources and available technologies. These plans, in turn, are evaluated and compared on the basis of economic, environmental and technical factors.

D. Weatherization

Weatherization consists of installing insulation and other energy-saving materials. The results of the audit determine the appropriate amount of insulation, caulking and other building materials to be installed. When the present value of future energy savings is equal to or greater than the cost of materials used for weatherization, the installation of these materials is then justified on economic grounds.

There are two benefits associated with weatherization. One is energy cost savings. In its seven years of experience in running weatherization programs throughout rural Alaska, RurAL CAP has found savings of 30% or more on heating costs for weatherized homes. During 1980, over 900 homeowners in six regions of the State participated in the Federally funded weatherization program administered by the Division of Energy and Power Development. The second benefit is jobs for rural Alaskans. Since

the above program was conducted entirely with locally hired construction crews, it also created significant rural employment opportunities.

E. Community Participation and Education

Community participation and education in this program has two major goals:

- o to educate youth and adults in rural Alaska about energy conservation issues and methods in their villages.
- o to involve youth and adults in discussions, assessments and decisions on future development of local energy resources for their villages (and regions), in consultation with energy professionals.

Community participation and education would be informal, entertaining, highly participatory, and appropriate to rural Alaska. Rather than lectures and written materials, the primary methods of education would be slides, models, posters in public buildings and other visual displays. The education program would focus on instruction in conservation measures through entertaining presentations and materials and participation in audits. For example, as a kick-off for audits, program

staff might organize a community gathering where people actually participate in an audit.

A two person team, hired on the basis of a full year commitment, is responsible for coordinating community outreach activities in a village. The team visits each village at least twice:

- o a preliminary visit to coordinate participation in the program
- o a visit after regional alternatives are specified to explain the alternatives available to the village and the region and to elicit village preferences.

Eighteen to twenty teams are required for the program, with each team responsible for 25-30 villages. The teams also coordinate the energy audit program for the village.

Special attention is given to the hiring and training of team members. Members of the team are hired on the basis of skills in rural sensitivity and communication and education, but serve also as energy auditors. Therefore, a comprehensive training program for them includes:

- o energy auditor training
- o training in community involvement and public participation
- o exposure to the funding source
- o participation in reconnaissance studies under the supervision of engineers
- o orientation to rural Alaska, regional corporations, village life and communications, and working in rural Alaska.

To educate the community and generate interest in the program, the teams use the schools extensively.

Examples of activities in schools are:

- o conducting energy audits with youth in schools not only to educate them, but also to encourage adult participation in a demonstration energy audit.
- o setting up an energy experiment for school children. For example, children could test the village houses throughout the school year for temperatures, drafts, fuel consumption, and other conservation indicators.

In addition to involving the community in audits, the teams facilitate exchanges between the community and technical staff by ensuring that:

- o visuals prepared for educating the community are technically accurate
- o technical presentation prepared for village meetings are interesting, entertaining, and easily understood

- o technical staff collect information by the most appropriate methods and with as much village interaction as possible.
- o difficult engineering concepts are well interpreted
- o "readable" and useful summaries of alternatives and technology profiles are available (readable here may mean through the use of slides, T.V., radio....rather than through written words only).

To assure continuity between the regional program and the community programs, the regional energy planner actively participates in community programs. First, the planner contributes to training sessions for the teams. Second, the planner becomes a team member on as many village site visits as possible and when appropriate. Third, the energy planner participates in discussions about use of community preference data in developing regional energy strategies.

F. Reporting

Reporting is of two types. One is the written materials developed as part of the community participation and education element. The other is a draft and final report for each village and region, which includes data, analysis, and recommendations. Three types of recommendations offered by the reports are

- o actions that can be implemented immediately, such as waste heat utilization
- o additional energy resource data needs such as wind speed, steam flow or coal quality
- o the need for detailed feasibility studies of specific energy-related projects.

G. Program Management and Agency Coordination

Program management and the responsibility for the effective and timely completion of this program resides in the Department of Commerce and Economic Development. Several full-time project managers assigned to specific regions are required to administer contracts and reimbursible services agreements, insure quality control, and coordinate the energy reconnaissance program.

H. Evaluation

This program is evaluated continuously both by qualitative and quantitative measures. Qualitative measures include suggestions received through public participation. Each year before new contracts are awarded for reconnaissance studies, appropriate adjustments are made in the different elements of the program.

In addition, actual sampling of the reduction in

the use of heating fuels by selected homeowners provides a quantitative audit of the energy savings resulting from retrofits.

VI. ECONOMIC BENEFITS

The economic benefits of the program, as shown in Exhibit II, are large. Based on the value of energy savings over a 20 year period, the direct economic benefits of the program are estimated at \$533.3 million, or a benefit to cost ratio of 5 to 1. The payback period for the cost of the program is less than four years. This represents an average savings per household of \$663 per year.

VII. PROGRAM TIMETABLE

Scheduled to operate over a three-year period, the program will begin in July, 1982, and complete its work by July 1985. By July 1985, the program will have audited and weatherized over 40,000 homes and provided resource assessments for every rural community in Alaska.

EXHIBIT I

THREE YEAR PROGRAM BUDGET SUMMARY

<u>PROGRAM ELEMENT</u>	<u>PERSONNEL RESOURCES</u>	<u>ESTIMATED BUDGET (MILLIONS)</u>
A. REGIONAL ENERGY PLANNING	Performed under contract	4.25
B. ENERGY AUDITING		
1. Training	Performed under contract	.27
2. Audits	Performed under contract	7.20
3. Data Processing	Contract	.25
C. WEATHERIZATION	Performed under contract	80.44
D. ENGINEERING	Performed under contract	4.20
1. End Use Analysis		
2. Energy Forecast		
3. Resource Assessment		
4. Plan Formulation and Evaluation		
E. COMMUNITY/INVOLVEMENT AND EDUCATION		4.00
	Performed partly under contract and partly by program managers and regional planners	
F. PROGRAM MANAGEMENT AND AGENCY COORDINATION	4 (three new positions)	.92
<u>TOTAL</u>		<hr/> \$101.53

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SENTENCING
STUDY