SCOMM

#46:30

It's time to develop state energy policy

By MIKE DAVIS

Guest opinion

Local hire and use of the state's royalty share of oil and gas are major policy issues that were dealt with during the last legislative session, and that will continue to be a point of focus during the interim and the next session as well.

The state of Alaska receives one/eighth of the oil and gas produced on state-owned lands and waters as its royalty share of the resources. About half of the state's oil and gas revenues, $1 billion annually, are earned as royalties. This figure will drop sharply, though, as the volume of royalty oil begins to decline. Ten years from now, the state's royalty share will be less than half of what it is today. In 20 years, the royalty share will be only 15 percent of today's volume.

Another effect of having less royalty oil and gas is that there is increased competition for these resources. Forty percent of the Prudhoe Bay and Kuparuk royalty oil is already committed through long-term contracts with MAPCO, GVEA, Tesoro, and Chevron, and demand for the remaining royalty oil far exceeds available supply.

Recognizing both the relative scarcity of these commodities and the state's role as resource manager and owner, the state has three options for utilizing its oil and gas. These options include selling these resources by competitive bid, through long-term negotiated contracts, or allowing the oil and gas producers to sell the state's royalty share for them.

The purpose of negotiated contracts, through which the state receives less than the maximum value of the oil and gas, is to benefit Alaskan residents through lower fuel costs or other consumer benefits. Unfortunately, the latest long-term royalty oil contract awarded to GVEA will result in marginal consumer benefits, while also resulting in less state revenue than possible.

With almost half of the North Slope oil reserves already depleted, the Legislature is belatedly beginning to recognize the need for a statewide fiscal policy. It is time we develop a statewide energy policy as well.

We have been made painfully aware in recent months of the state's dependence on energy-based revenues, and of the pivotal nature of energy prices on Alaska's economy. A statewide energy policy would be invaluable in lending direction toward using energy resources and energy-program expenditures for the best interest of the people of the state.

Alaska has an extensive array of energy programs, though these programs are often in conflict with one another due to lack of an overriding energy policy. This lack of policy has resulted in regional disputes toward energy costs and the development of energy projects, disincentives toward energy conservation, conflicting direction being given to the administration, and cutbacks in programs providing subsidies on a needs, rather than community, basis.

For this reason, I introduced HCR 29 during the last session, which directs the administration to develop an energy policy and reevaluate existing energy programs in the state.

I am also evaluating the possibility of making North Slope natural gas available to Alaskan consumers, and drafting criteria regarding the disposition of royalty oil and gas. These criteria, which will be introduced as legislation in January, will provide direction to the legislature so that future long-term negotiated sales will result in greater consumer benefits than will be received under the most recent GVEA contract.

REP. MIKE DAVIS
Energy policy needed

A related policy issue is that of local hire. One of the greatest benefits of resource development should be employment for local residents. As long as many of these jobs continue to go to people from out of state, though, we will continue to lose many of the gains associated with development.

Legislation was recently signed by the governor that strengthens the local hire statutes relating to public works construction, though much still needs to be done for Alaska to have an effective local hire law. Among these needs are funding for additional enforcement officers, and provisions written into all projects involving state lands, grants, or loans that all work done on state projects utilize the local work force.

Without a comprehensive effort being made to maximize revenues, increase consumer benefits, and provide jobs for Alaskans, we risk losing many of the gains realized from the one-time development of our non-renewable resources.

Democrat Mike Davis is serving his second term in the state House of Representatives, representing District 19.

STATE OF ALASKA

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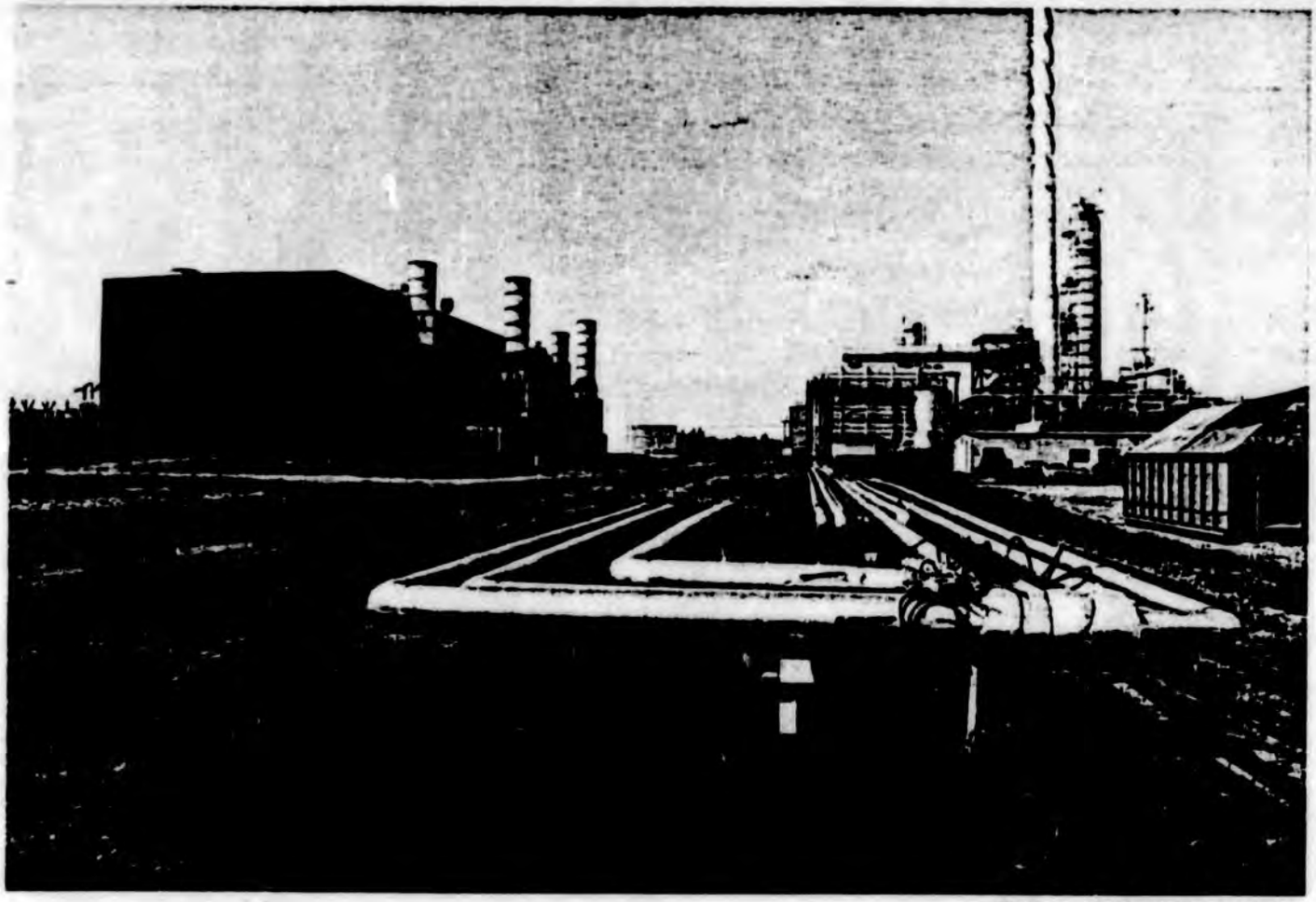
HOUSE SPECIAL COMMITTEE ON OIL AND GAS

HCR 29

Alaska has an extensive array of energy programs, though these programs are often in conflict with one another due to lack of an overriding energy policy. This lack of policy has resulted in regional disputes toward energy costs and the development of energy projects, disincentives toward energy conservation, conflicting direction being given to the administration, and cutbacks in programs providing subsidies on a needs basis.

Recognizing that the implementation of specific energy programs is not a substitute for an energy policy, HCR 29 is designed to provide for the development of a policy that will address energy issues on a broad, statewide basis. Only through such a policy will it be possible for the state to maximize development of its thermal resources, maximize revenues based on these resources, promote lower energy costs to individuals and the state, and allow for the proper planning of major energy projects.

HCR 29 is not directed toward the expansion or curtailment of specific energy programs, but toward development of a policy that will allow all present and proposed programs to be viewed within an overall context. We have been made painfully aware in recent months of the state's dependence on energy-based revenues, and of the pivotal nature of energy prices on Alaska's economy. HCR 29 would lend direction toward utilizing energy resources and energy-program expenditures for the best interests of the people of the state of Alaska.



Refinery at North Pole, Alaska.

Alaska's Energy Policy: Power to the People at Any Cost

by Neil Davis

INTRODUCTION

The State of Alaska is in the energy business in a big way. More than 90 percent of state government's income is from petroleum resources—possessions owned collectively by the people of Alaska. This income is large, especially for a state having a population of only half a million people, and it allows the state government to spend heavily. The fiscal year 1985 state budget plans for an expenditure of $3.89 billion, the equivalent of $18,600 per average Alaskan household.[1]

In 1985 Alaska will spend roughly $600 million for transportation and public facilities and another $550 million for education. The next largest expenditure—ranking above government administration itself and above health and social services—is for providing energy and energy subsidies to Alaskans. Alaska will spend approximately $480 million on energy-related matters in fiscal year 1985. This is because Alaska's state government has established itself as the key provider for the state's energy needs.

An examination of the FY 1985 budget indicates a planned expenditure for the state's energy business as shown in Table 1. Striking features of this table are the high expenditure for hydropower and the low expenditure for research. No for-profit enterprise with operating and capital budgets the size of Alaska's would consider spending such a small portion of its total outlay for research. Exxon, for example, spent 6 percent of its total $11 billion budget in 1981 for research, and a tenth of that was for "basic" research.[2] Yet, in 1985 Alaska will spend only about two-

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One important component of the energy policy . . . is the concept that all Alaskans should share equally in the cost of energy and that all should have plenty of energy to use.

tenths of a percent of its energy-related outlay on what might be considered research.

Even if one includes the entire budget allocated to the Alaska Department of Natural Resources for "resource inventory/geological investigations"[1] as if it were intended for research on energy resources—which of course it is not—then the portion for research is still less than 1.5 percent. Alaska's energy policy does not include more than token investment for research directed toward developing the state's vast energy resources[3] or toward analyzing state government's self-chosen role of providing energy to the people of the state.

ALASKA'S ENERGY POLICY

If Alaska's energy policy has little room for the generation of new knowledge and for technical innovation, what is the policy, and what does it include? Does Alaska even have an explicit energy policy? The evidence is that it does have an *evolving* energy policy, although one might not be able to locate a statement of what that policy consists of at any moment in its evolution.

Something that sounds like the makings of a policy is the legislation that requires the Alaska Department of Commerce and Economic Development, with the assistance of the Alaska Power Authority, to prepare annually a new report on the "Long Term Energy Plan for Alaska."[4] The various authors of the reports on the Long Term Energy Plan do not claim that the plan is a statement of policy or that it is even a tool for developing policy.[5] Yet the reports contain statements giving implicit indications of the state's energy policy. Such statements, in addition to the body of enacted law, do suggest what the state's energy policy is.

Table 1. Alaska FY 1985 Budget for Energy

Item	Amount (in millions of dollars)
Hydropower	396.621
Energy Subsidies	25.653
Interties: Anchorage - Fairbanks plus Seward	25.082
Rural Electrification	14.295
Administration	13.766
Energy Conservation	2.434
Alternative Energy	1.195
Research (0.2%)	
Fisheries impacts of hydropower	0.415
Coal resources	0.400
Geothermal resources	0.100
(University of Alaska Coal Lab: 0.180)	
Total	$480 million (12.3% of state budget)

The record of legislative actions over the past six years, as outlined in Table 2, hints at the nature of Alaska's energy policy and its fast evolution. The state's actions over the years do express an evolving policy, even if that policy is not explicitly stated.

The starting point for development of Alaska's energy policy was the major increase in worldwide petroleum costs that occurred during the 1970s. High petroleum prices and Alaska's status as a major petroleum exporter together gave the state money to spend. Those high prices also caused the state's political leaders to have genuine concern over the cost of energy to Alaskans, particularly those in rural areas.

The flurry of energy legislation in 1978 established a policy that said, in essence: Alaska will use its energy resources and the money derived from them to attempt to hold down or even reduce energy costs for urban Alaskans, and also to elevate rural standards of living by providing lower-cost energy there. The policy included components based upon a faith in the concept of increasingly greater petroleum prices in the future, faith in technology (i.e., creation of the Division of Energy and Power Development and the Alaska Council on Science and Technology), and faith in the idea that anything can be accomplished by showering it with money (establishment of the Alaska Gas Pipeline Authority).

Most important, the policy stated that it shall be the role of Alaska's state government to enter the business of providing electrical energy to the state's citizens (establishment of the Alaska Power Authority). Why not? The federal government did the same thing many years ago with its Rural Electrification Administration and Tennessee Valley Authority.

An element of the state leadership rec-

Alaska's energy policy does not include more than token investment for research directed toward developing the state's vast energy resources. . . .

ognized that perhaps the centralization epresented by the major role awarded to he Alaska Power Authority might not be a satisfactory answer for everyone. One result was legislation forming the Alaska Energy Center, a public corporation intended to do everything for everyone, but which resulted—because of its quick termination—only in an embarrassing waste of time and money.

The years 1979 through 1983 saw changes that honed Alaska's energy policy into its present form. The recognizable forces affecting the evolution of policy include one that politicians find difficult to resist: the demand for jobs that large energy projects promise.[5]

Another strong force is the persistent faith in rising energy costs, an almost blind trust that inflated costs of fossil fuels will level all apparent fiscal mountains into highly negotiable foothills that future Alaskans can tread across with ease. Best to put out of mind the possibility that petroleum prices may stay constant or even decline further. If that happens, a typical Alaskan fall sets in: the money tree sheds its fruit and leaves quickly; a hard winter follows soon behind.

Another strong, growing force is state government itself. The fiscal year 1985 budget adds 1772 new positions to augment the approximately 17,000 people already employed by the state.[1] Even if they are not employed by the state, most Alaskans expect the state to provide benefits that go beyond the basic services government had provided a few decades ago. Alaskans now expect state government to provide jobs, housing loans, welfare payments, economic assistance to farmers and businessmen, and subsidies of all sorts. That state government should also provide energy only seems natural in an era when the public expects so much of government.

These and other forces influenced the refinements of Alaska's energy policy from 1979 to 1983. If one thinks that state government's actions during this period indicate an evolving policy rather than merely a battling between different political elements of the leadership, then the nature of the evolution is clear.

The elimination of such bodies as the Division of Energy and Power Development and the Alaska Council on Science and Technology indicates a trend toward centralization of authority and decision making and also a move away from the belief that technical innovation and the development of new knowledge should be important components of Alaska's energy policy.

Along with a trend toward centralization, the evolving policy has focussed on the development of large power projects, primarily hydropower. The policy looks away from small, local energy projects that collectively might depend upon a variety of energy sources and that might

Table 2. Energy Legislation Implying an Energy Policy

1978 – *Alaska Power Authority* established.
– *Division of Energy and Power Development* created.
– *Alaska Gas Pipeline Authority* established.
– *Alaska Council on Science and Technology* established.
1980 – *Alaska Energy Center* established.
1981 – *Alaska Energy Center* abolished.
– *Energy Program for Alaska* enacted.
1982 – *Alaska Power Authority* powers broadened.
1983 – *Alaska Council on Science and Technology* abolished.
– *Division of Energy and Power Development* abolished.
– *Susitna blackmail clause (consumer balloon payments)* postponed until July 1991.
1984 – *Susitna blackmail clause* repealed.
Fiscal restraints removed from Alaska Power Authority, *so that its projects no longer need be economical* or return full investment to the state.
Power Development Revolving Fund established in the Department of Commerce and Economic Development to pay differences between actual costs and income from Alaska Power Authority projects.
– *Intertie appropriations* made for $25 million (Seward; Anchorage-Fairbanks).
– *Lake Tyee, Swan Lake, Solomon Gulch, and Terror Lake* hydro projects combined for purpose of rate determinations.
– *Bradley Lake* hydro project authorized for construction at a cost of $300 million in July 1983 dollars.
– *Susitna-Watana* hydro project authorized for construction at a cost of $3.75 billion in January 1983 dollars.
– *Unconstitutional forward appropriations* for
1. *"power cost equalization"* – $21.7 million annually,
2. *Bradley Lake* "rate stabilization," etc. – $50 million annually, and
3. *Susitna-Watana* "rate stabilization," etc. – $200 million annually.

require application of new or improved technologies.

One important component of the energy policy that has not changed is the concept that all Alaskans should share equally in the cost of energy and that all should have plenty of energy to use. The Energy Program for Alaska is accomplishing these goals by means of direct subsidies to consumers outside the Anchorage and Fairbanks areas and by means of the required sharing of power project costs expressed in the "Susitna blackmail clause" —primarily intended to force future legislatures to invest in large power projects. The repeal of this clause in 1984 and its replacement legislation actually did not signal a change in the policy that all Alaskans should share equally in the costs of power projects administered by the Alaska Power Authority. However, the new legislation did remove from the power authority the previous requirement that its projects should pay for themselves.

Prior to 1984, the Alaska Statutes required the Alaska Power Authority to set rate structures that would return the state's investment in total. But now, if the authority builds a project that produces power at a cost higher than an alternative source of energy, the authority is allowed to set rates equal to that dictated by the cheaper alternate source. All Alaskans will share equally in the cost of the resulting shortfalls through the Power Development Revolving Fund—which is to be filled with money owned equally by all citizens.

SUMMARY

In summary, Alaska certainly does have an energy policy. It has some fixed elements and some that are evolving. Based upon the actions that express it, Alaska's energy policy seems to be composed of the following elements:

- Derive all possible income from export of energy. Foster, if necessary, new exports by providing financial assistance using money owned by the state's citizens. Assume an increase in fossil fuel prices of a few percent each year.
- Provide electrical and thermal energy to the state's citizens, since it is assumed that such a task is a proper function of state government. Also, subsidize fossil fuel costs in rural areas.
- Centralize decision making within state government and emphasize large power projects together with an interconnected intertie network. Use power projects to promote employment and regional growth. Assume that all technical problems can be solved during construction phases, using a base of pre-existing knowledge.
- Do not require that power projects in themselves be the cheapest means of power generation in each area of the state.

Use a common pool of money owned by the state's citizens, now and in the future, to make up cost differences.

- Do not emphasize use of the variety of energy resources available in Alaska or of technical innovation and development of new knowledge—to do so has no current fiscal advantage.

I submit that the state's current energy policy is not in the long-term best interests of Alaska. Regardless of whether one approves of rapid growth, the policy probably is quite successful in promoting growth—as long as excess funds are available from energy exports. However, the policy makes too much use of subsidy and minimizes technological development that will be needed in future years. We are, in fact, already wasting money that would be better spent trying to diversify our use of Alaska's copious energy resources.

Our policy places too much emphasis on centralization, both in energy supply and decision-making authority. The issues are complex and difficult to comprehend, at best. Partly for that reason, and partly because of the centralization within government, Alaska's energy policy can be conducted by too few people with too little scrutiny.

Perhaps the most serious defect is the lack of fiscal restraint in the policy that now exists in 1984. Previously, the Alaska statutes required that energy sold from projects be priced to match their costs, year by year. The removal of that stringent requirement decreases the pressure on planners to make energy projects cost-effective—as long as the oil money holds out, we have no immediate sanction to punish poor planning or costly mistakes. We are, in effect, putting our problems off to the future. As rich as Alaska is now, one would think that we ought to be able to solve our problems as we encounter them, instead of foisting them off on our children.

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[5] State of Alaska Long Term Energy Plan, annual reports for 1982, 1983, and 1984. Department of Commerce and Economic Development, Juneau, AK. (See, in particular, the 1982 report.)

[6] Tussing, A.R. 1984. Alaska's energy policy in a global context. *The Northern Engineer* 16(2):27-33. ♦

NAKNEK ELECTRIC ASSOCIATION, INC.

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April 8, 1985

Rep. Davis
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RE: ENERGY EQUALIZATION PERPETUATION CONCERNS

Everyone reads, listens, observes and interprets differently. The best of intentions can be construed to make "black white."

This I may be doing by the following comments. However, I should like to set forth and offer comments and suggestions relating to "power cost equalization."

Recognition of high electric energy costs in given areas of Alaska is acknowledged and should be addressed.

Too, it is realized people "by and large" live where they do, because of a willingness and awareness that it may cost more, and accept such as a way of life.

Consequently, considerable disparity exists, but Alaskans do have a good buy in their base electrical requirements with the application of energy equalization. As an example, from the March 25 addition of U.S. News and World Report (copy attached), average residential cost per KWH in New York City was listed as 16.174¢. Here in Naknek, Alaska our average residential consumption is 454 KWH per month at a tariff rate of $120.59, or 26.56¢ per KWH, and a credit for power cost equalization of 15.73¢ per KWH, or net of 10.83¢ per KWH "out-of-pocket expense," a lesser cost than New York City by 5.34¢ and near the same as Chicago costs per KWH. My chief concern of equalization is threefold; the state of Alaska capital budget, perpetuation of the fund, and placing equalization in the hands of legislative intent.

The seeding of the fund will dwindle, and at some point in time exhaust itself. This will cause considerable unrest among rural people that have become accustomed to the stipend, thereby causing hardship in some cases, questions of the utilities, legislators and Board of Directors. It will be hard to explain the removal and decline of the equalization fund, once established for their benefit.

The following observations might well serve as thought for revision possibilities of PCE legislation and law.

At 1984's year end, the Alaska Power Authority disbursed in excess of 8.5 million dollars for some 77.5 million KWH at an average 11.15¢ per KWH. After scanning the rural electric borrowers national statistical report of Alaskan systems, a ratio of 50% appears reasonable for distribution of residential against all consumer classifications. **It appears assumable that fifty percent of equalization could be eliminated by making only residential consumers eligible for energy equalization.**

I do not know the capital budget for PCE, however, it appears that about five million dollars will be required to satisfy only residential consumers while the inclusion of all other classes could possibly bring the figure to ten million dollars. Therefore, let us assume the program would be funded with ten million dollars each year as long as possible; thus leaving a surplus of five million after satisfying the residential requirements to be trusted until such time the trust would generate in earnings that amount needed for PCE payments of the future, and require no further funding.

Taking the position that only residential consumers be eligible for PCE is based upon the nature of business today. Take the commerical account for example. Each are entitled to take from their income the expense of doing business; therefore, in reality, electrical costs are a deduction for the commercial account. Too, the commercial account will add the cost of electrical costs to the retail item or items for sale; or in the case of a service, it will be included in the service fee indirectly. Therefore, no need is truly generated for PCE in the commerical class of consumer. Let us look now upon the governmental usage of electricity. By funding such accounts, it is merely pushing funds from one tax pocket to the other, and providing a budget surplus for the agency, whether it be federal, state or local governmental entities.

Only the residental consumer has no means of regaining excessive energy costs and truly should be the only recipients of PCE funding.

It probably is not politically wise to remove commercial accounts from PCE, however, every justification necessary lies in the fact that expense is a tax deductible item, and therefore, should be eliminated from allocation.

These thoughts have been in mind for sometime, and I hope might light the spark for some revision of PCE.

Thank you for your time and considerations.

Sincerely,

C. E. Franke
General Manager

As an Ex-President Prunes His Perks—

Richard Nixon's plan to give up his Secret Service bodyguards lent impetus to a drive in Congress to trim the costly perks enjoyed by former Presidents.

Senator Lawton Chiles (D-Fla.) announced that he would introduce a bill to rein in what some critics call the "imperial ex-Presidency," curtailing the 28 million dollars spent each year to commemorate, protect and otherwise take care of former Chief Executives.

With that tab exceeding the 24.9 million dollars it costs to run the White House itself, critics protest that something is amiss.

Nixon, who became in mid-March the first ex-President to decide to give up lifetime protection, would save the government more than 2 million dollars a year by hiring his own guards. Others shielded by the Secret Service: Gerald Ford and his wife Betty, Jimmy Carter and his wife Rosalynn and Lyndon Johnson's widow Lady Bird. Jacqueline Kennedy lost her protection when she remarried in 1968.

The agents accompany the former First Families on their travels and camp on their doorsteps when at home, operating out of nearby leased quarters.

The Secret Service last year stopped providing protection for Nixon's wife

Nixon and his Secret Service agents.

Pat at her request. After Nixon's announcement, Ford said he would keep his Secret Service [illegible] for now but gradually eliminate it later. Carter declined to comment.

Before Dwight Eisenhower [illegible] Presidents had to fend for themselves. Then, in 1955, Congress [illegible] est $64,000 for [illegible] presidential libraries. Pensions and [illegible] were added in [illegible] and Secret Service protection in 1965.

By this year, outlays had expanded to 15.5 million dollars for the libraries, 11.2 million for Secret Service protection, 1.2 million [illegible] allowances and $278,600 for pensions.

Chiles's bill would [illegible] for presidential libraries [illegible] and require [illegible] for protection after [illegible] years.

Electricity's Surging Cost

Average residential electric bills climbed 7.9 percent in 1984, nearly twice as fast as the 4.0 percent inflation rate.

A national survey by utility regulators found power costs varied widely, with consumers in the Northeast paying the most and those in the Northwest the least. New York City's rate was the highest in the nation.

The 25 most expensive and 25 least expensive cities by kilowatt hour in 1984:

25 Most Expensive

	Average KWH Cost	1-Year Change
New York City	16.17c	[illegible]
Kahului, Hawaii	14.33c	+ 8.3%
Nantucket, Mass.	14.31c	− 7.6%
Hilo, Hawaii	13.82c	−10.7%
Middletown, N.Y.	13.78c	− 0.3%
Long Branch, N.J.	13.05c	−10.5%
Boston, Mass.	12.77c	−30.9%
[illegible]	12.14c	−11.5%
[illegible] Township, N.J.	12.01c	− 5.8%
San Diego, Calif.	11.79c	− 6.1%
Fitchburg, Mass.	11.50c	−20.1%
Bergen County, N.J.	11.4[illegible]c	−14.6%
Newark, N.J.	11.31c	− 1.1%
[illegible]	11.[illegible]c	+ 9.4%
[illegible]	11.23c	+ 1.5%
[illegible]	11.20c	+22.3%
Bridgeport, Conn.	11.14c	+11.6%
[illegible], N.J.	11.07c	− 2.0%
Chicago, Ill.	10.80c	+ 4.6%
Philadelphia, Pa.	10.80c	+20.9%
Pawtucket, R.I.	10.78c	+21.8%
Wilmington, Del.	10.75c	− 2.8%
Elkton, Md.	10.65c	−21.0%
Fall River, Mass.	10.60c	+12.2%
Davenport, Iowa	10.57c	—

25 Least Expensive

	Average KWH Cost	1-Year Change
Billings, Mont.	3.56c	−15.5%
Spokane, Wash.	3.61c	−23.0%
Boise, Idaho	3.85c	+ 8.5%
Ontario, Oreg.	3.85c	+11.0%
Portland, Oreg.	3.[illegible]c	−10.8%
La Grande, Oreg.	4.37c	−21.1%
Casper, Wyo.	4.92c	+ 7.4%
Bellevue, Wash.	[illegible]	−35.2%
Ashland, Ky.	5.20c	+ 1.6%
Duluth, Minn.	5.45c	+ 1.5%
Franklin, N.C.	5.46c	−35.5%
Marietta, Ohio	5.48c	− 0.1%
Cheyenne, Wyo.	5.55c	−21.7%
Washington, Pa.	5.56c	+ 3.3%
Las Vegas, Nev.	5.67c	−27.4%
Rutland, Vt.	[illegible]	+ 5.7%
Kingsport, Tenn.	[illegible]	+ 2.2%
Flint, Mich.	[illegible]	+ 2.4%
Juneau, Alaska	[illegible]	+ 3.2%
Lexington, Ky.	5.85c	[illegible]
La Crosse, Wis.	5.89c	− 7.9%
[illegible]	5.91c	1.1%
[illegible]	[illegible]	− 3.8%
[illegible]	5.94c	4.6%
Parkersburg, W.Va.	6.08c	1.8%

Current Quotes

"The first thing one has to remember is that you don't get to the head of the Politburo by being a choirboy."

Former Secretary of State Henry Kissinger, stressing the need for caution in sizing up new Soviet leader Mikhail Gorbachev.

"If the United States wants to continue to play a role in the Third World, it must attack terrorism at its source."

Former President Richard Nixon, calling for tough action against terrorists in a newly released book *No More Vietnams*.

The IRS has sunk so low in public opinion that a responsible accountant honestly believes he needs a hood to protect himself from IRS retaliation."

Ronald Noll of the Pennsylvania Society of Public Accountants, telling a House subcommittee that accountants fear the IRS so much they have discussed hiding their identity for future appearances.

"The fact is we might be handing out psychological thalidomide."

Dr. Edward Zigler of Yale, warning that Americans who put very young infants in day-care centers may traumatize them and do serious psychological harm.

"We should not have let him out of there alive."

Former Israeli Defense Minister Ariel Sharon, saying his government "committed an error" when it allowed PLO leader Yassir Arafat to escape from Lebanon in 1982.

"We have drawn a very fine line in the sand against raising taxes."

Budget Director David Stockman, describing the Reagan administration's position against tax increases to a group of magazine editors and publishers.

"Go ahead—make my day."

President Reagan, borrowing a line from Clint Eastwood, inviting Congress to send him a tax increase so he can have the pleasure of vetoing it.

Chugach Electric Association
1984 Annual Report

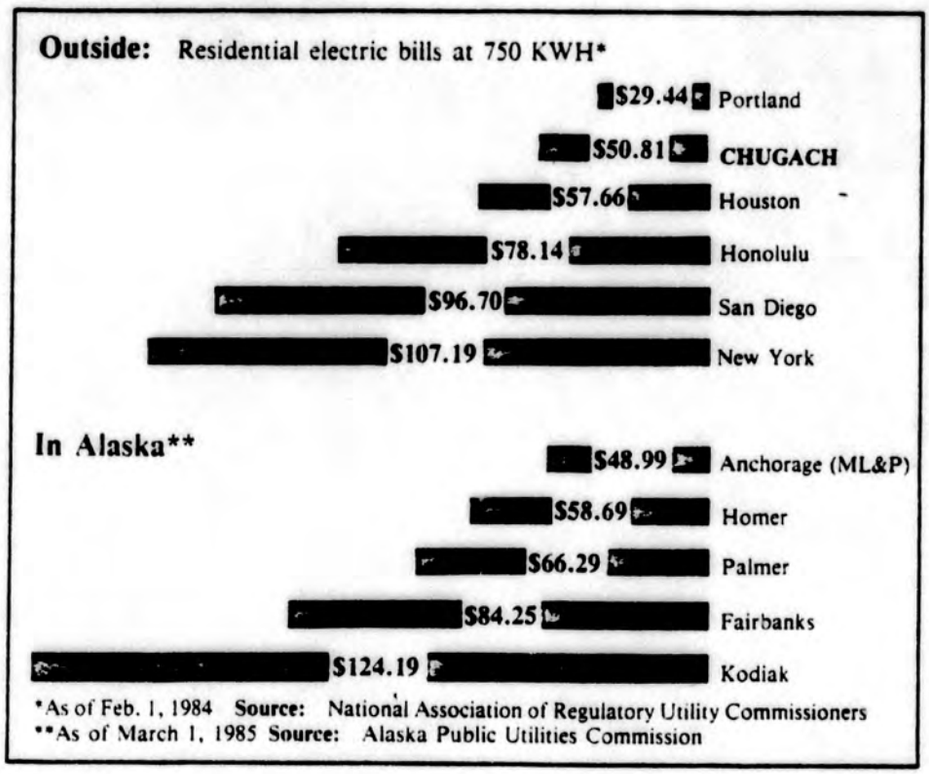
How our rates compare

Chugach consumers enjoy some of the lowest electric rates in the nation, thanks in part to a long-term supply of inexpensive natural gas used to generate power.

Statistics compiled by the National Association of Regulatory Utility Commissioners show that consumers in New York City pay $107.19 for 750 kilowatt hours (kWh) of electricity, more than double the $50.81 charged by Chugach.

Residents of Tampa Fla., pay $60.74 for 750 kilowatt hours while those who live in Philadelphia pay $73.08.

Chugach's rates have remained suprisingly constant over the past 30 years, although electrical usage has soared. The average residential usage in 1984 was 805.4 kWh per month.



Alaska's Energy Policy in a Global Context

An Informal Tour of a Modern Maze

by Arlon Tussing

WORLD ENERGY FUTURES

How one looks at Alaska's energy policy choices depends mainly on one's perceptions of what world energy markets will look like over the next 10 to 20 years. Some of the perceptions that stood behind the State's policies during the late 1970s and the early 1980s now need to be reassessed. Specifically, we should look again at the notion that we face a long-term tightening of energy markets worldwide, and that oil prices (and, hence, the value of Alaska's fossil fuel resources) will continue to increase without letup. It is time to reexamine the belief that Alaska can look forward to brightening prospects for energy-related export ventures which could, in turn, sustain economic growth in the state.

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This belief rests on a fundamentally flawed picture of the world energy outlook and Alaska's energy-related opportunities. It reflects, at best, a myopic view of the events of the 1970s. The last few years showed that lasting and worsening energy traumas are not inevitable, at least in the short term. And a look at the cycles and trends of energy prices over the preceding hundred years calls into question doomsday rhetoric for the long term, as well.

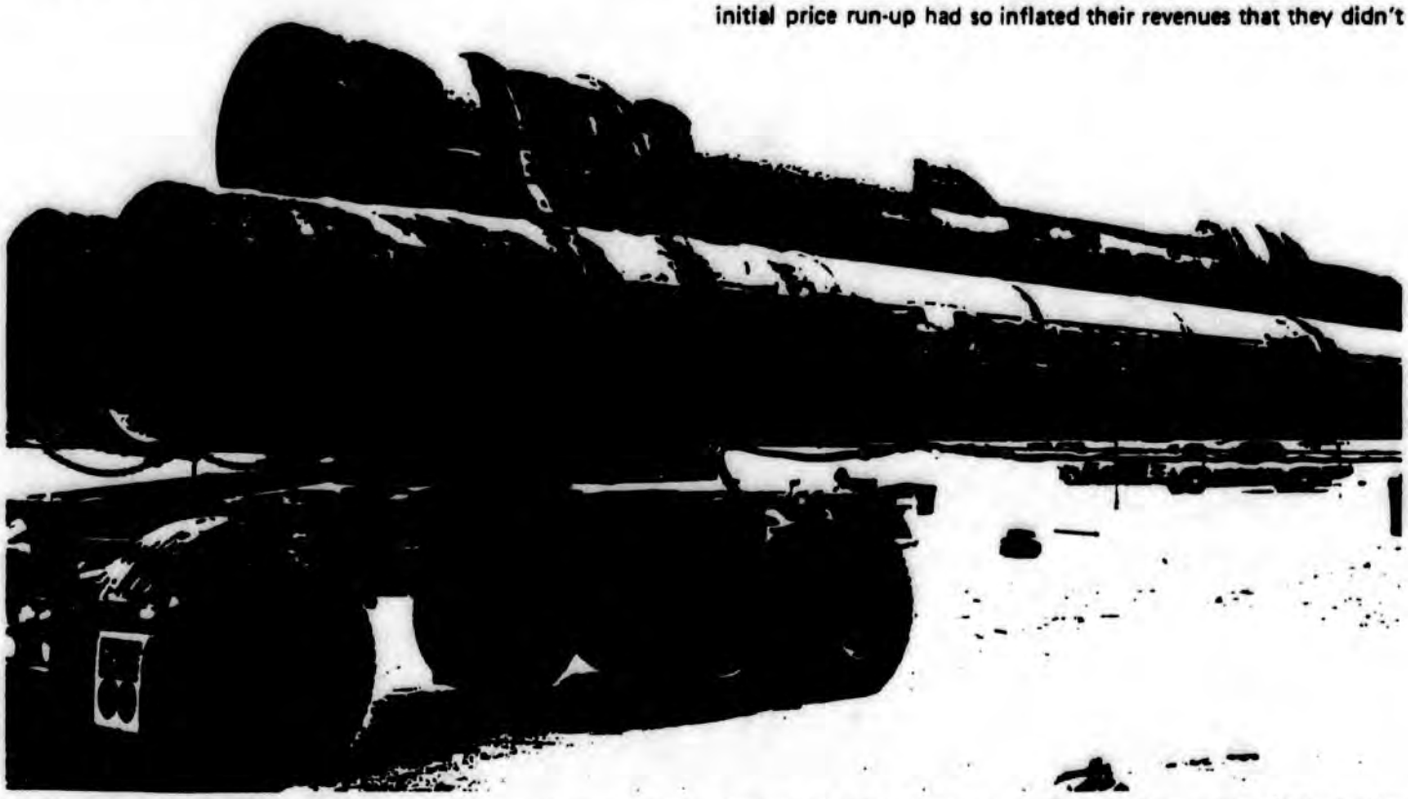
History shows us that oil prices, in particular, are violently cyclical, at least without an overwhelming regulatory presence like that of the Texas Railroad Commission between 1935 and 1972. Oil is a commodity and, like soybeans or copper, its price fluctuates annually and over longer periods. If we look at 130 years of crude-oil prices in the United States, we find no long-term trend; that is, the overall pattern is pretty flat – with an average somewhere on the order of $14 a barrel in today's prices. But we also find dramatic short-term fluctuations: prices have moved up or down an average of about 20 percent per year.

Perhaps the most important lesson to be gleaned from these historical statistics is that there is no confident basis upon which to forecast oil prices in the year 1990, 1995, or 2000. It is not inconceivable that prices will again reach down to the levels prevailing before 1972 – less than $10 per barrel in today's dollars – or that spot prices could for a nonce reach $50 or more. The important point is that even if, as I suspect, $15 is about the "right" price for the long run, $15 is not a stable "equilibrium" that provides a basis for long-term business or public planning.

In the years before 1973, the energy establishment assumed, perhaps unconsciously, that there was such an equilibrium because the Texas Railroad Commission had been stabilizing domestic (and, with the help of the Seven Sisters, global) oil prices for decades. From 1935 to 1972, the average annual change, up or down, in U.S. constant-dollar crude-oil prices was only about 4 percent. The Commission wielded such power because Texas producers controlled and contained the bulk of the world's discretionary oil-producing capacity. Texas authorities could increase production enough to cover any surge in demand resulting from a world-wide economic boom; they could also slow down production to prevent a petroleum glut and consequent price crashes.

As a result, we were blessed with 35 to 40 years of stable oil prices. In a sense, it was a fool's paradise that gave rise to the conviction that there was indeed a long-term equilibrium price of oil. Stability led to complacency, and the world shifted almost totally to dependence on oil for its industrial, electrical-generation, and transportation fuels. During the 1960s, for example, Japan's oil consumption expanded at a compound rate of 18 percent per year. Even in Europe, a 7 percent compound growth rate prevailed.

Reality obtruded in the early 1970s, however, when Texas (and Louisiana) ran out of the spare producing capacity that allowed state conservation authorities to use their power over production rates to prevent the Middle Eastern crises of 1954, 1957, and 1967 from causing more than a ripple in prices. The disturbances of 1973-74 touched off a consumer panic which produced a run-up of spot-market prices. The oil-producing nations of the Middle East then voluntarily and individually reduced their production (without any urging or direction from OPEC) and reduced their exports to a degree that sustained prices at the spot-market levels reached at the peak of the panic. The initial price run-up had so inflated their revenues that they didn't



These sections of pipe were being moved from storage yards at Fairbanks, Valdez and Prudhoe Bay to intermediate storage sites along the 800-mile trans-Alaska pipeline route. (All pipeline photographs courtesy of Alyeska Pipeline Service Company.)

know what to do with it all. During this period, even Alaska's government leaders suspected that the era of rising oil prices meant that oil left in the ground would yield a higher and more secure return than any conceivable investment founded on today's cash proceeds from oil production.

A similar progression of events unfolded in 1979. This time, however, the market panic that arose from the Iranian Revolution was not even a response to an actual cutoff in supplies. The supply shrinkage happened only *after* prices went up, and the cutback was engineered in Saudi Arabia – not in Iran. This second oil-price shock pushed prices to a level that was self-defeating. The oil states had now largely priced oil out of the world's industrial fuel markets.

At any price above $20 in today's dollars, there is no market for oil as an industrial bulk fuel or for the generation of electricity, wherever coal or natural gas is available. Coal from new mines in North America shipped through new terminals in new ships can be burned in new plants with scrubbers or other technology sufficient to meet the tightest environmental standards, at any tidewater site in the world, and still undercut $20 oil. The nearly unlimited availability of coal in the long run therefore ultimately sets a price cap on oil somewhere below $20 a barrel.

By the same token, as long as oil is priced anywhere above $20 per barrel, industries throughout the world will continue to reduce their consumption of oil in favor of coal (or natural gas, or other energy resources with favorable local economics). The world, after all, has no need for any *specific* energy commodity. All that civilization requires are the calories for light heat, and motive power, and simple hydrocarbon molecules to serve as the building blocks for making more complex organic chemicals. For each of these used, established technology offers several candidates, and liquid petroleum will remain the fuel or feedstock of choice in each one of them only where and for so long as it is the cheapest.

The price run-ups of the 1970s were thus not the product of terminal resource depletion, but only artifacts of a too-long suppressed commodity cycle. Such cycles are inevitable, however, because fuel-use decisions are incorporated in long-lived capital goods, like transportation equipment, buildings, industrial processes, and appliances. Periods of short supply give way to buyers' markets and *vice versa* because neither production nor demand can react instantaneously to changed circumstances, but they do unfailingly react and, because of the delay and uncertainty of the reaction, they tend to overreact.

The reactions and overreactions to the market conditions of the 1970s still have plenty of momentum. Even today's economic recovery does not bode well for oil producers and other energy purveyors struggling with a glutted market. Revival carries with it some short-term consumption gains, but it means mainly a more rapid replacement of fuel-inefficient vehicles, buildings, industrial machinery, and appliances by durables designed in a high-price, energy-conscious environment.

WPPSS AND OTHER PUBLIC ENERGY PROBLEMS

A number of public power agencies that made long-term investments based on the faulty wisdom of the immediate past now find themselves in deep trouble. The public power agencies of western North America, for example, embarked on a very large construction program because they anticipated higher and higher alternative fuel prices and because they assumed that electricity demand was largely insensitive to price. The Washington Public Power Supply System (WPPSS) invested in a nuclear future. Private utilities and public power agencies in several Western states invested in expensive coal-fired plants, while British Columbia's public power agency pushed forward a massive scheme for hydropower development.

These agencies are now finding, however, that the power simply is not needed in their own districts. Worse yet, nobody else needs it either, at least at prices proportional to the debt service they incurred in construction. High prices have depressed demand, and even higher prices for incomplete and abandoned plants could provoke a dangerous "death spiral," in which utilities attempt to charge higher per-unit prices as demand falls, which exacerbates their sales losses.

A nuclear plant, for example, has an enormous embedded fixed cost. But once it is built, its operating costs are trivial. What this means is that in a supply surplus, the utility and its regular consumers benefit from sales to marginal and off-system customers, so long as they pay anything at all in excess of variable operating costs. The same is true – even more so – with a hydro project like Susitna whose fixed costs per kilowatt of capacity are greater, and its operating costs per kilowatt-hour of sales even less, than is the case for nuclear generating stations.

Consider these events: British Columbia Hydro, facing a huge surplus of power it cannot sell within the province at a price that will recover its costs, has executed a long-term sales contract with the Los Angeles Department of Water and Power. The city will use the imported power to displace oil- or gas-fired generation. Meanwhile, Bonneville Power Administration has been offering its surplus hydropower to California utilities for what it perceives to be their "avoided cost" for fossil-fuel generation – about 4.5 cents per kilowatt-hour – even though fixed-cost amortization for the WPPSS plants may run about 12 cents. BC Hydro offers its hydro surplus for less than 3 cents, however, whereupon the administrator of Bonneville (sounding like one of the villainous private-power magnates of yore) says: "Our transmission lines are not common carriers and we have no obligation to carry power for others to the detriment of our own marketing program."

Now what does BC Hydro do? It goes shopping around the State of Washington, reminding those utilities who are tied to the Bonneville system that Bonneville is going to jack up their rates to cover the costs of the recently completed and soon-to-be abandoned nuclear plants. BC Hydro then offers to sell power to these utilities in the future for a substantial discount off whatever price Bonneville charges. Ironically, BC could sell to some of Bonneville's regular customers in the Northwest without obtaining access to Bonneville's lines. Seattle City Light, for example, has transmission lines extending to the Canadian border; this utility would probably be delighted, moreover, to "wheel" British Columbia Power for the Snohomish PUD, various aluminum companies, and other customers that are now captives of Bonneville. Bonneville's latest attempt to avoid a cutthroat battle over the California market has been to propose itself as leader of a cartel of potential suppliers.

This situation arises because Northwest utilities and public power agencies are all troubled by excess capacity bearing high fixed costs. But at least they do have options for wooing export sales. Susitna wouldn't even have this safety valve.

The parable of today's Northwest power surplus also illustrates the general state of world energy markets. Everywhere we turn, inter- and intra-fuel competition is more intense than at any other time in living memory, and the potential for price-cutting wars exists in many quarters. Oil markets have yet to succumb to panic and disorder on the way down (as they twice did during the 1970s on the way up), but every OPEC country without exception has a growing budget deficit. Some of them are very poor, and their leaders have to cope with tremendous domestic problems and unrest. Once a price war breaks out, they will exhibit little discipline in cleaving to the production and price mandates that OPEC may issue.

OUTLOOK FOR THE YUKON-PACIFIC PLAN

The present and continuing surplus in world oil markets has implications for Alaska's export energy dreams. The Yukon-Pacific plan for exporting North Slope gas is based on the notion that the Japanese and Koreans will surely wish to purchase Alaska's gas (transported through a high-cost pipeline) even though utilities in the Lower 48 do not. Project promoters point to the quest in the Orient for energy diversity and for reduced dependence on Middle Eastern energy sources. Even if this remains a major goal, Japan and Korea are still looking for diversity at the lowest possible price relative to Persian Gulf oil.

And therein lies the glitch. Future oil prices are wholly uncertain and, as I mentioned earlier, a price rout is not inconceivable sometime in the near future. Investors today, whether they be North American or East Asian, will not touch any *new* oil-displacement project that could not survive a continued downward drift in oil prices for maybe another ten years. *No one* is going to risk $20 to $30 billion on an LNG export project whose cost recovery demands stable or even upward-trending oil prices.

Worse yet, Middle Eastern oil is no longer the strategic competitor to international LNG schemes. Huge surpluses of flared or shut-in gas are available to Pacific Rim markets from tidewater locations that do not need an all-Alaska pipeline, or its counterpart in Canada. It is gas-to-gas competition that will henceforward determine the export value of North American LNG. The value to Japan of a new LNG supply may in some sense be worth the price of the crude-oil imports it displaces, but the huge global inventory of undeveloped gas reserves means that a Japanese company would be foolish to promise that much. Is it reasonable, in other words, to expect Japanese or Koreans to offer a price for Alaska gas sufficient to cover a $30 billion pipeline when gas is still being flared in the *coastal* oil fields of Mexico, Saudi Arabia, and Indonesia, and while the USSR, Malaysia, China, and a host of other countries have discovered but unexploited *coastal* reserves of "non-associated" gas?

CHOICES FOR ALASKA

What is going on outside of Alaska does indeed affect energy choices in this state. Anyone who thinks that a very expensive,

capital-intensive hydropower project is justified by the expectation of further increases in the price of fossil fuels, and that Alaska's natural gas and coal are more valuable as exports than as domestic fuels, is taking the risk of replacing the lowest-price thermal energy in North America with about the highest-cost large-scale electrical generation anywhere in the world.

Alaska's economic prospects are already shaky because of the state's utter dependence on its oil exports. There is risk of further crippling the state with huge capital investments, like Susitna, that may not be able to pay for themselves. Repeating on a larger scale the hydro project problems in southeast Alaska is really asking for trouble. If oil prices five years from now are inherently unpredictable, however, and long-lived megaprojects like Susitna unacceptably risky, how can a community plan its own energy future?

Foremost, the choice of energy alternatives must be tied to the life cycle of the equipment in question. Diesel generators and combustion turbines have an advantage over highly capital-intensive projects like most hydro or nuclear power plants because a utility can write off the equipment in a relatively short time. The bulk of the cost of power generation with such initially low-priced installations is fuel. Thus, if demand is less than anticipated, the utility can shut down the generators (thereby saving fuel costs) without suffering high recurring fixed costs for debt service. If oil proves to be an unattractive fuel source in some future year, diesel generators or turbines can be mothballed or even retired with comparatively little financial trauma. Conversely, if power demand grows faster than expected, the utility can buy such oil- or gas-fired equipment practically "off the shelf" and have it installed in a matter of months.

The argument for many high-cost energy-supply ventures rests on the proposition that they will pay for themselves in 20, 30, or 50 years, even if they are uneconomic at the beginning. It should be obvious, however, that projections of energy "needs," fuel costs, and technical options extending more than 20 years are merely convenient fictions, and they should have little credibility as the basis for today's investment decisions. A utility or a public entity considering laying out a lot of money on a big central-station generating plant on the basis of a 20 to 50 year cost-benefit calculus should, at minimum, look at the "downside" risks. It should not, for example, launch big hydro or nuclear programs unless facility construction is justified by the *lowest* reasonable power-demand and oil-price forecasts. One element continually missing from the Power Authority's Susitna assessments is, however, a clear explanation of the consequences for Railbelt ratepayers, the State's fiscal position, and Alaska's economy if the demand and fuel-price projections of its carefully selected forecasters turn out to be wrong.

One effective way around the dangers of backing the wrong horse in power generation is to have a variety of generating technologies. Ideally, utilities should use a different technology for their base-load generation from the ones they use for peaking or reserve capacity. Small communities, obviously, have fewer opportunities for diversification. In the Railbelt, nevertheless, a mix of technologies is certainly attainable – although the likely price and availability of natural gas in the region may well argue for a concentration in gas power over the planning horizon.

NATURAL GAS AND ALASKA ENERGY DEMAND

Not everybody agrees with the Acres, Battelle, and Kentco reports that rejected natural gas as a fuel for the Railbelt on the theory that its price in Alaska will be tied to a rising oil-import price in Japan. The export market is probably not the decisive element, whether or not that market for gas grows. Right now, the proved reserves of gas in Cook Inlet are equal to something on the order of 70 years of Anchorage-based demand at today's level, and at least 20 years if the gas-consuming industrial plants on the Kenai and the present LNG export facility are included. That's a lot of energy security by anyone's standards. Nevertheless, there is little likelihood that today's proved reserves contain all that will ever become accessible to Southcentral Alaska. As long as reserves represent more than 10 or 15 years of future production, it just doesn't pay the oil companies to search for gas or to drill up known prospects that are not yet considered proved reserves.

Aerial view of Devil Canyon. (Photograph by Eric Yould.)

In any case, enough gas has already been discovered to serve Anchorage basin gas-utility demand and Railbelt electrical demand at lower cost than Susitna power, at least through the rest of the century. In a sense, this outlook enables Railbelt citizens and their utilities to put off the need to choose among high-capital cost options. Cook Inlet gas will be there at an acceptable cost for as long as it's worth thinking about.

Years ahead, when and if Cook Inlet gas is truly nearing depletion, there will be plenty of time to look at alternatives, including coal, medium-size hydro projects like Bradley Lake and perhaps even megaprojects like Susitna, Cook Inlet tidal power or a new, less troublesome generation of nuclear plants. But now is not the time to consider them as realistic planning alternatives or to spend tens of millions of dollars each year in the engineering, promotional, or research and development efforts on options that may not even be in the running when something new is really needed. When the gas begins to run short, the Railbelt will have plenty of warning, and you can bet that technological options are going to be a lot more varied and sophisticated 10 or 15 years in the future than they are today.

COST OVERRUNS

In addition to the danger of long-lasting supply and price commitments attendant to high-cost, capital-intensive energy projects, these ventures pose notorious dangers of cost overruns during the construction period. Cost overruns can triple or quadruple project costs. They are, of course, a management problem and they are subject to the swings of inflation and interest rates. But there is a far more insidious problem; the forces and rationales within the community that press for these megaprojects are indifferent to costs. More precisely, the demand within Southeastern Alaska for state-funded hydro projects was based more on the short-term payroll effects than on future energy needs. And because of this, there is a tendency for the boomer factions in Alaska's public life to act as if the bigger and more expensive the project, the better it will be for the state.

The big thrust for Susitna indeed arises not so much because there is a respectable case for it as an investment in Alaska's distant future, but rather because it involves enormous spending in the near term. The more costly it is, the more jobs it would "create," and the more popular it becomes with everyone who perceives it will be built with somebody else's money. Susitna is the most popular project in the neighborhood precisely because it is the biggest. In this context, the forces that select these projects can be expected to undermine any will on the part of a community's political system to control costs. It would be inconceivable, in light of the principal motivation for building the project, that the Power Authority would be allowed to hold costs down by hiring Korean construction firms to build Susitna with Pakistani (or even non-union American) labor.

Consider the Four-Dam Power Pool in Southeast Alaska. Every stupid disaster connected with that project was warned against by outside consultants, by skeptical legislators, and even by Power Authority staff. The projects were too big, they were goldplated, they were incompetently managed, and they were built without power-sales commitments or long-term financing.

Even those legislators from the affected communities, who understood the problems, nevertheless voted to approve them, because it was clear that the communities to be served by the dams would bear none of the costs of overbuilding. Anyone who looked thoughtfully at those programs (and there were many) knew that they were overbuilt and that the cost of power, if it was marketable, would exceed what a smaller project could have yielded, and would in fact exceed the costs of diesel alternatives. The Power Authority went ahead anyway with the explicit or tacit consent of both branches of state government because the true thrust of the program was to spend construction dollars. The Power Authority thus let itself get into the position of trying to do well what shouldn't have been done in the first place.

Alaskans will naturally regard construction as a "basic" industry as long as it is sustained largely by federal appropriations, big oil companies, or a seemingly bottomless state treasury, and wherever the members of the impacted community are not clearly responsible (through taxes, utility rates, or bonded indebtedness) for the costs of overcapacity, gold plating or pyramid building. In Alaska's present political mood, checks and balances are both weak and unpopular. It would be too bad, however, if the only effective check on construction boondoggles turns out to be a deep economic slump, accompanied by a wave of defaults on state-sponsored ventures.

Let me conclude with a half-upbeat note. No longer are huge costs overruns inevitable or even likely on every big project.

In the 1970s, macroeconomic conditions doomed large construction projects everywhere to cost overruns. General inflation was accelerating, and interest rates were moving in track. During that period, labor rates for construction ran ahead of inflation. Environmental, safety, and other technical regulation was becoming more complex and demanding. Everybody, therefore, chronically underestimated "as-built" costs, construction times, and interim financing costs.

Now, tight money, surplus capacity, and the collapse of unrealistic expectations about future energy prices have given us a global and national construction-services market (outside Alaska anyway), bids are coming in under the owner's engineering estimates and projects are coming in under budget and on time. The era of inevitable massive cost overruns and delays is over, along with the energy crisis and the boom and shortage periods of the 1970s. But this outlook may not carry much hope for unneeded or ill-timed projects. Cost overruns can be expected to continue for public projects in Alaska as long as there is no *will* to control costs, as long as state funds are treated as if they belong to nobody, and as long as those who make the go-ahead decision don't bear the responsibility for ultimate costs. Cost overruns will be the norm as long as state-funded projects, and particularly hydro projects, are advocated largely as public works programs to keep the construction industry in business and growing. ♦

THE VOICE OF THE CONFERENCE:

A REPORT FROM ENERGY OPTIONS 85

from

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INTRODUCTION

Energy Options 85 was a three day conference held on March 8-11, 1985 at the Egan Convention Center in Anchorage. The conference consisted of a two day general conference for the public, followed by a single professional day. Its energy trade show received 2000 visitors over the three day period to the substantial satisfaction of 40 exhibitors. Over 400 participants attended 94 sessions on the technical, program and policy aspects of conservation and renewable energy. Sixty speakers from Alaska, Canada, and the lower 48 shed light on the major accomplishments in this field that can contribute to Alaska's energy picture.

For example, Jan Hamrin of the Independent Power Producers Association reported that California now has 1,050 MW of independently produced energy on line and generating electricity in the California grid. That's a 525% increase since 1981. A total of 6,000 MW are on contract, with 60% of these in co-generation, waste-to-energy and biomass.

Canada and Scandinavia have demonstrated that climatically appropriate research and development have produced impressive results in arctic energy technologies. The Swedes have produced quality housing that typically consumes 50% of the energy of Alaskan homes. Our neighbors, the Canadians, have researched, demonstrated and commercialized superinsulated homes in a period of 7 years. Confidence in this technology is so high that the Canadian government now offers a $3,000 rebate toward the construction of a superinsulated home. As a result of these research efforts, superinsulation is now being demonstrated in Montana and in an aggressive 500 unit program by Bonneville Power Authority. Denmark, at the same latitude as Ketchikan, has invested profitably in producing the best marine quality wind generator in the world.

By identifying conservation and energy management as a supply option, utilities nationwide have moderated growth, reduced load or stabalized rates as needed. The City of Tacoma has recently adopted a stringent building code for their climate, (R 19 walls, R 38 ceilings and triple pane windows) because its cost at 1.9c per KwH is substantially less than the cost to produce new electrical resources. Pacific Gas and Electric (PGE) has a better buy in its residential audit program at 3.1c per kwh, commercial energy investment rebates at .7c per KwH and appliance efficiency rebates at 2.5c per KwH, than their marginal cost of electricity at 8.7c per KwH. Fully 40% of PGE's 10 year load forcast is projected to be met through conservation and load management. Closer to home, a recent reevaluation of Chugach Electric Association's

residential load forcast found that a 30% shortfall in projected demand could be largely attributed to increases in appliance efficiency.

Energy management has emerged as a important economic development strategy. The California Energy Commission reports that the corporate energy tax credit in that state is responsible for creating 21,000 jobs and $1.1 billion in economic development. The cost to the state was $120 million in reduced taxes. Private sector interest in Alaskan energy production was clearly in evidence at Energy Options 85.

THE ECONOMIC CLIMATE FOR CONSERVATION AND RENEWABLES

Conference participants recognized that the advances in Northern technology achieved by Sweden, Denmark, Canada, and California can be equalled in Alaska. They noted that in spite of high energy costs and abundant energy resources, the positive atmosphere that has made for significant development of those technologies in other countries seems to be absent in Alaska. Three examples illustrate the point:

- It is ironic that the Railbelt, which has the largest load center in the state, has not explored load management, cogeneration, conservation or supply alternatives similar to the California experience. The costs for investing in these technologies is typically less than Southcentral marginal energy costs.

- The longest term benefit to Southcentral Alaska would be in managing Cook Inlet gas reserves to achieve its maximum fuel potential, yet combustion efficiency for Southcentral electric utilities is commonly under 30%.

- Investment tax credits, energy tax credits, and other state incentives could attract investors to take an interest in bush waste heat recovery, yet the state has assumed virtually 100% of the funding of this activity.

Several elements must be present to foster a positive atmosphere for a diversified energy supply based on local resources. They are:

- positive government programs that focus on resource assessment, research and development and financial incentives for investment.

- certainty in the economic climate based on stable, positive regulatory and administrative environment.

- a highly competative and technically competent and diversified energy industry.

- a utility system or grid that has not overbuilt its electrical generation capacity.

The majority of participants at Energy Options 85 support a realignment of state enregy policy that would attempt to balance equity with long term sustainability. This integrated approach to energy programming would be based on restoration of incentives for energy investment, well-planned research and development, and efficient housing. Rural Alaskans still face high energy costs and the larger context of the cash poor rural economy. They can best be served by an effort to move conservation and renewable technologies into the market place or supply system while the state still has money to bridge high costs with subsidies. The following sections outline program elements to achieve this goal.

THE ENERGY PROGRAM FOR ALASKA: A REALIGNMENT

Energy Efficient Housing

Building construction efficiency was a major focus of Energy Options 85. Emphasis continued on presenting to over 2000 builders and homeowners current and available energy efficient technology. In a panel discussion on efficient construction, builders noted that although the heating season in Alaska is two to four times as severe as as the lower 48, the majority of homes built in Alaska are built to lower 48 standards. The consensus among builders was that the general public still is unaware of the cost benefit of energy conservation in comfort and dollar savings. Although most people are familiar with conservation techniques, they do not have the tools to quanitfy the costs of installation and the benefits of reduced fuel bills. Scores of privately built energy efficient Alaskan houses have not been monitored for performance.

Documentation of household energy use reveals that the cost of home heating exceeds electrical cost in rural Alaska by as much as a factor of five. The quality of new construction is largely dependent upon HUD, an agency that has difficulty in responding to local priorities. While funding seriously curtails the possible investment by HUD in energy efficiency, the shortfall is often paid many times over in Low Income Energy Assistance payments. Furthermore, rural homes are reknown for cold floors and drafts that jeopardize the health of children and elders. Sweden, on the other hand, has defined energy as a housing

problem and initiated a series of incentives that have achieved a comfortable housing stock that is fully 50% more efficient than its Alaskan counterpart. It is in housing that the most significant gains in energy savings and health benefits can be made. Two promising new developments within the housing industry took shape this year.

- The Energy Morgage Valuation Program, gives an energy rating to homes to inform the purchaser of the energy efficiency of the structure. Home buyers are able to qualify at a higher debt to income ratio to purchase energy efficient homes because their higher monthly morgage payment will be offset by lower fuel bills. This program, developed by the Western Resources Institute, has been approved by both Fannie Mae and the Freddie Mac. The Morgage Valuation program can stimulate the market for energy efficient homes by increasing the number of income qualified homebuyers and by covering the higher cost needed for many energy efficient features. An Ad Hoc committee of the building industry, partially funded by DCRA Office of Energy Programs, has gained support from the building and financial communities. The support expressed by Governor Sheffield for Morgage Valuation during Energy Options 85 will strengthen the program and help to secure the capital necessary to implement the program.

- Lighting and Thermal Efficiency Standards: after a four year delay, the DCRA has and made notable progress toward developing Lighting and Thermal Standards for Alaska. A 17 member statewide advisory board has met to review existing standards from other states. It has developed up-to-date costs for the construction of energy measures and fuel for 15 regions of the state. The committee expects to have regional residential standards in place by the end of 1985.. The quality of the Efficiency Standards effort has left the conference participants optimistic about its outcome.

To compliment these two initiatives, additional actions are suggested:

- evaluate existing Alaskan energy efficient housing for thermal performance, air quality, construction techniques, cost of construction, ect.

- set up a committee like the Lighting and Thermal Standards Committee to specifically investigate the real costs and benefits of superinsulation and energy efficient design. Benefits go beyond simple fuel savings to include comfort, daylighting, etc.. One large commercial facility reported a 15% decline in absenteeism upon moving its employees into a structure designed for energy efficiency and daylighting.

The increase in productivity more than compensated for the increased cost for the energy features.

- incorporate the findings of the Superinsulation Committee into a carefully planned research and development program. (see below)

- Disseminate findings to lay and professional communities.

Restoring the Economic Climate for Conservation and Renewal Energy

In session after session conference participants stressed that the continuing energy subsidies in Alaska provide no long range solution to high energy costs;and that our current energy technology is inappropriate to the actic and sub-arctic climate. They noted that state projects and budgets are electricity centered, sidestepping the larger problems and opportunities of space heating and transportation. Energy businessmen and women substantiated that the current subsidies have dramatically depressed the market for conservation and renewable energy technologies. Rural utilities, who have found their most reliable customer in the State of Alaska, have no incentive to reduce operating costs. Rather, there are indications that subsidies are actually encouraging consumption, increasing dependence, and, therefore, the requirement for state subsidies.

Beyond these fundemental problems is the recognition that the system of subsidies probably cannot survive the reality of declining revenues and will have to change. The result of the change is unknown and somewhat secondary to the reality that private investors can not responsibly consider business ventures in a climate of such economic uncertainty.

With these parameters in mind, Alaska's Energy Program could be realigned in the following ways:

- Develop a standard for evaluating the cumulative costs and benefits of energy subsidies. Set up long term strategies to achieve increased efficiency and the lowest cost, unsubsidized energy option. (The 1985 Energy Plan takes a first step in this direction, but even this accomplishment becomes valueless, unless the Plan becomes the basis for state energy budgeting.)

- Give greater funding and planning authority to regions and

communities to achieve a better match for climate and program delivery. Concentrate on communities and regions that are motivated and have demonstrated sufficient planning and administrative support to succeed. Let these first efforts serve as a demonstration for communities and regions currently dealing with non-energy priorities. Build success!

- Require that utilities participating in the power cost equalization program maintain or increase operating efficiency. Assist PCE utilities to accurately record costs and improve plant efficiency.

- Provide incentives for utilities to reduce production costs and for consumers to increase end-use efficiency.

- Encourage utilities to provide information and load management programs for their ratepayers.

- Establish a corporate energy tax credit for private sector investments in wind, geothermal, coal, solar, biomass, waste-heat recovery and building energy management.

Research and Development

Equally important to a positive economic climate is confidence in the technology and resource evaluation. Past State efforts in renewable energy have typically been demonstration projects that had never undergone applied research or modification for Alaska. Siting was sometimes based more on political reasons than than on the quality of the energy resource. Compounded by understaffed project management and a systematic lack of monitoring, many projects have yielded disappointing results. Consequently, the value of renewable energy technologies has come into question.

As a young state, much of the available energy resource data is too tentative for resource development. Alaska needs to assess and perform a production quality inventory on all its energy resources from high efficiency housing to completion of the peat inventory. A production quality inventory would allow communities and private investors to evaluate their energy options with greater confidence.

The resource assessment should be complemented with a planned, systematic research and development program to determine the best energy technologies for Alaska. Projects should build on one another and rigorously promote only successful technologies. In 1985, the State of

Alaska will spend $480 million on energy related matters, ranking above state administation and health and social services in expenditures. This makes Alaska the sixth largest energy corporation in the U.S. Exxon and other energy corporations allocate 6% of their budgets for research and development. Yet Alaska's 1985 energy R and D budget was .2% of the total. Moreover, the state can better utilize research talent on hand. The energy expertise that the university and in private industry is substantial.

Energy costs continue to undermine Alaska's competative position in producing goods and services, thereby effecting the strength and diversity of the Alaska economy. Political leadership and vision is required to develop viable options. By improving its energy and investment efficiency, Alaska stands to benefit from innovations that increase the value of its royalty resources, or diminish the demand for General Fund transfers. Therefore, the State should embark on an incentive research program which addresses real problems directed toward controlling and conserving energy use. Such a program would:

* adequately fund the Division of Geological and Geophysical Survey, and other agencies as appropriate, to assess and inventory energy resources to include wind, geothermal, peat, biomass, and coal.

* plan an integrated and targeted R and D program. Standardize reporting procedures for data from research.

* Track research activities in other Northern countries. Where possible cooperate on research projects to maximize funding and reduce redundancy. Coordinate with the federal Arctic Research program.

* Target a allocation of 2% of energy related funds to research and development.

Information Dissemination

A problem that is voiced year after year at the energy conference is the lack of specific technical information on Alaskan applications of energy technologies. This year builders and designers agreed that the general public is still unaware of what energy conservation can mean to them in terms of comfort and dollar savings. Utilities can provide for the information needs of many of their ratepayers. Professional groups, community leaders, and industry associations need well organized, targeted energy information to perform their jobs. The energy resource

and demand issue is easily as complex as the land issue has been for Alaska. Substantial progress was made in land issues only after a determined effort was made to coordinate the players and comprehensively record and disseminate information. Therefore:

- Make a primary objective of disseminating information in the most usable and consistant forms possible.

- Coordiate with utilities, professional organizations, and local governments for dissemination.

SOURCEBOOK

The Energy Options 85 Sourcebook and Proceedings chronicals in depth the technical accomplishments and policy perspectives presented at this year's conference. Copies can be ordered from CARE, Inc., P.O. Box 4-1464, Anchorage, AK 99509 for $ 15.

COMPASS NORTH
Five Challenges For Alaska

AN ACTION REPORT
BY
COMMONWEALTH NORTH

Edited by
Judith M. Brady
Executive Director

February, 1985

EXECUTIVE SUMMARY

COMPASS NORTH:
Setting a direction for the future

Alaska is "unique" in so many ways that Alaskans take the word for granted. In this state "unique" is a cliche; unique in size, unique in beauty, unique in resources.

What is only beginning to be understood is that Alaska is also unique in its economic structure. It is this uniqueness that will decide its future.

Alaska is an "owner state". It owns 28% of its land base, which includes the largest discovered oil field in North America. The revenues from this field give the state government control over the largest pool of capital in the economy.

Land and capital are ingredients of ownership. They are the basis of power. The State of Alaska, as the owner of more than 100 million acres of land and billions of dollars in resource wealth, has power.

In a democratic society, all governments have obligations to the people. In Alaska the government has an obligation of ownership that is above and beyond that of a traditional state government. It has an obligation as an owner to help sustain the economy - to use its land and capital to preserve and enhance the private enterprise system.

This is a new frontier in public obligation. Never before has a state government been so wealthy in relation to its citizens. Never before has a state government controlled so much of its land and capital assets.

This new frontier means Alaskans must pioneer a new concept of state government, a government that uses its power in partnership with the private sector to create new opportunity and new wealth.

Alaska's obligation of ownership is more than an interesting hypothesis: the state is on a time line. Every available public and private forecast depicts a rapid decline in Prudhoe Bay oil revenues in the 1990's. The state's economy is almost totally dependent on these revenues.

If Alaska is not a responsible owner, if th state government does not stop dissipating its capital base on current operations, the result may be similar to that of a failed company: unemployment, bankruptcy, and social hardship.

There will be many Alaskans who do not believe the state has any obligations as an owner. They will believe that all state revenues should be treated alike and "spent" on public services. They will believe that all state land should be preserved from further development.

The irony and tragedy for Alaska, should this thinking prevail, is that without a strong, growing economy, the government will not be able to provide public services or protect the environment. The private sector will not be able to generate jobs and income.

What must be done to meet the obligations of ownership?

Alaskans and our leaders must begin to think like owners - to make our ownership work for us.

Alaskans must begin to think about revenue as owners:

Traditional government leaders ask: How much do we have to spend?

Leaders of Alaska as an owner state must ask: What is our income? What are our assets? Can we sustain the current level of spending into the future? Where should we invest to get the greatest return on our money?

- THE STATE'S OWNERSHIP REVENUES ARE CAPITAL ASSETS THAT MUST BE MANAGED TO CREATE NEW WEALTH.

As an owner the state receives revenues that are separate from taxes. These are royalties, rentals, and bonuses from the lease and sale of its resources. This capital should be treated as a powerful renewable resource, a means of creating new wealth.

But right now only 25% of these ownership revenues must be invested in the Permanent Fund. The rest are being spent on the current operation of government. The state must stop dissipating this capital base.

- ALASKA'S OWNERSHIP REVENUES SHOULD BE DIVIDED EQUALLY BETWEEN THE PERMANENT FUND AND A NEW CAPITAL INVESTMENT FUND.

It is likely that the Permanent Fund will be a "safety net", a means of sustaining government service as Prudhoe Bay revenues decline. The Capital Investment Fund would be the means of encouraging new development. It could finance revenue producing, regionally important projects that add to the long term economic health of the state.

- THE FUTURE OF THE PERMANENT FUND IS TOO IMPORTANT AN ASSET TO BE LEFT TO "DECISION BY DEFAULT". THE LEGISLATURE SHOULD ENACT LEGISLATION WHICH ESTABLISHES LONG TERM GOALS FOR THE FUND.

- TO ENSURE A "SOFT LANDING" FROM THE DECLINE OF PRUDHOE BAY REVENUES, CURRENT SPENDING MUST BE REDUCED TO LEVELS THAT CAN BE SUSTAINED IN THE FUTURE.

- MISUSE OF WEALTH IS A GREAT DANGER IN AN OWNER STATE. THE STATE GOVERNMENT MUST REFRAIN FROM USING ITS WEALTH TO USURP LOCAL DECISIONS OR DISPLACE LOCAL RESPONSIBILITY.

The legislature has taken over the role of local government by direct appropriation and other political distribution practices that bypass or dictate to local communities.

Revenue sharing must follow the Constitutional mandate of "maximum local self government".

State revenue sharing should be accomplished through a single formula based on equitable distribution. Except for emergencies, no funds should be allocated outside such formula. The emphasis must be on local decision making and local responsibility.

Alaskans must begin to think about land as owners:

Traditional government leaders ask: Are we doing a balanced job regulating between private land owners?

Leaders of an owner state must ask: What are our resource assets worth? Is there enough development underway to maintain our economy and continue growth? Are we helping the private sector promote responsible development?

- ALASKA'S STATEHOOD LANDS AND RESOURCES SHOULD BE MANAGED AS CAPITAL ASSETS. PUBLIC POLICY MUST BE REFOCUSED, AS A MATTER OF HIGHEST PRIORITY, TO REFLECT THE STATE'S DEPENDENCE ON NATURAL RESOURCE DEVELOPMENT.

Resource development is Alaska's only option for a continued economic base.

The plain fact is, if there is no further natural resource development, the state will be bankrupt.

Public leadership must distinguish between ritualistic environmentalism and areas of true ecological concern. After years of government decisions weighted in favor of "no development" today's leadership must redirect public policy toward action consistent with the mandate of Alaska's Constitution: "to encourage the settlement of its land and the development of its resources by making them available for maximum use consistent with the public interest."

- THE LEGISLATURE, AS CUSTODIAN FOR STATE LANDS, SHOULD DEVELOP A COMPREHENSIVE POLICY THAT RECOGNIZES THE STATE'S RELIANCE ON RESOURCE DEVELOPMENT AND DIRECTS MANAGEMENT OF THESE RESOURCES AS CAPITAL ASSETS.

- THE GOVERNOR SHOULD FORGE THE RESOURCE DEVELOPMENT STRATEGY NECESSARY TO ENACT LEGISLATIVE POLICY.

The leadership must work together to meld Alaska's need for development with concern for the environment by formulating an overall state resource development strategy. The

emphasis should be on technically sound, efficient permitting; stable tax policies; and balanced multiple use management by state agencies.

- THE OBLIGATION OF OWNERSHIP INCLUDES ENCOURAGING NEW REVENUE SOURCES. THE STATE SHOULD DETERMINE ITS ROLE AS AN INVESTOR IN THE DEVELOPMENT OF ALASKA'S RESOURCES.

It can be good public policy to invest state funds in resource development projects, but the state must decide the limits and goals of its investment role. At a minimum, project investment should be economically feasible and be able to return to the state a cash flow having a present value greater than the state's investment.

To meet these obligations of ownership Alaska's elected leaders must use the full power of their Constitutional authority and responsibility.

Public policy will decide the future of the owner state, and it is Alaska's elected leaders who decide public policy. Alaska needs decisive leadership now, leadership that understands the obligations of ownership and has the courage to make the politically hard decisions necessary to meet that obligation.

No other state constitution grants more authority to the governor than does Alaska's. No other state constitution implies more public trust in its legislative representatives than does Alaska's.

It is these elected leaders who must meet the obligation of ownership by preserving Alaska's capital assets.

It is these elected leaders who must meet the obligation of ownership by advocating responsible resource development.

If our leadership fails in this pioneering effort we could well end up with socialism - a government that uses its land and capital to feed its own growth.

The challenge for Alaskans is to develop economic and social strategies that use public ownership as a catalyst to develop a strong free enterprise system.

Executive Summary

Alaska's Energy Plan 1985

Governor Bill Sheffield

Prepared by:

State of Alaska

Department of Commerce
& Economic Development

Office of Energy

Loren Lounsbury
Commissioner

Jack Roderick
Director

February 15, 1985

Energy Assessment

Alaska's production of energy far exceeds in-State needs due to the massive crude oil and natural gas resources available in the State. Limited refinery capacity necessitates the import of some refined petroleum products despite the excess production. Alaskans have the nation's largest average energy consumption level and this consumption occurs through a variety of commercially proven and alternative energy technologies. (How consumption and production balance in Alaska is the subject of this section.)

Consumption

Alaskans consumed 411 trillion Btu's of energy in 1982, continuing an increasing consumption trend that has prevailed since statehood in 1959. In 1982, Alaska consumed 1.15 billion gallons of petroleum, 238 billion cubic feet of natural gas, 672 million pounds of coal, 2.3 billion kilowatt hours of electricity. In total, Alaska ranked first in consumption compared to all other states in the nation, and per capita consumption of 926 million Btu's was three times the national per capita average of 305 million Btu's. Alaska's increasing consumption of 5 percent per year since statehood closely parallels the overall economic growth of 3 to 5 percent.

Fossil fuels are the main source of energy in Alaska today. Diesel engines are the principal source of electric generation for most of Alaska's rural villages and many of its smaller cities, having a nameplate capacity of 265.5 MW. Alaskan coal-fired steam plants have a nameplate capacity of 87.0 MW with all of this capacity located in the Fairbanks area. Combustion turbines using natural gas are another source of power in Alaska, with total nameplate capacity of 901.6 MW. Peat, also considered a fossil fuel, has potential as a heat source.

Renewable energy resources are gaining greater usage in Alaska. Both utility sized and smaller privately owned microhydroelectric projects are on line. (Combined with fossil fuel production, a total of 2.4 billion kilowatt hours of electricity was produced for consumption in 1982.) Wind generators are becoming more popular and there are presently more than 150 wind generators statewide. Photovoltaic systems are being used in low wattage, remote uses such as fish-counting equipment, communication equipment and railroad crossings as well as to supplement other sources of intermittent power such as wind generators. Wood consumption and the use of biomass products to supplement heat and power sources are also used. Biomass consumption is unquantified for Alaska, but wood consumption for heating exceeds 50,000 cords annually. Geothermal energy generation is becoming more important, but like biomass, is not clearly documented in Alaska.

Production

Alaskan energy production continued to expand in 1984. On a daily basis, in-State refineries produced approximately 4.4 million gallons of refined liquid petroleum products and over 1.6 million barrels of crude oil flowed from the North Slope to Valdez. On the Kenai Peninsula, 1984 saw 1.0 million tons of ammonia and urea and 1.0 million tons of liquified natural gas produced from Cook Inlet natural gas. Coal production from the railbelt was 800,000 short tons. Renewable energy sources also provided power for Alaska in 1984, as hydroelectric capacity reached 217 MW and alternative energy projects in the form of wind and geothermal began approaching a point of commercialization at select Alaskan sites.

Chart 4

Consumption of Energy by Sector and Fuel Type for Alaska

(Trillions of Btu's)

		Statehood 1960	1982	1981	1980
Residential	**Total**	**8.1**	**34.3**	**33.1**	**38.8**
Coal		0.4	0.0	0.0	0.0
Natural Gas		0.2	8.1	8.1	10.8
Petroleum[2]		5.2	7.0	5.4	6.8
Electricity[3]		2.3	19.2	19.6	21.2
Commercial	**Total**	**7.5**	**34.5**	**31.9**	**41.2**
Coal		0.8	0.0	0.0	0.0
Natural Gas		0.0	16.9	16.6	24.9
Petroleum[2]		5.2	4.8	4.4	4.8
Electricity[3]		1.5	12.8	10.9	11.5
Industrial	**Total**	**17.2**	**138.7**	**109.2**	**266.9**
Coal		5.0	0.0	0.0	5.9
Natural Gas		1.9	102.4	70.1	208.4
Petroleum[2]		9.5	22.9	23.2	36.3
Electricity[3]		0.8	13.4	15.9	16.3
Transportation	**Total**	**27.6**	**89.4**	**101.1**	**102.4**
Coal		0.1	0.0	0.0	0.0
Natural Gas		*	0.1	0.3	0.3
Petroleum[2]		27.5	89.3	100.7	102.0
Electricity[3]		*	*	0.1	0.1
All Sectors Combined	**Total**	**60.3**	**297.1**	**275.2**	**411.4**
Coal		6.3	4.7	5.6	5.9
Natural Gas		2.0	157.3	125.1	244.4
Petroleum[2]		47.4	129.4	138.4	155.2
Electricity[3]		4.6	5.7	6.1	5.9

[1] Information from U.S. Department of Energy, State Energy Data Report, Consumption Estimates 1960-1982.
[2] Includes Distillate Fuel, Kerosene, and LPG.
[3] Electric sales and electric energy losses due to transmission generation.
* Less than 0.1

Chart 5

Alaska's 23 Energy Regions

Oil & Gas

Oil and gas are Alaska's primary energy resources. Total petroleum production in Alaska since the turn of the century has been over 4.3 billion barrels of oil (one barrel equals approximately 42 gallons), and over 7.9 trillion cubic feet of natural gas. Estimated reserves of 9 billion barrels of oil and 39.9 trillion cubic feet of natural gas are known.

Competitive leasing is the method used to provide temporary access to below-ground petroleum reserves, with leased tracts spread from the Gulf of Alaska to the Beaufort Sea on federal and State lands. The story of oil exploration and subsequent leasing have formed Alaska's present oil and gas picture.

The State has held 43 competitive lease sales since 1959, leasing 7.7 million acres of State-owned land. A total of 1,479 leases covering 4.6 million acres are currently active. The State of Alaska plans to hold an additional 16 sales through the year 1989. In addition, the Federal Government will conduct 11 lease sales on the Outer Continental Shelf (OCS) through 1987, including areas in Cook Inlet, the Gulf of Alaska, St. George Basin, the Diapir Field (Beaufort Sea), areas near Kodiak Island and in areas near the Shumagin Islands.

Exploratory activities are occurring in Cook Inlet, the Beaufort Sea, St. George Basin, Navarin Basin and on the North Slope. Marginally economic fields, such as the Kuparuk and Lisburne formations, are beginning to be produced due to their close proximity to the super-giant field,

Prudhoe Bay. Additionally, development plans are being formulated for the Endicott formation located east of Prudhoe Bay, and a at Seal Island in the Beaufort Sea west of Prudhoe Bay.

Alaskan petroleum supplies come largely from oil flowing through the Trans-Alaska pipeline (TAPS) from Prudhoe Bay and from oil and gas production in Cook Inlet. Crude oil and natural gas are refined for in-State consumption and export. TAPS provides 1.6 million barrels of crude oil per day. Alaskan refineries process 124,100 barrels of refined petroleum products and 230 million cublic feet of natural gas per day. Annually, 1.1 million tons of ammonia and 1.0 million tons of urea are also produced from natural gas.

Chart 6

Alaska's Known Oil and Gas Provinces

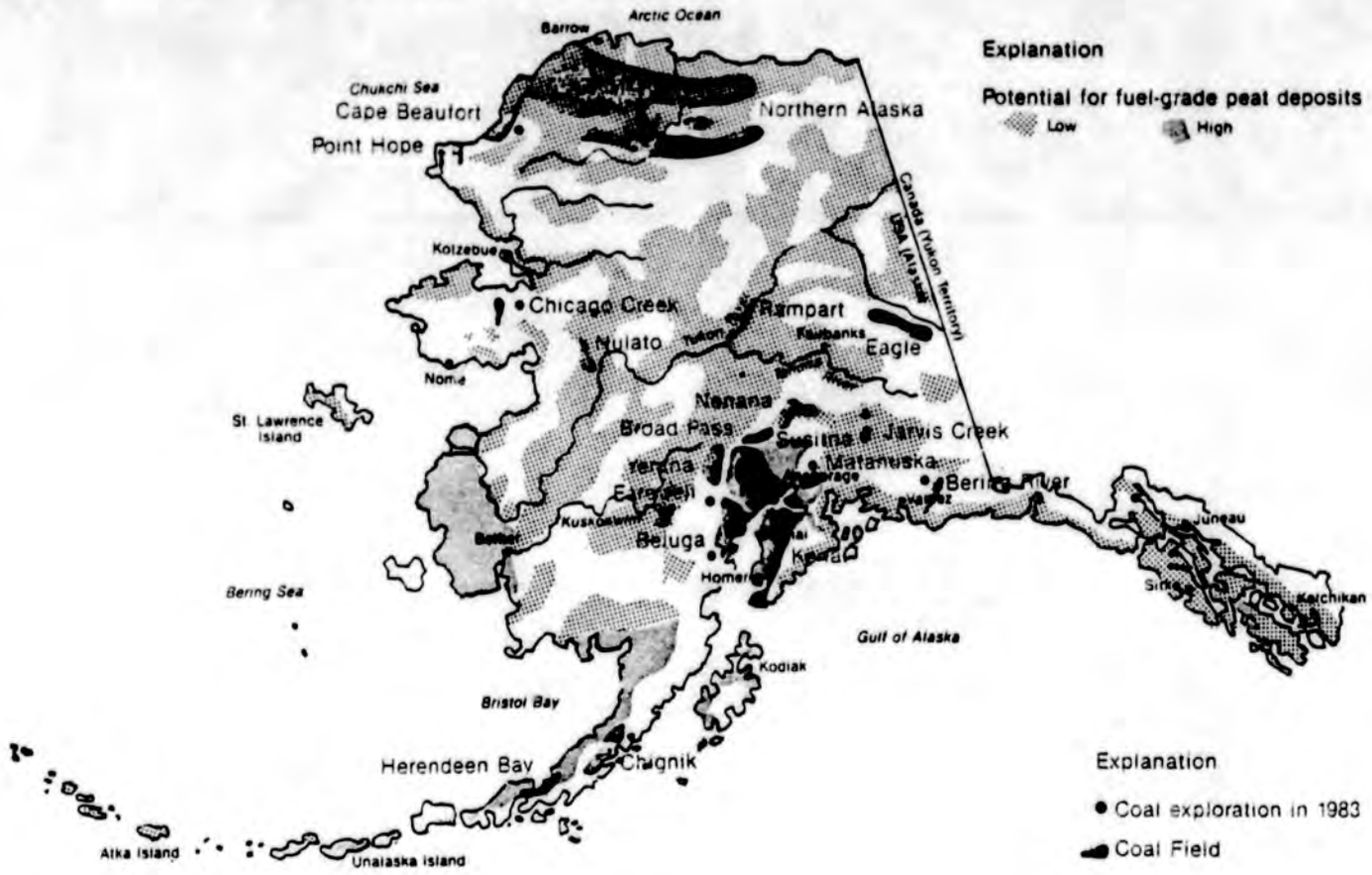
Coal

Alaska's coal resources are plentiful and widespread, providing long-term development potential for export and in-State use. Coal deposits range from Cook Inlet to the North Slope and offer a vast exploitable resource. Alaska produced 336,000 short tons of coal in 1982. Alaska's measured coal reserves are approximately 6.3 billion short tons (one short ton equals 2,000 pounds) with hypothetical reserves of 5.6 billion short tons. (See Chart 7 for location of Alaska's known coal resources.)

Only one coal mine was active in 1983-84 and there was a low level of exploratory drilling. In 1985, this activity will increase. Potentially, Diamond Shamrock will develop a 12-million-ton per year coal production facility in the Beluga area, the Usibelli mine at Healy will increase production, Usibelli coal will be shipped via the Alaska railroad to Seward for export to South Korea. Recently

Chart 7

Alaska's Known Coal and Peat Resources



leased acreage in the Matanuska area will be developed, and a $2 million appropriation by the Alaska State Legislature will fund a feasibility study of a Cape Beaufort coal mining facility.

Peat

Alaska has only a small portion of the known world supplies of usable peat. Peatlands with fuel grade potential cover 4.4 million acres of Alaska. With a minimum deposit thickness of five feet, these peat deposits will yield approximately 880 million tons of moisture-free, fuel grade peat.

Peat assessment is now focused at Dillingham as part of the Bristol Bay Native Association Peat Harvesting Project at Roger's Creek and Houston areas in the Susitna Valley and on the Kenai Peninsula. Horticultural peat is mined from four pits in the Fairbanks area and at two locations in Willow. Production during 1983 is estimated at 15,000 cubic yards (See Chart 7 for location of Alaska's known peat resources.)

Hydroelectric Power

Alaska has more undeveloped hydroelectric potential than any other state in the U.S. In the 1960's, the U.S. Bureau of Reclamation investigated thousands of potential hydroelectric sites throughout Alaska; 252 sites have been identified with a potential for a hydroelectric project of 2,500 KW or more. Alaskan hydroelectric projects on line today have a nameplate capacity of 197.7 MW, with an additional 20.0 MW just coming on line with the completion of the Terror Lake project. These projects will generate 1.04 million MWh of electricity annually (See Chart 8 for Alaska's Major Hydro Installations.)

The State of Alaska has conducted three geothermal drilling programs since 1979. These were at Pilgrim Hot Springs on the Seward Peninsula, Summer Bay on Unalaska Island, and Makushin Volcano on Unalaska Island. These each had reservoir temperatures ranging from 122° to 380°F.

In addition to the State projects, the U.S. Department of Navy has been investigating the possibility of developing geothermal resources for electrical generation on Adak Island. The Navy is planning a geothermal exploration program for 1985. (See Chart 8 for Geothermal Resources of Alaska.)

Solar

Solar energy has good potential for use as an additional source of energy in Alaska. Varying levels of daylight experienced in Alaska actually permit 230 hours more sunlight in Alaska than at the equator each year. Solar energy can be used in one of four forms: passive heating, active heating, photovoltaics, and daylighting; and although the actual experience with solar energy in Alaska is limited, solar may be a valuable energy resource. The amount of solar use is not well documented.

Tidal

The ebb and flow of the tide produces kinetic energy which can be harnessed to produce electricity if there is sufficient tidal range. The principal tidal resource in Alaska is Cook Inlet which has the second highest tides in the world. Cook Inlet is a major tidal estuary which is approximately 180 miles long and ranges in width from approximately 80 miles near its mouth to approximately 20 miles at the confluence of the Knik and Turnagain Arms. Some 16 sites have potential for a tidal power plant. However, the density of the kinetic energy in tidal currents is relatively low and harnessing this energy source is capital intensive. To date, no substantial contribution to power generation has come from this resource.

Biomass · Wood

Alaska has tremendous biomass potential, particularly from forestry product waste material. In 1983, 262 million board feet of logs were harvested, resulting in production of 146 million board feet of lumber, 240,000 short tons of pulp, and 7,000 short tons of chips. (Additionally, Native corporations exported 233 million board feet of logs.) This production of lumber and pulp comes from Alaska's 240 sawmills which have a total production capacity of 532 million board feet. This production could provide a sizable amount of biomass for power generation.

Wood is used for space heating in many parts of Alaska. Firewood removal from National Forest Service lands in Alaska from October 1982 to September 1983 totalled 11,226 cords of wood and State lands provided an additional 38,890 cords of wood; for a total energy equivalent of 860 billion Btu's. About 40 percent of that consumption was in Fairbanks, 40 percent in all Southeast, and the balance spread statewide (see Chart 9 for Alaska's Timber Resources).

Conservation

Energy saved through conservation is one method to provide more energy service from a given level of power, and represents one of the more accessible energy resources available in Alaska. Conservation includes improvements brought about through increasing thermal efficiencies in buildings, power generation efficiencies for electrical production, increased miles per gallon in transportation, and changes in consumer attitudes on energy use. Thus, conservation offers potential benefits through more comfortable living accommodations with lower life-cycle costs and reduced levels of energy spending. Like many energy resources used in the home or extracted for personal consumption, the exact levels of energy saved are not quantified.

In Alaska, conservation reaches all aspects of the consuming public. Building insulation leads the list in providing maximum energy savings for minimum investment. Other simple forms include insulation of hot water heaters, installation of flow restrictors in hot water faucets, and elimination

Wind

Wind power, suitable for generation of energy in the form of electricity, heat or mechanical power, occurs mainly in Alaskan coastal areas and mountain passes. Favorable wind conditions tend to prevail in the winter months when most communities experience their peak electrical demand and, of course, peak heating demand.

There are over 150 wind generators erected in Alaska today. They are distributed across all regions of Alaska, and have peak power capacities ranging in size from less than 0.5 kW to over 10 kW. Several potential sites with expected good wind potential are being monitored today in select Alaskan locations.

Geothermal

Alaska's geothermal resources occur in over 100 surface manifestations including hot springs, fumaroles, mud pots and wells. Over 11 million acres in the State have significant geologic evidence for geothermal energy development. To date, the quantity of power produced from geothermal has been limited.

The use of hot springs in Alaska for health and recreational purposes is well documented in the historic record. Commercial baths and spas have been developed at numerous sites in southeast and northcentral Alaska. At least six of these establishments have also used low-temperature geothermal fluids for other direct uses such as space heating in lodges, cabins, and greenhouses.

Chart 8

Alaska's Major Hydroelectric Installations and Geothermal Resources

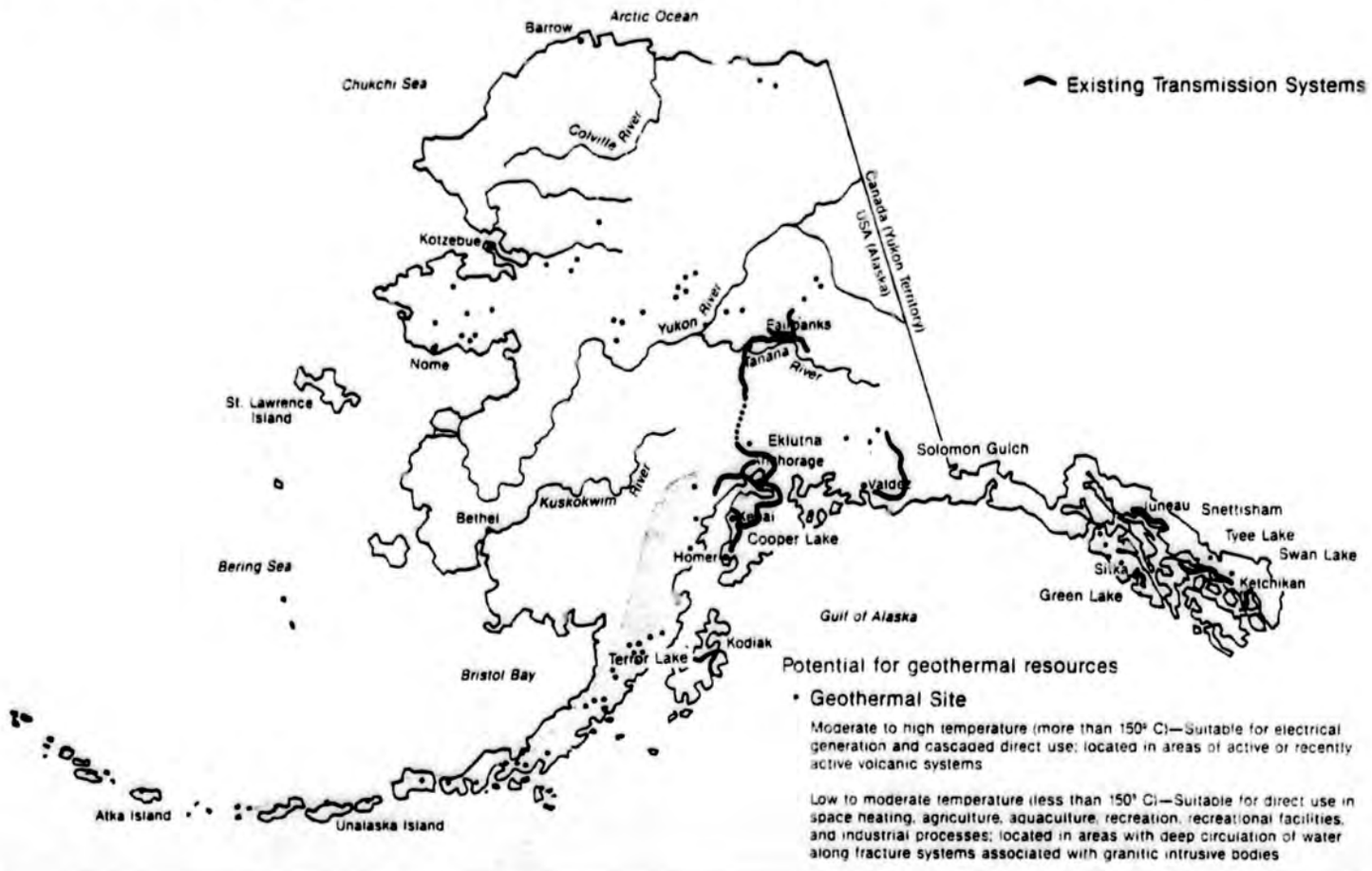
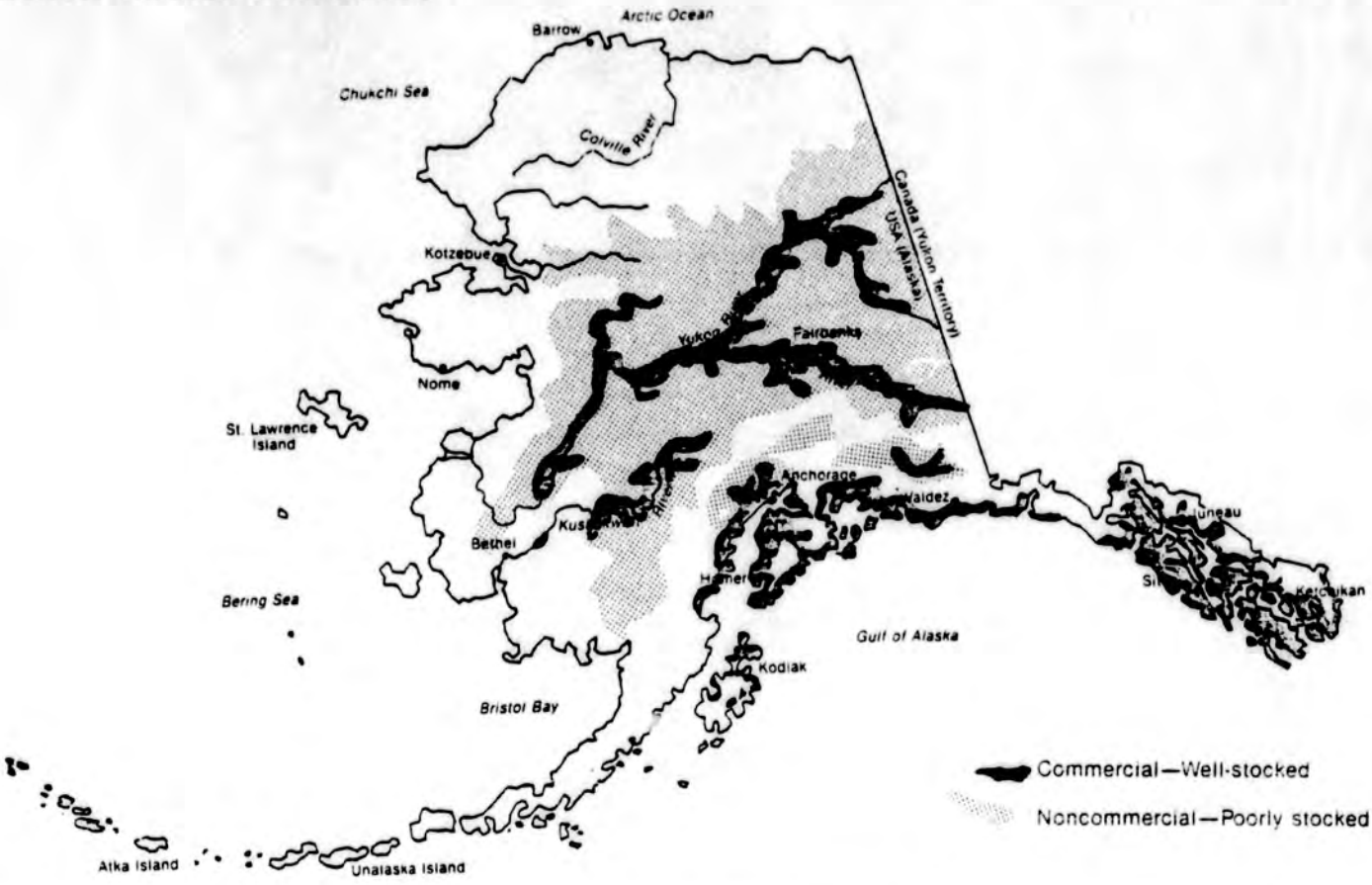


Chart 9

Alaska Timber Resources



of dripping faucets. On a larger scale is the use of properly sized, newer and more efficient diesel generators for electricity generation, and the use of waste heat from the generator jacket and flue gas emissions to heat nearby buildings.

Alaskans are separated by great distances, and have worked to improve economies in transportation and communication. Transportation efficiencies have been brought about through widening, paving, and generally upgrading road surfaces and through carpooling and mass transit programs in Anchorage and Fairbanks. Travel by air and sea have realized greater efficiencies through engine modifications, adjusted travel scheduling, and increased design efficiencies. Communication improvements through the electronic media have reduced the need for travel as well.

State Energy Programs

The State of Alaska continues to give high priority to domestic and export energy issues. Virtually every State agency has some direct or indirect involvement in energy. Several departments have direct responsibility for implementing energy projects or programs. The involvement of the State agencies tends to be based on peripheral concerns, such as environmental permitting.

State agencies with direct responsibility for energy programs are:

1. Department of Commerce and Economic Development (DCED)
   - Office of Energy (OE)—Energy planning, alternative energy development, marketing of fossil fuels.
   - Division of Investments—Energy loan programs.
   - Office of Minerals Development—Assists in developing contacts and encouraging mineral development in-State.
   - Alaska Power Authority (APA)—Planning and development of district heating and electrical systems.
   - Alaska Public Utilities Commission (APUC)—Regulation of electric and gas utilities and pipeline carriers.
   - Oil and Gas Conservation Commission—Regulates oil and gas production.
2. Department of Community and Regional Affairs (DCRA)
   - Division of Community Development (DCD)—Weatherization program, public information efforts, community planning.
   - Municipal and Regional Assistance Division (MARAD)—Community grant and bulk fuel loan administration.
3. Department of Health and Social Services (DHSS)
   - Division of Public Assistance—Low Income Housing Energy Assistance Program.
4. Department of Natural Resources (DNR)
   - Division of Geological and Geophysical Surveys—Investigates oil, gas, coal and geothermal resources.
   - Division of Oil and Gas—Manages oil, gas and geothermal leasing programs, royalty oil sales, and issues permits for exploration and development plans.
   - Division of Mining—Manages coal leasing programs.
5. Department of Transportation and Public Facilities (DOTPF)
   - Research Section—Energy conservation in public facilities.
6. Department of Administration (DOA)
   - Direct grants administration of legislative appropriations to unincorporated communities.

7. University of Alaska (UA)
   - Energy Extension Service—Provide information on energy conservation and conduct alternative technology research.
   - Institute of Water Resources—Energy education and research.
   - Geophysical Institute—Mineral exploration.
8. Department of Revenue (DOR)
   - Research Section—State revenue forecasting.
9. Department of Military and Veterans Affairs (DMVA)
   - Division of Emergency Services— Civil defense and natural disaster emergency planning.
10. Office of the Governor (GOV)
   - Office of Management and Budget (OMB)—State budgeting.

Chart 10

Agency Responsibilities by Energy Functional Areas · 1984

Functional Area	Department of Administration	Department of Community & Regional Affairs	Division of Investments	Office of Energy	Alaska Power Authority	Alaska Public Utilities Commission	Department of Health & Social Services	Department of Transportation & Public Facilities	Department of Natural Resources	University of Alaska
Energy Conservation										
Conservation Education		•								•
Energy Grants	•	•								
Institutional Conservation		•								
Largescale Electrification				•						
Rural Electric Loans				•						
Rural Technical Assistance				•						
Smallscale Electrification				•						
Thermal and Light Standards		•					•			
Utility Loans				•						
Waste Heat				•						
Weatherization		•					•			
Energy Subsidies										
Power Cost Assistance				•	•					
Power Cost Equalization				•	•					
LIHEAP						•				
Audit Grants		•								
Residential Weatherization Loans			•							
Alternative Technology Loans			•							

(Continued)

Functional Area	Department of Administration	Department of Community & Regional Affairs	Division of Investments	Office of Energy	Alaska Power Authority	Alaska Public Utilities Commission	Department of Health & Social Services	Department of Transportation & Public Facilities	Department of Natural Resources	University of Alaska
Electric Systems										
Bulk Fuel Loans			•							
Bulk Storage Grants		•								
Legislative Grants	•	•			•		•			
Alternative Energy										
Demonstration Projects		•		•	•					
Information		•		•						
Alaska Energy Center Projects				•						
Research										•
Grants and Loans	•	•	•							
Utility Regulations						•				
Leasing and Marketing										
Royalty Program								•		
Oil and Gas Leasing								•		
Coal Leasing								•		
Geothermal Leasing								•		
Resource Marketing				•						

Summary and Conclusions

Alaska's **Energy Plan — 1985** gives direction to the economic and financial objectives of Governor Sheffield's energy development policy, supporting orderly, prudent resource development which currently or potentially contributes in a substantial way to the economic vitality of the State. By placing emphasis on the short-term strategies of State agencies having direct responsibility for energy programs and using an interagency workgroup to write the plan, State agencies have more effectively coordinated informational needs and decision-making procedures. Alaska's **Energy Plan — 1985** provides both a snapshot of State energy programs and energy use today, and a mechanism for developing Administration policy on Alaska energy issues in the future.

In the short term, the State will continue to place a major emphasis on energy through the programs administered by some 20 different State agencies. The bulk of those programs is conducted by the Department of Commerce and Economic Development, the Department of Community and Regional Affairs, and the Department of Natural Resources. State energy programs provide aid to private development of Alaska's natural resources through direct subsidies in the form of loans and grants, and through the pursuit of specific demonstration and power development projects.

State subsidies are the backbone of the rural energy program. The Power Cost Equalization program provides funding to rural utilities to reduce consumer electrical costs. Heating costs will be reduced by the construction of bulk fuel storage facilities, through grants and loans for improvements to electrical generation and transmission facilities, by development of waste heat recycling facilities, and through low-interest loans and grants for conservation improvements. Weatherization continues to be provided to low-income households, and conservation education programs are widely used. The State also administers over $11 million in federal funds to help low-income Alaskans pay for their energy requirements.

Power development projects and demonstration projects for alternative technologies are either contemplated, under construction, or in place. The Rural Electrification Revolving Loan Fund permits rural utilities to extend electrical services, and the Power Project Loan Fund develops new ones. Reconnaissance and feasibility studies precede State participation in these endeavors. Alternative energy projects for wind, solar, peat, bioenergy, woodstoves and geothermal are in place. Future activities are being funded with loan programs and through direct State development efforts. Those efforts also include oil, gas, coal, and geothermal leasing of State lands.

Alaska's long-term energy future has been projected in many economic models. One such model, by A. D. Little in 1983, projects a real growth in the economy of 2-3 percent per year, and a population increase of 3-4 percent through the year 2000. Pacific Rim nations are expected to need increased levels of natural gas and oil by 1995. Given Alaska's ability to provide those fuels, additional employment opportunities attached to increased Alaskan production for these Pacific Rim markets can be expected to begin around 1990.

Certain projects will continue to play a dominant role in determining Alaska's energy future. An FY '85 loan appropriation of $210 million was made to the Four Dam Pool (Ketchikan, Wrangell, Petersburg, Kodiak and Valdez) hydroelectric projects, $100 million to the Susitna hydroelectric program, $50 million to the Bradley Lake Dam, and $21.7 million for rural Power Cost Equalization. 1984 saw the acquisition of the Alaska Railroad by the State which will begin hauling coal from Usibelli Coal Mine, near Fairbanks, to Seward for shipment to Korea and the issuance of coal leases in the Palmer area.

Long-term electrical power source(s) for the Railbelt — where three-quarters of Alaskans live — is a question still waiting to be answered. Alternatives to the Susitna hydroelectric project appear to be mine-mouth coal (Beluga), or gas-fired turbines supplied from either Cook Inlet or North Slope natural gas, or a combination of these. The Governor's Council on Railbelt Electricity (G-CORE), formed in 1984 with representatives of local utilities, is attempting to address the questions of the price of Susitna power to Railbelt consumers and which alternative(s), if any, might be preferable. The State will look to the electrical utilities to indicate which power source(s) should be promoted for the Railbelt.

Either a tidewater (TAGS) or cross-Canada (ANGTS) pipeline may bring North Slope natural gas to foreign and domestic markets within the next decade. It is possible, with 40 trillion cubic feet of gas on the North Slope, that liquefied natural gas (LNG) could be shipped to the Pacific Rim nations and natural gas piped to the South-48, concurrently. At the moment, natural gas prices make either venture appear uneconomic. In 1985, Atlantic Richfield Company is expected to begin a pre-feasibility study of the Japanese market for Alaskan LNG. Companion studies of Korean and Taiwanese markets are anticipated.

Funding for Alaska's energy programs will largely be determined by available revenues. On the positive side, removal of federal prohibitions may provide additional revenue to the State. Presently, federal legislation prohibits the export of Alaska oil. As a result, approximately 800,000 barrels of Alaska crude are now being shipped each day to the Gulf Coast on U.S. flag vessels at a cost of over $5.00 per barrel. By shipping to Japan, even in U.S. flag vessels, a substantial cost per barrel savings, perhaps as great as $3.00 per barrel, would be experienced. On the negative side, declines in petroleum revenues from reduced North Slope production after 1990, decreasing world oil prices in the near future, and changes to the level of oil consumption worldwide may potentially reduce State revenues. Development of Alaska's energy programs and overall economic growth may directly depend on the revenues dictated by these actions.

What energy policy should the State embrace? Expectations for reduced State revenues and Alaska's continual growth must work hand in hand, which means applying today's revenues to assure a quality Alaska tomorrow. To do so requires Alaska's energy policy to be founded on the premise that all Alaskans can be assured an adequate supply of acceptable quality energy at a fair price within the financing limits of the State. Extracted resources must provide optimum benefits without leaving the State with energy shortfalls. Alaska must use today's revenues to protect Alaska from future energy "shocks."

Major energy projects must be weighed against less costly options, and potential in-State and export revenue generating capabilities must be quantified. Large projects that require energy must reflect a balance between Alaska's needs for revenue generation and personal needs of State residents. These same nonenergy projects must be analyzed for potential power generation opportunities, such as incorporating tidal power generation with a road crossing of Cook Inlet, for example. Rural Alaska power should be made more accessible, reliable, and less costly through the use of interties, alternative technologies, and more efficient use of cogeneration capabilities where they exist. Generally, Alaska must plan a stepped approach to assuring quality power, a growing economy, and adequate life-cycle cost of every large project undertaken.

Aggressive pursuit of short-term projects with long-term benefits must start today. Weatherization is a proven method to lower power costs and assure a warm, comfortable home and should be provided in line with developing statewide thermal and lighting standards. Conservation must be a byword. Knowing how and where to conserve is a primary step, and education is the key to successful implementation. In schools, and at the consumer levels, Alaskans must have their energy consciousness raised to a point that efficiency is expected. Reducing consumption through efficiencies without degradating accustomed lifestyles, must be a key objective. Reductions to State energy subsidies would benefit from such savings as well. Generally, active pursuit of programs and projects that are relatively low cost yet widespread over rural and urban areas will net considerable energy savings now and in the long run. Ultimately, Alaskans will determine where the State goes on economic expansion and energy development.

RURAL ENERGY
An Overview of Programs and Policy

House Research Agency
Alaska State Legislature
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SUMMARY

History of Rural Energy

- A fuel-based lifestyle in many rural Alaska villages began with the introduction of outboard motors and snowmobiles. Government sponsored housing created a demand for heating oil beginning in the 1960s. Also, the spread of electricity in the 1960s and 1970s established the need for diesel fuel to run power generators (page 9).

- The early government housing was often poorly constructed and creates significant energy burdens for the homeowners even today. The newer housing has improved and is more energy efficient. (page 9).

- The increase in State grants for village electrification in the 1970s coincided with the increase in State oil revenues. By the mid-1970s, many of the larger rural communities were electrified to some degree, but about 85 villages were still without a centralized power utility (pages 10-11).

- As fuel demand increased, villages began to experience fuel shortages in the 1970s because of inadequate bulk storage. Although 81 villages (about 31 percent of the rural villages) have received State grants over the past five years, problems still remain in other villages (pages 11-12).

- The energy outlook in rural Alaska is not particularly promising, as declining oil revenues will likely shrink State assistance through the numerous programs. Furthermore, federal energy funds may decrease under deficit reduction efforts. However, declining world oil prices and increased competition in rural fuel markets (particularly in Western Alaska) should alleviate concerns about the potential for spiraling rural energy costs over at least the next few years (page 13).

Government Energy Programs in the 1970s and 1980s.

- The federal home energy assistance program reaches about 20,000 of the estimated 38,000 eligible households in Alaska. The cash payments covered roughly 17 to 29 percent of the fuel expenses for the typical rural household in some coastal western villages and interior villages. Because Alaska participants in the energy assistance program are increasing six to ten

percent annually, it is likely that the average energy payment will decrease in future years in order to extend benefits to more households (pages 15-16).

- About 5 percent, or 7,900 houses, of all housing statewide has received low-income weatherization assistance under the federal and State programs. However, there are roughly 100 communities, primarily small and isolated, which have received no weatherization assistance during the seven years of government programs. In addition, given the substandard condition of much of the rural housing, it is uncertain whether these programs are weatherizing houses which should actually be replaced (pages 16-17).

- Unlike many other states which were focusing serious attention on conserving energy, Alaska's energy agenda beginning in the mid-1970s was primarily to develop new hydroelectric power sites and to promote and extend electric power statewide. State officials were guided by a policy of redistributing the petroleum resource wealth in energy projects throughout the state (pages 17-18).

- Many of the State rural energy programs have emphasized power production and delivery. State loans and grants to rural utilities for diesel generation systems flourished in the late 1970s and the 1980s. Numerous alternative energy demonstration projects were begun in the late 1970s in hopes that they would eventually provide replacements for rural diesel generation. As oil prices continued to rise, the State established a power rate subsidy (Power Cost Assistance) in 1980 as an interim measure until long-term alternative energy solutions could be found for high rural power costs (pages 18-21).

- Space heating costs have been the most critical energy burden facing rural households. In 1979, Native households spent three times as much on fuel oil for space heating as on electric bills. Even today, households in coastal Western Alaska spend 40 percent of their total energy dollars on heating oil, in comparison with 18 percent on electricity. In order to reduce rural Alaskans' vulnerability to high heating costs, a State Energy Policy Committee recommended in 1979 that the State supplement the federal weatherization program. Belatedly, the State began a modest weatherization program in 1983 as federal funds diminished under the Reagan Administration (pages 22-23).

- Disenchantment with the general lack of success with alternative energy projects and the perception of disorganization lead to the demise of the Division of Energy and Power Development in 1983 (page 24).

- As results from alternative energy projects and village reconnaissance studies became known, many people began to realize that there were not realistic alternatives to diesel power generation in most rural communities (page 24).

- With massive State loans for the "Four Dam Pool" and appropriations for Susitna and Bradley Lake hydro projects under consideration during the 1984 session, some rural legislators raised the question of equity in energy assistance for rural Alaskans. The rural power rate subsidy was significantly increased under a revised program, Power Cost Equalization. Rural utilities can now apply for a State subsidy which reduces power costs to 8.5¢/kwh for 750 kwh monthly usage by each customer (page 25).

- Unlike previous statewide energy plans, which were prepared by consultants and merely catalogued energy resources and uses, the State's 1985 long-term energy report presents energy goals and options for action. Many of the options identified through this interagency effort require additional funds and few appear in the Governor's FY 86 budget request (pages 25-26).

- A recent report from the Advisory Committee on Statewide Power Production Costs recommends that the Alaska Power Authority be restructured into a marketing agency which would purchase power from all utilities and resell the power at an average cost. Under this proposal, the APA would also manage future capital additions to a statewide power system, including the Susitna hydro project. The committee report recommends annual appropriations of $350 million for eight years which would cover the costs of rate equalization and stabilization but not the costs of capital additions statewide (page 27).

Alaska Energy Programs Lack Rational Policy

- The State of Alaska has never formally adopted an energy policy as the basis for energy program expenditures totaling as much as $1.7 billion during the last nine years. The energy programs have been implemented without first: 1) accurately defining the energy problems to be solved; 2) carefully articulating goals to be achieved through program expenditures; and 3) thoughtfully deriving a formula for the distribution of State program benefits based on rational and fair distribution principles. Consequently, rural energy programs in Alaska exhibit a serious inequity in the distribution of program benefits and services. Furthermore, several rural energy programs tend to be self-defeating or counterproductive (pages 29-30).

- In large part, the failure of Alaska's rural energy policy can be attributed to an underlying motive of "sharing the wealth" of State revenues accrued through Prudhoe Bay oil royalties and taxation. The desire to "share the wealth", expressed by both administrations and legislatures during the last nine years, has often been the most potent factor affecting the design of State energy programs. Rational energy policy has fallen victim to concerns over achieving a balance between appropriations to rural versus urban areas of the State. In addition, a number of rural energy programs have been spawned out of the capital budget process instead of carefully following the three-step procedure described above (pages 30-33).

What's Wrong With The State's Energy Programs?

- The focus of State energy programs has been largely restricted to addressing a single energy need--electric power. At least $720 million has been expended in meeting urban electric requirements through State emphasis on major hydroelectric developments and electric interties. For rural Alaskans, an annual appropriation of $21.7 million has recently been earmarked for electric power subsidies via the Power Cost Equalization program. Approximately $93 million has been appropriated as grants and loans to villages for the development of electric generation and distribution systems. Nearly $27 million has been expended in search of alternate sources of energy to be used in the generation of electric power, including hydroelectric, geothermal, coal and natural gas resources. Almost $24 million has been invested in research and pilot projects relating to wind energy, wood gasification, solar energy, single-wire ground return, biomass and waste heat recovery technology in an effort to provide alternate methods of generating and distributing electricity in the Bush (page 35).

- Ironically, electric energy constitutes a small portion of the overall energy requirements of many rural communities. In a number of cases, the energy value of electricity makes up less than 5 percent of the total energy requirements of individual villagers. In contrast, often over half of residential energy requirements relates to space heating fuel, while most of the remaining energy use pertains to transportation fuels. Consequently, even if State energy programs prove successful in providing rural communities with affordable electric power, only a small fraction of rural energy needs will have been addressed (pages 35-36).

- Energy program benefits and services have been distributed among rural communities in an inequitable manner. Generally speaking,

the better organized rural communities have garnered the lion's share of the benefits offered by State programs. Typically, those communities which have received electrification grants have also been relatively successful in obtaining bulk fuel grants and loans, waste heat recovery grants and electric power rate subsidies. In this "survival of the fittest" approach to distributing State energy program services and benefits, as many as 70 rural villages have been largely ignored under existing State energy policy (pages 36-39).

- Conventional energy policy is often based on the goals of energy conservation and energy self-sufficiency (particularly a reduction in oil dependency). The centerpiece of Alaska's rural energy policy -Power Cost Equalization--encourages the consumption of electricity and deepens the dependency of rural Alaska on oil. The goals of energy conservation and independence from oil are being undermined by Power Cost Equalization subsidies which cause rural consumers to react to artificially low electric power prices (8.5 cents/kwh) instead of learning to live with the real cost of electric power (often over 50 cents/kwh). Moreover, since almost all electric power in the Bush is produced by diesel generators and rural electric power consumption is increasing every year, rural Alaska is becoming more (not less) dependent on oil and the goal of energy self-sufficiency is falling farther from reach (pages 39-48).

- Beyond the technical flaws in State rural energy policy, several misconceptions have clouded the true nature of the "rural energy problem." Put simply, the "rural energy problem" is a consequence of the high cost of living in rural Alaska and the low average cash income. Anything purchased with cash in rural Alaska is generally more expensive than the same item bought in urban communities, including energy, grocery items, clothing, boats and motors. Due to the scarcity of jobs which provide income and because the subsistence economy is a cashless economy, rural residents will likely remain cash poor by urban standards. Consequently, the "rural energy problem" will only be solved either when opportunities present themselves for rural Alaskans to secure substantial increases in cash income, or if the State government is prepared to support perpetual energy subsidies (page 48).

- The real energy problem for rural Alaskans is not one of finding subsidized energy sources, but one of generating sources of income with which to: 1) purchase energy at the best price; and 2) enable local governments to implement their own decisions about meeting their energy needs. The corollary to this misconception is the mistaken notion that "oil is the enemy" in rural Alaska. The fact remains that oil has been, and will likely

continue to be, the least costly energy option for many remote communities (pages 48-50).

Alternative Plans of Action

The recent budget trimming activity at the federal level, coupled with forecasts of declining State revenues caused by oil price declines over the short term and Prudhoe Bay production declines over the long term, lends urgency to the matter of addressing the energy problems of rural Alaskans. Consequently, our proposals for action in this area call for a dramatic departure from the status quo. These action plan options include:

- Dismantling existing rural energy programs in favor of a direct "wealth distribution" plan to be implemented through State revenue sharing (pages 51-52).

- Paring back present energy programs to include only those which support conventional energy policy goals while greatly expanding the scope and funding of the remaining programs. The surviving programs would be the federal Low Income Home Energy Assistance Program and the Weatherization Assistance Program (page 52).

- Phasing out current energy programs while subsidizing the development of regional energy resources (such as coal in Western Alaska). The goal of this proposal is to attack the root cause of the "rural energy problem"--the lack of a solid and self-sustaining cash economy in rural Alaska (pages 52-54).