# 1981

# STATE OF ALASKA

# LONG TERM ENERGY PLAN

*Executive Summary*

**Prepared For**

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**August 1981**

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# EXECUTIVE SUMMARY

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## The Purpose of Alaska's Long-Term Energy plan

The primary purpose of Alaska's Long-Term Energy Plan is to provide an orderly process for making energy decisions. To be successful, the following must be accomplished:

- The Plan must be a statement of policy, and set the State's goals and objectives.
- The Plan must provide basic information about energy demand, the resource base, and energy technologies.
- The Plan must coordinate Alaska's ongoing energy activities.
- The Plan must standardize and coordinate the process of project/program selection.

This report provides a logical approach to meeting Alaska's present and future energy needs. The keystone is the availability of accurate and reliable information from which decisions are made. The importance of this element cannot be over emphasized. Major policy decisions impacting the conservation and development of conventional and renewable energy resources will be based on the analysis contained in the Long-Term Energy Plan and its annual updates.

Perhaps what makes the preparation of the Long-Term Energy Plan especially noteworthy is that Alaska is one of the few states with the key ingredients necessary to chart its own energy future. Revenue from petroleum and natural gas can be combined with a willing work force and vast energy resource potential to provide an array of local energy supply and conservation options. Since Alaska's population is less than one half of one percent of the U.S. total (at the same time that the State provides 10% of U.S. oil supplies), the Alaskan energy future can be managed to the benefit of all.

Most Alaskans are probably not aware of the State's many activities in energy development and conservation. Although these tasks are by no means finished, there have been many accomplishments. Energy activities, conservation investments and development projects are being pursued in every region of the State.

As Alaska's Long-Term Energy Plan evolves, criteria for energy decisions and the information base on which they are made will become more definitive. This year, considerable progress has been made in each of the major topic areas. The Long-Term Energy Plan is by no means complete. As energy planning in Alaska is strengthened, and as the reliability and competitiveness of the various energy options become known, the Plan's strategy can be and should be revised.

In this report the energy data base for the State has been updated and analyzed, using a standarized methodology. For the first time, Alaskans will have a comprehensive breakdown of historic energy consumption by region for the State. Despite this achievement, the data base is not yet perfect. For example, some end-uses of petroleum had to be estimated. Overall, however, a steady advance has been made.

In this report an attempt has been made to draw together a specific description of the Alaskan resource base and the technologies available to transform or convert the energy. There is a brief description of energy development projects underway and many of those which have been proposed.

To date there have been a number of State and federally mandated energy conservation programs proposed and implemented. Information on the effec-

tiveness of these programs is very limited. The major contribution of the energy conservation section in this report is to develop a framework for monitoring the effectiveness of existing programs as well as to provide some tentative estimates of the potential for saving energy.

Despite the surplus of crude oil production, the State has a higher level of vulnerability than other regions because of the climate and remoteness of many Alaskan communities. Even a small oil shortage in Alaska could be very serious. This report investigates the nature of Alaska's vulnerability to oil supply disruptions and proposes some options that the Governor could implement in the event of an energy emergency. Over the next year this plan will be refined, in collaboration with federal, state and local officials, to produce a detailed emergency energy plan for Alaska.

No long-term energy plan would be complete without an energy demand and supply projection.

Ultimately, the vast majority of energy decisions are not made by State or local government. Consumers and private companies make many day-to-day decisions about which fuels to consume and which to produce. In addition to its role in developing specific community projects and programs, the Alaska State government's role is to guide individual private decisions. That guidance is made through fiscal and tax incentives, pricing, the regulatory process, and the state's energy programs. In other words, a clear, widely disseminated statement of Alaska's energy policy goals and objectives is often as important in bringing about desired changes as the State's participation in energy projects.

This year the Long-Term Energy Plan was prepared by the Division of Energy and Power Development and submitted to other agencies and the Governor's office for review. This process helps to ensure that the Administration has a coordinated position on energy.

However, if Alaska's Long-Term Energy Plan is really to become an effective tool of decision making, its preparation must be tied to the budget process. Alaska Statutes require that the plan be submitted to the legislature no later than 1 February each year, and yet funding for the Plan is not available before the beginning of the fiscal year. Consequently the preparation of the plan does not coincide with the normal budget process of the State.

Because of the timing of preparation, the Governor and the Legislature are unable to review agency requests in the context of the policies enumerated in the Plan. The Plan is still in preparation during the period when the Administration is making decisions about specific project funding. As a result, the Plan is not the effective tool for policy coordination that it could be.

To remedy this problem, the Long-Term Energy Plan should be prepared in conjunction with the budget process. To do so will require that the Plan due in 1982 be presented as a progress report on the status and development of the 1983 (FY 1984) Plan.

Energy decisions, and particularly ones related to development, are site specific. An annual report on state-wide energy issues cannot, by itself, address all of the individual concerns of local utilities, industry, small businesses, regional authorities, municipalities, cities, boroughs, regional and village corporations, village councils, and nonprofit cooperatives.

Instead, Alaska's Long-Term Energy Plan is meant to provide the information base and institutional framework to assist Alaskans in getting a local energy project or program off the ground. It is an essential part of the Long-Term Energy Plan to describe the process of how the State government selects projects or programs for funding and other State assistance.

The most clearly defined process of project selection concerns electric power development.

The Alaskan Legislature has established the Power Project Fund, under the Alaska Power Authority. This fund can be used by local communities and public utilities to finance power projects. However, before construction can begin, proposed projects must go through a series of evaluations:

- Reconnaissance Study
- Study Review
- Feasibility Study
- Feasibility Study Review
- Legislative Approval
- Project Construction

There are three main limitations to the process of project selection. First, it emphasizes electricity. Secondly, much of the community based research overlaps and is not standardized. Thirdly, the Office of Budget and Management of the Governor's office is responsible for reviewing the reconniassance and feasibility studies, without extensive in-house energy planning capabilities; thus, through evaluation is often left to the agency sponsoring the project.

In the long-term, Alaskans will be best served if a clear distinction is made between energy project/ program advocacy and evaluation. In most states, private companies or utilities propose projects and the State government is responsible for evaluating the proposal through public hearings and internal review. Alaska that process will not work because the State government is heavily involved in most of the projects.

In the coming years, the pace of project selection in Alaska will accelerate. It is essential that the State of Alaska has the capability to evaluate all of the proposals fairly and quickly. It would seem logical that this should become one of the more important functions of the Long-Term Energy Plan process.

One of the clear and present dangers of any ongoing planning function is the isolation of the planners from the real world. After a length of time, the planning develops an inertia and momentum of its own above and beyond the original purpose and objectives that created the function in the first place.

In order to prevent this and to develop as reasonable and realistic a plan as possible, regular contact and assistance is needed from outside the immediate planning sphere. The establishment of an Energy Advisory Council to obtain needed periodic input, critical review and recommendations from representatives of both the public and private sectors is needed. Council participants will be drawn from government, the fuels industries, utilities, environmental interests, consumers and business. The Council's recommendations and endorsements will be key elements in the planning process.

## Alaska's Energy Policy

Alaska's energy policy encompasses six broad areas: the lease and production of energy resources, the price and availability of energy for Alaskans, the coordination of energy and economic activity, the promotion of energy conservation, the encouragement of alternative energy development, and the improved coordination and administration of energy matters within the State government.

Alaska expects to continue leasing its land for oil and gas exploration at a moderate and steady rate. If oil and gas exploration is successful, this should help to offset the effect of declining State royalties from severance taxes associated with the depletion of the Prudhoe Bay oil field. Furthermore, a steady leasing rate should minimize disruptions associated with oil and gas development.

Alaska's energy policy is concerned about the availability of both electricity and petroleum products. The State's policy initiatives are aimed at ensuring that energy is reliably available at reasonable prices. The highest priority should be given to the disposition of royalty oil and gas within the State. Emergency fuel assistance will be provided, in some hardship cases attempts will be made to reduce the high cost of fuel, and there will be loans for new bulk fuel storage facilities. Similarly, the State intends to accelerate the development of Alaskan hydro power and to offset some of the rising cost of electricity with a short-term subsidy program.

The Alaskan state government intends to moderate the economic and social impact of energy development in order to prevent the problems that arise from a "boom or bust" activity. Technical assistance will be provided to communities impacted by large scale energy development. The State will ensure that energy facilities are developed in an economically and environmentally sound manner.

Alaska is encouraging energy conservation through grants and loans. The State offers technical and educational assistance to individuals and communities. Energy conservation will be incorporated into the planning, design, and construction of State owned and funded facilities.

Alternative energy development in Alaska will be encouraged by research and development activities and by grant and loan programs.

The State government will improve administration and coordination by ensuring the availability of

an adequate energy data base and analytical capability for decision makers. Coordination among all of the agencies involved in energy production, distribution and regulation is the responsibility of the governor's office.

In 1979 Governor Hammond confirmed these basic principles in a statement on Alaska's energy policy. In summary, his basic points were:

- Direct and equitable distribution of Alaska's energy resource wealth to all Alaskans.
- Improved efficiency in the production and distribution of electricity.
- Support for local energy needs by State planned and funded energy facility construction.
- Technical assistance for community improvement in energy conservation and management practice.
- Improved energy conservation practices in State government buildings and activities.
- Support for the development of locally-oriented energy technologies.
- Support for improved community petroleum product storage facilities.
- Public participation and local input in energy planning decisions.
- Priority for in-state uses of Alaskan energy resources.
- Procurement and delivery of fuels in emergency situations.

## Energy End-Use

Alaska's energy end-use is dominated by the climate, low population density, and the fact that the State produces eighteen times the final energy it consumes. Furthermore, energy end-use varies significantly within the State. Essentially, there are five independent energy systems — the Southeast, the Arctic, the Anchorage area, the Fairbanks area, and the rest of the State.

Each of these energy systems have different resource opportunities and, therefore, different ways of using energy. In addition to the use of petroleum products, Southeast has abundant hydro and wood resources; Anchorage has natural gas and hydro; Fairbanks has coal; the Arctic has natural gas at Barrow and at Prudhoe Bay. The rest of Alaska almost totally depends on oil.

There can be no doubt that the Railbelt (Fairbanks/Anchorage) area dominates energy end-use. Only 14 percent of Alaska's end-use energy is consumed outside the Railbelt, despite the fact that 29 percent of the population lives in these regions. Even discounting the ammonia/urea plant on the Kenai Peninsula, which accounts for 25 percent of total State energy end-use demand, the Railbelt's per capita energy consumption is 78 percent higher than the average of the other regions.

Significantly, the per capita use of energy in every sector is higher than the U.S. average. On a per-capita basis, Alaskans consume twice the energy of their counterparts in other states. Every sector of per capita energy end-use in Alaska is higher than in the Lower Forty-Eight, and the highest, the combined transportation and marine sectors, are nearly three times the national average.

Overall, petroleum accounts for 56.8 percent of the end-use energy consumed in Alaska. This is slightly higher than the national average. Natural gas in Alaska is the second most important fuel, accounting for 34.9 percent of end-use energy. Coal is only 2.3 percent, and electricity is half the national average, accounting for only 5.9 percent of the total.

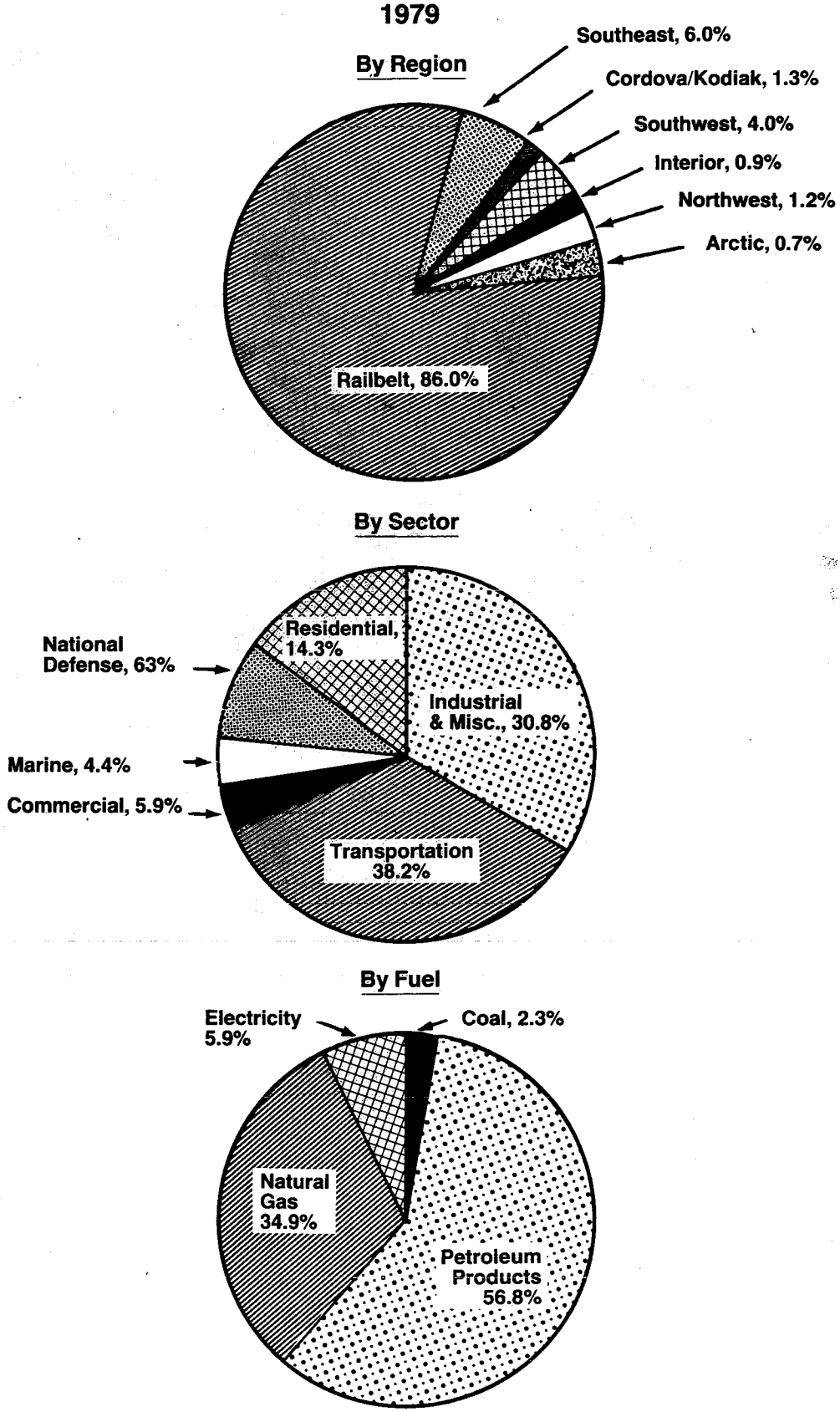
The region, sector, and energy source breakdown for Alaska is presented in figure 1.

Figure 2 is a graphic presentation of energy flows in the State of Alaska. The diagram distinguishes between end-use energy from primary energy requirements by depicting energy sector uses, electricity generation and refinery losses separately. End-use is energy that has been transformed or converted and transmitted for final consumption.

Energy demand growth in Alaska since 1970 has been erratic — in two years it actually declined and in another year grew by 24 percent. Over all it has grown at an average growth of about 7 percent, with the largest demand growth in natural gas. The figures reveal how sensitive the Alaskan energy picture

# FIGURE 1

## ALASKAN ENERGY END-USE BY REGION, SECTOR, AND FUEL 1979



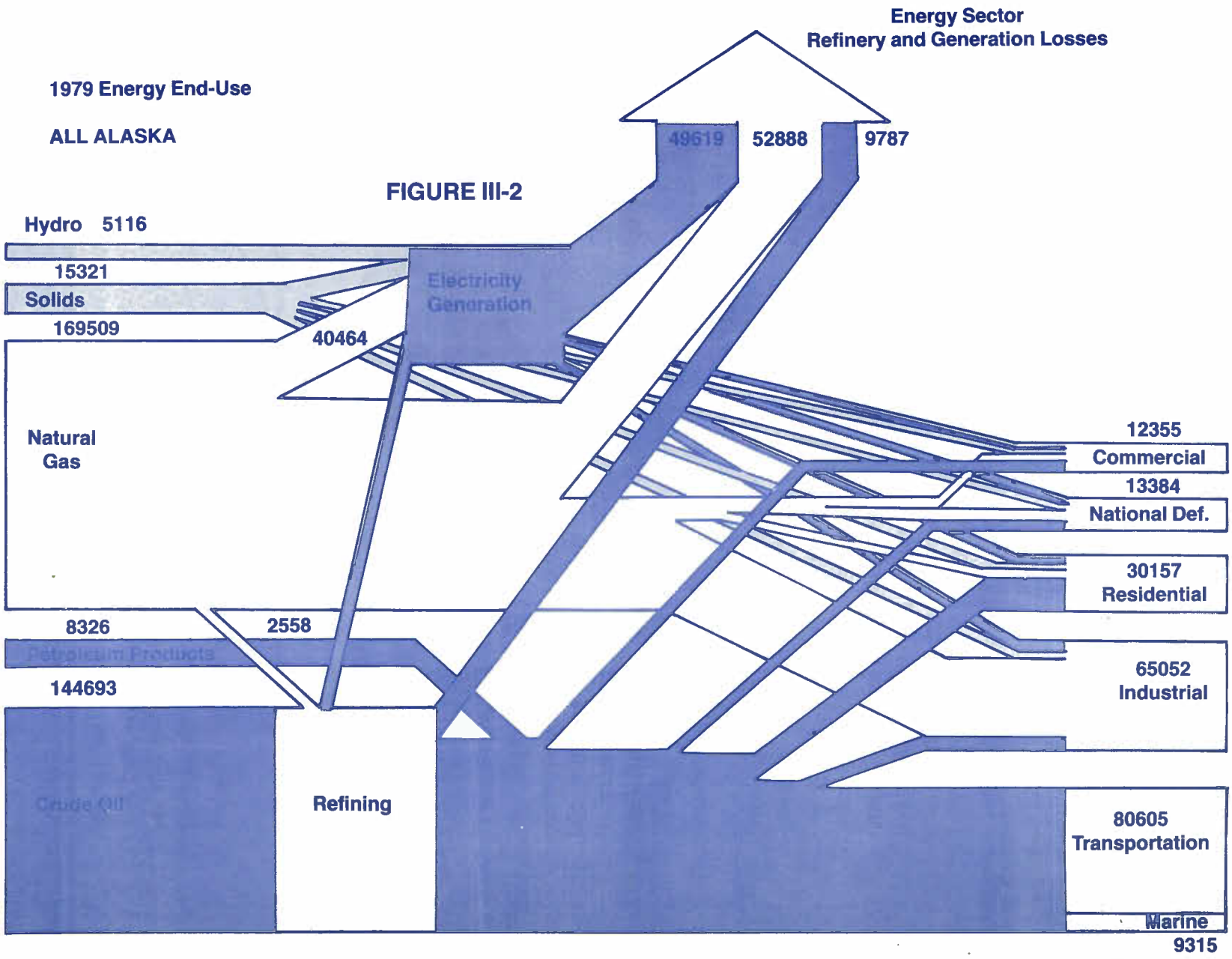
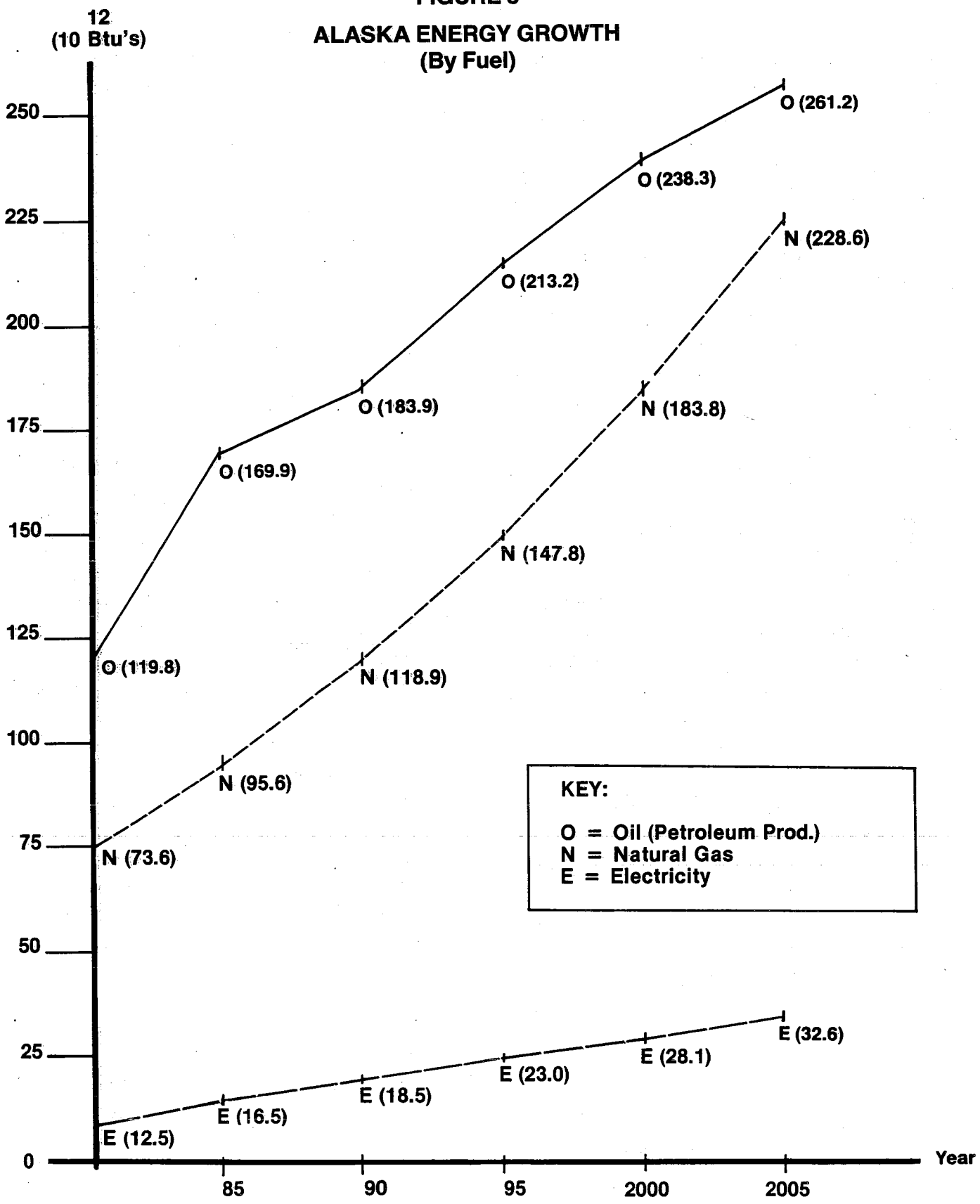

1979 Energy End-Use
ALL ALASKA
FIGURE III-2
Energy Sector
Refinery and Generation Losses
49619
52888
9787
Hydro 5116
15321
Solids
169509
40464
Electricity Generation
Natural Gas
12355
Commercial
13384
National Def.
30157
Residential
8326
2558
Petroleum Products
144693
65052
Industrial
Crude Oil
Refining
80605
Transportation
Marine
9315

**FIGURE 3**

**ALASKA ENERGY GROWTH**
**(By Fuel)**



is to major construction projects such as the Alyeska pipeline.

Demand growth for the next 25 years is expected to be lower than for the past decade, reflecting a lower population growth and energy prices rising faster than the rate of inflation. From 1979 to 1985, energy demand growth is projected to be 5.3 percent for all energy end-use. After 1985, demand growth is expected to decline so that it averages 3.9 percent from 1979 to 2025. This is low by Alaskan standards, but over double the expected growth rate in the Lower Forty-Eight.

This year's forecast is a long-term forecast. It does not account for the income cycle, unexpected construction projects, or a cold winter. Thus, the results should be interpreted for what they mean, a long-term secular trend.

## Energy Development

Alaska has the good fortune of being rich in energy resources ranging from the traditional, such as oil and coal, to the more "exotic," such as a tidal. However, these resources and the infra-structure for their use are not evenly distributed within the State. Thus, while State-wide and regional guidance can be provided, energy development decisions must ultimately be made at the community level.

## Traditional Energy Resources

Alaska's energy transition has paralleled the general evolution of energy resource utilization in other regions. Wood as a primary fuel was replaced by coal which was later replaced in part by oil, natural gas, and hydroelectric power. Despite increasing interest in alternative technologies, it is clear that these four traditional resources will continue to meet most of the State's energy demand through the end of the century.

- **Oil.** End-use consumption of refined petroleum products in Alaska is greater than the end use consumption of all other energy resources combined. Despite the fact that prices are likely to continue to increase, this dependence is expected to continue for many years. Even with the State's large oil resources, approximately forty percent of refined petroleum products are imported from the Lower Forty-Eight. In-State refining is increasingly dependent on State royalty oil as a feedstock. Together with the likelihood of further international oil shortages, these conditions raise questions regarding the linking of royalty oil policies to projected in-State oil needs.
- **Natural Gas.** Since the Cook Inlet gas fields are located near Anchorage, it has been possible for one-half of the State's population to rely primarily on natural gas for both heating and electrical generation. In the short-term, use of natural gas will continue although prices will increase. Depending upon export policies, known Cook Inlet resources may not last through the year 2000. Barrow also uses natural gas and gas is expected to be available to Fairbanks through the proposed Natural Gas Pipeline from Prudhoe Bay. Natural gas reserves are estimated to be approximately 32.791 trillion cubic feet (TCF). In addition, the State contains an estimated 101.2 (TCF) of undiscovered recoverable resources.
- **Coal.** Except for very small local activities, the Usibelli Mine near Healy is the only operating coal mine in the State. While a part of the mine's output is used for space heating the majority is used to generate two-thirds of Fairbank's electrical requirements. Expansion at Healy and development of the Beluga Coal Fields are expected as a result of opportunities in export markets. The potential also exists for village use of local coal resources. It is estimated that Alaska has between 10 and 23 percent of the world's coal resources.
- **Hydroelectric.** Hydroelectric resources offer the potential of meeting the electrical needs of ninety-five percent of the State's population. Accordingly, the State has made a major financial commitment to the development of the resource. Projects are currently under study or construction primarily in the Southeast and Railbelt regions. The largest of these is the pro-

posed fifteen hundred megawatt Upper Susitna Hydro Electric Project. As the cost of oil continues to rise, so does the likelihood of substituting hydroelectricity for oil use in heating.

## Expanding Energy Options

Given today's rapidly changing energy conditions, it is important that Alaska keeps its energy options open. It is the policy of the State to encourage the transition away from dependence on petroleum. While there is growing interest and activity in the resources and technologies discussed below, it is important to keep in mind that in many cases, reliability and costs are not yet fully demonstrated.

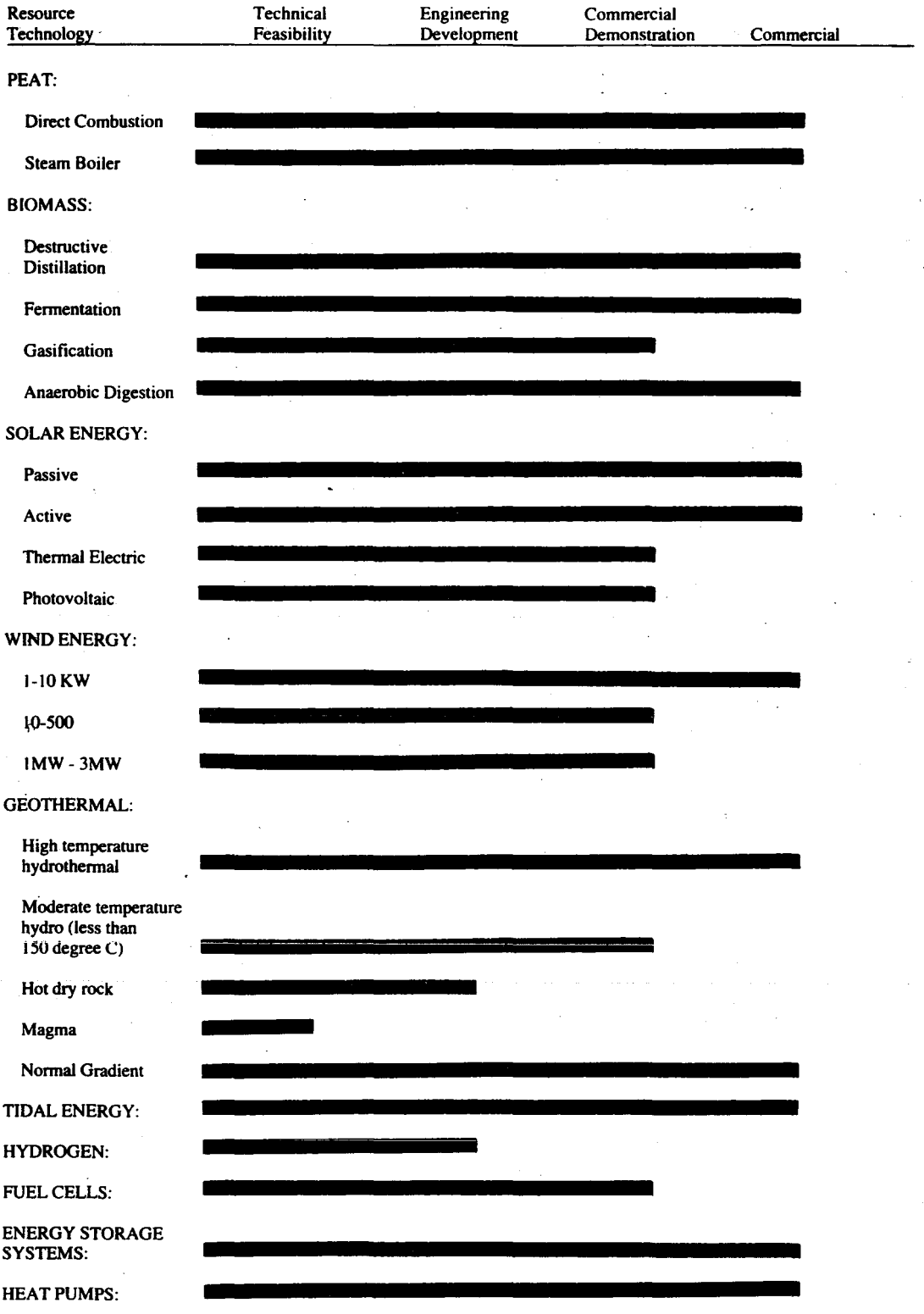
- **Peat.** Peat is partially decomposed organic matter undergoing the lengthly transition from biomass to coal. With an estimated 27 million acres of peat in non-permafrost areas, Alaska contains 51 percent of the resource in the United States. For many years, peat has been used for heating in Ireland and Scandanavia, and more recently it has been used for electrical generation. Like coal and biomass, peat can be converted into a number of liquid organic fuels.
- **Biomass.** Biomass is living or recently living matter such as wood or agricultural products. Alaska has extensive biomass resources, but their potential application is generally limited by a slow rate of growth and the high cost of collection. Major existing applications include direct use of wood for heating and the use of wood waste from the pulp mills in Southeast Alaska for electrical generation. Under investigation for future Alaskan application are alcohol and methane production from agricultural produce and residues.
- **Solar.** Contrary to common belief, solar energy is an important resource in Alaska. Passive solar, which uses proper building design without mechanical assistance, is in use today and offers significant heating potential. Economic considerations are the primary constraints to utilization of active solar systems, which include mechanical components. The technology for these systems is well established and the components are commercially available.

Photovoltaic cells, which use a photo-chemical process to convert sunlight directly to electricity, are already economical in remote and special applications. Increased use can be anticipated as production costs decrease.

- **Wind.** Small wind electrical systems have been used in Alaska since the 1920's. Today's expanding use of such systems is made possible by the abundant wind resource along the state's coastline and in many inland sites. Small wind machines (up to 8 kw) are commercially available, but larger systems are still in the development stage and have not yet been proven under Alaskan conditions.
- **Geothermal.** Geothermal heating is that which is derived from the earth's interior. It has been used in Alaska for many years in small scale applications such as hot baths, space heating and gardening. Recently, there has been increased exploration and resource assessment activity aimed at heating and electrical applications. Although Alaska's geothermal resources are vast, the site-specific nature of geothermal energy will limit its development.
- **Tidal.** Alaskans have long been facinated by the potential of ocean energies. This is especially evident in Cook Inlet, which has one of the highest tidal ranges in the world. Renewed interest has resulted in the initiation of two studies of the potential for utilizing tidal power.
- **Hydrogen.** Hydrogen can be obtained from water using electrolysis or through chemical conversion of hydrocarbons such as coal and peat. In the long term, hydrogen may be considered as a fuel substitute for oil and gas. Of particular interest is the generation of hydrogen through electrolysis using hydro power or some other renewable energy resource such as wind.
- **Other Energy Technologies.** Fuel cells, waste heat recovery systems, heat pumps, and energy storage systems all offer promise for greater energy efficiency. With the dramatic rise in the price of oil in recent years, these and other energy conserving technologies have received increasing Alaskan attention.

# FIGURE 4

## STATUS OF ENERGY TECHNOLOGIES




*Photovoltaic cells are commercially available, but the development of cells competitive with other forms of electrical production is in the engineering demonstration stage.
**When used for space heating assistance.

- Technical Feasibility — Does the technology work (theory)
- Engineering Development — Pilot plant stage (practice)
- Commercial Demonstration — Demonstration at commercial or near commercial size
- Commercial — There are commercially operating types (does not mean economically competitive in all applications).

# Energy Conservation

Energy conservation was defined in *Energy: The Next Twenty Years* as

> those energy saving investments, operating decisions and changes in the goods and services that we buy and use that save money over the life of energy consuming products. Money can be saved by substituting intelligence, prudence, maintenance, better equipment, or different equipment for purchased energy; the substitution should be made up to the point where the cost of not using the energy is equal to the cost of energy saved.

Conservation of energy does not require curtailment of activities or degradation of the quality of lifestyle. The evolving view of energy conservation as a source of energy has far more positive implications, despite the fact that conservation sometimes requires significant investments. The high initial costs are almost always offset by years of benefits.

Energy conservation, then, means increasing the efficiency of energy and its use. Even with Alaska's vast energy development potential, conservation, particularly of petroleum products, could prove economically effective.

Significant differences exist between the Railbelt and other areas of Alaska with respect to energy end-use. For example, nearly half of the energy consumed in Non-Railbelt Alaska is for transportation, while less than 10 percent is used for industry. In comparison, for the State as a whole, transportation accounts for only 38 percent and industry accounts for 31 percent of the total energy end-use. Besides the differences in energy end-use, the Railbelt and non-Railbelt sectors consume different types of fuels. Non-Railbelt Alaska is almost totally dependent on petroleum products, while the State as a whole relies on petroleum for only half of its energy consumption.

Observations drawn from Alaska's energy end-use profile provide direction for the development of energy conservation programs. Among other things, this information suggests that in order to obtain significant savings, State energy conservation programs in non-Railbelt Alaska should be directed at petroleum use—primarily in transportation and for residential and commercial buildings. The differences in energy use among Alaska's regions underscores the need to localize energy conservation programs.

In 1980, the State of Alaska developed and legislatively approved the passage of one of this country's more ambitious energy conservation acts. Among the provisions of Senate Bill 438 are:

- Establishment of thermal and lighting efficiency standards for both residential and commercial buildings, as well as for State owned and operated buildings.
- Establishment of a tax credit available to businesses who purchase and install energy conserving equipment or materials.
- Establishment of a Statewide energy audit program, including auditor training and testing, subsidized energy audits and informational materials for participants, and grants and loans for energy conservation improvements in audited homes.
- Provision of matching grants for the federally funded Appropriate Technology Small Grants program.
- Provision of financial assistance for rural educational facilities for energy conservation planning, and matching grants for federally funded energy conservation technical assistance retrofit action by schools, hospitals and units of local government.
- Funding for educational programs, directed at interested citizens as well as enrolled studies in classrooms throughout the State.

There are numerous other programs provided for in this legislation, which all add up to a significant State commitment to energy efficiency.

Only by proving that energy conservation is an energy resource will its benefits be realized. If energy conservation is to ever reach its full potential and become an important, viable component of Alaskan energy policy, current conservation efforts must be carefully monitored and evaluated for both energy savings and societal impact. In addition, all new programs should include a monitoring and evaluation component when they are planned.

Many energy conservation programs initiated in Alaska and elsewhere rely on estimates of likely achievable savings, since little or no historical data on actual savings are available. As more and more conservation programs are implemented, it is crucial that data on measured effectiveness under actual conditions be carefully collected. Without such a monitoring and evaluation scheme, there will always exist some doubt as to program effectiveness.

Many State and local organizations, both public and private, are involved with energy conservation programs. Primary activities include information dissemination, educational programming, energy audits and weatherization services for residential buildings, and minimal research and demonstration projects. The impetus for this activity at the State government. level is Federal legislation, including such acts as the Energy Policy and Conservation Act (EPCA), the Energy Conservation and Production Act (ECPA), the National Energy Conservation Policies Act (NECPA), the Energy Extension Service Act (EES), and the Institutional Buildings Grant Program. Locally, the initiation of conservation programs has been based on financial assistance from State or federal government, consumer demand (as in the case of utility programs), and federal mandate (as in the case of utility programs), and federal mandate (as in the case of Rural Electrification Administration requirements for REA member utilities). Whatever the reason, energy conservation efforts are taking hold in Alaska as never before.

The impact of federal mandates on Alaskan State programs has been both positive and negative. Financial incentives have been provided for almost all conservation efforts initiated by State agencies, but there have been myriad rules and regulations. Frequently, there are conflicting requirements and impossible deadlines which have added to State frustrations. Most important, perhaps, has been the sometimes poor applicability of federal requirements to the particular Alaskan geography, climate, and political institutions. For example, the Weatherization Program for Low-Income Perjsons has been plagued by funding cuts, delayed payments (which slow work during decent weatherization weather), and limitations on spending for administrative costs and home repairs.

Federally-funded programs that have been tied to energy savings — though laudable for their insistence upon energy savings — have brought delays while bureaucrats have quibbled over numbers. Certain federal programs have limited applicability in Alaska. One such example is the Residential Conservation Service program, which impacts only two of Alaska's largest utilities — Chugach Electric Association and Alaska Gas and Service Company.

## Energy Emergency Planning

Given the nature of the Alaskan energy system, the primary emergency problems that can be addressed with a statewide planning program are in the petroleum sector. There are two broad categories of problems inherent to oil: an international problem and an unusual distribution problem within Alaska. Although a state government has more control over the internal distribution problem, there are also measures that can be implemented in the event of an international oil disruption that will help to moderate the problem.

More than any other factor, the risk of oil shortages stems from the inescapable fact that the U .S. is heavily dependent on imported oil, much of which is purchased in the turbulent Middle East. There are a variety of events that could evolve into an oil disruption in Alaska, along with the rest of the country: political instability or revolution in the oil exporting nations, sabotage of critical foreign or domestic oil installations, natural disasters, limited warfare between the producing countries and their neighboring nations, a blockade of shipping, and a politically-based withholding of oil. Given all of these potential problems, it is essential that State and local officials become aware of the risk of future disruptions along with their probable severity.

Closer to home, Alaska's unique geography and population distribution may give rise to isolated spot oil shortages within the State. Specifically, many Alaskan Bush communities could experience an oil shortage due to transportation or financial problems. These problems may not stem directly from an international oil supply problem, but they could have a tremendous disruptive effect on the community and are an important component of Alaska energy plan-

ning.

## Federal Allocation Policy and Alaska's Royalty Oil

The gasoline shortages experienced by California and the East Coast were caused, in part, by the inflexibility of the federal allocation controls on gasoline and crude oil. This program has just been eliminated by President Reagan (it was originally due to be phased out in September). Despite the problems with allocation, these controls are likely to be implemented again in the event of emergency, because they do give state and federal governments some control over the distribution of petroleum products.

The theory of allocation is quite simple. Everyone is entitled to a set percentage of the petroleum products purchased last year. So if the shortfall is 10 percent, everyone is guaranteed 90 percent of supply. This program can be made to work on the production and wholesale distribution level. But at the retail level it becomes unmanageable because almost no one keeps such detailed records.

At the moment, the federal government has a standby allocation program under consideration. The form of this standby program should be of considerable concern to Alaskans. In the event of an energy emergency, it will determine the trading relationships between oil producers, refiners, wholesalers and retailers. That, in turn, will affect All Alaskans. It could also affect the contractual terms concerning the sale of the State's royalty oil.

Alaska is the only state to actually own a major share of crude oil being produced within its borders. Consequently, royalty oil can be used by the Governor to moderate or eliminate an oil shortage, which is a supply option no other State has. In order to use the oil during a shortage, any contractual sale should have a clause which mandates that the oil must be refined and sold in Alaska unless it is offset with products from elsewhere. Exceptions to this clause could be granted during normal market conditions.

If such a plan is to be successful, however, it will have to be made a part of the federal standby allocation regulations. Otherwise, purchasers of Alaskan royalty oil face the prospect of being in violation of either State or federal requirements.

## Options Available to Manage an Oil Disruption

Following is an abbreviated list of those items that could be implemented by the State of Alaska in the event of a petroleum emergency. These actions assume that there has been a statewide oil disruption; in addition, there are varying degrees of severity within the measures. Public comment is solicited regarding these and other emergency responses which could be implemented in Alaska.

**Measures to constrain demand:**

- Reduce highway speed limits to 50 mph or less.
- Prohibit travel by private autos on different days. This could be implemented by a sticker plan, which limits the use of each registered vehicle one or more days per week.
- Prohibit driving on Sundays, weekends, or at other times.
- Provide additional transit service by operating a larger portion of available vehicles and redeploying vehicles to carry more passengers per vehicle mile.
- Increase commercial passenger transport aircraft load factors by rescheduling flights.
- Mandate a tune-up of vehicles every six months.
- Prohibit space heating in commercial buildings to above 65 degrees. This could also apply to residential buildings.
- Mandate efficiency tests on all oil-burning industrial boilers and larger commercial heating plants. Poor efficiency conditions must be corrected.
- Restrict hours for commercial and industrial operations.
- Reduce the work/school week to four days.
- Prohibit or limit the use of private planes for nonessential uses.
- Institute public information program.

**Measures to manage shortages:**

- Odd/Even license plate rationing with mandatory service station openings.
- Hot lines for distress or other emergencies.
- Credible, accurate public information.
- State set-aside for emergency oil allocations.

**Measures to provide supplemental supplies:**

- Prohibition of the sale of royalty crude oil outside Alaska, unless offset by the sale of refined products. The ratio between royalty crude and petroleum product sales to be determined by market conditions at the Governor's discretion.
- Emergency burning of wood or coal wherever possible.
- A strategic petroleum reserve funded and controlled by the Alaska State Government.

# RECOMMENDATIONS

Alaska's Long-Term Energy Plan and the process of energy planning it is meant to represent could be greatly improved by the following changes:

- Shift the timing of the Plan to be compatible with and included as part of the State's budgetary cycle and process.
- Establish a clear delineation between planning, advocacy and evaluation and designate appropriate State agency responsibilities for each.
- Include within the Long-Term Energy Plan the responsibility for technical and economic review and evaluation of all State-financed energy projects above a minimum scale.
- During the first quarter of the coming fiscal year specific guidance as to the technical and economic criteria to be used in project review and evaluations should be developed.
- Establish an Energy Advisory Council to assist in the annual update and refinement of the Plan.
- The end-use data base should be improved further, particularly on a regional basis from 1970 to the present. Access to Department of Revenue records and other supplementary data will be required. Reconnaissance studies and community energy assessments end-use data should be standardized and incorporated into the centralized data base.
- A comprehensive economic and demographic forecasting model with a regional breakdown is required. At the present time, the Institute of Social and Economic Research (ISER) has the only Alaska long-term econometric model. Following analysis by Batelle of the ISER model for the Railbelt Alternative Study a determination should be made of its adequacy for use in the long-term energy planning process.
- Reliable regional economic and demographic variables should be developed for use in the energy end-use sectoral analysis and demand forecasting.
- In-depth analysis of natural gas and electricity pricing should be conducted. This year an oil price forecast based on OPEC's proposed oil price index was used to generate the expected changes in key petroleum product prices.
- The State of Alaska should closely coordinate its royalty oil and gas policies and programs to insure compatibility with in-State energy-use forecasts. For example, proposed in-State refinery products should coincide with projected Alaskan fuel requirements.
- The potential for community use of natural gas from the proposed natural gas system originating at Prudhoe Bay should be determined immediately.
- Pending positive results from ongoing coal use studies in the Northwest portion of the State, the development of coal-based community energy systems should continue.
- The State should continue its extensive financial support of economic hydroelectric resource development.
- Resource assessments for coal, hydro, peat, biomass, solar, wind and geothermal energy should continue.
- Alaskan energy research and demonstration programs should be evaluated and prioritized based upon resource availability, regional and state-wide applicability and acceptability, costs and time frames.

- The development and implementation of energy conservation programs in Bush Alaska must be addressed separately in order to account the special needs and problems of rural villages. Energy conservation efforts should be localized. Every effort should be made to allow communities to ascertain their own conservation needs. The State should help financiall and through technical assistance.
- An adequate monitoring and evaluation syste for existing and new conservation programs should be established immediately. A status report and cost/benefit analysis of these efforts should be included in the 1982 Long-Term Energy Plan.
- Specific goals and objectives for the State's energy conservation policies and programs should be defined and included in next year's plan. These should be developed by considering Energy Conservation as another energy supply option.
- Alaska should carefully evaluate further participation in federal conservation programs. The State has many unique conditions not found elsewhere and its programs need to be suited to them. In addition, federal conservation funding will decline significantly in FY 82.
- The Alaska Energy Emergency Contingency Plan should be completed and submitted to the Legislature for approval by January 1982.
- Effort should be initiated immediately to amend federal standby allocation regulations to allow an Alaskan Royalty Oil on-state use clause during national shortages.
- The proposed legislation developed by the National Council of State Legislatures (NCSL) to provide the Governor with additional authority to respond to energy emergencies should be approved. (References Appendices J and K).