

# Catalyst

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CATALYST is concerned with the total environment. It aims to help people restore a quality environment and prevent new damage. CATALYST thus attempts to act as a "transmittal belt" for the transfer of pollution control and environment enhancement knowhow—to the end that it may serve as a catalytic influence in getting relevant knowledge, research and skills put to use.

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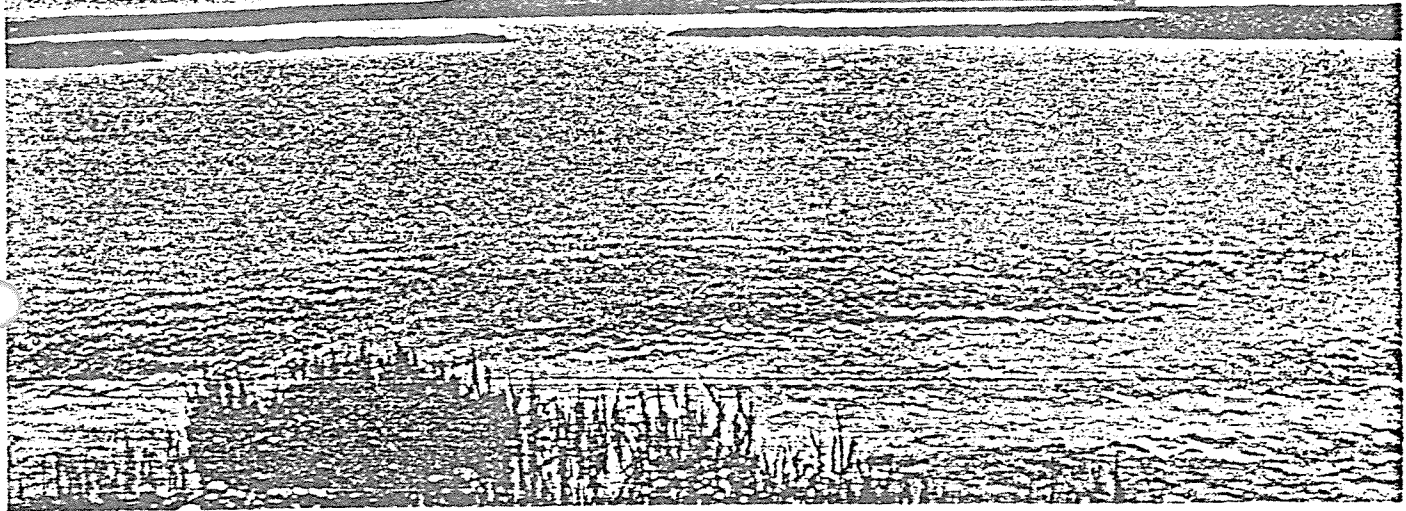
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# ENERGY IN ALASKA

By United States Senator  
Mike Gravel

*Income from non-renewable petroleum  
is providing the key to a  
renewable resource future  
in Alaska, including development  
of hydroelectric power.*



In less than a decade, Alaska has earned a reputation as America's energy storehouse.

With the Trans-Alaska Pipeline delivering crude oil from North America's largest known petroleum reservoir, and with a route chosen for a natural gas pipeline extending 4,800 miles to the midwest and west coast, Alaska has become a crucial supplier of American-produced petroleum.

Prudhoe Bay contains almost 30 percent of America's proven reserves of oil. And during the coming years, this field will provide some 10 percent of the oil used per annum in the United States.

Alaska's huge coal reserves add to the "energy storehouse" reputation. The U.S. Geological Survey has estimated Alaska's coal resources at over 130 billion short tons. By comparison, demonstrated coal resources in the lower 48 states total 437 billion short tons.

Important, however, as these resources are for the nation, Alaska's own energy future lies largely with yet another energy source, one that is cleaner, more reliable and ultimately cheaper than fossil fuels—hydroelectric power.

Alaska possesses hydroelectric potential in an abundance as great as that of its fossil fuels. A third of the freshwater runoff of the entire nation is found in Alaska, and the Alaska Power Administration has estimated the state's hydroelectric potential at as much as 172 billion kilowatt hours per year. Hydro-generated electricity in the United States in 1975 totalled 304 billion kilowatt hours.



*Senator Mike Gravel, D-Alaska, is serving his second term in the U.S. Senate. He is a member of the Finance Committee, and chairman of its subcommittee on energy; he is also a member of the Environment and Public Works Committee, and chairs its subcommittee on water resources.*



*This 2300-foot-long bridge across the Yukon River was built to carry heavy traffic for the trans Alaska pipeline project.*

Hydroelectric power can be provided to most of Alaska's population, both in the high-demand "railbelt" area which includes Anchorage and Fairbanks, and in the smaller, isolated cities of southeast Alaska. Even where it can't provide power directly, as in the remote interior villages, hydroelectric development can help lower electricity costs through a statewide power authority.

It is not surprising that, among all its energy riches, Alaska should choose the one which constitutes a renewable resource. In fact, the choice can be seen as part of a widespread preference for a renewable resource economy in Alaska.

The effects of unplanned development in the Lower and of the ever-increasing burning of fossil fuels, have become well known while Alaska is still mostly wilderness. Indeed, many Alaskans came north to escape the worst of twentieth century growth and pollution.

Alaska's opportunity to plan a different and better future for itself is unprecedented. Three factors work to

the state's advantage: 1) a huge undeveloped land mass that is soon to undergo extensive changes of ownership; 2) a politically active populace; and, 3) coincidental with the land transfers, a massive infusion of oil dollars.

#### Wilderness Nature Of Alaska

The true wilderness nature of much of the state is not appreciated by most who have not witnessed it. There are, for example, less than 3,000 miles of paved highway in all of Alaska's 586,000 square miles.

At present, the federal government owns more than 90 percent of this expanse of 365 million acres. But a great redistribution of the land is imminent. Some 104 million acres will pass to state ownership under the terms of the Alaska Statehood Act, and 44 million more acres will go into the private ownership of the Alaska Native corporations which were created by the Alaska Native Claims Settlement Act.

These sudden extensive changes in land ownership create a climate that is conducive to land use planning. And in fact, a Joint Federal-State Land Use Planning Commission already exists in Alaska. The Commission is now dealing with proposals to redesignate as much as half the remaining federally-owned acreage as parks, forests and refuges.

But the life of the Commission could well be extended beyond this task, and it could—and, I believe, should—act as a statewide land use planner. No other state has had this opportunity to put land use planning into effect virtually from the beginning of land development.

The degree of participatory democracy in Alaska is also noteworthy. Alaskans as a group are well educated and politically aware, and they are accustomed to making their voices heard.

A recent case in point is the state's Public Forum. Under this program of meetings and polls, the state government sought out Alaskans' desires for the future. Overwhelmingly, citizens identified the issue of growth as a controversial one, and they said they preferred a state economy based on renewable resources.

The final factor in making Alaska's opportunity unique is its sudden, near-overwhelming influx of money from petroleum development. With the oil pipeline on-stream, Alaska can look forward to income approaching \$1 billion per year from current oil production alone. North Slope gas will add more when the gas pipeline is in place. And several other areas of the state, both on- and off-shore, are considered to be among the most promising in the country for new oil discoveries.

#### Use Of Petroleum-Generated Income

It seems ironic that income from non-renewable petroleum should provide the key to a renewable resource future in Alaska—and even more ironic insofar as oil income can help make renewable energy, through hydropower, a reality.

In fact, Alaskans' insistence on turning their oil income into a self-renewing and self-sustaining economic base is the product of a hard lesson that the state learned in the first years of the North Slope bonanza.

After the discovery of oil at Prudhoe Bay, the state conducted a sale of oil leases in 1969 which yielded \$900 million. This represented a huge windfall, almost five times the size of that year's state budget.

Alaska, which had never been able to afford the kinds of social programs it needed, used much of the \$900 million to expand education, health care and public works programs. All state programs, in fact, were expanded. But the lease money could not sustain these programs beyond a few years, and when the pipeline and its income were delayed, the state found itself running a \$200 million yearly deficit.

The virtual disappearance of the \$900 million made a deep impression on Alaskans, and they became commit-

ted to using future oil income to help build a self-sustaining economic foundation based on renewable resource industries.

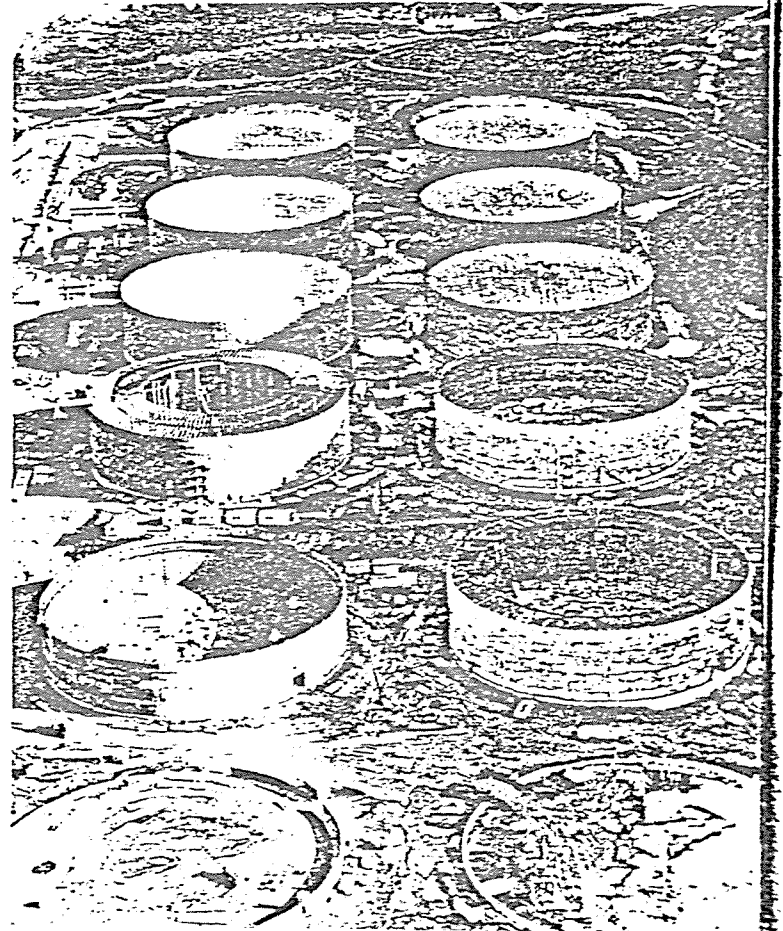
#### State Permanent Fund

Voters in 1976 passed a constitutional amendment creating a state Permanent Fund, an economic "nest egg" built from oil income. At least 25 percent of the income from oil and other non-renewable resources must be set aside in the fund. The principal must be put in income-producing investments, including loans to Alaska industry. Interest may be spent or retained. State officials have researched other such permanent funds in Alberta, New Mexico, Kuwait and Venezuela—in addition to the Japan Development Bank—for guidance on investment of the Alaska fund.

Income to the Alaska fund is estimated at \$1.3 billion by 1985 if only the 25 percent minimum is invested—or as much as \$5 billion if 100 percent were invested. In addition, the Alaska Renewable Resources Fund, established by the state legislature in 1974, takes effect this July. Five percent of the money Alaska collects from non-renewable resources must be set aside in this fund to develop renewable resource industries.

It is in this context, then, that Alaska is looking to its hydroelectric potential as a renewable base for its energy needs.

*These 62-foot-high crude oil storage tanks, shown here while still under construction, are at the Valdez terminal for the trans Alaska pipeline.*







*Although not specifically designated as animal crossings, some elevated portions of the trans Alaska pipeline provide adequate clearance for passage of large migrating or roaming animals. There are about 360 such sites along the 800-mile line.*

In Southeast Alaska, 40 percent of electricity needs already are met by hydro-power. But in Anchorage, where demand is largest, natural gas is being burned to generate power; and in Fairbanks, the basic fuel for electricity is coal.

More than half the hydroelectric potential remaining in the U.S. is to be found in Alaska. Many potential sites are in the southeast, and new small hydro developments can be added to serve the small cities there. The most dramatic hydro-power potential, however, is on the Susitna River about halfway between Anchorage and Fairbanks.

This site has been referred to by environmentalists as the best in the state for a large hydro project. The Susitna's water is glacial, meaning there is no fish life to be affected. The project would involve inundation of a minimum amount of land and thus minimal interference with wildlife, especially at the deep gorge called Devils Canyon.

The project would involve constructing two dams, one at Devils Canyon and one upriver from the canyon. The combined capacity of the two dams would be 1,568 megawatts. Together, they would generate an average 6.91 billion kilowatt hours per year, which is more than 60 percent of the power needs projected for the railbelt area. As in all hydroelectric projects, the estimated \$1.5 billion cost for the Susitna project would be almost entirely for the initial dam construction, leaving the power that is produced free from inflationary pressures.

Under the Alaska Hydroelectric Power Development Act, which passed Congress in 1976, a new method of financing would be used to build the Susitna dams. In essence, the state would pay the U.S. Corps of Engineers, as contractors, through the sale of bonds—meaning that unlike many large water projects, this one would be paid

for and owned by the same people who would benefit from it.

#### Phase I Activities—Susitna Dams

At present, the Corps is at the proposed sites conducting Phase I activities, which include complete design and cost/benefit analyses as well as a final Environmental Impact Statement. If these result in a go-ahead decision for the project, the first dam could be on line by 1986 and the second by 1990.

Among those who were quick to recognize Alaska's great hydro-power potential was the late Senator Hubert Humphrey, who said during a visit to the state 18 years ago that hydro-power was "one of the greatest of all Alaska resources—this power is a vital and essential requirement for the development of Alaska as a whole, and most of her resources." I have proposed naming the Susitna project for Senator Humphrey and the state legislature is already acting on the proposal.

Alaskans are anxious to build an economy that will enhance rather than degrade the environment of the nation's most spectacular state.

Reaching this and other objectives will be aided by the great shifts in land ownership and land management in Alaska which are creating a climate conducive to unprecedented land use planning, and Alaskans can be relied upon to participate vigorously in the planning process.

As mentioned before, it is somewhat ironic that the key to using these unusual assets and to avoiding the mistakes that others have made is being given to Alaskans in the form of great infusions of money generated from non-renewable oil. This money can be used to build a capital infrastructure geared toward renewable resource industries. And among the features of such an infrastructure is an energy base of hydroelectric power. ■