

Susitna River: Do We Really Need To Dam It?

Like all free-flowing rivers, the Susitna is a complex system of inter-related resources. Beginning in the southern flank of the Alaska Range, it travels a 275-mile journey flowing into Cook Inlet west of Anchorage. The upper Susitna is home to the most heavily-hunted caribou herd in Alaska and has historically contributed a large portion of the moose harvest in the state.

The Susitna valley culminates at Devil's Canyon, one of the most challenging whitewater areas in the continent.

Downstream, the Susitna produces the majority of salmon to the Cook Inlet fisheries, providing a renewable resource harvested by thousands of sport and commercial fishermen.

The Alaska Power Authority, a government agency, has proposed construction of two massive dams at Devil's Canyon and Watana Creek to generate hydro-electricity for Alaska's "Railbelt", (the Kenai Peninsula, Anchorage and

Fairbanks). Results of the current \$30 million feasibility studies are not due until 1982, when the Governor and the Legislature will decide the Susitna's future.

Although the costs and impacts of the project are not yet fully known, preliminary findings indicate that hydro-electric development on the Susitna could seriously affect the river's resources.

But one thing is clear: thousands of Alaskans depend on the Susitna River for livelihood and recreation. We must examine the impacts and alternatives of this project before a decision is made.

Many Alaskans feel it is too early to be "for" or "against" the Susitna dams. Instead, it will take careful consideration by all of us to determine the best use of the Susitna River.



Silver (Coho) 50%	Pink (Humpback) 50%	Chum 75%
Red (Sockeye) 30%	King (Chinook)	The Susitna King run makes up one of two runs in Cook Inlet. Numbers presently not known.

Salmon Runs At Stake

According to the Alaska Department of Fish and Game, the Susitna project "will create adverse impacts to fisheries resources both upstream and, more importantly, downstream of the proposed dams".

The Susitna is a silt-laden, glacial river. Over 80% of its flow occurs during spring and summer, providing access to sloughs and tributaries used by spawning salmon.

In winter, the main channel of the Susitna runs clear. This allows the juvenile salmon to migrate from freezing tributaries and sloughs to use the Susitna as their main winter rearing habitat.

The proposed dams would store the river's summer flow for winter release, causing potentially large impacts to salmon spawning and winter habitat.

--- Decreased summer flow could reduce salmon access to sloughs and tributaries needed for spawning.

--- The dams would release silt-laden summer flow during winter, causing year-round siltation and possibly destroying critical winter rearing habitat.

Both these factors could have serious effects on the salmon fisheries. What are the potential losses to the Cook Inlet salmon industry?

How much do we value these fisheries? Alaskans must answer these and other difficult questions before a decision is made on the Susitna project.

The Susitna River contributes the majority of salmon to the Cook Inlet fisheries



Sport fishermen flock to Montana Creek and other tributaries of the Susitna to reel in the abundant salmon.

Cook Inlet Fishing Grounds

Each year, commercial fishing in Cook Inlet employs many Alaskans and makes an important contribution to our economy.

Information sources: Alaska Dept. of Fish & Game, U.S. Dept. of Fish & Wildlife, U.S. Army Corps of Engineers, Alaska Power Authority, Institute of Social & Economic Research and Alaska Center for Policy Studies.

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Caribou Threatened

The heartland of range for the Nelchina caribou herd lies in the upper Susitna country. Numbering some 22,000, this is the largest remaining herd south of the Brooks Range and the most heavily-hunted in Alaska. In 1979, over 5,600 people applied for permits to hunt the Nelchina herd.

Water-level fluctuations of up to 125 feet in the proposed Watana reservoir would cause extreme ice shelving. This would pose a serious hazard to caribou and could result in high mortality during attempted crossings.

The calving grounds of the Nelchina herd are adjacent to the proposed Watana reservoir. The 54-mile reservoir would pose a major barrier, possibly causing the caribou to stop migrating across the Susitna. A resulting reduction in range could cause a dramatic population decline in the Nelchina herd.

An integral part of the Susitna project would be construction of permanent roads from the Parks Highway to the Devil's Canyon and Watana dams and from the Denali Highway to the Watana site. The Denali-Watana road would cut through the middle of the caribou range. These new roads and spin-off development of surrounding lands could place additional pressure on the herd.

It is impossible to predict exactly what effect the Susitna project would have on caribou. But it may well threaten the future of this last large herd in south-central Alaska and the unique wilderness hunting it offers.

Loss Of Critical Moose Winter Range



Moose depend heavily upon the Susitna's river bottoms for winter habitat both above and below the proposed dam sites.

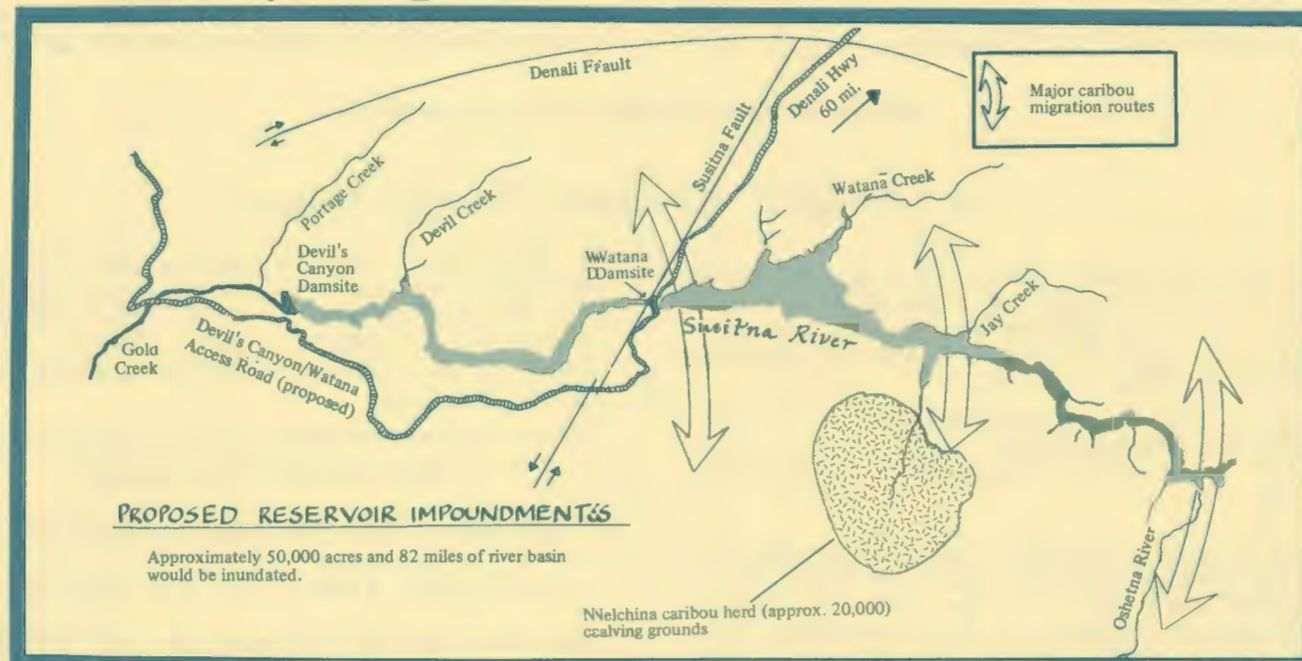
This winter range results from the seasonal flooding of the Susitna, allowing willow to colonize the dry stream beds.

The dams would eliminate this seasonal flooding and the growth of winter moose browse vegetation. Without annual floods, these areas could become mature stands of hardwoods and provide little or no moose forage.

The proposed Watana dam site would inundate some 35,000 acres of critical winter habitat, which supports 4,000 to 5,000 moose.



A Shaky Proposition



The upper Susitna basin lies in a zone of high seismic activity, crossed by three major faults and several smaller ones. The active Susitna fault runs directly between the two proposed dam sites and the Denali fault lies within 40 miles.

Geologic knowledge of the area is incomplete. But recent reports show that 114 earthquakes were recorded within 60 miles of the dam sites, between March 1975 and December 1977.

In addition to natural seismic activity, filling the reservoirs could trigger earthquakes. This has happened with other large dam projects. And there is no way to fully evaluate the effects of reservoir loading until the dams are built.

A major quake could cause structural damage or generate huge waves which could over-top the dams. Either way, massive floods could swamp the Parks Highway, devastating Talkeetna and other downstream communities.

No one is sure the dams can be designed to withstand a major earthquake. But even if safe dams can be built, the cost could be astronomical. The price tag of the Susitna project is already estimated at \$3 to \$6 billion! Engineering against the high seismic risks could escalate costs even more.

Are Alaskans ready to take the risk and pay the price for Susitna power?



Susitna Hydro. . .

A Question of Priorities

The front of this poster shows that the Susitna River plays an important role in the lives of many Alaskans.

Thousands of sport and commercial fishermen depend on Susitna River salmon for their recreation and livelihood. Alaskans heavily use the Susitna basin to hunt the Nelchina caribou herd and abundant moose. The Susitna flats is a major waterfowl hunting area.

Preliminary assessments by the Alaska Department of Fish and Game show that the proposed hydro-electric project will have negative effects on the big game and fisheries.

The question is: How great will the impacts be? As we explore that question, Alaskans should examine all possible ways to meet our electrical needs.

Our Future: Our Choice

What type of energy future do you want for Alaska? Remember that the energy choices we make today will greatly influence Alaska's future. Our choice should involve building projects that are economical, safe, renewable and which avoid large impacts on Alaska's natural resources and human environment.


Consider the abundant energy sources we have in Alaska. Do we really have to dam a vital river like the Susitna to meet only 13% of our energy needs? (See "Alaska's Energy Picture", below).

Susitna hydro is NOT the only answer. We have many other options.

The "Railbelt" area of Alaska is energy-rich. There are numerous potential dam sites. The Beluga coal fields (near Anchorage) and the Healy fields are the most notable of many coal deposits. Conservation and increased efficiency have great potential for reducing our energy demands. Solar, natural gas, geothermal, tidal and wind power round out the amazing variety of energy sources in the Railbelt.

We have a choice. We can assume rapid growth in Alaska's population and energy consumption. We can dam the Susitna and risk losing one of our richest river systems to generate more power than we need.

Or we can increase our energy efficiency, build smaller-scale, localized hydro-projects and develop a mix of other sources. This path could lead to a future where our most vital rivers still run free and Alaskans continue to enjoy self-sufficiency based on our diverse renewable resources.



Energy Options

Polar Solar

At the Arctic Circle, there are 230 hours more sunlight than at the equator.

The technology for solar energy provides the means for individuals to meet their own energy needs.

Three solar technologies have the greatest promise for helping meet Railbelt energy needs:

--- PASSIVE SOLAR makes maximum use of sunlight for space heating by effective siting and design of buildings. Recent analysis shows that the combination of improved insulation standards and designing buildings to collect sunlight through south-facing windows can reduce fuel consumption for space heating by 60 to 73%.

At the Arctic Circle, there are 230 hours more sunlight than at the equator.

--- ACTIVE SOLAR provides hot water and space heating by solar collectors that heat air or water for circulation throughout the building. It is estimated that one-half of the Railbelt's single-family residence hot water needs could be met through active solar.

Our Cheapest, Cleanest Energy Source

Right now, we have an energy source available which produces no pollution and causes no damage to fish, wildlife or other natural resources. It costs very little, compared with other sources. And it doesn't need big bureaucracy to build or operate it.

Instead, it relies on the Alaskan traditions of individual initiative and independence.

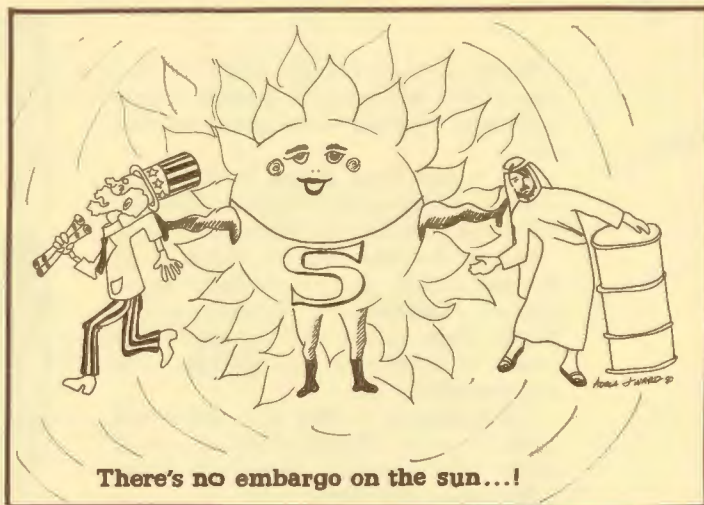
What is this remarkable energy source? Conservation . . . energy efficiency.

Recent research shows that energy consumption in the average Alaskan home could be cut in half, with an investment of less than \$5000. The cost of the Susitna project is currently estimated at \$3 to \$6 billion. This works out to a cost of \$30,000 to \$60,000 per electrical user to build the Susitna project.

If we directed our money and effort into improving the efficiency of our homes, we could reduce the total energy consumption of the Railbelt by 25%!

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--- PHOTOVOLTAICS (or solar cells) convert sunlight directly into electricity. Presently costing \$7 to \$12 per peak watt of electricity compared to a cost of \$1.40 to \$3 for Susitna hydro, solar cells are projected to reduce to \$.50 to \$1 a peak watt by 1986.



The potential of solar power in Alaska's Railbelt is truly exciting. It is not the whole answer, but an important part of it. Solar in combination with increased conservation could keep our energy needs at reasonable levels. By controlling our consumption, we will have greater flexibility in choosing hydro sites.

Since 1975, people in Fairbanks have shown how individual efforts can dramatically reduce consumption. For the last four years, the per-customer rate of consumption at Golden Valley Electric Association (Alaska's second-largest utility) has declined by an average of 12% a year.

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In the same period, the number of insulation businesses in Fairbanks has dramatically increased. Alaskans are learning that a kilowatt saved is cheaper and just as useful as a kilowatt produced.

It's clear that a real commitment to conservation can go a long, long way toward keeping our energy needs at reasonable levels.

Localized Hydro

Susitna hydro is not the only answer. The Devil's Canyon and Watana dams would produce three times the amount of power currently used by Railbelt utility customers. The need for this large output was once justified by projections which predicted Railbelt power consumption to increase 4 to 10 times by 1995. But recently, detailed studies show Railbelt demand will only double in the next 15 years, allowing us to develop smaller projects to meet our energy needs more efficiently.

Lake Chakachamna and Bradley Lake, in southcentral Alaska, are two likely sites which do not support substantial fish and wildlife populations. Such localized projects could be licensed and built more quickly. The jobs created would more likely go to local workers and be spread more evenly around the state.

Construction of smaller-scale projects would make Alaskan communities more self-sufficient and encourage more efficient use of electricity.

Hydro-power can provide Alaska with clean, renewable energy - - without major environmental costs. But we must carefully choose damsites and build projects which:

1. are the least harmful to the state's natural resources; and
2. fit our REAL energy needs, not inflated energy growth assumptions.



Alaska's undeveloped hydro resources are the largest in the nation. There are over 700 potential sites identified in Alaska. From this, 76 of the more favorable sites are represented in the above map.

Alaska's Energy Picture

Talk of the "energy crisis" has led many Alaskans to believe we have a shortage of energy. This isn't so. In fact, we have a tremendous variety of energy sources for the future.

To plan our energy future, we need to take a look at our present energy picture.

Right now, transportation accounts for almost half our total energy use. Residential and commercial heating accounts for 38%. **ELECTRICITY MAKES UP ONLY 13% OF OUR ENERGY USE.**

So it's clear that the Susitna dams or any other electrical project will not contribute to the major part of our energy needs.

But let's take a closer look at our current electrical picture. In the Anchorage area, most of the electricity is generated from natural gas. Fairbanks depends primarily on oil and coal.

Until recently, these fuels were inexpensive. This caused utilities to promote heavy electrical consumption for such uses as home heating. Rate structures have reflected this. Customers who consume large amounts of electricity receive a discount, while those who conserve are penalized.

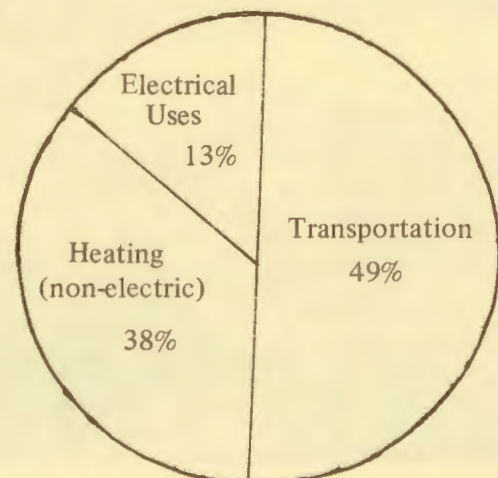
But this strategy has begun to backfire. In Fairbanks, Golden Valley Electric Association has greatly over-built new generating facilities. Rates have skyrocketed and consumers have begun to show dramatic efforts at conservation. This has postponed the need for Golden Valley to build new generators, until after 1990.

Electricity will play an important role in Alaska's energy future.

But the Fairbanks experience illustrates an important lesson: Electricity is premium energy.

It should be used for lighting, electronics, communications and other specialized applications. But our heating needs can best be met by other, less expensive means.

ALASKA'S ENERGY PIE



HOW DO WE USE OUR ENERGY?



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