

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/2  
981 SCOMM44: HOUSE POWER ALTERNATIVES STUDY COMM. 1979-80 981

Robert Cross / ALPAdm

Impact on financial aspects

Sensitivity to power price

Demand - making educated guesses  
analyzing recent trends  
changing use patterns  
effectiveness of conservation

population assumptions  
per capita trends - see page 46

Dept. of Labor - population figures

Effectiveness Anchoring  
of  
conservation

Technique - reduction of growth over time

0.8% growth - Susitna still feasible?

System use loss - under 5% / analyzed generation, not  
consumption

Would military buy power from Susitna?

plants old, but no commitment  
Using gas for home heating

Elasticity

Dear Legislator,

What are the problems with the Susitna Hydropower Project?

1. THE NEED FOR SUCH A LARGE PROJECT HAS NOT BEEN SHOWN.

Total electrical energy consumption in the railbelt area (excluding military) was about 1.7 billion kilowatt hours (KWH) in 1976. Energy consumption in the Fairbanks area declined in 1978. These dams will produce 6.1 billion KWH, well over 3 times the amount of energy needed to meet current consumption.

The Alaska Power Authority and the Army Corps of Engineers have used highly inflated and unrealistic growth projections to justify the project. The lowest growth pattern cited by APA, resulted in a quadrupled demand by 1995, a doubling the present railbelt population by 1995, and a tripling of per-capita energy usage by the industrial sector. In light of the most recent trends in population growth, energy conservation and decreased per-capita energy usage in Alaskan industry, these projections seem totally unrealistic.

No matter what the growth rate, local utilities will build new plants to meet needs before Susitna could come on line. Since the generating capacity to meet current demand will have already been met by existing power plants, Susitna power represents an enormous glut of energy.

Such a glut can only result in the introduction of some highly energy intensive industries in the railbelt (bauxite refining plant and uranium enriching plant are a few of the proposals) in order to sell excess power to make the project economically feasible.

2. ITS ECONOMIC FEASIBILITY IS, AT BEST, MARGINAL; AT WORST A TERRIBLE LOSS.

Even when using the Corps very conservative cost estimate of \$2.6 billion economic feasibility has been judged as marginal. If we bear in mind the 900% cost overrun of the Trans-Alaska Pipeline, the necessary backup generating systems and the costs of environmental damage, we can expect costs to far exceed the projected \$2.6 billion.



3. THE PROJECT RISKS MASSIVE FLOODING FROM EARTHQUAKE DAMAGE.

The active Susitna fault goes right through the middle of the proposed Susitna River Dams Project. Five moderate earthquakes and many smaller ones occurred along this fault in the last 6 years. Many more earthquakes have been registered along the major Denali fault, which lies within 40 miles of the site.

Compounding the problem is that filling of reservoirs often induces earthquakes, sometimes of large magnitude. With the Susitna reservoirs lying on either side of the active fault, the situation here will be particularly dangerous.

Earthquake damage to either dam or over-topping of the dams by tsunami-type waves could cause massive flooding of the lower Susitna and its communities such as Talkeetna and Gold Creek as well as damage to the Parks Highway and the Alaska Railroad. Is the State of Alaska prepared to take the almost inevitable seismic risk in order to secure electrical energy of which the need has yet to be demonstrated?

4. A CARIBOU HERD OF 20,000 ANIMALS WILL BE THREATENED.

The calving grounds for the Nelchina caribou herd are near the proposed impoundment sites. Movement of animals to and from the calving ground could be impeded by the reservoirs. Considerable mortality to the herd could result during the crossings.

In Norway the reindeer have ceased to migrate due to the building of a reservoir. This similar situation could reduce the herd numbers drastically.

The feasibility study itself could adversely effect the caribou herd. The study would build a road to the dam sites, creating access for many people. Ensuing trails could lead people directly into the calving ground. In 1978 close to 3,000 people applied for permits to hunt the Nelchina caribou herd.

5. MORE THAN 20% OF THE STATE'S TOTAL MOOSE HARVEST COMES FROM THE GAME UNIT SURROUNDING THE PROPOSED SUSITNA PROJECT.

The Alaska Department of Fish and Game considers the Nelchina Basin one of the most important game area in the State, providing large numbers of game animals and roadside access for hunters and viewers. A very significant part of fall and winter moose habitat used by moose in this unit would be covered by the impoundments. This could mean a considerable reduction in moose numbers which would limit hunting and viewing opportunities.

6. 38% OF THE COOK INLET SALMON HARVEST COMES FROM THE SUSITNA. THIS RESOURCE COULD BE THREATENED.

The Susitna River is the highest producing river into Cook Inlet of all salmon species, save the sockeye. It is the second or third highest producer of sockeye salmon. In the winter the Susitna runs clear and, thus it is satisfactory for the rearing of juvenile salmon which move into it at that time. The dam would probably cause the winter waters to run silty and, thus, would be unsatisfactory for that purpose. This condition would effect the entire length of the river down to the mouth. Also, the probable decrease in water level downstream from the dam to the mouth during summer would reduce the existence of and access to spawning sites.

7. THE SUSITNA IS NOT OUR ONLY POSSIBILITY FOR HYDROPOWER.

32 other hydro-power sites in the railbelt area were recently investigated by order of OMB (Office of Management and Budget). This was to provide a cost-benefit comparison of Susitna to smaller-scale projects. We need the information on these alternatives before we get into the Susitna project.

8. THE STATE WILL PROBABLY BE STUCK WITH THE BILL--PAYING \$2.6 BILLION OR A LOT MORE.

Right now the Alaska Power Authority and the Governor's office are asking for a direct appropriation from the State for \$8.2 million to begin the first part of a \$25 million study. Federal re-imbursement for the study seems highly improbable with the current trend in Washington to reduce spending and to cut back on hydroprojects. The federal government has already backed out of any full-scale funding for the dam project because it feels that it benefits too few people. Because of this, Senator Gravel and others in the State are recommending that the financing be through APA (Alaska Power Authority) issued bonds.

The State will have to secure these bonds and the source for this security can only be the Permanent Fund. There have also been suggestions of using the Permanent Fund for direct financing of the project. Added to the idea of using the fund to finance the gas pipeline and the petrochemical industry, this will exhaust the fund for any uses in renewable resources.

9. THE CORPS SHOULD NOT DO THE FEASIBILITY STUDY.

Since the Corps will be doing the planning, design and construction of the Susitna project if the project proves feasible, then it seems highly questionable whether the Corps should also conduct the feasibility study since their future jobs will depend on proving the project feasible. If the study must be done it should be conducted by an outside, independent, unbiased agency and not the Corps.

10. THE STUDY SHOULD BE DELAYED.

The study should be delayed at least until Senator Gravel secures a guaranty of Federal re-imbursement. The Corps has said they need to start before the Spring thaw and therefore need the money immediately, otherwise the study would be delayed until next winter. But just what are the disadvantages of delaying the study until then?

With so many questions unanswered and with information from recent studies not yet assimilated a delay is clearly needed.

What to do

Vote down the appropriation

This will give us the chance to see

- 1) If Gravel really does succeed in getting federal funding
- 2) The outcome of the Corps' studies on alternate smaller-scale hydro in the railbelt area
- 3) What the new projected construction costs will be
- 4) The final impact statement on the feasibility study

We need a better analysis of Alaska's future energy needs based on realistic and planned growth. We also need to fully examine all our energy alternatives, including solar, coal, wind, geothermal and conservation.

February 26, 1979

Alaska Conservation Society

P.O. Box 88192-College Branch

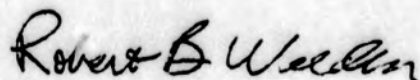
Fairbanks, Ak. 99708

To Alaskan Legislators:

Alaskans promoting wise resource use are deeply concerned about the decision soon to be made regarding feasibility studies of the Susitna hydroelectric project. In a year when many worthwhile renewable resource development projects are languishing for lack of funding, and when agencies managing resources and caring for our land are starved for operating funds, you are being asked to spend \$8 million on studies (which eventually will cost \$25 to 30 million) of a project which would produce far more power than we will need. This project will soak up funds every year for decades, funds which could be used to solve our real problems now.

A preliminary look at the Susitna project reveals some worrisome earthquake hazards and risks to extremely important fisheries and recreational resources. These and other concerns are described very briefly in the enclosed information sheet. We hope that you will read about them and investigate the issues yourself.

Sincerely yours,



Robert B. Weeden  
President

What to do

Vote down the appropriation

This will give us the chance to see

- 1) If Gravel really does succeed in getting federal funding
- 2) The outcome of the Corps' studies on alternate smaller-scale hydro in the railbelt area
- 3) What the new projected construction costs will be
- 4) The final impact statement on the feasibility study

We need a better analysis of Alaska's future energy needs based on realistic and planned growth. We also need to fully examine all our energy alternatives, including solar, coal, wind, geothermal and conservation.

7. THE SUSITNA IS NOT OUR ONLY POSSIBILITY FOR HYDROPOWER.

32 other hydro-power sites in the railbelt area were recently investigated by order of OMB (Office of Management and Budget). This was to provide a cost-benefit comparison of Susitna to smaller-scale projects. We need the information on these alternatives before we get into the Susitna project.

8. THE STATE WILL PROBABLY BE STUCK WITH THE BILL--PAYING \$2.6 BILLION OR A LOT MORE.

Right now the Alaska Power Authority and the Governor's office are asking for a direct appropriation from the State for \$8.2 million to begin the first part of a \$25 million study. Federal re-imbursement for the study seems highly improbable with the current trend in Washington to reduce spending and to cut back on hydroprojects. The federal government has already backed out of any full-scale funding for the dam project because it feels that it benefits too few people. Because of this, Senator Gravel and others in the State are recommending that the financing be through APA (Alaska Power Authority) issued bonds.

The State will have to secure these bonds and the source for this security can only be the Permanent Fund. There have also been suggestions of using the Permanent Fund for direct financing of the project. Added to the idea of using the fund to finance the gas pipeline and the petrochemical industry, this will exhaust the fund for any uses in renewable resources.

9. THE CORPS SHOULD NOT DO THE FEASIBILITY STUDY.

Since the Corps will be doing the planning, design and construction of the Susitna project if the project proves feasible, then it seems highly questionable whether the Corps should also conduct the feasibility study since their future jobs will depend on proving the project feasible. If the study must be done it should be conducted by an outside, independent, unbiased agency and not the Corps.

10. THE STUDY SHOULD BE DELAYED.

The study should be delayed at least until Senator Gravel secures a guaranty of Federal re-imbursement. The Corps has said they need to start before the Spring thaw and therefore need the money immediately, otherwise the study would be delayed until next winter. But just what are the disadvantages of delaying the study until then?

With so many questions unanswered and with information from recent studies not yet assimilated a delay is clearly needed.

Earthquake damage to either dam or over-topping of the dams by tsunami-type waves could cause massive flooding of the lower Susitna and its communities such as Talkeetna and Gold Creek as well as damage to the Parks Highway and the Alaska Railroad. Is the State of Alaska prepared to take the almost inevitable seismic risk in order to secure electrical energy of which the need has yet to be demonstrated?

4. A CARIBOU HERD OF 20,000 ANIMALS WILL BE THREATENED.

The calving grounds for the Nelchina caribou herd are near the proposed impoundment sites. Movement of animals to and from the calving ground could be impeded by the reservoirs. Considerable mortality to the herd could result during the crossings.

In Norway the reindeer have ceased to migrate due to the building of a reservoir. This similar situation could reduce the herd numbers drastically.

The feasibility study itself could adversely effect the caribou herd. The study would build a road to the dam sites, creating access for many people. Ensuing trails could lead people directly into the calving ground. In 1978 close to 3,000 people applied for permits to hunt the Nelchina caribou herd.

5. MORE THAN 20% OF THE STATE'S TOTAL MOOSE HARVEST COMES FROM THE GAME UNIT SURROUNDING THE PROPOSED SUSITNA PROJECT.

The Alaska Department of Fish and Game considers the Nelchina Basin one of the most important game area in the State, providing large numbers of game animals and roadside access for hunters and viewers. A very significant part of fall and winter moose habitat used by moose in this unit would be covered by the impoundments. This could mean a considerable reduction in moose numbers which would limit hunting and viewing opportunities.

6. 38% OF THE COOK INLET SALMON HARVEST COMES FROM THE SUSITNA. THIS RESOURCE COULD BE THREATENED.

The Susitna River is the highest producing river into Cook Inlet of all salmon species, save the sockeye. It is the second or third highest producer of sockeye salmon. In the winter the Susitna runs clear and, thus it is satisfactory for the rearing of juvenile salmon which move into it at that time. The dam would probably cause the winter waters to run silty and, thus, would be unsatisfactory for that purpose. This condition would effect the entire length of the river down to the mouth. Also, the probable decrease in water level downstream from the dam to the mouth during summer would reduce the existence of and access to spawning sites.

Dear Legislator,

What are the problems with the Susitna Hydropower Project?

THE NEED FOR SUCH A LARGE PROJECT HAS NOT BEEN SHOWN.

Total electrical energy consumption in the railbelt area (excluding military) was about 1.7 billion kilowatt hours (KWH) in 1976. Energy consumption in the Fairbanks area declined in 1978. These dams will produce 6.1 billion KWH, well over 3 times the amount of energy needed to meet current consumption.

The Alaska Power Authority and the Army Corps of Engineers have used highly inflated and unrealistic growth projections to justify the project. The lowest growth pattern cited by APA, resulted in a quadrupled demand by 1995, a doubling the present railbelt population by 1995, and a tripling of per-capita energy usage by the industrial sector. In light of the most recent trends in population growth, energy conservation and decreased per-capita energy usage in Alaskan industry, these projections seem totally unrealistic.

No matter what the growth rate, local utilities will build new plants to meet needs before Susitna could come on line. Since the generating capacity to meet current demand will have already been met by existing power plants, Susitna power represents an enormous glut of energy.

Such a glut can only result in the introduction of some highly energy intensive industries in the railbelt (bauxite refining plant and uranium enriching plant are a few of the proposals) in order to sell excess power to make the project economically feasible.

2. ITS ECONOMIC FEASIBILITY IS, AT BEST, MARGINAL; AT WORST A TERRIBLE LOSS.

Even when using the Corps very conservative cost estimate of \$2.6 billion economic feasibility has been judged as marginal. If we bear in mind the 900% cost overrun of the Trans-Alaska Pipeline, the necessary backup generating systems and the costs of environmental damage, we can expect costs to far exceed the projected \$2.6 billion.

3. THE PROJECT RISKS MASSIVE FLOODING FROM EARTHQUAKE DAMAGE.

The active Susitna fault goes right through the middle of the proposed Susitna River Dams Project. Five moderate earthquakes and many smaller ones occurred along this fault in the last 6 years. Many more earthquakes have been registered along the major Denali fault, which lies within 40 miles of the site.

Compounding the problem is that filling of reservoirs often induces earthquakes, sometimes of large magnitude. With the Susitna reservoirs lying on either side of the active fault, the situation here will be particularly dangerous.

Summary of House Resource Committee Hearing on Sustina Project (SJR 6 & SB 63)

March 5, 1979

1. Eric Yould, Alaska Power Authority

Yould gave a general explanation of the project's history, general financing provisions and the timetable.

Cotten asked about the questions raised in Weeden's letter, specifically the demand projections ~~and~~:

Yould: even at an extreme low growth scenario of only .8% increased consumption per year, the project would still be economically viable.

Cotten then asked about the appropriateness of the Corps doing the feasibility study.

Yould: revenue bond market--we have to sell our bonds to conservative, knowledgeable investors on Wall st. They wouldn't buy the bonds if they didn't trust the Corps. (praise to wisdom of wall st, amen)

Yould escaped with no further questioning by the committee

2.

2. Hugh Malone

Main question--what analysis of alternatives has been done? Who is making an evaluation of which project is best? Are we sure that this is the best deal? A range of varying costs--what are the next best alternatives?

Would like to see the OMB study of 32 other sites. What is the impact of this projection the Beluga coal field power plant proposal? Or on other large-scale alternatives such as using royalty gas via an in-state line?

Last year's legislature appropriated \$300,000 for the study of alternatives (note--not exactly true), but the study funds were contingent on federal guarantees. ~~The commitment~~ Was made when the state's only commitment was to revenue bonds. I'm not saying that we shouldn't appropriate the eight million, only that we need to look at alternatives.

What are the effects of the federal administration of the Corps contracts? The OMB wants additional information, before its approval.

Signoffs still have to be obtained from the local village corporations. We need to know which ones have an interest in this land. D2 is a problem, the river has been selected as a proposed wild and scenic river--what are the effects of that?

Even if the federal backing comes through, if the state decides not to go ahead with the project for our own reasons, we have to pay. and the ratepayers will have to bear the burden of cost overruns.

Agencies promote projects that they are interested in. We should get an independent analysis of the available alternatives; then decide what the magnitude of the state commitment should be. If the legislature provides funding, some sort of interim oversight committee should be set up, with the responsibility for renewing the Corps contract.

"I don't want the ratepayers on the hook." Alternative, incremental power plants may be more economical. Final shot--make sure Fish and Game has adequate money for biological studies.

3. Jim Brennen--as citizen and ~~Atlix~~ Alaska Center for the Env.

should delay funds for a year--M OMB dissatisfactions, BLM permits, federal guarantees, possible alternatives are all questions that have not yet been resolved. stressed need to develop decentralized source of power and inevitability of the development of the Beluga coal fields.

4. Roman Motyka--on own behalf, member of geophysical institute, environmentalist

My concerns--cost overruns, as exemplified by pipeline. Seismic problems. Costs of backup systems. Limitations of bonding. Are demand forecasts backed up by assumptions of a capital move, energy-intensive industry moving into the state? What other options are available?

Eliason asked the biological concerns, social impact, Zharoff concurred with Eliason's questions.

Carney--conservation groups should make some positive, specific suggestions, instead of always criticizing.

Chatterton attempted to trip Roman up by asking detailed questions about his seismic map and knowledge of the area.

Osterback--are you in favor of coal-fired plants, and coal-mining?

Eliason--are there any historical examples of a dam attracting industry?

5. Dick Logan, for F&G

Susitna supports the Cook Inlet fishery, of extremely high value. Dam also will affect upland habitats of moose, caribou and brown bear.

~~NRE~~ NEPA requires that ecological questions be addressed--EIS will cover questions, the feasibility studies have to be run to get the answers.

Have effect on caribou migration, possible thermal bloc to salmon spawning. Dams have caused big loss in fish populations, most impact will be downstream from dam. Hatcheries to replace have had varying success.

Osterbeck--what are impacts of alternatives? Logan--pipeline, coal plant would have much less effect than hydro project.

Eliason--what are the effects of flow levels, temperature changes?

Logan--we're able to manipulate the dam outflow to adjust temperatures, rate, can ~~possibly~~ increase fish populations, though increase in salmon is unlikely.

Halford--do you have enough money to do an adequate job? Logan--Yes; we proposed more, but understand it's a tight budget year (for Corps?) will accept what we get.

6. David Hutchins--exec. director of ass. of rural ~~coops~~ electric coops

strongly support ~~susitna~~ susitna project. recent decrease in Fb power demand not representative of the rest of the Railbelt. Susitna is the best alternative for the region. Healy coal was shelved because of costs associated with the Clean Air Act. Small hydro projects are supplemental, not replacements.

Chatterton--would nuclear power be more cost-effective? Hutchins--don't know. Hutchins also stressed the federal prohibitions on using gas to generate electricity.

Zharoff--thanked everyone for electrifying testimony, keeping committee current on positive and negative aspects, generating discussion. numerous groans.

Susitha Heering  
Resources Committee

3-5-79 3 pm

- SJR 6 SB 63

① Gould - Background - # steps, possibilities  
(good basic desc.)

Cotton - Weeden's letter/questions

② demand projections - backed up by APAdm, Battelle, JER  
sensitivity study -

low growth of .8% - project still feasible ★

③ Corps shouldn't be doing feasibility  
protection interest <sup>in</sup> revenue bond market ★ - challenge

② <sup>stop</sup> Malone -

Main question - what analysis of alternatives has been done?

who is making evaluation that project is best?

Are we sure that this is the best deal? Cost?

What are next best alternatives?

OMB study of 32 other sites

Impact of this project on coal/Beluga power proposals?

Other large-scale alternatives - North Slope gas

in-state royalty line

Cost leg. → \$300,000 for study of alternatives

study funds were contingent on federal guarantees

made when state's only commitment was to revenue bonds

not saying we shouldn't appropriate \$, let's look at alternatives

Effect, if any of federal adm. of Corps contract?

OMB - wants additional information

Signoffs from village corporations - which have interest?

DZ - Wild & Scenic Rivers selection?

Finally, proposed amendment by Gravel should be in your hands?

1) If state decides to cut off, we pay

2) payment of additional costs - borne by rate payers

Agencies promote projects or interested in - we should

get independent analysis of alternatives

What will management of the project be?

If funding by leg., interim subcommittee with responsibility for reviewing that contract.

"I don't want to see ratepayers on the hook."

alternative increments may be more economical  
(One final shot - biological studies F+G)

③ Jim Brenner - atty., pres. of Ak. Centre of Env. Justice  
particularly as consumer of electric power

④ Should delay for a year -  
OMB dissatisfaction

BLM permits, etc. - lands

Federal Guarantee

Alternatives not yet assessed / other hydro, Beluga  
decentralized sources of power

④ Roma Motyka - on own behalf (with Geophysical Inst.)  
Concerns - re

Cost overruns

Seismic problems

Costs of backup systems

Bonding - what limitations

Demand - Capitol more

energy - intensive industry

What other options

Eliason - biological concerns /  
social impact

Zheroff, too

Corney - Conserv. groups should get positive

Halford - seismic questions

Chai - map questions

~~at~~ Therack - in favor of coal-fired/mining?

Eliason - other examples of dam attracting - including  
BC

⑤ Dick Logan - F&G -

Susitna supports, Cook Inlet fishing  
upland habitat - moose, caribou, brown bear

NEPA requirements

EIS will address the questions  
feasibility studies have to run to get answers

Fuller - questions re caribou

possible thermal shock to salmon migration

Dams have caused big loss in fish

but most impact will be downstream

Carney - Hatcheries successful? probably not

The Rock - should we look at alternatives

Logan - impact of pipeline less than hydro project

Too much power? - not qualified to answer

Eliason - <sup>effect of</sup> flow, temperatures

DL - able to manipulate dam outflow

able to increase fish population

The Rock - temperatures

Hallford - is this amount enough to do studies

F&G - yes, it's adequate

proposed more "tight budget year"

will accept what we get

⑥ David

Hatcheries - Ak Rural Coop Exec Director

Yout 12 members in area

GV, Mart, HEA, ?

strongly support Susitna project

He not representative of Railbelt

best alternative for Railbelt region

Healy shelved because of Clean Air Act

Small Hydro project, are supplements, not replacement

Chat - nuclear more cost effective

# Sensitive - basic points

① Corps shouldn't do study

② Report of MRS study

③ Small Hyatt project

needs

employment

④ Needs projection - growth, elasticity

⑤ FILL + Game use - bank

⑥ Beluga and fields

meeting

Study money lapses June 30, '79

→ Should get extension

change wording for independent "advising"

economic-financial

Corps doesn't have to do anything justifying 8 million

→ Amend Resolution p. line 4 - 9

(bill no.?)

What happens to OMB study / approval  
BLM permits?

Yould + Erickson

3/5/79

10 am

① \$300,000 study by LAA

information available from Corps

need 2 years data collection

Corps will be putting out report in 9 months  
(required)

will look at other dam sites

will confirm that Susitna is best site, will  
look at coal, etc.

Not as in-depth ~~study~~ as final study

18-month = Phase I

Foundation data - 1<sup>st</sup> 3 year

last year - putting together

design for cost estimates

Biological studies

need long life-cycle

Main questions that have been raised

- ① Seismicity
- ② Impact of large bloc of power on Railbelt
- ③ " on down-stream fisheries

Only ② can be done in short term

Will have to sell <sup>47</sup>\$ million worth of bonds to  
pay for study costs + interest.

Secured by 24 million app.

## ② Status of OMB's approval

Should find out this week or next

Army has to send to OMB

OMB will take speedy action

leg approval

unofficial approval

Could be stipulated as above

Start-up date changed to April 1 - activities not as extensive

Land has to be conveyed to village corporations  
Corps have to have wetlands permit

issuing entire boundary now

jobs at stake - if leg. doesn't approve money

(F+G) - 40 people for biology

APA not managing study

LAA needs detail on each stage of Phase I

→ see Susitna Hydroponic Plan of Study (1978)

\$3 million dollar study for OMB (fed. funding)

reaffirmed viability of Watana

not public yet - has to be reviewed

Gregg can see (for a week)

Financing - Authority has no money

~~Authority~~ Fed. have app. \$6 million <sup>but can't</sup> USE (1978)

security of 6 million → 47 million of bonds → but can only spend according to matching state or federal funds.

If Corps find feasible, and state doesn't →

① You'd "most salient point ... one I find most difficult to answer."

If Corps find feasible, financing should be available

If State does not want - pass resolution

Policy decision by state

will not necessarily get the \$ back

If Gravel not successful -

get rid of Corps

You'd - benefits in getting rid of feds

But can't go to Corps from private, only  
visa versa

Corps equipment bought for project becomes APA property.  
Without federal legislation

halt & transfer to private is possible

checkpoints

Phase I

9-month study - reassessment of economic viability

3-yr. - go or no go

4-yr. - final

as studies progress,

lands issues

Corps - feasibility only

ADFG - mitigation

Economic study.

identity potential  
dam sites

optimum water

resource; compared

coal plant

FEA gives values of most feasible alternative

GAS almost ruled out

Can't finance anything  
the Corps doesn't think is  
necessary

needs  
costs

/Chen River project

implicit about demand growth, based on Botelle

primarily based on APAdm studies - did Swettisham

★  $\Rightarrow$  Corps, in 3 million study  
sensitivity factor  
even if load growth fell to .8% annually,  
project will be economically feasible.

- ① independent study
  - ① social impact
  - ② economics - mainly hydro configurations  
not general picture

Gravel: 10% adversary funding  
original intent of 300,000

[Rutland test inside water resources firm]

Call A&P Adam

Yard - aware of complexities  
want decision on project soon  
utilities need to know

Economics of major coal-fired generation

~~the~~ close to Watana

400 Mgw - advantage of coal - meeting  
demand in increments

May be forced to go to coal anyway

capital investment in gas plant minuscule compared to coal  
but fuel costs are higher

Coal plants could destroy economics of Susitna

Exhaustion of Polson, etc. (700 mt per yr)

Questions that should be answered by the Alaska Power Authority  
and the Army Corps of Engineers

1. The Alaska Power Authority (APA) and the Army Corps of Engineers (Corps) has said that the railbelt's present energy consumption is about 2.8 billion kilowatt hours (KWH). We would like to be given the breakdown of energy usage upon which this estimate is based. Specifically we would like the present total and the present per capita electrical energy consumption by 1) residential owners and 2) small commercial/industrial users in each of the three major railbelt communities: Anchorage, Mat-Su, and Fairbanks.

Our figures, based on the Alaska Power Administration's latest report on Alaska energy consumption, show that the total railbelt energy consumption in 1976 (excluding military) was about 1.7 billion KWH.

2. We would like to know the total sales of each of the major utilities in Fairbanks and Anchorage over the past 3 years (1975-1978), and the percent increase in sales per year for both the residential and the small commercial/industrial sectors.
3. The Alaska Power Administration, APA and the Corps has said that energy needs in the railbelt area will be four to ten times the present level. We would like to know the basis for these projections.

Mr. Eric Yould has cited one study conducted by the Institute of Social and Economic Research to confirm these large predictions. ISER's lowest projection resulted in a quadrupled demand for electrical energy by 1995. This demand was based on an annual population increase in the railbelt area of over 4.5% per year, more than four times the present national average. This would result in more than doubling the present railbelt population by 1995. Further, the industrial sector was projected to grow as rapidly as the population and was projected to increase their per capita electrical energy consumption by 5.8% per year. This would result in a tripling of industrial per capita usage by 1995. In light of the most recent trends in population growth, energy consumption and decreased per-capita energy usage in Alaskan industry, we wonder if these projections are realistic.

4. If the demand for electrical energy in the railbelt area grows as rapidly as APA and the Corps suggests, then it would appear that local utilities will be forced to build several new power plants over the next 2 years to meet this need. Many people therefore have expressed fears that, since the generating capacity to meet current demand will have already been met by existing power plants, Susitna power then represents an enormous glut of energy. Can you comment on how APA envisions integrating Susitna power into the overall power network and whether there will be a need to attract energy intensive industry to use Susitna power?
5. We understand that the Corps is in the final stages of completing a report on a \$3 million study they did this past summer for the Office of Management and Budget. We understand that , included in this study is a re-evaluation of total project construction costs and also a study of 32 other potential sites for hydro-power in the railbelt area. We feel that it is essential that the committee examine this report in order to make an intelligent decision concerning the Susitna feasibility study, especially since the other sites may prove more cost-beneficial and could be brought on line much sooner than Susitna. For these reasons we would like the Finance Committee to be provided with either a finished or draft version of this report ASAP. If this can not be done, we would like to know why.
6. It is our understanding that the Corps will be doing the planning, design and construction of the Susitna project if the project proves feasible. If this is the case, then it seems highly questionable whether the Corps should also conduct the feasibility study since their future jobs could depend on proving the project feasible. Wouldn't it be better to have an outside, independent, unbiased agency conduct the study rather than the Corps?
7. Many people have expressed strong concern over the environmental and geological risks associated with the Susitna project. One of the most prominent of these risks is the seismic hazard. We know the Corps is well-aquainted with the problems of earthquakes and we have one specific question to ask. We understand that reservoirs commonly introduce seismicity. Rather severe earthquakes, up to magnitude 6.4, have accompanied the filling of reservoirs at a number of dams around the world. The Susitna dams and their reservoirs will lie on opposite sides of the active Susitna fault with the upper part of the Devil's

Canyon reservoir actually overlying a portion of the fault. The high loading and water from these reservoirs could very possibly trigger strain energy which has been stored in rocks prior to impoundment.

We understand that there is no way of fully evaluating beforehand the effect reservoir loading will have on the active Susitna fault, and that this can only be done during the actual filling of the reservoir. Our question is this: If the impoundment of water at Watana and Devil's Canyon does cause and increase in the frequency and intensity of earthquakes, what will be the Corps' plan of action, particularly if the public becomes concerned about the safety of the project?

8. Many people have asked why the study can't be delayed until Senator Gravel secures a guaranty of Federal re-imbusement. We know the Corps has said they need to start before the Spring thaw and therefore need the money immediately, otherwise the study would be delayed until next winter. But just what are the disadvantages of delaying the study til then? It seems to us that there is a lot of information that hasn't been assimilated yet and that a delay might not be such a bad thing.

*Corps shouldn't do -  
need project  
to keep their jobs*

RECEIVED  
24 Capital Budget

BUDGET & MANAGEMENT  
OCT 9 1978

RECEIVED  
OCT 9 1978  
BUDGET & MANAGEMENT

| FUNDING<br>SOURCE,<br>YEAR, RANK | PROJECT TITLE<br>(Group Projects by State Funding Source) | PROJECT TYPE |      |       |      | LOCATION(S)             | ULTIMATE<br>ANNUAL<br>OPERATING<br>COST | AGENCY<br>Appropriation<br>REQUEST | GOVERNORS<br>BUDGET | LEGISLATIVE<br>ALLOWANCE |
|----------------------------------|-----------------------------------------------------------|--------------|------|-------|------|-------------------------|-----------------------------------------|------------------------------------|---------------------|--------------------------|
|                                  |                                                           | CONST        | IMPR | EQUIP | LAND |                         |                                         |                                    |                     |                          |
| G.F.                             |                                                           |              |      |       |      |                         |                                         |                                    |                     |                          |
| 80-1                             | Green Lake Hydroelectric Project                          | X            |      |       |      | Sitka                   | -0-                                     | 3,600.0                            | 0                   |                          |
| 80-2                             | Swan Lake Hydroelectric Project                           | X            |      |       |      | Ketchikan               | -0-                                     | 2,000.0                            | 0                   |                          |
| 80-3                             | Tye or Virginia Lake or Thomas Bay Hydro                  | X            |      |       |      | Petersburg/<br>Wrangell | -0-                                     | 2,000.0                            | 0                   |                          |
| 80-4                             | Terror Lake Hydroelectric Project                         | X            |      |       |      | Kodiak                  | -0-                                     | 2,000.0                            | 0                   |                          |
| 80-5                             | Cordova Hydroelectric Development                         | X            |      |       |      | Cordova                 | -0-                                     | 500.0                              | 0                   |                          |
| 80-6                             | IPD small Hydro Demonstration                             | X            |      |       |      | Anchorage               | -0-                                     | 60.0                               | 0                   |                          |
| 80-7                             | Bradley Lake Hydroelectric CORPS                          | X            |      |       |      | Homr                    | -0-                                     | 80.0                               | 0                   |                          |
| 80-8                             | Salmon Creek Hydroelectric                                | X            |      |       |      | Juneau                  | -0-                                     | 200.0                              | 0                   |                          |
| 80-9                             | Chakachamna Hydroelectric                                 | X            |      |       |      | Anchorage               | -0-                                     | 200.0                              | 0                   |                          |
| 80-10                            | Anchorage Energy Pooling                                  | X            |      |       |      | Anchorage               | -0-                                     | 120.0                              | 0                   |                          |
| 80-11                            | Mennonite Creek Hydroelectric                             | X            |      |       |      | Port Lions              | -0-                                     | 90.0                               | 0                   |                          |
|                                  | Gartina Creek Hydroelectric                               | X            |      |       |      | Hoonah                  | -0-                                     |                                    | 0                   |                          |
| 80-12                            | Gunnak Creek Hydroelectric                                | X            |      |       |      | Kake                    | -0-                                     | 120.0                              | 0                   |                          |
|                                  | Thayer Creek Hydroelectric                                | X            |      |       |      | Anoon                   | -0-                                     |                                    | 0                   |                          |
|                                  | Black Bear Lake Hydroelectric                             | X            |      |       |      | Klawock                 | -0-                                     |                                    | 0                   |                          |
| 80-13                            | Larson Bay Hydroelectric                                  | X            |      |       |      | Larson Bay              | -0-                                     | 80.0                               | 0                   |                          |
|                                  | Old Harbor Hydroelectric                                  | X            |      |       |      | Old Harbor              | -0-                                     |                                    | 0                   |                          |
| 80-14                            | Lake Elva Hydroelectric                                   | X            |      |       |      | Dillingham              | -0-                                     | 80.0                               | 0                   |                          |
| 80-15                            | Chilkat Hydroelectric                                     | X            |      |       |      | Haines                  | -0-                                     | 50.0                               | 0                   |                          |
| 80-16                            | Grant Lake & Crescent Lake Hydroelectric                  | X            |      |       |      | Seward                  | -0-                                     | 70.0                               | 0                   |                          |
| 80-17                            | Kisaralik Hydroelectric                                   | X            |      |       |      | Bethel                  | -0-                                     | 80.0                               | 0                   |                          |
| 80-18                            | Assess Kotzebue Hydroelectric                             | X            |      |       |      | Kotzebue                | -0-                                     |                                    | 0                   |                          |
|                                  | Assess Nome Hydroelectric                                 | X            |      |       |      | Nome                    | -0-                                     | 80.0                               | 0                   |                          |
| 80-19                            | ALASKA POWER AUTHORITY LOANS                              | X            |      |       |      | STATEWIDE               | -0-                                     |                                    | 3,000.0             |                          |
| TOTAL                            |                                                           |              |      |       |      |                         | -0-                                     | 11,410.0                           | 3,000.0             |                          |

getting  
443.2K for  
contracted  
in go budget

|                   |                       |     |          |         |  |
|-------------------|-----------------------|-----|----------|---------|--|
| FUNDING<br>SOURCE | FEDERAL RECEIPTS      |     |          |         |  |
|                   | REQUIRED GENERAL FUND |     |          |         |  |
|                   | OTHER GENERAL FUND    | -0- | 11,410.0 | 3,000.0 |  |
|                   | INTER-AGENCY TRANSFER |     |          |         |  |
|                   | OTHER (Specify)       |     |          |         |  |
|                   | G. O. BONDS           |     |          |         |  |

CATEGORY Electrical Energy AGENCY Alaska Power Authority PROGRAM Energy Development

24 CAPITAL BUDGET SUMMARY

00047

Introduced: 1/19/79  
Referred: Resources and  
Finance

BY THE RULES COMMITTEE BY  
REQUEST OF THE GOVERNOR

1 IN THE SENATE

2 SENATE JOINT RESOLUTION NO. 6

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 ELEVENTH LEGISLATURE - FIRST SESSION

5 Relating to the Alaska Power Authority,  
6 the Phase I environmental, economic,  
7 social and engineering studies of the  
8 Susitna Hydroelectric Project, and the  
9 incurring of indebtedness for Phase I.

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

11 WHEREAS the Alaska Power Authority under AS 44.56.180 has submitted to  
12 the legislature and to the commissioner of commerce and economic develop-  
13 ment a statement outlining the status of the Susitna Hydroelectric Project  
14 and the Plan of Study outlining the necessary feasibility studies of the  
15 project which is planned to be designed, and may be acquired or constructed,  
16 by the United States under an agreement providing for ownership of the  
17 project by the authority; and

18 WHEREAS the Congress of the United States, on October 22, 1976, en-  
19 acted P.L. 94-587, the Alaska Hydroelectric Power Development Act, which  
20 Act authorized the Secretary of the Army and the U.S. Army Corps of Engi-  
21 neers to participate in the Susitna Hydroelectric Project; and

22 WHEREAS the Phase I activities outlined delineate the environmental,  
23 economic, social, and engineering studies requisite to informed decision-  
24 making; and

25  WHEREAS the cost to be incurred during Phase I is now estimated to be  
26 \$25,000,000, but may exceed that amount; and

27 WHEREAS it is considered to be in the best interests of the State of  
28 Alaska to proceed with Phase I of the project through the use of Alaska  
29 Power Authority sponsored financing; and

1 WHEREAS legislative approval of project construction is required if  
2 project feasibility and desirability result from the study process con-  
3 ducted under Phase I activities;

4 BE IT RESOLVED that, based on the plan outlined in the statement of  
5 the Alaska Power Authority to the legislature and to the commissioner of  
6 commerce and economic development, the legislature agrees to the incurring  
7 of indebtedness by the Alaska Power Authority in an amount necessary to  
8 finance the cost of the Phase I feasibility studies of the Susitna Hydro-  
9 electric Project, including interest; and be it

10 FURTHER RESOLVED that Phase I studies must provide for substantive  
11 public involvement throughout the study process; and] be it

12 FURTHER RESOLVED that the Legislative Affairs Agency shall conduct or  
13 contract for an independent review, (in consultation with the Alaska Power  
14 Authority,) based on existing data, of the economic, financial, [biological  
15 and geophysical implications] of the proposed Susitna Hydroelectric Project,  
16 and shall report to the legislature by January 15, 1980.

17 fiscal note?

18 Add: The Corps of

19 Engineers and the AKPA shall provide full  
20 cooperation to all studies conducted by the LAA  
21  
22  
23  
24  
25  
26  
27  
28  
29

UFA  
GVEA



ROBERT W. RETHERFORD ASSOCIATES

CONSULTING ENGINEERS

TELEPHONE 344-2585

P. O. BOX 6410

ANCHORAGE, ALASKA 99502

TELEX: 626-380

RECEIVED  
JAN 2 1979

GOLDEN VALLEY  
ELECTRIC ASSN., INC.

26 JANUARY 1979

UNITED STATES DEPARTMENT OF THE INTERIOR  
Bureau of Land Management  
Anchorage District Office  
4700 East 72nd Avenue  
Anchorage, Ak 99507

RE: EAR-010-9035  
AK-017-9025  
2920/1791 (013)  
REQUEST FOR PUBLIC COMMENT

SUBJECT: Application by the Alaska Power Authority to conduct a  
feasibility analysis of the proposed Susitna Hydroelectric  
Project and the environmental assessment of the proposed  
study activities.

Gentlemen:

I strongly urge immediate approval of the above subject application. I would further suggest that all means available to the BIM be used to facilitate the speedy evaluation of feasibility of the proposed hydroelectric project.

I remember making a similar endorsement, verbally in a public meeting a year or so ago, relating to earlier work on this continuing feasibility analysis. During all this process one gets the feeling that a considerable number of the participants do not appear to understand that there is a vital public interest in the determination of feasibility of the proposed project. On the contrary - there is an apparent desire that the hydroelectric proposal just go away. I do not believe this attitude represents a majority but it certainly deserves attention. I believe the government system is missing something in the assessment process. That "something" is perspective.

It seems to me that right out in front of the public there should be a clear, understandable statement of the reason for considering the action at all, such as the following:

The proposed action is being considered because credible showings have been made that indicate a substantial growing need for electrical energy that could be satisfied by the project that is the subject of the action. These credible showings also indicate that to produce equivalent electric energy the railbelt community systems would have to use other available energy resources as follows:

ELECTRIC ENERGY RESOURCE OF SUSITNA (USE 100 YEARS) - - - 700 BILLION Kwh  
OTHER EQUIVALENT RESOURCE USE:

COAL - - - - - 585 MILLION TONS  
(This would disturb about 18,000 to 20,000 acres of land)  
or OIL - - - - - 1.5 BILLION BBLs.  
(This is equivalent to about 1/6 of the Prudhoe Bay reserves)  
or GAS - - - - - 11.3 TRILLION CU. FT.  
(This is equivalent to about 1/2 of the Prudhoe Gas Field)

PG-2

26 JANUARY 1979

BLM

I believe that the foregoing statement and its figures are quite revealing as to the nature of the potential hydro-project to be studied. The figures are credible, too, and can be derived from several sources that have considered them in considerable depth.

Why can't this perspective be placed clearly out front so that the public as a whole may have a better chance to grasp the significance of the proposed action? I can't help but think that a better perspective might also develop as to the process of review itself.

Let's get on with the feasibility analysis and let's level with the public on what it's all about!!

A handwritten signature in dark ink, appearing to read "Robert W. Retherford". The signature is fluid and cursive, with a large, sweeping "R" at the end.

ROBERT W. RETHERFORD

By:  
Introduced; Feb. 16, 1979

RESOLUTION NO. A/F 79-1

A RESOLUTION REGARDING FUNDING FOR THE SUSITNA DAM PROJECT

WHEREAS, the energy supply for the entire railbelt area will be seriously deficient during the next 20 years;

WHEREAS, the Susitna Dam project is an integral part of the solution for the above problem;

WHEREAS, the project is viable but will take several years to complete;

WHEREAS, timely funding is now necessary to keep the project on schedule;

NOW, THEREFORE, BE IT RESOLVED, by those attending the Joint Anchorage-Fairbanks local government elected officials conference, Anchorage, Alaska as follows:

That the State and Federal Governments appropriate and expend the necessary funds to keep the project on schedule, and that Congress seek funding for and expedite the project.

PASSED AND APPROVED BY THE FAIRBANKS CITY COUNCIL, FAIRBANKS NORTH STAR BOROUGH, AND THE ANCHORAGE MUNICIPAL ASSEMBLY THIS 16th DAY OF February, 1979.

/s/ William R. Wood  
Mayor, City of Fairbanks

/s/ John A. Carlson  
Chairman, Fairbanks Northstar  
Borough

/s/ George M. Sullivan  
Mayor, Municipality of Anchorage

/s/ Ernest W. Brannon  
Chairman, Assembly

ATTEST:

/s/ Phyllis Eileen Banks  
Clerk, (Acting) Municipality of Anchorage

Susitna

① App. LA for critiquing study

\$300,000 range to 1/80

amount?  
language?

intent: to be used when other study gets underway  
extend deadline / see H13736 // when will critique be done / during  
after or  
access to comparison

Alternative - Quarterly reports for

① Power projections - oversupply?  
mandated overhauling

Demand price elasticity (sensitivity) Manipulable  
② Costs - of project  
have to sell below costs  
to users during const. / low fixed costs  
losses

③ Alternative - small-scale hydro  
gas  
coal

④ Wild & Scenic Rivers Withdrawals (proposed)  
Types of expenditure

inflow for 63 & 8 million  
25 & 40 million  
log. motive #45

⑤ Seismic Data

Council on Science & Technology

Subsidies

Susitna

JSER Electric Power in AK 1976-1995  
for House Finance 1976

see Jim Rhode

Anchorage growth rate 9% - 16%

Hydro must be operated at full capacity & be efficient

price of coal and gas

1-6 Susitna Project will not be economical unless AK consumers  
are relieved of debt service.

Federal ownership must cool effective

WHILE IN SESSION:  
FOUCH V  
JUNEAU, ALASKA 99811  
(907) 465-4925

HOME:  
BOX K - COLLEGE  
FAIRBANKS, ALASKA 99708  
(907) 456-2037

**BRIAN ROGERS**

*Alaska State Legislature*

Feb. 25, 1979

Office of the Commissioner  
Dept. of Fish and Game

Could you please send me information  
on the following questions?

1. The effect of the Susitna Hydroelectric Project on the Nelchina moose and caribou herds.
2. Figures describing the relative importance of the the moose and caribou harvests (take?) in this area. (eg, % of total harvest)
3. The effect of the Susitna Project on the Cook Inlet Commercial and Sport Salmon Fishery.

I realize that some of this information may best be found in existing studies; if so, please feel free to refer me to those works.

Thank you. I would like to have the information as soon as possible.

*Mark Wittow*

Mark Wittow  
Aide to Representative  
Brian Rogers

*Nancy Lord has this material.  
Main problem - \$ differences  
in proposals*

By Senator  
Gravel  
for Leg. Ed.  
lib  
Swi  
file

The state agreed to put up the \$100,000. To have that money authorized and appropriated by the Congress would have delayed the project a year.

The clean-up language is part of this year's omnibus water bill, now reported to the Senate by the Environment and Public Works Committee.

In a word, the detailed Phase I study, meant to enable the Corps to give a firm recommendation for or against the Susitna project, is on its way. What remains to be done is to secure the passage of the clean-up language; finish the Plan of Study and pay for it; appropriate the first \$6 million of the \$25 million revolving fund, needed to guarantee the state's bonds; secure a resolution from the state legislature authorizing the sale of the bonds, and sell the bonds. The Corps says that if it begins next spring, Phase I recommendations can be completed by 1980.

One other facet remains. My original legislation provided for thorough independent critique of each of the segments of the Corps' Phase I report: engineering and design, environmental impact statement, and cost/benefit analysis. This provision was inadvertently omitted by the House-Senate conferees, and I was unable to have it reinstated in this year's omnibus bill. It is my hope that the state power authority would provide for such an independent critique of the Corps' work.

#### ADVANTAGES

The Hydroelectric Power Development Act was originally conceived out of necessity: we simply needed an alternative to the traditional financing method, because it was clear the Susitna project could not be financed that way. As it was developed and refined, however, we recognized a number of unexpected advantages that come from the alternative financing method.

A great hydroelectric project could be completed in ten years, not 30 or 40. Not only did this mean power on line more quickly, but it meant lower construction costs. Even the higher cost of Wall Street bonds, as opposed to federal money, would be more than counterbalanced by the savings effected by an optimum construction schedule.

From

Gravel's

bill

1 (f) Notwithstanding any other provision of this section,  
2 the total authorization to carry out this section shall not  
3 exceed \$25,000,000.

4 SEC. 126. The Secretary of the Army, acting through  
5 the Chief of Engineers, is authorized and directed to under-  
6 take the advanced engineering and design for a flood control  
7 project at Milton, Pennsylvania, including, but not limited to,  
8 final construction plans at a cost not to exceed \$2,500,000.

9 TITLE II—HYDROELECTRIC POWER

10 DEVELOPMENT FUND

11 SEC. 201. Section 203 of the Water Resources Devel-  
12 opment Act of 1976 (Public Law 94-587) is amended to read  
13 as follows:

14 "SEC. 203. (a)(1) The Congress finds that the expedi-  
15 tious development of hydroelectric power generating facilities  
16 that are environmentally sound to assist the Nation in meet-  
17 ing existing and future energy demands is in the national  
18 interest.

19 "(2) The Congress therefore declares that the expertise  
20 of the Chief of Engineers can and should be utilized, in ac-  
21 cordance with this section, for the benefit of local public  
22 bodies in the development of projects in any case where the  
23 Secretary <sup>of the Army</sup> determines that 90 per centum or more of the  
24 benefits of the project are attributable to hydroelectric power  
25 generation when the project is fully operational.

1       “(b) There is hereby established in the Treasury of the  
 2 United States a Hydroelectric Power Development Fund  
 3 (hereafter in this section referred to as the ‘fund’) to be and  
 4 remain available for expenditures authorized by this section.  
 5 The fund shall consist of (1) repayments by non-Federal  
 6 public authorities of expenditures made from the fund, (2) any  
 7 appropriations made to the fund, and (3) interest on moneys  
 8 in the fund invested in accordance with subsection (d).

9       “(c) There is authorized to be appropriated for deposit in  
 10 the fund established by subsection (b) of this section the sum  
 11 of \$25,000,000.

Needs appropriations  
 6.11

12       “(d)(1) If the Secretary<sup>of the Army</sup> determines that moneys in the  
 13 fund are in excess of current needs, he may request the in-  
 14 vestment of such amounts as he deems advisable by the Sec-  
 15 retary of the Treasury in direct, general obligations of, or  
 16 obligations guaranteed as to both principal and interest by,  
 17 the United States.

18       “(2) With the approval of the Secretary of the Treasury,  
 19 the Secretary<sup>of the Army</sup> may deposit moneys of the fund in any Federal  
 20 Reserve bank or other depository for funds of the United  
 21 States, or in such other banks and financial institutions and  
 22 under such terms and conditions as the Secretary<sup>of the Army</sup> and the  
 23 Secretary of the Treasury may mutually agree.

24       “(e)(1) The Secretary<sup>of the Army</sup> is authorized, ~~for any project that~~  
 25 meets the requirements of subsection (a)(2) of this section, to

1 ~~obligate moneys in the fund to pay for, or reimburse expendi-~~  
 2 ~~tures for, the cost of the phase I design memorandum made~~  
 3 ~~by a non-Federal public authority pursuant to this subsection.~~  
 4 The Secretary<sup>of the Army</sup> is authorized to enter into an agreement with  
 5 a non-Federal public authority to ~~pay from the fund the cost~~  
 6 ~~to such non-Federal authority of preparing a phase I design~~  
 7 ~~memorandum on condition that such non-Federal authority~~  
 8 ~~repay such cost to the fund if (A) the phase I design memo-~~  
 9 ~~randum report demonstrates the feasibility of constructing~~  
 10 ~~the project, and (B) the non-Federal authority within three~~  
 11 ~~years of the date of completion of the report, is either able to~~  
 12 ~~borrow money for construction costs based upon the security~~  
 13 ~~of the project or its revenues or actually commences con-~~  
 14 ~~struction of such project. If either of the conditions in clause~~  
 15 ~~(A) or (B) is not met, such costs shall be borne by the United~~  
 16 ~~States and the report on such project shall be submitted to~~  
 17 Congress. The Secretary<sup>of the Army</sup> is also authorized to accept funds  
 18 from a non-Federal authority for costs incurred for preparing  
 19 phase I design memorandum if the Secretary<sup>of the Army</sup> first agrees  
 20 with the non-Federal public authority to reimburse such costs  
 21 from the fund (i) if the report demonstrates infeasibility of the  
 22 project, or (ii) if the report is feasible, the non-Federal public  
 23 authority is not able to borrow money to pay construction  
 24 costs of the project, including the costs of the phase I design  
 25 memorandum, based on the security of the project or its rev-

1 enues within three years of the completion of the phase I  
 2 design memorandum. Payments by the Secretary<sup>of the Army</sup> from the  
 3 fund shall be subject to appropriations acts. Payments by the  
 4 Secretary<sup>of the Army</sup> under this subsection for phase I reimbursement  
 5 shall include reimbursement of any interest expense of the  
 6 non-Federal public authority resulting from bonds or notes  
 7 such authority has issued to finance the phase I design  
 8 memorandum and for any other expenses normally associated  
 9 with the issuance and administration of revenue bond and  
 10 note financings. Failure to complete a phase I report being  
 11 prepared in accordance with the provisions of this subsection  
 12 within a reasonable time in accordance with the schedule  
 13 fixed in the phase I design memorandum agreement entered  
 14 into by the Secretary<sup>of the Army</sup> with a non-Federal public authority due  
 15 to Federal actions or inactions not primarily occasioned by  
 16 the actions or inactions of the non-Federal public authority,  
 17 including, but not limited to, Federal inaction in failing to  
 18 appropriate at any time amounts necessary to reimburse such  
 19 costs and expenses in accordance with the schedule fixed in  
 20 the phase I design memorandum agreement, shall also consti-  
 21 tute a determination that such report demonstrates the proj-  
 22 ect is infeasible for purposes of this subsection except that if  
 23 such project is constructed within five years of the date of  
 24 such determination of infeasibility, the non-Federal authority  
 25 shall repay to the fund all phase I costs. The Secretary<sup>of the Army</sup> shall

Needs appropriations  
 bill

1 hold and apply any moneys in the fund available for reim-  
2 bursement of the phase I costs of a particular project of a  
3 non-Federal public authority for which the Secretary<sup>of the Army</sup> has ex-  
4 pended non-Federal funds, in accordance with the terms of a  
5 phase I design memorandum agreement entered into by the  
6 Secretary<sup>of the Army</sup> with the non-Federal public authority for the bene-  
7 fit of the holders of bonds or notes issued to provide such  
8 non-Federal funds. The Secretary<sup>of the Army</sup> shall transmit a copy of a  
9 completed phase I report, including a proposed agreement  
10 between the Corps of Engineers and the non-Federal public  
11 authority setting forth the terms and conditions for construc-  
12 tion of the project, in accordance with the provisions of this  
13 section, to Congress and to the non-Federal public authority,  
14 not later than thirty days after the date of completion of the  
15 report. If the proposed agreement for construction of the  
16 project is entered into and approved pursuant to subsection  
17 (g) within two years of completion of the favorable report, the  
18 project shall be constructed in accordance with subsection (g)  
19 if the non-Federal public authority is able to borrow money  
20 to pay construction costs of the project, including the costs of  
21 the phase I design memorandum, based on the agreement  
22 and the security of the project or its revenues within three  
23 years after completion of the favorable report. The Governors  
24 of the States or their designee may use the phase I design  
25 memorandum report prepared in accordance with the provi-

1 sions of this subsection as they determine necessary to under-  
 2 take construction of a project by a non-Federal public author-  
 3 ity. The United States shall not be liable for the payment of  
 4 any damages resulting from a non-Federal authority's use of  
 5 the phase I report and the construction of any project by a  
 6 non-Federal public authority in connection therewith, other  
 7 than damages due to negligence of the United States.

8       “(f) The Secretary,<sup>of the Army</sup> in accordance with a contract be-  
 9 tween the non-Federal public authority and the Secretary,<sup>of the Army</sup> is  
 10 authorized to construct projects eligible under subsection  
 11 (a)(2) of this section, including engineering and design, land  
 12 acquisition, site development, and offsite improvements nec-  
 13 essary for construction.

14       “(g)(1) Prior to initiating any construction work under  
 15 the authority of this section, the agreement submitted to  
 16 Congress in accordance with subsection (e) must be approved  
 17 by resolution of the Committee on Environment and Public  
 18 Works of the Senate and of the Committee on Public Works  
 19 and Transportation of the House of Representatives. The  
 20 non-Federal authority shall pay the full anticipated costs of  
 21 constructing the project determined by the agreement at the  
 22 time such costs are incurred, together with normal contingen-  
 23 cies and related administrative expenses of the Secretary,<sup>of the Army</sup>  
 24 and such payments shall be held by the Secretary,<sup>of the Army</sup> for pay-

1 ment of obligations incurred by the Secretary on a project for  
2 construction under this section.

3       “(2)(A) The United States shall pay all costs over the  
4 anticipated costs fixed in the agreement with the non-Federal  
5 public authority, if such costs are (i) occasioned by acts of  
6 nature, (ii) occasioned by failure on the part of the Secretary of the Army  
7 to adhere to the agreed schedule of work or a failure of  
8 design, or (iii) are necessary to be paid by the United States  
9 to permit operation of the project in accordance with the ini-  
10 tial determination of feasibility. Payments by the Secretary of the Army  
11 such costs shall be subject to appropriations Acts.

12       “(B) Any Federal funds paid under subparagraph (A) of  
13 this paragraph shall be repaid to the Treasury with interest  
14 by the non-Federal public authority from revenues received  
15 from the sale of power. Payments shall commence following  
16 retirement of all bonds issued by the non-Federal public au-  
17 thority for the project. Interest payable under this subpara-  
18 graph shall be at the rate the Federal Government must pay  
19 on such obligations at the time of payment pursuant to such  
20 subparagraph (A).

21       “(h) As used in this section the term ‘Secretary’ means  
22 the Secretary of the Army, acting through the Chief of Engi-  
23 neers.

24       “(i) This section may be cited as the ‘Hydroelectric  
25 Power Development Act of 1979’ ”.

# STATE OF ALASKA

## DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

SUPPORT BUILDING  
JUNEAU 99801

JAY S. HAMMOND, GOVERNOR

For Terry Reichardt

March 30, 1979

Ms. Suzanne Weller  
Trustees for Alaska  
835 "D" Street #202  
Anchorage, Alaska 99501

Dear Ms. Weller:

I have enclosed two documents which should largely answer the questions you posed in your letter of March 12. Our comments on your questions are summarized below.

Question:

1. How the Department of Fish and Game plans to cooperate with the Corps of Engineers, the U.S. Fish & Wildlife Service, and the Alaska Power Authority in coordinating studies to be done, and goals to be accomplished during the feasibility study?

Answer: The Department of Fish and Game hopes to insure that the biological studies proposed in the June 1978 Phase I Plan of Study (POS) for the Susitna Hydro Project are carried out. We will be coordinating our activities with each of the above mentioned and other agencies in an attempt to insure that all studies outlined in the POS are conducted and all requirements of State and Federal law are satisfied.

2. What sorts of studies are needed before the feasibility of the dam, from the viewpoint of its effects on fish and wildlife, can be determined?

Answer: The biological investigations proposed in the June 1978 POS identify the basic biological investigations which we believe are necessary and required to assess the feasibility of the Susitna Hydro Project.

- a. How much time will be needed to complete the studies? This time estimate should include study planning and analysis.
- b. How much money will be required to conduct the studies? If possible, this should be broken down into dollar amounts needed for each year of study?

Answer (a & b): Please refer to the enclosed briefing document entitled "Susitna Hydro Biological Investigations." It includes a commentary on the budgets proposed by ADF&G for the full term 46 month feasibility investigations of the Phase I POS and our views on the need for a five year study in lieu of the shorter, 46 month investigation.

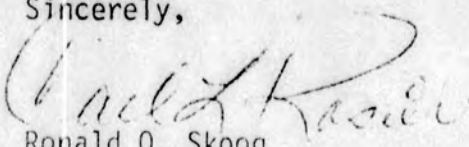
3. In light of past studies conducted in the area, what is the Department's current view regarding potential impacts of the proposed project, on fish and wildlife in the area?

Answer: Please refer to the appropriate section of the "Susitna Hydro Biological Investigations" briefing document and our 1978 report to the U.S. Fish and Wildlife Service, "Preliminary Environmental Assessment of Hydroelectric Development on the Susitna River."

The Department of Fish and Game appreciates your interest in the proposed Susitna Hydro biological investigations. If you have further questions regarding our involvement in the feasibility studies, please contact Thomas Trent, Regional Supervisor of the Habitat Protection Section in Anchorage, telephone 344-0541, extension 133.

Thank you for your inquiry on this matter. I hope this material will prove useful to you.

Sincerely,

  
Ronald O. Skoog  
Commissioner

cc: T. Trent



## REVIEW OF BUSINESS AND ECONOMIC CONDITIONS

---

UNIVERSITY OF ALASKA, INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH, JUNE 1977, Vol. XIV, No. 2

---

# ALASKA ELECTRIC POWER REQUIREMENTS

## A REVIEW AND PROJECTION

### INTRODUCTION

Strong growth of Alaska's economy is causing demand for electric power in the state to grow approximately 12 percent annually, nearly double the historic national average. Meeting this demand in a timely manner, so that a lack of electricity does not act as a brake on economic development, will be a major concern in Alaska for many years to come. At the same time, however, planners, in attempting to meet this demand, must avoid building more power capacity than the future requires, since this could result in an unnecessary waste of capital and resources.

The danger of ending up with too little or too much electrical power capacity emphasizes the need

for and the value of properly assessing and projecting electrical demand. Such projections are also important and necessary because of the several years lead time required to efficiently increase generating capacity.

Projecting future electrical demand is a complicated task that requires consideration of many factors. Researchers must look far into the future and attempt to project the rate of economic growth and related population growth for which to provide electrical power. However, economic growth in Alaska will, to a large extent, depend on the level of future petroleum exploration and development, activities that are subject to a large amount of uncertainty. Therefore, before the economist can forecast electrical demand growth, he must first define the limits of this potential petroleum activity and determine how it will affect economic and population growth.

To overcome the complications involved in projecting electrical demand, ISER researchers used a methodology that allows for variability in both the rate of economic growth in Alaska as well as the rate of use by individual customers. In reporting the results of these efforts, this *Review* looks first at recent electrical use trends in Alaska and, second, presents consistent sets of regional and statewide projections of electrical demand through 1995.

The economic computer model used to make the projections presented in this *Review* was developed as part of the Man in the Arctic Program. Funded by the National Science Foundation and the State of Alaska, MAP is directed toward the identification, comparison, and forecasting of the social and economic effects of energy development in Alaska. For a comprehensive description of MAP, see David T. Kresge, "Alaska Growth to 1990," *Alaska Review of Business and Economic Conditions*, 13:1 (January 1976).

**ALASKA REVIEW OF BUSINESS  
AND ECONOMIC CONDITIONS**

VOL. XIV, No. 2  
June 1977

Published by the

Institute of Social and Economic Research  
University of Alaska  
Anchorage • Fairbanks • Juneau

Charles O. Ferguson—Interim President,  
University of Alaska  
Lee Gorsuch—Director, ISER

Editor: Ronald Crowe  
ISER, University of Alaska  
Fairbanks 99701

Author: Oliver S. Goldsmith  
Assistant Professor  
of Economics, ISER

### HISTORICAL OVERVIEW

Four basic sources supply Alaska's electrical power: (1) private industry, (2) the military, (3) home generators, and (4) utilities. In 1975, the generating capacities of these four sources were distributed as follows:

- Industry—108 megawatts (mw)
- Military—218 mw
- Private home generators (no figures)
- Utilities—738 mw

The first two of these, industrial and military electrical power, are of little interest to us here since they are essentially independent of state population and income levels. And while privately generated power for home use is important because of incomplete utility coverage, its use is declining, and existing programs of rural electrification will continue this trend. Therefore, our primary concern is with the remaining and largest component of electrical power in the state, that generated by utilities. In 1970, approximately 87 percent of Alaska households were connected to electric utilities. Those not connected included villages, households with access to electricity but no desire to consume, and households isolated from any power source or community.

### Utility Generation

Utilities presently provide the largest percentage of electricity generated in the state. And, because military requirements will not expand appreciably and population increases will be concentrated in urban areas, utilities in the future are expected to

supply an even larger proportion of the state's electricity.

Historic growth rates in electric power sales for the largest utilities in the state, calculated for the period 1965 through 1974, are shown in Table 1. In all regions except the Southeast (see Figure 1), growth has exceeded the long-run national average of 7 percent annually. Individual utilities have experienced much more rapid growth. Of the state's largest utilities, Golden Valley Electric Association in Fairbanks grew most rapidly, in excess of 20 percent annually.

Differences in growth rates of electricity use are only partially explained by differences in the rates of population increase. In addition, the number of electric hookups per 1,000 persons, or hookup saturation, has also been increasing, and consumption per customer has been increasing at different rates in different regions. Hookup saturation percentages for 1974 were:

|              |      |
|--------------|------|
| Anchorage    | 31.1 |
| Southcentral | 32.7 |
| Fairbanks    | 28.0 |
| Southeast    | 24.9 |

Table 2 shows the increase by region in numbers of customers and the average annual consumption per customer in the residential sector; Table 3 gives the same information for the commercial and industrial sectors.

The different consumption levels for electricity vary not only across regions but also from community to community. This is shown in Table 4 for residential customers. In 1974, average sales per

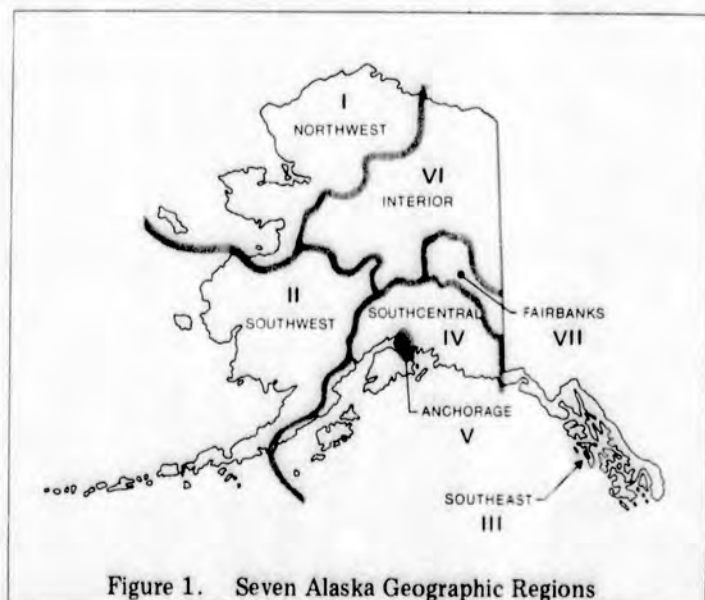


Figure 1. Seven Alaska Geographic Regions

**Table 1**  
**Historic Growth Rates of Sales to Final Consumers**  
**Alaska Electric Utilities, 1965-1974**

| Map Regions and<br>Census Divisions | Electric<br>Utility                          | Annual<br>Growth<br>Rate (%) | 1974 Total<br>KWH Sales<br>to Final<br>Consumers |
|-------------------------------------|----------------------------------------------|------------------------------|--------------------------------------------------|
| <b>Region I</b>                     |                                              |                              | (Thousands)                                      |
| Northwest Alaska                    |                                              |                              |                                                  |
| Kobuk                               | Kotzebue Electric Assn.                      | 8.90                         | 4,859                                            |
| Nome                                | Nome Light & Power                           | 8.57                         | 8,921                                            |
|                                     | Matanuska Electric Assn.<br>(Unalakleet)     | 6.39                         | 1,398                                            |
|                                     | Average                                      | 7.86                         |                                                  |
| <b>Region II</b>                    |                                              |                              |                                                  |
| Southwest Alaska                    |                                              |                              |                                                  |
| Bethel                              | Bethel Utilities Corp.                       | 21.36                        | 11,948                                           |
| Bristol Bay                         | Nushagak Electric Coop.<br>(Dillingham)      | 9.80                         | 3,565                                            |
| Bristol Bay Bor.                    | Naknek Electric Assn.                        | 8.17                         | 4,864*                                           |
| Kuskokwim                           | McGrath Light & Power                        | 1.11                         | 1,102                                            |
|                                     | Average                                      | 11.49                        |                                                  |
| <b>Region III</b>                   |                                              |                              |                                                  |
| Southeast Alaska                    |                                              |                              |                                                  |
| Haines                              | Haines Light & Power Co.                     |                              |                                                  |
| Juneau                              | Glacier Highway Electric<br>(Auke Bay)       | 7.85                         | 5,352                                            |
|                                     | Alaska Electric Light &<br>Power (Juneau)    | 7.03                         | 71,482                                           |
| Ketchikan                           | City of Ketchikan Public<br>Utilities        | 5.66                         | 66,628*                                          |
| Outer Ketchikan                     | Metlakatla Power & Light                     | 5.31                         | 16,435                                           |
| Prince of Wales                     | Alaska Power & Tele-<br>phone Co. (Craig)    | 14.60                        | 1,054                                            |
|                                     | Alaska Power & Tele-<br>phone Co. (Hydaburg) | 23.27                        | 466                                              |
| Sitka                               | City & Borough of Sitka                      | 4.45                         | 29,467                                           |
| Skagway-Yakutat                     | Pelican Utility Co.                          | 1.10                         | Not available                                    |
|                                     | Alaska Power & Telephone<br>Co. (Skagway)    | 10.20                        | 3,708                                            |
| Wrangell-                           | Petersburg Municipal                         | 9.25                         | 15,970                                           |
| Petersburg                          | Light & Power                                |                              |                                                  |
|                                     | Wrangell Municipal<br>Power Plant            | 6.75                         | 9,076                                            |
|                                     | Average                                      | 6.54                         |                                                  |

(Continued, next page)

Table 1 (Cont.)

| Map Regions and<br>Census Divisions        | Electric<br>Utility                         | Annual<br>Growth<br>Rate (%) | 1974 Total<br>KWH Sales<br>to Final<br>Consumers |
|--------------------------------------------|---------------------------------------------|------------------------------|--------------------------------------------------|
| <b>Region IV</b>                           |                                             |                              |                                                  |
| Southcentral Alaska                        |                                             |                              |                                                  |
| Cordova-McCarthy                           | Cordova Public Utilities                    | 9.36                         | 9,577                                            |
| Kenai-Cook Inlet                           | Homer Electric Assn.<br>(Homer)             | 16.47                        | 92,223                                           |
|                                            | Homer Electric Assn.<br>(Kenai)             | 11.36                        | 20,223                                           |
|                                            | Homer Electric Assn.<br>(Port Graham)       | 34.47                        | 217                                              |
|                                            | Homer Electric Assn.<br>(Seldovia)          | 13.14                        | 3,600                                            |
| Kodiak                                     | Kodiak Electric Assn.<br>(Kodiak)           | 8.78                         | 36,528                                           |
|                                            | Kodiak Electric Assn.<br>(Port Lions)       | 10.20                        | 1,580                                            |
| Matanuska-<br>Susitna                      | Matanuska Electric Assn.<br>(Palmer)        | 12.43                        | 92,073                                           |
|                                            | Matanuska Electric Assn.<br>(Talketna)      | 17.09                        | plant closed                                     |
| Seward                                     | Seward Electric System                      | 10.14                        | 14,152                                           |
| Valdez-Chitina-<br>Whittier                | Copper Valley Electric<br>Assn. (Glenallen) | 6.83                         | 5,576                                            |
|                                            | Copper Valley Electric<br>Assn. (Valdez)    | 12.81                        | 8,464                                            |
|                                            | Average                                     | 11.92                        |                                                  |
| <b>Region V</b>                            |                                             |                              |                                                  |
| Anchorage                                  |                                             |                              |                                                  |
| Anchorage                                  | Anchorage Municipal<br>Light & Power        | 12.05                        | 350,302                                          |
|                                            | Chugach Electric Assn.                      | 14.31                        | 516,830                                          |
|                                            | Average                                     | 12.53                        |                                                  |
| <b>Region VI</b>                           |                                             |                              |                                                  |
| Interior                                   | (No reporting utilities)                    |                              |                                                  |
| <b>Region VII</b>                          |                                             |                              |                                                  |
| Fairbanks                                  |                                             |                              |                                                  |
| Fairbanks                                  | Fairbanks Municipal<br>Utilities            | 7.06                         | 88,135                                           |
|                                            | Golden Valley Electric<br>Assn.             | 20.18                        | 230,618                                          |
|                                            | University of Alaska                        | Not available                | 10,212                                           |
| Southeast<br>Fairbanks                     | Alaska Power & Telephone<br>Co. (Tok)       | 8.69                         | 2,996                                            |
|                                            | Average                                     | 14.11                        |                                                  |
| SOURCE: FPC data for the period 1965-1974. |                                             |                              |                                                  |
| * 1973 total                               |                                             |                              |                                                  |

customer varied from a low of 1,381 kilowatt hours (kwh) in Fort Yukon to 21,109 kwh in Metlakatla. The statewide average of 8,860 kwh is consistent with the past trend in Alaskan residential usage, which is between 5 and 10 percent greater than the national average.

### Factors Affecting Consumption Levels

Regression analysis indicates that electricity price, income, and average temperatures are important determinants of the average level of residential electricity consumption in Alaska.<sup>1</sup> "Heating degree days" are commonly used to indicate the severity of the weather. One heating degree day is recorded each day for every degree Fahrenheit (F.)<sup>2</sup> by which the temperature falls below 65 degrees F. Heating degree days for Alaskan communities are shown in Table 5.

Residential prices for electricity, which are generally a decreasing function of the quantity consumed, show a large variation from community to community within the state. As shown by Table 6, the 1975 cost of 500 kwh per month varied between \$13.00 in Anchorage and \$131.94 in Deadhorse (2.6 cents versus 26.4 cents for one kwh).

Compared to prices nationally, the average for Alaska is high, but during the decade of the sixties, it

fell in real terms and also relatively. The Alaska average in 1960 was 4.32 cents/kwh, while nationally, it was 2.47 cents/kwh. By 1972, the Alaska average was 3.33 cents/kwh. To a large extent, this downward trend reflects the price of electricity in Anchorage, since more than half of the state's electrical consumption occurs in the Anchorage area.

More recently, the downward trend in prices has reversed as a result of increasing costs of fuel, construction, and capital. Changes in fuel costs can dramatically affect the cost of electricity, but these cost changes are not rapidly translated into rate changes. A temporary expedient, which avoids the necessity of a rate hearing, is the automatic fuel cost rate adjustment surcharge, which is added to the base rate as fuel costs increase. Table 7 shows the adjustments on file with the Alaska Public Utilities Commission as of October 1, 1975. These adjustments change monthly.

Prices for commercial and industrial consumers, when different from residential rates, are generally lower and trends have tended to follow those of the residential sector.

### ELECTRICAL DEMAND PROJECTIONS

#### Economic Growth

Because growth in electricity requirements will closely follow growth in the state's economy, electrical demand projections must necessarily be based on economic projections. Institute researchers used the MAP regional econometric model (see Appendix 1) to obtain the economic projection results discussed below.

The MAP computer model (See box, page 1)

**Table 2**  
**Average Annual Residential Electricity Use**

| Year | Southeast           |                                 | Southcentral        |                                 | Anchorage           |                                 | Fairbanks           |                                 |
|------|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|---------------------|---------------------------------|
|      | Number of Customers | Average Annual KWH per Customer | Number of Customers | Average Annual KWH per Customer | Number of Customers | Average Annual KWH per Customer | Number of Customers | Average Annual KWH per Customer |
| 65   | 9,050               | 6,067                           | 7,336               | 4,946                           | 22,110              | 6,614                           | 8,183               | 4,804                           |
| 66   | 9,291               | 6,309                           | 6,677               | 5,726                           | 23,003              | 7,110                           | 8,170               | 5,712                           |
| 67   | 9,354               | 6,472                           | 7,792               | 5,453                           | 23,931              | 7,246                           | 8,574               | 6,055                           |
| 68   | 9,314               | 6,865                           | 8,698               | 5,719                           | 27,437              | 6,977                           | 9,344               | 6,569                           |
| 69   | 9,570               | 7,121                           | 9,278               | 6,187                           | 30,079              | 7,112                           | 10,023              | 7,672                           |
| 70   | 9,877               | 7,459                           | 10,800              | 6,401                           | 33,159              | 7,641                           | 10,756              | 8,418                           |
| 71   | 10,419              | 7,593                           | 11,467              | 7,287                           | 35,056              | 8,555                           | 11,184              | 9,515                           |
| 72   | 10,995              | 7,719                           | 11,899              | 7,773                           | 38,817              | 8,817                           | 11,487              | 10,529                          |
| 73   | 11,677              | 7,472                           | 12,617              | 8,175                           | 39,915              | 9,273                           | 11,825              | 11,233                          |
| 74   | 11,940              | 7,623                           | 14,507              | 8,029                           | 43,453              | 9,106                           | 13,261              | 11,597                          |

<sup>1</sup>Scott Goldsmith, "Future Electricity Requirements in Alaska," paper presented at the Western Economic Association Annual Meeting, San Francisco, June 17, 1976.

<sup>2</sup>In other words, if on a particular day, the temperature dropped to 30 degrees F., or 35 degrees below 65 degrees F., this would amount to 35 heating degree days.

**Table 3**  
**Average Annual Commercial-Industrial**  
**Electricity Use Per Customer**

| Year | Southeast Commercial |                                       | Southeast Industrial |                                       | Southcentral Commercial/Industrial |                                       |
|------|----------------------|---------------------------------------|----------------------|---------------------------------------|------------------------------------|---------------------------------------|
|      | Number of Customers  | Average Annual MWH Usage per Customer | Number of Customers  | Average Annual MWH Usage per Customer | Number of Customers                | Average Annual MWH Usage per Customer |
| 65   | 1,608                | 20.345                                | *                    | *                                     | 1,575                              | 35.594                                |
| 66   | 1,662                | 21.227                                | *                    | *                                     | 1,399                              | 41.924                                |
| 67   | 1,650                | 21.932                                | *                    | *                                     | 1,559                              | 40.880                                |
| 68   | 1,657                | 22.749                                | *                    | *                                     | 1,703                              | 49.342                                |
| 69   | 1,704                | 22.700                                | *                    | *                                     | 1,687                              | 58.618                                |
| 70   | 1,761                | 25.117                                | 57                   | 457.912                               | 2,447                              | 49.412                                |
| 71   | 1,783                | 26.515                                | 54                   | 522.870                               | 2,331                              | 56.280                                |
| 72   | 1,857                | 27.607                                | 89                   | 322.101                               | 2,403                              | 54.420                                |
| 73   | 1,943                | 29.440                                | 52                   | 549.442                               | 2,636                              | 54.961                                |
| 74   | 1,359                | 28.852                                | 13                   | 1,401.385                             | 2,839                              | 53.583                                |

| Year | Anchorage Commercial/Industrial |                                       | Fairbanks Commercial/Industrial |                                       |
|------|---------------------------------|---------------------------------------|---------------------------------|---------------------------------------|
|      | Number of Customers             | Average Annual MWH Usage per Customer | Number of Customers             | Average Annual MWH Usage per Customer |
| 65   | 3,035                           | 46.997                                | 1,318                           | 25.181                                |
| 66   | 3,105                           | 51.790                                | 1,467                           | 23.910                                |
| 67   | 3,195                           | 56.794                                | 1,452                           | 25.363                                |
| 68   | 3,488                           | 56.865                                | 1,469                           | 33.665                                |
| 69   | 3,793                           | 58.475                                | 1,579                           | 35.269                                |
| 70   | 4,093                           | 63.260                                | 1,717                           | 62.087                                |
| 71   | 4,245                           | 70.804                                | 1,772                           | 69.268                                |
| 72   | 4,652                           | 75.654                                | 1,800                           | 69.773                                |
| 73   | 4,815                           | 84.714                                | 1,883                           | 73.167                                |
| 74   | 5,132                           | 85.395                                | 2,073                           | 71.449                                |

\*No customer figures available.

along with two sets of assumptions (limited and accelerated petroleum development) was used to generate two projections of the future level of economic activity in the state. These are not predictions of the level of any particular variable, because future levels for the basic variables cannot be known with certainty. Rather, they are projections which describe the general expected levels of activity, if petroleum development and other basic activities take a certain course.

Results from the two cases are presented in Table 8. Two factors primarily account for the rapid growth observed in both cases. The first is the continued expansion of the petroleum industry, which has had an annual average increase in real gross

product of 17 percent since statehood. The second is the continuing important role of state and local government in the economy, stimulated by petroleum revenues.

In the limited case, annual population growth between 1974 and 1990 averages 3.8 percent, employment growth 4.3 percent, real wages and salaries 6.1 percent, and state and local government expenditures 12.2 percent. Accelerated development results in population growth of 4.8 percent, employment 5.2 percent, real wages and salaries 7.1 percent, and state and local government expenditures 13.7 percent.

Alaskan economic growth will be strong even in the limited development case, primarily because of

**Table 4**  
**1974 Residential Electricity Consumption by Region and Community**

| Map Region,<br>Census Division | Utility Locations    | (A)<br>1974<br>Residential<br>Customers | (B)<br>1974 KWH<br>Residential<br>Sales by Utilities | (C)<br>(B/A)<br>Annual KWH<br>Sales/Customers |
|--------------------------------|----------------------|-----------------------------------------|------------------------------------------------------|-----------------------------------------------|
| <b>Region I</b>                |                      |                                         |                                                      |                                               |
| Northwest Alaska               |                      |                                         |                                                      |                                               |
| Barrow                         | Barrow               | 377                                     | 915,896                                              | 2,429                                         |
| Kobuk                          | Kotzebue             | 369                                     | 1,553,676                                            | 4,210                                         |
| Nome                           | Nome, Unalakleet     | 748                                     | 6,454,067                                            | 8,628                                         |
| <b>Region II</b>               |                      |                                         |                                                      |                                               |
| Southwest Alaska               |                      |                                         |                                                      |                                               |
| Aleutian Islands               |                      | ---                                     | ---                                                  | ---                                           |
| Bethel                         | Bethel               | 670                                     | 2,470,288                                            | 3,687                                         |
| Bristol Bay Bor.               | Naknek               | 190                                     | 980,821                                              | 5,162                                         |
| Bristol Bay                    | Dillingham           | 301                                     | 1,200,571                                            | 3,989                                         |
| Kuskokwim                      | McGrath              | 54                                      | 97,283                                               | 1,802                                         |
| Wade Hampton                   |                      | ---                                     | ---                                                  | ---                                           |
| <b>Region III</b>              |                      |                                         |                                                      |                                               |
| Southeast Alaska               |                      |                                         |                                                      |                                               |
| Angoon                         |                      | ---                                     | ---                                                  | ---                                           |
| Haines                         | Haines               | 596                                     | 5,346,132                                            | 8,970                                         |
| Juneau                         | Auke Bay, Juneau     | 5,266                                   | 35,392,244                                           | 6,721                                         |
| Ketchikan                      | Ketchikan            | 3,569 <sup>a</sup>                      | 30,957,853 <sup>a</sup>                              | 8,674 <sup>a</sup>                            |
| Outer<br>Ketchikan             | Metlakatla           | 326                                     | 6,881,403                                            | 21,109                                        |
| Prince of<br>Wales             | Craig, Hydaburg      | b                                       | 742,597                                              | b                                             |
| Sitka                          | Sitka                | 1,666                                   | 11,656,608                                           | 6,997                                         |
| Skagway-<br>Yakutat            | Pelican, Skagway     | b                                       | 1,205,185                                            | b                                             |
| Wrangell-<br>Petersburg        | Wrangell, Petersburg | 1,532                                   | 9,482,975                                            | 6,190                                         |
| <b>Region IV</b>               |                      |                                         |                                                      |                                               |
| Southcentral Alaska            |                      |                                         |                                                      |                                               |
| Cordova-<br>McCarthy           | Cordova              | 534                                     | 3,159,042                                            | 5,916                                         |
| Kenai-Cook<br>Inlet            | Homer                | 2,023                                   | 14,494,954                                           | 7,165                                         |
| Kodiak                         | Kodiak               | 1,774                                   | 10,596,414                                           | 5,973                                         |
| Matanuska-<br>Susitna          | Palmer               | 1,087                                   | 5,940,733                                            | 5,465                                         |
| Seward                         | Seward               | 785                                     | 4,664,360                                            | 5,942                                         |

(Continued, next page)

Table 4 (Cont.)

| Map Region,<br>Census Division  | Utility Locations  | 1974 Residential<br>Customers | 1974 KWH<br>Residential<br>Sales by Utilities | (B/A)<br>Annual KWH<br>Sales/Customers |
|---------------------------------|--------------------|-------------------------------|-----------------------------------------------|----------------------------------------|
| Valdez-<br>Chitina-<br>Whittier | Valdez             | 935                           | 3,750,993                                     | 4,012                                  |
| <b>Region V</b><br>Anchorage    |                    |                               |                                               |                                        |
| Anchorage                       | Anchorage          | 43,456                        | 395,854,136                                   | 9,109                                  |
| <b>Region VI</b><br>Interior    |                    |                               |                                               |                                        |
| Upper Yukon                     | Ft. Yukon          | 130                           | 179,650                                       | 1,381                                  |
| Yukon-<br>Koyukuk               | Manley Hot Springs | 9                             | 48,764                                        | 5,418                                  |
| <b>Region VII</b><br>Fairbanks  |                    |                               |                                               |                                        |
| Fairbanks                       | Fairbanks          | 13,261                        | 153,781,613                                   | 11,597                                 |
| Southeast<br>Fairbanks          | Dot Lake, Tok      | b                             | 674,870                                       | b                                      |
| <b>TOTAL</b>                    |                    | <b>79,062</b>                 | <b>700,514,344</b>                            | <b>8,860</b>                           |

SOURCE: FPC reports and Alaska Public Utilities Commission Annual Reports.

<sup>a</sup>1973 figures

<sup>b</sup>Consumption figures not complete

the projected continued growth in the state and local government sectors. The two cases parallel one another closely until 1980, at which time the accelerated development case begins expanding much more rapidly.

Tables 9 and 10 present the projection results for population, employment, and real wages and salaries (which is closely related to personal income) on a regional basis for the two cases. The impact of development does not fall evenly across the regions of the state. A basic indicator of this is the difference in population growth rates among the regions and between cases as shown in Table 11.

In comparison with the projected rate of population increase in the United States of under 1 percent annually, these figures indicate significant population growth.

#### Electricity Demand Projection Results

Four different sets of electricity-use assumptions

(use-intensity scenarios) described in Appendix 2 were developed and combined with the two sets of economic projections (see Tables 9 and 10) to yield, for each region of the state, eight separate projections of utility electricity requirements through 1995. The different use-intensity scenarios reflect different assumptions regarding the future relative attractiveness of electricity as a source of energy. The highest and lowest of these projected requirements for each region were combined to yield the range of values for the state as a whole as shown in Table 12.

One can see in Table 12 that under the most restrictive assumptions regarding limited economic growth and electricity use, the long-run growth rate of electricity demand in Alaska is projected to exceed 8 percent. At the other extreme of accelerated economic development and continued historical rates of increase in electricity consumption, the long-run growth rate for electricity demand approaches 14 percent. Whatever the long-range growth rate actually turns out to be, Alaska requirements are expected to

be considerably higher than the historic national growth rate of 7 percent.

The larger component of variation among the different projections is in the intensity of electricity use rather than in the assumptions regarding economic growth. The long-run growth rate varies between 9.0 percent and 12.9 percent among the use-intensity scenarios within the accelerated economic development case, but only between 11.2 percent and 12.9 percent between economic development scenarios in the highest use-intensity case. The primary reason for this seems to be that the economic growth of the state is projected to largely depend upon state government activity which will grow steadily over the period under either economic growth assumption. This underscores the importance of the average consumption of electricity by the individual in the determination of total demand in a

rapidly growing region. Electricity consumption occurs through use of appliances, the purchase of which is a long-term investment. A rapidly growing population means a rapid growth in appliance stocks not only in the residential but the commercial and industrial sectors as well. Type of appliance (gas, oil, or electricity) decisions by these new customers will strongly influence the growth rate of electricity use.

A regional comparison of projected electricity requirements is shown in Table 13. This comparison shows that not only is present electricity consumption concentrated in the railbelt area of the state (Anchorage, Southcentral, and Fairbanks regions), but future growth will further concentrate electricity use in that part of the state.

Some indication of the magnitude of electricity requirements for the railbelt area is provided by a comparison of peak demand, measured in megawatts, with the installed capacity of 1,568 megawatts, which would be available from the Devil's Canyon Hydroelectric project proposed for the Susitna River by the Corps of Engineers. Total requirements in the railbelt would exceed this amount by 1995 in even the lowest growth case.

Growth of electricity requirements in Anchorage, which has the most diversified economy in the state, will be most rapid in the long run and relatively insensitive to the rate of economic development statewide. Southcentral growth will be most rapid in the short run and will moderate somewhat over the longer period. The projected range of variability for Fairbanks is larger due to the larger relative impact of direct petroleum-related activity in that community. By contrast, growth in the Southeast is the most stable in the state, showing little variation among projections. This stability largely arises from the lower population growth rate projected for that region. In the other regions of the state, projected growth rates are highly variable, but are below the statewide average, which is strongly influenced by Anchorage. Data for the utilities in these regions are sparse; some communities are still in the process of becoming electrified, so that the largest variation in projections is to be expected for those regions.

Detailed projections of sales and peak demand by region under each set of assumptions are presented in Tables 14 and 15. In addition, underlying assumptions regarding the ratio of consumers to population in each case as well as the average rate of consumption are presented in Table 16 for those regions where the data is available.

Analysis of Table 16 provides some additional insight into the plausibility of each set of projections.

**Table 5**  
**Heating Degree Days for Alaskan Communities**  
**20 Year Averages (1955-1974)**

| Heating Degree Days (Fahrenheit) |        |
|----------------------------------|--------|
| Anchorage                        | 10,960 |
| Annette (S.E.)                   | 7,054  |
| Barrow                           | 20,426 |
| Barter Island (Int.)             | 20,197 |
| Bethel                           | 13,372 |
| Bettles (Int.)                   | 16,107 |
| Cold Bay                         | 9,885  |
| Fairbanks                        | 14,439 |
| Gulkana                          | 14,250 |
| Homer                            | 10,443 |
| Juneau                           | 9,184  |
| King Salmon (S.W.)               | 11,701 |
| Kodiak                           | 8,890  |
| Kotzebue (N.W.)                  | 16,171 |
| McGrath (S.W.)                   | 14,667 |
| Nome (N.W.)                      | 14,512 |
| St. Paul Island                  | 11,205 |
| Shemya (S.W.)                    | 9,574  |
| Summit (S.C.)                    | 14,603 |
| Talkeetna                        | 12,024 |
| Unalakleet (N.W.)                | 14,162 |
| Yakutat (S.E.)                   | 9,711  |

SOURCE: U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service, "Local Climatological Data," various issues, Asheville, N.C., 1974.

**Table 6**  
**Typical Monthly Bills for Residential Electricity**

| Map Region,<br>Census Division | Utility<br>Location | Minimum<br>Bill (\$) | 50 KWH<br>Bill (\$) | Price per<br>KWH (cents) | 100 KWH<br>Bill (\$) | Price per<br>KWH (cents) | 500 KWH<br>Bill (\$) | Price per<br>KWH (cents) |
|--------------------------------|---------------------|----------------------|---------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|
| <b>Region I</b>                |                     |                      |                     |                          |                      |                          |                      |                          |
| Northwest Alaska               |                     |                      |                     |                          |                      |                          |                      |                          |
| Barrow                         | Barrow              | 10.00                | 10.00               | 20.0                     | 15.00                | 15.0                     | 66.00                | 13.2                     |
| Kobuk                          | Kotzebue            | 10.00                | 10.00               | 20.0                     | 17.50                | 17.5                     | 67.50                | 13.5                     |
| Nome                           | Nome                | 5.00                 | 5.00                | 10.0                     | 10.00                | 10.0                     | 50.00                | 10.0                     |
|                                | Teller              |                      | 10.00               | 20.0                     | 20.00                | 20.0                     | 100.00               | 20.0                     |
|                                | Unalakleet          | 10.00                | 12.00               | 24.0                     | 18.00                | 18.0                     | 54.00                | 10.8                     |
| <b>Region II</b>               |                     |                      |                     |                          |                      |                          |                      |                          |
| Southwest Alaska               |                     |                      |                     |                          |                      |                          |                      |                          |
| Aleutian Islands               | Cold Bay            | 10.00                | 10.00               | 20.0                     | 10.00                | 10.0                     | 41.00                | 8.2                      |
| Bethel                         | Bethel              | 5.00                 | 6.00                | 12.0                     | 11.00                | 11.0                     | 44.75                | 9.0                      |
| Bristol Bay                    | Dillingham          | 14.00                | 14.00               | 28.0                     | 14.00                | 14.0                     | 50.00                | 10.0                     |
|                                | Egegik              | 7.50                 | 7.50                | 15.0                     | 13.50                | 13.5                     | 44.50                | 8.9                      |
| Bristol Bay                    | King Salmon         | 7.50                 | 7.50                | 15.0                     | 13.50                | 13.5                     | 44.50                | 8.9                      |
| Borough                        | Naknek              | 7.50                 | 7.50                | 15.0                     | 13.50                | 13.5                     | 44.50                | 8.9                      |
| Kuskokwim                      | Aniak               | 20.00                | 20.00               | 40.0                     | 20.00                | 20.0                     | 95.00                | 19.0                     |
|                                | McGrath             | 5.00                 | 6.75                | 13.5                     | 12.50                | 12.5                     | 57.00                | 11.4                     |
| <b>Region III</b>              |                     |                      |                     |                          |                      |                          |                      |                          |
| Southeast Alaska               |                     |                      |                     |                          |                      |                          |                      |                          |
| Haines                         | Haines              | 5.50                 | 5.50                | 11.0                     | 7.50                 | 7.5                      | 23.50                | 4.7                      |
| Juneau                         | Auke Bay            | 10.00                | 10.00               | 20.0                     | 10.00                | 10.0                     | 35.00                | 7.0                      |
|                                | Juneau              | 4.00                 | 4.00                | 8.0                      | 5.00                 | 5.0                      | 20.80                | 4.2                      |
| Ketchikan                      | Ketchikan           | 4.50                 | 6.00                | 12.0                     | 7.50                 | 7.5                      | 18.25                | 3.7                      |
| Outer Ketchikan                | Metlakatla*         |                      |                     |                          |                      |                          |                      |                          |
| Prince of Wales                | Craig               | 3.30                 | 5.30                | 10.6                     | 9.80                 | 9.8                      | 37.80                | 7.6                      |
|                                | Hydaburg            | 3.30                 | 5.30                | 10.6                     | 9.80                 | 9.8                      | 37.80                | 7.6                      |
| Sitka                          | Sitka               | 5.00                 | 5.00                | 10.0                     | 5.00                 | 5.0                      | 19.00                | 3.8                      |
| Skagway-                       | Hoonah              | --                   | 5.00                | 10.0                     | 10.00                | 10.0                     | 50.00                | 10.0                     |
| Yakutat                        | Pelican             | 2.50                 | 3.75                | 7.5                      | 6.00                 | 6.0                      | 26.00                | 5.2                      |
|                                | Skagway             | 3.50                 | 5.00                | 10.0                     | 10.00                | 10.0                     | 31.50                | 6.3                      |
|                                | Yakutat             | 5.00                 | 5.00                | 10.0                     | 10.00                | 10.0                     | 40.00                | 8.0                      |
| Wrangell-                      | Petersburg*         |                      |                     |                          |                      |                          |                      |                          |
| Petersburg                     | Wrangell            | 5.50                 | 5.50                | 11.0                     | 9.35                 | 9.4                      | 24.75                | 5.0                      |
| <b>Region IV</b>               |                     |                      |                     |                          |                      |                          |                      |                          |
| Southcentral Alaska            |                     |                      |                     |                          |                      |                          |                      |                          |
| Cordova-McCarthy               | Coruova             | 4.00                 | 6.50                | 13.0                     | 9.50                 | 9.5                      | 27.50                | 5.5                      |
| Kenai-Cook                     | Homer               | 7.50                 | 7.50                | 15.0                     | 8.00                 | 8.0                      | 25.00                | 5.0                      |
| Inlet                          | Kenai               | 5.00                 | 5.00                | 10.0                     | 7.50                 | 7.5                      | 23.50                | 4.7                      |
|                                | Port Graham*        |                      |                     |                          |                      |                          |                      |                          |
|                                | Seldovia            | 7.50                 | 7.50                | 15.0                     | 11.50                | 11.5                     | 33.50                | 6.7                      |
|                                | Soldotna            | 7.50                 | 7.50                | 15.0                     | 8.00                 | 8.0                      | 25.00                | 5.0                      |
| Kodiak                         | Kodiak              | 3.00                 | 5.50                | 11.0                     | 9.13                 | 9.1                      | 24.63                | 4.9                      |
|                                | Port Lions          | 9.00                 | 7.00                | 14.0                     | 14.00                | 14.0                     | 44.00                | 8.8                      |

(Continued, next page)

Table 6 (Cont.)

| Map Region,<br>Census Division | Utility<br>Location   | Minimum<br>Bill (\$) | 50 KWH<br>Bill (\$) | Price per<br>KWH (cents) | 100 KWH<br>Bill (\$) | Price per<br>KWH (cents) | 500 KWH<br>Bill (\$) | Price per<br>KWH (cents) |
|--------------------------------|-----------------------|----------------------|---------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|
| Matanuska-                     |                       |                      |                     |                          |                      |                          |                      |                          |
| Susitna                        | Palmer                | 9.00                 | 9.00                | 18.0                     | 9.00                 | 9.0                      | 31.25                | 6.3                      |
| Seward                         | Seward                | 6.00                 | 7.80                | 15.6                     | 12.30                | 12.3                     | 23.30                | 4.7                      |
| Valdez-Chitina-                | Chitina               | --                   | 7.50                | 15.0                     | 15.00                | 15.0                     | 75.00                | 15.0                     |
| Whittier                       | Glennallen            | 7.50                 | 8.00                | 16.0                     | 13.50                | 13.5                     | 45.50                | 9.1                      |
|                                | Valdez                | 5.00                 | 5.00                | 10.0                     | 9.75                 | 9.8                      | 41.75                | 8.4                      |
|                                | Paxson Lodge          | 5.00                 | 8.00                | 16.0                     | 13.50                | 13.5                     | 53.50                | 10.7                     |
| <b>Region V</b>                |                       |                      |                     |                          |                      |                          |                      |                          |
| Anchorage                      |                       |                      |                     |                          |                      |                          |                      |                          |
| Anchorage                      | Eagle River           | 9.00                 | 9.00                | 18.0                     | 9.00                 | 9.0                      | 31.25                | 6.3                      |
|                                | Municipal             | 2.00                 | 2.75                | 5.5                      | 4.25                 | 4.3                      | 13.00                | 2.6                      |
|                                | Chugach               | 2.00                 | 2.75                | 5.5                      | 4.25                 | 4.3                      | 13.75                | 2.8                      |
| <b>Region VI</b>               |                       |                      |                     |                          |                      |                          |                      |                          |
| Interior                       |                       |                      |                     |                          |                      |                          |                      |                          |
| Upper Yukon                    | Deadhorse             | --                   | 13.20               | 26.4                     | 26.39                | 26.4                     | 131.94               | 26.4                     |
|                                | Fort Yukon            | 3.00                 | 12.50               | 25.0                     | 25.00                | 25.0                     | 85.00                | 17.0                     |
| Yukon-Koyukuk                  | Bettles               | --                   | 12.00               | 24.0                     | 24.00                | 24.0                     | 120.00               | 24.0                     |
|                                | Manley Hot<br>Springs | 10.00                | 12.50               | 25.0                     | 25.00                | 25.0                     | 125.00               | 25.0                     |
|                                | Nenana                | 7.00                 | 7.00                | 14.0                     | 13.00                | 13.0                     | 61.00                | 12.2                     |
|                                | Tanana                | 7.80                 | 7.80                | 15.6                     | 13.00                | 13.0                     | 61.00                | 12.2                     |
| <b>Region VII</b>              |                       |                      |                     |                          |                      |                          |                      |                          |
| Fairbanks                      |                       |                      |                     |                          |                      |                          |                      |                          |
| Fairbanks                      | Municipal             | 1.80                 | 4.00                | 8.0                      | 7.50                 | 7.5                      | 22.50                | 4.5                      |
|                                | Golden<br>Valley      | 10.00                | 10.00               | 20.0                     | 10.00                | 10.0                     | 37.96                | 7.6                      |
| Southeast<br>Fairbanks         | Delta                 |                      |                     |                          |                      |                          |                      |                          |
|                                | Junction              | 10.00                | 10.00               | 20.0                     | 10.00                | 10.0                     | 30.38                | 6.1                      |
|                                | Dot Lake              | --                   | 7.50                | 15.0                     | 15.00                | 15.0                     | 63.00                | 12.6                     |
|                                | Northway              | 10.00                | 10.00               | 20.0                     | 13.00                | 13.0                     | 55.00                | 11.0                     |
|                                | Tok                   | 7.50                 | 7.50                | 15.0                     | 13.00                | 13.0                     | 53.50                | 10.7                     |
| Alaska Village                 |                       |                      |                     |                          |                      |                          |                      |                          |
| Electric Cooperative (AVEC)    |                       | --                   | 10.00               | 20.0                     | 18.75                | 18.8                     | 72.75                | 14.6                     |

\*Information not available.

SOURCE: Electric utility rate files, Alaska Public Utilities Commission, as of October 1975. These are the rates on file at the commission and do not include either interim rate increases or automatic fuel cost rate adjustments which increase actual prices paid. For utilities with more than one residential rate, the base rate without specific appliances was reported.

In particular, in the growth-as-usual use-intensity projections, the ratios of residential customers to population and average annual consumption continue to grow quite rapidly. The most striking example of this occurs in the Fairbanks region, where by 1990, assuming accelerated economic growth, average annual residential consumption exceeds 40,000 kwh per year. At present, the typical all-electric home in the Fairbanks area (including space heat) consumes

approximately 40,000 kwh. Thus, the unlikely assumption implied for Fairbanks in the growth-as-usual case is that the entire housing stock will, by 1990, convert to all-electric appliances. Also during this period, the ratio of residential customers to population is projected to increase from 28 to over 37 percent. This implies either a drastic reduction in average family size or a substantial increase in the incidence of second homes.

Neither of these implied assumptions appears likely to the author. It seems, therefore, that the growth-as-usual assumptions should not be seriously considered as a possible future growth pattern in electricity consumption.

### CONCLUSION

This paper has attempted to delineate the possible range of growth of electricity requirements for the state. The range is wide, both because of the uncertainty surrounding economic growth and also the uncertainty of response by future customers to variables affecting consumption rates. Within the broad range of growth possibilities, however, the variation seems to be between rapid growth of requirements and very rapid growth. Clearly, to adequately respond to this growth with an efficient investment strategy to develop necessary additional capacity is a challenging prospect, given the many options available to the state.

\* \* \* \*

**Table 7**

#### Automatic Fuel Cost Rate Adjustment Clause Surcharges as of October 1, 1975

| Utility                              | Surcharge in<br>cents/KWH |
|--------------------------------------|---------------------------|
| Aniak Power Company                  | 2.89                      |
| Craig (AP&T)                         | 2.06                      |
| Egegik (Naknek Electric Association) | 4.5                       |
| Fort Yukon Utilities                 | 1.082                     |
| Golden Valley Electric Association   | .5973                     |
| Haines Light & Power                 | 1.33                      |
| Homer Electric Association           | 1.32                      |
| Hydaburg (AP&T)                      | 2.49                      |
| Juneau (AELP)                        | .48                       |
| Kodiak Electric Association          | 1.34                      |
| Kotzebue Electric Association        | 1.518                     |
| Matanuska Electric Association       | 1.74                      |
| Naknek Electric Association          | 1.5                       |
| Northern Commercial Company          | 1.87                      |
| Northern Power and Engineering       | 1.76                      |
| Northway Power and Light             | 1.63                      |
| Nushagak Electric                    | 1.502                     |
| Skagway (AP&T)                       | .35                       |
| Tok (AP&T)                           | 1.96                      |
| Yakutat Power Company                | 1.604                     |

SOURCE: Alaska Public Utilities Commission

**Table 8**

#### MAP Projection Results for Selected Variables

|                                                                    | Limited<br>Development | Accelerated<br>Development |
|--------------------------------------------------------------------|------------------------|----------------------------|
| <b>1974</b>                                                        |                        |                            |
| Population (x 1000)                                                | 350.7                  | 350.7                      |
| Employment (x 1000)                                                | 159.9                  | 159.9                      |
| Wages and Salaries (real<br>millions of 1967 \$)                   | 973.9                  | 973.9                      |
| Petroleum Production<br>(thousand b/d)                             | 200                    | 200                        |
| State and Local Government<br>Expenditures<br>(nominal million \$) | 793.2                  | 793.2                      |
| <b>1980</b>                                                        |                        |                            |
| Population (x 1000)                                                | 456.9                  | 471.4                      |
| Employment (x 1000)                                                | 219.7                  | 229.2                      |
| Wages and Salaries (real<br>millions of 1967 \$)                   | 1,506.9                | 1,586.3                    |
| Petroleum Production<br>(thousand b/d)                             | 2,066                  | 2,066                      |
| State and Local Government<br>Expenditures<br>(nominal million \$) | 1,973.3                | 2,058.1                    |
| <b>1985</b>                                                        |                        |                            |
| Population (x 1000)                                                | 547.9                  | 614.8                      |
| Employment (x 1000)                                                | 265.4                  | 300.9                      |
| Wages and Salaries<br>(real millions of 1967 \$)                   | 1,970.0                | 2,260.8                    |
| Petroleum Production<br>(thousand b/d)                             | 3,033                  | 4,930                      |
| State and Local Government<br>Expenditures<br>(nominal million \$) | 3,408.8                | 4,084.4                    |
| <b>1990</b>                                                        |                        |                            |
| Population (x 1000)                                                | 641.3                  | 738.0                      |
| Employment (x 1000)                                                | 312.7                  | 361.4                      |
| Wages and Salaries<br>(real millions of 1967 \$)                   | 2,506.2                | 2,919.2                    |
| Petroleum Production<br>(thousand b/d)                             | 3,597                  | 7,299                      |
| State and Local Government<br>Expenditures<br>(nominal million \$) | 5,026.1                | 6,197.1                    |

**Table 9**  
**MAP Model Economic Projection Values for Limited Development Case**

**Population**

(Thousands of Persons)

| Year | RGN 1  | RGN 2  | RGN 3  | RGN 4  | RGN 5   | RGN 6 | RGN 7  | STATE   |
|------|--------|--------|--------|--------|---------|-------|--------|---------|
| 74   | 13.499 | 27.563 | 48.615 | 45.283 | 153.118 | 8.562 | 54.020 | 350.659 |
| 75   | 13.748 | 27.647 | 51.466 | 53.601 | 163.909 | 9.967 | 57.800 | 378.137 |
| 76   | 14.051 | 28.042 | 53.956 | 56.240 | 173.753 | 9.831 | 59.161 | 395.034 |
| 77   | 14.226 | 28.534 | 54.610 | 53.252 | 179.760 | 9.067 | 57.867 | 397.315 |
| 78   | 14.362 | 28.801 | 55.765 | 54.812 | 187.411 | 9.386 | 58.735 | 409.272 |
| 79   | 14.589 | 29.078 | 57.982 | 57.252 | 198.372 | 9.387 | 59.912 | 426.571 |
| 80   | 14.919 | 29.362 | 61.555 | 64.246 | 214.927 | 9.764 | 62.154 | 456.927 |
| 81   | 15.254 | 29.879 | 64.112 | 68.273 | 225.612 | 9.798 | 64.218 | 477.145 |
| 82   | 15.503 | 30.192 | 66.534 | 71.557 | 236.992 | 9.008 | 65.962 | 495.747 |
| 83   | 15.621 | 30.379 | 67.842 | 76.951 | 247.200 | 8.736 | 66.938 | 513.667 |
| 84   | 15.818 | 30.710 | 69.595 | 79.078 | 259.264 | 8.670 | 68.388 | 531.523 |
| 85   | 16.039 | 31.125 | 71.297 | 78.763 | 271.972 | 8.759 | 69.957 | 547.913 |
| 86   | 16.234 | 31.500 | 72.870 | 79.301 | 284.590 | 8.767 | 71.415 | 564.478 |
| 87   | 16.393 | 31.833 | 74.182 | 80.670 | 297.139 | 8.795 | 72.683 | 581.693 |
| 88   | 16.549 | 32.160 | 75.546 | 81.495 | 311.223 | 8.802 | 73.992 | 599.767 |
| 89   | 16.699 | 32.471 | 76.911 | 83.251 | 325.999 | 8.821 | 75.352 | 619.503 |
| 90   | 16.857 | 32.778 | 78.427 | 85.146 | 342.414 | 8.875 | 76.847 | 641.344 |

**Employment**

(Thousands of Persons)

|    |       |        |        |        |         |       |        |         |
|----|-------|--------|--------|--------|---------|-------|--------|---------|
| 74 | 4.085 | 10.654 | 24.627 | 17.929 | 72.475  | 5.344 | 24.772 | 159.886 |
| 75 | 4.471 | 11.183 | 27.006 | 21.492 | 79.244  | 6.687 | 27.542 | 179.625 |
| 76 | 4.723 | 11.567 | 28.624 | 22.490 | 84.200  | 8.279 | 28.294 | 188.177 |
| 77 | 4.682 | 11.626 | 28.482 | 20.964 | 85.874  | 6.236 | 26.932 | 184.796 |
| 78 | 4.766 | 11.829 | 29.138 | 21.502 | 89.515  | 6.830 | 27.336 | 190.916 |
| 79 | 5.003 | 12.210 | 30.709 | 22.487 | 95.351  | 6.862 | 28.099 | 200.720 |
| 80 | 5.446 | 12.830 | 33.521 | 25.427 | 104.854 | 7.872 | 29.760 | 219.712 |
| 81 | 5.693 | 13.237 | 35.040 | 26.847 | 109.713 | 7.800 | 30.781 | 229.111 |
| 82 | 5.990 | 13.705 | 36.848 | 28.191 | 115.906 | 6.125 | 31.933 | 238.696 |
| 83 | 6.159 | 14.036 | 37.891 | 30.396 | 121.570 | 5.634 | 32.629 | 248.313 |
| 84 | 6.344 | 14.392 | 39.056 | 31.173 | 127.680 | 5.476 | 33.449 | 257.569 |
| 85 | 6.495 | 14.714 | 39.999 | 30.865 | 133.607 | 5.546 | 34.186 | 265.412 |
| 86 | 6.639 | 15.036 | 40.906 | 30.933 | 139.613 | 5.488 | 34.904 | 273.520 |
| 87 | 6.755 | 15.334 | 41.659 | 31.851 | 145.664 | 5.477 | 35.531 | 281.771 |
| 88 | 6.879 | 15.649 | 42.477 | 31.570 | 152.579 | 5.439 | 36.207 | 290.799 |
| 89 | 7.020 | 15.997 | 43.360 | 32.189 | 160.037 | 5.438 | 36.968 | 301.010 |
| 90 | 7.185 | 16.376 | 44.394 | 32.883 | 168.476 | 5.515 | 37.849 | 312.677 |

**Real Wages and Salaries**

(Millions of Dollars)

|    |      |       |       |       |        |      |       |        |
|----|------|-------|-------|-------|--------|------|-------|--------|
| 74 | 24.9 | 56.5  | 150.5 | 102.5 | 441.1  | 48.1 | 150.2 | 973.9  |
| 75 | 27.7 | 60.9  | 168.8 | 130.3 | 493.5  | 82.5 | 174.9 | 1138.6 |
| 76 | 29.8 | 64.4  | 182.9 | 138.1 | 535.0  | 78.1 | 183.2 | 1211.5 |
| 77 | 30.2 | 66.0  | 185.9 | 128.1 | 556.1  | 54.4 | 175.1 | 1195.8 |
| 78 | 31.4 | 68.4  | 194.0 | 134.1 | 590.2  | 59.3 | 181.2 | 1258.5 |
| 79 | 33.5 | 72.1  | 208.7 | 142.9 | 640.0  | 59.4 | 190.0 | 1346.6 |
| 80 | 37.1 | 77.4  | 232.6 | 168.1 | 716.1  | 69.4 | 206.2 | 1506.9 |
| 81 | 39.5 | 81.5  | 247.9 | 180.6 | 761.6  | 69.2 | 218.0 | 1598.3 |
| 82 | 42.4 | 86.0  | 265.7 | 192.2 | 817.7  | 51.8 | 231.2 | 1687.0 |
| 83 | 44.4 | 89.7  | 278.4 | 212.7 | 871.1  | 47.2 | 241.1 | 1784.8 |
| 84 | 46.7 | 93.7  | 292.5 | 221.0 | 929.4  | 46.0 | 242.6 | 1881.9 |
| 85 | 48.8 | 97.6  | 305.3 | 220.3 | 987.2  | 47.2 | 263.6 | 1970.0 |
| 86 | 50.9 | 101.4 | 318.1 | 222.9 | 1046.8 | 47.0 | 274.7 | 2061.9 |
| 87 | 52.9 | 105.2 | 329.9 | 229.0 | 1107.9 | 47.5 | 285.4 | 2157.8 |
| 88 | 55.0 | 109.2 | 342.6 | 233.7 | 1176.7 | 47.6 | 296.7 | 2261.7 |
| 89 | 57.3 | 113.4 | 356.1 | 241.5 | 1251.0 | 48.2 | 309.1 | 2376.6 |
| 90 | 59.9 | 118.0 | 371.3 | 249.8 | 1334.6 | 49.5 | 323.1 | 2506.2 |

**Table 10**  
**MAP Model Economic Projection Values for Accelerated Development Case**

**Population**

(Thousands of Persons)

| Year | RGN 1  | RGN 2  | RGN 3  | RGN 4  | RGN 5   | RGN 6  | RGN 7  | STATE   |
|------|--------|--------|--------|--------|---------|--------|--------|---------|
| 74   | 13.499 | 27.563 | 48.615 | 45.283 | 153.118 | 8.562  | 54.020 | 350.659 |
| 75   | 13.748 | 27.647 | 51.466 | 53.601 | 163.909 | 9.967  | 57.800 | 378.137 |
| 76   | 14.051 | 27.042 | 53.956 | 56.240 | 173.753 | 9.831  | 59.161 | 395.034 |
| 77   | 14.387 | 28.483 | 53.738 | 55.478 | 186.201 | 9.035  | 59.081 | 409.402 |
| 78   | 14.357 | 28.710 | 56.059 | 58.860 | 190.077 | 9.352  | 58.948 | 416.363 |
| 79   | 14.632 | 29.040 | 58.654 | 61.233 | 202.266 | 9.257  | 60.115 | 435.196 |
| 80   | 16.055 | 29.550 | 62.410 | 69.002 | 221.208 | 10.172 | 63.032 | 471.429 |
| 81   | 18.138 | 30.278 | 65.145 | 78.349 | 236.062 | 11.291 | 66.297 | 505.560 |
| 82   | 20.409 | 31.006 | 69.286 | 88.024 | 257.630 | 12.058 | 70.672 | 549.083 |
| 83   | 20.601 | 31.625 | 72.957 | 94.871 | 278.020 | 11.778 | 73.391 | 583.243 |
| 84   | 19.079 | 32.419 | 76.424 | 91.155 | 294.060 | 10.166 | 74.951 | 598.253 |
| 85   | 18.881 | 33.225 | 78.392 | 89.892 | 307.794 | 10.035 | 76.592 | 614.811 |
| 86   | 18.610 | 33.912 | 80.392 | 89.975 | 323.307 | 9.851  | 78.212 | 634.258 |
| 87   | 18.867 | 34.602 | 82.150 | 91.668 | 340.177 | 10.031 | 79.950 | 657.445 |
| 88   | 19.177 | 35.267 | 84.073 | 93.211 | 359.740 | 10.191 | 81.827 | 683.484 |
| 89   | 19.289 | 35.660 | 86.067 | 95.613 | 379.584 | 10.233 | 83.718 | 710.163 |
| 90   | 19.414 | 35.911 | 88.027 | 98.147 | 400.593 | 10.305 | 85.607 | 738.004 |

**Employment**

(Thousands of Persons)

|    |        |        |        |        |         |        |        |         |
|----|--------|--------|--------|--------|---------|--------|--------|---------|
| 74 | 4.085  | 10.654 | 24.627 | 17.929 | 72.475  | 5.344  | 24.772 | 159.886 |
| 75 | 4.471  | 11.183 | 27.006 | 21.492 | 79.244  | 6.687  | 27.542 | 179.625 |
| 76 | 4.723  | 11.567 | 28.624 | 22.490 | 84.200  | 8.279  | 28.294 | 188.177 |
| 77 | 5.009  | 11.995 | 30.439 | 22.119 | 90.473  | 6.408  | 28.133 | 194.575 |
| 78 | 4.835  | 11.906 | 29.547 | 23.213 | 91.439  | 6.868  | 27.660 | 195.467 |
| 79 | 5.114  | 12.336 | 31.373 | 24.169 | 97.903  | 6.682  | 28.403 | 205.981 |
| 80 | 6.743  | 13.147 | 34.226 | 27.378 | 108.429 | 8.935  | 30.392 | 229.249 |
| 81 | 9.326  | 13.746 | 35.777 | 30.844 | 115.221 | 11.838 | 32.079 | 248.830 |
| 82 | 13.009 | 14.590 | 38.613 | 34.597 | 126.224 | 14.241 | 34.710 | 275.983 |
| 83 | 13.358 | 15.430 | 41.278 | 37.319 | 136.987 | 13.274 | 36.429 | 294.075 |
| 84 | 10.514 | 16.289 | 43.509 | 35.614 | 144.590 | 8.455  | 37.114 | 296.114 |
| 85 | 9.845  | 16.871 | 44.248 | 34.670 | 149.853 | 7.845  | 37.586 | 300.916 |
| 86 | 9.242  | 17.526 | 45.288 | 34.444 | 156.764 | 7.273  | 38.252 | 308.797 |
| 87 | 9.470  | 18.274 | 46.233 | 34.896 | 164.570 | 7.542  | 39.062 | 320.047 |
| 88 | 9.811  | 19.080 | 47.393 | 35.344 | 174.012 | 7.804  | 40.037 | 333.481 |
| 89 | 9.906  | 19.558 | 48.695 | 36.172 | 183.844 | 7.838  | 41.096 | 347.108 |
| 90 | 10.031 | 19.838 | 49.998 | 37.061 | 194.348 | 7.948  | 42.176 | 361.399 |

**Real Wages and Salaries**

(Millions of Dollars)

|    |       |       |       |       |        |       |       |        |
|----|-------|-------|-------|-------|--------|-------|-------|--------|
| 74 | 24.9  | 56.5  | 150.5 | 102.5 | 441.1  | 48.1  | 150.2 | 973.9  |
| 75 | 27.7  | 60.9  | 168.8 | 130.3 | 493.5  | 82.5  | 174.9 | 1138.6 |
| 76 | 29.8  | 64.4  | 182.9 | 138.1 | 535.0  | 78.1  | 183.2 | 1211.5 |
| 77 | 32.2  | 68.3  | 198.8 | 135.3 | 586.6  | 55.3  | 183.7 | 1260.1 |
| 78 | 31.8  | 68.9  | 196.8 | 149.8 | 603.2  | 59.5  | 183.6 | 1293.6 |
| 79 | 34.3  | 72.9  | 213.3 | 158.3 | 657.4  | 57.2  | 192.2 | 1385.5 |
| 80 | 51.8  | 79.7  | 237.5 | 186.2 | 740.9  | 78.8  | 211.3 | 1586.3 |
| 81 | 82.7  | 85.3  | 253.2 | 216.6 | 800.5  | 107.8 | 229.1 | 1775.1 |
| 82 | 125.8 | 92.8  | 278.7 | 247.4 | 890.9  | 129.7 | 255.9 | 2020.3 |
| 83 | 129.2 | 100.4 | 303.9 | 270.9 | 982.0  | 121.4 | 273.5 | 2181.2 |
| 84 | 94.5  | 108.5 | 326.8 | 256.6 | 1052.5 | 75.3  | 283.8 | 2197.8 |
| 85 | 87.1  | 114.7 | 338.6 | 251.0 | 1107.3 | 69.4  | 292.8 | 2260.8 |
| 86 | 80.3  | 121.5 | 353.1 | 251.7 | 1175.1 | 63.7  | 303.9 | 2349.4 |
| 87 | 83.8  | 129.3 | 367.3 | 258.2 | 1251.0 | 67.0  | 316.7 | 2473.3 |
| 88 | 88.9  | 137.7 | 383.6 | 265.2 | 1231.0 | 70.2  | 331.3 | 2617.9 |
| 89 | 90.7  | 143.4 | 401.5 | 274.8 | 1435.4 | 71.2  | 347.1 | 2764.0 |
| 90 | 93.0  | 147.5 | 419.9 | 285.2 | 1537.2 | 72.9  | 363.5 | 2919.2 |

Table 11

## Projected Average Annual Population Growth Rates

|                            | North-<br>west | South-<br>west | South-<br>east | South-<br>central | Anchorage | Interior | Fairbanks | State |
|----------------------------|----------------|----------------|----------------|-------------------|-----------|----------|-----------|-------|
| Limited<br>Development     | 1.4            | 1.1            | 3.0            | 4.0               | 5.2       | .0       | 2.2       | 3.8   |
| Accelerated<br>Development | 2.3            | 1.7            | 3.8            | 5.0               | 6.2       | 1.2      | 2.9       | 4.8   |

Table 12

State Electricity Demand  
Projections Summary

| Year | Thousands of MWH Demanded       |        |                                     |        | Annual Growth Rates<br>Calculated from 1974 (%) |        |                                     |        | MW Peak Capacity @ 50% Load |       |       |       |
|------|---------------------------------|--------|-------------------------------------|--------|-------------------------------------------------|--------|-------------------------------------|--------|-----------------------------|-------|-------|-------|
|      | Limited Economic<br>Development |        | Accelerated Economic<br>Development |        | Limited Economic<br>Development                 |        | Accelerated Economic<br>Development |        |                             |       |       |       |
|      | Highest                         | Lowest | Highest                             | Lowest | Highest                                         | Lowest | Highest                             | Lowest |                             |       |       |       |
| 1974 | 1,715                           | 1,715  | 1,715                               | 1,715  | --                                              | --     | --                                  | --     | 392                         | 392   | 392   | 392   |
| 1980 | 3,909                           | 2,830  | 4,286                               | 2,941  | 14.7                                            | 8.7    | 16.5                                | 9.4    | 892                         | 646   | 979   | 671   |
| 1985 | 6,581                           | 4,147  | 8,358                               | 4,712  | 13.0                                            | 8.4    | 15.5                                | 9.6    | 1,503                       | 947   | 1,908 | 1,076 |
| 1990 | 10,158                          | 5,975  | 13,450                              | 6,961  | 11.8                                            | 8.1    | 13.7                                | 9.2    | 2,319                       | 1,364 | 3,071 | 1,589 |
| 1995 | 15,799                          | 8,765  | 21,929                              | 10,524 | 11.2                                            | 8.1    | 12.9                                | 9.0    | 3,607                       | 2,001 | 5,007 | 2,403 |

**Table 13**  
**Summary of the Range of Alaska Electricity**  
**Demand Projections, 1985 and 1995**

| Region                                    |         | Peak Demand (MW) |      |      | Total Energy Sales<br>(Thousand MWH) |      |       | Average Annual<br>Growth Rates |                    |                    |
|-------------------------------------------|---------|------------------|------|------|--------------------------------------|------|-------|--------------------------------|--------------------|--------------------|
|                                           |         | 1974<br>(actual) | 1985 | 1995 | 1974<br>(actual)                     | 1985 | 1995  | 1975<br>to<br>1980             | 1975<br>to<br>1985 | 1975<br>to<br>1995 |
| Anchorage (v)                             | Lowest  | 199              | 538  | 1300 | 867                                  | 2347 | 5679  | 9.9                            | 9.4                | 9.4                |
|                                           | Highest | 199              | 1104 | 3515 | 867                                  | 4822 | 15350 | 17.5                           | 16.9               | 14.7               |
| Southcentral (except Anchorage) (iv)      | Lowest  | 62               | 164  | 372  | 282                                  | 748  | 1325  | 10.1                           | 9.2                | 7.6                |
|                                           | Highest | 62               | 290  | 611  | 282                                  | 1701 | 2791  | 21.9                           | 17.7               | 11.5               |
| Anchorage, Southcentral                   | Lowest  | 261              | 702  | 1672 | 1149                                 | 3095 | 7004  | 9.9                            | 9.4                | 9.0                |
|                                           | Highest | 261              | 1394 | 4126 | 1149                                 | 6523 | 18141 | 18.7                           | 17.1               | 14.0               |
| Fairbanks (vii)                           | Lowest  | 76               | 144  | 260  | 319                                  | 602  | 1088  | 5.8                            | 5.9                | 6.0                |
|                                           | Highest | 76               | 297  | 677  | 319                                  | 1244 | 2843  | 12.8                           | 13.2               | 11.0               |
| Anchorage, Southcentral,<br>and Fairbanks | Lowest  | 337              | 846  | 1932 | 1468                                 | 3697 | 8092  | 9.1                            | 8.8                | 8.5                |
|                                           | Highest | 337              | 1691 | 4803 | 1468                                 | 7787 | 20984 | 17.6                           | 16.4               | 13.5               |
| Southeast (iii)                           | Lowest  | 48               | 93   | 141  | 215                                  | 417  | 634   | 6.7                            | 6.2                | 5.3                |
|                                           | Highest | 48               | 112  | 184  | 215                                  | 505  | 827   | 8.7                            | 8.1                | 6.6                |
| Northwest plus Southwest (i & ii)         | Lowest  | 8                | 9    | 10   | 31                                   | 36   | 44    | 2.0                            | 1.3                | 1.6                |
|                                           | Highest | 8                | 21   | 31   | 31                                   | 86   | 127   | 9.7                            | 9.7                | 6.9                |
| Alaska Statewide                          | Lowest  | 393              | 948  | 2083 | 1715                                 | 4147 | 8765  | 8.6                            | 8.4                | 8.1                |
|                                           | Highest | 393              | 1824 | 5018 | 1715                                 | 8358 | 21938 | 16.5                           | 15.5               | 12.5               |

Note: There are no significant electric utilities in the Interior Region.

**Table 14**  
**Projected Net Sales of Electric Utilities to Final Consumers (Thousand MWH)**  
 Electricity Use Intensity Scenario

| Electricity<br>Intensity<br>Scenario | Case 1          |                    | Case 2                                                                        |                    | Case 3                                                                           |                    | Case 4         |                    |
|--------------------------------------|-----------------|--------------------|-------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------|--------------------|----------------|--------------------|
|                                      | Growth As Usual |                    | Moderate Residential Electrification<br>Commercial/Industrial Growth As Usual |                    | Low Residential Electrification<br>Commercial/Industrial Minimum Electrification |                    | Minimum Growth |                    |
| Economic Scenario                    | Limited Growth  | Accelerated Growth | Limited Growth                                                                | Accelerated Growth | Limited Growth                                                                   | Accelerated Growth | Limited Growth | Accelerated Growth |
| <b>Northwest<sup>a</sup></b>         |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 15.178          | 15.178             |                                                                               |                    |                                                                                  |                    | 15.178         | 15.178             |
| 1980                                 | 20              | 24                 |                                                                               |                    |                                                                                  |                    | 17             | 18                 |
| 1985                                 | 24              | 34                 |                                                                               |                    |                                                                                  |                    | 17             | 21                 |
| 1990                                 | 27              | 36                 |                                                                               |                    |                                                                                  |                    | 19             | 22                 |
| 1995                                 | 30              | 37                 |                                                                               |                    |                                                                                  |                    | 20             | 23                 |
| <b>Southwest<sup>b</sup></b>         |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 16.615          | 16.615             |                                                                               |                    |                                                                                  |                    | 16.615         | 16.615             |
| 1980                                 | 28              | 30                 |                                                                               |                    |                                                                                  |                    | 18             | 18                 |
| 1985                                 | 40              | 52                 |                                                                               |                    |                                                                                  |                    | 19             | 21                 |
| 1990                                 | 51              | 69                 |                                                                               |                    |                                                                                  |                    | 20             | 23                 |
| 1995                                 | 63              | 90                 |                                                                               |                    |                                                                                  |                    | 22             | 25                 |
| <b>Southeast<sup>c</sup></b>         |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 215.088         | 215.088            | 215.088                                                                       | 215.088            | 215.088                                                                          | 215.088            | 215.088        | 215.088            |
| 1980                                 | 328             | 338                | 344                                                                           | 355                | 340                                                                              | 350                | 318            | 326                |
| 1985                                 | 432             | 487                | 443                                                                           | 505                | 449                                                                              | 502                | 417            | 465                |
| 1990                                 | 529             | 611                | 527                                                                           | 617                | 561                                                                              | 639                | 523            | 594                |
| 1995                                 | 656             | 777                | 634                                                                           | 763                | 713                                                                              | 827                | 667            | 768                |
| <b>Southcentral<sup>d</sup></b>      |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 282.417         | 282.417            | 282.417                                                                       | 282.417            | 282.417                                                                          | 282.417            | 282.417        | 282.417            |
| 1980                                 | 762             | 933                | 717                                                                           | 849                | 563                                                                              | 612                | 503            | 544                |
| 1985                                 | 1,302           | 1,701              | 1,131                                                                         | 1,432              | 835                                                                              | 966                | 748            | 857                |
| 1990                                 | 1,659           | 2,178              | 1,390                                                                         | 1,774              | 1,087                                                                            | 1,267              | 987            | 1,142              |
| 1995                                 | 2,114           | 2,791              | 1,716                                                                         | 2,205              | 1,436                                                                            | 1,686              | 1,323          | 1,545              |
| <b>Anchorage</b>                     |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 867.132         | 867.132            | 867.132                                                                       | 867.132            | 867.132                                                                          | 867.132            | 867.132        | 867.132            |
| 1980                                 | 2,124           | 2,286              | 2,012                                                                         | 2,147              | 1,664                                                                            | 1,723              | 1,529          | 1,580              |
| 1985                                 | 3,734           | 4,822              | 3,245                                                                         | 4,076              | 2,550                                                                            | 2,924              | 2,347          | 2,679              |
| 1990                                 | 6,326           | 8,637              | 5,096                                                                         | 6,749              | 3,910                                                                            | 4,628              | 3,625          | 4,273              |
| 1995                                 | 10,633          | 15,350             | 7,982                                                                         | 11,154             | 6,071                                                                            | 7,416              | 5,679          | 6,918              |
| <b>Fairbanks</b>                     |                 |                    |                                                                               |                    |                                                                                  |                    |                |                    |
| 1974 (Actual)                        | 318.751         | 318.751            | 318.751                                                                       | 318.751            | 318.751                                                                          | 318.751            | 318.751        | 318.751            |
| 1980                                 | 631             | 658                | 598                                                                           | 616                | 485                                                                              | 495                | 446            | 455                |
| 1985                                 | 1,032           | 1,244              | 833                                                                           | 950                | 650                                                                              | 727                | 602            | 669                |
| 1990                                 | 1,534           | 1,891              | 1,090                                                                         | 1,256              | 861                                                                              | 977                | 803            | 907                |
| 1995                                 | 2,247           | 2,834              | 1,410                                                                         | 1,640              | 1,157                                                                            | 1,334              | 1,088          | 1,250              |

<sup>a</sup>Includes utilities at Kotzebue, Nome, and Unalakleet.

<sup>b</sup>Bethel, McGrath, Naknek, and Nushagak.

<sup>c</sup>Juneau, Ketchikan, Metlakatla, Petersburg, Sitka, and Wrangell.

<sup>d</sup>Includes Cordova, Glennallen, Homer, Kenai, Kodiak, Palmer, Seldovia, Seward, Talkeetna, and Valdez.

**Table 15**  
**Projected Electricity Peak Demand (MW)**

| Electricity<br>Intensity<br>Scenario | Case 1            |                       | Case 2                                                                              |                       | Case 3                                                                                 |                       | Case 4            |                       |
|--------------------------------------|-------------------|-----------------------|-------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------|-----------------------|-------------------|-----------------------|
|                                      | Growth As Usual   |                       | Moderate Residential<br>Electrification<br>Commercial/Industrial<br>Growth As Usual |                       | Low Residential<br>Electrification<br>Commercial/Industrial<br>Minimum Electrification |                       | Minimum<br>Growth |                       |
| Economic<br>Scenario                 | Limited<br>Growth | Accelerated<br>Growth | Limited<br>Growth                                                                   | Accelerated<br>Growth | Limited<br>Growth                                                                      | Accelerated<br>Growth | Limited<br>Growth | Accelerated<br>Growth |
| <u>Northwest</u>                     |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 3.6               | 3.6                   |                                                                                     |                       |                                                                                        |                       | 3.6               | 3.6                   |
| 1980                                 | 4.8               | 5.7                   |                                                                                     |                       |                                                                                        |                       | 4.0               | 4.3                   |
| 1985                                 | 5.7               | 8.1                   |                                                                                     |                       |                                                                                        |                       | 4.0               | 5.0                   |
| 1990                                 | 6.4               | 8.6                   |                                                                                     |                       |                                                                                        |                       | 4.5               | 5.2                   |
| 1995                                 | 7.1               | 8.8                   |                                                                                     |                       |                                                                                        |                       | 4.8               | 5.5                   |
| <u>Southwest</u>                     |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 4.1               | 4.2                   |                                                                                     |                       |                                                                                        |                       | 4.1               | 4.1                   |
| 1980                                 | 7.0               | 7.5                   |                                                                                     |                       |                                                                                        |                       | 4.5               | 4.5                   |
| 1985                                 | 10.0              | 12.9                  |                                                                                     |                       |                                                                                        |                       | 4.7               | 5.2                   |
| 1990                                 | 12.7              | 17.2                  |                                                                                     |                       |                                                                                        |                       | 5.0               | 5.7                   |
| 1995                                 | 15.7              | 22.4                  |                                                                                     |                       |                                                                                        |                       | 5.5               | 6.2                   |
| <u>Southeast</u>                     |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 48.0              | 48.0                  | 48.0                                                                                | 48.0                  | 48.0                                                                                   | 48.0                  | 48.0              | 48.0                  |
| 1980                                 | 73.1              | 75.4                  | 76.7                                                                                | 79.2                  | 75.8                                                                                   | 78.1                  | 70.9              | 72.7                  |
| 1985                                 | 96.3              | 108.6                 | 98.8                                                                                | 112.6                 | 100.1                                                                                  | 111.9                 | 93.0              | 103.7                 |
| 1990                                 | 118.0             | 136.3                 | 117.5                                                                               | 137.6                 | 125.1                                                                                  | 142.5                 | 116.6             | 132.5                 |
| 1995                                 | 146.3             | 173.3                 | 141.4                                                                               | 170.1                 | 159.0                                                                                  | 184.4                 | 148.7             | 171.3                 |
| <u>Southcentral</u>                  |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 61.8              | 61.8                  | 61.8                                                                                | 61.8                  | 61.8                                                                                   | 61.8                  | 61.8              | 61.8                  |
| 1980                                 | 166.9             | 204.3                 | 157.0                                                                               | 185.9                 | 123.3                                                                                  | 134.0                 | 110.2             | 119.1                 |
| 1985                                 | 285.1             | 372.5                 | 247.7                                                                               | 313.6                 | 182.9                                                                                  | 211.6                 | 163.8             | 187.7                 |
| 1990                                 | 363.3             | 477.0                 | 304.4                                                                               | 388.5                 | 238.1                                                                                  | 277.5                 | 216.2             | 250.1                 |
| 1995                                 | 463.0             | 611.2                 | 375.8                                                                               | 482.9                 | 314.5                                                                                  | 369.2                 | 289.7             | 338.4                 |
| <u>Anchorage</u>                     |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 198.6             | 198.6                 | 198.6                                                                               | 198.6                 | 198.6                                                                                  | 198.6                 | 198.6             | 198.6                 |
| 1980                                 | 486.4             | 523.5                 | 460.7                                                                               | 491.7                 | 381.1                                                                                  | 394.6                 | 350.1             | 361.8                 |
| 1985                                 | 855.1             | 1,104.2               | 743.1                                                                               | 933.4                 | 584.0                                                                                  | 669.6                 | 537.5             | 613.5                 |
| 1990                                 | 1,448.7           | 1,977.9               | 1,167.0                                                                             | 1,545.5               | 895.4                                                                                  | 1,059.8               | 830.1             | 978.5                 |
| 1995                                 | 2,435.0           | 3,515.2               | 1,827.9                                                                             | 2,554.3               | 1,390.3                                                                                | 1,698.3               | 1,300.5           | 1,584.2               |
| <u>Fairbanks</u>                     |                   |                       |                                                                                     |                       |                                                                                        |                       |                   |                       |
| 1974                                 | 76.2              | 76.2                  | 76.2                                                                                | 76.2                  | 76.2                                                                                   | 76.2                  | 76.2              | 76.2                  |
| 1980                                 | 150.8             | 157.3                 | 142.9                                                                               | 147.2                 | 115.9                                                                                  | 118.3                 | 106.6             | 108.7                 |
| 1985                                 | 246.6             | 297.3                 | 199.1                                                                               | 227.1                 | 155.4                                                                                  | 173.8                 | 143.9             | 159.9                 |
| 1990                                 | 366.6             | 451.9                 | 260.5                                                                               | 300.2                 | 205.8                                                                                  | 233.5                 | 191.9             | 216.8                 |
| 1995                                 | 537.0             | 677.3                 | 337.0                                                                               | 392.0                 | 276.5                                                                                  | 318.8                 | 260.0             | 298.8                 |

Load factor: Northwest .53, Southwest .51, Southeast .56, Southcentral .56, Anchorage .55, Fairbanks .53.

System losses: Northwest 10.5%, Southwest 11.6%, Southeast 9.2%, Southcentral 7.4%, Anchorage 10.4%, Fairbanks 11.0%.

**Table 16**  
**Projected Residential Consumption Parameters**

Electricity Intensity Use Scenario

| Economic<br>Scenario | Growth as Usual      |                  |                       |                  | Moderate<br>Electrification |                  |                       |                  | Low<br>Electrification |                  |                       |                  |
|----------------------|----------------------|------------------|-----------------------|------------------|-----------------------------|------------------|-----------------------|------------------|------------------------|------------------|-----------------------|------------------|
|                      | Limited<br>Growth    |                  | Accelerated<br>Growth |                  | Limited<br>Growth           |                  | Accelerated<br>Growth |                  | Limited<br>Growth      |                  | Accelerated<br>Growth |                  |
|                      | hookup<br>saturation | kwh/<br>consumer | hookup<br>saturation  | kwh/<br>consumer | hookup<br>saturation        | kwh/<br>consumer | hookup<br>saturation  | kwh/<br>consumer | hookup<br>saturation   | kwh/<br>consumer | hookup<br>saturation  | kwh/<br>consumer |
| <b>Southeast</b>     |                      |                  |                       |                  |                             |                  |                       |                  |                        |                  |                       |                  |
| 1974                 | 24.9%                | 7,623            | 24.9%                 | 7,623            | 24.9%                       | 7,623            | 24.9%                 | 7,623            | 24.9%                  | 7,623            | 24.9%                 | 7,623            |
| 1980                 | 24.5                 | 8,520            | 25.9                  | 8,555            | 27.0                        | 9,137            | 27.0                  | 9,232            | 27.0                   | 8,394            | 27.0                  | 8,422            |
| 1985                 | 26.9                 | 9,181            | 26.7                  | 9,226            | 27.0                        | 9,690            | 27.0                  | 10,009           | 27.0                   | 8,675            | 27.0                  | 8,808            |
| 1990                 | 27.9                 | 9,776            | 27.7                  | 9,818            | 27.0                        | 10,008           | 27.0                  | 10,340           | 27.0                   | 8,837            | 27.0                  | 8,972            |
| 1995                 | 29.1                 | 10,435           | 28.8                  | 10,472           | 27.0                        | 10,296           | 27.0                  | 10,635           | 27.0                   | 8,983            | 27.0                  | 9,118            |
| <b>Southcentral</b>  |                      |                  |                       |                  |                             |                  |                       |                  |                        |                  |                       |                  |
| 1974                 | 32.7%                | 8,026            | 32.7%                 | 8,026            | 32.7%                       | 8,026            | 32.7%                 | 8,026            | 32.7%                  | 8,026            | 32.7%                 | 8,026            |
| 1980                 | 37.4                 | 12,896           | 38.3                  | 14,240           | 37.0                        | 11,076           | 37.0                  | 11,422           | 37.0                   | 9,639            | 37.0                  | 9,822            |
| 1985                 | 40.0                 | 16,771           | 40.1                  | 19,050           | 37.0                        | 11,999           | 37.0                  | 12,502           | 37.0                   | 10,127           | 37.0                  | 10,394           |
| 1990                 | 40.8                 | 18,961           | 41.2                  | 21,589           | 37.0                        | 12,304           | 37.0                  | 12,801           | 37.0                   | 10,289           | 37.0                  | 10,552           |
| 1995                 | 42.1                 | 21,448           | 42.3                  | 24,477           | 37.0                        | 12,585           | 37.0                  | 13,075           | 37.0                   | 10,438           | 37.0                  | 10,696           |
| <b>Anchorage</b>     |                      |                  |                       |                  |                             |                  |                       |                  |                        |                  |                       |                  |
| 1974                 | 31.1%                | 9,106            | 31.1%                 | 9,106            | 31.1%                       | 9,106            | 31.1%                 | 9,106            | 31.1%                  | 9,106            | 31.1%                 | 9,106            |
| 1980                 | 35.8                 | 12,614           | 36.1                  | 12,931           | 35.0                        | 11,317           | 35.0                  | 11,425           | 35.0                   | 10,010           | 35.0                  | 10,054           |
| 1985                 | 38.1                 | 16,073           | 39.1                  | 17,605           | 35.0                        | 12,102           | 35.0                  | 12,439           | 35.0                   | 10,331           | 35.0                  | 10,469           |
| 1990                 | 39.9                 | 20,505           | 40.9                  | 23,090           | 35.0                        | 12,695           | 35.0                  | 13,023           | 35.0                   | 10,573           | 35.0                  | 10,707           |
| 1995                 | 41.3                 | 26,498           | 42.2                  | 30,704           | 35.0                        | 13,162           | 35.0                  | 13,466           | 35.0                   | 10,794           | 35.0                  | 10,888           |
| <b>Fairbanks</b>     |                      |                  |                       |                  |                             |                  |                       |                  |                        |                  |                       |                  |
| 1974                 | 28.0%                | 11,597           | 28.0%                 | 11,597           | 28.0%                       | 11,597           | 28.0%                 | 11,597           | 28.0%                  | 11,597           | 28.0%                 | 11,597           |
| 1980                 | 31.5                 | 19,112           | 31.8                  | 19,797           | 32.0                        | 16,987           | 32.0                  | 17,235           | 32.0                   | 12,310           | 32.0                  | 12,343           |
| 1985                 | 34.3                 | 26,816           | 34.9                  | 30,735           | 32.0                        | 18,952           | 32.0                  | 20,278           | 32.0                   | 12,509           | 32.0                  | 12,746           |
| 1990                 | 36.9                 | 34,801           | 37.3                  | 40,223           | 32.0                        | 20,324           | 32.0                  | 21,723           | 32.0                   | 12,752           | 32.0                  | 12,937           |
| 1995                 | 39.6                 | 44,585           | 40.0                  | 52,006           | 32.0                        | 21,561           | 32.0                  | 23,002           | 32.0                   | 12,916           | 32.0                  | 13,107           |

Note: The no-growth case assumes no change over time in either hookup saturation or average KWH consumption per customer and is, therefore, omitted.  
Hookup saturation is defined as residential customers/civilian population.

## APPENDIX 1. THE MAP ECONOMIC MODEL

Growth in electricity requirements will closely follow growth in the state's economy. Projections of the state's future economic growth are provided by the Man-in-the-Arctic Program (MAP) regional econometric model of the state.

### Model Description

The MAP model<sup>1</sup> allows the researcher to develop projections of key economic and demographic variables for seven regions of Alaska (Figure 1), based upon a set of assumptions about factors outside state control but impacting the state economy. Researchers constructed the model using multiple linear regression techniques with historic Alaskan data covering the period 1961 to the present.

Treatment of individual industries in the model depends upon whether the industry is basic or nonbasic. A basic industry is one in which the level of economic activity (as measured by employment, wages and salaries, and gross product) is determined by forces outside the Alaskan private economy. The basic determinants of activity in these industries are national and international markets, the physical availability of resources, and federal government policies impacting the state. Industries which fall into this category are mining (including petroleum), agriculture, forestry and fisheries, and manufacturing. Construction industry activity is partially determined by forces external to the Alaska economy and partially by instate economic activity.

The level of activity in nonbasic industries is essentially a function of the amount of income generated instate by both the basic and nonbasic industries. This category includes services, trade, finance, transportation, communications, and public utilities.

Government activity at the federal level is determined by forces outside state control, but state and local government revenues and expenditures are a function of Alaska economic conditions. State population is related not only to employment but also to relative disposable income in the state.

### Development Scenarios

In order to project annual economic values using the MAP model, a set of assumptions must first be provided which indicates levels of expected activity

within the basic industry sectors. Most important within this set are the assumptions of the petroleum industry, because activity in this industry will have the most impact on economic growth in the state during the next 20 years. This impact will occur both through employment in the petroleum and related industries (such as construction) and through state revenues generated by petroleum exploration, development, and production.

In developing the electric power requirements, two different sets of assumptions were used regarding petroleum industry activities within the state. Each is a consistent scenario describing the level and pace of new discoveries. The average wellhead price of new oil discoveries is assumed to be \$5 per barrel in either case. The two cases are known as limited development and accelerated development.

**Limited Development.** This case represents the minimum expected level of petroleum leasing activity between the present and 1990. In addition to Cook Inlet and Prudhoe Bay, the federal government leases in Lower Cook Inlet and the Gulf of Alaska. In leasing the Outer Continental Shelf (OCS), the federal government effectively determines where state and private, primarily Native, development can occur. Thus, these parties are assumed to develop adjacent areas, and along the route of the oil pipeline. In addition, a gas line from Prudhoe Bay through Canada via the McKenzie Valley is constructed with minimum instate impact. In this scenario, petroleum production increases to 2 million barrels per day (mbd) in 1980 and 3.6 mbd in 1990.

**Accelerated Development.** This case incorporates all limited development activities. In addition, National Petroleum Reserve Alaska and several other OCS areas are developed through federal initiative. State and private development again follows the geographic lead of these activities. Petroleum development in this case increases more rapidly after 1980 and reaches 7.3 mbd by 1990. The OCS leasing schedule in this scenario is rapid but does not correspond to the schedule of leasing proposed as a part of Project Independence, nor does it include all OCS provinces identified and included in that schedule.

In addition to petroleum development assumptions, assumptions must be made regarding other basic industries. These other industries are assumed to experience mild growth, which does not vary between cases. This does not imply that

<sup>1</sup>See box on page 1.

nonpetroleum basic industries are not important to the future of the state or that there will not be future growth in these industries. Developments in other basic industries will be of central importance, particularly on a community level. However, on a statewide and regional basis, the activities associated with petroleum development will be greater than those of other industries by an order of magnitude—thus, the choice to concentrate on petroleum development.

## APPENDIX 2. ELECTRICITY USE PROJECTION METHODOLOGY

The level of electricity requirements in future years will depend both upon the number of customers and the intensity of use per customer. These factors will in turn be related to the price of electricity, alternative types of energy available, and the level of income of the potential consumers. In Alaska, as elsewhere, there is evidence of a negative consumption response to price increases and a positive response to income increases. Although the relationship observed is only for one time period and only for the residential type of consumer, it is reasonable to expect that the same qualitative relationship will exist in other years and among other consumer types.<sup>1</sup>

The MAP econometric model projects increases in real wages and salaries (closely related to personal income) but does not provide estimates of the future prices of electricity and other fuels. This is because these prices will increasingly be determined by national and international, as opposed to purely local, market conditions.

Because of this uncertainty both in price and in consumers' response to price as it affects consumption, several sets of projections must be made, each corresponding to a different set of assumptions regarding these variables. Since each set of assumptions is essentially independent of the growth rate of the economy, each of the projections of electricity use is linked to both sets of economic projections (slow growth and accelerated growth). In this way, the projections cover the likely range of requirements for electricity.

The four sets of assumptions are: (1) *no growth*, (2) *low electrification*, (3) *moderate electrification*, and (4) *growth as usual*. Each is

Finally, policy decisions by the state regarding the disposition of the revenues generated by petroleum development will affect the level of economic activity in the state. State government is assumed to place in a permanent fund 25 percent of recurrent and 50 percent of nonrecurrent petroleum revenues in both the limited and accelerated cases. This reflects the effect which the permanent fund will have on the level of expenditures.

briefly described in the remainder of this section.

**No-growth.** This assumption provides the lowest estimate of future electricity use. The ratio of new residential customers to new population is assumed to be equal to the present ratio in each region. The average annual rate of consumption of existing customers is unchanged and new customers consume at the average rate of old customers. In the commercial and industrial sectors, new customers are projected at the same ratio to new population as existing customers. However, annual average consumption is allowed to grow at 5.8 percent, which was the national rate for the decade 1962-1972. These assumptions correspond to a very restrictive climate for electricity demand increase. Such a climate could result from substantial and continuing relative price increases for electricity, as well as from restrictions on electricity use, which would hold down or reduce consumer use.

**Low-electrification.** This case allows a gradual increase in the ratio of residential customers to population. Present customers will continue to consume at existing average rates, while consumption by new customers will be determined by the mix of appliances they choose and the average consumption rate of those appliances. New customers in each region are assumed to acquire major electric appliances (space heaters, water heaters, and stoves) in the same ratio as existing customers in that region. Other appliances in new households are all electric. The average consumption for a new customer will thus vary among regions, based not only upon differences in the existing ratio of particular electric appliances to consumers in the region, but also upon implicit regional differences in the average consumption rate of electricity in the different appliances. The commercial and industrial sectors are, because of scarcity of data, projected using the same methodology as in the *no-growth* case. However, the rationale behind this set of assumptions is a

<sup>1</sup>A detailed analysis of this relationship is presented in Scott Goldsmith, "Future Electricity Requirements in Alaska," paper presented at the Western Economic Association Annual Meeting, San Francisco, June 17, 1976.

somewhat less restrictive atmosphere for the development of increased electricity demand than the *no-growth* case.

National average electricity requirements for the most common household appliances used in the

development of these projections are shown in Table 2-1. Data on the percentage of households with major electric appliances is shown in Table 2-2.

**Moderate electrification.** This case differs from low electrification in two respects. First, all new consumers in the residential sector acquire electric water heaters and stoves. Second, the projections of both commercial and industrial customers, as well as average consumption level per customer, are based upon regression analysis employing historical time series data for the individual region. This case reflects an atmosphere more conducive to electricity consumption growth than the former cases.

**Growth-as-Usual.** Finally, this case is based entirely upon regression analysis using observed historical relationships between the demographic and economic variables of the economic model and electric power consumed through utilities. Implicit in this case is the assumption of a continuing reduction in the relative price of electricity within Alaska.

Table 2-1

## Household Appliance Electricity Consumption

| Major Appliances                     | Average Wattage | Estimated Annual KWH Use |
|--------------------------------------|-----------------|--------------------------|
| Dishwasher                           | 1,201           | 100                      |
| Range (with oven)                    | 12,200          | 1,175                    |
| Range (self-cleaning)                | 12,200          | 1,205                    |
| Freezer (15 cu. ft.)                 | 341             | 1,195                    |
| Freezer (Frostless, 15 cu. ft.)      | 440             | 1,761                    |
| Refrigerator (12 cu. ft.)            | 241             | 728                      |
| Refrigerator (Frostless, 12 cu. ft.) | 321             | 1,217                    |
| Clothes dryer                        | 4,856           | 993                      |
| Water heater                         | 2,475           | 4,219                    |
| Water heater (quick-recovery)        | 4,474           | 4,811                    |
| Air conditioner (room)               | 860             | 860                      |
| Dehumidifier                         | 257             | 377                      |
| TV (black & white, tube)             | 160             | 350                      |
| TV (black & white, solid st.)        | 55              | 120                      |
| TV (Color, tube)                     | 300             | 660                      |
| TV (color, solid st.)                | 200             | 440                      |
| Other Common Appliances              |                 |                          |
| Broiler                              | 1,436           | 100                      |
| Coffee maker                         | 894             | 106                      |
| Deep fryer                           | 1,448           | 83                       |
| Frying pan                           | 1,196           | 186                      |
| Hot plate                            | 1,257           | 90                       |
| Oven (microwave)                     | 1,450           | 190                      |
| Roaster                              | 1,333           | 205                      |
| Toaster                              | 1,146           | 39                       |
| Trash compactor                      | 400             | 50                       |
| Iron (hand)                          | 1,008           | 144                      |
| Wash machine (automatic)             | 512             | 103                      |
| Wash machine (nonautomatic)          | 286             | 76                       |
| Bed covering                         | 177             | 147                      |
| Heater (portable)                    | 1,322           | 176                      |
| Humidifier                           | 177             | 163                      |
| Hair dryer                           | 381             | 14                       |
| Heat lamp (infrared)                 | 250             | 13                       |
| Radio                                | 71              | 86                       |
| Clock                                | 2               | 17                       |
| Sewing machine                       | 75              | 11                       |
| Vacuum cleaner                       | 630             | 46                       |
| Toothbrush                           | 7               | ½                        |

SOURCE: Electric Energy Association.

**Table 2-2**  
**Percentages of Households With Selected Appliances — 1970**

| CENSUS<br>DIVISION              | Number of<br>Occupied<br>Housing<br>Units | Percent<br>Modern<br>Space<br>Heat | Percent<br>Electric<br>Space<br>Heat | Percent<br>Modern<br>Water<br>Heat | Percent<br>Electric<br>Water<br>Heat | Percent<br>Modern<br>Cooking<br>Fuel | Percent<br>Electric<br>Cooking<br>Fuel | Percent<br>Clothes<br>Dryers | Percent<br>Electric<br>Clothes<br>Dryers | Percent<br>Dish-<br>washers | Percent<br>Clothes<br>Washing<br>Machines | Percent<br>Refrigerators | Percent<br>Television<br>Sets |
|---------------------------------|-------------------------------------------|------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|--------------------------------------|----------------------------------------|------------------------------|------------------------------------------|-----------------------------|-------------------------------------------|--------------------------|-------------------------------|
| <b>ANCHORAGE REGION</b>         |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Anchorage                       | 35,021                                    | 94.9                               | 6.4                                  | 95.6                               | 34.6                                 | 99.4                                 | 64.5                                   | 59.4                         | 54.2                                     | 29.0                        | 63.2                                      | 39.1                     | 94.6                          |
| <b>SOUTHCENTRAL REGION</b>      |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Cordova-McCarthy                | 563                                       | 100.0                              | 0.0                                  | 90.4                               | 11.5                                 | 100.0                                | 51.9                                   | 49.2                         | 34.3                                     | 10.8                        | 48.3                                      | 68.7                     | 62.5                          |
| Kenai-Cook Inlet                | 3,881                                     | 90.8                               | 3.6                                  | 86.1                               | 33.0                                 | 97.4                                 | 23.6                                   | 54.6                         | 42.8                                     | 17.4                        | 61.6                                      | 50.8                     | 70.5                          |
| Kodiak                          | 2,535                                     | 96.1                               | 0.8                                  | 93.1                               | 21.9                                 | 100.0                                | 54.7                                   | 66.8                         | 61.9                                     | 12.9                        | 78.3                                      | 51.5                     | 80.7                          |
| Matanuska-Susitna               | 1,797                                     | 68.8                               | 1.1                                  | 63.2                               | 31.3                                 | 82.1                                 | 44.0                                   | 47.5                         | 44.0                                     | 19.3                        | 47.3                                      | 66.5                     | 75.0                          |
| Seward                          | 534                                       | 95.5                               | 3.9                                  | 87.5                               | 30.9                                 | 100.0                                | 47.0                                   | 53.0                         | 36.9                                     | 26.2                        | 75.3                                      | 71.3                     | 90.6                          |
| Valdez-Chitina-Whittier         | 1,017                                     | 78.9                               | 0.9                                  | 56.5                               | 20.2                                 | 93.6                                 | 17.9                                   | 35.0                         | 17.5                                     | 5.5                         | 30.5                                      | 40.0                     | 36.0                          |
| <b>INTERIOR REGION</b>          |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Upper Yukon                     | 3.65                                      | 36.7                               | 0.0                                  | 0.0                                | 0.0                                  | 38.1                                 | 0.0                                    | 0.0                          | 0.0                                      | 0.0                         | 12.1                                      | 27.1                     | 14.0                          |
| Yukon-Koyukuk                   | 1,030                                     | 73.6                               | 5.9                                  | 48.5                               | 28.0                                 | 81.8                                 | 35.2                                   | 32.6                         | 30.8                                     | 3.7                         | 47.9                                      | 42.3                     | 50.1                          |
| <b>FAIRBANKS REGION</b>         |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Fairbanks                       | 11,630                                    | 72.6                               | 6.9                                  | 75.8                               | 33.7                                 | 98.9                                 | 77.7                                   | 47.6                         | 46.5                                     | 21.7                        | 56.7                                      | 38.5                     | 91.4                          |
| Southeast Fairbanks             | 982                                       | 73.1                               | 6.2                                  | 83.0                               | 45.8                                 | 92.4                                 | 59.0                                   | 54.7                         | 54.7                                     | 17.1                        | 60.9                                      | 45.9                     | 67.9                          |
| <b>SOUTHEAST REGION</b>         |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Angoon                          | 116                                       | 79.3                               | 0.0                                  | 15.5                               | 0.0                                  | 79.3                                 | 0.0                                    | 0.0                          | 0.0                                      | 0.0                         | 0.0                                       | 15.5                     | 0.0                           |
| Haines                          | 362                                       | 92.5                               | 0.0                                  | 72.1                               | 26.2                                 | 92.5                                 | 48.9                                   | 56.9                         | 56.9                                     | 13.0                        | 69.1                                      | 52.5                     | 41.4                          |
| Juneau                          | 4,293                                     | 99.0                               | 0.6                                  | 98.2                               | 27.5                                 | 97.7                                 | 79.6                                   | 57.4                         | 57.0                                     | 24.2                        | 59.4                                      | 38.5                     | 81.6                          |
| Ketchikan                       | 2,820                                     | 99.3                               | 3.5                                  | 98.7                               | 66.4                                 | 100.0                                | 87.8                                   | 64.3                         | 64.3                                     | 21.8                        | 63.2                                      | 40.6                     | 78.3                          |
| Outer Ketchikan                 | 412                                       | 100.0                              | 16.9                                 | 100.0                              | 83.5                                 | 100.0                                | 89.1                                   | 74.0                         | 74.0                                     | 11.7                        | 94.9                                      | 69.7                     | 88.8                          |
| Prince of Wales                 | 528                                       | 96.4                               | 0.0                                  | 79.0                               | 7.4                                  | 93.4                                 | 6.6                                    | 31.6                         | 13.8                                     | 7.0                         | 64.8                                      | 43.4                     | 16.3                          |
| Sitka                           | 1,873                                     | 100.0                              | 0.0                                  | 97.0                               | 42.3                                 | 100.0                                | 59.7                                   | 62.1                         | 59.2                                     | 20.1                        | 71.1                                      | 48.6                     | 83.0                          |
| Skagway-Yakutat                 | 626                                       | 90.7                               | 3.6                                  | 87.6                               | 20.5                                 | 90.7                                 | 34.8                                   | 33.7                         | 24.3                                     | 7.0                         | 40.9                                      | 47.1                     | 24.3                          |
| Wrangell-Petersburg             | 1,395                                     | 96.5                               | 3.4                                  | 86.5                               | 51.0                                 | 90.6                                 | 60.9                                   | 45.4                         | 45.4                                     | 19.6                        | 64.2                                      | 53.8                     | 66.8                          |
| <b>NORTHWEST REGION (Rural)</b> |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Barrow                          | 513                                       | 100.0                              | 0.0                                  | 25.0                               | 0.0                                  | 95.9                                 | 7.6                                    | 21.6                         | 18.1                                     | 0.0                         | 17.5                                      | 14.6                     | 28.1                          |
| Kobuk                           | 955                                       | 81.4                               | 2.2                                  | 19.3                               | 6.6                                  | 74.9                                 | 17.6                                   | 19.3                         | 19.3                                     | 4.6                         | 15.6                                      | 30.2                     | 4.5                           |
| Nome                            | 1,238                                     | 85.5                               | 1.8                                  | 34.0                               | 5.6                                  | 87.6                                 | 9.5                                    | 12.6                         | 11.1                                     | 5.1                         | 15.1                                      | 12.9                     | 1.4                           |
| <b>SOUTHWEST REGION</b>         |                                           |                                    |                                      |                                    |                                      |                                      |                                        |                              |                                          |                             |                                           |                          |                               |
| Aleutian Islands                | 1,192                                     | 88.3                               | 5.7                                  | 82.8                               | 52.3                                 | 100.0                                | 62.2                                   | 66.1                         | 62.8                                     | 15.0                        | 73.2                                      | 45.7                     | 53.9                          |
| Bethel                          | 1,439                                     | 86.7                               | 0.0                                  | 19.7                               | 2.6                                  | 81.8                                 | 13.1                                   | 9.1                          | 8.1                                      | 1.5                         | 25.6                                      | 28.1                     | 0.0                           |
| Bristol Bay                     | 655                                       | 89.9                               | 0.0                                  | 37.3                               | 3.5                                  | 93.1                                 | 18.5                                   | 18.2                         | 18.2                                     | 3.4                         | 34.4                                      | 37.9                     | 0.0                           |
| Bristol Bay Borough             | 213                                       | 100.0                              | 0.0                                  | 72.3                               | 29.1                                 | 100.0                                | 38.0                                   | 84.5                         | 48.4                                     | 17.8                        | 56.8                                      | 82.1                     | 93.4                          |
| Kuskokwim                       | 401                                       | 29.9                               | 0.0                                  | 24.4                               | 9.5                                  | 39.7                                 | 14.0                                   | 14.7                         | 14.7                                     | 0.0                         | 24.4                                      | 24.4                     | 14.9                          |
| Wade-Hampton                    | 773                                       | 46.2                               | 0.0                                  | 5.8                                | 0.0                                  | 46.6                                 | 6.2                                    | 8.9                          | 8.9                                      | 0.0                         | 21.2                                      | 9.4                      | 6.2                           |
| <b>TOTAL</b>                    | <b>79,059</b>                             | <b>89.0</b>                        | <b>4.8</b>                           | <b>83.6</b>                        | <b>32.5</b>                          | <b>96.2</b>                          | <b>58.9</b>                            | <b>52.5</b>                  | <b>48.3</b>                              | <b>21.9</b>                 | <b>58.5</b>                               | <b>41.3</b>              | <b>78.9</b>                   |

SOURCE: U.S. Bureau of the Census, Department of Commerce, 1970 Census of Housing.

## RECENT INSTITUTE PUBLICATIONS

The Institute of Social and Economic Research was established in 1961 for the purpose of conducting interdisciplinary research in the social sciences and related fields. The institute is part of the University of Alaska and has branches in Anchorage, Fairbanks, and Juneau. In addition to the *Alaska Review of Business and Economic Conditions*, the institute publishes *ISER Reports*, *Occasional Papers*, *Research Notes*, and other special publications. Recent institute publications include:

## REVIEWS

(Free subscription upon request)

- "Alaska Economic Growth, 1961-1972," David T. Kresge.
- "Consumer Prices, Personal Income and Earnings in Alaska," Arlon R. Tussing and Monica Thomas.
- "Estimates of Alaska Gross Product by Region, 1965-1973," Monica E. Thomas and Earlene Goodwin.
- "Fiscal Data for Alaska," Neville O. Beharie.
- "Alaska's Growth to 1990," David T. Kresge.
- "Agriculture in Alaska: 1976-2000 A.D.," Wayne Thomas.
- "Urban Impacts of Oil Development—The Fairbanks Experience," Jack Kruse.
- "Petroleum Development in Alaska," Thomas A. Morehouse.

## OCCASIONAL PAPERS

- *Northern Eskimo Law Ways and Their Relationships to Contemporary Problems of "Bush Justice,"* Arthur E. Hippler and Stephen Conn .....\$1.00
- *Patterns of Village Growth and Decline in the Aleutians,* Dorothy M. Jones .....\$1.00
- *Urban Native Men and Women—Differences in Their Work Adaptations,* Dorothy M. Jones .....\$2.00

## REPORTS

- *A Long Way from Home—Effects of Public High Schools on Village Children Away From Home,* Judith Kleinfeld .....\$5.00
- *Alaska Natives in Higher Education,* Karen Kohout and Judith Kleinfeld .....\$3.00
- *The Subarctic Athabascans—A Selected Annotated Bibliography,* Arthur E. Hippler and John R. Wood .....\$15.00
- *An Aleut Bibliography,* Dorothy M. Jones and John R. Wood .....\$15.00
- *Bristol Bay—A Socioeconomic Study,* David T. Kresge, Susan R. Fison, and Anthony F. Gasbarro .....\$5.00
- *The Urban Native Encounters the Social Service System,* Dorothy M. Jones .....\$3.00
- *Alaska's Constitutional Convention,* Victor Fischer .....\$4.00
- *Copper River-Wrangells Socioeconomic Overview,* Charles L. Logsdon, et. al.

## RESEARCH NOTES

(Free upon request)

- *The Population of Russian America (1799-1867),* Svetlana G. Federova
- *Using Nonverbal Warmth to Increase Learning: a Cross-Cultural Experiment,* Judith Kleinfeld
- *Alaskan Population Growth and Movements, 1960-1972,* Daniel A. Seiver and Susan R. Fison



For further information on institute publications, contact the Fairbanks office at the Institute of Social and Economic Research, eighth floor, Gruening Building, University of Alaska, Fairbanks, telephone 479-7434.

# Susitna study funds discussed

JUNEAU (AP)—Top officials huddled but made no decision today on whether to pump money into newly troubled feasibility studies for the Susitna hydroelectric project.

The Internal Revenue Service has balked at a state financing plan for the engineering work, and lawmakers are now considering whether to keep alive a proposal to spend \$8 million in state money for the first of the studies.

Alaska Sen. Mike Gravel told lawmakers he is optimistic the studies and project can proceed, and he warned that loss of momentum could bog down the entire \$2.6 billion hydro-electric project to serve Fairbanks, Anchorage and the areas between.

Gravel remained confident that federal legislation involving the project can clear Congress.

But state Transportation Commissioner Bob Ward, active on the Susitna issue, took a more cautious approach to the studies in light of the IRS ruling. Ward wouldn't say if the state administration plans to reverse its stand and oppose state spending for the studies this year.

Meanwhile, key lawmakers say they don't know when they will make a

decision on the funding issue.

"We don't know where we're going. We're still looking at options," said Eric Yould, executive director of the Alaska Power Authority.

Yould, Gravel and state House and Senate leaders discussed the issue in a quickly called meeting, but the gathering broke up without a resolution of the problem.

Yould said the power authority itself must now reassess whether it wants the Legislature to proceed with the funding.

The APA has been seeking \$8 million for the first year of the \$25 million, 46-month study by the U.S. Army Corps of Engineers. Yould has been pushing for quick funding so equipment could be moved to the sites with snow cover still protecting the ground.

## CORRECTION

University of Alaska-Fairbanks has an enrollment of 180 declared majors in civil, electrical and mechanical engineering.

# Look closely at hydro proposals

The Susitna Dam project is presently undergoing intensive resuscitation efforts by local business interests, GVEA, the Hon. Mike Gravel et al. Those of us who are labeled as 'stumbling blocks to progress' might not be forced into so negative a stance if the advocates of measures authorizing projects which impact heavily on the public interest would be more critical and demanding of facts and honest evaluations of costs vs. benefits. The typical attitude of the promoters of such schemes is: "Don't confuse me with facts. My mind is made up."

Even to plead for time in which the true facts can be assembled, and the long-range consequences assessed is suspected of being mere obstructionism. It would be interesting to go back through recent history and to document the instances where projects hastily conceived and executed have resulted in environmental and financial catastrophe.

I think of one off-hand: the Teton Dam. Opposed early on by critics who pointed out that the geologic formations created hazards to such a dam, it was pushed through to completion in total disregard for these factors, and finally gave way, with terrible consequences in human lives lost, farms and other investments destroyed, and a huge bill

**Celia  
Hunter**



for clean-up and restitution incurred.

The casualness with which the boosters of the Susitna Dam project dismiss the earthquake hazard of the Susitna fault lying only five miles below the dam site brings echoes of other equally vehement protestations about the safety of other construction operations. We can believe what we want to believe, but such an attitude has its problems—trouble is, it's always the public that pays, not the promoters. We pay for the building and financing, and we pay over and over again for the unwise use of scarce resources, whether financial, or wildlife, or environmental or human.

Alaskans today are massing support for moves away from being controlled from afar, but this movement seems to be highly selective, aimed only at the federal government represented by the

National Park Service and the U.S. Fish and Wildlife Service, the supposed 'preservationist' agencies. Meanwhile the Trojan horse carrying subjugation and total dependency on outside forces is being wheeled into their midst, where it is greeted with cries of joy and celebration. How can anyone with any understanding of the implications such an enormous project brings with it fail to comprehend the inevitable loss of personal freedoms and the economic and energy options we forego from such a move?

We would have all our eggs in one basket. It has been pointed out repeatedly that such total dependence on an integrated system is a major weakness in the Lower 48, witness the disastrous New York City blackouts, and less massive but equally threatening power failures elsewhere in the country. Amory Lovins, and many other energy experts argue logically and persuasively for development of a system of smaller, self-sustaining power supplies, which insure communities against such calamities. We need to study carefully our options for providing additional power in small increments, including an assessment in depth of some 30 smaller hydroelectric power sites within the railbelt area.

The power from a Susitna dam may

be virtually all surplus to local needs when it comes on stream many years from now. Our present and future power needs must be met somehow by smaller incremental units in the meantime, and these in themselves may prove quite sufficient to handle our power demands, especially as increased prices slows projected requirements. After all, one reason given by GVEA for cancelling Healy No. 2 was that electrical power use here had failed to reach projected demands.

The message I'm attempting to convey here is simple: let's look before we leap. And especially let's look before we take hard-to-come-by tax dollars to shore up a faltering project which its chief sponsor, Sen. Mike Gravel, admits has "tenuous economic viability" (story in News-Miner 3/13: "IRS ruling called threat to Fairbanks power plans.")

That "tenuous economic viability" is sufficient cause to reject the Susitna Dam project. In addition to that fundamental issue, we have the slipperiness of projected power demands, primarily developed by a self-serving agency, the Alaska Power Authority, which is overstepping its original charge when created, and is now planning and promoting power development projects in general, and

the Susitna Dam in particular. Alaska desperately needs to do some comprehensive planning of realistic energy needs and resources, rather than jumping from one crash program to another, attempting to bail out a faltering economy with enormous public works programs, such as the Susitna Dam.

We need more time—and by we, I mean the Alaskan citizen and taxpayer—before we buy into the Susitna Dam, whether for \$8 million, or \$25 million, or to be saddled with the entire cost, which undoubtedly will escalate out of sight due to cost overruns as these projects inevitably do. We need to take a hard look at the effects such a quantum jump in available energy will have on individual independence and self-reliance, as well as its effects on our communities.

Furthermore, I object to my rural electrification association—GVEA—buying newspaper space to promote state financing support of this project. It's easy to label the opposition as "no-growth obstructionists" as they do in their ads—sounds great and gets instantaneous positive reaction from some local residents—but it takes more than labels to determine what the public good really is. Let's get the facts—first!

# Funds for Susitna study languish in House panel

By CHARLIE SPENCER  
News-Miner Bureau

JUNEAU—The flow of a special appropriation to initiate a study of the giant Susitna River hydroelectric project may be in for a freeze.

Running through the legislative channels is an \$8.2 million bill to fund the first year of a four-year feasibility study for the project. The Legislature is being asked to get the \$25 million study started because federal financing has yet to come through.

The Senate earlier approved the \$8.2 million, but the request has been mired this week in the House Resources Committee. Resources co-chairman Rep. Bill Miles, D-Anchorage, said today he wants to re-examine the entire hydroelectric picture for the state.

He pointed out there are other appropriations totalling more than \$7 million for smaller hydro projects in Ketchikan, Petersburg and Kodiak.

Miles said he will meet within the next few days with other members of the House leadership "to tie those together and stake out our position."

He said, "It's obvious that hydro power is the only way to go in certain areas of the state and under certain situations." But he said there are several big questions about Susitna that he wants to get answered before the committee votes on the appropriation.

One of the biggest was discussed Wednesday when the committee took testimony from more than 30 witnesses over the state teleconference network.

Said Miles afterward, "Some of the folks claim that Susitna is going to provide much more energy than the Railbelt will ever use. Other witnesses testified that not even two Susitnas would provide enough power in the long-range future."

The project would help supply electricity to Fairbanks, Anchorage and the areas between the two cities.

Another big question concerns the risk of placing the dam on what has been termed an area subject to many earthquakes, but Miles said he personally puts that down the list.

"I'm no geologist, but we've got that problem in over 800 miles of a pipeline project," he said.

Seismic tests are only part of the four-year study, to be conducted by the Army Corps of Engineers. But the Alaska Power Authority, coordinating with the Corps, which would eventually pay for the \$2.6 billion two-dam project, wants to get going this year.

APA officials have said the state money is needed immediately so Corps equipment can be moved into the remote, upper Susitna site before breakup.

But the project has received heavy criticism in legislative hearings. Wednesday, several witnesses urged the legislators to consider other, smaller hydro projects.

Other critics said that to go ahead with the study would be to irrevocably

commit the state to the project. The Corps, however, maintains the study can be shut down at any one of several steps, and the total project can be scrapped at the completion of the study.

Also Wednesday, the general manager of the Anchorage Municipal Light and Power Co. said the state's largest power consuming area will be in trouble without Susitna.

"There's no question that Susitna will be sorely needed at the time it is built," said Tom Stahr. "It will not produce an energy surplus."

Meanwhile, Terry McGuire, a financial analyst with the APA, said today, "Every week that the approvals are delayed will force a change in the scope of activity that will be performed in the first year" of the study.

But he said that if the study can begin within the next month, it should not significantly stretch out the total life of the work—provided state agencies hire personnel in time to perform some of the work planned for this summer.

The Department of Fish and Game, for example, must do some of the biological surveys.

# Susitna Funding Plan Sought

By The Associated Press

Although funding has bogged down, the U.S. Army Corps of Engineers says it still can accomplish a full year of Susitna River dam studies beginning around May 1.

But the Corps says lack of snow cover will not permit ground access to one of the two sites proposed for massive dams.

Meanwhile, top state officials huddled here Tuesday in an effort to resolve federal roadblocks to the state's financing method for the \$25 million study project.

The officials reached no decisions, other than to return to the Internal Revenue Service and hope for a more favorable ruling.

Alaska Power Authority offi-

cials earlier told the governor and Legislature that this year's proposed "phase one" feasibility studies would be in jeopardy if the project wasn't started before spring breakup.

But Corps Col. Jim Fero outlined a new work schedule at the meeting.

"We feel the project is salvageable for this year, just by rearranging our schedule," he was quoted as saying by the Anchorage Daily News.

The future of the studies is still uncertain, with both the administration and the state House waiting to see if financing problems can be straightened out before throwing support behind continuing the dam studies this

year.

The project has been on hold since the Internal Revenue Service recently informed the Alaska Power Authority that it couldn't use an \$8 million appropriation from the Legislature to back the sale of revenue bonds to pay for the studies.

The power authority's directors, plus lawmakers and other officials, met to debate what to do about the four-year study for the \$2.6 billion project in the wake of the Internal Revenue Service ruling.

The \$8 million appropriation had the support of Gov. Jay Hammond and had already cleared the Senate at the time of the ruling. But House Resources Com-

mittee co-Chairman Bill Miles, D-Anchorage, told the power authority meeting that the House has numerous questions about the proposal and has adopted a "show me" attitude.

State Transportation Commissioner Robert Ward told the meeting that the governor's Susitna task force was unenthusiastic about pushing the dam studies appropriation through the Legislature if the revenue bonding plan falls through.

"If direct appropriation is the only alternative, there was reluctance expressed that the task force would not want an \$8 million appropriation to compete with other capital needs this year," he said.

But he said the new work plan presented by the Corps, and the possibility that some revenue bonds still might be used for the project are important considerations in the administration's view.

Tax consultants said the initial Internal Revenue Service Ruling didn't necessarily preclude a modified financing plan, and they believe tax-free bonds may be allowed to pay for at least part of the studies.

The power authority discussed alternatives for getting the study money — including simply writing a check to the Corps or private engineering firm — but decided to wait for about two weeks.

## Bitter Bill Clears Full Senate

Empire  
3/9

## House Susitna Vote Delayed

By The Associated Press

House Resources Chairman Bill Miles says he will not let his committee vote on Susitna dams appropriations bill until some questions are answered.

The Senate has already approved advancing the Alaska Power Authority \$8 million to continue phase one studies of the hydroelectric project and committee hearings have started on the House side.

Miles, an Anchorage Democrat, says he wants to

look at the question of hydroelectric power from a statewide perspective, and will meet with House leaders the next few days to "stake out our position."

He said that other appropriations bills for smaller projects in Ketchikan, Petersburg and Kodiak total more than \$7 million.

Witnesses at the Senate and the House hearings, many of them by teleconference, have either said the project is a critically needed bargain, or that it is foolish to invest in one largescale project to serve the majority of the state's population.

Empire  
3/6

diner, D-Ketchikan and also a member of the state affairs panel.

tion with downtown.

## House Studies Susitna Funding

By The Associated Press

The state should investigate alternatives before committing itself to the proposed \$250 million Susitna hydroelectric project, says a state lawmaker.

Kenai Democrat Hugh Malone called Monday for an independent evaluation of other energy possibilities before "the taxpayers go on the hook for \$2.6 billion."

The House Resources Committee started hearings on a Senate-passed bill to provide \$8 million in state funds for feasibility studies on the two-dam project. The hearings were to continue into the week.

"We might be down the road \$30 million and somebody says

"Wait a minute," Malone told the panel.

Malone said further study could determine if the Susitna project is better than 30 other identified hydroelectric sites, using power generated from the Beluga coal fields, using North Slope natural gas to generate electricity or any other alternatives.

Malone, House Speaker in the last Legislature, said that Legislature intended study of the alternatives.

The \$8 million would only fund a part of the \$25 million plus "phase one" feasibility studies for the project. Malone said he wants to know how much more the studies could cost.

Environmentalist Jim Brennan urged a year's delay in the feasibility study funding.

## ROSEMARY SHINOHARA



*Yes, Virginia,  
it does snow  
every year*



**JUNEAU** — Others talked about kilowatts and caribou killed, but none brought such perspective to the debate as a man named Carl Benson.

The debate about the proposed \$2.6 billion Susitna Dam project blossomed into a full-fledged legislative issue last week, and then it shriveled just as suddenly, proving Benson right.

**EARLY ON**, there was pressure from pro-dam forces to rush an \$8 million appropriation through the legislature so the state could continue feasibility studies on the dam. If work is to be accomplished at all this year on one of the sites it must be begun before the snow melts and travel across roadless federal land in the region is forbidden.

In the midst of the pressure for speedy action, Benson, speaking to a committee from Fairbanks last week during a teleconference hearing, brought a refreshing attitude. He simply pointed out that it snows every year.

"Why do we have to rush into this?" he asked. "People say we have to go before the snow melts, but we have snow every year."

**THE CERTAINTY** that it will snow every year may have been the one solid fact that those considering the project could bank on.

The House Resources Committee, whose task it was to gather facts and opinions about the state putting up the money, heard some of the dam's opponents say the proposed project is so big the railbelt region couldn't consume all the power.

It heard people say little dam sites haven't been studied enough.

**AND IT HEARD** municipal officials say towns like Anchorage and Fairbanks are going to be in big trouble within a few years without the dams, or some other major new source of power.

Finally, at the end of the week, legislators learned that the Internal Revenue Service disapproves of the plan the state power authority had in mind for using the \$8 million to borrow three times that much to pay the total cost of the studies.

Unless a brilliant new idea is brought forward, or the Susitna region has a long, long winter with a snowstorm in June, this latest IRS problem is bound to hold things up until after the big spring melt.

And that takes care of that. On to the next issue.

**Daily News to tell** ~

# IRS ruling called threat to Fairbanks electric plan

News-Miner Bureau

JUNEAU—An Internal Revenue Service ruling that has jammed up funding for a Susitna hydro-electric study may jeopardize a proposed electrical transmission line tying together Fairbanks and Anchorage as well.

The double-tower line is perceived as a viable project whether or not the two Susitna dams are built. It is designed to help float peak power surpluses between the two population centers.

But Eric Yould, executive director of the Alaska Power Authority, told members of the Alaska Rural Electric Cooperatives Association Monday, "We

are going to have IRS problems in the future, and they will affect that inter-tie as well."

The power authority, to pay for Susitna construction and possibly the \$25 million preliminary study for it, had been counting on selling tax-free revenue bonds. That would mean a savings of three interest points.

But IRS last week said it would turn down the APA request for the tax exemption.

Sen. Mike Gravel, D-Alaska, told a group of legislators Monday that the ruling was more dangerous to the larger \$2.6 billion dam project because

(See SUSITNA, page 5)

## SUSITNA . . .

(Continued from page 1)

of its tenuous economic viability, than to the initial study.

The transmission line, to stand alone, would have to be economical however, and Yould said the APA has determined—assuming the tax exemption was approved—it was viable.

Meanwhile, Yould said both the governor's Susitna task force and the APA board of directors will meet in the next few days to discuss the project.

He told the rural coop representatives that the Legislature now has two choices if it wants to go ahead with the study. It can appropriate the \$8.2 million as requested by Gov. Jay Hammond to start it up, hoping that federal legislation comes through to provide federal reimbursement.

Or, said Yould, the Legislature can forget the federal government and pay for the whole study itself.

Fbks  
N.M. 3/13

Empire  
2/13

# Susitna Funding Decision Pending

By The Associated Press

Top officials huddled but made no decision today on whether to pump money into newly troubled feasibility studies for the Susitna hydroelectric project.

The Internal Revenue Service has balked at a state financing plan for the engineering work, and lawmakers are now considering whether to keep alive a proposal to spend \$8 million in state funds for the first of the studies.

Alaska Sen. Mike Gravel told lawmakers that he is optimistic the studies and project can proceed, and he warned that loss of momentum could bog down the entire \$2.6 billion two-dam undertaking.

Gravel remained confident that federal legislation involving the project can clear Congress.

But state Transportation Commissioner Bob Ward, active on the Susitna issue, took a more cautious approach to the studies

in light of the revenue agency ruling. But Ward wouldn't say if the state administration plans to reverse its stand and oppose state spending for the studies this year.

Meanwhile, key lawmakers say they don't know when they will make a decision on the funding issue.

"We don't know where we're going. We're still looking at options," said Eric Yould, executive director of the Alaska Power Authority.

Yould, Gravel and state House and Senate leadership discussed the issue in a quickly called meeting, but the gathering broke up without a resolution of the problem.

Yould said the power authority itself must now reassess if it wants to Legislature to proceed with the funding.

The power authority has been seeking \$8 million for the first of the \$25 million, 46-month study by the U.S. Army Corps of

Engineers.

Yould has been pushing for quick funding so equipment could be moved to the sites.

Yould said even with the new snag, the Corps still could carry out critical studies required to keep the 46-month timetable.

The \$8 million has passed the Senate, and is now in the House Resources Committee. Resources Chairman Bill Miles, D-Anchorage, said he didn't know

when the committee would have its next hearing on the proposal.

Under the financing plan as originally proposed, the Legislature would have appropriated \$8 million to use as collateral in borrowing funds for the study.

But Yould said the Internal Revenue Service will not rule favorably on plans to allow the authority to pay interest on money borrowed to finance the study.

Fbks N.M. 3/21

# Corps holds out hope for Susitna

JUNEAU (AP)—Although funding has bogged down, the U.S. Army Corps of Engineers says it still can accomplish a full year of Susitna River dam studies beginning about May 1.

But the Corps says lack of snow cover will not permit ground access to one of the two sites proposed for the hydroelectric dams.

Meanwhile, top state officials huddled here Tuesday in an effort to resolve federal roadblocks to the state's financing method for the \$25 million feasibility study.

The officials reached no decisions, other than to return to the Internal Revenue Service and hope for a more favorable ruling.

Alaska Power Authority officials earlier told the governor and Legislature that this year's proposed "phase one" feasibility studies would be in jeopardy if the project wasn't started before breakup.

But Corps Col. Jim Fero outlined a new work schedule at the meeting.

"We feel the project is salvageable for this year, just by re-arranging our schedule," he said.

The future of the studies is still uncertain, with both the administration and the state House waiting to see if financing problems can be straightened out before throwing support behind continuing the studies this year.

The project has been on hold since IRS recently informed the Alaska Power Authority that it couldn't use an \$8 million appropriation from the Legislature to back the sale of revenue bonds to pay for the studies.

The power authority's directors, plus lawmakers and other officials, met to debate what to do about the four-year study for the \$2.6 billion project in the wake of the IRS ruling.

The \$8 million appropriation had the support of Gov. Jay Hammond and had

already cleared the Senate at the time of the ruling. But House Resources Committee Co-Chairman Bill Miles, D-Anchorage, told the power authority meeting that the House has numerous questions about the proposal and has adopted a "show me" attitude.

State Transportation Commissioner Robert Ward told the meeting that the governor's Susitna task force was unenthusiastic about pushing the dam studies appropriation through the Legislature if the revenue bonding plan fails through.

"If direct appropriation is the only alternative, there was reluctance expressed that the task force would not want an \$8 million appropriation to compete with other capital needs this year," he said.

But he said the new work plan presented by the Corps, and the

(See SUSITNA, page 7)

## SUSITNA . . .

(Continued from page 1)

possibility that some revenue bonds still might be used for the project are important considerations in the administration's view.

Tax consultants said the initial IRS ruling didn't necessarily preclude a modified financing plan, and they believe tax-free bonds may be allowed to pay for at least part of the studies.

The power authority discussed alternatives for getting the study money—including simply writing a check to the Corps or private engineering firm—but decided to wait

for about two weeks while tax experts talk again with IRS.

The Bureau of Land Management is apparently going to let the Corps haul equipment to the Devil Canyon site on an old Bureau of Reclamation trail, Fero said.

Devil Canyon site is about 20 miles from the other dam site—Watana—and equipment and people could be ferried between the sites, he said.

## JUPITER . . .

(Continued from page 1)

AVN  
Avor  
Bally  
Balt  
Bnk  
Baus  
Baxt  
Beat  
Beke  
Bell  
Bend  
Benf  
Beng  
Best  
Beth  
Black  
Blick  
Boein  
Boein  
Boiset  
Borde  
Borg  
BosEd  
Branif  
BristM  
BritPe  
BrnsW  
Bucy

# Susitna dam critics, backers give testimony

By ROSEMARY SHINOHARA  
Our Juneau Bureau Chief

JUNEAU—The Susitna is a beautiful, clear river for fish, a House committee was told Wednesday. "Let's have an attitude of gratitude for the way it is," said an opponent of the dam, Ada Charlton, speaking over a teleconference network from Fairbanks.

"If we have to have a damn dam... let's go ruin some other valley please," she said.

CHARLTON'S testimony was more poetic than most, but reflected growing criticism of the proposed \$2.6 billion dam project which now depends on the Alaska Legislature for an \$8 million appropriation to allow feasibility studies to continue. The 18 million appropriation

sailed through the Senate, but is undergoing more extensive debate in the House. Meanwhile, backers of the project are trying to secure funding immediately so that heavy equipment can be hauled in the Susitna River dam sites over a snow cover.

If the work doesn't begin before spring, it will have to wait until next winter because the federal Organic Act requires that roadless government land be managed wilderness until it is decided what to do with it. That means no roads can be built.

CRITICS of the project fear the \$8 million for feasibility studies will lead to an irrevocable commitment for the project to go ahead. They say the huge dams will create a surplus of power for the railbelt area, and

alternatives for smaller dams haven't been adequately studied.

But others say hydropower is important to the future of the most populous area of the state.

Tom Stahr, general manager of the Anchorage Municipal Light and Power Co., told the House Resources Committee hearing on the project Wednesday that Anchorage will be in trouble with out big new power sources.

"THERE'S NO question that Susitna will be sorely needed at the time it is built. It will not produce an energy surplus," Stahr said.

The initial costs may be high, but over its life, it will provide cheaper energy for Southcentral residents than other options, he said.

(Continued on Page 22)

Amin readies Canton hearing

ces 190

ALASKA  
MENT OF  
TATION &  
ILITIES  
ON OF  
DESIGN  
DUCTION

gustin Gymna-  
199035

44,43,000, the  
through the  
Transporta-  
ilities, pro-  
e sine con-  
sional services  
a gymnasium,  
capacity of 300  
McLaughlin  
100 Providence  
se, Alaska, for  
ment of Health  
es, Division of  
e gymnasium  
visions for bas-  
ill and tennis  
chers, locker  
exercise room  
ry areas. The  
a building will  
9,000,000. Occu-  
ding is sched-

structural, me-  
il and civil de-  
se required.

ctural/engine-  
id submit let-  
current GSA  
254 and 255,  
als, as op-  
escribe their  
is, capabilities  
on similar  
consultants  
use provide  
1 for each  
ms having  
ecord need  
of interest  
ct identity-  
soms.

led within  
a Central  
orage) of  
of Design  
umittals  
olved at  
han 3:00  
Prefer-  
ms with  
this re-  
sely if  
ould be  
lones at

Chief  
in  
ees)

## ● Susitna dam

(Continued from Page 1)

Coal—the most likely alternative to the Susitna project — would take a higher toll in pollution, Stahr said. Answering criticism of other witnesses that alternatives to build smaller dams have not been studied, Stahr said, "lots of studies have already been done. No new information can be found from further studies."

MOST OF the Critics of the dam project disagreed, saying there are numerous sites suitable for smaller dams that haven't been considered.

State Rep. Chat Chatterton, R-Anchorage, challenged one witness to "show us these sites." The witness, Bo Bassett of Anchorage, said he would send the legislator a map showing 34 potential hydro sites in Southcentral Alaska.

Another witness suggested that if the legislators aren't aware of the alternative dam sites, that is proof they don't have the information needed to make a decision.

JOHN NICHOLS of Anchorage said the study should be done, but there should be a year's delay.

"I'm concerned about the possibility of the state embarking on this project with blinders on," Nichols said.

Nichols and several other witnesses said if the study is done, the U.S. Army Corps of Engineers should not be the one to do it. Since the corps would probably build the dam if the project is ever finally approved, it has a vested interest in it, witnesses said.

However in earlier hearings, officials have testified that if the site hopes to get reimbursed from the federal government for the dam studies, the Corps of Engineers must be hired to do them.

HOUSE RESOURCES Co-Chairman Bill Miles, after listening to some 30 witnesses Wednesday, told the Daily News that the committee will probably act on the Susitna bill soon, but it will consider other proposed dams in Alaska as part of the total package.

Miles said he personally has some doubts about the project, "but the main problem is the fact that both Anchorage and Fairbanks are going to be in rough shape. Cheap gas is going to be gone from Anchorage within a couple of years."

The dam project was proposed by the Corps of Engineers in 1976. The phase I study program is expected to total \$25 million, including the \$8 million appropriation for the first year.

U.S. SEN. Mike Gravel is sponsoring legislation that calls for the federal government to reimburse the state if after four years the studies show the project shouldn't go ahead. The bill was killed along with the d-2 lands bill late in the 1976 session of Congress, but Gravel hopes it will pass this year or next.

Instead of waiting for the federal money, Gov. Jay S. Hammond is asking the legislature to make an appropriation to the Alaska Power Authority now to fund the first year's study.

But wait, that's not all. In the original House and Senate versions of the d-2 bills, the Susitna was one of 14 Alaskan rivers to be added to the federal wild and scenic river category.

Susitna was eventually dropped from both versions. But when Interior Secretary Cecil Andrus last fall withdrew 110 million acres into wilderness study classification for three years he threw in the original 14 rivers.

The new versions of the Alaska lands bills in the House also say BLM should run a study concurrently with the Corps' effort to determine what would be done with the Susitna.

**Q. But what about the land?**

A. Most of it will end up owned by Native corporations. The state will then have to negotiate, and trade or buy. In 1975 the Corps said the reservoir land was worth \$25 million.

Whatever the final price, Yould says the cost of the land will not be what makes or breaks the project, because it will be dwarfed by the total bill.

**Q. Some expensive undertaking, anyway. So why do we need it?**

A. Remember we said the dam could provide 6.1 billion KWH a year, and the present Anchorage plus Fairbanks residential and small commercial load is slightly less than half that.

Yould says that by the year 2000 the load requirement should triple or quadruple. Even if both dams went on line in 1994, there could still be excess demand, he says. Assuming that is true, it would mean there would still be a need for coal- or natural gas-fired electric generating capacity.

**Q. Even if we could use all that power, would it really be cheaper than other energy?**

A. According to Yould, the projected mill-rate cost of power from the two-dam complex would be 40 mills per KWH, compared to coal costs of 52

mills, in today's dollars.

Throw in a decade and a half of inflation, and hydropower may be roughly four-fifths as expensive as coal-fired power.

**Q. Anything else you haven't told me?**

A. Something Gravel told a legislative committee in Juneau this week probably drives home the fact that, even if the studies say Susitna is both environmentally and economically feasible, there is going to be a huge battle.

Gravel pointed out that the dams are at the top of the national "environmental hit list." That may be more for their possible impact on the Lower 48 than on the Alaskan wilderness.

"Dam" is a dirty word in most of the country. They aren't getting built. But if this one gets by, Gravel said, the environmentalists fear it could be the crack that bursts the present virtual moratorium on dam-building.

**Q. So what do we do with this complicated mess?**

A. Some say abandon it: Why should we mimic the energy mistakes of Lower 48? Why don't we wait for alternative energy sources to be developed? Dams are only acceptable on a small-scale basis. Leave ecosystems alone. Stop.

Hammond, however, has firmly supported the effort to move ahead with the study. We'll see if the Legislature agrees. And remember that phase only about a quarter of the engineering and designing effort envisioned for the entire project, though its completion would allow construction to begin.

The 46-month phase I is split into three parts: preliminary screening, detailed feasibility studies and detailed design for Watana, its access road and the transmission system.

Says the Corps, "At the end of any of the three program steps, Susitna hydroelectric development could be determined to lack economic or environmental justification" and the project could be terminated.

## Gas on U.S.-Mexico talks agenda

WASHINGTON (AP)—Administration officials said today they expect negotiations to begin within one or two months between the United States and Mexican governments on guidelines for the U.S. purchase of natural gas from its neighbor across the border.

The move would mark an unusually direct intervention by the U.S. government into import negotiations, which had generally been left up to private purchasers.

The question of natural gas sales was one of the sore points in U.S.-Mexican relations which Carter had hoped to heal in his third day summit with President Jose Lopez Portillo, said the official who accompanied the president on the visit.

The United States also agreed to discuss with Mexico the idea of a triangular swap of oil, to bring Mexican oil into the United States while relieving the transportation problem confronting oil from Alaska.

### or develops Home Treatment to

Alaska will hold Alaska lands legislation in March 10.

The day-long hearings will begin in the morning on the University of

Office Building, Room 202, Washington, D.C. 20515, Phone (202) 225-7307.

In addition to the hearings, the subcommittee members and staff are expected to visit the North Slope and some of the areas proposed for

w  
fi

## SUSITNA DAMS . . .

(Continued from page 1)

then along came d-2, Gravel killed the Alaska lands bill and environmentalist Rep. John Seiberling of Ohio killed the water resource bill.

### Q. What happens now?

A. The state could wait for a new federal bill. Gravel told the Legislature this week, "I can assure you there will be no water resources bill without a Susitna." He predicted it will pass within "60 to 90 days . . . certainly this year . . . or if not, next year."

Gov. Jay Hammond decided not to wait. He has asked the Legislature for an immediate \$2.8 million appropriation for the first year of phase I.

### Q. Where is that request right now?

A. A bill to appropriate the money and a resolution to approve the APA selling revenue bonds to pay for phase I were passed out of the Senate Resources Committee Wednesday. They face an important Senate Finance Committee hearing Monday.

### Q. If the Legislature does shell out the money for the bond reserve, will it ever get its money back?

A. If Gravel gets his amendment passed, and the project ends up a no-go, the feds will refund the money. If the project goes ahead, the APA will eventually pay for everything, including the study, by selling revenue bonds.

### Q. Any Hitches?

A. One. Part-way through the study period, the APA could decide that a private firm would finish faster and more cheaply than the Corps. If that firm—and there are several available—were substituted, the state would void the cooperative agreement with the Corps and would not be eligible for the refund as provided by the yet-unpassed water act. So if the project fell through, the Legislature would be holding the tab.

### Q. How soon does the Legislature have to act?

A. The Corps says right away, if the study is to begin this year. The Bureau of Land Management has said the Corps must move into the site during winter conditions to minimize damage to the landscape. That means the Corps has to get rolling by early March into the area, which sits east of the Parks Highway about half-way between Talkeetna and Cantwell.

### Q. Speaking of environmental damage, and putting aside the full project's impact, what are the environmental risks to allowing the Corps to conduct the study?

A. The Corps says it needs a 5,000-foot runway to airlift bulk samples out for testing. It also wants to install a 70-man camp. BLM is writing an environmental assessment of the phase I impact on the area. That is due in a matter of days, and should conclude whether or not a full environmental impact statement is needed before phase I is begun. If an EIS is required, it would shelve the study for at least

another year.

### Q. What about if we end up building the dams?

A. According to Eric Yould, APA executive director, one of the biggest concerns is "the integrity of the project in a highly seismic area." Or, as a preliminary study document says, the project is "located in an area of major faults."

The study said that "during the period of record, through the end of 1970, 262 earthquakes had been recorded within a radius of 150 miles of the proposed Devil Canyon site. Of these, 229 had a magnitude on the Richter scale of less than 5.3, while 20 were between 5.3 and 7.0, 11 were between 7.0 and 7.75, and two were greater than 7.75."

The seismic situation should be re-evaluated using recent advances in seismic technology, the study recommended. About \$1 million of the phase I money is to go into direct seismic study.

Another big concern expressed by the public so far, Yould said, is that a "glut of power" will in turn lead to a glut of intensive industry along the railbelt.

"To be perfectly honest, I think that's the least of our concerns," he said. Assuming the hydro power would be cheaper than alternative power sources, it would have to be really cheap to compensate for the high cost of labor and construction in Alaska, Yould says.

### Q. OK, but what about the animals?

A. Watana, the larger reservoir, would cover 43,000 acres and stretch 54 miles. Devil Canyon would inundate 7,550 acres over a 28-mile stretch of river. One person who testified this past week said, "The Susitna basin is the only really good game location for Fairbanks, where people can drive up and hunt."

Both moose and caribou inhabit the area. Yould says the anadromous fish do not come up as far as the dam sites, so their cyclic pathway would not be blocked. The dams would affect flow, temperature and sediment, but Yould says that does not necessarily mean a negative effect.

But before making any claims, he says, he wants to see the results of the phase I study, which will address the fish and caribou as well as the rocks.

### Q. You're talking about an awful lot of acreage. Considering all the land problems we have, are there any conflicts in this area?

A. You guessed it. Almost everybody's in on the act. A majority of the reservoir area was claimed by six Native village corporations soon after the Corps announced its site choices in 1976.

That land is to be conveyed to Cook Inlet Region Inc., which will in turn convey it to the six villages. In addition, Cook Inlet Region has overselected the entire area, as has the state.

Doc  
**Rinse**



**(EDITOR'S NOTE:** Both state and federal legislative action is being considered to get the proposed Susitna hydroelectric project moving. Today, reporter Charlie Spencer from the News-Miner's Juneau bureau examines the massive project.)

**Q. What is the Susitna River dams project?**

A. As proposed by the Army Corps of Engineers in 1976, the project would eventually consist of two dams on the upper Susitna River. The first dam, Watana, would go in about 100 miles upstream from Talkeetna.

An earthfill structure, it would be 810 feet high and would create a reservoir 54 miles long. It was proposed to go on line in 1994.

Next would be the Devil Canyon dam. It would be 635 feet high and would be built of concrete. It would sit 32 miles downstream from Watana, and is envisioned to go into operation as soon as needed—tentatively about 1999 but perhaps concurrently with its big sister if the need were there.

A transmission line would be strung from Fairbanks to Anchorage as part of the project. Hooked into the power plants at both dam sites, it would take about 75 per cent of the power south and the rest north.

The two dams could produce 6.1 billion kilowatt hours "firm annual energy." The railbelt's present consumption, excluding industrial and national defense energy, is about 2.8 billion KWH.

**Q. How much would the project cost?**

A. In 1975, the corps said \$1.5 billion. The projection now is \$2.6 billion.

**Q. Where are we now with the project?**

A. Waiting on a phase I study for which there is at the moment no money.

**Q. Who would pay for the study?**

A. Originally the federal government was to pay for the whole thing, according to the 1976 Federal Water Resources Act. But the state's leaders soon realized there was probably no way the federal government would end up paying so much to build dams to benefit so relatively few people.

So the Legislature created the Alaska Power Authority to finance this and other hydro projects. Then proponents had to figure out how to finance the phase I study, now estimated to run 46 months and \$25 million. **Q**

Sen. Mike Gravel went to work on the Water Resources Act that was due to pass in 1978, putting in language that would set up two pots of money.

The new APA could sell revenue bonds to raise the \$25 million, and the federal government would set aside a like amount. If the study showed after four years that the project wouldn't go, the feds would reimburse the state.

The language also said the feds would pay for cost overruns resulting from errors of God or miscalculations by the Corps of Engineers in the study. But

Saturday Daylight  
11 hours 16 minutes  
Sunrise 6:33 a.m.  
Sunset 5:49 p.m.

ALASKA'S LARGEST NEWSPAPER

# The Anchorage

THE  
Anchorage Times

COMPLIMENTARY COPY  
from the  
ANCHORAGE TIMES  
for  
MEMBERS OF THE LEGISLATURE  
flown to Juneau courtesy of  
ALASKA AIRLINES

Saturday Tides  
High  
4:43 a.m. 27.7 ft.  
4:31 p.m. 26.8 ft.  
Low  
10:58 a.m. 4.5 ft.  
11:19 p.m. 0.1 ft.

Volume 65 No. 67 78 Pages ★

© 1979 The Anchorage Times

Anchorage, Alaska, Friday, March 9, 1979

U.S.P.S. 000000

Single Copy Price 25 Cents

# SUSITNA PLAN HITS SNAG



FISH AND GAME OFFICIALS DEFEND WOLF HUNT

Alaska Department of Fish and Game officials Ron Summer-ville, left, Bud Burriss and Bob Henman, right, consider questions from members of the Board of Game at today's hearing on aerial wolf hunts. The special meeting was called after the

planned wolf control program came under heavy criticism while Alaska legislators were in Washington, D.C., last week to lobby on the D2 land issue.

## IRS Rejects State Proposal For Financing

By MEAD TREADWELL  
Times Juneau Bureau

JUNEAU — The Internal Revenue Service has shot down a financing plan for the engineering feasibility study of the proposed Sustina hydroelectric project.

Core drilling at the site of one of the two dams has been set back for another year, Alaska Power Authority Director Eric Yould said today.

The power authority asked the House Resources Committee, which was rushing to pass an \$8 million appropriation by a deadline of next week, to hold off on passage of the legislation.

"We don't think it's prudent for the Legislature to proceed forward with a defunct financing scheme," Yould said.

Under the plan, the Legislature would have appropriated \$8 million to use as collateral in borrowing funds for the \$25 million, 46-month study by the Army Corps of Engineers.

But the Internal Revenue Service notified Yould Thursday that it would not rule favorably on a request which would allow the authority to pay the interest on money borrowed to finance the study.

"It pretty well shot us out of the water for this year," Yould said.

The power authority director said he would talk with Sen. Mike Gravel this weekend and meet with legislators Monday to see if an alternative financing plan was possible this year.

"But I don't think the Legislature can act that fast," Yould said.

Gravel failed last year in an attempt to get a federal appropriation for the study past President Carter and his Senate colleagues. While Gravel continued his attempt, Gov. Jay Hammond proposed that the state indirectly finance the first year of the study, with the hope that the federal government would take over funding later.

The March 15 deadline for a state

## Susitna Plan Hits A Snag

(Continued From Page 1)

financing plan was necessary because the Bureau of Land Management would not allow construction of an airstrip at the Watana site where an earthfill dam of the Susitna River has been proposed. A study had to be approved before breakup, when drilling equipment could be taken in across frozen snow-covered ground.

Yould said it is possible that some core drilling would begin at the Devil Canyon site, where a 635-foot dam is proposed.

"We could get mobilized this summer and get some actual core drilling done there," Yould said, "but I don't think we can spend the full \$8 million this year."

Despite testimony by environmentalist groups asking for delay or refusal of the study, the Senate quickly passed the Susitna legislation two weeks ago. After several hours of testimony this week, House Resources Committee chairman Bill Miles was slated to take up final consideration of legislation Saturday.

"The Legislature has bent over backwards to meet our time frame," Yould said. If the Legislature decides to push on with the study in the next week, he continued, the state would have to finance directly the \$25 million phase one study and use a private firm, rather than the Army Corps of Engineers, to complete it.

In this week's hearings, many were concerned that the Army, which would eventually build the project, might have a conflict of interest in carrying out a study to see if the dam was feasible.

As chairman of the Environment and Public Works Subcommittee on Water Resources in the Senate, I introduced the Water Resources Development Act of 1979 last Wednesday. It authorizes about \$1 billion in water and navigation projects of the Army Corps of Engineers. Five sections of the bill are of particular importance to Alaska:

-- The four-year preconstruction study (Phase I) of the Susitna Hydroelectric Project is directly authorized in the bill, superceding the need for approval by the Office of Management and Budget.

-- Changes are made in the Hydroelectric Power Development Act of 1976, under which the Susitna dams would be built. The changes make it clearer at what point the government guarantees of the Corps' work would be triggered. The changes were requested by bond specialists. Construction of the dams would be paid for by the sale of state bonds. Upon completion, the dams would be owned by the state power authority.

-- Construction of the addition at Kodiak harbor, for \$8.6 million, is authored.

-- An increase is made in the amount the government may pay toward construction of small boat harbors. This continuing authority goes from \$2 million to \$3 million per project. The balance of the cost of any project would be paid by the local community. At the present time, the Corps is studying plans for a small boat harbor in Juneau with a total price tag of \$5 million. In other communities of Alaska, as well, the increased federal share would make small harbors more feasible.

-- A study of riverbank erosion in Bethel is authorized. The Corps is already looking into emergency bank stabilization -- the new study would look at controlling erosion over the long term.

In addition, later in the week, I wrote to the Office of Management and Budget and to the Treasury Department concerning the Susitna Project. Treasury, through the Internal Revenue Service, must approve the tax-exempt status of bonds to be sold by the state in financing the Phase I study. And the OMB must authorize the Corps to do the work for the state.

**UNITED STATES SENATE**

WASHINGTON, D.C. 20510

**PUBLIC DOCUMENT**



**U. S. S.**

1002.55 XA  
MARK WITTOW  
ROUTE 6, BOX 3501  
JUNEAU, AK 99803