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In 1981 the legislature again passed electric power legislation, known as SB 25 and SB 26. The legislation, discussed in Section 9.3, relates to the Power Authority.

The above discussion is not intended as either a comprehensive review of history of electrical power planning and development in the State of Alaska or a detailed review of the legislation relating to the Power Authority. Nonetheless, several relevant observations can be drawn. First, involvement by legislative and executive branches of the state government in the planning, analysis, financing, and direct ownership of power generation and distribution facilities is a recent phenomenon. Second, although recently involved, the State has clearly assumed a major role in these activities. It has preempted significantly most other efforts by federal agencies and by individual utilities. Third, almost yearly the state's involvement has been expanding significantly, in terms of dollar volume, complexity, and geographic area. Fourth, the specific means and parameters that define that involvement have changed frequently.

These observations suggest that the analysis of the 1981 legislation and its impact upon alternative energy projects, which follows, must be viewed with some skepticism. Most likely, these laws will be changed before either the Susitna Project or some alternative can be implemented. Furthermore, because the State's involvement has been so fluid, if an alternative is perceived publicly as preferable to the Susitna Project, the alternative most likely could be implemented directly by changes in the current statutes.

Federal, state, or local governments have become involved in the construction and ownership of power generating facilities for four general reasons. First, government involvement in the decision making process and ownership of production facilities may be appropriate where market imperfections prevent a utility from building the generating capacity it needs to meet demand. Such imperfections do exist in the capital markets and also may be caused by regulatory risks. To address such imperfections, the simplest approach is for the government to make available to the utility a grant or loan to provide a direct source of capital. Normally, the government entity would not have to take over the decision making process or own the facility simply to correct capital market imperfections.

A second reason for government involvement is to give recognition to "externalities" that result in public benefits but which are not factored into

an individual utility's decision making process. Many projects undertaken by the federal government are justified on this basis. For example, construction of Tennessee Valley Authority dams was undertaken when public sentiment viewed the creation of construction jobs as a public benefit in itself. In this instance, the government was willing to spend money to put people to work on a construction project even if a private entity was not willing to build the project. For dams built in the West, the externalities that constitute public benefits justifying the expenditure of public dollars include making water available for irrigation and for protection against flooding. Although a private utility might not chose construction of a hydroelectric plant if cheaper energy sources are available, the hydroelectric plant may be the "best" plant when consideration is given to the additional public benefits it creates.

A third reason for government involvement is the decision to effect income transfers through the distribution and consumption of power. If the government wishes to subsidize the consumption of power, it may construct a plant and sell the power below its free market price. The result will be a subsidy to electricity users. Such a subsidy can result in income transfer either to end-use consumers, to the utility distribution companies, or to both.

A fourth reason for government intervention in the decision making or production production process is simply to alter the free market result for political or policy reasons. Thus, if a private utility will generate electricity using methods "A" and "B" and the government prefers methods "C" and "D", it can intervene to ensure use of methods "C" and "D." The government's preference for "C" and "D" might result from objectives already discussed (such as income redistribution) or it might be the result of noneconomic objective. For one example, a noneconomic objective might be the desire to create a local market for coal. If this were a government objective, the government might wish to encourage coal-fired power generation even if that method was not the least-cost method.

9.3 THE CURRENT STATUTORY FRAMEWORK IN ALASKA

The legal authority for the state to implement the electric energy plans is contained in the recently adopted legislation that revises the legislation creating the Alaska Power Authority. The provisions creating the Alaskan Energy Program, A.S. 44.83.380 *et seq* (SB 25), are especially important. This statute creates a fund, the revenues of which may be used for, among other

things, reconnaisance, feasibility and construction of power projects (including all related costs of such construction). The fund may not be used for operation and maintenance which, as discussed below, creates a significant bias in planning. Before the revenues can be used for constructing a project, the project must satisfy the following conditio

1. The project must be economically feasible and after construction, must be able to provide revenue sufficient to return annually to the State five percent (5%) of the amount that the Power Authority has spent from the fund for the project.
2. The project must provide the lowest reasonable power cost to the utility in the market area for the estimated life of the power project, whether operated by itself or in conjunction with other power projects in the market area.
3. The project must operate either on renewable energy resources such as hydroelectric, wind, biomass, geothermal, tidal, solar, temperature differentials of the ocean, or coal, peat, waste heat, or fossil fuel.
4. The project must be approved by the legislature and funds appropriated by the legislature.

Because these limitations are defined primarily in economic and political terms and not in terms of engineering or hardware, the statute appears to have enough flexibility to permit the Power Authority to adopt any of the four alternative electric energy plans, provided that the plan meets the tests of the statute. The exception to this conclusion is the plan option that requires large expenditures for conservation of electrical energy. The statute appears to contemplate construction of facilities that will generate electricity. The statute may be interpreted so that certain types of conservation programs could be classified as "projects;" however, this approach is doubtful. Implementating the conservation option appears to require new authorizing legislation.

Although the requirements of A.S. 44.83.384 et seq. do not preclude implementing any of the energy option plans (except perhaps conservation as mentioned above), the circumstances under which the requirements dictate a particular option as the only authorized option cannot be determined with

certainty. Lack of certainty results because the requirements are too general and sometimes contradictory to judge definitively how the courts will interpret the statute.

The relationship between the requirements set forth in A.S. 44.83.384 (conditions 1-3 above) and the requirement of legislative approval contained in A.S. 44.83.380 is not clear. Legislative approval appears to be a separate, independent requirement and therefore should not be sufficient to authorize construction of a project that does not also satisfy the requirements of A.S. 44.83.384. On the other hand, the legislative approval must be in accordance with A.S. 44.83.185, which requires passage of a law authorizing the project. Most likely the legislation authorizing approval will either make explicit or implied amendments, or if necessary, repeal the requirements of A.S. 44.83.384 as to the project the legislation authorizes. If the legislature takes this action, then any of the options are possible if it is approved by enactment of a law. While this analysis seems logical, it renders the requirements of A.S. 44.83.384 illusory, and for that reason, a court might conclude that a project is not properly before the legislature for approval until the requirements of A.S. 44.83.384 are met.

Application of the standards set forth in the statues requires interpretation by the Power Authority. For example, the requirement that a project "be able to provide revenue sufficient to return annually to the State five percent (5%) of the amount that the (Power Authority) has spent from the fund. . ." is ambiguous. If this requirement is interpreted to mean that a project must return five percent (5%) of the amount spent, almost no project could qualify because the price the Power Authority charges for power pursuant to section .490 expressly excludes capital recovery. This provision must mean that five percent (5%) would be returned if a full price is charged. However, even this interpretation raises questions. What price and demand assumptions should be made to determine if the project meets the requirement? Is it realistic that a project large enough to meet demand at a low price will also be able to sell enough power at a much higher price to return five percent (5%) per year? What rate of return should be assumed for invested capital? Also, if the State has a 100% equity position in the project, this requirement necessarily implies a 20-year amortization of the project.

The statute requires that a project must provide the lowest price by itself and when operated in conjunction with other power projects in the market area. However, a project may be lowest in only one situation, not both. All

of these uncertainties are problems that are frequently encountered and handled by planners and engineers when making decisions about future generating additions. Once assumptions are made about market area, future demand, project lifetime and other parameters, conclusions can be drawn about which project will provide the "lowest" cost. In the current statute uncertainty exists, however, because it authorizes projects only when certain criteria, such as "lowest cost," are met. It does not provide guidance on the assumptions that are to be used when arriving at the final determination.

Because the statutory requirements are technical and require the Power Authority in determining whether they are met, its determination should be final unless a court finds that no reasonable basis exists for the their finding. This standard maximizes the Power Authority's flexibility to evaluate alternatives, but does not give the Power Authority complete freedom to select whatever option it wants. If the option or base case is not justified in terms of the statutory requirements, interpreted in a reasonable manner, the option or base case could not be implemented under the existing statute.

In the statute, other provisions that seemingly are unrelated to the statutory standards create bias in favor of a particular generation option. Because the Power Authority obtains the needed funds for a project from the legislature and because the project is expected to be subsidized partially with General Fund revenues, no direct market accountability exists for whatever option the Power Authority undertakes. On the other hand, the Power Authority, as an agency of the state, must be accountable to the legislature, the governor and the people of the state and, to the extent this political accountability is a direct substitute for market accountability, the Power Authority can be expected to seek out the least-cost approach just as a private utility would. Conversely, if the least-cost objective conflicts with other political objectives, the Power Authority may seek to accommodate both the economic and political goals to the maximum extent feasible.

Section .490(b)(2) of SB 25 states that if the legislature has not appropriated $5 billion to the fund, the wholesale power rate shall be the higher of either 10% of the amount the Power Authority has invested in power projects or the amount of revenues necessary to pay operation and maintenance (O&M) costs plus debt service plus safety inspections. If O&M costs, debt service and safety inspections are less than 10% of investment, which is quite likely, then purchasing utilities will want the legislature to appropriate the

$5 billion to satisfy the condition contained in (b)(2) since they then will avoid the risk of the higher wholesale power costs. To meet the $5 billion appropriation requirement, the legislature will have to select those power projects and energy options that have the greatest initial capital cost. Of the option plans identified in this study, only those including construction of Susitna appear to meet that requirement. The purchasing utilities can be expected to work aggressively, in their own self interest, to persuade the Power Authority to choose an energy option that includes construction of Susitna, even if Susitna is not the least-cost approach.

The pricing provision also creates a second kind of bias. Assuming the legislature does appropriate $5 billion, the wholesale price the Power Authority charges to purchasers is a function of O&M costs, safety inspections and the financing approach used by the Power Authority. Under this provision, the price to the purchasing utilities will be lowest for those projects having lowest O&M and safety inspection costs, regardless of capital cost, when the project is funded by direct appropriation. If the least-cost approach is one that includes projects with higher overall long-term O&M costs but less initial capital investment, the least-cost approch will not be favored by the purchasing utilities because it results in greater power costs to them (and less cost to the State). This bias in favor of the facility with the lowest O&M is significant when considering alternatives. Those facilities, such as hydroelectric projects, with high initial capital investment but low O&M costs, will be favored by purchasing utilities because the capital costs are subsidized by the State but O&M costs are not. On the other hand, projects, such coal-fired plants, which have lower front end costs but higher O&M costs, might be the least-cost project (in present dollars) but will not be favored by the purchasing utilities because it could result in higher cost power to them and to their customers because the State subsidy will be less.

The extent to which the statute's pricing provisions create, for the purchasing utilities, objectives that conflict with the criteria contained in other parts of the statute cannot be known until additional economic analyses of the options are undertaken. Likewise, the extent to which the Power Authority's analysis will be directly or indirectly inflenced by the desires of purchasing utilities is unknown. Note that the Power Authority is required to average prices statewide for all projects. This requirement means that all purchasing utilities, not just Railbelt utilities, will be impacted by the

Power Authority's decisions. All utilities which do, or may, purchase power from the Power Authority's, therefore, will have the same objectives of prefering those projects that receive maximum State subsidy whether they purchase power from a particular project or not.

The 1982 amendment (HB 9) changes the single, shared wholesale price to a project-specific cost based on each project's proportionate share of the outstanding debt for all projects. In addition, a "cap" assures that the early projects will "phase-in" to paying their proportionate shares, with other projects making up the difference.

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

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January 5, 1983

MEMORANDUM

TO: Representative Brian Rogers

FROM: Jack Kreinheder
Research Staff

RE: Status of Susitna Project Studies
Financing and Power Sales Proposals
Research Request 82-157

You requested that we monitor and report on the progress of studies and on recent events related to the proposed Susitna hydroelectric project, particularly those studies dealing with alternatives to Susitna and Susitna fisheries impacts. You also asked that we review new developments in Susitna financing and power sales contracts.

THE KEY ROLE OF OIL PRICES AND STATE REVENUES

The outlook for future oil prices is one of the most important and controversial issues regarding the Susitna project today. As you know, the power demand forecasts and the power cost analyses presented in the Battelle Railbelt Electric Power Alternatives Study and the Acres Draft Susitna Hydroelectric Feasibility Report were developed before the recent downturn in oil prices and State revenues. According to Battelle and some other analysts, this downturn, coupled with State forecasts of oil prices which are much lower than earlier projections, indicates that Railbelt power demand and the cost of thermal generation are likely to be substantially lower than projected by Acres and the original Battelle report. These factors could reduce or eliminate the economic benefit of building the Susitna project, and also make power marketing and project financing more difficult.

Others, including Acres and the Power Authority, maintain that the consensus among nationally-recognized energy forecasters is for continued increases in the real price of oil averaging about 2 percent annually, which is the figure used in the Acres and Battelle reports. Thus, the analyses in these reports, which demonstrate that Susitna is the lowest cost source of electrical power for the Railbelt, remain valid.

The price of oil and other fossil fuels is important in evaluating any proposed hydroelectric development throughout the world because this

price usually determines the "base case" cost of power against which a new hydro project is compared. However, petroleum prices are even more significant for the Susitna project because of the strong link between petroleum prices, State revenues, and economic activity in the Railbelt. In addition to affecting relative power costs, oil prices also influence load growth and the fiscal capacity of the State to appropriate the $2.3 billion (in 1982 dollars; $3.5 billion in actual appropriations) which was estimated by Acres to be necessary for financing Susitna.

The economic feasibility of the Susitna project, as it is currently proposed, depends not only on the increased cost of fossil fuels, but also on substantial growth in Railbelt electrical demand. The Watana and Devil Canyon dams would produce more than twice as much electricity as is now consumed in the Railbelt. Although the output from the Watana dam could be fully utilized with only a small increase in electrical load growth (combined with replacement of retired generating units), Acres has stated that a modified Devil Canyon dam appears to be the best single-dam development plan.

The economic and population growth which is necessary to create this level of electrical demand depends significantly on the level of State spending in the Railbelt over the next 20 years. As you know, nearly 90 percent of State revenues are currently derived from petroleum taxes and royalties. Increases or decreases in oil prices translate fairly directly into similar changes in State revenues and spending, inducing corresponding increases or decreases in economic and population growth, which in turn are the primary determinants of electrical power demand in the Railbelt. Thus, the increase in power demand which is necessary to realize the full benefits of the Susitna project is also substantially dependent on future increases in oil prices (although subsidized power costs could increase demand, as discussed below).

REVISED BATTELLE RAILBELT LOAD FORECASTS

In response to concern among State officials and others that the decline in current and projected State revenues made Battelle's original forecasts of demand for power in the Railbelt too high, Battelle revised these forecasts based on current (March 82) revenue projections. These updated forecasts were issued as an addendum to the executive summary of the Battelle report. The calculations for the updated projections are approximate and much less detailed than Battelle's initial work. However, Battelle now believes that Railbelt load growth is likely to be substantially lower than originally projected.

The revised Battelle forecasts contain a number of poorly documented assumptions and calculations. The most obvious case is in the projection of State petroleum revenues. Although Battelle states that their revisions were based on Department of Revenue forecasts (apparently the March 1982 report), the revenue figures listed in the Battelle report differ significantly from the Department's. In 1990 the Battelle revenue figure is 33 percent higher than the comparable Department of Revenue projection.

The revised "moderate" and "low" forecasts of power demand prepared by Battelle are about 20 percent lower than the original forecasts for the years 2000 to 2010. In addition, Battelle states that because of factors which were not quantified in the revised load forecasts, the most likely case probably lies between the revised low and moderate cases. The midpoint between the revised low and moderate cases is about 29 percent below the original moderate or most likely case over the 2000 to 2010 period. Battelle concludes that "while still the most resistant [energy plant] to inflation once it is completed, [Susitna's] power output would be larger than the Railbelt region could readily accommodate."[1]

It should be noted that the growth rate of electricity consumption in the Anchorage-Cook Inlet area during 1981 and 1982 has been considerably larger than was forecast by Battelle in their earlier work. This recent trend has raised concern over the accuracy of the forecasting models, and has been cited as evidence that the revised Battelle forecasts are too pessimistic.

One major factor favoring Susitna which was not mentioned in Battelle's revised summary, or in the Tussing/Erickson review (discussed below), is the effect which State investment in Susitna would have on Railbelt power demand. In their original analysis, Battelle estimated that demand for Susitna power would be approximately double the level otherwise expected by the year 2010 if the State appropriated the full $5.1 billion project cost, rather than using 100 percent market financing as assumed in the base case.[2] This analysis assumed that the cost of power to consumers would reflect only the operation and maintenance costs of the project, which are very low compared to the costs of debt service under the bond financing case.

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[1] Battelle, Railbelt Electric Power Alternatives Study, Newsletter #4, December 1982, p. 13

[2] Dick Emmerman, Division of Policy Development and Planning, The Probable Effect of Lower State Revenue Forecasts on the Projection of Electricity Demand in the Railbelt, September 1982, pp. 5-6.

Based on this analysis and full State funding for Susitna, Railbelt power demand could be more than originally estimated in the Battelle Railbelt alternatives study, even with the decline in oil price and revenue forecasts. It now appears very unlikely that the State will fund the full cost of Susitna through appropriations; therefore, State investment in the project will probably have a more moderate effect on demand. In any case, this factor should be addressed in any re-evaluation of Susitna, as should the higher load growth rates discussed above.

The Power Authority is planning to contract with Battelle for a more detailed revision of their power demand forecasts, including an update of the historical power demand data used in the forecasting models. The Power Authority plans to submit a status report on Susitna to the Governor and the legislature in March 1983, as required by AS 44.83.340. The staff of the Authority believes that a more detailed revision of the Battelle forecasts is necessary to provide an accurate and realistic update on the status of the Susitna project. The contract amount would be about $30,000.

THE TUSSING/ERICKSON STUDY

In Alaska Energy Planning Studies, a report prepared for the Division of Policy Development and Planning by Arlon Tussing and Gregg Erickson, the authors review both the Acres and Battelle studies mentioned above. The principal conclusions of the report are: (1) the change in oil-price expectations since 1980 suggests that economic activity and load growth in the Railbelt will be substantially lower than projected by Battelle and Acres; (2) the Acres and Battelle estimates of Railbelt coal and gas prices are too high because they are based on export market values rather than regional market factors; (3) recent high interest rates and capital-market conditions raise concerns about the risks, costs, and financing arrangements of the Susitna project; and (4) the economic attractiveness of the Susitna project is significantly less favorable than indicated by Acres and Battelle.

While a thorough discussion of the Tussing/Erickson review is beyond the scope of this memorandum, a few observations may be helpful. On the whole, the report does a very good job of highlighting the key factors affecting the Susitna project, and generally appears factually correct. However, the authors sometimes draw conclusions based on limited data and overlook opposing viewpoints.

For example, the discussion of oil prices notes that the Department of Revenue forecasted in March 1982 that real oil prices would decline through 1998. While this is true, Tussing and Erickson did not mention

that wellhead prices were projected to rise in real terms at 0.1 percent annually in the March forecast and 1.7 percent in the June forecast. Wellhead, rather than market prices, are the determining factor in the level of State oil revenues. The 1.7 percent figure is much lower than the 4.8 percent annual increase in wellhead value forecast in June 1981, so that the overall point made by the authors is still accurate. However, it would seem appropriate to discuss forecasted wellhead prices, as well as market values.

Tussing and Erickson also seem to misinterpret the meaning of the Department of Revenue 30th percentile or "risk adjusted" revenue estimates, which are now used as the basis for the executive budget. The report states that the use of the 30th percentile figure "indicates the Department's judgment about the probability that actual revenues will be less than the figure shown."[3] The use of the 30th percentile figure does not mean revenues are anticipated to be less than the mean forecast value. Instead the lower figures are used to adjust for the greater risk or impact associated with lower than expected revenues. The lower estimates simply reflect the fact that it is more disruptive to the budget process to have lower than expected revenues than to have higher revenues, and that it is prudent to base the State budget on a revenue estimate that is more certain than the mean "50-50" figure.

In the section on financing issues, Tussing and Erickson argue that the discount rate used by Acres (3 percent) is too low, and that at a discount rate corresponding to current real interest-rate levels, even the Acres analysis rejects Susitna. In Acres review of the draft report, the firm maintained that a project specific discount rate analysis, as recommended by Tussing and Erickson, resulted in a discount rate lower than 3 percent. The authors appear to ignore the Acres comments on the discount rate issue in the final report and reach the same conclusion stated above.

Acres and the Power Authority criticized the draft Tussing/Erickson report for relying almost exclusively on the Department of Revenue oil price forecasts in concluding that Railbelt electricity demand is likely to be lower than the lowest Acres and Battelle projections. Acres cited a number of oil price forecasts by major energy-oriented firms and agencies which generally supported the 2 percent annual real increase used by Acres and Battelle for their base case analysis. Eric Yould of the Power Authority stated that on the oil price issue, Tussing and Erickson "seem to have adopted a somewhat extreme position outside the mainstream of informed opinion."

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[3] Tussing and Erickson, Alaska Energy Planning Studies, November 1982, p. 15.

Tussing and Erickson responded to these comments by noting that none of the forecasts cited by Acres were made by oil companies and that four of the eight forecasts were made by agencies with a stake in oil price increases. The authors also stated that internal forecasts by oil companies and oil-exporting nations, major decreases in drilling activity, and declines in the value of petroleum reserves all point to lower expectations of future oil prices.

Department of Revenue Forecasts

An important issue raised by this discussion is the accuracy of the Department of Revenue forecasts of oil prices and State revenues, and the role of these forecasts in evaluating the feasibility of the Susitna project. Acres and the Power Authority clearly imply in their comments on the Tussing/Erickson report that the Department or Revenue forecasts are too pessimistic, do not correspond with the projections of most reputable forecasting agencies or firms, and are not a valid basis for reevaluating the Susitna project. This situation is somewhat ironic, given the strong criticism of the Department of Revenue forecasts which was levied by the legislature and others just last spring because the forecasts were too high.

I spoke with Chuck Logsdon, Chief Petroleum Economist for the Division of Petroleum Revenue, regarding the apparent discrepancies between the Division's oil price forecasts and the much higher forecasts cited by Acres. Dr. Logsdon explained that the Division's projections are, in fact, more conservative than those of many other forecasters, in part because of the need for prudent revenue estimates in the State budget process, and because of the State's recent experience with revenue shortfalls. However, the oil price projections represent the best judgment of the Division's staff, and are not intentionally biased downward to provide a margin of error; this margin is provided by the use of the 30th percentile revenue estimates, as discussed above.

It would appear to be a difficult and confusing situation for the legislature (and the Governor) if the Power Authority's studies concluded that Susitna was feasible and properly sized, while the revenue projections on which the State budget is based suggested that excess capacity could prevent the project from being the lowest cost generation alternative.

While it may not be possible, or necessarily desirable, to reach a consensus on the oil price issue, it is important to recognize that the forecast(s) used in Susitna feasibility updates will have a major effect on the evaluation of the project. The "base case" analysis must center on one rate of growth, but the sensitivity analysis should address the effect of a wide range of oil prices on both relative power

generation costs and load growth. Ideally, the range of oil prices considered should be continuous, so that the "break-even" point can be easily determined, and so that the effect of new developments in the oil price area can be assessed.

I should mention that Susitna is not the only project affected by the oil price issue; nearly every Alaska hydro project, including those under construction, as well as planned projects like Bradley Lake, would show substantially lower benefits if projections of flat or declining real oil prices were used instead of the positive escalation rates used by the Power Authority.

Cook Inlet Gas Prices

The discussion in the Tussing/Erickson report concerning Cook Inlet fossil fuel prices, and natural gas prices in particular, emphasizes the importance of considering local market conditions and gas contracts, rather than the export opportunity values derived by Battelle and Acres. This point is supported by the recent announcement of the new Enstar gas contracts with Shell Oil Co. and Marathon Oil Co. for 470 billion cubic feet of gas at a base price of $2.32 per thousand cubic feet (MCF). Although this price is more than a three-fold increase from Enstar's current primary gas price of $0.65 per MCF, it is about 25 percent below the $3.00 per MCF figure estimated by Battelle and Acres for the cost of new gas.

The future gas price under the contracts is tied to the current ratio between gas and heating oil prices. Only if oil prices increase more than projected by Battelle and Acres would the contract gas price be more than 75 percent of the Battelle/Acres projections. Smaller oil price increases would mean lower gas prices. Thus, the future cost of gas-fired generation could be significantly less than estimated by Battelle and Acres.

In responding to the draft Tussing/Erickson report, Acres stated that the authors' rejection of Acres export valuation of Cook Inlet gas was a short-term view based on the lack of current gas export development, and did not reflect the long-time horizon for the Susitna project. It is true that it is difficult to project future gas markets and export opportunities, and it may well be appropriate to use the higher Battelle/Acres gas prices over the long term. However, the new Enstar contracts run until the year 2002, and would appear to be the most accurate indicator of Cook Inlet gas prices for this period.

The marketability of Susitna power may be more affected by the new Enstar contracts than is the economic feasibility of the project. The Enstar contracts and any new Chugach Electric contracts with

similar terms could increase the difference in cost between Susitna power and the cost of thermal generation, particularly during the first few years of Susitna operation. It is these early years that are most difficult from a marketing standpoint (reference Acres' discussion of the "inflationary financing deficit").

It is important to note that the most recent Enstar contracts affect (with respect to electricity prices) primarily the Anchorage Municipal Light and Power utility, which buys nearly all of its gas from Enstar. Chugach Electric Association, Inc. (CEA) buys over 80 percent of its gas directly from producers. However, the Enstar contracts give a strong indication that producers are willing to sell gas under long-term contracts at a price substantially below the Acres and Battelle values.

I spoke with Tom Kolasinski, Production Manager for CEA, about the significance of the Enstar contracts for CEA's future gas prices. Mr. Kolasinski believes the Enstar contracts have effectively set a ceiling on Cook Inlet gas prices, and he expects CEA to be able to negotiate new gas contracts at prices less than or equal to the Enstar rates. CEA will be beginning negotiations this month with Chevron and Arco, who each have 220 BCF of proven, uncommitted reserves in the Beluga field.

According to the Acres Susitna feasibility study, a State appropriation of about $2.3 billion (1982 dollars) is likely to be required in order to bring the first-year power costs from the Susitna project down to the level of thermal generation costs. If gas is available in the early 1990's at a cost 25 percent below the Acres estimate, the State appropriation for Susitna may have to be significantly higher than $2.3 billion to maintain the marketability of Susitna power.

SUSITNA FINANCING PROPOSALS

Acres is currently developing a series of financing options for the Susitna project. These options are in preliminary draft form at this point and have not been approved by the Authority, but have been reviewed by the Authority's financial advisors, First Boston, John Nuveen, and First Southwest. The financing alternatives include a mix of general obligation and revenue bond issues and State appropriations, with the State contributions ranging from $100 million per year to $250 million per year (in real dollars) from 1985 to 1993-4. Another option would rely entirely on G.O. bonds until 1987 and then require a State appropriation of $306 million in 1988 (in 1988 dollars) continuing through 1994.

The financial advisors concluded in their review of the various options that the levels of borrowing proposed in all of the options could be

achieved without material effect on Alaska's credit rating providing that a sufficient proportion of revenue bonds were issued, no other major State borrowing were attempted during periods of peak borrowing for the project, and the borrowing were phased to meet market conditions prevailing at the time. The group of advisors also indicated that the options are practicable methods for financing the project. However, the advisors emphasized the need for prudent and full reevaluation of financing alternatives with changing economic and financial conditions.

Acres noted that because all of the preliminary financing options appear to be technically feasible, the choice between the options depends on other criteria, the most important of which are:

(1) the financial viability of Watana in its early years under each option, and thus the level of revenue bonds which could be issued;

(2) the percentage of the State funds available for capital and loan appropriations which would be required for Susitna;

(3) the timing of the demands for State appropriations with regard to variations in the amount of funds available for capital projects and loans.

Although Acres did not recommend a particular financing plan to the Power Authority, they suggested that the three criteria listed above were best met by the two financing options which balance lower levels of appropriations before 1987 against higher amounts from 1988 to 1994.

Because of the preliminary nature of these financing options, it would not be appropriate to critique them in detail in this memorandum. In general, the options point out the trade-off between the amount of money appropriated by the State for Susitna and the amount of G.O. bonds required for the project because lower State appropriations reduce the financial viability of the Watana phase and limit the amount of revenue bonds that the bond markets would be willing to purchase.

The financing discussion also indicates that there is a good deal of uncertainty about the proportion of the project cost that can be financed through revenue bonds because this proportion will depend on the financial position and credit rating of the State, the power sales contract which have been negotiated, and other factors. Finally, the options which Acres favors include higher amounts of State appropriations in the later years. This approach seems to run counter to current forecasts of State revenues, which are expected to decline in real terms after 1989.

FERC LICENSING/PROJECT DESIGN

The Power Authority currently plans to submit a license application for construction of the Susitna project to the Federal Energy Regulatory Commission (FERC) in February. The firm of Acres American, Inc., is overseeing the preparation of the license application up to the point of filing the application. After submission of the application to FERC, the joint venture of Harza and Ebasco will assume responsibility for project licensing and the next phase of project design. Acres estimated that it would take approximately 24 months for a FERC license to be issued after filing the application. Major litigation or a requirement for substantial additional information could extend this period.

SUSITNA FISHERIES STUDIES

I spoke with Dr. Richard Fleming, who is responsible for environmental studies for the Power Authority, regarding the research effort on the Susitna fisheries. The fisheries data collected during the summer of 1982 by the Alaska Department of Fish and Game (ADF&G) is now being compiled and will be released in a draft ADF&G report around January 31. A subsequent study to be completed by June will contain an analysis of the "raw" data included in the January report.

The Arctic Environmental Information and Data Center (AEIDC) is responsible for the analysis of probable fisheries impacts from the Susitna project. AEIDC is currently developing a model with which to evaluate these impacts. It is expected that the model will be completed by June, but no results from the impact analysis will probably be available until the fall and winter of 1983.

The firm of Woodward-Clyde is preparing "Exhibit E," which includes fisheries impacts and mitigation measures, for the Susitna license application to be submitted in February by the Power Authority to the Federal Energy Regulatory Commission (FERC). Although no analysis of the 1982 fisheries data will be available until June, the Authority plans to submit the tentative findings from the 1981 research program, plus a preliminary mitigation plan, to FERC in February. Additional submissions will be made as new information becomes available.

The 1982 summer research program was benefitted (although the salmon were not) by an unusually dry period in which the Susitna River flow dropped below 12,000 cubic feet per second (CFS) for part of the salmon spawning period. This flow compares to average summer flows in the 25,000-30,000 CFS range. This dry period allowed the researchers to observe the effects of lower flows, such as would occur from the operation of the Susitna project, on the spawning patterns of the Susitna

salmon. A number of negative effects from the low flows were observed, including blockage of access in some sloughs and a reduction in the size of spawning areas. It should be noted that the effects of these low natural flows were more severe than the effects that would be caused by comparable flow reductions from the Susitna project. This is because the drought reduced flows from tributaries and ground water sources, as well as in the Susitna itself.

Summer river flows in the primary spawning areas during operation of the Susitna project would be about 8,000 to 10,000 CFS if the economic benefits of annual power production were to be maximized. The preliminary data from 1981 indicated that summer flows of about 19,000 CFS would be needed to avoid any significant impact on salmon reproduction (absent any other mitigation measures).

The preliminary mitigation plan to be submitted to FERC in February will be based on a combination of moderate flow increases and intervention measures to provide access to spawning areas at reduced flow levels. According to Dr. Fleming, the research conducted to date suggests that flows of 11-12,000 CFS during the critical spawning months of August and September, combined with habitat modifications, could avoid any decrease in salmon stocks. The intervention measures cover a broad range of possibilities and will not be defined on a specific area-by-area basis in the February FERC submission. Possible approaches include removal of obstacles, lowering of slough entrances, construction of small check dams to increase slough flows, and gravel substrate placement or improvement.

I checked with Carl Yanagawa, the Director of the ADF&G Habitat Division for the Southcentral Region, regarding the Department's response to the proposed mitigation measures and FERC license submission. Mr. Yanagawa is presently coordinating comments from the different divisions in the Department and stated that no response had yet been developed, but that a formal response would be provided to the Power Authority by January 15.

The fisheries research program for the summer of 1983 and the winter of 1983-84 has not yet been finalized, nor have funding levels been determined. Scoping meetings with ADF&G and other consultants will be held in January and February to determine what studies are needed. Dr. Fleming indicated that he expected the field research efforts to become more focused as a result of previous experience, and that the FY 84 budget may be reduced from the FY 83 level.

SUSITNA ALTERNATIVES STUDIES

North Slope Gas Studies

Task Force Study. Railbelt power generation is one of the options being evaluated by Booz-Allen & Hamilton in their study for the State Task Force on Alternative Uses of North Slope Natural Gas. The Phase I report, which was released in November, screened a wide range of potential transportation and utilization options and eliminated the options which did not pass the screening criteria. The Railbelt power generation option was selected as one of five alternatives for more detailed evaluation. However, this option would be in conjunction with one of the other alternatives, i.e., with a conventional gas pipeline such as ANGTS, a pipeline to the Kenai area for LNG production, or Fairbanks methanol production. This report should be completed in the next two mont[illegible].

Alaska Power Authority Study

The Alaska Power Authority is analyzing the feasibility of three options for generating Railbelt power from North Slope gas:

(1) construction of a small-diameter gas pipeline from the North Slope to the Fairbanks area, with power generation in Fairbanks and transmission of power to Anchorage via the intertie now under development;

(2) generation of power on the North Slope and transmission via new high voltage lines to Fairbanks, and then to the remainder of the Railbelt.

(3) utilization for power generation of low-BTU waste gas from an LNG facility on the Kenai Peninsula, located at the terminus of an "all-Alaska" gas line.

This study, which is being conducted by Ebasco Services Inc. for the Authority, is due to be completed in February 1983. Two reports reviewing existing data and assumptions and system planning studies have been released. Ebasco has determined that only about 10 percent of the maximum daily Prudhoe Bay gas production would be required to meet all Railbelt power generation requirements, and that combined cycle gas turbines would be the most cost-effective generation system using North Slope gas. Ebasco estimates that the low-BTU waste gas option would be able to meet less than one-third of Railbelt power needs. No information on the cost of power or overall feasibility of electricity generation from North Slope gas has yet been released.

Chakachamna Hydro Studies

The Chakachamna project is not an alternative to Susitna in itself because of its much smaller generation capacity (330 megawatts versus 1660 megawatts for Susitna). However, it would be a major element, if constructed, of any Railbelt generation plan not including Susitna. The Power Authority has been conducting a study of the Lake Chakachamna hydro site since August 1981. According to Eric Marchegiani, the project manager, this is not a feasibility-level effort, but rather an interim study. The work is being done under contract to Bechtel and Woodward-Clyde and was funded by the Power Authority Board for $800,000 for the current fiscal year. Approximately $900,000 was spent on Chakachamna studies during FY 82.

The legislature appropriated $3.3 million for FY 83 Chakachamna studies as part of the $25.6 million authorized for continuation of the Susitna project studies. This figure was reduced by the Power Authority Board based on a recommendation from the staff that $800,000 was sufficient to carry out the FY 83 study efforts. Mr. Marchiagiani did not wish to comment on the adequacy of this funding level, but it appears from the program description that field studies and other portions of the study were constrained significantly by the limited funds available. Also, because FY 83 funds were not authorized until the end of June, study efforts during July were limited.

Approximately 80-90 percent of the Chakachamna study funds are being spent on fisheries research, primarily to determine salmon escapement levels, major spawning areas, and other baseline data. This funding allocation was based on the judgment that fisheries impacts were the area of primary concern for the Chakachamna site, with the cost estimate for the project another major concern. The development plan recommended by Bechtel and Woodward-Clyde would have a power generation capacity of about 330 megawatts and would involve a power tunnel from Lake Chakachamna into the McArthur River, which is one of the adjacent drainages.

Earlier studies had indicated that up to 480 megawatts of capacity could be developed at the Chakachamna site, but the current studies have found that mitigation of fisheries impacts and other factors limit the capacity of the site to the 330 megawatt figure. The current estimated cost for construction of the project is $1.2 billion (January 82 dollars), provided that the power tunnel can be bored rather than blasted. Blasting of the tunnel would add about $222 million to the project cost.

Bechtel and Woodward-Clyde will release a report on their findings to date in February 1983. However, because of the limited scope of the

studies, no determination of project feasibility will be included in this report. Instead, the report will summarize the fisheries and geotechnic data collected, discuss potential project impacts and possible mitigation measures, and review the project cost analysis conducted by Bechtel.

The Power Authority requested $2.9 million for Chakachamna studies in FY 84. This has been reduced to $2.5 million by the Governor's Office.

* * * *

I hope this summary information on the Susitna project and related issues is useful. If you have any questions, please call. Also, if there are other legislators who you feel would be interested in this subject, we would be glad to provide this memorandum to them.

JK/sj

January 18, 1983

Addendum to Susitna Status Memorandum -- APA Comments

This memorandum was reviewed after its completion by Robert Mohn, Director of Engineering and Susitna Project Manager for the Alaska Power Authority. Mr. Mohn provided the following comments on the report:

Cook Inlet Gas Prices. Mr. Mohn indicated that there are several add-on charges to the $2.32 base price of the Enstar gas contracts which effectively boost its price to about $3.00/MCF. This is about the same as the current gas price used in the Acres and Battelle base case analyses of Railbelt thermal generation costs. The Power Authority therefore does not view the Enstar contracts as significantly altering the conclusions of the Battelle and Acres studies. Time did not permit additional research on this question by this agency; however, two analysts in the Governor's Office of Management and Budget are doing some work on the effect of the Enstar contracts which should be completed in the next several weeks.

Susitna Fisheries Studies. The memorandum states that no analysis of the 1982 fisheries data will be available to June, in reference to the Alaska Department of Fish & Game's report which is scheduled to be completed at that time. Mr. Mohn stated that although the full ADF&G analysis will not be completed until June, there has been a substantial amount of analysis conducted on the 1982 fisheries data by ADF&G and Woodward-Clyde. The February FERC licence application will include the results of the analysis conducted to date.

Chakachamna Study Funding. There appears to be some dispute on the legislative intent for FY 83 Chakachamna studies. Mr. Mohn's understanding is that there was no clear statement of intent by the legislature that $3.3 million of the $25.6 million in FY 83 Susitna funding be used for studies of the Chakachamna project. Rather, there was only a general directive that the $25.6 million include funding for the study of alternatives to the Susitna project, as necessary.

According to George Matz of the Office of Management and Budget, who handled this budget request, there was clear intent by the legislature that a feasibility level study of the Chakachamna project be conducted, as stated in a budget amendment document. Both the Power Authority Board and the Policy Review Committee overseeing the Battelle study recommended that $3.3 million be provided for this purpose; however, it was not expected that these funds would come out of the appropriation for Susitna studies.

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

Pouch Y, State Capitol
Juneau, Alaska 99811
(907) 465-3991

February 11, 1983

MEMORANDUM

TO: Representative Don Clocksin

FROM: Jack Kreinheder
Research Staff

RE: Lake Tyee Power Costs and Project History
Research Request 83-39

You requested that we summarize the current status of contract negotiations for the sale of power from the Lake Tyee hydro project. You asked that we address the expected cost of power from the project, current power costs in Petersburg and Wrangell, and alternatives for reducing Tyee power costs to marketable levels..

The attached letter from the Alaska Power Authority outlines the sequence of construction cost estimates for the Tyee project and the decisions made by the Power Authority Board concerning project construction.

It is important to emphasize that the power cost projections in this memorandum are preliminary and are currently being revised by the Power Authority to reflect detailed financing arrangements for the Tyee project. These revised cost estimates will probably be somewhat lower than the figures cited here.

SUMMARY OF FINDINGS

The basic power marketing problem for the Tyee project is that the wholesale cost of power from the project in its first years of operation is projected to be about 40 percent higher than current power generation costs for Petersburg and Wrangell. The Power Authority estimates that Tyee power will cost about 16.5 cents per kilowatt hour (KWH) in FY 1986. Recent press reports have cited claims by Petersburg officials that the retail cost of power from Tyee would be 100 percent higher than current levels. However, these claims are disputed by the Power Authority, as discussed later.

Power generation in Petersburg and Wrangell now costs about 12 cents per KWH and this cost is not likely to increase substantially over the next several years unless oil prices increase more than expected by most forecasters. These communities are understandably not willing

to sign contracts to purchase Tyee power at rates substantially higher than current generation costs.

If no action is taken by the legislature to reduce Tyee rates, it appears that power sales agreements could not be obtained and the Power Authority would not be able to sell the necessary revenue bonds to repay the interim financing for the project. Although I did not research the possible steps the Power Authority might take in this situation to avoid a default on the Tyee debt, the Authority would probably be in a precarious financial position.

There are several possible approaches to reducing power rates for the Tyee project, most of which require more State money:

(1) Make an additional lump sum appropriation to the hydro program to reduce the amount of debt financing required for Tyee and other projects. About $70-80 million may be required to reduce Tyee rates to the level of current power costs. If desired, this appropriation could be structured as a loan, to be repaid to the State after Tyee power becomes competitive with the cost of power from present generation facilities.

(2) Appropriate a smaller amount of about $20 million only to the Tyee project and enact temporary legislation which would reduce only the Tyee rates. (Under present law, an appropriation to any power project would reduce the power rates by an equal percentage for all projects.)

(3) Make annual appropriations of about $2-3 million to cover a portion of the debt service costs for the Tyee project, allowing power rates to be reduced until the project becomes competitive with diesel generation costs.

(4) Amend the rate structure under present law to spread the higher cost of Tyee power among other power projects.

(5) Restructure the long-term debt for the Tyee project to reduce debt service costs in the early years of project operation (the viability of this approach is uncertain).

TYEE POWER COSTS

The following table shows projected wholesale power costs for the Tyee project from FY 85 to FY 90.

PROJECTED TYEE WHOLESALE POWER COSTS
(Cents per Kilowatt Hour)

Fiscal Year	1985	1986	1987	1988	1989	1990
Power Cost	12.8	16.5	16.7	16.8	17.0	17.2
Power Sales (Millions of KWH)	32.0	32.8	33.6	34.5	35.3	36.2

Source: Alaska Power Authority for FY 85-86, adjusted by House Research Agency for FY 87-90 for 4 percent annual increase in debt service cap, 3 percent average annual load growth for all APA projects, and 5 percent annual inflation in operation and maintenance costs. Debt service calculations based on 35-year revenue bonds at 11 percent interest, with a 1.1 coverage level.

Again, these projections are preliminary, and more accurate figures will be available within a week. These projected rates are probably on the high side because they do not account for the interest earned on debt reserve funds or the lower-than-expected cost of the interim financing for the project. The Power Authority's financial advisors are now working to incorporate these and other adjustments to arrive at more accurate rate projections. One uncertainty in these rates is that they assume the Wrangell sawmill will buy about 7 million KWH per year -- about 20 percent of total projected power sales from the project. The sawmill was shut down for over a month this winter and could be an uncertain buyer of Tyee power.

The Tyee project is scheduled to be completed in early 1984, and may be on line as soon as October 1983 if work continues at its current pace. When the project begins generating power, the initial rate will be set to cover only operation and maintenance costs (4-5 cents/KWH) until the start of the 1985 fiscal year, when the rate will increase to cover the costs of long-term financing for Tyee and the Swan Lake project. The power rate will increase again in FY 86 to reflect the cost of

revenue bonds issued for the Terror Lake project. After 1986, the Tyee power rate will probably increase by about two percent per year.*

PROJECT FINANCING

82M/112M

The completed cost of the Tyee project is now estimated at $115 to $125 million. Construction of the project has been financed by $82 million in appropriations from the legislature and $50 million in interim financing. This interim financing will have to be repaid in the spring of 1984 through the issuance of revenue bonds, additional State appropriations, or a combination of the two. The Swan Lake project also has $50 million in interim financing which will be repaid at about the same time. Terror Lake has $100 million in short-term debt which will be due in 1985.

HB 9 RATE STRUCTURE

The financing and power costs for Tyee are tied to those of other Power Authority hydro projects under legislation enacted in 1982 (CCSHB 9 -- Chapter 155). This statute requires each hydro project to pay its "proportionate share" of the total debt service costs for all projects, as determined under a formula in the statute. Basically, the statute means that if the construction cost of Tyee is 25 percent of the total cost of all projects in the system, Tyee must pay 25 percent of the total debt service costs for all projects. The wholesale power rate for each project is then determined by adding operation and maintenance expenses to debt service costs and dividing this sum by the expected power sales for each project.

The HB 9 rate structure replaced the "postage stamp" or single statewide rate formula which was enacted in 1981 by SB 25. The major purpose for the change in the rate structure was to increase the incentive for building cost-effective and properly sized projects, by linking power costs more directly with project construction costs.

When the conference committee on HB 9 reviewed rate projections for the four power projects, there was concern that the rates for the Tyee and Swan Lake projects would be excessive under the HB 9 rate structure. As a result, the committee included in the legislation a limit or cap on the debt service cost for each project. Under this cap, no project must pay more than the average debt service cost for all Power Authority

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* The rate calculation is complex, but the three main factors that affect the project rates after 1986 are: inflation in O&M costs, the rate of growth in power sales, and the 4 percent annual increase in the HB 9 debt service cap. The addition of the Bradley Lake project or other projects could also affect Tyee rates substantially.

projects, plus a certain percentage which increases each year (8 percent in FY 85, 12 percent in FY 86, and so on). Although this debt service limit reduces the power rate for Tyee substantially, it does not reduce the rate to a marketable level.

Because the debt service costs are pooled for all projects in the system, an appropriation to Tyee or any other project would reduce the power costs for all projects by an equal percentage.

PETERSBURG AND WRANGELL POWER COSTS

Current Costs

Exact power costs for Wrangell and Petersburg were not readily available at this writing. However, the busbar generation cost (equivalent to the wholesale power cost from Tyee) for both communities is approximately 12 cents per KWH. Wrangell generates all of its electricity from diesels, while Petersburg obtains about half its power from the Crystal Lake hydro project, which was built many years ago. The Petersburg utility apparently has a higher level of debt than the Wrangell utility, which offsets the lower cost of power from the hydro facility.

While most of the recent publicity concerning the Tyee project has focused on the city of Petersburg, the Power Authority staff maintains that Wrangell would face a larger rate increase if Tyee power were purchased at current projected rates than would Petersburg. According to Mike Yerkes, who is negotiating the Tyee contracts for the Power Authority, this is because Wrangell would convert entirely from diesel generation to Tyee power, while Petersburg would continue to generate about half its power from the low-cost Crystal Lake hydro project, which was built decades ago.

Future Costs

The rate of increase in future generation costs for Petersburg and Wrangell is one of the basic questions to consider in determining what approach the State might take to the Tyee situation. The cost of diesel fuel is the largest expense component for these utilities, averaging about 9-10 cents per KWH generated over the past year. As you know, the future of world oil prices is highly uncertain and the range of forecasts is considerable. However, the most recent Department of Revenue forecast projects a 28 percent cumulative decrease in the real price of oil through FY 87. In nominal terms, oil prices in FY 88 are forecast to be about the same as today.

If this projection is accurate, it may be the early to mid-1990s before diesel generation costs would increase to the level of Tyee

costs. However, an additional consideration is that Wrangell and Petersburg may have deferred expansion of their generation facilities in expectation of receiving Tyee power. Therefore, new generators might have to be added to meet increases in load growth during the 80s, which would increase power rates.

Retail Power Rates

Part of the publicity over the Tyee project centered on claims by Petersburg officials that they would have to add about 9 cents per KWH to the wholesale cost of power from Tyee for distribution and overhead costs, thus doubling the retail power costs from current levels. The Power Authority staff believe this figure is highly inflated and does not account for savings in diesel maintenance costs which would occur when Tyee comes on line. The staff is preparing documented estimates of what they feel are more realistic distribution and overhead costs.

Other Concerns

It is important to note that the cost of power fr ent projects is not the only concern of Petersburg, Wrangell, other cities or utilities to be served by Power Authority proje These groups are also concerned that under the current rate structure, their power rates could increase substantially as additional projects are added to the system. Whether this would occur depends on the level of State funding for the additional projects. If the ratio of State funding to bonded costs for new projects is lower than the average for current projects, the rates for current projects would rise.

The "Susitna Blackmail Clause" [AS 44.83.398(b)(2)] is an additional source of concern for municipalities and utilities, as the clause could dramatically increase power rates if not repealed. This clause would increase power rates by requiring a 10 percent annual return on investment to the State if $5 billion has not been appropriated for power projects by 1986.

POSSIBLE APPROACHES TO THE TYEE RATE PROBLEM

There are several possible approaches to the Tyee rate problem, as summarized earlier. The choice among them is complex and depends on basic policy issues relating to the power development program. Some of the more important factors to consider are discussed below.

Lump Sum Appropriation

This approach would be the most expensive; preliminary calculations indicate that $70-80 million would be necessary to lower the Tyee power rates to the cost of diesel generation.* Although the outstanding debt on the Tyee project is only $50 million, the pooling of debt service among all projects under the APA rate structure requires a larger appropriation to reduce Tyee rates sufficiently. A lump sum appropriation would also lower the power rates for Solomon Gulch, Swan Lake, and Terror Lake by an equal percentage (about 40 percent). This raises two questions.

First, is it necessary or desirable to reduce the power rates for other projects that already have reasonably price power? Second, what effect would lowering the rates for all projects now on line or under construction have on future projects? Lowering the average power rate would reduce the debt/equity ratio for current projects and require a higher level of State appropriations for future projects unless power rates were to be increased for all projects.

Special Tyee Legislation

If special legislation were passed so that a one-time appropriation would be used to reduce only Tyee power rates, roughly $20 million would be required to provide the necessary rate reduction. However, this approach could be viewed as creating a precedent for "bailing out" high-cost projects which might result in similar problems for future projects.

Annual Appropriation

In lieu of a one-time appropriation, the legislature could make annual appropriations of about $2.4 million to cover the debt service shortfall that will result if power is sold at 12 cents rather than 16.5 cents per KWH. These appropriations would continue and eventually diminish

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* I have not included these calculations here for the sake of brevity, but can provide them if desired.

to zero as the cost of diesel generation increased to match the cost of Tyee power or the cost of Tyee power fell. Although it is uncertain how long these annual appropriations would be required, depending on fuel escalation rates and other factors, the total cost would probably be half or less the cost of a lump sum appropriation.

The Petersburg and Wrangell utilities would be eligible for rate relief under the power cost assistance program, but only for the portion of retail rates above 16 cents in FY 86. This floor increases by one cent each fiscal year. Also, cost assistance is available only for the first 600 KWH per month sold to each customer. Therefore, a separate appropriation specifically for Tyee debt service might be required each year in order to reduce power rates sufficiently.

Modification of Rate Structure

It would be technically possible to modify the statutory rate structure to reallocate at least part of the Tyee debt service to other lower cost projects, primarily Solomon Gulch and Terror Lake. The communities served by these projects would probably strongly oppose this change. In addition, the bond markets could view this juggling of the rate structure with some concern.

Restructure Project Debt

It may be possible to reduce the debt service costs for the first few years of operation of the Tyee project by borrowing additional funds with which to pay part of the interest on the bonds for several years. According to Sterling Gallager of John Nuveen and Associates, it is legally possible to have this type of arrangement for five years without violating federal arbitrage regulations. However, the financial viability of this approach is uncertain and would require additional research.

Another possibility would be to use a geometric financing approach, in which the debt service schedule would be shifted so that debt service costs would be lower in the early years and increase gradually as the project power sales increased. This approach has been used in a few utility bond issues, but it is uncommon and would also require more investigation to determine its viability for the Tyee situation.

IMPLICATIONS FOR OTHER POWER PROJECTS

A number of legislators and other observers have expressed concern about the possibility of the Tyee marketing problem occurring with Susitna or other hydro projects. This is a controversial issue with numerous points of view, but a few observations may be helpful in understanding the problem.

It is important to recognize the distinction between the economic feasibility of a hydroelectric project and the marketing feasibility of the same project. Although the economic feasibility of the Tyee project is an issue itself, the point is that even a clearly feasible hydro project will usually require some sort of grant or low-cost financing to lower power rates to marketable levels in its early years of operation. After a period of years, increasing power sales and higher fuel costs for the alternative generation source should result in a break-even point, after which the hydro power becomes less expensive. The initial subsidy to the project can then be repaid, if necessary.

In the case of the Tyee project, the continually increasing cost estimates for the project made it difficult to determine how much State money was required to achieve marketable power rates. The power marketing problem for Tyee is also accentuated by the fact that Tyee has the largest excess generation capacity of the four projects now on line or under construction -- only about 25-30 percent of the project's capacity will be used in the first years of operation. This lower level of utilization means that a higher proportion of State funds is necessary to obtain reasonable power rates.

A major element of the Tyee problem appears to be that neither the legislature nor the Power Authority placed sufficient emphasis until recently on the marketing of power from the projects under construction. Part of the reason for this apparent oversight is that in 1980 and 1981, State revenues were increasing rapidly and it was expected that most of the project costs would be funded through direct appropriations or low-cost loans, rather than by revenue bonds. With this expectation, power marketing was not an issue because of the low power costs. The sharp decline in State revenues has resulted in more reliance on debt financing, causing higher power rates and the marketing problem demonstrated by the Tyee project.

With respect to the Power Authority, an additional problem was the lack of staff with experience in marketing and rate issues. It was only about 10 months ago that the Power Authority hired someone with rate setting and utility experience. Until then, the focus of the staff

was more on the feasibility, design, engineering and financing aspects of power development.

A final contributing factor to the Tyee situation was that the revisions to the Power Authority rate structure enacted in 1982 by HB 9 were not based on a full assesment of the effect of these rate revisions on the marketability of power from Tyee and the other projects.

The likelihood of the Tyee rate problem occurring with other power projects is difficult to assess. The Power Authority appears to have made good progress in dealing with the marketing issue. Several measures have been taken to avoid the recurrence of the Tyee cost escalation problem, and a number of recent bids for construction of the Terror Lake and Anchorage-Fairbanks projects have been substantially lower than engineering estimates.

In addition, the Authority has proposed changing its procedures to require power sales contracts to be signed before project construction begins, and this was done for the Terror Lake project. In the past it has been difficult to obtain contracts because it was uncertain how much funding would be provided by the legislature, and there is a natural incentive for communities to lobby the legislature for additional funds to reduce their power rates. It may also be difficult to obtain pre-construction power sales agreements for the Susitna project because of the long lead time of the project.

The chances of the Tyee power marketing problem occurring with future power projects would be reduced if the legislature made certain it had sound estimates of the maximum appropriation necessary for power marketing purposes before approving construction of a project, and committed itself to the appropriation of the necessary amount. Any changes in the rate structure should also be made only after detailed evaluation of the impact on project power rates and marketability.

* * * * *

I hope this information is useful. If you have any questions or would like additional information, please don't hesitate to call.

JK

Attachment

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE · ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

February 9, 1983

Mr. Jack Kreinheder
House Research Agency
Pouch Y
Juneau, Alaska 99811

Subject: Tyee Hydroelectric Project-Summary of Estimated Total Costs

Dear Jack:

As per your request, following is a brief summary on the sequence of events on the Tyee hydropower project primarily relating to cost. The summary of Board actions was extracted from our corporate minutes. Most of the actions taken by the Board were based on advice from myself and my staff.

On December 19, 1979, the Alaska Power Authority submitted a revised application to the Federal Energy Regulatory Commission (FERC) for the construction of the Tyee Hydroelectric Project in the vicinity of Wrangell and Petersburg, Alaska. Our engineers, R.W. Retherford Associates/International Engineering Company (IECO) estimated the total cost of the project at that time at $39,590,000 (1980$'s). With an allowance for inflation and interest during construction the estimated total capital investment at that time came to $53,333,000.

In September 1980, IECO submitted a revised cost estimate of $50,976,000 (August 1980$'s).

Early in 1981, the Power Authority retained EBASCO Services, Inc., to prepare an independent cost estimate. EBASCO subsequently estimated the total project cost at $96,693,000 (May 1981$'s). Escalated to the midpoint of construction, this would represent a completed cost of approximately $110 million. After reviewing the EBASCO estimate, IECO conceded that its previous estimates were low and IECO raised its estimate to $81,069,000 (June 1981$'s). EBASCO refuted this revised estimate.

Procurement of long-lead-time turbines began in July 1981 in anticipation of a FERC license. The Board of Directors was realigned by Statute in the latter part of July 1981. The FERC issued a license on August 5, 1981 and the award of several additional procurement and one construction contract followed almost immediately thereafter.

IECO continued to make monthly reports on the status of the project, including estimated total project costs. It is important to note that by the end of March 1982, IECO had increased its project estimate to $97,072,000,

including engineering costs prior to construction. In the March report the overhead transmission line was estimated to cost $12,840,000 plus a $6,000,000 contingency. Less than two months later, during the bid opening for that contract, IECO provided an engineer's estimate of $23,280,887.00--an estimate that is 24 percent above any previous estimate, including contingency funds. The actual low bid was even higher at $24,901,466.

Starting with the IECO estimate from the March 1982, report, adjusting for the actual low bid on the transmission line, and adding the estimated cost for a proposed separate substation construction contract, the estimated total project cost was increased by IECO to $110,133,000 (May 1982). This did not include approximately $5 million for owner provided insurance. During the months that followed, the total project cost has decreased and increased, slightly, as adjustments have been made for actual bids on relatively small procurement contracts.

In December 1982, and again in January 1983, senior staff of IECO and IECO's parent company, Morrison Knudson (M-K), met with representatives of the Power Authority to discuss construction management of the project, including total project costs. The latest information from IECO is that the total project cost will not exceed $124,886,100. The Power Authority has asked the parent company, M-K, to completely review this estimate. A report from the M-K staff is anticipated the second week of March 1983.

A summary of Board actions, as extracted from our corporate minutes, is as follows:

October 4, 1978 Board receives report on Tyee Project indicating that, according to the reconnaissance study by Robert W. Retherford Associates, (RWR) the Project looks favorable and that Thomas Bay Power Commission (TBPC) will soon enter into contract with RWR for Federal Energy Regulatory Commission (FERC) work and that TBPC may request the Alaska Power Authority to take over the project.

November 18, 1978 APA Board voted to make $120,000 loan to TBPC for Tyee FERC work and this would supplement the $300,000 available from the Water Resources Revolving Loan Fund (WRRLF) in order to cover the $475,000 contract with RWR.

June 21, 1979 Board makes a loan to TBPC of $60,000 for Tyee Project. TBPC and Representative E.J. Haugen request the APA take over Tyee. The Board directed staff to bring information back at next Board meeting for Project take-over.

September 27, 1979 Tyee Letter of Understanding with TBPC adopted by Board.

November 2, 1979 Board authorized Executive Director to submit FERC license application. Also passed "stop-the-clock" resolution needed for bonding.

February 7, 1980 Board agreed to extend contract for advanced Engineering

and Design to IECO for Tyee but it was later decided with legal council to seek competitive proposals.

April 18, 1980 Board selects IECO for the Engineering and Design from among three proposals.

October 23, 1980 Board informed that costs have increased from $39,000,000 to $51,000,000 and has IECO explain to Board.

April 20, 1981 Board selects consultant panel as required by FERC.

May 14, 1981 Board awards Bids for Turbines.

July 6, 1981 Board considered awarding contract for Steel Towers and Conductors but defers "notice to proceed" until after opening of major Civil Contract so that the Board could get a better fix on the true cost of the Project.

August 18, 1981 FERC license has been received. Bids for Civil construction were reviewed as were the economics of the Project based on new cost estimates. Notice-to-proceed was given on Towers and Conductors. The Board was informed that existing funds were insufficient and that interim financing would be necessary. Board deferred action until the next meeting.

September 10, 1981 Board awards Civil Works contract to Southeast Harrison Western (SEHW) after lengthy debate.

October 2, 1981 Board informed on legal actions against Tyee construction contracts. Need for interim financing was discussed and indicated a proposal would be presented to the Board in December, 1981. Risk Management's desire to use "Wrap-up Insurance" on Tyee Project was discussed and actions that would be taken to effectuate such a program.

December 15, 1981 A Finance Plan was presented to the Board. It was recommended that the Board appoint a subcommittee to review the feasibility of the Tyee Project based on present knowledge of the costs. Commissioners Ward and Mueller and Dr. Weeden were appointed to the subcommittee. The Board moved that final financing documents for financing be prepared. The economics of the Project was reviewed.

January 22, 1982 Senator Dankworth and Representative Haugen addressed the Board and recommended proceeding with interim financing. Board authorized securing of $50,000,000 in interim financing. Board awarded a contract for Underwater Cables.

May 25, 1982 The Board awarded the Overhead Transmission Line contingent upon the Legislature not passing a piece of legislation that was being considered but that subsequently was not passed. Thus on June 3, 1982 the Executive Director informed the Board of his intent to issue the award for Transmission Tower construction.

October 22, 1982 The Board awarded contract for Transformers.

I trust this information is of assistance to you. If there is any further information you need, please call on me.

Sincerely,

Eric P. Yould
Executive Director

CC:
C. Conway
Comm. D. Lyon

MARKETS & INVESTMENTS

A fiasco that may rock municipal bonds

When a delegation of top Washington State officials traveled to New York City recently to drum up interest in a bond sale, institutional money managers turned out in force. Despite the unusually large crowd, the obligatory call for questions following the briefing was greeted with silence. "Finally, someone asked about 'Whoops,'" recalls one attendee, "and all hell broke loose."

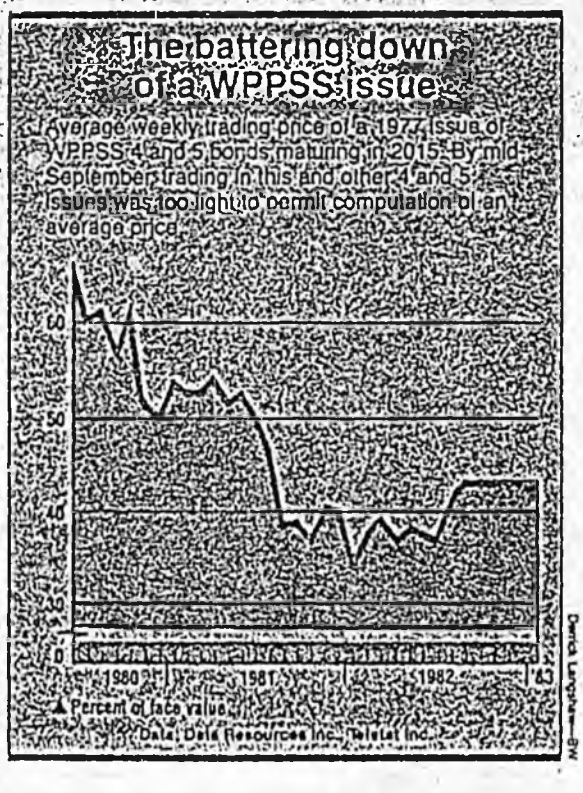
Washington Public Power Supply System, better (if unaffectionately) known as Whoops, is giving Wall Street a severe case of the jitters. WPPSS, which is the nation's largest single issuer of tax-exempt debt, is perilously close to defaulting on $2.25 billion of the $8.3 billion in bonds it has sold to finance a massive nuclear construction program. "The worst is beginning to come true," sighs a municipal bond portfolio manager for a big mutual fund.

A WPPSS default would be the biggest in municipal bond market history, and analysts say it could prove more disruptive than previous financial collapses. Unlike the typical tax-exempt issue, WPPSS bonds are in the hands of investors throughout the country. And in contrast to New York City and Cleveland—both of which had delayed repayment of short-term debt—WPPSS is on the verge of defaulting on long-term bonds. "It is an unparalleled situation," says Howard Sitzer, municipal research director for Thomson McKinnon Securities Inc.

Bad timing. WPPSS's predicament, moreover, is entering the crisis stage just as the health of the municipal bond market is becoming more crucial than ever. Sales of long-term tax-exempt bonds, which have hovered at $45 billion since 1977, shot up to $76 billion in 1982. Another record is expected this year as states and cities rush to finance long-delayed building projects.

"Any problem with Whoops will have an effect on the whole muni market," says a senior executive at a top brokerage house. "I really shouldn't say any more about it," he adds. "Just say we are very concerned." Investment bankers are particularly loath to discuss Wall Street's role in the WPPSS debacle. At the urging of four Northwestern congressmen, the Securities & Exchange Commission recently began looking into allegations of fraud in the underwriting and sale of WPPSS bonds. And John D. Dingell (D-Mich.), chairman of the House Energy & Commerce Committee, is considering holding hearings..

The syndicates put together to underwrite WPPSS bonds were headed by some of the premier names in public finance—Merrill Lynch, Goldman Sachs, Salomon Bros., Smith Barney, Blyth Eastman, and Paine Webber. Virtually every brokerage house of any consequence participated in these huge offerings. "Everybody sold Whoops bonds," says one analyst. To the dismay of investors, a long series of setbacks has depressed many WPPSS bond issues (chart).



Upward revisions. WPPSS was forced to abandon two partially constructed nuclear plants a year ago; estimates had soared after Robert Ferguson took charge as WPPSS managing director and ordered a recalculation of costs. On Jan. 25, the 88 Pacific Northwest utilities that joined in this project were required to begin paying off the $4.8 billion in interest due over 30 years on the $2.25 billion in bonds sold to finance the plants.

Although each participant signed a contract obligating it to pay its share even if the plants were never completed, WPPSS received payments from only two utilities—totaling $9,435 of the $19 million it had coming. Five other utilities set aside funds in escrow accounts.

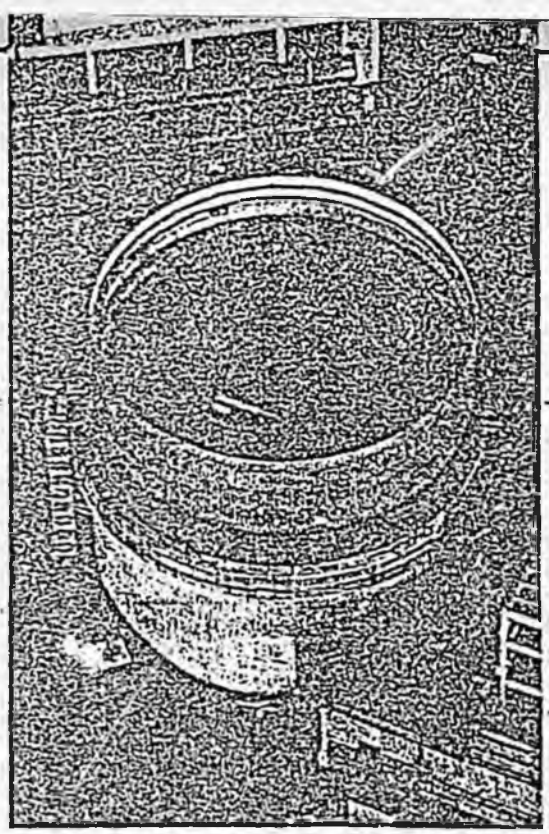
WPPSS needs the funds to make monthly payments to Chemical Bank, the bond fund trustee, which in turn makes semiannual distributions to investors. Unless WPPSS begins collecting by March, it will not have enough money to cover the $93.9 million payment due bondholders on July 1. Chemical holds $102 million in reserves, but tapping them might trigger a technical default.

'We're stretching.' Moreover, by the end of March, WPPSS expects to exhaust the funds set aside to pay up to $490 million due contractors on the ill-fated plants. It might be able to buy more time by selling off assets and delaying payments to contractors. "We're stretching," says James Perko, WPPSS's treasurer.

The participants, most of which are small public utilities, are under intense pressure from angry ratepayers. Crowds have marched on, and in some cases occupied, headquarters of public utility districts. Although many major participants are willing and able to fulfill their WPPSS contracts, they are unlikely to begin paying unless their legal obligation to do so is clarified in court. (Otherwise, they could be sued by ratepayers—and in Washington, public utility officials are personally liable.)

In fact, the 11 participants from Oregon are barred from paying by a state court ruling that found they exceeded their authority by entering into contracts with WPPSS in the first place. That decision is being appealed. Similar challenges are before courts in Idaho and Wyoming. In Washington, home to 48% of the participants, a suit to force utilities to pay WPPSS will not go to trial until April at the earliest. A half dozen other WPPSS cases—including one not expected to reach a federal court until summer—are pending.

No sympathy. Northwestern political and business leaders have tried in vain to jawbone recalcitrant utilities into paying. Attempts to seek a solution outside the region have proved similarly ineffective. California utilities have demonstrated little interest in buying WPPSS plants or any future output, and neither the Rea-



Director Ferguson and one of the two nuclear power plants (right) WPPSS decided to leave unfinished after getting new cost estimates.

gan Administration nor Congress is sympathetic to pleas for federal help.

Last fall, Shearson/American Express Inc., a major institutional owner of WPPSS debt, was unable to muster even token support on Capitol Hill for a bailout plan. "The federal government is waiting to receive guidance from the states to see what, if anything, they want done," says Lawrence S. Hobart, deputy executive director of the American Public Power Assn.

Efforts to reach an out-of-court compromise have gotten nowhere. "A lot of people would like to see all the parties sit down together and work something out," says Robert Greening, director of the Public Power Council, a utility trade group that counts many participants as members. "But as long as the lawyers are advising everyone not to give an inch, it won't happen. A lot of people are becoming fatalistic."

Thinking the unthinkable. Default, once unthinkable, increasingly is being viewed in the Northwest as a legitimate political option. Two recent studies contended that the impact of default on Washington's economy would not be as catastrophic as had earlier been predicted. Washington Governor John Spellman in mid-January commissioned an independent study of the effect on the state.

Although many observers cling to the hope that default can somehow be averted, some veteran WPPSS analysts already have concluded that it is virtually inevitable. "Under the most streamlined circumstances imaginable, there is the potential for an interruption in payment of interest, conceivably for two years or greater," says Eileen Titmuss, an analyst for Drexel Burnham Lambert Inc. Adds Jeffrey Whitehorn, an analyst for Dreyfus Corp.: "There is no way bondholders are going to come out whole."

If WPPSS is forced into receivership or bankruptcy, creditors might be able to get at funds—including bond reserves—meant for the three other plants it is building. WPPSS still needs to raise $1.1 billion to complete two of these plants (work on the third has been halted). But it is not clear that the Supply System will be able to return to the bond market for additional financing this spring as planned unless the legal uncertainties surrounding the impact of a default have been resolved.

The $6.2 billion in bonds WPPSS has sold to finance these plants are backed by the Bonneville Power Administration (BPA), a federal agency that markets the output of U.S. government-owned dams in the Northwest. But the BPA, too, is under mounting financial strain. Standard & Poor's Corp. recently downgraded the bonds for the three plants to AA.

A default also is likely to trigger an investor backlash against other Pacific Northwest tax-exempt issuers—even those not directly involved in WPPSS. "The precedent is really bad," says Edward Hosinger, municipal research director for Oppenheimer & Co. "I don't think a portfolio manager can risk owning a general obligation bond within these states."

The old story. Investors also may demand an additional risk premium to buy the securities offered by the nation's other 31 major regional public-power agencies, many of which employ "take or pay" contracts of the sort that WPPSS relied on. As a result, they may have to pay more for the $24 billion that John Nuveen & Co. estimates they will need to raise by 1990. One lesson of the WPPSS debacle, Titmuss says, is that "a project financing is only as good as the economics which underlie it."

But some analysts foresee an even stronger investor reaction. Although individuals now account for as much as 75% of all municipal bond purchases, "they are relatively unknowledgeable about munis," Sitzer argues. "If you had a Supply System default, people are going to be reluctant to buy more."

"It will affect people's assessment of the safety of all similar investments or even of all dissimilar investments," says Sterling Munro, former chief administrator of the BPA and Nuveen's national director of public power. "It is the old story—once the cat has been burned, it won't sit on the hot stove again, and it won't sit on a cold stove, either." ■

Alaska State Legislature

Senator Vic Fischer · Pouch V Juneau, Alaska 99811 · (907) 465-4954

January 20, 1983

Eric Yould, Executive Director
Alaska Power Authority
344 W. 5th Avenue.
Anchorage, Alaska 99501

Dear Eric:

As you know, developments in recent months have significantly altered the outlook for future oil and gas prices and for energy demand. It now appears that some of the assumptions made by Acres and Battelle in their evaluations of the proposed Susitna project and alternatives are inaccurate. For example, it now appears that supplies of Cook Inlet natural gas will be available as fuel for the southcentral part of the state, and that they may be considerably less expensive than previously anticipated. (The intertie will make gas-fired electricity available to the interior as well.)

I have heard, though, that your understanding of the $2.32/mcf contracts recently signed by Enstar is that they do not differ significantly for the $3.00/mcf assumed in the Acres study, because the Acres price includes some additional costs that must also be added to the $2.32 to compare them on an equal basis. I would very much appreciate it if you could provide me with a written explanation of this, as I believe it's critical to an understanding of the impact of the Enstar contracts.

Perhaps more important than the initial price, however, is the expected price escalation. Acres, I noted, in their medium forecast, assumes a real price escalation to $4.80/mcf by the year 2000. Since the Enstar contracts are tied to changes in the price of locally-produced fuel oil and, since at least some experts in the field expect those prices to drop, it seems very possible that the escalation rate assumed by Acres is too high.

I understand further that people within the industry expect the Enstar contracts to act as a ceiling, and that future contracts are expected to be equal to or lower than the Enstar prices.

Given these developments, I would very much like to know how the up-dated Susitna-related work will reflect them. It seems to me that new net benefits calculations comparing Susitna to the base thermal case and to alternatives is called for. It would be most helpful to the legislature if such calculations could include a sensitivity analysis or, at the very least, a careful explanation of how changes in oil and gas prices will affect the net benefits.

I understand that Acres has in the past insisted on valuing the thermal alternatives at their "opportunity costs," or the prices they could bring on the export market if they could be sold. Although there

may be some value in providing such a comparison, it seems to me obvious that we have at work some local market conditions that must be considered when deciding on the relative costs and merits of competing sources of energy. In fact, the market value of Cook Inlet gas is not the price it might bring in Japan if Japan wanted to buy it, but the price that the producers are willing to sell it for. It would be fiscally irresponsible to develop an energy project that would cost more than an available alternative; I would not want to face the prospect of building Susitna and then having the utilities opt to purchase Cook Inlet gas instead. Even disregarding such as extreme event, an accurate net benefits calculation is critical to determining how much state funding will need to be appropriated to Susitna so that its initial costs are lower than the thermal alternative, assuring that there will, in fact, be a market for the power. I would therefore very much appreciate it if Acres, or the APA, would, in addition to its "net-back" approach, provide a net benefits calculation based on actual costs available in Alaska.

Because of changing economic conditions, I have previously stressed to you what I felt was a need for updated load forecasts. I understand that Battelle was to do some revised forecasts, but that the contract has been both altered and delayed. I again stress the importance of this information to future decisions regarding Susitna. Further, I hope that new forecasts will include information on the effect of pricing on demand and some analysis of the energy demand "bubble" experienced by Anchorage in the last year.

I understand that the APA is apparently still expecting to submit a FERC license application for Susitna in February. It seems to me that there's a great deal of new information (including environmental field data for the 1982 season) that needs to be integrated into the application. Will a license application submitted in February take into account the recent pricing and demand developments and include this year's data and update? If it does not, how will the information later be incorporated?

I thank you for your attention to these matters and look forward to your early response.

Best regards,

Senator Vic Fischer

cc: Governor Bill Sheffield
Dick Lyon, Commissioner, DCED
Chuck Conway, APA Board Member
Robert Weeden, APA Board Member
John Schaeffer, APA Board Member
Peter McDowell, Director, OMB

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

Phone: (907) 277-7641
(907) 276-0001

February 10, 1983

The Honorable Vic Fischer
Senator
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Fischer:

Thank you for your thoughtful inquiry into matters affecting the economic feasibility of the Susitna Hydroelectric Project.

In being associated with the project, I have noted that various people frame the arguments for or against Susitna in very different ways. Some concentrate on the environmental issues; others focus on the alternative uses for state funds. Some emphasize the risks inherent in building Susitna; others concentrate on the risks of relying on the alternatives and not building Susitna. Some base their judgement on the economic analysis, while others prefer to take a long term view of the project's potential contribution.

It is my personal opinion, and one which I have passed on to Governor Sheffield, that the issue is whether or not, at this juncture in the State's history, the State has sufficient discretionary funds to develop a secure renewable energy resource, at some risk regarding project cost, to satisfy power needs of about 70 percent of the State's population for more than 100 years.

Philosophy aside, there is no doubt that the economic analysis (with all its limitations) is a useful indicator that should contribute to a well reasoned decision. I will try to respond to each of your points.

The feasibility study, for purposes of the economic analysis, assumed unlimited supplies of Cook Inlet gas. I believe this to be a potentially dangerous assumption, but it nonetheless underlies the cost comparison. Mr. Dale Teel, of Enstar, continues to advise, in the strongest terms, that Cook Inlet gas supplies should not be depended upon for power generation beyond the mid 1990's. You may want to speak with him to gain insight into his view of the future.

With respect to Cook Inlet gas prices, the recent Enstar contracts provide an extremely valuable data point in the forecast of gas value. Previously contracted supplies will be exhausted by the time Watana could come on line in 1993. Therefore, the pertinent price for evaluating Susitna is the marginal value of new supplies. I have no reason to

believe that the recent Enstar contracts are other than accurate indicators of the present day marginal price of Cook Inlet gas. The Alaska Power Authority's review of the contracts and our discussions with Mr. Teel lead us to the conclusion that the 1993 price of Cook Inlet gas delivered to Anchorage Municipal Light & Power (ML&P), in 1982 dollars and excluding any escalation between now and 1993, is about $3.00. This figure is arrived at by adding the severance tax (0.06/MCF), the delivery system fixed charges (0.30/MCF) and the demand charge (0.35/MCF) to the base price of $2.32/MCF. The estimates of severance tax and delivery system cost were provided by Mr. Teel. He was also the source of the forecast as to when the demand charge would go into effect (1990).

If an electric utility manages to negotiate an equally attractive contract and is able to burn the gas closer to the field than can ML&P, at least a portion of the delivery costs could be eliminated. Of course, that would mean increased electrical transmission facilities.

The Susitna Feasibility Report uses a 1993 cost of Cook Inlet gas (1982 dollars) of $3.03/MMBTU. Thus, the indicated cost based on the Enstar contracts would be virtually identical to the feasibility study estimate, as long as there is no real escalation in the gas prices between now and 1993. If there is real escalation over the next decade, Acres' estimate would prove too low; if there is de-escalation, the opposite would be true.

With this fairly close agreement on initial year prices between forecasted values and costs recently contracted, I agree with you that the expected price escalation is probably more important than the initial price. Acres assumed several escalation rates. In the low case, the price was assumed constant at $3.00/MMBTU throughout the study period (i.e., no escalation). The high case escalation rate was set at five percent to the year 2000, two percent for the next decade and zero thereafter. The resulting set of long-term system costs are presented in the Feasibility Report.

I am not privy to industry expectations that the Enstar contracts will serve as a ceiling for future price agreements. Please transmit any such information so that we can take it into account in our planning.

At my insistence, the Feasibility Report has been prepared to reflect and highlight the uncertainties and risks associated with both proceeding and not proceeding with the Susitna Project. Pages 46-49 of the March 1982, Summary Report offer a vivid presentation of the sensitivity of the economic evaluation to assumptions different than those that were assumed as the base case. Section 18, Volume 1 of the Feasibility Report provides more detail.

Your letter goes on to ask for economic (net benefits) and financial (yearly cost of thermal power) calculations based on actual costs

available in Alaska. With respect to the latter, the actual generation cost (fuel, O&M and new capital investment) facing the utilities when Watana goes into operation is a very critical number in formulating the finance plan. The estimate is very dependent on inflation over the next decade and is also sensitive to the rate of demand growth. The first year alternative cost facing the utilities is one of several items that must receive periodic review.

You suggest that the market value of a fuel is not a function of the price it could bring in the Far East, but rather the price the Alaskan producers are willing to sell it for. Why would the producers want to sell the fuel locally at a price less than could be received from exporting? As long as the net-back procedure is performed properly and cost estimates are reasonably accurate, the procedure should yield good fuel price forecasts. If there is no interested overseas buyer, than the estimated market price should reflect that situation. If the forecast of world demand and markets proves incorrect and an export opportunity turns out not to exist, then the Alaskan production cost would become the controlling price.

To summarize, the net-back export price is the appropriate yardstick, but it is admittedly difficult to estimate world market conditions a decade and more into the future. The lowest price at which Alaskan fuels could possibly be valued is the local cost of production. I will include a sensitivity test where production based fuel costs are used for those fuel types where there is presently no established markets.

Battelle's RED model for Railbelt load forecasting has now been transferred to the State, under the custodianship of the Division of Energy and Power Development. Rather than hire Battelle to exercise the model for a forecast update, the project team will be using it directly. By so doing, we will be able to provide the necessary coordination of the forecasting and project evaluation to satisfy Federal Energy Regulatory Commission (FERC) requirements and can eliminate an extra player. The updated forecasts, like those prepared by Battelle, will show the sensitivity of demand to varied prices. They will also incorporate actual 1982 demand in the historical base.

You are correct that the Susitna license application will be submitted to FERC this month. It will have had the benefit of FERC and agency review and will be more thorough as a consequence. It will incorporate much of the results of the 1982 field season and will be accompanied by Alaska Department of Fish and Game's (ADF&G) 1982 data report. It will represent the largest amount of environmental information ever assembled for a FERC license application.

The "need for power" sections of the application will present the same analytical tools for load forecasting and project evaluation that are contained in the Feasibility Report. The application will also

include the sensitivity testing methodology of the Feasibility Report and the full range of sensitivity test results. As the license processing proceeds, the Power Authority will be transmitting periodically updated load forecasts, fuel price assumptions and revenue projections. The FERC staff can be expected to critically review these and develop their own independently.

The FERC staff will initially concentrate on understanding and evaluating the analytical tools; only then will FERC turn to the actual evaluation of the project itself. By that time, the update presently in progress should be complete. FERC is well aware of the changing outlook for Alaskan revenues and is sensitive to their impact on demand.

As you consider the merits of the Susitna Project, it might be helpful to keep in mind that only the second phase, Devil Canyon, is predicated on load growth. The Watana phase is being planned to displace thermal generation and can be utilized from its first day of operation. Of course, the finance plan must result in competitive power costs to support this approach.

I hope I have adequately responded to your questions.

Sincerely,

Robert A. Mohn
for Eric P. Yould
Executive Director

Attachment: Vic Fischer's letter dated January 20, 1983

cc: Governor Bill Sheffield
Richard Lyon
Charles Conway
Robert Weeden
John Schaeffer
Peter McDowell
Ray LaRusso
Henry Chen
Jane Drennan

NOTE REGARDING THE FOLLOWING FRAME(S) ON MICROFILM:
COMPLETE DOCUMENT IS AVAILABLE IN ORIGINAL FILES.
TITLE PAGE ONLY HAS BEEN FILMED.

(K)

POLICY ANALYSIS PAPER 82-14

Potential for Industrial Development in the Railbelt Region of Alaska Based on the Availability and Cost of Electric Power

December 1982

STATE OF ALASKA

OFFICE OF THE GOVERNOR

Division of Policy Development and Planning

POUCH AD

JUNEAU, ALASKA 99811

(907) 465-3577

SB

68-71

(FILE 8)

ALASKA STATE LEGISLATURE
SENATE STATE AFFAIRS COMMITTEE
SENATOR VIC FISCHER, CHAIRMAN
POUCH V, JUNEAU 99811
(907) 465-4954

SENATE STATE AFFAIRS COMMITTEE

COMMITTEE REPORT

ON

THE SUSITNA PROJECT

SENATE BILLS 68, 69, 70, AND 71

MARCH 24, 1983

Senate State Affairs Committee
Committee Report -- the Susitna Project
Senate Bills 68, 69, 70, and 71

The Senate State Affairs Committee held four days of hearings on hydroelectric development and the proposed Susitna project. Testimony on three days was primarily from witnesses invited to address specific issues. In an all-day public hearing in Anchorage, the views of more than thirty members of the public were heard. The focus of the hearings was on economic and fiscal concerns within the province of the committee.

Summary of Principal Findings

1. Alaska's oil revenues have fallen below anticipated levels, making uncertain the state's ability to fund the Susitna project.

2. Falling oil prices have also affected the net benefits of the Susitna project, and the Acres determination that the project is economically feasible may no longer be supportable.

3. Other questions, including whether Susitna would be eligible for tax-exempt bonds, remain to be answered.

4. As the federal construction license is not expected before 1986, three years remain in which to reevaluate the project's economics and financing and to gather additional data before making a decision to construct.

5. Other APA hydro projects have experienced significant cost increases. Power projects in Washington State are facing default because of poor planning and management; this is expected to result in a tighter bond market for new projects like Susitna.

6. Power sales contracts are a prerequisite for the construction of Susitna. Utilities are reluctant to sign take-or-pay contracts until they have assurance that the price of this power will be competitive with alternatives.

7. The APA is continuing to assess Susitna and the alternatives, with a report expected in May.

8. The public, while supporting hydropower generally, is concerned about the the costs of Susitna power, both in power rates and in opportunity costs.

Bills Before the Committee

Of the bills currently before the committee, SB 68, SB 69, and SB 71 would authorize construction of Susitna and would approve a finance plan for the project consisting of a state appropriation of $2.3 billion in 1983 dollars to be dedicated through a constitutional amendment and revenue bonds of the APA backed by the general obligation of the state. SB 70, an alternative financing bill, would provide for power project funding through per capita "energy dividends."

Background of The Proposed Susitna Project

The Susitna project is a two-dam (Watana and Devil Canyon) hydroelectric project proposed by the Alaska Power Authority (APA) to provide power to the railbelt area. As planned, the Watana phase (1020 MW) would come on-line in 1993 and the Devil Canyon phase (600 MW) in 2002.

A 2½-year feasibility study was conducted by Acres American at a cost to the state of $41 million. A $1 million study of railbelt power alternatives was conducted concurrently for the Governor's office by Battelle.

The Acres study concluded that the project was technically viable, environmentally acceptable, and economically feasible. The determination of economic viability was based on a number of assumptions, many of which have changed since the completion of the study last year.

The APA Board of Directors, in making its recommendations to the State of Alaska last April, noted that while the project offers a potential for long-term benefits, realizing those benefits will depend on skillful management, proper timing, and assumptions about an uncertain future holding true. They concluded, "The Authority believes it is premature to make any commitment, at this time, to actual project construction."[1]

The capital costs of the project are estimated at $5.1 billion 1982 dollars or $12.5 billion nominal dollars at 7% inflation. Acres concluded that in order for power in the early years of the project to be priced competitively against thermal alternatives, a state appropriation of $2.3 billion (later revised to $1.8 billion) in 1982 dollars would be required.[2]

This appropriation, variously referred to as an equity investment, state financing, grant, or subsidy would not be repaid to the state's treasury; instead, benefits in terms of jobs, economic development, and state electric rates would be expected to accrue to Alaskans.

Last year, the legislature authorized work to be done on project design and a license application to be submitted to the Federal Energy Regulatory Commission (FERC), and appropriated $25.6 million. The engineering firm of Harza-Ebasco has been selected for the design work; the FERC application was filed on February 28.

Financing of Hydro Projects in Alaska

The Energy Program for Alaska (AS 44.83.400), adopted in 1981, provides that power projects developed by the Alaska Power Authority are to be funded largely through cash grants from the general fund, with supplemental funds coming from the sale of revenue bonds by APA. The stated purpose of this state participation in the funding of power projects was to convert a portion of Alaska's one-time oil wealth into a renewable resource with long-term benefits to Alaskans. In addition, state funding of such capital-intensive projects would help ensure that consumer costs in the projects' early years would be competitive with the costs from alternative (oil or gas) power sources.

The Energy Program for Alaska currently includes four major hydro projects that are either in operation or under construction. These are Solomon Gulch, Swan Lake, Tyee Lake, and Terror Lake. So far, $270 million has been appropriated by the Legislature for direct funding of these projects. In addition, the APA has borrowed in the form of short-term notes $200 million in interim financing to supplement the financing of these projects.[3] The next major projects anticipated to be added to the Energy Program for Alaska are Bradley Lake and Susitna.

A characteristic of the Energy Program for Alaska is that each project must pay a proportionate share of the combined outstanding debt. This means additional debt cannot be added to the system in a proportion higher than the existing ratio of debt to state funding without raising all rates throughout the system.

Under this system there must be sufficient state revenues available if hydroelectric projects are to be successfully financed in Alaska. As 88% of the state's income comes from oil revenues, the future of the state, and its hydro development plans, is inextricably tied to the price of oil on the world market.

Future State Oil Income

There is now great uncertainty concerning the direction in which oil prices, which have fallen significantly in the last year, are heading. While some analysts believe that prices will stabilize in the long-run and continue to escalate in real terms, others anticipate a serious drop in the short-term that will only very gradually return to price levels experienced during the last decade.[4]

To demonstrate the expected severe decline in state revenues, the Institute of Social and Economic Research compared their 1983 preliminary projections of petroleum revenues with projections they made just two years ago.[5]

For FY 84, their former projection of $5.6 billion (nominal dollars) compares to the new projection of $3.2 billion. For FY 93 (the year in which the Watana phase of Susitna could be expected to come on-line) the 1981 projection of $13.8 billion compares with a new projection of just $4.0 billion.

The Department of Revenue and the Legislative Finance Division have projected similar revenue declines.[6] Alaska's peak oil revenue year appears to have already passed.

Effect of Oil Prices on Susitna

Lower oil prices will affect the Susitna project in at least four major ways:

1) Lower state revenues may be insufficient to pay for Susitna.

Reduced state income may mean that there are insufficient state funds to pay for the state's portion of Susitna.

The Legislative Finance Division has compared projected revenues to funds available for capital projects and to funds needed for Susitna.[7] They identify just $2.4 billion in nominal dollars available for all capital projects between 1985 and 1993, under current law, after subtracting funds needed for the operating budget. This compares to the $3.5 billion alone that would be required for Susitna under SB 68 and to the $11.7 billion that has been identified for other planned capital projects. Even if the law were changed so that both permanent fund inflation-proofing and dividends were repealed, the analysis shows that there would still be a total of only $6.6 billion available for capital projects in the same time

period.

2) Less state spending and reduced economic activity decreases the demand for power.

Battelle, in revising its electricity forecasts for the railbelt last year, adjusted its forecasts downward to reflect th[illegible] effect.[8] The previous peak demand projected for 1995, for example, was 993 MW in the moderate case; the revised peak demand is 791 MW for the same year.

3) Lower inflation rates may result in higher financing costs.

If interest rates remain high, the discount rate--the difference between inflation and interest rates-- will increase. Higher discount rates will result in higher real costs for bonds.

4) Thermal alternatives to Susitna will be cheaper than anticipated.

Less expensive thermal alternatives (oil, gas or coal) reduce the net economic benefits of Susitna. The financial feasibility of Susitna would also be affected, as more state funding would be required to assure the marketability of Susi[illegible]a power. The House Research Agency has studied the effect of lower natural gas prices on Susitna feasibility.[9] The recent gas contracts signed by Enstar Natural Gas Company and the Department of Revenue's most-recent oil price escalation forecast were used as the basis for comparison with the Acres feasibility analysis. The conclusion was that if oil prices correspond closely to the Department of Revenue's forecast, the price of power from gas generation would be 38% less in 1994 than projected by Acres, and 50% less in 1996. This means that, in order for the price of power from Susitna to be at a marketable rate, an additional $600-700 million in state grant funds, above the $1.8 billion projected by Acres, would have to be appropriated to the project.

Key Feasibility Factors

The real discount rate and fuel price escalation are the key feasibility factors that must fall within defined limits for Susitna to be an economically feasible long-term source of railbelt power. Acres, in performing the feasibility analysis, made assumptions on future values of these factors based on the information available at the time of the study.[10] Acres performed a sensitivity analysis, that

showed the net economic effect of changes in these assumptions.

Acres assumed a base case discount rate of 3%, and the APA continues to assume that Susitna financing can be obtained at that rate. Acres concluded that Susitna was viable only with a discount rate of less than 4.2%. A discount rate of 5%, the sensitivity analysis showed, would result in a negative net benefit of over $500 million. The current discount rate, according to Data Resources Inc., is more than 6%.[11] Even that favorable rate assumes tax-exempt financing.

It is not clear whether Susitna bonds will be eligible for tax-exempt status. According to the APA, the IRS has indicated that the "two-county rule" would prohibit tax-exemption, unless power sale contracts were something other than take-or-pay. The APA has identified alternative methods of obtaining tax-exempt status, including granting the APA authority to retail power (by-passing the utilities) or restructuring the existing utilities.[12]

The fuel escalation rate assumed by Acres in its base case was 2.6% above inflation to 2000 and 1.2% to 2010. An escalation rate less than 1%, according to the APA, would result in negative net benefits. A zero percent escalation rate would result in a negative net benefit of over $1 billion.

Other critical factors in the feasibility analysis include load forecasts, capital costs and capital cost escalation, and base fuel costs.

There is now considerable uncertainty regarding oil and gas price trends. Other elements of the feasibility analysis are also in flux. The APA is currently reevaluating the assumptions for its Susitna update, which will be reviewed by the Office of Management and Budget. Much of this information can be fed into computer models, so that project feasibility may be continually monitored.

Susitna Financing Plan

The APA is required by statute to submit a finance plan for each proposed project. Acres has prepared a report for the APA, "Task 11: Financing Options," which is the first step towards a finance plan for Susitna.

The financing options suggested by Acres, and reviewed by the APA's financial advisors, involve state appropriations of between $1.4 and $1.8 billion (1982 dollars) between 1984 and 1989, with the balance of funding coming from revenue bonds. Two of the four options involve state appropriations guaranteed through a constitutional

amendment.

Among the recommendations of APA's financial advisors are that prior to major state expenditures or the sale of any bonds, participating utilities sign definitive contractual commitments, an updated economic and financial analysis of the project be completed, and the question of whether or not tax-exempt bonds can be sold be answered.

The advisors stressed that bonding, to the greatest degree possible, should be with revenue bonds, backed by the moral obligation of the state, rather than relying upon general obligation (G.O.) bonds . They said that G.O. bonds would, in any case, be of limited usefulness, as they will be marketable only if their maturity dates fall within the state's short oil revenue curve, and the state can only incur an additional $565-$900 million in G.O. debt without negatively affecting its bond rating. The advisors also recommended that the state appropriation be made first, before any bonds are sold.

Cost History of Other Power Projects

The four hydro projects of the APA that are either in operation or under construction have experienced significant increases in construction cost estimates between the feasibility and actual construction stages. These have varied from 54% for Swan Lake to 218% for Tyee.[13]

The committee specifically reviewed the Tyee Project. Its wholesale power price, even with the state paying 70% of the capital costs, will be much higher than the cost of diesel power for Petersburg and Wrangell. Problems identified were major changes in project design, poor initial cost estimates, poor review of cost estimates, poor pricing analyses, hasty decisions made without the benefit of accurate data and analysis, overcapacity resulting in underutilization, and mid-project statutory changes.

In response to committee concerns, APA staff testified that they expect to gain better control of project costs in the future through more professional and complete engineering work, closer supervision by the APA, and a requirement for independent cost estimates.

Other lessons may be learned from the experiences of the Washington Public Power Supply System (WPPSS), as explained by Eileen Titmuss, a bond analyst for Drexel, Burnham, and Lambert in New York City.

In WPPSS, Washington created an agency to enter into long-term power sales contracts with utilities to build nuclear plants. The bond market believed that the projects were backed by the full faith and credit of the U.S.

Government, and the bonds found a generous market acceptance. In truth, the real security behind the bonds was the ability of the Bonneville Power Administration to raise rates. When costs of the nuclear plants rose and power demand proved to be less than had been projected, two of the five plants had to be mothballed and a substantial rate increase was proposed. Participating utilities balked at the increase, claiming they simply could not raise the required revenues, despite take-or-pay contracts.[14] This has resulted in a revenue shortfall that may soon force WPPSS into defaulting on these bonds.

The lessons of WPPSS that could be applied to Susitna include knowing true and full project costs, having realistic demand forecasts, requiring the utilities to participate in project investment, providing for rate-payer education and involvement, and close state monitoring of agency management and contracting.

The bond market, after WPPSS, is expected to be tighter because of competition for funds among other large-scale projects. In addition, bond purchasers can be expected to take a harder look at both the sanctity of power sales contracts and the economic assumptions underlying project feasibility analyses.

Power Sales Contracts

Power sales contracts help assure the marketability of a project's power. It is standard industry practice to obtain power sales contracts prior to beginning project construction.[15]

Until now, the APA has not followed this practice, and utilities have been under no obligation to purchase power from its completed projects. In the Ketchikan case, the power sale contract that was eventually signed allows the utility to cease purchasing Swan Lake power if it becomes higher priced than the diesel alternative.

The APA is currently in the process of developing a standard take-or-pay contract, requiring utilities to purchase the power regardless of its cost.

Utilities are understandably reluctant to sign such contracts if the price of project power may cost more than the alternatives. This problem has been most apparent in the case of Petersburg and Wrangell, where it appears that the power from Tyee Lake will cost significantly more than continuing to generate with diesel.

Utilities are also reluctant to sign take-or-pay contracts for power under the Energy Program for Alaska because of flaws in the legislation.[16] One concern is the

provision that if $5 billion is not appropriated for energy projects by 1986, all projects must pay a 10% return on state investment each year. Further, because of the "pooling" nature of the Energy Program for Alaska, utilities are responsible for paying a proportionate share of any new debt that enters the system and have no control over rate increases to meet that debt. This makes it impossible to predict rates or ensure price stability.

The APA has recommended, the Federal Energy Regulatory Commission will require, and the Governor has insisted that construction not begin on Susitna without first having rigorous power sales contracts in place. The utilities are reluctant to make commitments and have indicated that they will not do so until they have a better assurance that Susitna costs will be competitive with alternatives.

All major railbelt utilities were represented at the Anchorage hearing, and all testified that they must have more information about the level of state funding and the possible price of power before they will be willing to negotiate take-or-pay contracts.

Although the Alaska Public Utilities Commission has no jurisdiction over the APA, it does have authority to review the power supply contracts of regulated utilities to ensure reasonable consumer rates. It would likely become involved if the reasonableness of Susitna prices came into question.

Information and Work Schedule

APA's Susitna feasibility update will not be completed until mid-May, and will include, besides economic feasibility factors, information on alternatives including Cook Inlet gas, North Slope gas, coal, and Chakachamna hydro.

The Administration indicated that it will be prepared, also in May, when oil market fluctuations may have steadied, to discuss the state's ability to finance Susitna.

A license application was filed with FERC on February 28, 1983. FERC approval for construction is not expected until December 1986, although FERC hopes to expedite the approval process.

The APA Board of Directors, meeting March 14, altered their request for funding for the Susitna project from the $37 million recommended in the Governor's preliminary FY 84 capital budget to $22 million. This smaller amount of money will enable them to continue with the work required for FERC licensing, but will not provide for detailed design engineering. The reason given for the decision was to request funds only as needed; as FERC licensing is expected to take three years, it is not necessary to proceed with

detailed design work during FY 84.

The APA is also studying the possibility of lowering the height of the Watana Dam. Preliminary indications are that dropping the dam height by 85 feet could save 10% of the Watana construction costs for 12% less annual energy, while a drop of 185 feet could save 20% of the costs for 26% less energy. The intent of such a design change would be to enhance the financial viability of the project by requiring less appropriation of state funds. Although the project cost would decrease, the per unit cost of energy would increase.

Conclusions

The two major outstanding questions regarding the viability of the Susitna project concern its economic and financial feasibilities.

Economic feasibility relates to the project's net benefits, compared to the alternatives for providing electricity to the railbelt. The study completed by Acres in 1982 concluded that at that time the project appeared feasible. Since that time, a number of fundamental assumptions have changed and remain unsettled. An updated feasibility analysis is required to determine if Susitna remains the most economic choice.

This feasibility analysis must realistically consider the alternatives to Susitna. These include Cook Inlet gas, North Slope gas, coal, other hydro including Chakachamna, and conservation Each of these alternatives has so far received far less consideration than the Susitna option.

Financial feasibility relates to whether, regardless of the project's economic feasibility, the project can be financed so that the price of power will be at a marketable rate. The Acres analysis showed that a state appropriation of at least $1.8 billion (in 1982 dollars) would be required to keep the price of power competitive. Unless Alaska is both willing and able to pay this price, the project will not be financially feasible, utilities will not contract to purchase Susitna power, and project bonds will not be marketable.

A workable finance plan for Susitna needs to answer at least three questions:

(1) How much does the state need to appropriate to Susitna to assure that its power will be initially priced no higher than the alternatives?

(2) Will state revenues be sufficient to make such an appropriation without negatively impacting other state needs?

(3) Can a mechanism be developed that

would either guarantee the availability of the necessary funds or provide for the accumulation of all necessary funds prior to bonding and construction?

The finance plan proposed in the legislation before the committee does not answer these questions. The state revenues available for Susitna have not been determined, the tax-exempt status of Susitna revenue bonds is uncertain, the degree to which the state can safely obligate to back the revenue bonds is unknown, and other elements of a successful finance plan are absent. Accordingly, the basis for acting on the bills is not currently available.

A public vote would be desirable to assure public acceptance of both project subsidies and future power rates. Such a vote requires a realistic and workable finance plan, and a question for the voters with specific information as to total project costs and levels of state funding.

The FERC license for Susitna is not expected before late 1986, so a construction decision is not required at this time.

NOTES

1. Letter from Charles Conway to Governor Hammond, April 26, 1982.

2. A distinction is made between economic feasibility and financial feasibility. Economic feasibility relates to whether a project is the lowest-cost option in the long-run. Financial feasibility relates to the ability to finance a project in such a manner that the price of power is competitive with alternatives. A project might thus be economically feasible without being financially feasible.

3. The interim financing is divided between Tyee Lake ($50 million), Swan Lake ($35 million), and Terror Lake ($115 million).

4. Recent forecasts are noted in "Alaska Energy Planning Studies," by Arlon Tussing and Gregg Erickson, Nov. 1982. The authors note that, while the government agency forecasters referenced by Acres project increases in real oil prices, recent internal forecasts by petroleum producers assume real declines through 1985 and a long-term trend between a level nominal-dollar and a level constant-dollar trajectory. The significance of varying forecasts is not whether one may be more reliable than another but that there is neither consensus nor certainty.

5. "Comparison of ISER MAP Model Projections Prepared in 1981 for Battelle Railbelt Study and Preliminary Projections Prepared in 1983," prepared for the Alaska Senate State Affairs Committee by Scott Goldsmith and Gunnar Knapp, Feb. 1983

6. All revenue projections are simply projections, and actual revenues could vary widely. The Department of Revenue currently bases its projections on the 30th percentile of probability, which means that there is a 70% chance that revenues might be higher than projected. With the recent drop in OPEC prices, however, the 30th percentile projections are considered most likely.

7. "Funds available for Capital Projects," memo to Senator Vic Fischer from Milt Barker, Fiscal Analyst, Feb. 21, 1983

8. "Railbelt Electric Power Alternatives Study," Battelle, Volume 1, Dec. 1982, p. xv

9. "Comparison of Susitna and Natural Gas Power Costs," memo to Rep. Hugh Malone from Jack Kreinheder, Research Staff, March 3, 1983

10. Plate 24, "Sensitivity Analysis," Acres summary report, 1982

11. Data Resources U.S. Review, Feb. 1983

12. APA Susitna "Checklist," Table 1, transmitted to Governor Sheffield Jan, 17, 1983

13. "Cost History of APA Hydro Projects", Chart 5 accompanying transcript of testimony by Gregg Erickson before the Senate State Affairs Committee, March 1, 1983

14. In Oregon, the courts have ruled that contracts binding municipal utilities to WPPSS debts are illegal. At question is whether the utilities had the right to make such commitments without a vote of the ratepayers.

15. Letter to Charles Conway from Eric Yould, October 11, 1982

16. "Marketing of Project Power Under the Energy Program for Alaska," memo from Myles Yerkes to Eric Yould, Dec. 28, 1982

WITNESSES WHO TESTIFIED BEFORE THE COMMITTEE

WITNESS	AFFILIATION
Governor Sheffield	Administration
Eric Yould	APA
Ray Benish	APA
William Wakefield	FERC
Tom Singer	Erickson & Associates
Ernie Haugen	Thomas Bay Power Commission
Richard Underkofler	City of Petersberg
Kenneth Mason	City of Wrangell
George Matz	OMB
Ernie Mueller	Environmental Services, Limited
Kent Wick	Homer Electric Association
Bob Mellin	Self
Mike Kelly	Golden Valley Electric Association
Jeff Bohman	Self
Harold Pomeroy	Self
Jeff Eustis	Self
Bob Penney	State Chamber of Commerce
Mano Frey	Laborers' Union Local 341
Joseph Henri	Resource Development Council
Jim Ayres	Self
Paul Lowe	Self
Larry Underwood	Self
Wayne Beckwith	Anchorage Chamber of Commerce
Budd Goodyear	Matanuska Electric Association
Tom Stahr	Municipal Light and Power
Lee Woreham	Susitna Power Now
Liz Gilbert	Chugach Electric Association
Sharon O'Dell	Self
Nancy Lee	Self
Mary Pat Haberle	Self
Keith Treseder	Self
Victor Mittasch	Self
Judy Zimicki	Northern Alaska Environmental Center
Jim Sykes	Self
George Skladal	Self
Doug Stark	Self
Ron Kuzek	Self
Mark Beltz	Self
Bill Holton	Self
Brian Boyd	Self
Earl Finkler	CSM

Chuck Konigsburg	Self
Lisa Moorehead	Self
George Rogers	Self
Don Grimes	First Southwest
Steve McAleer	First Boston
Sterling Gallagher	John Nuveen
Tony Merritt	Acres American
Gervin Wernock	Acres American
Eileen Titmuss	Drexel Burnham Lambert
Gregg Erickson	Erickson and Associates
Lee Gorsuch	ISER
Milt Barker	Legislative Finance Division
Robert Heath	Department of Revenue
Harrison Call	RMI Pacific Northwest
Carolyn Guess	APUC
Dick Emmerman	OMB
David Rogers	Senate Advisory Council
Al Carson	DNR
Dennis Kelso	ADFG

ALASKA STATE LEGISLATURE
SENATE STATE AFFAIRS COMMITTEE
SENATOR VIC FISCHER, CHAIRMAN
POUCH V, JUNEAU 99811
(907) 465-4954

March 10, 1983

Honorable Bill Sheffield
Office of the Governor
Pouch A
Juneau, Alaska 99811

Dear Governor Sheffield:

The Senate State Affairs Committee has completed extensive hearings on the proposed Susitna hydroelectric project. We appreciated your taking the time to share your thoughts on this project with us.

The inescapable conclusion of the hearings is that the precipitous drop in oil prices has substantially altered the economic foundations of the Susitna project. Unless an immediate and thorough re-evaluation is made, and new answers provided, Susitna may well change from its desired goal of being the high benefit keystone to future state development into an uneconomic white elephant with an appetite for state funds capable of destroying Alaska's economy for years to come.

It has become clear that action by you and your administration is critical before the project can move ahead, and before we will be in position to act knowledgeably on legislation pending before the Senate State Affairs Committee (SB 68, 69, 70, and 71). We trust that you will cooperate in providing the necessary information and answers.

A summary of the extensive information and analytical work presented at the hearings will be completed next week and will be presented with the meeting minutes and edited transcripts. The purpose of this letter is to share with you, immediately, some of the questions that have been raised so that they may begin to get the attention that they require.

Though most people favor hydroelectric power and Susitna, the crucial question now facing Alaska is, simply, how and whether the state can pay for the project. The economic and financial picture was

quite different a few years ago, when oil revenues were piling up and it appeared that we would have billions of dollars in "surplus" revenues to spend on Susitna. If we are to proceed, we must find new ways of financing the project that will not undermine the fiscal structure of the state.

The committee was told that falling oil prices will affect the Susitna project in four ways:

*First, state revenues will be lower, and the funds simply will not be available to appropriate the state's "equity" portion without sacrificing other needs. As Lee Gorsuch, of the Institute of Social and Economic Research, testified, it now looks as though our peak revenue year may well be past.

*Second, lower state revenues will result in less economic activity within the state, which will reduce the future demand for the project's power.

*Third, lower oil prices and reduced economic activity should result in a lower inflation rate, which may raise the real cost of project financing.

*Fourth, lower prices mean that the cost of the thermal alternatives to Susitna will be less.

To elaborate on the last point, a recent memo by the House Research Agency indicates that with lower than expected gas prices (as evidenced by the recent Enstar contracts) the Susitna project would need subsidies of an additional $600-700 million in state appropriations, above the minimum$1.8 billion projected by Acres, as necessary to simply make Susitna power marketable relative to the alternatives.

Given the projected revenue situation, an awareness seems to be emerging that the factors that made Susitna an economically positive project just a short time ago may no longer be present. These factors must be continually monitored from this time forward so that when the time is right, we will be in a position to go forward with Susitna. Some of these factors, as identified by OMB, are:

--load forecasts
--fuel prices
--capital costs
--the discount rate

All of these factors are now different from the assumptions made by Acres in evaluating Susitna eighteen months ago, and are still changing.

At this stage, we have identified some of the key issues and questions that now need to be addressed in order to proceed with decisions on Susitna. We need your help to deal with them.

1. FINANCING

The basic question is: is there, can there be, a workable

finance plan for Susitna? So far, the Alaska Power Authority has not presented a finance plan, only a list of possible options. APA has suggested that only a dedicated revenue stream of $1.8 billion ($1982) would satisfy the need for a cash contribution by the state, with revenue bonds to supplement the financing. Analysis by the Legislative Finance Division, however, has found that such a dedicated stream would leave no money for any other capital projects in the whole state. Commissioner Heath has indicated that the administration is "very nervous" about Susitna financing, but is not prepared to comment more specifically on a finance plan until some of the uncertainties in the oil market are resolved. I believe we will have no progress on Susitna until a realistic financing plan is in place, one that can be approved by all parties.

What are Administration plans with respect to Susitna financing?

Is a financing plan being prepared?

When can the legislature expect a bona fide proposal from the administration for financing Susitna?

What is the Administration position on the financing bills pending before the Senate State Affairs Committee?

SB 68 -- advisory vote on financing Susitna
SB 70 -- Alaska Energy Dividend Fund
SB 71 -- bonding for Susitna

2. UPDATING ASSUMPTIONS

Which of the Susitna study and feasibility assumptions need to be updated, and how shall the updates be incorporated into the project's evaluation?

Who will be responsible for what data, and how will it all be tracked?

When will an authoritative re-assessment be available?

Many of the factors in question were identified during our hearings. They include the forecasted demand, fuel prices and price escalation, capital costs, and the bond discount rate. The APA is responsible for the update, but they have indicated that it will not be completed until May. Even then, these factors will still be subject to considerable uncertainty.

3. DECISION TIMING

You and others testified to the necessity to meet various criteria before a decision can be made to go ahead with Susitna.

The FERC representative, William Wakefield, testified that FERC approval is not likely before December, 1986, maybe not until 1987.

How far shall we go and what shall we do with Susitna before we are sure that it is both feasible and financable?

What is the Administration position on SB 69, which would authorize first phase construction of Susitna?

What schedules do you anticipate for provision of neces-

sary answers?

APA staff testified that a smaller Watana Dam is under consideration. They also indicated the possibility of a different, single dam on the Susitna River in lieu of the two-dam configuration; it would be designed for smaller load demands and would cost less. At the same time, site specific design and engineering are being considered and appropriations have been requested to pursue plans previously prepared.

What timing and effort is considered appropriate for further preparatory work pending FERC approval? What further action will be required in pursuit of FERC application action? What costs are entailed in what activities in FY 84, 85, and 86? In other words, how much money is required, and when, to keep the Susitna project viable during the FERC application and re-evaluation periods?

4. RELATIONSHIP TO BRADLEY LAKE

APA staff testified that Bradley, in order to compete with gas, would require a cash contribution of 50-75% of the project cost which is estimated at a total of about $400 million.

How does Susitna fit with the need for and financing of other planned hydro projects, specifically Bradley Lake?

How and when shall we proceed with Bradley? Shall it be the 135 MW size or the 60-90 MW size? Such decisions are clearly intertwined with a decision on the timing of Susitna, and they need to be addressed in that context.

In addition, is it wise to begin funding this smaller but still expensive dam incrementally, without considering where the full funding will come from and whether we can afford it either with or without Susitna?

5. ALTERNATIVES

Serious questions have been raised about the extent to which alternatives to Susitna hydro have been adequately examined. This matter becomes particularly important if Susitna decisions are deferred due to financing, marketability, or other problems.

It has been very difficult in the past to evaluate alternatives--gas, coal, other hydro--because they have not enjoyed the same degree of financial support as Susitna. Although many studies have been completed, the focus has not always been clear. For example, of the two recent studies concerned with using North Slope gas for electrical generation, one (Ebasco) is principally a hardware study, and the other (Booz-Allen) basically avoided the option because Ebasco had already looked at it. The representative from Booz-Allen, when asked to compare the gas option to Susitna, commented that the way to decide on how to meet railbelt electrical needs was to identify the need and then look at all the options, not to identify a source and then show how it could serve the need.

It was also suggested that we let the marketplace do the

choosing, and then decide whether to subsidize the capital costs of that choice.

In any case, in order to be prepared, additional consideration of the short-term and long range alternatives to Susitna appear to be called for.

How can we best continue to evaluate alternatives? Who should do that?

Are there technologically "clean" ways of using coal for power generation? Could such use facilitate development of coal resources for export and other economic development? Would state subsidies be required to make that feasible? How much money would be required to adequately study coal potentials?

How can we best determine what the realistic prospects are for use of gas to meet future power demand? What effect would state equity or subsidies akin to Susitna have on future gas and power cost?

Chakachamna and other hydro?

The Department of Commerce and Economic Development (DCED) has documented significant savings, even in Anchorage, through residential energy conservation. In other parts of the country, utilities have found that it's usually more cost effective to invest in conservation than in new generating facilities. Even though conservation will not by itself solve future power requirements problems, its potential for energy and cost savings is enormous.

What role can and should conservation play in decreasing the need for additional power for the railbelt?

How do the benefits of other alternatives, including subsidized power costs, compare with the benefits of energy conservation?

There are many other questions that need to be answered in the near future, including: tax-exempt bonding, land ownership, fisheries mitigation, and power sales contracts. The ones I noted above seem, based on the committee hearings, to be those that are the most basic and urgent at this time.

The above questions are, of course, difficult to answer. But they must be confronted in light of the fiscal realities now faced by the Susitna Project. As the issues before us are of such importance that they must be addressed at the highest level, I look forward to your Administration taking the lead in seeking answers to all the many questions and establishing a policy course for Alaska's energy future.

It is clear from the information we obtained in the hearings that legislative actions on Susitna will be stymied unless we receive

critical financial and other information from your administration. Your cooperation in this will be greatly appreciated.

Sincerely,

Vic Fischer

Senator Vic Fischer

cc: Commissioner Dick Lyon
Commissioner Esther Wunnike
Commissioner Dan Casey
Peter McDowell, OMB
Charles Conway
John Schaeffer
Robert Huffman

BILL SHEFFIELD
GOVERNOR

STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

March 16, 1983

The Honorable Vic Fischer
Senator
Alaska State Legislature
Pouch V
Juneau, AK 99811

Dear Senator Fischer:

This will acknowledge receipt of your letter of March 10, sharing with me the questions raised during the extensive hearing held by the Senate State Affairs Committee on the proposed Susitna hydroelectric project.

A copy of your list of questions has been sent to the Commissioner of the Department of Commerce and Economic Development, Dick Lyon. I have asked him to personally coordinate the Administration's response to these questions and to assist you further, if necessary.

I look forward to receiving a summary of the hearings when it is completed.

Sincerely,

Bill Sheffield
Governor

ALASKA STATE LEGISLATURE
SENATE STATE AFFAIRS COMMITTEE
SENATOR VIC FISCHER, CHAIRMAN
POUCH V, JUNEAU 99811
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SENATE STATE AFFAIRS COMMITTEE

COMMITTEE REPORT

ON

THE SUSITNA PROJECT

SENATE BILLS 68, 69, 70, AND 71

ADDITIONAL MATERIAL

MARCH 24, 1983

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SENATE STATE AFFAIRS
STANDING COMMITTEE
February 24, 1983
1:30 p.m.

Members Present: Senator Vic Fischer, Chairman
Senator Rick Halford
Senator Arliss Sturgulewski
Senator Tim Kelly

Members Absent: Senator Pat Rodey

COMMITTEE CALENDAR

No specific bills were under consideration at this meeting. Instead the time was used as a background briefing on hydroelectric power as it relates to the legislation before the Senate.

WITNESS REGISTER

Mr. Eric Yould
Alaska Power Authority
No address or phone provided.
Position Statement: Answered questions from committee members and offered testimony regarding hydro construction and financing.

Bill Sheffield, Governor
State of Alaska
Pouch A, Juneau, Alaska 99811
465-3500
Position Statement: Answered questions from committee members.

Representative Tony Vaska
Alaska State Legislature
Pouch V, Juneau, Alaska 99811
465-4914
Position Statement: Committee draft doesn't reflect his testimony.

Senator Rick Halford
Alaska State Legislature
Pouch V, Juneau, Alaska 99811
465-4958
Position Statement: Asked questions of Eric Yould.

PREVIOUS ACTION

No previous action to record.

ACTION NARRATIVE

TAPE# 1 for 2/24/83

Recording Number 000	The meeting of the Senate State Affairs Committee was called to order at 1:30 p.m. with member Senators V. Fischer, Ray, Sturgulewski and Kelly present. Senator Rodey was absent.
Number 010	Chair V. Fischer calls the meeting to order.
Number 051	Today's meeting is to provide background information for the series of hearings. The administration's views are going to be heard from Governor Sheffield.
Number 053	Governor Sheffield testified that power was one way we can develop Alaska. He felt that if Susitna met certain criteria, then it would be a good deal., He has come up with a checklist for the Susitna project consisting of the following: we must know 1) the cost, 2) the financing from start to finish, 3) who will buy the power, 4) 100% of the design, 5) final pre-construction cost estimate, and we must have 6) Federal Energy Regulatory Commission license, 7) external review planning, 8) tax exempt status in place, 9) legislative authoriazation, and 10) APA approval. He felt that Bradley Lake was also part of the overall picture as it could come on line before Susitna and could supplement the railbelt needs by providing peak power to Anchorage. He envisions a total intertied system within the railbelt area receiving power from three locations where all consumers would pay the same price. State money would be involved, with the state getting its money back over a long, long time. In rural Alaska we subsidize diesel fuel, although there are lots of possibilities for power other than diesel fuel--, hydro, gas, wind, thermal. Under Commissioner Dick Lyon we are going to try to develop long range plans while we have some money with which to do it. In Southeastern Alaska, Governor Sheffield envisions two power grids consisting of northern and southern sections. He named other options like coal, and the wind mills which are used in Unalakleet, and felt that we need to be able to store up that power. Governor Sheffield's overall view was to

generate a long term plan consisting of two parts--one large scale and one small scale. It was his view that they all help to get our money back. He felt that Susitna looks right 50 years down the road. In any case, in order to develop our energy resources, we need to store up large amounts of money-- as the Alaska Investment Fund would do.

Chair V. Fischer asked what the energy network was under the Administration, and how it all fits together.

Governor Sheffield responded that the Alaska Power Authority is housed under the Department of Commerce and Economic Development, but that it is run by an independent board.

Number 289 Governor Sheffield said that he saw himself becoming more involved with the Alaska Power Authority than the previous administration and wants more direct contact with it. Policy decisions will be up to Commerce.

Commissioner Lyon, Department of Commerce and Economic Development, said that the Department wants to be closer to all the entities under its umbrella.

Number 328 Chair V. Fischer asked how fast they saw the decisions being made. He also asked if the Commissioner thought they would proceed down the checklist and then decide on the project.

Number 338 Governor Sheffield would like to speed up the process of the checklist. "I don't have a time frame yet."

Chair V. Fischer said that the committee has before it several bills affecting Susitna financing. Governor Sheffield said that he would be looking at alternative financing.

Number 387 Eric Yould, APA executive director, gave an overview of the Alaska Power Authority. One of the goals of APA would be to put into place a long term scenario that would implement the views of the Governor. He agreed that he worked very closely with the new administration. He felt close Administration supervision was in the best interest of the state. He continued to

explain that the purpose of the Alaska Power Authority was to provide economic development to the state through the lowest cost power, and that the APA took a longer term view. He felt that we are developing very cost effective projects.

Number 000 — CHANGE TAPE TO SIDE 2.

Number 183 — Eric Yould introduced Mr. Ray Benish.

Mr. Ray Benish testified on the APA's ability to study and implement power plans.The goal of the APA is to remain small, and they contract out most of their work. 1/2 billion dollars worth of construction has been funded under APA. Other programs include power cost assistance in rural areas, where the State picks up part of the costs for electricity. Current program cost is $10 million per year. Another program is the revolving electric loan fund. It allows utilities to get 2 percent loans which enables them to provide electricity to areas otherwise unserved. Power production loan fund has been used in the past to fund some hydro studies. He concluded by saying that all these programs must report back to the Legislature.

Next came a slide show on various Alaska Power Authority projects including Bradley Lake, Green Lake, Swan Lake, Terror Lake, Tyee, Solomon Gulch, Anchorage/Fairbanks intertie, waste heat projects, Silver Lake, Susitna, Kiseralik, and Tazimina.

Number 000 — BEGIN SIDE 2, TAPE 1.

Number 93 — Senator Halford asked why the Susitna camp is in the only swamp around?

Number 101 — Eric Yould answered that the camp was put in during the middle of winter. The decision has proved embarrassing.

Question.

Number 150 — Eric Yould testified on the system undergone with power projects. The process on the projects begins with a reconnaisance study process, and proceeds with a review of energy needs, a comparison of life cycle costs, a review of the costs of resources,

and a study of alternatives to diesel fuel generation. Mr. Yould said that the Alaska Power Authority had been criticized for bringing forth too many projects, but actually APA rejects many projects which are not feasible. APA has just completed the feasibility stage on Susitna. He said that if the conclusion proves that Susitna is technically feasible, APA still can't go forward until the Legislature authorizes construction. Alaska Power Authority initiated the Tyee project with state funds. It had to have interim financing. This is also true for Swan Lake and Terror Lake projects.

Number 275 — Senator Sturgulewski wanted an overview of what will happen for the rest of the presentation and the other hearings on Hydro that have been sheduled by this committee.

Number 282 — Chair V. Fischer responded that they would follow the printed agenda.

Number 324 — Chair V. Fischer asked what was the incentive for a "good" project like Green Lake to pool with higher cost projects.

Number 336 — Eric Yould answered that the lower cost projects will not wish to be included in the pool and higher cost ones will want in. Present pooling system may not be workable. May affect bonding.

Number 363 — Chair V. Fischer asked if the Alaska Power Authority was looking at ways of financing some of these other projects.

Number 370 — Eric Yould responded that they were.

Number 380 — Chair V. Fischer asked what kinds of power sales agreements do we now have with Swan and Terror Lake?

Number 390 — Eric Yould responded that the power sales agreements were written around SB 25 and specify that they are "subject to existing state law." They will now have to be changed, and the APA is looking for a standard to adopt. Petersburg and Wrangell have recently balked at the power sales agreements offered them for Tyee power.

Number 412 — Senator Sturgulewskisaid that there was a

lack of a specific method of legislative oversight and that it was frustrating. She

asked if A.P.A. could provide data for unexpended amounts on various projects?

Eric Yould answered that yes they could.

Senator Sturgulewski asked if A.P.A. had a method to report its findings on projects.

Number 449 Eric Yould answered that a long term energy plan was a good vehicle for that purpose.

Number 472 Senator Sturgulewski said that this information was not available or perhaps not asked for in the past. She felt that we needed better legislative oversight.

Number 518 William Wakefield, Federal Energy Regulatory Commission (FERC) testified. His office has developed a "Susitna Status Report" which was distributed to the Committee. FERC is charged with determining whether or not the Susitna project is in the best interest of the public. FERC's process for that determination consists of public notices, sixty to ninety day comment period, and a three pronged analysis. An Environmental Impact Study is prepared. There may be a hearing before an administrative law judge. Intervenors may present evidence. A staff recommendation is made. Commissioners review the record. The three criteria for issuance are is the project 1) Needed? 2) Stable? 3) Environmentally sound? The status report lays out timetable for Federal Energy Regulatory staff decisions.

Number 598 Chair V. Fischer: What criteria do you use to determine the need for power?

Number 605 William Wakefield answered that they use the application and other data. "Hydroelectric Power Evaluation" is a document used by FERC to make these decisions, and was provided to the committee. "Any conclusion we make we must defend in public."

Number 625 Chair V. Fischer said that Alaska has a policy of promoting power development. He then asked how Mr. Wakefield would evaluate Alaska's long term plan for the future.

Number 645

William Wakefield answered that such economic development is speculative and very difficult to evaluate. FERC makes independent analyses.

Chair V. Fischer said that he was trying to get a feel for the relationship between the F.E.R.C. and the State.

Number 660

Senator Sturgulewski asked what was the long range price of other energy sources. She asked if FERC used the same assumptions as the Finance Committee.

William Wakefield answered that they look at the State's analysis, and they look at their analysis, and make an independent judgement if they don't agree. He said that there was a mechanism in place whereby the conclusion made by FERC could be challenged. In reviewing the application, however, they don't discuss the merits of the information, only the sources and explanations.

CHANGE TAPE TO TAPE 2 for 2/24/83.

Number 000

William Wakefield: FERC is speaking on the feasibility of the projects. Their opinion can be challenged in court but not while they are in the review process.

Number 026

Senator Sturgulewski asked where the FERC representative would physically be located?

Mr. Wakefield answered Washington, D.C.

Number 045

Senator Sturgulewski asked if they would have on-site personnel. Wakefield answered yes.

Number 093

Senator Sturgulewski asked what was the last major dam built in the last few years?

William Wakefield (FERC) said there hadn't been any for quite some time.

Chair V. Fischer asked if FERC looked at power purchase agreements, or does FERC assume that it can be done.

William Wakefield answered that the power sales agreement had to come before the licensing. He further concluded that FERC assumes the need for power is very clearly

defined.

Number 155

Chair V. Fischer asked Mr. Wakefield if the state could assume that when FERC issues an order that they have okayed the project and that the state could then go ahead with the project. Senator Fischer also asked what questions the state should still ask after we have received the FERC approval.

William Wakefield answered that the State doesn't have the final design yet, so FERC reviews what the State has and they stay in touch in an on-going process. He commended the APA. He also said that unless FERC has all the information, they cannot go through their process.

Number 201

Chair V. Fischer asked if FERC would throw the application away if it was missing some pertinent information.

William Wakefield said FERC would ask for more information.

Chair V. Fischer asked at what point the state needs to give full and formal Susitna approval.

Mr. Wakefield said that FERC is going on the assumption that the project is already approved.

Senator Sturgulewski answered that only the filing of Susitna with FERC has been approved.

Mr. Wakefield said that if FERC has any indication that the state is not going on with the process, they won't want to commit time and money to it.

Chair V. Fischer asked at what point do we have to have money on the line?

Mr. Wakefield answered that construction must commence within two years of licensure. You must have power sales contracts before licensing, which assumes financing in-place.

Number 289

Chair V. Fischer asked about the FERC commission order that approved a cost for Tyee of $64.1 million, in contrast to the $132 million we now have in the project.

Does FERC use a sensitivity analysis regarding costs and to what extent does FERC track power costs after licensure?

Mr. Wakefield answered that economic analysis is subject to change by its very nature, and that Tyee has been a moving target.

Number 338

Senator Sturgulewski asked if FERC continued its oversight once the process is complete, license is issued, and the project comes to fruition.

Mr. Wakefield said that the FERC analysis is complete with licensure, and that they only do inspections later.

Senator Sturgulewski asked if FERC would take any preventive action.

Mr. Wakefield answered that they do not.

Number 370

Chair V. Fischer said that the next testimony is from Erickson and Associates. They are going to speak on interim financing.

Chair V. Fischer introduced Tom Singer from Erickson and Associates.

Number 403

Tom Singer read his testimony. See testimony from Erickson & Associates memorandum. This memorandum is attached to Senate State Affairs Committee copy of minutes only. Not available on computer network.

Senator Kelly returns to meeting.

Number 512

Several witnesses discussed the Tyee Project including Ernie Haugen (Thomas Bay Power Commission), Rich Underkofler (City of Petersburg), Kenneth Mason (City of Wrangell), George Matz (OMB), and Ernie Meuller (former APA board member)..

Number 552

Eric Yould passed out a chronology of the Tyee project. He said that Tyee was originally undertaken in 1978 by Thomas Bay Power Commission. Originally the cost was $39 million, one half cost was in the transmission line and one half in civil engineering portion. In 1979 the Alaska

Power Authority took over. In 1980 costs were revised from $39 million to $51 million. APA Board was concerned. Independent cost estimates were completed in June 1981: $97 million present dollars or 110 million at time of completion. APA needed additional funding; they turned to interim financing for $50 million. APA indicated plan to Legislative Budget and Audit. Ultimate cost will be between $115 and $125 million. The financing statutes have changed year by year.

Number 000 — BEGIN TAPE 2, SIDE 2. Eric Yould continues. Cost for Tyee power has been estimated at 30¢ per kilowatt hour.

Number 050 — Ernie Mueller said that APA once considered firing the engineering firm that gave poor cost estimates.

Number 080 — George Matz, Office of Management and Budget, gave an historical perspective on the Tyee project, and passed out a memo detailing the historical milestones. OMB analysis had raised questions about the project's feasibility, but at the time there was no process for an independent cost analysis.

Number 213 — Richard Underkoffler, City Manager, Petersburg. Petersburg believes in Hydropower. Currently, the cost of electricity from the 48% of the load produced by hydro power in Petersburg only costs .7¢/kilowatt hour. Petersburg is concerned about 1) the Tyee wholesale cost 2) the clause in the law which requires all power projects to pay a 10% annual return if $5 billion is not paid into the fund by 1986. The Legislature should defer the cost of hydro projects over the life of the project. Front end costs are great but operation and maintenance costs are low. Power from Tyee could be sold through an intertie to Ketchikan or sale to U.S Borax for their mining operation on an interuptable basis.

Number 352 — Senator Kelly asked what would an intertie with Ketchikan cost.

Number 360 — Eric Yould answered that it would cost $600,000 - 700,000 per mile.

Ernie Haugen testified for in favor of hydro generally. Load could be increased through cheaper rates. He wanted it to be completely understood that Tyee belongs to Wrangell and Petersburg, and that Borax should only recieve power in excess to the communities' needs.

Kenneth Mason stated for Wrangell that if Tyee power were not cheaper than diesel, Wrangell would be hesitant to purchase it.

Number 448 — Senator Kelly asked why the engineers misestimated the project cost so badly? How do we know it won't happen again?

Number 527 — Eric Yould answered that the APA won't use International again, but that they are still on the job because you can't take them off of design and keep continuity. Severe action would have hurt the project. The APA now requires a second, independent cost estimate.

Number 584 — Senator Sturgulewski said that APA awarded the major Tyee contract before APA had some fundamental data for the project.

Number 594 — Ernie Meuller said that they had already delayed the awarding thirty days. They didn't know at the time that they would have trouble obtaining power sales contracts.

Number 610 — Senator Sturgulewski asked how we could make a viable project out of Tyee.

Ray Benish answered that there were at least four alternatives: 1) additional state equity; 2) low interest loans; 3) a grant similar in nature to power cost assistance; 4) same as three but made on a loan basis. All would require some assistance from the State. He added that it's not true that if power sales contracts were signed, that would entirely solve the problem. There is a particular problem with small communities in that they can't assume the risk.

Number 459 — Chair V. Fischer adjourns the meeting at 5:00 p.m.

SENATE STATE AFFAIRS
STANDING COMMITTEE
February 26, 1983
9:00 a.m.

Members Present: Senator Vic Fischer, Chairman
Senator Arliss Sturgulewski
Senator Pat Rodey

Members Absent: Senator Bill Ray
Senator Tim Kelly

COMMITTEE CALENDAR

This purpose of this meeting was to receive public comment on the Susitna project, Senate Bills 68-71, and hydroelectric development in general.

WITNESS REGISTER

Senator Rick Halford
Alaska State Legislature
Pouch V, Juneau, Ak 99811
465-4958
Position Statement: Discusses SB 70.

Kent Wick
Homer Electric Association
No information provided.
Position Statement: Supports Susitna with conditions.

Eric Yould
Alaska Power Authority
No information provided.
Position Statement: Gave history on choice of Susitna as an energy source.

Bob Mellin
Wasilla
No information provided.
Position Statement: Testified on SB 68, 69, 70, 71.

Mike Kelly
Golden Valley Electric Association
No information provided.
Position Statement: Hoped Committee would pass out hydro bills.

Jeff Bohman
McKinley PArk
No information provided.
Position Statement: Expressed concern on the long term energy

policy of the State.

Harold Pomeroy
Self
No information provided.
Position Statement: Believes in development but oil revenues are in decline.

Jeff Eustis
Self
No information provided.
Position Statement: Railbelt should bear the cost of Susitna.

Bob Penney, Chair
Energy Committee of the Alaska State Chamber of Commerce
No information provided.
Position Statement: Susitna is needed to complete the goal of hydro power.

Mano Frey
Laborers' Union Local 341 Anchorage
No information provided.
Position Statement: Spoke on SB 10.

Joseph Henry, Attorney
Resource Development Council
No information provided.
Position Statement: Testified that 10,000 members want project to go forward right away.

Jim Ayers
Self
No information provided.
Position Statement: Addressed the lack of a clear economic plan for State.

Jim Sykes
Self
No information provided.
Position Statement: Testified that we need to know final costs of Susitna project.

Doug Stark
Self
No information provided.
Position Statement: Testified that it isn't desireable to move ahead on Susitna.

George Skladal
Self
No information provided.
Position Statement: Favored hydro.

Ron Kuzek
Self