HB
758

COMMITTEE REPORT

HOUSE

FURTHER: FINANCE

(7)

2/11/82

Date: March 30, 1982

Mr. Speaker:

The Committee on RESOURCES has had HB 758

"An Act relating to the energy program for Alaska."

under consideration and ~~(a majority of the committee)~~ ~~(the committee)~~ reports it back with the following recommendations:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[✓] replace with CS for HB 758 (Resources) [ ] same title [✓] new title

and recommends

[ ] AND attaches a "Letter of Intent" [✓] New Fiscal Note

[✓] reports it back without individual recommendations.

[ ] referred to the Committee

MEMBERS SIGNING DO PASS	MEMBERS HAVING OTHER RECOMMENDATIONS:
[signature]	[signature] / Do Not Pass
	[signature] Do Not Pass
Eric Sutcliffe	

Eric G. Sutcliffe

CHAIRMAN

H 60 (Rev. 12/78)

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

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

March 18, 1982

MEMORANDUM

TO: Representative Eric Sutcliffe
Attn: Pat Lawler

FROM: Jack Kreinheder
Research Staff

RE: HB 758 Real Power Costs
Research Request No. 82-65

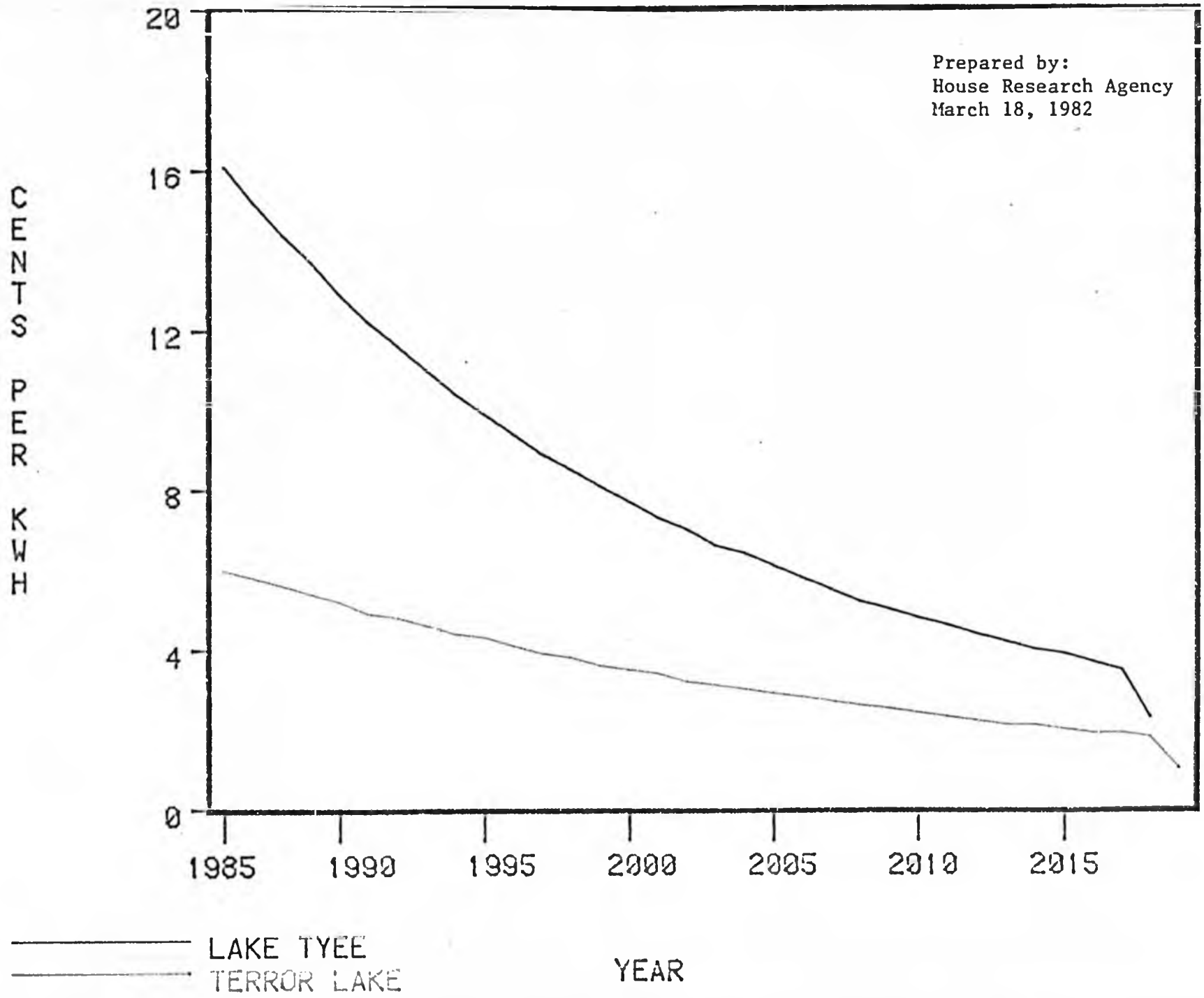
You requested that we prepare a chart showing the estimted busbar (wholesale) cost of power under HB 758 for Terror Lake and Lake Tyee in "real" or 1982 dollars. The attached graph indicates that for Lake Tyee, the power cost in 1982 dollars would decline from about 16.1 cents per kilowatt hour (KWH) in 1985 to about 2.3 cents/KWH by 2017. This compares to a current power generation cost (not including distribution, administration, etc.) of approximately 10.6 cents KWH in Wrangell and 6.1 cents/KWH in Petersburg, which receives part of its power from an existing hydro facility. Terror Lake power costs are projected to decline from 6.0 cents/KWH in 1985 to 10 cents/KWH in 2018, compared to a current power generation cost in Kodiak of about 9.1 cents/KWH.

These estimates are based on power cost figures prepared by the Division of Budget and Management in the Office of the Governor, with an assumed annual inflation rate of 7 percent. The power costs shown are for a low growth scenario, in which annual power consumption grows at the average 1976-1980 rate. The feasibility studies for the Terror Lake and Lake Tyee projects also projected high growth rates based on more rapid population growth, economic development, etc. The power costs shown on the attached chart would decline more steeply if the higher growth rates occurred. A brief review of projected power costs for Bradley Lake, Solomon Gulch, and Swan Lake indicates that similar declines in real power costs can be expected for these hydro projects, although the specific power costs vary among the different projects.

Please don't hesitate to contact me if you have further questions.

JK/bl
Encls.

HB 758 "REAL" BUSBAR POWER COSTS
(1982 DOLLARS)



THE LEGISLATURE OF THE STATE OF ALASKA
TWELFTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. HB 758
Title Relating to the Energy Program for Alaska
Requested by House Resources Committee Date March 20, 1982

II. FISCAL DETAIL
Agency Affected Alaska Power Authority
Program Category Affected Operations
BRU, Program, Or Subprogram(s) Affected
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES	0	0	0	0	0	0
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS,CLAIMS,ETC.						
TOTAL	0					

FUNDING (Thousands of Dollars)

GENERAL FUND	0					
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS

FULL TIME	0					
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instruction, Section III)

This bill has no fiscal impact upon APA operations.

IV. DATE March 24, 1982 PREPARED BY Terry McGuire
AGENCY Alaska Power Authority
PHONE 277-7641

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)
33-001 (Rev. 12/81)

Sofo

Original sponsor: Resources Committee

IN THE HOUSE BY THE RESOURCES COMMITTEE

CS FOR HOUSE BILL NO. 758 (Resources)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWELFTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to the Alaska Power Authority."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 44.83.090(b) is amended to read:

(b) The authority is not subject to the jurisdiction of the Alaska Public Utilities Commission. Except as provided in AS 44.83.398(h) - (j), nothing [NOTHING] in AS 44.83.010 - 44.83.310 grants the authority any jurisdiction over the services or rates of any public utility or diminishes or otherwise alters the jurisdiction of the Alaska Public Utilities Commission with respect to any public utility including any right the commission may have to review and approve or disapprove contracts for the purchase of electricity by a public utility.

* Sec. 2. AS 44.83.110 is amended by adding a new subsection to read:

(h) If the authority decides to covenant to issue bonds or to issue bonds secured by a capital reserve fund, the bonds may not be issued until 10 days after the authority has mailed notification to the State Bond Committee and the Legislative Budget and Audit Committee by certified mail of its intention to establish a capital reserve fund to secure the bond issue. The notification shall include the amount of the capital reserve fund to be established, the amount of bonds proposed to be issued, and the total cost of the project for which the bonds are to be issued. The notification shall be accompanied by an estimate by the authority of the need to withdraw money from the capital reserve fund during the term of the bond issue, the amount that it may be necessary to withdraw, and the time at which withdrawals are estimated to be

needed. The authority shall annually prepare a revised estimate, considering the same factors, and a statement of all withdrawals that have occurred from the date of issuance of the bonds to the end of the calendar year. The revised estimate and statement shall be submitted to the State Bond Committee and the Legislative Budget and Audit Committee by January 30 of the succeeding year.

* Sec. 3. AS 44.83.177(b) is amended by adding a new paragraph to read:

(4) include, when appropriate, recommended measures to mitigate damages to fisheries resources and to protect or enhance fisheries resources;

* Sec. 4. AS 44.83.181(b)(1) is amended to read:

(1) information about the proposed project, including but not limited to estimates of total project construction costs, total project operating costs, the costs of transmission systems and reserve power requirements, the timing and amount of anticipated returns from the completed project, a benefit-to-cost ratio, the potential effect of the project on the environment of the area which will be served by the project when completed including, when appropriate, recommended measures to mitigate damage to fisheries resources and measures to protect or enhance fisheries resources, and the availability of alternative government financing;

* Sec. 5. AS 44.83.183 is amended by adding a new subsection to read:

(e) The report required by (c) of this section shall include a financial analysis of the proposed project of the authority that evaluates proposed bond resolutions or other financial arrangements or financial plans, security plans and arrangements, cost and demand uncertainties, and debt volume, as they relate to the total direct and indirect indebtedness of the state. In preparing the financial analysis required by this section the division of budget and management may use

the services of outside agencies or institutions that are not otherwise involved in the project.

* Sec. 6. AS 44.83.185(c) is amended to read:

(c) The legislature shall consider and must approve all proposed new projects except proposed new projects that are exempt under AS 44.83.187. The legislature may approve a proposed new project only by enacting law that authorizes the project and approves a maximum construction cost for [AUTHORIZING] that project.

* Sec. 7. AS 44.83 is amended by adding a new section to read:

Sec. 44.83.186. FINAL COST ESTIMATE AND REAUTHORIZATION BY THE LEGISLATURE. If a project is approved under AS 44.83.185(c), the authority shall obtain a final cost estimate for the project from an independent source qualified to make such an estimate. If the final cost estimate does not exceed the cost estimate presented by the authority to the legislature under AS 44.83.185 by more than five percent, the authority may proceed with the construction of the project. If the final cost estimate exceeds the cost estimate presented by the authority to the legislature under AS 44.83.185 by more than five percent, the authority shall revise its feasibility study and, if it determines that the project remains feasible, the authority shall submit the revised feasibility study and the independent cost estimate to the legislature. A proposed project that is returned for reconsideration by the legislature under this section may not be constructed unless the legislature reauthorizes it by enacting law for that purpose.

* Sec. 8. AS 44.83.189 is amended by adding a new subsection to read:

(b) A contractor who has participated in the preparation of the feasibility study for or in the engineering design of the project may not participate in the construction management or the construction of the project by the authority.

* Sec. 9. AS 44.83.380(b) is amended to read:

(b) The energy program for Alaska is a program by which the authority may acquire or construct power projects with money appropriated by the legislature to the power development fund established in AS 44.-83.382. A power project may be acquired or constructed as part of the energy program for Alaska only if

(1) for a power project that will generate more than 1.5 megawatts of power and on which construction has not begun

(A) the power project is submitted to and approved by the legislature in accordance with procedures set out in AS 44.-83.177 - 44.83.187; and

(B) the authority makes the determinations required by AS 44.83.394 with respect to the power project;

(2) for a power project that will generate more than 1.5 megawatts of power and on which construction has begun or is completed, the authority makes the determinations required by AS 44.83.394 with respect to the power project; and

(3) for a power project that will generate 1.5 megawatts of power or less, on which construction has not begun, the authority prepares a feasibility study for the power project in accordance with AS 44.83.181 and makes the determinations required by AS 44.83.394 with respect to the power project.

* Sec. 10. AS 44.83.382(b) is amended to read:

(b) The fund consists of [INCLUDES

(1)] money appropriated to it by the legislature [; AND

(2) REVENUES COLLECTED FROM THE SALE OF POWER THAT ARE NOT REQUIRED BY LAW TO BE DEPOSITED INTO THE GENERAL FUND].

* Sec. 11. AS 44.83.384(b) is amended to read:

(b) Money in the fund may be used under (a) of this section only

for a power project that

(1) meets the revenue requirements of AS 44.83.394; [AND]

(2) provides the lowest reasonable power cost to utility customers 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, and that operates or will operate on one or more of the following:

(A) renewable energy resources, including but not limited to hydroelectric power, wind, biomass, geothermal, tidal or solar energy, or a method that uses temperature differentials or other physical properties of the ocean;

(B) coal or peat;

(C) energy derived from waste heat; or

(D) fossil fuel, including oil or natural gas; and

(3) has been approved by a majority of the voters in an election held under AS 44.83.385.

* Sec. 12. AS 44.83 is amended by adding a new section to read:

Sec. 44.83.385. ELECTIONS ON POWER PROJECTS. (a) Before the authority may use money in the power development fund established in AS 44.83.382 to acquire or construct a power project, the power project must be approved by a majority of the voters at an election held under this section. However, the authority may use money in the power development fund for a feasibility study required by AS 44.83.380(b) without voter approval under this section.

(b) Before an election is held under this section the authority shall determine in writing the amount of money from the power development fund the authority intends to use to acquire or construct a power project. The authority shall then provide a copy of its written determination, together with a description of the area that will be served by

the power project, to the division of elections, Office of the Lieutenant Governor, the division of budget and management, Office of the Governor, and to each member of the legislature. If the power project is subject to review under AS 44.83.177 - 44.83.187, the authority shall prepare its written determination under this subsection after the division of budget and management submits its report under AS 44.83.183(c). If the power project is not subject to review under AS 44.83.177 - 44.83.187, the authority shall prepare its written determination under this subsection after the division of budget and management approves a determination under AS 44.83.394 that the power project is economically feasible.

(c) After receipt of a written determination under (b) of this section, the division of elections shall conduct a special election in the area that will be served by the power project as that area is described by the authority under (b) of this section. The special election shall be held in accordance with the procedures in AS 29.68.090. The question that the voters will decide at the special election is whether the authority may acquire or construct the power project. The ballot must include a statement of the amount of money determined under (b) of this section to be used to acquire or construct the power project.

(d) The authority shall include with its written determination under (b) of this section a description of the power project that includes a statement of the total cost of the power project and a statement of the anticipated social, environmental, and economic impacts of the power project in the area in which the power project will be located. The description shall be reviewed and approved by the division of budget and management. The division of elections shall deliver the description of the power project to the area in which the special election will be held. The delivery shall be by individual mailings to each

the power project, to the division of elections, Office of the Lieutenant Governor, the division of budget and management, Office of the Governor, and to each member of the legislature. If the power project is subject to review under AS 44.83.177 - 44.83.187, the authority shall prepare its written determination under this subsection after the division of budget and management submits its report under AS 44.83.183(c). If the power project is not subject to review under AS 44.83.177 - 44.83.187, the authority shall prepare its written determination under this subsection after the division of budget and management approves a determination under AS 44.83.394 that the power project is economically feasible.

(c) After receipt of a written determination under (b) of this section, the division of elections shall conduct a special election in the area that will be served by the power project as that area is described by the authority under (b) of this section. The special election shall be held in accordance with the procedures in AS 29.68.090. The question that the voters will decide at the special election is whether the authority may acquire or construct the power project. The ballot must include a statement of the amount of money determined under (b) of this section to be used to acquire or construct the power project.

(d) The authority shall include with its written determination under (b) of this section a description of the power project that includes a statement of the total cost of the power project and a statement of the anticipated social, environmental, and economic impacts of the power project in the area in which the power project will be located. The description shall be reviewed and approved by the division of budget and management. The division of elections shall deliver the description of the power project to the area in which the special election will be held. The delivery shall be by individual mailings to each

the authority determines that the power project is economically feasible and the division of budget and management in the Office of the Governor approves the authority's finding. In determining whether a power project is economically feasible under this section, the authority may rely upon a feasibility study prepared for the power project under AS 44.83.-181 if that feasibility study is not more than one year old. If the feasibility study is more than one year old, the authority may revise the feasibility study and rely upon the revised feasibility study [THAT, AFTER CONSTRUCTION, OPERATION OF THE POWER PROJECT WILL BE ABLE TO PROVIDE REVENUE SUFFICIENT TO RETURN ANNUALLY TO THE STATE FIVE PERCENT OF THE AMOUNT THAT THE AUTHORITY HAS SPENT FROM THE FUND FOR THE POWER PROJECT].

* Sec. 14. AS 44.83.398(a) is amended to read:

(a) The authority shall sell power produced from power projects acquired or constructed under the energy program for Alaska. A utility that purchases power produced by a power project of the authority shall agree with the authority

(1) to give preference in the sale of power at retail to all classes of customers [CONSUMERS] of power except industrial customers [CONSUMERS];

(2) to charge industrial customers [CONSUMERS] of power a rate determined by the authority in accordance with (d) of this section;

(3) to establish a rate structure for the sale of power at retail to all classes of customers including industrial customers that complies with the requirements of (h) - (k) of this section.

* Sec. 15. AS 44.83.398(b) is repealed and reenacted to read:

(b) The authority shall establish and maintain a wholesale power rate applicable to a power project that it acquires or constructs under the energy program for Alaska. Beginning in the year in which a power

project becomes functional, the authority annually shall compute the wholesale power rate applicable to the power project. The authority shall, by regulation, establish a method for applying a wholesale power rate to various types of power projects and shall, by regulation, establish a procedure for the adjustment of a wholesale power rate to compensate for an overestimate or underestimate in a previous year of the amounts described in (1) and (2) of this subsection. Except for adjustments provided by regulation under this subsection, the wholesale power rate must equal the rate that the authority estimates is necessary to provide

(1) program receipts sufficient to pay, beginning in the year in which the power project becomes functional,

(A) operation, maintenance, and equipment replacement costs, including costs of a loan attributable to this paragraph under AS 44.83.399 of the power project;

(B) debt service on bonds issued for the power project, if any; and

(C) safety inspections and investigations of the power project by the authority; and

(2) a return to the state of its investment in the power project, with adjustments for inflation, as provided in (f) - (h) of this section, over a 33-1/3 year period, or over a period equal to three-fourths of the life of the project as determined by the authority, whichever is less.

Sec. 16. AS 44.83.398(d) is amended to read:

(d) A rate for an industrial <u>customer</u> [CONSUMER] under (a)(2) of this section

(1) may exceed the wholesale power rate determined under (b) of this section;

(2) may not be less than the rate charged residential customers [CONSUMERS].

* Sec. 17. AS 44.83.398 is amended by adding new subsections to read:

(f) For the purposes of (b)(2) of this section, the authority, at the time it initially establishes a wholesale power rate applicable to a power project, shall determine the average rate of inflation, based on the federal consumer price index for the United States for the 33-year period preceding the establishment of the wholesale power rate. Every 10 years after the initial establishment of a wholesale power rate, the authority shall calculate the average rate of inflation for the preceding 33-year period and increase the wholesale power rate by a percentage equal to the increase in the average rate of inflation for the preceding 33 years or for the preceding 10 years, whichever is less.

(g) For the first year in which a wholesale power rate is in effect, the authority shall determine the amount to be returned to the state under (b)(2) of this section by multiplying the state's investment in the power project by the quotient achieved from dividing the period of time described in (b)(2) of this section into one. For each subsequent year, the authority shall determine the amount to be returned to the state under (b)(2) of this section by multiplying the amount determined under this subsection for the preceding year by the sum of one plus the average rate of inflation calculated by the authority under (f) of this section. After the period of time described in (b)(2) of this section, the amount to be returned to the state under (b)(2) of this section is zero unless other state investments in the power project are made after the wholesale power rate is initially established. For a state investment in a power project made after the initial wholesale power rate is established, the authority shall separately determine the amount to be returned to the state under (b)(2) of this section in the

manner provided in this subsection.

(h) A rate structure established under (a)(3) of this section shall consist of at least three rates. The lowest rate shall be known as the "equity rate" and shall be the rate charged by the utility to customers for the first 250 kilowatt hours of power used during a monthly billing period. For residential customers the utility shall specify successively higher ranges of power usage to which successively higher rates within its rate structure apply. A rate structure established under (a)(3) of this section must, to the maximum extent possible, encourage conservation of energy, efficient use of facilities and resources, and equitable rates to consumers of electricity.

(i) The lowest rate charged to a customer under (h) of this section may not exceed an amount that represents the customer's proportionate share of the utility's non-capital costs. However, if the authority determines that a higher rate is necessary in order to allow a utility to pay the wholesale power rate required by (b) of this section, the authority may authorize that higher rate.

(j) At least two weeks before a utility establishes or amends a rate structure under (a)(3) of this section, the utility or the Alaska Public Utilities Commission shall conduct a public hearing within the area served by the utility to explain the proposed rate structure or amendment and to receive comments from the public. The utility shall provide public notice of the hearing at least two weeks before the hearing is held. The utility may provide the public notice by newspape or radio or by posting the notice within the area served by the public utility.

(k) In addition to the requirements of (h) - (j) of this section relating to a utility's rate structure, a utility that is subject to th jurisdiction of the Alaska Public Utilities Commission must comply wit

the provisions of AS 42.05.361 - 42.05.441. Nothing in this section affects the authority of the Alaska Public Utilities Commission under AS 42.05.361 - 42.05.441.

(l) The authority shall adopt regulations in accordance with the Administrative Procedure Act (AS 44.62) to implement (a)(3) and (h) - (j) of this section.

(m) In this section,

(1) "the state's investment in the power project" means the total amount invested by the state for the acquisition or construction of a power project, including loans and grants from the state, other than loans or grants made for the purposes described in (b)(1) of this section and other than loans made from the proceeds of bonds issued for the power project;

(2) "non-capital costs" means a utility's costs other than costs under (b)(1)(B) and (b)(2) of this section.

* Sec. 18. AS 44.83 is amended by adding a new section to read:

Sec. 44.83.399. POWER PROJECT EMERGENCY MAINTENANCE FUND. There is established in the authority the power project emergency maintenance fund. The power project emergency maintenance fund consists of money appropriated to it by the legislature. The authority may use money in the power project emergency maintenance fund to pay the cost of maintenance, including equipment replacement, of a power project it acquires or constructs under the energy program for Alaska if other appropriations are not available or are insufficient to pay that cost. For the purposes of AS 44.83.398(h), the use of money in the power project maintenance fund for a power project is a loan to the power project for a purpose described in AS 44.83.398(b)(1) bearing interest at nine percent a year and with a term determined by the authority but not to exceed 30 years. The authority shall, in its annual budget request under AS 44.83.-

210, request an appropriation to repay a loan under this section. If the appropriation is made, the use of the money is a grant that is a state investment in the power project for the purposes of AS 44.83.-398(h).

* Sec. 19. AS 44.83.425(4) is amended to read:

(4) "industrial customer [CONSUMER]" means a customer of a utility which customer has a peak power demand in excess of 500 kilowatts and uses the power principally for

(A) manufacturing;

(B) pipeline transportation;

(C) the recovery or processing of minerals;

(D) the processing of timber, agricultural, or seafood products or their by-products; or

(E) the operation of facilities owned by the federal government;

HIF these Senate changes

* Sec. 20. AS 44.83.390 and 44.83.398(c) are repealed.

* Sec. 21. The provisions of AS 44.83.384(b)(3), added by sec. 11 of this Act, and AS 44.83.385, added by sec. 12 of this Act, do not apply to a power project on which construction has begun before the effective date of this Act notwithstanding the provisions of AS 44.83.385(g).

(3) "entire transmission system" means the gas transmission pipeline (together with all related facilities) to extend from the Prudhoe Bay area on the North Slope of Alaska into the contiguous United States, substantially as described in the President's report entitled "Decision and Report to Congress on the Alaska Natural Gas Transportation System", issued by the President on September 22, 1977, under provisions of the Alaska Natural Gas Transportation Act of 1976, and includes planning, design and construction of the pipeline and facilities;

(4) "project" means the gas transmission pipeline (together with all related property and facilities) to extend from the Prudhoe Bay area on the North Slope of Alaska to a connection with the Trans-Canada Pipeline on the Alaska-Canada border, substantially as described in the President's report entitled "Decision and Report to Congress on the Alaska Natural Gas Transportation System", issued by the President on September 22, 1977, under provisions of the Alaska Natural Gas Transportation Act of 1976, and includes planning, design, and construction of the pipeline and facilities;

(5) "project sponsor" means any partner of the Alaskan Northwest Natural Gas Transportation Company or its successors;

(6) "Prudhoe Bay natural gas" means natural gas produced from the Prudhoe Bay reservoir;

(7) "Prudhoe Bay oil" means oil produced from the Prudhoe Bay reservoir;

(8) "Prudhoe Bay reservoir" means those areas defined in Article 5.1 of the "Prudhoe Bay Unit Agreement" of April 1, 1977. (§ 2 ch 90 SLA 1978)

Chapter 83. Alaska Power Authority.

Article
1. Creation and Organization (§§ 44.83.010 — 44.83.050)
2. Purpose and Powers (§§ 44.83.070 — 44.83.090)
3. Financial Provisions (§§ 44.83.100 — 44.83.160)
4. Power Production Cost Assistance (§§ 44.83.162 — 44.83.164)
5. Power Project Fund (§ 44.83.170)
6. General Provisions (§§ 44.83.177 — 44.83.230)
7. Susitna River Hydroelectric Project (§§ 44.83.300 — 44.83.360)

Article 1. Creation and Organization.

Section
10. Legislative finding and policy
20. Creation of authority
30. Membership of the authority
40. Officers and quorum
45. Qualifications, powers, and duties of officers and directors.
50. [Repealed]

Sec. 44.83.010. Legislative finding and policy. (a) The legislature finds, determines and declares that

(1) there exist numerous potential hydroelectric and fossil fuel gathering sites in the state;

(2) the establishment of power projects at these sites is necessary to supply power at the lowest reasonable cost to the state's municipal electric, rural electric, cooperative electric, and private electric utilities, and regional electric authorities, and thereby to the consumers of the state, as well as to supply existing or future industrial needs;

(3) the achievement of the goals of lowest reasonable consumer power costs and beneficial long-term economic growth and of establishing, operating and developing power projects in the state will be accelerated and facilitated by the creation of an instrumentality of the state with powers to construct, acquire, finance, and operate power projects.

(b) It is declared to be the policy of the state, in the interests of promoting the general welfare of all the people of the state, and public purposes, to reduce consumer power costs and otherwise to encourage the long-term economic growth of the state, including the development of its natural resources, through the establishment of power projects by creating the public corporation with powers, duties and functions as provided in this chapter. (§ 1 ch 278 SLA 1976; am § 1 ch 156 SLA 1978)

Effect of amendment. — The 1978 amendment in subsection (a), substituted "power at the lowest reasonable cost" for "lower cost power" in paragraph (2) and "lowest reasonable consumer power costs and beneficial" for "lower consumer power costs and" and "construct, acquire, finance, and" for "incur debt for constructing, and with powers to" in paragraph (3).

Sec. 44.83.020. Creation of authority. There is created the Alaska Power Authority. The authority is a public corporation of the state in the Department of Commerce and Economic Development but with separate and independent legal existence. (§ 1 ch 278 SLA 1976)

Sec. 44.83.030. Membership of the authority. (a) The authority shall consist of the following directors:

(1) four directors at large to be appointed by the governor and confirmed by the legislature;

(2) the commissioner of commerce and economic development.

(b) The commissioners of community and regional affairs, natural resources, transportation and public facilities, and revenue shall have the rights and privileges of directors except for the right to vote and may not be considered for purposes of quorum or voting. (§ 1 ch 278 SLA 1976; am § 2 ch 156 SLA 1978)

Effect of amendment. — The 1978 amendment rewrote this section.

(14) to enter into contracts or agreements with respect to the exercise of any of its powers, and do all things necessary or convenient to carry out its corporate purposes and exercise the powers granted in AS 44.83.010 — 44.83.510;

(15) to exercise the power of eminent domain in accordance with AS 09.55.250 — 09.55.410;

(16) to recommend to the legislature

(A) the issuance of general obligation bonds of the state to finance the construction of a power project if the authority first determines that the project cannot be financed by revenue bonds of the authority at reasonable rates of interest;

(B) the pledge of the credit of the state to guarantee repayment of all or any portion of revenue bonds issued to assist in construction of power projects;

(C) an appropriation from the general fund

(i) for debt service on bonds or other project purposes; or

(ii) to reduce the amount of debt financing for the project;

(D) an appropriation to the power project fund for a power project;

(E) an appropriation of a part of the income of the renewable resources investment fund for a power project;

(F) development of a project under financing arrangements with other entities using leveraged leases or other financing methods.

(G) an appropriation for a power project acquired or constructed under the energy program for Alaska (AS 44.83.380 — 44.83.425). (§ 1 ch 278 SLA 1976; am §§ 6 — 11 ch 156 SLA 1978; am §§ 16, 17 ch 83 SLA 1980; am § 5 ch 118 SLA 1981)

Revisor's notes. — In paragraph (16)(G), a reference to AS 44.83.400 — 44.83.510 was changed to AS 44.83.380 — 44.83.425 to reflect numbering changes made by the revisor of statutes pursuant to AS 01.05.031 (b).

Effect of amendments. — The 1981 amendment, effective August 4, 1981, added subparagraph (G) of paragraph (16).

Sec. 44.83.090. Power contracts and the Alaska Public Utilities Commission. (a) The authority shall, in addition to the other methods which it may find advantageous, provide a method by which municipal electric, rural electric, cooperative electric, or private electric utilities and regional electric authorities, or other persons authorized by law to engage in the distribution of electricity may secure a reasonable share of the power generated by a project, or any interest in a project, or for any right to the power and shall sell the power or cause the power to be sold at the lowest reasonable prices which cover the full cost of the electricity or services, including capital and operating costs, debt coverage as considered appropriate by the authority, and other charges that may be authorized by AS 44.83.010 — 44.83.510. Except for a contract or lease entered into under AS 44.83.380 — 44.83.425, a contract or lease for the sale, transmission

and distribution of power generated by a project or any right to the capacity of it shall provide:

(1) for payment of all operating and maintenance expenses of a project and costs of renewals, replacements and improvements of it;

(2) for interest on and amortization charges sufficient to retire bonds of the authority issued for the project and reserves for them, plus a debt service coverage factor as may be determined by the authority to be necessary for the marketability of its bonds;

(3) for monitoring of the project by the authority or its agents;

(4) for full and complete disclosure to the authority of all factors of costs in the transmission and distribution of power, so that rates to any persons may be fixed initially in the contract or lease and may be adjusted from time to time on the basis of true cost data;

(5) for periodic revisions of the service and rates to persons on the basis of accurate cost data obtained by the accounting methods and systems approved by the directors and in furtherance and effectuation of the policy declared in AS 44.83.010 — 44.83.510;

(6) for the cancellation and termination of a contract or lease upon violation of its terms by any person;

(7) for security for performance as the authority may consider practicable and advisable, including provisions assuring the continuance of the distribution and transmission of power generated by a project and the use of its facilities for these purposes; and

(8) other terms not inconsistent with the provisions and policy of this chapter as the authority may consider advisable.

(b) The authority is not subject to the jurisdiction of the Alaska Public Utilities Commission. Nothing in AS 44.83.010 — 44.83.510 grants the authority any jurisdiction over the services or rates of any public utility or diminishes or otherwise alters the jurisdiction of the Alaska Public Utilities Commission with respect to any public utility, including any right the commission may have to review and approve or disapprove contracts for the purchase of electricity by a public utility. (§ 1 ch 278 SLA 1976; am § 12 ch 156 SLA 1978; am § 6 ch 118 SLA 1981)

Revisor's notes. — In the second sentence of subsection (a), a reference to AS 44.83.400 — 44.83.510 was changed to AS 44.83.380 — 44.83.425 to reflect numbering changes made by the revisor of statutes under AS 01.05.031(b).

Effect of amendments. — The 1981 amendment, effective August 4, 1981, substituted "except for a contract or lease entered into under AS 44.83.380 — 44.83.425, a" for "a" preceding "contract" and added "or lease" preceding "for the sale" in the second sentence of subsection (a) and added "or lease" following "contract" in paragraphs (4) and (6) of subsection (a).

Effect of amendment. — The 1978 amendment so changed this section as to make a detailed comparison impracticable. Among other things, however, it designated the former provisions of this section as subsection (a) and added subsection (b).

Article 3. Financial Provisions.

Sec. 44.83.100. Bonds of the authority. (a) The authority may borrow money and may issue bonds, including but not limited to bonds on which the principal and interest are payable (1) exclusively from the income and receipts or other money derived from the project financed with the proceeds of the bonds; (2) exclusively from the income and receipts or other money derived from designated projects whether or not they are financed in whole or in part with the proceeds of the bonds; (3) from its income and receipts or other assets generally, or a designated part or parts of them; or (4) from one or more revenue-producing contracts including a contract providing for the security of the bonds made by the authority with any person. The authority may issue bonds to pay, fund or refund the principal of, or interest or redemption premiums on, bonds issued by it, whether or not the bonds or interest to be funded or refunded have become due.

(b) Bonds shall be authorized by resolution of the authority, and shall be dated and shall mature as the resolution may provide, except that no bond may mature more than 50 years from the date of its issue. Bonds shall bear interest at the rates, be in the denominations, be in the form, either coupon or registered, carry the registration privileges, be executed in the manner, be payable in the medium of payment, at the places, and be subject to the terms of redemption which the resolution or a subsequent resolution may provide.

(c) All bonds, regardless of form or character, shall be negotiable instruments for all the purposes of the Uniform Commercial Code.

(d) All bonds may be sold at public or private sale in the manner, for the price or prices, and at the time or times which the authority may determine. (§ 1 ch 278 SLA 1976)

Sec. 44.83.110. Trust indentures and trust agreements. (a) In the discretion of the authority, an issue of bonds may be secured by a trust indenture or trust agreement between the authority and a corporate trustee (which may be a trust company, bank, or national banking association with corporate trust powers, located inside or outside the state) or by a secured loan agreement or other instrument or under a resolution giving powers to a corporate trustee by means of which the authority may

(1) make and enter into any and all the covenants and agreements with the trustee or the holders of the bonds which the authority may determine to be necessary or desirable, including, without limitation, covenants, provisions, limitations and agreements as to

(A) the application, investment, deposit, use and disposition of the proceeds of bonds of the authority or of money or other property of the authority or in which it has an interest;

(B) the fixing and collection of rentals, charges, fees or other consideration for, and the other terms to be incorporated in, contracts with respect to a project or to generated power;

(C) the assignment by the authority of its rights in contracts with respect to a project or to generated power or in a mortgage or other security interest created with respect to a project or generated power to a trustee for the benefit of bondholders;

(D) the terms and conditions upon which additional bonds of the authority may be issued;

(E) the vesting in a trustee of rights, powers, duties, funds or property in trust for the benefit of bondholders, including, without limitation, the right to enforce payment, performance, and all other rights of the authority or of the bondholders, under a lease, power of contract, contract of sale, mortgage, security agreement, or trust agreement with respect to a project by injunction or other proceeding or by taking possession of by agent or otherwise and operating a project and collecting rents or other consideration and applying the same in accordance with the trust agreement;

(2) pledge, mortgage or assign money, leases, agreements, property or other rights or assets of the authority either presently in hand or to be received in the future, or both; and

(3) provide for any other matters of like or different character which in any way affect the security or protection of the bonds.

(b) Notwithstanding any other provisions of this chapter, the trust agreement shall contain a covenant by the authority that it will at all times maintain rates, fees or charges sufficient to pay, and that a contract entered into by the authority for the sale, transmission or distribution of power shall contain rates, fees or charges sufficient to pay the costs of operation and maintenance of the project, the principal of and interest on bonds issued under the trust agreement as the same severally become due and payable, to provide for debt service coverage as considered necessary by the authority for the marketing of its bonds and to provide for renewals, replacements and improvements of the project, and to maintain reserves required by the terms of the trust agreement.

(c) For the purpose of securing any one or more issues of its bonds, the authority may establish one or more special funds, called "capital reserve funds", and shall pay into those capital reserve funds the proceeds of the sale of its bonds and any other money which may be

made available to the authority for the purposes of those funds from any other source. The funds shall be established only if the authority determines that the establishment would enhance the marketability of the bonds. All money held in a capital reserve fund, except as provided in this section, shall be used as required, solely for (1) the payment of the principal of, and interest on, bonds or of the sinking fund payments with respect to those bonds, (2) the purchase or redemption of bonds, or (3) the payment of a redemption premium required to be paid when those bonds are redeemed before maturity; however, money in a fund may not be withdrawn from it at any time in an amount which would reduce the amount of that fund to less than the capital reserve requirement set out in (2) of this subsection, except for the purpose of making, with respect to those bonds, payment, when due, of principal, interest, redemption premiums and the sinking fund payments for the payment of which other money of the authority is not available. Income or interest earned by, or increment to, a capital reserve fund, due to the investment of the fund or any other amounts in it, may be transferred by the authority to other funds or accounts of the authority to the extent that the transfer does not reduce the amount of the capital reserve fund below the capital reserve fund requirement.

(d) If the authority decides to issue bonds secured by such a capital reserve fund, the bonds may not be issued if the amount in the capital reserve fund is less than such an amount as may be established by resolution of the authority (called the "capital reserve fund requirement"), unless the authority, at the time of issuance of the obligations, deposits in the capital reserve fund from the proceeds of the obligations to be issued or from other sources, an amount which, together with the amount then in the fund, will not be less than the capital reserve fund requirement.

(e) In computing the amount of a capital reserve fund for the purpose of this section, securities in which all or a portion of the funds are invested shall be valued by some reasonable method established by the authority by resolution. Valuation on a particular date shall include the amount of any interest earned or accrued to that date.

(f) The chairman of the authority shall annually, no later than January 2, make and deliver to the governor and the legislature his certificate stating the sum, if any, required to restore any capital reserve fund to the capital reserve fund requirement. The legislature may appropriate such a sum, and all sums appropriated during the then current fiscal year by the legislature for such restoration shall be deposited by the authority in the proper capital reserve fund. Nothing in this section creates a debt or liability of the state.

(g) When the authority has created and established a capital reserve fund, the commissioner of revenue may lend surplus money in the general fund to the authority for deposit in a capital reserve fund in an amount equal to the capital reserve fund requirement. The loans shall

be made on such terms and conditions as may be agreed upon by the commissioner of revenue and the authority, including without limitation terms and conditions providing that the loans need not be repaid until the obligations of the authority secured and to be secured by the capital reserve fund are no longer outstanding. (§ 1 ch 278 SLA 1976; am §§ 13, 14 ch 156 SLA 1978)

Effect of amendment. — The 1978 amendment in paragraph (1) of subsection (a), added "or to generated power" to the end of subparagraph (B), inserted "or to generated power" and "or generated power" in subparagraph (C), and substituted "by injunction" for "by mandamus" in subparagraph (E). In subsection (d), the amendment substituted "an amount" for "a per cent, not exceeding 10 per cent of the principal amount of all of those bonds secured by that capital reserve fund then to be issued and then outstanding in accordance with their terms."

Sec. 44.83.120. Validity of pledge. It is the intention of the legislature that a pledge made in respect of bonds shall be valid and binding from the time the pledge is made; that the money or property so pledged and thereafter received by the authority shall immediately be subject to the lien of the pledge without physical delivery or further act; and that the lien of the pledge shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the authority irrespective of whether the parties have notice. Neither the resolution, trust agreement nor any other instrument by which a pledge is created need be recorded or filed under the provisions of the Uniform Commercial Code to be valid, binding or effective against the parties. (§ 1 ch 278 SLA 1976)

Sec. 44.83.130. Nonliability on bonds. (a) Neither the members of the authority nor a person executing the bonds is liable personally on the bonds or is subject to personal liability or accountability by reason of the issuance of the bonds.

(b) The bonds issued by the authority do not constitute an indebtedness or other liability of the state or of a political subdivision of the state, except the authority, but shall be payable solely from the income and receipts or other funds or property of the authority. The authority may not pledge the faith or credit of the state or of a political subdivision of the state, except the authority, to the payment of a bond and the issuance of a bond by the authority does not directly or indirectly or contingently obligate the state or a political subdivision of the state to apply money from, or levy or pledge any form of taxation whatever to the payment of the bond. (§ 1 ch 278 SLA 1976)

Sec. 44.83.140. Pledge of the state. The state pledges to and agrees with the holders of bonds issued under this chapter and with the federal agency which loans or contributes funds in respect to a project, that the state will not limit or alter the rights and powers vested in the authority by this chapter to fulfill the terms of a contract made by the

Article 6. General Provisions.

Section
177. Reconnaissance study

Sec. 44.83.177. Reconnaissance study. (a) To identify power project alternatives for a community, the authority shall, after consultation with other state agencies and after review of information on alternative sources of power, complete a reconnaissance study for each proposed new power project.

(b) A reconnaissance study shall

(1) survey all power sources available to the community and adjacent area and evaluate the relative economic merits of alternative sources of power;

(2) include an assessment of the effect of the development of alternative sources of power on the environment so as to assure that there is no adverse effect to the environment which would make the project inadvisable;

(3) include public comment from residents of the community and adjacent area.

(c) The authority, in consultation with the division of budget and management, shall adopt regulations defining

(1) the methods which it shall apply to determine that the information required by (b) of this section is obtained; and

(2) standard criteria and measures for comparative analysis of alternative power sources.

(d) In completing a reconnaissance study, the authority shall consult with the division of energy and power development in the Department of Commerce and Economic Development to determine the information that each may require for energy planning and the development of technology. (§ 24 ch 83 SLA 1980; am § 11 ch 118 SLA 1981)

Effect of amendments. — The 1981 amendment, effective August 4, 1981, added subsection (d).

Article 8. Rural Electrification Revolving Loan Fund.

Section
361. Rural electrification revolving loan fund
363. Loan advisory committee

Effective date of article. — Section 17, ch. 118, SLA 1981, provides that this article take effect July 1, 1981. However, ch. 118 became law without approval by the governor, and since there is no provision in ch. 118 for the retroactive application of the effective date (see AS 01.10.090), this article is effective August 4, 1981.

Editor's note. — The repealed section derived from § 1, ch. 278, SLA 1976; §§ 17, 18, ch. 156, SLA 1978.

Sec. 44.83.181. Feasibility study and finance plan. (a) Unless the reconnaissance study has been disapproved by the division of budget and management under AS 44.83.179, the authority shall complete a feasibility study and plan of finance for each proposed project.

(b) A feasibility study shall include

(1) information about the proposed project, including but not limited to estimates of total project construction costs, total project operating costs, the timing and amount of anticipated returns from the completed project, a benefit-to-cost ratio, the potential effect of the project on the environment of the area which will be served by the project when completed, and the availability of alternative government financing;

(2) a statement of all assumptions which affect the economic feasibility of the project, including but not limited to the discount rate and interest rate of amounts of money to be used for the project, anticipated fuel prices, an escalation rate, state and local electric load growth, and estimates of indirect costs and benefits;

(3) a comparative analysis of all reasonable alternatives to construction of the proposed project; and

(4) information based on engineering and design work which meets the requirements for submission of a license application for the project to the Federal Energy Regulatory Commission.

(c) The plan of finance shall include recommendations of the most appropriate means to finance a project, including, but not limited to,

(1) the issuance of revenue bonds of the authority;

(2) the issuance of

(A) general obligation bonds of the state; or

(B) revenue bonds of the authority which are guaranteed or partially guaranteed by the state;

(3) an appropriation from the general fund

(A) to pay debt service on bonds or for other project purposes; or

(B) to reduce the amount of debt financing for the project;

(4) a loan from the general fund;

(5) financing arrangements with other entities using leveraged leases or other financing methods;

(6) assistance from any federal agency, including, but not limited to, the Rural Electrification Administration;

(7) a loan from the power project fund (AS 44.83.170(a)), or from the renewable resources investment fund (AS 37.11.050); or

(8) any combination of financing arrangements listed in this subsection.

(d) When financial assistance from the state is necessary for a project to meet financial feasibility criteria, the plan of finance shall

include an estimate of the minimum amount of financial assistance required from the state. The plan of finance shall include an estimate of the present value of the financial assistance from the state, computed as the difference between

(1) a market rate of interest, which is

(A) the rate determined under AS 44.83.170(f)(2)(B)(i); or

(B) the estimated interest rate for revenue bonds to be issued by the authority for the project; and

(2) the effective rate of interest because of state financial assistance provided.

(e) The authority, in consultation with the division of budget and management, shall adopt regulations defining

(1) the techniques which it shall apply to determine that the information required by (b) — (d) of this section is obtained; and

(2) standard criteria and measures for comparative analysis of alternative financing arrangements. (§ 24 ch 83 SLA 1980)

Cross reference. — As to application of this section to current projects of the Alaska Power Authority and exemption from the provisions of this section of pending projects of the Alaska Power Authority, see editor's note to AS 44.83.177.

Sec. 44.83.183. Review of feasibility studies and plans of finance by division of budget and management. (a) The division of budget and management in the Office of the Governor shall review the feasibility study and plan of finance for a project of the authority for compliance with the provisions of AS 44.83.181(b) — (d).

(b) In its review under this section, the division of budget and management may obtain an independent evaluation of a feasiblity study and plan of finance to determine compliance with the provisions of AS 44.83.181(b) — (d).

(c) When the division of budget and management has completed a review of the feasibility study and the plan of finance for a project under this section, it shall submit a report to the governor. The report shall examine the feasibility study and plan of finance for compliance with the requirements of AS 44.83.181(b) — (d). The report of the division of budget and management shall include a recommendation to the governor and legislature for approval or disapproval of the project based on the division's review of the feasibility study and plan of finance for compliance with the requirements of AS 44.83.181(b) — (d).

(d) The report required by (c) of this section shall be prepared and submitted not later than 60 days after the feasibility study and plan of finance for a proposed project have been received by the division of budget and management. (§ 24 ch 83 SLA 1980)

Cross reference. — As to application of this section to current projects of the Alaska Power Authority and exemption from the provisions of this section of

pending projects of the Alaska Power Authority, see editor's note to AS 44.83.177.

Sec. 44.83.185. Submission to the legislature. (a) The authority shall submit a feasibility study and plan of finance for a proposed new project to the legislature. When the report of the division of budget and management examining the feasibility study and plan of finance is completed as required by AS 44.83.183, it shall be submitted to the legislature.

(b) The authority may not proceed with work on the engineering or design phase of a proposed new project for which legislative approval is required until the legislature approves the proposed new project. However, the authority may proceed with the engineering or design work necessary to meet the requirements for submission of a license application for the proposed new project to the Federal Energy Regulatory Commission without obtaining legislative approval of the proposed new project.

(c) The legislature shall consider and must approve all proposed new projects except proposed new projects that are exempt under AS 44.83.187. The legislature may approve a proposed new project only by enacting law authorizing that project. (§ 24 ch 83 SLA 1980)

Cross reference. — As to application of this section to current projects of the Alaska Power Authority and exemption from the provisions of this section of pending projects of the Alaska Power Authority, see editor's note to AS 44.83.177.

Sec. 44.83.187. Applicability of sections. (a) The provisions of AS 44.83.177 — 44.83.185 and 44.83.189 apply only to a proposed new project which will generate more than 1.5 megawatts of power and

(1) requires an appropriation from the state general fund, from the power project fund, or from the renewable resources funds; or

(2) is based on a plan of finance which requires the issuance of general obligation bonds or other pledge of the credit of the state.

(b) The provisions of AS 44.83.177 — 44.83.185 and 44.83.189 apply to a project which generates more than 25 megawatts of power for which the authority will issue its revenue bonds for costs of construction.

(c) The provisions of AS 44.83.177 — 44.83.183 do not apply when a reconnaissance study and a feability study for a proposed new project have been prepared by an agency of the federal government, if the authority determines that the reconnaissance study and the feasibility study prepared by the agency of the federal government provide information sufficient to permit the authority to finance and construct the proposed new project in accordance with the requirements of this chapter. When a reconnaissance study and feasibility study are prepared for a proposed new project by an agency of the federal govern-

Editor's notes. — As enacted, this section was designated AS 44.83.460 and was renumbered by the revisor of statutes under AS 01.05.031.

1.5 + ABOVE

Sec. 44.83.394. Revenue requirements. The authority may not use money in the fund for a power project except in compliance with AS 44.83.177 — 44.83.187, and unless the authority determines that the power project is economically feasible and that, after construction, operation of the power project will be able to provide revenue sufficient to return annually to the state five percent of the amount that the authority has spent from the fund for the power project. (AS 44.83.470; § 1 ch 118 SLA 1981)

Editor's notes. — As enacted, this section was designated AS 44.83.470 and was renumbered by the revisor of statutes under AS 01.05.031.

Sec. 44.83.396. Operation of power project. (a) A power project that is acquired or constructed as part of the energy program for Alaska is owned by the state and shall be administered by the authority.

(b) When a power project has been acquired or constructed by the authority, the project may be operated for the authority under a contract or lease entered into by a qualified utility and the authority.

(c) The authority shall enter into a contract or lease under reasonable terms and conditions to permit the applicant utility to operate the power project when the applicant utility is the only wholesale power customer to be served directly by the power project unless the authority determines a utility making application for a contract or lease to operate a power project is not capable of operating that power project.

(d) The authority shall adopt regulations to determine the manner of selecting a qualified utility to operate a power project under a contract or lease when there is more than one wholesale power customer to be served directly by the power project.

(e) When the authority permits a power project to be operated by a qualified utility under a contract or lease, the authority shall

(1) review and approve the annual budget for the operation and maintenance of the power project;

(2) assure that the project is being operated efficiently and in a manner that is consistent with national standards for the industry. (AS 44.83.480; § 1 ch 118 SLA 1981)

Editor's notes. — As enacted, this section was designated AS 44.83.480 and was renumbered by the revisor of statutes under AS 01.05.031.

Sec. 44.83.398. Sale of power from power project. (a) The authority shall sell power produced from power projects acquired or constructed under the energy program for Alaska. A utility that purchases power produced by a power project of the authority shall agree with the authority

(1) to give preference in the sale of power at retail to all classes of consumers of power except industrial consumers;

(2) to charge industrial consumers of power a rate determined by the authority in accordance with (d) of this section.

(b) The authority shall establish a wholesale power rate structure applicable to sales of power to its customers at the busbar of the power project as follows:

(1) The authority shall establish and maintain a single wholesale power rate applicable to all power projects that it has acquired or constructed under the energy program for Alaska. The wholesale power rate shall be computed by the authority annually, and shall equal the rate that the authority estimates is necessary to produce revenue that is sufficient to pay

(A) operation, maintenance, and equipment replacement costs of the power projects;

(B) debt service of the power projects;

(C) safety inspections and investigations of the power projects by the authority.

(2) If, by July 1, 1986, the legislature has not appropriated at least $5,000,000,000 to the fund, in addition to appropriations to the fund of interest earned on money in the fund, the authority shall, beginning on that date, establish and maintain a single wholesale power rate applicable to all power projects that it has acquired or constructed under the energy program for Alaska. The wholesale power rate shall be computed by the authority annually, and shall be the greater of

(A) 10 percent of the amount the authority has invested in the power projects, including loans and grants made by the state; or

(B) the rate that the authority estimates is necessary to produce revenue sufficient to pay

(i) operation, maintenance, and equipment replacement costs of the power project;

(ii) debt service of power projects by the authority; and

(iii) safety inspections and investigations of the power projects by the authority.

(c) The authority shall transmit all the money that it receives under (b) of this section to the commissioner of revenue for deposit in the state general fund except for the money it receives under (b)(1)(A) and (B) and (b)(2)(B)(i) and (ii), or the money it would have received under (b)(1)(A) and (B) and (b)(2)(B)(i) and (ii) of this section if those items had been used in part to establish the wholesale power rate in effect at the time the money is received by the authority.

(d) A rate for an industrial consumer under (a)(2) of this section

(1) may exceed the wholesale power rate determined under (b) of this section;

(2) may not be less than the rate charged residential consumers.

(e) The legislature may, by law, annul or change the wholesale power rate for sales of power that the authority adopts under (b) of this section. (AS 44.83.490; § 1 ch 118 SLA 1981)

Editor's notes. — As enacted this section was designated AS 44.83.490 and was renumbered by the revisor of statutes under AS 01.05.031.

Sec. 44.83.400. Energy conservation. The authority shall ensure

(1) that communities that benefit from the energy program for Alaska implement cost-effective energy conservation measures for residences, commercial and public buildings, and industries; and

(2) that communities shall fulfill their responsibilities under (1) of this section by cooperating with state agencies concerned with development and conservation of energy, including but not limited to

(A) the Alaska Public Utilities Commission;

(B) the division of energy and power development, Department of Commerce and Economic Development; and

(C) the division of business loans, Department of Commerce and Economic Development. (AS 44.83.500; § 1 ch 118 SLA 1981)

Editor's notes. — As enacted, this section was designated AS 44.83.500 and was renumbered by the revisor of statutes under AS 01.05.031.

Sec. 44.83.425. Definitions. In AS 44.83.380 — 44.83.425,

(1) "busbar" means the substation that serves as the delivery point from the generation and transmission system of the authority to the transmission and distribution system of the utility;

(2) "debt service" means the cash flow necessary to secure bonds;

(3) "fund" means the power development fund established by AS 44.83.382;

(4) "industrial consumer" means a customer of a utility which customer has a peak power demand in excess of 500 kilowatts and uses the power principally for

(A) manufacturing;

(B) pipeline transportation;

(C) the recovery or processing of minerals;

(D) the processing of timber, agricultural, or seafood products or their by-products; or

(E) the operation of facilities owned by the federal government;

(5) "qualified utility" means an electric utility that is certified by the Alaska Public Utilities Commission to serve all or part of a market area that is served or will be served by the power project, and that the authority determines is capable of operating and maintaining the power project. (AS 44.83.510; § 1 ch 118 SLA 1981)

CS CHANGES TO HB 758

section 1. This section establishes the right of the APA to set general retail rate guidelines that appear later in the bill.

Section 2. This amendment concerns the revenue bonding powers of the APA. If a power project is built with funds raised by the issuance of revenue bonds a capital reserve fund is sometimes created. This capital reserve fund ((usually enough to pay to the bondholders one years worth of principle and interest) gives the bondholders additional security and so makes the bonds easier to sell. If the revenue generating by the project is insufficient to meet the annual payment to the bondholders the capital reserve fund is tapped. The fund would then have to be replenished, probably by legislative appropriation. Since the legislature would be asked to appropriate money to replenish capital reserve funds it should be aware of the creation of capital reserve funds and have an estimation of the amount of withdrawls from the fund.

section 3. This amends APA stautes concerning reconnaissance studies, The present law requires an environmental impact assessment be included in a recon study. This would mandate a specific look at the effects on fisheries resources.

section 4. Section 4 amends APA statutes on feasibility studies. It would add the underlined language to the information required to be presented in a feasibility study.

section 5. This section amends the review of feasibilty studies and plans of finance by the Division of Budget and Management. This language would require that budget and management prepare a financial analysis for APA projects and specifies what should be included in the report.

section 6. This section amends the law concerning legislative approval of APA power projects. The legislature must enact a law and approve a maximum construction cost for the project. This amendment is designed to discourage low cost estimates and cost overruns. The following section spells out the procedure if this estimate is exceeded.

section 7. If the final cost estimate for a project exceeds the cost estimate approved by the legislature by more than 5% this amendment mandates the APA to revise its feasibility study for the project and resubmit the project to the legislature for approval.

section 8. This section would exclude contractors who worked on a project feasibility study or in engineering design from the construction of the project. The purpose of this amendment is to discourage biased feasibility studiesor design work.

sections 8 - 13 are in the original HB 758

section 14. The only change in section 14 is replacing the word consumer with customer.

section 15. no change

section 16 same as section 14

section 17. The changes to this section begin on line 11. The effect of the change is that if inflation was to be reduced to a low level in any future decade the inflation factor would reflect this lower figure and not that of the preceeding 33 years.

The next change to section 17 begins atpage 11 line 2. This subsection (h) has been rewritten to change the number of rates from two to three. Also on line 8 the guidlines which should be followed when establishing a rate structurehave been broadened from - to encourage conservation of energy- to also include, efficient use of facilities and resources, and equitable rates to consumers.

On line 14 subsection (i) the utilities non-capital costs have replaced trying to list what costs of the utility are non-capital. The rationale for this change is that different utilities break out costs under different names. Just saying non-capital costs, which is defined on page 12, line 14 is simpler and more accurate. The definition is that non-capital costs are costs other than - 1. debt service on bonds issued for the power project, if any 2. a return to the state of its investment in the power project, with adjustments for inflation etc.

Sub-section (j) line 19. after the word utility the phrase, or the Alaska Public Utility Commission, is added. This change is necessary because the APUC normally conducts public hearings on electric rates. If a utility is economically regulated by the APUC the APUC should conduct this hearing.

Subsection (k) this change reiterates the authority of the APUC is rate setting matters for APA funded projcts. This language was advised by Ken Vassar of the Attorney General's office as a safeguard against misinterpretation of statues.

Section 18. no change

Section 19 no change except for replacing consumer with customer.

section 20, 21 no change

54,000

2/22/82 Energy
Bill Babcock
2/82 ① Village wide weatherization (conservation)
② rural policy
A. regional planning
Power Development Fund.

) Rural CAP

758 Dave Hutch Alaska Rural Electric Assn. (trade) (13 Assns.
GVEA, Mat-Su Electric, Unalakleet
Financing: ① wholesale pwr rates — prefer postage stamp rates
② pay back provision = principal only, not interest. Due to inflation factor, the rate of return is large after 33⅓ yrs.
③ effect on later projects

Rate Structure: objective is conservation, method in p.5 Sec. 6 is not the method (inverted rate for industrial uses)

AVEC: 1998 → [1.4%]
1979 1980 → [3.6%]
1981

Bill Corbus: AEL+P
electric heat customers, usually 3x. normal peak loads generally tend to tax capacity

1 kwh = 3413 btu

WASHINGTON RESIDENTIAL ELECTRIC RATE STRUCTURES

INVERTED	POPULATION
Seattle City Light	500,000
Puget Power	1,250,000
Pacific Power	300,000
Washington Water Power	500,000
Clark Co. PUD	200,000
Lewis County PUD	55,000
Chelan County PUD	45,000
	2,850,000

NON-INVERTED	
Tacoma City Light	200,000
Snohomish PUD	335,000
Inland Power and Light	50,000
Cowlitz PUD	80,000
Benton PUD	100,000
Franklin PUD	35,000
Others	350,000
	1,150,000
Total State Population:	4,000,000

317 East 17th Olympia, WA 98501 (206)357-8364

RESIDENTIAL BASELINE INVERTED RATES
ANALYSIS OF THEIR APPLICATION IN WASHINGTON STATE

Prepared For

The Washington State Senate
Committee on Energy and Utilities

Senator Susan Gould, Chairman

By

Richard H. Watson
Senior Research Analyst

Charles H. Sawyer
Senior Research Analyst

David Westburg
Legislative Aide

March, 1981

EXECUTIVE SUMMARY

The Pacific Northwest has long enjoyed electric rates that are among the lowest in the Nation, based on inexpensive power generated by the region's enormous hydroelectric system. However, the region's major hydro resources have been nearly fully exploited, and regional demand for electrical energy has outstripped the hydro system's capacity. The region's utilities have embarked upon an ambitious program to construct nuclear and coal-fired power plants to meet growing demand. However, many of these plants are experiencing lengthy delays and tremendous cost overruns.

As a result, consumers in the region face rapidly escalating electricity bills and almost certain electricity shortages in the coming decade. There is general agreement that conservation and certain renewable energy applications represent the only option for avoiding impending electricity shortages. Furthermore, there is considerable evidence that many conservation actions can "provide" energy much more cheaply than new nuclear or coal-fired plants.

However, a number of institutional obstacles stand in the way of the timely and widespread adoption of cost-effective conservation measures. This report examines one such obstacle--traditional electric rate structures for residential customers.

Further, this report evaluates a number of alternative rate structures according to three traditional ratemaking criteria and in light of the increasing cost conditions facing the region's utilities.

The results of this analysis may be briefly summarized as follows:

(1) Traditional declining block rate structures, which provide decreasing prices per kwh as consumption increases, are inappropriate during times of increasing costs. Declining block rates mislead consumers by indicating that costs <u>decrease</u> as consumption <u>increases</u>, when the opposite is true.

These misleading prices cause consumers to make uneconomic or inefficient decisions regarding fuel choice, electrical energy use and conservation. That is, declining block rates encourage wasteful use of electric energy in times of increasing costs.

(2) Electric rate structures based on average costs--flat rate structures--also encourage inefficient use of electric energy during times of increasing costs. Although not as misleading as declining block rates, flat rates based on average costs also mislead consumers by indicating that costs remain relatively stable as consumption increases.

(3) Pure marginal cost rate structures, which would price all electric energy at the cost of energy from new energy sources, would lead to economically efficient decisions regarding the choice of fuels, the selection of heating and cooling equipment and appliances, and choices between energy use and conservation measures. However, pure marginal cost rates would result in considerable excess revenues for utilities, severe cost increases for consumers, and would require some mechanism for distributing excess revenues back to consumers.

(4) A baseline inverted rate structure would result in more efficient (e.g., less wasteful) use of electricity, while avoiding the problem of very large excess revenues to utilities. A baseline inverted rate structure would price the initial or "base block" of electrical energy at the cost of inexpensive hydroelectric power to the utility. Electric energy consumed in excess of this base block would be priced at a level more closely approximating the marginal cost of electric energy; that is, the cost of power from new thermal power plants. Such a rate structure would provide the vast majority of consumers with more accurate price signals by pricing energy consumption over the base block closer to its marginal cost and closer to the cost of alternative fuels.

A baseline inverted rate structure has been successfully adopted by Seattle City Light. In addition, the Washington State Utilities and Transportation Commission recently promulgated an order requiring all investor-owned

utilities to adopt baseline inverted rate structures at subsequent rate orders. Presently, Puget Power has adopted a baseline increasing block rate structure under the state UTC's order.

Simulations developed for this report and presented in Chapter 4 indicate that, under assumptions consistent with the results of empirical research, baseline inverted rates will result in significant long-run electrical energy savings. Even under "worst case" (and least likely) assumptions, slight decreases in electrical energy use will result. These simulations also indicate that some minor adjustments in the rate structure may be necessary during an implementation phase to ensure that total revenues cover but do not exceed a utility's total costs.

SUMMARY

TESTIMONY OF RURALCAP

ON HB758

AMENDMENTS TO THE ENERGY

PROGRAM FOR ALASKA

- Energy costs in rural areas range up to 50¢/kwh and $3.00/gal for heating oil and gasoline.
- Rural areas are not well served by the existing Energy Program for Alaska. The distribution of state wealth for rural energy needs is inequitable.
- Proposed amendments to the Energy Program for Alaska are a good start, but still do not address the inequitable distribution of state wealth under it and still do not meet rural energy needs.
- The critical short-run need for almost all village residents is for weatherization. For longer-term energy needs, villages need the means to plan their own energy strategies.
- A state commitment to village-wide home weatherization and to village energy planning would address the inequity of the Energy Program for Alaska and help meet rural energy needs.
- RurALCAP offers to work with the Legislature in developing such a program.

TESTIMONY OF RURAL CAP
ON HB758
AMENDMENTS TO THE
ENERGY PROGRAM FOR ALASKA

My name is Matt Zencey, here from the Rural Alaska Community Action Program (RurAL CAP). We would like to commend the Committee for recognizing the need to improve the Energy Program for Alaska which was established last session.

The Energy Program for Alaska grew out of the desire to convert the State's temporary oil surplus into a secure long run supply of electricity for the Railbelt at stable prices. In its present form, the Program combines a wealth distribution scheme with an energy program which is claimed to serve all residents of the State.

From a rural perspective, the Program fails both as energy policy and as a wealth distribution plan; it neither gives rural residents the means to establish affordable, non-subsidized energy in rural areas nor provides an equitable distribution of State oil wealth. Last year, 99.5% of all funds under the Energy Program for Alaska went to urban areas.

Rural Alaskans would perhaps be willing to accept this Energy Program for urban Alaska if there were other adequate well-funded programs that converted part of rural Alaska's share of State wealth to stable, low-cost energy supplies. However, neither of

THE TWO MAJOR RURAL-ORIENTED ENERGY PROGRAMS DOES SO. THE POWER COST ASSISTANCE PROGRAM SUBSIDIZES BOTH URBAN AND RURAL AREAS WITH HIGH ELECTRICITY COSTS. IT IS A NECESSARY SHORT-TERM SUBSIDY, BUT IT IS NO SUBSTITUTE FOR A POLICY WHICH REPLACES THE NEED FOR SUBSIDIES WITH STABLE LOW-COST ENERGY FOR BOTH SPACE HEAT AND ELECTRICITY.

THE RURAL ENERGY AUDIT DEMONSTRATION PROGRAM OFFERS RURAL COMMUNITIES A STATE-CERTIFIED AUDIT AND A $300 ENERGY CONSERVATION GRANT TO EACH HOME IN SELECTED VILLAGES. WITH THE HIGH COST OF FREIGHT AND LABOR IN RURAL AREAS AND THE POOR CONDITION OF RURAL HOUSES, THE $300 MAXIMUM GRANT IS ALMOST RIDICULOUSLY LOW. IT IS ABOUT ONE-TENTH THE LEVEL THAT WOULD BE A REASONABLE MAXIMUM, ACCORDING TO RURAL CAP'S EXPERIENCE WITH THE FEDERAL WEATHERIZATION PROGRAM.

THE FINANCIAL COMMITMENT TO RURAL AREAS UNDER THESE ENERGY PROGRAMS IS MINISCULE IN COMPARISON TO THE APPROPRIATIONS UNDER THE ENERGY PROGRAM FOR ALASKA--ROUGHLY $11 MILLION VS. $435 MILLION, OR 2½%. THE HUGE FINANCIAL COMMITMENTS TO URBAN AREAS UNDER THE ENERGY PROGRAM FOR ALASKA ARE SIMPLY TOO LARGE FOR RURAL RESIDENTS TO IGNORE. RURAL AREAS ARE QUITE LITERALLY BEING LEFT OUT IN THE COLD.

THE GOVERNOR'S PROPOSED AMENDMENTS AND YOUR COMMITTEE'S BILL (HB/58) ARE A GOOD START. THEY BEGIN TO ADDRESS WHAT IS WIDELY RECOGNIZED AS THE MOST FUNDAMENTAL FLAW IN THE PROGRAM--THE USE

OF OUTRIGHT GRANTS TO THE PROPOSED ELECTRICITY PROJECTS. REQUIRING THAT THE PROJECTS PAY BACK THE STATE'S INVESTMENT WITH AN ADJUSTMENT FOR INFLATION IS A STEP TOWARD IMPROVEMENTS IN SEVERAL AREAS. IT MEANS THAT THE WORTHWHILE GOALS OF THE PROGRAM WOULD BE ACHIEVED AT LOWER COST, AS UNNECESSARY PROJECTS ARE DISCOURAGED AND SUBSIDIES TO PRICES REDUCED. HOWEVER, USING A 33-YEAR AVERAGE INFLATION RATE DOES LITTLE TO PROTECT THE PUBLIC'S INVESTMENT FROM THE RAVAGES OF INFLATION. USING A TEN OR EVEN FIVE-YEAR AVERAGE INFLATION RATE WOULD MAKE SURE THAT THE PUBLIC'S INVESTMENT IS PROTECTED.

THE BILL'S REQUIREMENT FOR LOCAL ELECTIONS IS MEANT TO FURTHER DISCOURAGE UNNECESSARY PROJECTS. HOWEVER, AS LONG AS LOCAL RESIDENTS DO NOT MAKE FINANCIAL COMMITMENTS TO BUILDING THE PROPOSED PROJECT, THEY HAVE A GREAT INCENTIVE TO SAY YES TO ALMOST ANY PROJECT.

REQUIRING REPAYMENT OF THE STATE'S INVESTMENT REDUCES PRICE SUBSIDIES AND REDUCES ARTIFICIAL DISINCENTIVES TO ENERGY EFFICIENCY AND OTHER ENERGY ALTERNATIVES. THE RESOURCES COMMITTEE VERSION ATTEMPTS TO ENCOURAGE ENERGY EFFICIENCY AND DISCOURAGE UNNECESSARY FUTURE PROJECTS EVEN MORE, BY REQUIRING AN INCLINING BLOCK RATE STRUCTURE FOR RESIDENTIAL CONSUMERS. THE INCENTIVES TO ENERGY EFFICIENCY WILL DEPEND, OF COURSE, ON HOW MUCH THE PRICE GOES UP WITH LEVEL OF USE. RESIDENTIAL CONSUMERS SHOULD NOT BE CHARGED ANY MORE THAN INDUSTRIAL OR COMMERCIAL CUSTOMERS. HB758 IS SILENT IN BOTH AREAS.

DESPITE THE IMPROVEMENTS THAT HB758 WOULD MAKE, THE MOST FUNDAMENTAL PROBLEMS REMAIN. IT ADDRESSES EQUITY ONLY BY REDUCING

THE TOTAL AMOUNT OF STATE MONEY SPENT DURING THE LIFE OF THE PROJECT. THE UP-FRONT COMMITMENT OF STATE MONEY IS NOT REDUCED. IT IS PAID BACK (IN SMALL INSTALLMENTS) OVER 33 YEARS, BUT ONLY AFTER OPERATIONS START. TODAY'S SURPLUS IS EXCLUSIVELY DEDICATED TO A SINGLE PURPOSE. RURAL AREAS CAN'T RELY ON 33 FUTURE ANNUAL REPAYMENTS TO MEET TODAY'S ENERGY NEEDS. THE PROGRAM'S HUGE FINANCIAL COMMITMENTS STILL WOULD

(CONTINUED ON PAGE 4)

NOT MAKE ANY LONG-TERM COMMITMENT TO USE RURAL ALASKA'S SHARE OF STATE WEALTH TO SOLVE LONG TERM RURAL ENERGY PROBLEMS. THE AMENDED PROGRAM SHOULD BE MUCH MORE EQUITABLE AND SHOULD DO MORE TO MEET RURAL ENERGY PROBLEMS.

WHEN A FEDERAL PROGRAM DESIGNED TO SERVE THE WHOLE NATION IS APPLIED TO ALASKA, THE STATE OFTEN POINTS OUT HOW DIFFERENT THINGS ARE IN ALASKA COMPARED TO THE LOWER 48. YET THE STATE OFTEN FORGETS HOW DIFFERENT THINGS ARE IN DIFFERENT AREAS WITHIN ALASKA. THE ENERGY PROGRAM FOR ALASKA IS A GOOD EXAMPLE. THERE ARE TWO REASONS IT DOESN'T SERVE RURAL ENERGY NEEDS--(1) IT CONCENTRATES EXCLUSIVELY ON ELECTRIC ENERGY, AND (2) IT RELIES ON A CENTRALIZED STATE BUREAUCRACY TO PLAN, DESIGN, BUILD, OWN AND OPERATE PROJECTS. ELECTRICITY IS IMPORTANT IN RURAL AREAS, BUT IN MOST VILLAGES, IT IS A MUCH LESS PRESSING NEED THAN FUEL OIL FOR HEATING. ABOUT 60% OF A VILLAGE'S ENERGY IS USED FOR SPACE HEATING, MORE THAN THREE TIMES THE AMOUNT USED TO GENERATE ELECTRICITY.

THE OVERSEER OF THE ENERGY PROGRAM FOR ALASKA IS THE ALASKA POWER AUTHORITY. IT HAS A VERY BIG MANDATE AND A VERY SMALL STAFF. UNDERSTANDABLY, IT CONCENTRATES ON PROJECTS WHICH ARE EASY TO ADMINISTER--A HANDFUL OF LARGE, CENTRALIZED PROJECTS. NO CENTRALIZED STATE AGENCY CAN BE EXPECTED TO PLAN, BUILD AND OWN HUNDREDS OF SMALL PROJECTS SCATTERED THROUGHOUT THE STATE WITHOUT AN EXPLICIT CHARGE FROM THE LEGISLATURE TO DO SO. BUT WITHOUT TECHNICAL HELP IN ENERGY PLANNING AND POLICY, VILLAGES ARE UNABLE TO TURN TO THE POLITICAL SYSTEM TO MEET THEIR ENERGY NEEDS.

WE THEREFORE CALL ON THE LEGISLATURE TO MAKE FINANCIAL COMMITMENTS TO A RURAL ENERGY PROGRAM WHICH WOULD INCLUDE TWO MAJOR COMPONENTS: FIRST, IMMEDIATE VILLAGE-WIDE WEATHERIZATION AND ENERGY EFFICIENCY AND SECOND, LOCAL ENERGY PLANNING TO IDENTIFY AND EVENTUALLY BUILD FUTURE ENERGY PROJECTS WHICH REDUCE RELIANCE ON ENERGY IMPORTED TO VILLAGES AND WHICH ARE APPROPRIATE TO VILLAGE LIFESTYLES.

RURAL CAP THINKS IT IS FAIR TO SAY THAT HOME WEATHERIZATION IS THE HIGHEST SHORT RUN ENERGY PRIORITY IN ALMOST ALL OF ALASKA'S VILLAGES. WEATHERIZATION SIMPLY REDUCES THE AMOUNT OF ENERGY NEEDED TO HEAT A HOME. RURAL CAP'S PRELIMINARY STUDY OF THE 1978 AND 1979 FEDERAL WEATHERIZATION PROJECT IN NOME FOUND ACTUAL FUEL SAVINGS AVERAGED ALMOST 15%, OR OVER $200 A YEAR. THE POTENTIAL FOR SAVINGS IS EVEN HIGHER, SINCE THE FEDERAL PROGRAM HAS AN UNREALISTICALLY LOW PER HOUSEHOLD CEILING ON SPENDING. THE NEED IS ESPECIALLY CRITICAL IN VILLAGES WHERE HOUSEHOLDS SPEND THOUSANDS OF DOLLARS ON FUEL OIL FOR HEAT. BUT EVEN IN VILLAGES WHERE LOCAL WOOD IS USED, WEATHERIZATION MEANS USING LESS TIME, LESS GAS, AND LESS WEAR ON THE SNOWMACHINES, TO GATHER WOOD. IN FACT, VILLAGE ENERGY RECONNAISSANCE STUDIES DONE FOR THE ALASKA POWER AUTHORITY ALMOST UNANIMOUSLY POINT OUT THAT WEATHERIZATION IS NEEDED IN THE VILLAGES STUDIED (SEE ATTACHED SHEET). SINCE THOSE RECONNAISSANCE STUDIES WERE AIMED AT ELECTRIC POWER, THEY DID NOT RESULT IN PROPOSED WEATHERIZATION PROJECTS. MOST STUDIES EITHER SIMPLY ASSUMED WEATHERIZATION WOULD BE DONE OR RECOMMENDED THAT VILLAGES PARTICIPATE IN EXISTING PROGRAMS. HOWEVER, THOSE PROGRAMS ARE

SIMPLY INADEQUATE TO MEET THE VILLAGE WIDE NEEDS--THERE IS NOT ENOUGH MONEY PER HOUSEHOLD UNDER THE STATE ENERGY AUDIT/CONSERVATION GRANT PROGRAM OR UNDER THE FEDERAL LOW-INCOME WEATHERIZATION PROGRAM. THE FEDERAL PROGRAM (WHICH MAY BE CUT OUT) REACHES ONLY A TINY FRACTION OF ELIGIBLE HOMES EACH YEAR AND ONLY THE POOREST RESIDENTS ARE ELIGIBLE. A STATE COMMITMENT TO VILLAGE WEATHERIZATION WOULD ENABLE RURAL AREAS TO SHARE MORE EQUITABLY IN THE USE OF STATE WEALTH FOR STABLE, LOW-COST ENERGY. (RATHER THAN DISCUSS THE VARIOUS FORMS THAT THE PROGRAM AND ITS FUNDING MIGHT TAKE RIGHT NOW, WE'D LIKE TO WORK WITH THE LEGISLATURE TO DEVELOP SUCH A PROGRAM FOR INCLUSION WITH THE ENERGY PROGRAM FOR ALASKA.)

WEATHERIZATION IS IMPORTANT, BUT IT IS JUST A FIRST STEP TO MEETING VILLAGE ENERGY NEEDS. THESE LONGER RUN ENERGY SOLUTIONS ARE AS VARIED AS ALASKA'S VILLAGES THEMSELVES. EACH VILLAGE NEEDS TO DECIDE FOR ITSELF WHAT ENERGY SOLUTIONS WILL BE BEST. THE BEST SOLUTION MAY INVOLVE COORDINATION WITH SEVERAL NEARBY VILLAGES. WE THEREFORE CALL ON THE LEGISLATURE FOR A COMMITMENT TO ENABLE LOCAL RESIDENTS TO DO ENERGY PLANNING. STATE AGENCIES AND REGIONAL NON-PROFITS CAN OFFER TECHNICAL HELP AND COORDINATION BUT VILLAGE RESIDENTS MUST HAVE THE MEANS TO GET INFORMATION AND MAKE SOUND DECISIONS ON ENERGY. AGAIN, WE'LL BE HAPPY TO WORK ON A PROPOSAL THAT COULD BE INCORPORATED INTO THE ENERGY PROGRAM FOR ALASKA.

IN CONCLUSION, THEN, WE COMMEND THE RESOURCES COMMITTEE FOR ITS EFFORTS TO IMPROVE THE ENERGY PROGRAM FOR ALASKA. HOWEVER,

THE PROPOSED IMPROVEMENTS STILL NEITHER IMPROVE THE INEQUITY IN THE DISTRIBUTION OF STATE WEALTH NOR ADEQUATELY MEET THE ENERGY NEEDS OF RURAL AREAS. BY INCLUDING COMMITMENTS TO VILLAGE-WIDE WEATHERIZATION AND LOCAL ENERGY PLANNING IN THE PROPOSED IMPROVEMENTS TO THE ENERGY PROGRAM, THE LEGISLATURE WOULD HELP ENSURE AN EQUITABLE DISTRIBUTION OF STATE WEALTH TO MEET THE ENERGY NEEDS OF ALL ALASKANS.

ATTACHMENTS: SUMMARY OF RECONNAISSANCE STUDY RECOMMENDATIONS ON WEATHERIZATION

SUMMARY OF COMMENTS ON HB758

THE NEED FOR WEATHERIZATION IN RURAL ALASKA

As Found in Alaska Power Authority Village Energy Reconnaissance Studies

NORTEC: Grayling, Scammon Bay, Goodnews Bay, Togiak

"The actual oil consumption in this area ('The Western Alaskan region where degree days vary from 12,000 to 14,000 days per year'.) is approximately 40-50% greater than required for a well-insulated home...Energy conservation offers the best opportunity in the villages for reduction of oil consumption and energy costs... These (energy conservation) technologies have the highest reliability, the greatest availability, and are most appropriate for the area involved."

Roy Barkwell:* Savoonga

"...Conservation of residential heating fuel has definite merit... The author's judgment from past experience and the site visit is that approximately 30% of this heat could be conserved through upgrading of building envelope by weatherstripping, added insulation, etc....The primary advantage of this technology is inherent in its low capital cost requirements and lack of complex maintenance and operations procedures."

Marks Engineering: Tanana

Conclusions: "Heating requirements ... can be greatly reduced if the structures are upgraded with energy saving improvements."

Recommendations: "Community residents should be encouraged to weatherize...."

CH_2M Hill: Ahkiok, King Cove, Larsen Bay, Old Harbor, Ouzinkie, Sand Point

Recommendations for all villages: Feasilibity studies of heat energy conservation (i.e. weatherization).

(This recommendation for a feasibility study of weatherization reflects the cumbersome way the reconnaissance process works in Rural Alaska when consultants apply it literally without taking

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*Master's Thesis based on work done for Fryer, Pressler, Elliott reconnaissance of Savoonga.

into account the special circumstances in rural areas. At least one other consultant, NORTEC, has said no feasibility study is necessary for weatherization, since we already know that it works and is greatly needed.)

Retherford Associates: Buckland, Koyokuk, Russian Mission, Sheldon Point, Chuathbaluk, Crooked Creek, Nikolai, Red Devil, Sleetmute, Stony River, Takotna, Telida, Hughes

"It cannot be overemphasized that if villages wish to stabilize and hopefully reduce the local cost of energy, immediate short-term conservation measures must be implemented. These conservation measures . . . can reduce current non-transportation fuel use on the order of 15 percent over the 20 year period of this study."

(It is ironic to note that this study simply assumed that energy conservation would be done and did not include this important energy strategy in the list of options studied.)

Wind Systems Engineering: Shungnak, Kiana, Ambler

Recommendations in all three villages: An "integrated" approach to conservation and weatherization:

"Increasing end use (energy) efficiency is as important as increasing (energy) conversion efficiency. This approach looks at energy as both electrical and thermal and takes advantage of reduced electric consumption associated with a well-insulated thermally tight building. Community facilities which are consolidated and built with energy efficient appliances, load management, and a well insulated shell make excellent sense from an integrated energy standpoint."

Fryer: Pressley: Elliott: Elim, Savoonga, Kaltag, White Mountain

Recommendations for all four villages: To bring in an auditor/energy specialist to help the villages participate in existing federal and state weatherization programs. (The consultants did not check whether those programs have enough money to meet weatherization needs of rural households.)

Terror Lake

PROJECT COST$ = 153436992. ANNUAL KWH= 139000000. ESCALLATION=1.07
ESC. YR. 1/101.043 ESC. YR. 11/201.057 ESC. YR. 21/301.073 ESC. YR. 31/341.07

YEAR	PAYMENT $	PAYMENT %	C/KWH
1	4603110.	3.00	3.31
2	4799309.	3.13	3.45
3	5003870.	3.26	3.60
4	5217150.	3.40	3.75
5	5439521.	3.55	3.91
6	5671370.	3.70	4.08
7	5913101.	3.85	4.25
8	6165135.	4.02	4.44
9	6427912.	4.19	4.62
10	6701889.	4.37	4.82
11	6987544.	4.55	5.03
12	7383408.	4.81	5.31
13	7801699.	5.08	5.61
14	8243687.	5.37	5.93
15	8710714.	5.68	6.27
16	9204200.	6.00	6.62
17	9725644.	6.34	7.00
18	10276628.	6.70	7.39
19	10858828.	7.08	7.81
20	11474010.	7.48	8.25
21	12124044.	7.90	8.72
22	13022036.	8.49	9.37
23	13986540.	9.12	10.06
24	15022482.	9.79	10.81
25	16135154.	10.52	11.61
26	17330240.	11.29	12.47
27	18613840.	12.13	13.39
28	19992512.	13.03	14.38
29	21473300.	13.99	15.45
30	23063764.	15.03	16.59
31	24772032.	16.14	17.82
32	26606824.	17.34	19.14
33	28577516.	18.62	20.56

397,389,053 = 2.6 x original investment

* * * * * DEPARTMENT OF COMMERCE & ECONOMIC DEVELOPMENT * * * * *

RT M E BUDGET COMPONENT	FY81 ACT	FY82 ATH	CONT.	GOVERNOR	HOUSE	HOUSE - GOVERNOR COMPARISON	
NATURAL RESOURCE MANAGEMENT							
OIL & GAS CONSERVATION	1632.5	2220.7	2483.7	2614.2	2532.6	-81.6	-3.0%
PUBLIC PROTECTION							
WEIGHTS & MEASURES	823.0	887.4	952.8	987.3	953.8	-33.5	-3.3%
BANKING SECURITIES & CORP							
CORPORATIONS	209.3	255.1	281.6	369.4	283.6	-85.8	-23.1%
FINANCIAL INSTITUTIONS	879.7	1004.4	1088.7	1088.7	1077.6	-11.1	-1.0%
*** PROGRAM TOTAL ***	1089.0	1259.5	1370.3	1458.1	1361.2	-96.9	-6.5%
INSURANCE DIVISION	812.2	892.3	911.2	976.8	907.6	-69.2	-7.0%
OCCUPATIONAL LICENSING							
ADMINISTRATION	631.4	735.2	791.9	795.9	765.9	-30.0	-3.7%
LICENSING BOARDS	212.6	169.5	186.5	186.5	186.5		
INVESTIGATIONS	381.1	501.6	522.2	525.2	507.3	-17.9	-3.3%
REAL ESTATE COMMISSION	199.5	303.7	319.4	329.4	329.4		
*** PROGRAM TOTAL ***	1424.6	1710.0	1820.0	1837.0	1789.1	-47.9	-2.5%
ADMINISTRATION & SUPPORT	841.1	508.2	960.3	964.4	937.4	-27.0	-2.7%
REGULATORY COMMISSIONS							
ALASKA TRANSPORTATION COMM.	1462.2	1480.0	1605.9	1664.2	1600.9	-63.3	-3.7%
AK. PUBLIC UTILITIES COMM.	1831.7	2022.1	3159.4	3165.9	3084.9	-81.0	-2.5%
ALASKA PIPELINE COMMISSION	541.5	934.6					
*** PROGRAM TOTAL ***	3835.4	4436.7	4765.3	4830.1	4685.8	-144.3	-3.0%
CIP POSITIONS & ASSOC COSTS							
PROJECT DIRECT CHG POSITIONS							
CIP OVERHEAD POSITIONS & COSTS							
*** PROGRAM TOTAL ***							
*** CATEGORY TOTAL ***	8825.3	9694.1	10779.9	11053.7	10634.9	-418.8	-3.7%
DEVELOPMENT							
ECONOMIC ENTERPRISE							
ADMINISTRATION	2346.2	276.3	296.4	298.4		-298.4	-100.0%
COMMERCIAL FISHERIES DEV.	219.1	272.7	648.8	648.8		-648.8	-100.0%
MINERALS DEVELOPMENT	224.8	318.1	353.3	353.3	387.8	34.5	9.7%
SPECIAL DEVELOPMENT PROJECTS	337.7	374.7	407.6	407.6		-407.6	-100.0%
HYDROCARBON DEVELOPMENT	2.0						
ASIAN OFFICE	228.2	477.3	524.7	574.7		-574.7	-100.0%
EUROPEAN OFFICE	155.0	150.0					
DESIGNATED GRANTS		1415.0					
*** PROGRAM TOTAL ***	3513.0	3284.1	2230.8	2282.8	387.8	-1895.0	-83.0%
BUSINESS LOANS & VET AFFAIRS							
LOAN FUND ADMINISTRATION	1961.5	1671.0	2425.7	2541.2	2422.6	-118.6	-4.6%
VETERANS LOAN FUND	835.7	753.1					
VETERANS SERVICES	128.0	140.2	142.1	142.1	142.1		
FISH ENHANCEMENT TAX RECEIPTS		1306.4	1306.4	2440.3	2010.7	-429.6	-17.5%
*** PROGRAM TOTAL ***	2925.2	3870.7	3874.2	5123.6	4575.4	-548.2	-10.6%

* * * * * DEPARTMENT OF COMMERCE & ECONOMIC DEVELOPMENT * * * * *

HORT ORM AGE	BUDGET COMPONENT	FY81 ACT	FY82 ATH	CONT.	GOVERNOR	HOUSE	HOUSE - GOVERNOR COMPARISON 76	
	TOURISM	3248.9	11254.1	5005.2	7605.2	6737.3	-867.9	-11.3%
	ENERGY & POWER DEVELOPMENT							
30	ENERGY ADMINISTRATION	335.7	341.8	850.9	858.9		-858.9	-100.0%
32	ENERGY GRANTS & ASSISTANCE	4357.2	21347.1	5901.8	5901.8		-5901.8	-100.0%
34	ENERGY PLANNING	189.6	253.8	381.3	481.3		-481.3	-100.0%
36	WEATHERIZATION	1570.3	2186.9					
38	FIELD OFFICES	746.0	1156.4	780.9	780.9		-780.9	-100.0%
40	ENERGY ENGINEERING			752.8	930.9		-930.9	-100.0%
	*** PROGRAM TOTAL ***	7198.8	25286.0	8667.7	8953.8		-8953.8	-100.0%
44	ALASKA POWER AUTHORITY	2754.9	10907.1	10333.1	11428.1	11281.5	-146.6	-1.2%
48	ROYALTY OIL AND GAS BOARD	126.9	268.8	290.5	290.5	190.5	-100.0	-34.3%
52	AK INDUSTRIAL DEVELOPMENT AUTH		1572.2	1689.8	1720.8	1700.7	-20.1	-1.1%
56	AGRICULTURAL ACTION COUNCIL	150.2	885.7	417.3	417.3	385.7	-31.6	-7.5%
60	AK SEAFOOD MARKETING INSTITUTE		2000.0	2754.2	2754.2	1854.2	-900.0	-32.6%
	*** CATEGORY TOTAL ***	19917.9	59328.7	35862.8	40576.3	27113.1	-13463.2	-33.1%
	******** TOTAL EXPENDITURES	30375.7	71243.5	49126.4	54244.2	40280.6	-13963.6	-25.6%
	******** FUNDING							
	FED. RECEIPT	2039.3	3003.9	54.2	54.2	54.2		
	GENERAL FUND	27108.4	65550.6	44869.3	48571.3	35249.8	-13321.5	-27.3%
	OTHER FUNDS	1228.0	2689.0	4202.9	5618.7	4976.6	-642.1	-11.3%

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

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

February 22, 1982

MEMORANDUM

TO: Representative Eric Sutcliffe
Attn: Pat Lawler

FROM: Jack Kreinheder
Research Staff

RE: Lifeline Utility Rates
Research Request 82-49

In response to your request, we have obtained a copy of the California statute establishing lifeline utility rates and have interviewed representatives of the California Public Utilities Commission (CPUC) and a major California electric utility regarding the implementation and results of the lifeline rate legislation. This memorandum summarizes this information and also discusses lifeline and inverted block rate pricing structures in other states. In addition, some observations on possible problems in HB 752 relating to the establishment of lifeline rates in Alaska have been made, where appropriate.

California enacted the Miller-Warren Energy Lifeline Act (§739, Public Utilities Code) in 1975. The statute, which is attached, required the CPUC to designate a lifeline quantity of gas and electricity which is necessary to supply the minimum needs of the average residential user. The statute specified that separate quantities were to be established for several types of "end uses": lighting, cooking, food refrigeration, space heating and cooling, and water heating.

The CPUC was also required to take into account the effect of climate and seasonal changes on energy needs. The lifeline legislation directed the CPUC to require that all electric and gas utilities under its jurisdiction file a schedule of rates and charges providing lifeline rates. The lifeline rates were not to be greater than the rates in effect on January 1, 1976, and no increase in lifeline rates was allowed to be granted until the average system rate increased by 25 percent or more over the January 1, 1976 level.

The lifeline program established by the CPUC is described in detail in the attached CPUC publication. Basically, the program provides a basic allowance of 240 kilowatt hours (KWH) per month for each residence for the puposes of lighting, cooking, and food refrigeration (a comparable

allowance of 26 therms per month is made for gas consumers). Homes with electric water heating qualify for an additional 250 KWH/month. Residences with electric space heat receive an additional lifeline allowance ranging from 550 KWH to 1420 KWH per month, depending on the climate zone in which the home is located. Except for some coastal areas, the home heating allowances are available only from November through April.

Based on this schedule, an all-electric home in the colder mountain areas of California can receive a lifeline allowance of up to 1910 KWH/month. The lifeline act was amended in 1978 to require the CPUC to provide additional allowances for persons with special medical conditions requiring life support equipment or having increased heating and cooling needs.

I spoke with Walter McGee, a Consumer Affairs Consultant with the CPUC, regarding the implementation of the California lifeline program. According to Mr. Mcgee, the three most common complaints received by the Commission regarding lifeline rates are the following:

(1) The lifeline program is unfair because it is based on average house size, average number of occupants per dwelling, etc., and doesn't provide sufficient allowances for large families, large houses, and so on.

(2) The program is too complicated and difficult to understand for the consumer. Too many changes have been made in the program.

(3) Business and industrial interests have complained that they are subsidizing lifeline rates for residential consumers by paying higher power rates.

The first two problems are in direct conflict with each other, because a lifeline program which takes account of house and family size and other factors is inherently complex. On the other hand, a simple system such as that proposed in HB 758 does not make adjustments for the types of electric uses and other variables and therefore does not provide the same level of savings to different groups of consumers. There is no single solution for these problems, just a trade-off between the goals of a simple, understandable system and a versatile system which reflects the variations in electric power use among consumers. The lifeline program enacted by the California legislature emphasized versatility over simplicity, while HB 758 does the opposite.

In regard to the third major complaint, that of subsidization of residential consumers by business and industrial power users, the CPUC

maintains that the subsidized cost of lifeline rates is offset by the higher rates for residential consumers using larger amounts of power, rather than business and industrial users. CPUC studies have indicated that the average cost of power to all three consumer groups is nearly the same -- about 8 cents per KWH.

I also contacted Stan Little, a Rate Analyst with the Pacific Gas and Electric Co. (PG&E), which serves much of northern California, for the utility's perspective on the lifeline program. PG&E's biggest single problem with the California lifeline rate program is that it requires the utility to determine customer end-uses of gas or electricity, such as water heating, space heating, etc., creating the problem of incorrect billings if the utility is not made aware of those uses. PG&E has relied on its customers to apply for the lifeline allowances for specific gas and electricity uses. Despite an extensive advertising program, there have been numerous cases of customers not applying for lifeline allowances for months or years after utility service is established. PG&E must then adjust prior bills for these errors.

A second problem is the potential for customer abuse of the lifeline program, i.e. customers claiming they have electric heat when some other heat source is used. According to Mr. Little, such abuse has been a small but significant problem for PG&E.

The complexity of rate schedules has been another burden for the utilities under the lifeline rate system. Before the lifeline rates were implemented, PG&E had three residential power rates, depending on the quantity used. There are now over 100 rate schedules, based on 6 climate zones and the various combinations of water heating, space heating, and other electric power uses. Rate adjustments are much more time-consuming as a result of this proliferation of rate schedules. PG&E's basic residential rate schedule is currently 6.9 cents/KWH for the lifeline quantity, 9.3 cents for the next 300 KWH or 2/3 of the lifeline amount, whichever is higher, and 12.6 cents for all additional consumption.

Finally, there appears to be some doubt that the lifeline system is effective in meeting its primary goal of lowering power and gas rates for low-income consumers. According to Mr. Little, a study prepared for PG&E indicated that it was possible that low-income consumers actually used more power and gas than higher-income consumers, and may therefore pay higher average power rates. Among the reasons for this tentative conclusion were that low-income persons tend to live in poorly insulated homes with older, less efficient appliances, spend more time at home, cook more frequently at home, and so on.

Other State's Laws

According to information provided by the National Conference of State Legislatures, at least 12 states have approved either lifeline or inverted block rates (higher rates for higher amounts of power used), including the following: Arizona, Alabama, California, Connecticut, Florida, Idaho, Maine, Michigan, New Jersey, Pennsylvania, Rhode Island, and Washington. This list of states includes rate structures created both by the legislatures and by the public utilities commissions in these states. Both Maine and Washington have lifeline programs which are targeted to low-income senior citizens, rather than all residential consumers. Copies of these statutes are attached. In addition, the NCSL information indicates that public utilities commissions in 32 states have adopted policies discouraging the use of declining block rates.

Lifeline Rates in HB 758

I discussed the proposed lifeline rate program in HB 758 [§8(h)-(j)] with both Mr. McGee and Mr. Little. Both gentlemen commented that the flat 250 KWH lifeline provision in HB 758 would be administratively much easier to implement than the California program, but that the cost savings would be marginal for consumers with electric water heat, space heat, etc. Mr. McGee stated that a consumer with an all- or primarily-electric home might actually pay more under this lifeline proposal, because the savings on the first 250 KWH would be offset by the higher costs of the remaining 1000 to 2000 KWH which would probably be consumed. Thus, it appears that mainly consumers using electricity for only lighting and cooking would benefit from this lifeline proposal, although the specific impact would depend on the actual rates applied.

Although a larger lifeline allowance, say 500 or 1000 KWH could provide a broader distribution of savings to consumers, a potential problem cited by Mr. McGee is that consumers using electricity only for lighting and cooking (say, 250 KWH per month) would have a reduced incentive for conservation, because of the low rates for the first 500 or 1000 KWH. Conservation is stated as a primary objective in the lifeline system proposed in HB 758. On the other hand, the only alternative to a fixed lifeline allowance appears to be an end-use based program like California's, with the problems described earlier.

I have two additional comments on the HB 758 lifeline proposal, regarding potential conflicts with the regulatory authority of the Alaska Public Utilities Commission (APUC). In lines 23-25 on page 7 of the bill, it states that "for residential consumers the utility shall specify successively higher ranges of power usage to which successively higher rates within its rate structure apply." It appears that for

utilities regulated by the APUC, this language could conflict with the APUC's statutory authority over utility rates. A possible solution could simply be to say that the utility, or the APUC for those utilities regulated by the APUC, shall specify successively higher ranges... etc.

The second possible conflict is in lines 6-9 on page 9 of HB 758. These lines allow the Alaska Power Authority to authorize a higher retail power rate in certain conditions for utilities to which it sells wholesale power. This granting of authority over retail power rates to the Power Authority may create a conflict with the APUC's authority over utility rates. Again, a simple rewording which grants authority to the proper agency, depending on jurisdiction, may be sufficient to avoid this conflict.

* * * * * * * * * *

I hope this information is useful. Please don't hesitate to contact me if you have any questions or would like additional information.

Terror Lake

PROJECT COST$ = 153436992. ANNUAL KWH= 139000000. ESCALLATION=1.07
ESC. YR. 1/101.043 ESC. YR. 11/201.057 ESC. YR. 21/301.073 ESC. YR. 31/341.07

YEAR	PAYMENT $	PAYMENT %	C/KWH
1	4603110.	3.00	3.31
2	4799309.	3.13	3.45
3	5003870.	3.26	3.60
4	5217150.	3.40	3.75
5	5439521.	3.55	3.91
6	5671370.	3.70	4.08
7	5913101.	3.85	4.25
8	6165135.	4.02	4.44
9	6427912.	4.19	4.62
10	6701889.	4.37	4.82
11	6987544.	4.55	5.03
12	7383408.	4.81	5.31
13	7801699.	5.08	5.61
14	8243687.	5.37	5.93
15	8710714.	5.68	6.27
16	9204200.	6.00	6.62
17	9725644.	6.34	7.00
18	10276628.	6.70	7.39
19	10858828.	7.08	7.81
20	11474010.	7.48	8.25
21	12124044.	7.90	8.72
22	13022036.	8.49	9.37
23	13986540.	9.12	10.06
24	15022482.	9.79	10.81
25	16135154.	10.52	11.61
26	17330240.	11.29	12.47
27	18613840.	12.13	13.39
28	19992512.	13.03	14.38
29	21473300.	13.99	15.45
30	23063764.	15.03	16.59
31	24772032.	16.14	17.82
32	26606824.	17.34	19.14
33	28577516.	18.62	20.56

397,389,053 = 2.6 x original investment

82 + 33 2015

SECTION-BY-SECTION ANALYSIS

HOUSE BILL 655 — REVISED FORCSHB 758

Section 9

° ~~Section 1~~ would modify the present procedures for reviewing and approving reconnaisance studies, feasibility studies and projects. We recommend that smaller projects, those generating 1.5 megawatts or less, be subjected to a simplified feasibility study and review process, and not be individually authorized by the Legislature. In this way, some of the steps in design and construction of these projects can be combined, thus saving substantial time. This section would also bring the review process for all projects into conformance with other proposed changes in the law. Projects larger than 1.5 megawatts would remain subject to the complete review and feasibility study process, including individual legislative authorization.

° SECTION 10 ~~Section 2~~ would repeal a section which purports to exempt revenues from the sale of power from the appropriation process, and allow them to be deposited directly into the Power Development Fund. The Attorney General has informed us that revenues from the sale of power must be appropriated by the Legislature before the Alaska Power Authority (APA) may expend them.

° SECTION 11 ~~Section 3~~ would add the provision that the Power Development Fund may not be used for construction of a power project until the project has been approved and a local special election has been held.

° Section 12 ~~4~~ would provide the form and specifications for the local special elections required by Section 3 of the bill. The election would be conducted by the State among those qualified voters residing in the area which the power project would serve. This section would also require that the voters be provided with certain specific information about the project before the election is conducted. The election process would be applicable to all projects upon which construction itself has not begun by the date of passage of this bill.

After the election, in the event that a substantial change in the project occurs that would require additional funds, a new election would be required. The Division of Budget and Management would determine whether the proposed changes are substantial.

° Section 13 ~~5~~. This section would revise the feasibility requirement to simply conform to the standards of AS 44.83.181 in existing law. Feasibility must be determined by the Alaska Power Authority within one year before expending funds on the project; this feasibility determination must be concurred in by the Division of Budget and Management. The APA may rely upon a feasibility study that is not more than one year old in making this determination, or may revise a feasibility study which is more than one year old.

This section removes the requirement that the project is deemed feasible only if it can be demonstrated that revenues from the project could be sufficient to return, annually, 5% of the State's investment in the project. As these funds are not returned to the State under existing law, and the amount to be returned under this bill is vastly different, this requirement should be removed.

° Section 15. This section would repeal the existing provisions for determining wholesale power rates, including eliminating the "postage stamp rates" and the "Susitna blackmail clause" and replace it with a wholesale rate structure for each project that provides revenues to pay:

(a) recurring costs of the project, including operation, maintenance, equipment replacement, debt service, loan repayments, safety inspections and investigations by the APA;

(b) repayment of the State's General Fund investment in the project on a "no real interest" basis at the rate of 3% return per year in dollars inflated back to the first year of project operation. Once the repayment is complete, the only portion used to calculate rates is the recurring costs.

° Section 17 provides the means to establish the repayment inflation rate used in Section 6. Essentially, the APA establishes the first rate used in repayment by averaging the Federal Consumer Price Index for the previous 33 years (the same period as the project repayment schedule). This figure is used to approximate bringing each year's portion of the capital investment to nominal dollars. The inflation rate is updated each ten years of the project's life.

° Section 18 would reestablish an emergency maintenance fund. This fund would be available to defray unanticipated operation and maintenance costs. These costs might occur as a result of a catastrophic equipment failure or other unbudgeted cost. The fund would initially provide loans to the projects at 9% interest. However, the APA is required to seek legislative appropriations to replace the amounts expended from the fund, and to convert the loans to capital investments of the State which would be repaid under Section 6 of this bill.

° Section 21. This section would exempt projects under construction or the effective date of the Act from the requirements for local special elections under Sections 3 and 4.

° Section 20 would repeal existing AS 44.83.390 and AS 44.83.398(c). AS 44.83.390 would purport to restrict future Legislatures' ability to reappropriate funds unexpended on a particular power project. AS 44.83.398(c) purports to allow the APA to retain and expend certain funds without appropriation. The Attorney General advises that these provisions are not constitutional, and should be repealed.

PER CAPITA ENERGY USE STATISTICS
CORRECTED FOR HYDRO @ 3413 BTU/KWH
UNITS MILLIONS OF BTU

STATE NAME	TOTAL USE	GAS USE	OIL USE	GAS&OIL USE	PU PWR FACT. HCORR	OIL	RESIDENTIAL OIL	TOTAL
ALA	430.29	64.45	170.91	235.36	.92	.01	11.08	72.33
AKA	776.00	366.71	417.60	784.31	.92	.14	20.58	76.82
ARZ	310.65	75.96	164.14	240.11	.84	.09	6.34	51.37
ARK	422.22	102.63	222.25	324.89	.91	.48	38.1?	84.05
CAL	273.32	71.48	161.11	232.59	.81	.46	11.??	47.58
COLO	349.10	102.12	164.70	266.82	.96	.02	11.9?	72.42
CONN	254.03	21.37	196.36	217.73	.99	.46	47.79	74.71
DEL	346.87	35.99	288.57	324.56	1.00	.73	46.24	69.3?
D.C	242.57	39.39	124.87	164.26	1.00	1.00	43.96	64.12
FLA	280.27	37.97	200.94	238.91	1.00	.49	36.41	68.27
GA	325.48	55.63	166.82	222.45	.95	.08	10.87	69.32
HW	281.87	.00	275.77	275.77	1.00	1.00	28.98	29.00
IDA	371.17	51.16	190.19	241.35	.33	.00	23.04	55.17
ILL	374.90	106.21	164.99	271.20	1.00	.10	18.90	94.11
IND	480.45	83.38	190.45	273.82	1.00	.04	27.41	98.02
IOWA	373.86	83.63	185.61	269.24	.97	.03	26.34	91.65
KAN	460.75	225.63	195.91	421.54	1.00	.10	20.42	93.08
KNTY	340.34	61.85	148.24	210.08	.96	.00	13.25	67.58
LA	830.93	577.86	243.99	821.86	1.00	.29	18.47	72.08
MAIN	302.79	1.97	247.82	249.79	.75	.14	50.71	72.21
MARY	275.98	33.25	162.25	195.49	.97	.35	23.33	58.72
MASS	254.76	28.25	214.00	242.25	1.00	.83	50.56	69.69
MICH	322.79	87.37	145.48	232.85	.94	.15	20.24	79.18
MINN	346.75	79.41	168.32	247.73	.96	.03	26.27	85.03
MISS	346.16	86.42	230.84	317.26	1.00	.60	40.80	70.07
MO	335.40	75.13	168.44	243.57	.99	.04	21.22	90.37
MONT	376.87	94.05	222.13	316.18	.54	.01	23.31	75.09
NEB	393.30	106.00	195.52	301.52	.95	.05	23.58	91.27
NEV	422.49	99.89	245.15	345.05	.92	.13	14.28	76.49
NHAM	263.80	9.50	205.91	215.41	.86	.46	55.66	75.68
NJER	267.60	31.73	183.32	215.05	1.00	.55	34.80	65.02
NMEX	399.41	180.08	195.37	375.45	1.00	.01	10.46	53.76
NYOR	216.65	32.6?	161.61	194.23	.83	.53	34.35	60.07
NCAR	295.06	14.94	153.26	168.20	.94	.02	16.00	66.80
NDAK	340.09	60.88	214.15	275.03	.79	.00	25.55	82.06
OHIO	398.31	87.87	133.69	221.56	1.00	.04	14.04	87.92
OKLA	449.34	273.90	185.20	459.10	.97	.01	16.54	89.79
OREG	278.22	35.81	157.85	193.66	.36	.00	7.41	36.95
PENN	367.66	58.26	150.34	208.60	1.00	.15	21.42	79.75
RI	333.09	25.04	154.04	179.07	1.00	1.00	53.84	68.67
SCAR	338.72	40.97	163.49	204.46	.95	.09	16.45	67.24
SDAK	280.58	52.16	209.79	261.95	.55	.02	33.27	77.92
TENN	399.71	42.92	153.00	195.92	.90	.05	11.88	82.56
TEX	566.00	330.85	207.17	538.02	1.00	.02	10.47	77.02
UTAH	393.42	92.23	169.79	262.02	.43	.02	5.47	55.42
VERM	269.42	7.89	190.52	198.41	.86	.00	40.74	74.62
VIRG	292.98	26.48	182.78	209.26	.98	.40	28.89	65.67
WASH	233.61	34.27	159.58	193.84	.40	.00	7.43	42.36
WVIR	419.46	82.94	119.92	202.86	1.00	.01	6.85	75.33
WISC	329.13	80.53	152.13	232.66	.96	.04	30.52	89.55
WYOM	864.38	209.20	400.70	609.90	.97	.00	22.36	90.81
USA	349.08	91.71	174.11	265.82	.91	.18	21.29	71.67

END OF PROGRAM
:BYE

CPU=12. CONNECT=20. TUE, FEB 16, 1982, 10:26 PM

SECTION-BY-SECTION ANALYSIS

HOUSE BILL 655

° Section 1 would modify the present procedures for reviewing and approving reconnaisance studies, feasibility studies and projects. We recommend that smaller projects, those generating 1.5 megawatts or less, be subjected to a simplified feasibility study and review process, and not be individually authorized by the Legislature. In this way, some of the steps in design and construction of these projects can be combined, thus saving substantial time. This section would also bring the review process for all projects into conformance with other proposed changes in the law. Projects larger than 1.5 megawatts would remain subject to the complete review and feasibility study process, including individual legislative authorization.

° Section 2 would repeal a section which purports to exempt revenues from the sale of power from the appropriation process, and allow them to be deposited directly into the Power Development Fund. The Attorney General has informed us that revenues from the sale of power must be appropriated by the Legislature before the Alaska Power Authority (APA) may expend them.

° Section 3 would add the provision that the Power Development Fund may not be used for construction of a power project until the project has been approved and a local special election has been held.

° Section 4 would provide the form and specifications for the local special elections required by Section 3 of the bill. The election would be conducted by the State among those qualified voters residing in the area which the power project would serve. This section would also require that the voters be provided with certain specific information about the project before the election is conducted. The election process would be applicable to all projects upon which construction itself has not begun by the date of passage of this bill.

After the election, in the event that a substantial change in the project occurs that would require additional funds, a new election would be required. The Division of Budget and Management would determine whether the proposed changes are substantial.

° Section 5. This section would revise the feasibility requirement to simply conform to the standards of AS 44.83.181 in existing law. Feasibility must be determined by the Alaska Power Authority within one year before expending funds on the project; this feasibility determination must be concurred in by the Division of Budget and Management. The APA may rely upon a feasibility study that is not more than one year old in making this determination, or may revise a feasibility study which is more than one year old.

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February 8, 1982

COMMENTS OF

ERNST W. MUELLER, VICE-CHAIRMAN
BOARD OF DIRECTORS
ALASKA POWER AUTHORITY

On

SB 646, HB 655
Acts relating to the energy program for Alaska.

By way of introduction, I am Ernst W. Mueller, Vice-Chairman of the Board of Directors of the Alaska Power Authority. As you know, last year the Legislature enacted certain changes in the structure of our Board of Directors which provided that the Governor appoint three heads of principal State departments and the Director of the Division of Budget and Management to the Board, as well as three non-governmental members. As a result of this change, I was appointed to the Board, and subsequently elected its Vice-Chairman. Part of my role is, with the Director of Budget and Management, to provide some liaison and communication between the Office of the Governor and the Board, and also to help represent the Administration's views on the Power Authority's operations before the Alaska Legislature. Other members of the Board include Mr. Charles Conway of Anchorage, Chairman; Dr. Robert B. Weeden of Fairbanks; Mr. John Schaefer of Nome; Director of Budget and Management Ron Lehr; and Commissioners Chuck Webber and Bob Ward.

Last year, Governor Hammond allowed Senate Bill 25 to become law without his signature. In his August 3 message to you, the Governor outlined his major objections to the approach used in

SECTION-BY-SECTION ANALYSIS

HOUSE BILL 655

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This section removes the requirement that the project is deemed feasible only if it can be demonstrated that revenues from the project could be sufficient to return, annually, 5% of the State's investment in the project. As these funds are not returned to the State under existing law, and the amount to be returned under this bill is vastly different, this requirement should be removed.

° Section 6. This section would repeal the existing provisions for determining wholesale power rates, including eliminating the "postage stamp rates" and the "Susitna blackmail clause" and replace it with a wholesale rate structure for each project that provides revenues to pay:

(a) recurring costs of the project, including operation, maintenance, equipment replacement, debt service, loan repayments, safety inspections and investigations by the APA;

(b) repayment of the State's General Fund investment in the project on a "no real interest" basis at the rate of 3% return per year in dollars inflated back to the first year of project operation. Once the repayment is complete, the only portion used to calculate rates is the recurring costs.

° Section 7 provides the means to establish the repayment inflation rate used in Section 6. Essentially, the APA establishes the first rate used in repayment by averaging the Federal Consumer Price Index for the previous 33 years (the same period as the project repayment schedule). This figure is used to approximate bringing each year's portion of the capital investment to nominal dollars. The inflation rate is updated each ten years of the project's life.

° Section 8 would reestablish an emergency maintenance fund. This fund would be available to defray unanticipated operation and maintenance costs. These costs might occur as a result of a catastrophic equipment failure or other unbudgeted cost. The fund would initially provide loans to the projects at 9% interest. However, the APA is required to seek legislative appropriations to replace the amounts expended from the fund, and to convert the loans to capital investments of the State which would be repaid under Section 6 of this bill.

° Section 9. This section would exempt projects under construction or the effective date of the Act from the requirements for local special elections under Sections 3 and 4.

° Section 10 would repeal existing AS 44.83.390 and AS 44.83.398(c). AS 44.83.390 would purport to restrict future Legislatures' ability to reappropriate funds unexpended on a particular power project. AS 44.83.398(c) purports to allow the APA to retain and expend certain funds without appropriation. The Attorney General advises that these provisions are not constitutional, and should be repealed.

February 8, 1982

COMMENTS OF

ERNST W. MUELLER, VICE-CHAIRMAN
BOARD OF DIRECTORS
ALASKA POWER AUTHORITY

On

SB 646, HB 655
Acts relating to the energy program for Alaska.

By way of introduction, I am Ernst W. Mueller, Vice-Chairman of the Board of Directors of the Alaska Power Authority. As you know, last year the Legislature enacted certain changes in the structure of our Board of Directors which provided that the Governor appoint three heads of principal State departments and the Director of the Division of Budget and Management to the Board, as well as three non-governmental members. As a result of this change, I was appointed to the Board, and subsequently elected its Vice-Chairman. Part of my role is, with the Director of Budget and Management, to provide some liaison and communication between the Office of the Governor and the Board, and also to help represent the Administration's views on the Power Authority's operations before the Alaska Legislature. Other members of the Board include Mr. Charles Conway of Anchorage, Chairman; Dr. Robert B. Weeden of Fairbanks; Mr. John Schaefer of Nome; Director of Budget and Management Ron Lehr; and Commissioners Chuck Webber and Bob Ward.

Last year, Governor Hammond allowed Senate Bill 25 to become law without his signature. In his August 3 message to you, the Governor outlined his major objections to the approach used in

establishing and financing large new power projects. The bill you have before you contains the corrective measures the Governor promised in that message.

The energy program for Alaska is a bold, multi-faceted approach to helping Alaskan residents, businesses, and industry cope with the increasing cost and growing scarcity of energy. Its most ambitious element is the construction of large electrical generation facilities, mainly hydroelectric plants, in a number of sites throughout the State. These facilities will provide a reliable, secure source of electric power which, while by no means inexpensive to produce, is not dependent upon foreign economic factors, such as the price of crude oil. The Governor and this Administration strongly support new hydro development as often the most sensible way to develop new power sources, providing it can be done in a manner which is economically and environmentally sound. The environmental part of that test is, at present, the one most easily met as all sizable new hydropower projects must undergo licensing by the Federal Energy Regulatory Commission and an environmental impact analysis is required as part of FERC's thorough review. However, the energy program for Alaska as it now exists both distorts analysis of economic practicability and encourages the development of projects which would not otherwise be economical. There are several reasons for this, the major one being the use of general fund capital grants with no repayment required. As a result, the State receives no return whatsoever on its investment, and the

traditional tests for economic practicabilities are somewhat neutralized. Decisions as to which public power projects to construct, and who receives the enormous economic advantages of them become more based on politics than on economics. This is exacerbated by the postage stamp, wholesale power rate of existing law by which all wholesale purchases pay the same rate r less of the capital and operating costs of the particular proje t from which they receive power. In this way, rates for projects which are economically impracticable are subsidized by those who receive power economically-sound projects.

The use of grants for these projects present a number of other inequities. Unless the entire population of the State is served by Alaska Power Authority projects, only a few Alaskans will receive the benefit of what is an economic cost burden for all. Further, the provision of subsidized power under the scenario present in existing law would strongly benefit, at the St te's expense, new energy intensive industrial development projects. Thus, those Alaskans who are not receiving power from an APA project are subsidizing, directly or indirectly, not only the APA power which residential consumers buy, but also the very industry that provides work and business to those consumers. Thi basic inequity can be corrected only through changing the type of fu ing for these projects from outright grants to a loan, or converting them into an investment from which the State will receive a substantial return.

Of course, a major factor in developing any new capital projects at this time is the State's cash flow situation. At present, we simply do not have the money to build the APA projects which are now on the drawing boards and also fund all the other capital projects the State needs. Also, the private financial market, particularly the bond market for large new power projects, is not as good as it once was. Providing some return to the State on its cash investment in power projects will help ensure that funds will be available for new projects in the future.

The Governor and his staff reviewed a wide variety of funding mechanisms for energy projects. The Alaska Power Authority needs to retain its existing authority to issue revenue bonds, as well as expend general fund capital appropriations made by the Legislature. In addition, the Authority will, from time to time, need to acquire short-term financing during construction. The Governor is also concerned that the spirit of public financing be retained so that energy prices be as reasonable as possible. After evaluating a large number of interest rates, "tilt" factors, repayment schedules and others, it was decided that the concept of a "no real interest" loan should be introduced. This option has the advantage of the State recouping its capital investment in the project yet still provide electricity costs that are lower than could be provided by any form of conventionally financed public or private project. While this concept still provides a substantial subsidy, especially for large bulk power users, it does not require a real dollar loss

to all the State's taxpayers to provide that subsidy. The only loss to the State is the opportunity cost--the income that would have been earned if the State had invested the money at market rates.

The concept of a "no real interest rate" loan must, somehow, adjust principal repayment for inflation. It is important, however, for customers of these projects to know what electric rates will be in the future, and how changes will be based, so that they can decide upon major capital investments of their own. For this reason, and to avoid the problem of constant readjustment of rates to meet continually changing inflation rates, it is proposed to "freeze" inflation rates in ten-year blocks, and to base the inflation rate on the previous 33-year history of the consumer price index. In this way, investors will be able to predict very accurately what the wholesale rates will be, not only for each ten-year block, but as a reevaluation period is reached, to predict the new rates as the basis upon which they will be established is in the public record.

A further advantage to establishment of a repayment schedule at this time is the elimination of future risk. Under existing law, repayment of the State's general fund capital investment is not required. This is, however, subject to change by future Legislatures. A large electric power purchaser making a major investment based upon the artificially low rates established in SB 25 stands

the risk of a repayment rate being imposed in the future--a repayment rate that might adversely affect the economics of his project. Establishing a reasonable, relatively simple and straightforward basis for rates now helps avoid the possibility of a future Legislature developing a whole new system which might unfairly penalize large power users.

In a very real sense, the "bottom line" of economic viability is the relative cost of electricity per kilowatt-hour. Once this has been estimated, proposed alternative sources of electrical power can be evaluated. In the best of all possible worlds, this evaluation would be conducted by those who would be purchasing the power; in free competition, so to speak, the buyer should have some degree of choice over where he purchases his electricity. At present, there is no opportunity for the potential rate payers to have independent control over proposed projects, the decisions are made by the Alaska Power Authority and the Alaska Legislature. To remedy this situation, the Governor recommends that an election be held among the potential customers to determine if a particular project should be selected. Before the election, the Alaska Power Authority's feasibility study would be published and available for the voters to review, as well as an informative "voter's pamphlet"-style information summary. The potential rate payers are then given an opportunity to make an informed choice based on the same factors that the Legislature and the Alaska Power Authority use in making their decisions.

This bill would make other changes in the energy program for Alaska which are consistent with the Governor's philosophy. Section 1 would provide that all APA power projects undergo a feasibility study phase, however, the degree of detail for projects of 1.5 megawatts are less, could be substantially less than that for larger projects.

Section 2 corrects a potential constitutional flow in existing law by providing that all funds in the power development fund must be appropriated to the fund by the Legislature. It may be interpreted that the provision that revenues collected from the sale of power may be deposited directly into the power development fund is the equivalent of establishing a dedicated fund, and thus unconstitutional. By removing that provision of law, this potential problem is eliminated.

Section 5 of the bill would change the criteria for development of economic feasibility. The present law establishes that a project is economically feasible if, in part, "Operation of the power project will be able to provide revenue sufficient to return annually to the State five percent of the amount the Authority has spent from the fund for the power project." Of course, this "five percent rule" is not realistic; the State would not receive, under existing law, that amount of return. Further, the repayment provision in the Governor's bill would set a new economic formula for return of the State's investment, and thus this five percent rule is no longer needed.

Section 8 of the Governor's bill would provide for a "Power project emergency maintenance fund." This fund would be a continuing account, funded by appropriations from the Legislature, that would be available to the Alaska Power Authority for unanticipated and unfunded operation and maintenance expenditures. Generally, these expenditures might result from equipment breakdowns or other major failures that would be beyond the scope of the legislative appropriation for operation and maintenance of a particular project. This fund is to be considered a loan to the particular power project, but the Authority is to seek conversion of a particular expenditure to repayment under the Governor's proposed formula through legislative appropriation.

The bill also repeals two sections of the existing law which are of doubtful constitutionality. In our view, AS 44.82.390 attempts to restrain future legislative ability to reappropriate funds not spent for the particular power project for which the appropriation was originally made. AS 44.83.398(c) attempts to exclude certain receipts of the power authority from the appropriation process prior to expenditure. Section 10 of the bill would repeal these provisions.

And finally, the Governor's bill does repeal the so-called "Susitna blackmail clause." This clause would attempt to bind future Legislatures to appropriating at least $5 billion to the power project development fund through the triggering of an enormously punitive

power rate in the event this amount is not appropriated by July 1, 1986. Because of the inartful drafting of this provision, that rate could reach a maximum of $500 million per kilowatt-hour. As we all know, the State will simply not have sufficient revenues to be able to appropriate $1 billion per year over the next five without destruction of the entire remainder of the capital budget. Of course, there are practical, as well as constitutional problems with the Susitna blackmail provision. Under the current high estimates of power sales from all potential APA funded projects, the lowest cost per kilowatt-hour if the State did appropriate only $2 billion by July 1, 1986 would be more than $1 per kilowatt-hour.

The Governor has expressed his concern that this legislation is a high priority of his 1982 legislative package. Parallel with this bill are the two bills he has introduced to provide further capital funding for ongoing APA power projects. I would be happy to provide you with information on those bills, or answer any questions you may have.

SECTION-BY-SECTION ANALYSIS

HOUSE BILL 655

° Section 1 would modify the present procedures for reviewing and approving reconnaisance studies, feasibility studies and projects. We recommend that smaller projects, those generating 1.5 megawatts or less, be subjected to a simplified feasibility study and review process, and not be individually authorized by the Legislature. In this way, some of the steps in design and construction of these projects can be combined, thus saving substantial time. This section would also bring the review process for all projects into conformance with other proposed changes in the law. Projects larger than 1.5 megawatts would remain subject to the complete review and feasibility study process, including individual legislative authorization.

° Section 2 would repeal a section which purports to exempt revenues from the sale of power from the appropriation process, and allow them to be deposited directly into the Power Development Fund. The Attorney General has informed us that revenues from the sale of power must be appropriated by the Legislature before the Alaska Power Authority (APA) may expend them.

° Section 3 would add the provision that the Power Development Fund may not be used for construction of a power project until the project has been approved and a local special election has been held.

° Section 4 would provide the form and specifications for the local special elections required by Section 3 of the bill. The election would be conducted by the State among those qualified voters residing in the area which the power project would serve. This section would also require that the voters be provided with certain specific information about the project before the election is conducted. The election process would be applicable to all projects upon which construction itself has not begun by the date of passage of this bill.

After the election, in the event that a substantial change in the project occurs that would require additional funds, a new election would be required. The Division of Budget and Management would determine whether the proposed changes are substantial.

° Section 5. This section would revise the feasibility requirement to simply conform to the standards of AS 44.83.181 in existing law. Feasibility must be determined by the Alaska Power Authority within one year before expending funds on the project; this feasibility determination must be concurred in by the Division of Budget and Management. The APA may rely upon a feasibility study that is not more than one year old in making this determination, or may revise a feasibility study which is more than one year old.

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This section removes the requirement that the project is deemed feasible only if it can be demonstrated that revenues from the project could be sufficient to return, annually, 5% of the State's investment in the project. As these funds are not returned to the State under existing law, and the amount to be returned under this bill is vastly different, this requirement should be removed.

° Section 6. This section would repeal the existing provisions for determining wholesale power rates, including eliminating the "postage stamp rates" and the "Susitna blackmail clause" and replace it with a wholesale rate structure for each project that provides revenues to pay:

(a) recurring costs of the project, including operation, maintenance, equipment replacement, debt service, loan repayments, safety inspections and investigations by the APA;

(b) repayment of the State's General Fund investment in the project on a "no real interest" basis at the rate of 3% return per year in dollars inflated back to the first year of project operation. Once the repayment is complete, the only portion used to calculate rates is the recurring costs.

° Section 7 provides the means to establish the repayment inflation rate used in Section 6. Essentially, the APA establishes the first rate used in repayment by averaging the Federal Consumer Price Index for the previous 33 years (the same period as the project repayment schedule). This figure is used to approximate bringing each year's portion of the capital investment to nominal dollars. The inflation rate is updated each ten years of the project's life.

° Section 8 would reestablish an emergency maintenance fund. This fund would be available to defray unanticipated operation and maintenance costs. These costs might occur as a result of a catastrophic equipment failure or other unbudgeted cost. The fund would initially provide loans to the projects at 9% interest. However, the APA is required to seek legislative appropriations to replace the amounts expended from the fund, and to convert the loans to capital investments of the State which would be repaid under Section 6 of this bill.

° Section 9. This section would exempt projects under construction or the effective date of the Act from the requirements for local special elections under Sections 3 and 4.

° Section 10 would repeal existing AS 44.83.390 and AS 44.83.398(c). AS 44.83.390 would purport to restrict future Legislatures' ability to reappropriate funds unexpended on a particular power project. AS 44.83.398(c) purports to allow the APA to retain and expend certain funds without appropriation. The Attorney General advises that these provisions are not constitutional, and should be repealed.

Alaska State Legislature
HOUSE OF REPRESENTATIVES
COMMITTEE ON RESOURCES

KEN FANNING, CO-CHAIRMAN
ERIC SUTCLIFFE, CO-CHAIRMAN
POUCH V
JUNEAU, ALASKA 99811
(907) 463-3715

MEMORANDUM

TO: All Members

FROM: Representative Eric Sutcliffe

RE: HB 758

DATE: February 15, 1982

Last session the Legislature established a framework for investing state money in renewable resource power projects, most notably hydroelectric projects. While this opportunity is an exciting and worthwhile one, it would be a serious mistake for the state to be wholly taken in by the allure of cheap power through grants for project construction. Predicting both future energy needs and future state revenues is a risky business. We have a hard enough time predicting revenues six months from now, no less a decade from now.

Will there be enough money to provide for all Alaskans as their communities become eligible for power projects? Will cheap power stimulate demand to the point where new, even more expensive projects are needed in 10, 20, or 30 years from now (as it has done in Washington)? Will subsidized power attract the kind of industry we want in Alaska? Will "artificially cheap" power retard the development of new, more diversified energy technologies? I question the wisdom of a public policy which dispenses billions of state dollars without being able to answer these questions.

HB 655, introduced by the Governor, corrects some of the problems. The bill provides for:

1. The repayment of the project's cost in real terms;
2. A project-specific wholesale price for power (not a statewide rate);
3. Local involvement by requiring an election before a project is built;
4. A fund that will provide a source of funds in case of emergency.

What motivated the introduction of HB 758 was that neither the current law nor HB 655 adequately addressed two major issues: conservation and equity of benefits.

Conservation should be key component in any energy strategy. Simple conservation measures can be quickly implemented yet accrue dramatic energy savings; it is a cost-effective substitute for energy production. Conservation means efficiency, not deprivation. Studies show that consumption of electricity can be reduced by up to 40% without affecting a standard of living at all. Conservation benefits are permanent. Conservation technologies can create more jobs than an equivalent investment in energy production.

The current law mentions the need for conservation without providing any direction as to how to attain it; HB 655 does not address the subject except in the sense that under this law, power would become more expensive and people would therefore use less of it. HB 758 treats conservation in a different way.

Rate design by most utilities actually discourages conservation. The more power you use, the lower the rate you pay. HB 758 would reverse this. Utilities purchasing power from a state funded project would be directed to set retail rates which would increase as power usage increases.

First, utilities would set a rate for 'essential energy' (0 - 250 KWh per month, sufficient to supply an average household with electric lights, radio, washing machine, refrigerator and electric range). This rate would return only the non-capital costs of that power - as if the project were built with a grant. For usages of power in excess of 250 Kwh per month the rates would be progressively higher because the capital costs of construction must be paid back. The utility would be required to set some type of inverted or ascending block rate structure which should attempt to encourage conservation. The public would be involved in the rate setting process through public hearings.

Under this bill, areas served by a particular project would have considerable flexibility to design their own rates. Only the 'essential energy' rate would be fixed by statute. Some areas could opt for relatively flat rates. Others may choose steeper increases - perhaps to avoid massive conversions to electrical space heating which might raise the peak load demand to such a level that a new power project would soon be needed. Industrial/commercial users could be charged a higher rate than residential users or the same rate.

The advantage of this approach is that the most incentive for conservation is for those who consume the most power, i.e., where the most potential for conservation exists. By charging higher rates for higher consumption, the consumer would have a greater reason to weatherize, to construct more energy efficient buildings and convert to more energy efficient appliances.

The second question which needs to be addressed is equity. There is already too much disparity in benefits to Alaskans without embarking on yet another disbursement of public funds without at least attempting to address the question of fairness.

The stage is now set for billions of dollars to pass from the general fund to the power development fund over the next few years. It is interesting to trace the flow of money to the people after the projects are constructed. The Terror Lake hydroelectric project slated for completion in 1985 is a case in point.

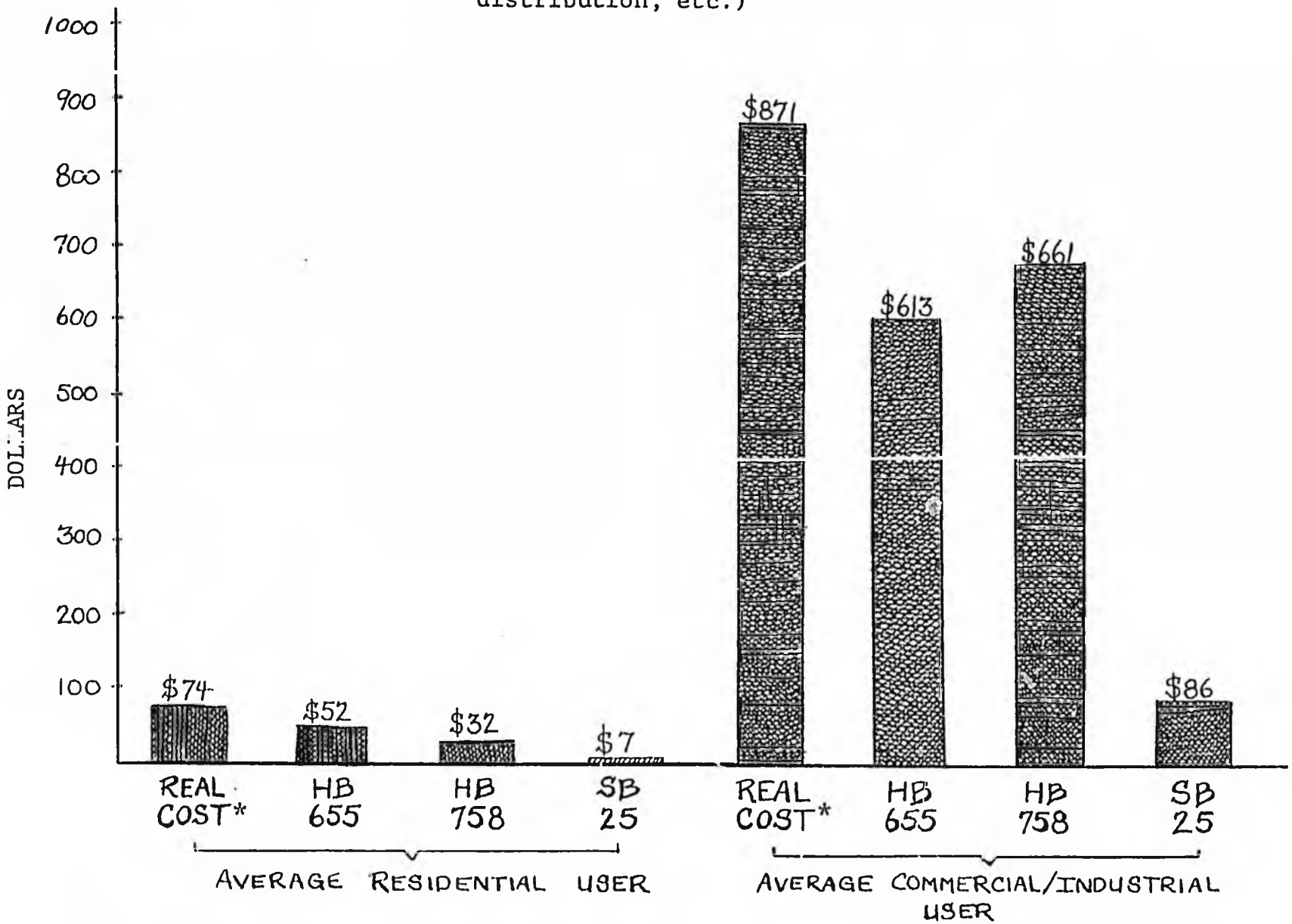
The charts on the following pages show the probable distribution of benefits under the current law (SB 25), HB 655 and HB 758. The current law would give much greater benefits to large users of power than to the average residential user. A very large power user would receive enormous benefits (in Terror Lake's case, the U.S. Coast Guard would receive about $250,000 a month in subsidized power). HB 655 would reduce the size of the subsidy but the relative inequity would be unchanged. HB 758 mitigates this inequity by favoring the average residential user. By establishing an 'essential energy' rate, everyone's basic energy needs would be provided for equally.

Each session, with so much to do, there is the tendency of every legislator to concentrate on his or her areas of interest and rely on the counsel of colleagues who have expertise in other issues. This is inevitable, but occasionally there are key issues which merit each member's close scrutiny. Hydro is such an issue, and I would urge you to join me in giving this legislation the time and attention it demands.

TERROR LAKE

MONTHLY COST TO CONSUMERS

(Does not include cost of transmission, distribution, etc.)

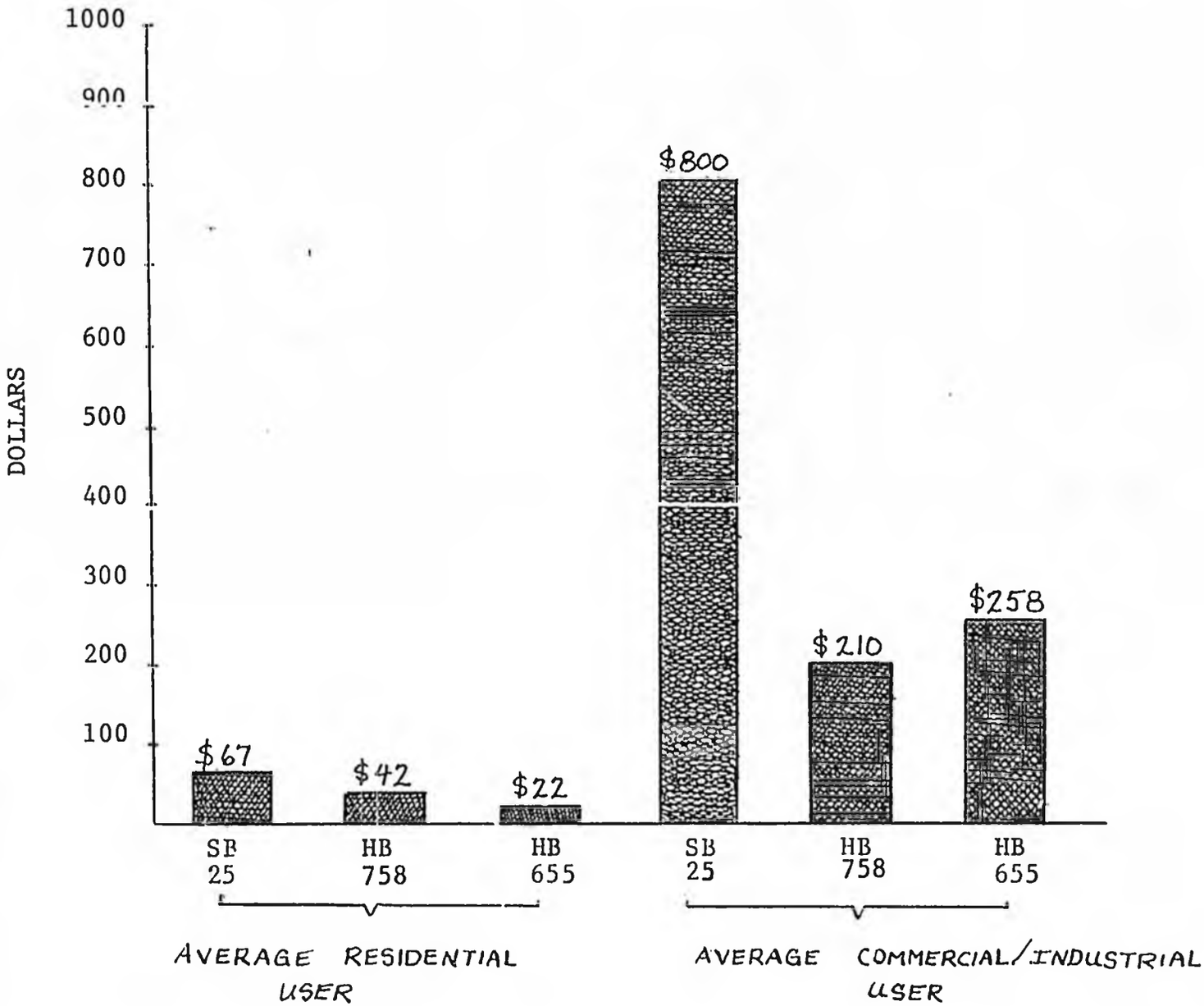


*Revenue bond market, 12% interest rate.

(Figures based on 1980 usage levels, Alaska Power Administration.)

TERROR LAKE

MONTHLY SUBSIDY TO CONSUMERS



(Figures based on 1980 usage levels, Alaska Power Administration.)

ALASKA STATE LEGISLATURE
HOUSE OF REPRESENTATIVES
RESEARCH AGENCY

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

February 19, 1982

MEMORANDUM

TO: Representative Rick Halford
Attn: Rick Uehling

FROM: Jack Kreinheder
Research Staff

RE: Comparison of Hydro Bills -- HB 655, HB 758, and Present Law
Research Request 82-24

Rick Uehling of your staff requested that we prepare a comparative analysis of the present energy program for Alaska, as enacted last session by SB 25, with HB 655, the Governor's proposed amendments to the energy program, and HB 758, the House Resources Committee substitute for HB 655. In this memorandum, the most important differences are summarized below, with more detailed information provided in the body of the memo.

SUMMARY OF MAJOR DIFFERENCES

- The most significant change made to the present energy program by both HB 655 and HB 758 is that State investments in hydro or other types of power projects would be essentially zero-interest loans, rather than direct grants, as under present law.[1] This change would, of course, greatly reduce the long-term cost to the State of development of hydroelectric and other power sources, but would also result in substantially higher power rates to consumers.

- Under HB 655 and HB 758, each power project would be subject to approval in a special election by the voters residing in the area to be served by the project, in addition to legislative approval. Approval of hydro projects under present law is solely the responsibility of the legislature.

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[1] State investments in hydro projects will be grants under present law, unless $5 billion is not appropriated to the power development fund by July 1, 1986. In that case, 10 percent of the State investment in each project would be required to be returned to the State each year.

- Present law requires the Alaska Power Authority (APA) to establish a single statewide or "postage stamp" rate for all hydro projects administered by the APA. Under HB 655 and HB 758, separate wholesale power rates would be established by the APA for each hydro project.

- The most important difference between HB 758 and HB 655 is that the Resources Committee version (HB 758) would require utilities which purchase power from the APA to establish retail rate structures incorporating "lifeline" and inverted block rates. The lifeline provision requires utilities to charge the lowest rates for the first 250 kilowatt hours used each month, while larger amounts of power are to be priced at successively higher rates. Lifeline and inverted block rate structures are required or allowed in a number of other states, but are not now used by any electric utilities in Alaska.

HB 655

Section 1 of the Governor's bill amends AS 44.83.380(b), which under present law states that a power project may be constructed as part of the energy program only if approved by the legislature. HB 655 would waive this requirement for power projects on which construction has begun or is completed. However, both planned projects and projects under construction or completed would be required by HB 655 demonstrate economic feasibility under Sec. 44.83.394, as amended by the bill. This section would require the APA to base its determination of economic feasibility upon a feasibility study or revised study less than one year old, and would require approval of the APA's finding by the Division of Budget and Management in the Office of the Governor.

Section 2 of HB 655 deletes the portion of AS 44.382(b) which states that the power development fund includes power revenues which are not required by law to be deposited into the general fund. The reason for this change is apparently that there would be no such revenues, as the Alaska Constitution prohibits the dedication of revenues to special funds.

Section 3 of the bill adds a new paragraph requiring voter approval of power projects to AS 44.83.384(b), which defines the eligibility requirements for projects to be financed from the power development fund.

Section 4 adds a new section to chapter AS 44.83, specifying the requirement and process for voter approval of power projects. Basically, the section requires the APA to prepare a written determination of the amount of money intended for construction or acquisition of a power project, and the anticipated impacts of the project on the area in which it is located. This determination must be submitted to the Division of Elections, the Division of Budget and Management, and to each legislator. The Division of Elections is then to conduct a special election in which the voters to be served by the project approve or disapprove the project. The Division is required to distribute the APA's description of the cost and impacts of the project to voters before the election is held. An additional election must be held if a "substantial" change in the project requires additional funds.

Section 5, as mentioned previously, amends AS 44.83.394 by requiring the APA to base its determination of economic feasibility for a power project on a feasibility study or revised study less than one year old. Under present law, the APA is to assess economic feasibility by determining if a project is capable of providing revenue sufficient to return 5 percent of the State's investment in the project on an annual basis. Section 5 also requires the Division of Budget and Management to approve the APA's finding of economic feasibility.

Sections 6 and 7 are the most important parts of the Governor's bill. These sections change the present law program of State grants for power projects to a loan program in which the State's investment in each project, with adjustments for inflation, is to be repaid through power sale revenues over a period of 33 and 1/3 years. Section 6 would also require the APA to establish a separate wholesale power rate for each power project, in contrast to present law, which provides for a single, statewide power rate based on the costs of all power projects administered by the APA.

Under present law, the APA is to establish a wholesale power rate which returns revenues sufficient to pay for the cost of operation, maintenance, inspections, and debt service, if any, for the power projects it constructs or aquires under the energy program. If at least $5 billion is not appropriated by the legislature to the power development fund by July 1, 1986, the APA is required to raise its wholesale rate to a level which will return annually either 10 percent of the State's investment in the power projects, or the costs listed above, whichever is higher (the 10 percent return would almost certainly be higher for many years, until inflation in operational costs increased these costs to a higher level).

Section 6 of HB 655 requires the APA to set its wholesale power rates for each project at a level which will recover the costs of operation, maintenance, inspections, and debt service, plus the return of the State's investment in the project, as adjusted for inflation, over a 33-1/3 year period. Section 7 specifies the method the APA is to use to calculate the annual return of the State's investment. The inflation adjustment is to be based on the average nationwide rate of inflation over the preceding 33 year period, as indicated by the Consumer Price Index. The rate of inflation is to be recalculated every 10 years. The amount to be returned to the State each year is equal to the previous year's return multiplied by the inflation factor. After 33-1/3 years, no additional return to the State is to be made, unless the State makes additional investments in the power project.

The apparent intent of this approach is to ensure that the State recovers the real value of its investment in power projects. By adjusting the return to the State for inflation, the amount the State receives at the end of the 33-1/3 year period should have approximately the same buying power as the amount invested in each power project. I have enclosed a set of tables prepared by the Division of budget and management which show the estimated amounts which would be returned to the State from each project under HB 655. Although the financing approach in HB 655 obviously would greatly reduce the cost to the state of developing power projects in comparison to the energy program under present law, there would still be a substantial State subsidy involved in terms of the foregone earnings on the power project investments.

While HB 655 would reduce the cost of power development, it would do so at the expense of higher power rates to consumers of electricity from power projects under the energy program. An earlier memorandum by this agency estimated the approximate differences in wholesale power costs which would result under present law and under HB 655. This memorandum is attached for your information.

Section 8 of HB 655 creates a power project emergency maintenance fund, which is intended to pay the cost of maintenance and equipment replacement if other appropriations are not available or are insufficient. Money used from the fund becomes a loan at an interest rate of 9 percent; however, the loan may be converted to a grant through an appropriation for that purpose from the legislature.

Section 9 waives the voter approval requirements established by sections 3 and 4 for projects already under construction. Section 10 repeals parts of present law pertaining to the reappropriation of funds by the legislature and the deposit of certain funds in the general fund.

COMPARISON OF HB 655 AND HB 758

Most of HB 758 is very similar in effect to HB 655, although a number of minor clarifications and other wording changes are made throughout the bill. The most important difference between the two bills is the addition in HB 758 of subsections requiring utilities which purchase power from the APA to establish rate structures which include "lifeline" and inverted block rate provisions. Lifeline pricing refers to the setting of rates for a basic amount of power at low levels, in order to provide the amount of power necessary for basic household operation at affordable rates.

In HB 758, utilities are required to provide the first 250 kilowatt hours (KWH) of monthly consumption at the lowest rate. Larger amounts of power are to be priced at successively higher rates. This type of increasing rate structure is known as inverted block rates -- inverted because utilities have historically charged lower rates for increasing amounts of power. No electric utilities in Alaska presently have either lifeline or inverted block rates, although Municipal Light and Power in Anchorage does have a flat rate structure, charging the same rate regardless of the amount of power used. A number of other states have either required or allowed lifeline or inverted block rates. The rationale behind inverted block rates is generally to encourage conservation of electric power, and/or to reflect the higher cost of new generation facilities in the rates paid by large power users.

There appear to be some possible problems in the present version of HB 758 regarding the authority of the Alaska Public Utilities Commission (APUC) over retail power rates. In section 8(h) of the bill, it states that "for residential consumers the utility shall specify successively higher ranges of power usage to which successively higher rates within its rate structure apply." It appears that this language could conflict with the APUC's authority over rates for utilities regulated by the APUC. A second potential problem is in section 8(i), which provides that if the Alaska Power Authority determines that a higher retail power rate is necessary in order to allow a utility to pay the APA wholesale power rate, the APA may authorize that higher rate. This provision would seem to create a jurisdictional conflict between the Power Authority and the Public Utilities Commission for utilities regulated by the APUC.

The second major difference between HB 655 and HB 758 is that the 33-1/3 year repayment period for State investments in power projects is changed in HB 758 to be 33-1/3 years or three-fourths of the life of the power project, whichever is less. Most hydro projects have economic lives of 50 years or more, but other types of power projects such as wind turbines, coal plants, and so on commonly have shorter life spans.

This change insures that the State's investment will be repayed while the power project is still in operation to make the repayment.

I hope this comparison of the three approaches to power development in Alaska is helpful. If you have any questions or would like additional information, please don't hesitate to contact me.

JK/bf

Attachments

DATE = 1/28/82
TIME = 14:48

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

RO

BLACK BEAR LAKE HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1985	5.67	6.38	1.54	0.27	0.24
1986	5.96	6.87	1.60	0.26	0.23
1987	6.27	7.40	1.67	0.26	0.22
1988	6.60	7.96	1.75	0.26	0.21
1989	6.94	8.58	1.82	0.26	0.21
1990	7.30	9.24	1.90	0.26	0.20
1991	7.68	9.95	1.98	0.26	0.19
1992	8.08	10.72	2.07	0.25	0.19
1993	8.50	11.54	2.16	0.25	0.18
1994	8.95	12.43	2.25	0.25	0.18
1995	9.41	13.39	2.35	0.24	0.17
1996	9.90	14.42	2.46	0.24	0.17
1997	10.42	15.53	2.56	0.24	0.16
1998	10.96	16.72	2.68	0.24	0.16
1999	11.53	18.01	2.80	0.24	0.15
2000	12.13	19.40	2.92	0.24	0.15
2001	12.76	20.89	3.05	0.23	0.14
2002	13.42	22.50	3.19	0.23	0.14
2003	14.12	24.00	3.33	0.23	0.13
2004	14.85	24.00	3.48	0.23	0.14
2005	15.63	24.00	3.63	0.23	0.15
2006	16.44	24.00	3.80	0.23	0.15
2007	17.29	24.00	3.97	0.22	0.16
2008	18.19	24.00	4.15	0.22	0.17
2009	19.14	24.00	4.34	0.22	0.18
2010	20.13	24.00	4.53	0.22	0.18
2011	21.18	24.00	4.74	0.22	0.19
2012	22.28	24.00	4.96	0.22	0.20
2013	23.44	24.00	5.18	0.22	0.21
2014	24.00	24.00	5.42	0.22	0.22
2015	24.00	24.00	5.67	0.23	0.23
2016	24.00	24.00	5.94	0.24	0.24
2017	24.00	24.00	6.21	0.25	0.25
2018	24.00	24.00	3.15	0.13	0.13

LOW GROWTH RATE = 5.2 PERCENT
HIGH GROWTH RATE = 7.7 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY EXPECTED DEMAND.
** LOW DEMAND FROM FEASIBILITY STUDY.

DATE = 1/28/82
TIME = 14:48

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R01

BLACK BEAR LAKE HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1985	1,380,000	1,380,000	157,300	1,537,300
1986	1,380,000	1,435,200	168,300	1,603,500
1987	1,380,000	1,492,600	180,100	1,672,700
1988	1,380,000	1,552,300	192,700	1,745,000
1989	1,380,000	1,614,400	206,200	1,820,600
1990	1,380,000	1,679,000	220,600	1,899,600
1991	1,380,000	1,746,100	236,100	1,982,200
1992	1,380,000	1,816,000	252,600	2,068,600
1993	1,380,000	1,888,600	270,300	2,158,900
1994	1,380,000	1,964,200	289,200	2,253,400
1995	1,380,000	2,042,700	309,400	2,352,200
1996	1,380,000	2,124,400	331,100	2,455,500
1997	1,380,000	2,209,400	354,300	2,563,700
1998	1,380,000	2,297,800	379,100	2,676,900
1999	1,380,000	2,389,700	405,600	2,795,300
2000	1,380,000	2,485,300	434,000	2,919,300
2001	1,380,000	2,584,700	464,400	3,049,100
2002	1,380,000	2,688,100	496,900	3,185,000
2003	1,380,000	2,795,600	531,700	3,327,300
2004	1,380,000	2,907,400	568,900	3,476,300
2005	1,380,000	3,023,700	608,700	3,632,400
2006	1,380,000	3,144,700	651,300	3,796,000
2007	1,380,000	3,270,500	696,900	3,967,400
2008	1,380,000	3,401,300	745,700	4,147,000
2009	1,380,000	3,537,300	797,900	4,335,200
2010	1,380,000	3,678,800	853,700	4,532,600
2011	1,380,000	3,826,000	913,500	4,739,500
2012	1,380,000	3,979,000	977,500	4,956,500
2013	1,380,000	4,138,200	1,045,900	5,184,100
2014	1,380,000	4,303,700	1,119,100	5,422,800
2015	1,380,000	4,475,900	1,197,400	5,673,300
2016	1,380,000	4,654,900	1,281,300	5,936,100
2017	1,380,000	4,841,100	1,370,900	6,212,000
2018	460,000	1,678,200	1,466,900	3,145,100
TOTAL	46,000,000	93,046,800	20,175,500	113,222,400

3 PERCENT OF PRINCIPAL REPAID EACH YEAR.
INFLATION RATE ON PRINCIPAL = 4 PERCENT.
FIRST YEAR O&M COST BASED ON APA REPORT.

NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O&M COST IN 1981 DOLLARS IS $120,000.

PLANNED FIRST YEAR OF CONSTRUCTION IS 1982.
CONSTRUCTION COST OF PROJECT IS 46,000,000 DOLLARS.

CONSTRUCTION TIME IS 3 YEARS.

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

BRADLEY LAKE HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1990	320.00	320.00	21.51	0.06	0.06
1991	320.00	320.00	22.59	0.07	0.07
1992	320.00	320.00	23.72	0.07	0.07
1993	320.00	320.00	24.91	0.07	0.07
1994	320.00	320.00	26.17	0.08	0.08
1995	320.00	320.00	27.50	0.08	0.08
1996	320.00	320.00	28.90	0.09	0.09
1997	320.00	320.00	30.38	0.09	0.09
1998	320.00	320.00	31.94	0.09	0.09
1999	320.00	320.00	33.59	0.10	0.10
2000	320.00	320.00	35.33	0.11	0.11
2001	320.00	320.00	37.17	0.11	0.11
2002	320.00	320.00	39.11	0.12	0.12
2003	320.00	320.00	41.16	0.12	0.12
2004	320.00	320.00	43.32	0.13	0.13
2005	320.00	320.00	45.61	0.14	0.14
2006	320.00	320.00	48.03	0.15	0.15
2007	320.00	320.00	50.58	0.15	0.15
2008	320.00	320.00	53.28	0.16	0.16
2009	320.00	320.00	56.14	0.17	0.17
2010	320.00	320.00	59.17	0.18	0.18
2011	320.00	320.00	62.37	0.19	0.19
2012	320.00	320.00	65.75	0.20	0.20
2013	320.00	320.00	69.33	0.21	0.21
2014	320.00	320.00	73.13	0.22	0.22
2015	320.00	320.00	77.14	0.24	0.24
2016	320.00	320.00	81.40	0.25	0.25
2017	320.00	320.00	85.90	0.26	0.26
2018	320.00	320.00	90.67	0.28	0.28
2019	320.00	320.00	95.73	0.29	0.29
2020	320.00	320.00	01.09	0.31	0.31
2021	320.00	320.00	06.77	0.33	0.33
2022	320.00	320.00	12.79	0.35	0.35
2023	320.00	320.00	84.30	0.26	0.26

LOW GROWTH RATE = 5.0 PERCENT
HIGH GROWTH RATE = 6.5 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY EXPECTED DEMAND.
** LOW DEMAND FROM FEASIBILITY STUDY. IN THIS CASE, GROWTH RATES HAVE INSIGNIFICANT EFFECT, BECAUSE OF CAPACITY CONSTRAINT.

DATE = 1/28/82
TIME = 14:45

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

RO

BRADLEY LAKE HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1990	14,340,000	14,340,000	7,170,000	21,510,000
1991	14,340,000	14,913,600	7,671,900	22,585,500
1992	14,340,000	15,510,100	8,208,900	23,719,100
1993	14,340,000	16,130,500	8,783,600	24,914,100
1994	14,340,000	16,775,800	9,398,400	26,174,200
1995	14,340,000	17,446,800	10,056,300	27,503,100
1996	14,340,000	18,144,600	10,760,300	28,904,900
1997	14,340,000	18,870,400	11,513,500	30,383,900
1998	14,340,000	19,625,200	12,319,500	31,944,700
1999	14,340,000	20,410,200	13,181,800	33,592,100
2000	14,340,000	21,226,600	14,104,600	35,331,200
2001	14,340,000	22,075,700	15,091,900	37,167,600
2002	14,340,000	22,958,700	16,148,300	39,107,100
2003	14,340,000	23,877,100	17,278,700	41,155,800
2004	14,340,000	24,832,100	18,488,200	43,320,400
2005	14,340,000	25,825,400	19,782,400	45,607,800
2006	14,340,000	26,858,400	21,167,200	48,025,600
2007	14,340,000	27,932,800	22,648,900	50,581,700
2008	14,340,000	29,050,000	24,234,400	53,284,400
2009	14,340,000	30,212,000	25,930,800	56,142,800
2010	14,340,000	31,420,500	27,746,000	59,166,500
2011	14,340,000	32,677,300	29,688,200	62,365,600
2012	14,340,000	33,984,400	31,766,400	65,750,800
2013	14,340,000	35,343,800	33,990,100	69,333,900
2014	14,340,000	36,757,600	36,369,400	73,127,000
2015	14,340,000	38,227,800	38,915,300	77,143,100
2017	14,340,000	39,756,900	41,639,400	81,396,300
2017	14,340,000	41,347,200	44,554,200	85,901,400
2018	14,340,000	43,001,100	47,673,000	90,674,100
2019	14,340,000	44,721,100	51,010,100	95,731,300
2020	14,340,000	46,510,000	54,580,900	101,090,800
2021	14,340,000	48,370,400	58,401,600	106,771,900
2022	14,340,000	50,305,200	62,489,700	112,794,900
2023	4,780,000	17,439,100	66,864,900	84,303,100
TOTAL	478,000,000	966,878,400	919,627,900	1,886,506,700

3 PERCENT OF PRINCIPAL REPAID EACH YEAR. NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON PRINCIPAL = 4 PERCENT. INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O & M COST = 1.5 PERCENT OF CONSTRUCTION COST.

PLANNED FIRST YEAR OF CONSTRUCTION IS 1983. CONSTRUCTION TIME IS 7 YEARS.
CONSTRUCTION COST OF PROJECT IS 478,000,000 DOLLARS.

DATE = 1/28/82
TIME = 14:47

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R01-C

GREEN LAKE HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1982	11.54	12.00	2.70	0.23	0.22
1983	14.24	14.98	2.84	0.19	0.18
1984	17.08	18.12	2.98	0.17	0.16
1985	20.08	21.46	3.13	0.15	0.14
1986	23.25	25.00	3.29	0.14	0.13
1987	26.59	28.75	3.45	0.12	0.12
1988	30.12	32.73	3.63	0.12	0.11
1989	33.84	36.94	3.81	0.11	0.10
1990	37.76	41.41	4.01	0.10	0.09
1991	41.90	46.15	4.22	0.10	0.09
1992	46.27	51.17	4.43	0.09	0.08
1993	50.88	56.49	4.67	0.09	0.08
1994	55.74	60.00	4.91	0.08	0.08
1995	60.00	60.00	5.17	0.08	0.08
1996	60.00	60.00	5.44	0.09	0.09
1997	60.00	60.00	5.72	0.09	0.09
1998	60.00	60.00	6.03	0.10	0.10
1999	60.00	60.00	6.35	0.10	0.10
2000	60.00	60.00	6.69	0.11	0.11
2001	60.00	60.00	7.05	0.11	0.11
2002	60.00	60.00	7.43	0.12	0.12
2003	60.00	60.00	7.83	0.13	0.13
2004	60.00	60.00	8.25	0.13	0.13
2005	60.00	60.00	8.70	0.14	0.14
2006	60.00	60.00	9.18	0.15	0.15
2007	60.00	60.00	9.68	0.16	0.16
2008	60.00	60.00	10.22	0.17	0.17
2009	60.00	60.00	10.78	0.17	0.17
2010	60.00	60.00	11.38	0.18	0.18
2011	60.00	60.00	12.02	0.20	0.20
2012	60.00	60.00	12.69	0.21	0.21
2013	60.00	60.00	13.40	0.22	0.22
2014	60.00	60.00	14.16	0.23	0.23
2015	60.00	60.00	10.58	0.17	0.17

LOW GROWTH RATE = 5.5 PERCENT
HIGH GROWTH RATE = 6.0 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY.
** LOW DEMAND FROM ANNUAL GROWTH RATE, YEARS 1976 THROUGH 1980.

DATE = 1/28/82
TIME = 14:47

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R01

GREEN LAKE HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1982	1,800,000	1,800,000	900,000	2,700,000
1983	1,800,000	1,872,000	963,000	2,835,000
1984	1,800,000	1,946,900	1,030,400	2,977,300
1985	1,800,000	2,024,800	1,102,500	3,127,300
1986	1,800,000	2,105,700	1,179,700	3,285,500
1987	1,800,000	2,190,000	1,262,300	3,452,300
1988	1,800,000	2,277,600	1,350,700	3,628,200
1989	1,800,000	2,368,700	1,445,200	3,813,900
1990	1,800,000	2,463,400	1,546,400	4,009,800
1991	1,800,000	2,562,000	1,654,600	4,216,600
1992	1,800,000	2,664,400	1,770,400	4,434,900
1993	1,800,000	2,771,000	1,894,400	4,665,400
1994	1,800,000	2,881,800	2,027,000	4,908,800
1995	1,800,000	2,997,100	2,168,900	5,166,000
1996	1,800,000	3,117,000	2,320,700	5,437,700
1997	1,800,000	3,241,700	2,483,200	5,724,800
1998	1,800,000	3,371,400	2,657,000	6,028,300
1999	1,800,000	3,506,200	2,843,000	6,349,200
2000	1,800,000	3,646,500	3,042,000	6,688,400
2001	1,800,000	3,792,300	3,254,900	7,047,200
2002	1,800,000	3,944,000	3,482,800	7,426,800
2003	1,800,000	4,101,800	3,726,600	7,828,300
2004	1,800,000	4,265,800	3,987,400	8,253,200
2005	1,800,000	4,436,500	4,266,500	8,703,000
2006	1,800,000	4,613,900	4,565,200	9,179,100
2007	1,800,000	4,798,500	4,884,800	9,683,200
2008	1,800,000	4,990,400	5,226,700	10,217,100
2009	1,800,000	5,190,000	5,592,600	10,782,600
2010	1,800,000	5,397,600	5,984,100	11,381,700
2011	1,800,000	5,613,500	6,402,900	12,016,500
2012	1,800,000	5,838,100	6,851,200	12,689,200
2013	1,800,000	6,071,600	7,330,700	13,402,300
2014	1,800,000	6,314,500	7,843,900	14,158,400
2015	600,000	2,189,000	8,393,000	10,582,000
TOTAL	60,000,000	121,365,700	115,434,700	236,800,000

3 PERCENT OF PRINCIPAL REPAID EACH YEAR. NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON PRINCIPAL = 4 PERCENT. INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O & M COST = 1.5 PERCENT OF CONSTRUCTION COST.

CONSTRUCTION COST OF PROJECT IS 60,000,000 DOLLARS.

DATE = 1/28/82
TIME = 15:10

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

SOLOMON GULCH HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1982	38.52	44.11	3.06	0.07	0.06
1983	39.56	48.48	3.21	0.08	0.06
1984	40.63	53.28	3.37	0.08	0.06
1985	41.73	55.00	3.54	0.08	0.06
1986	42.85	55.00	3.72	0.08	0.06
1987	44.01	55.00	3.91	0.08	0.07
1988	45.20	55.00	4.11	0.09	0.07
1989	46.42	55.00	4.32	0.09	0.07
1990	47.67	55.00	4.54	0.09	0.08
1991	48.96	55.00	4.78	0.09	0.08
1992	50.28	55.00	5.03	0.09	0.09
1993	51.64	55.00	5.29	0.10	0.09
1994	53.03	55.00	5.56	0.10	0.10
1995	54.47	55.00	5.85	0.10	0.10
1996	55.00	55.00	6.16	0.11	0.11
1997	55.00	55.00	6.49	0.11	0.11
1998	55.00	55.00	6.83	0.12	0.12
1999	55.00	55.00	7.20	0.13	0.13
2000	55.00	55.00	7.58	0.13	0.13
2001	55.00	55.00	7.99	0.14	0.14
2002	55.00	55.00	8.42	0.15	0.15
2003	55.00	55.00	8.87	0.16	0.16
2004	55.00	55.00	9.35	0.17	0.17
2005	55.00	55.00	9.86	0.17	0.17
2006	55.00	55.00	10.40	0.18	0.18
2007	55.00	55.00	10.97	0.19	0.19
2008	55.00	55.00	11.58	0.21	0.21
2009	55.00	55.00	12.22	0.22	0.22
2010	55.00	55.00	12.90	0.23	0.23
2011	55.00	55.00	13.62	0.24	0.24
2012	55.00	55.00	14.38	0.26	0.25
2013	55.00	55.00	15.19	0.27	0.27
2014	55.00	55.00	16.05	0.29	0.29
2015	55.00	55.00	11.99	0.21	0.21

LOW GROWTH RATE = 2.7 PERCENT
HIGH GROWTH RATE = 9.9 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY.
** LOW DEMAND FROM ANNUAL GROWTH RATE, YEARS 1976 THROUGH 1980.

DATE = 1/28/82
TIME = 15:10

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R01

SOLOMON GULCH HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1982	2,040,000	2,040,000	1,020,000	3,060,000
1983	2,040,000	2,121,600	1,091,400	3,213,000
1984	2,040,000	2,206,500	1,167,800	3,374,300
1985	2,040,000	2,294,700	1,249,500	3,544,300
1986	2,040,000	2,386,500	1,337,000	3,723,500
1987	2,040,000	2,482,000	1,430,600	3,912,600
1988	2,040,000	2,581,200	1,530,800	4,112,000
1989	2,040,000	2,684,500	1,637,900	4,322,400
1990	2,040,000	2,791,900	1,752,600	4,544,400
1991	2,040,000	2,903,500	1,875,200	4,778,800
1992	2,040,000	3,019,700	2,006,500	5,026,200
1993	2,040,000	3,140,500	2,147,000	5,287,400
1994	2,040,000	3,266,100	2,297,300	5,563,300
1995	2,040,000	3,396,700	2,458,100	5,854,600
1996	2,040,000	3,532,600	2,630,100	6,162,700
1997	2,040,000	3,673,900	2,814,200	6,488,100
1998	2,040,000	3,820,900	3,011,200	6,832,100
1999	2,040,000	3,973,700	3,222,000	7,195,700
2000	2,040,000	4,132,600	3,447,600	7,580,200
2001	2,040,000	4,298,000	3,688,900	7,986,900
2002	2,040,000	4,469,900	3,947,100	8,417,000
2003	2,040,000	4,648,700	4,223,400	8,872,100
2004	2,040,000	4,834,600	4,519,100	9,353,700
2005	2,040,000	5,028,000	4,835,400	9,863,400
2006	2,040,000	5,229,100	5,173,900	10,403,000
2007	2,040,000	5,438,300	5,536,100	10,974,300
2008	2,040,000	5,655,800	5,923,600	11,579,400
2009	2,040,000	5,882,000	6,338,200	12,220,300
2010	2,040,000	6,117,300	6,781,900	12,899,300
2011	2,040,000	6,362,000	7,256,700	13,618,700
2012	2,040,000	6,616,500	7,764,600	14,381,100
2013	2,040,000	6,881,200	8,303,200	15,189,300
2014	2,040,000	7,156,400	8,889,700	16,046,100
2015	680,000	2,480,900	9,512,000	11,992,900
TOTAL	68,000,000	137,547,800	130,825,600	268,373,300

3 PERCENT OF PRINCIPAL REPAID EACH YEAR. NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON PRINCIPAL = 4 PERCENT. INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O & M COST = 1.5 PERCENT OF CONSTRUCTION COST.

CONSTRUCTION COST OF PROJECT IS 68,000,000 DOLLARS.

DATE = 1/28/82
TIME = 14:43

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

SWAN LAKE HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1984	15.16	25.08	4.05	0.26	0.16
1985	16.64	29.46	4.25	0.25	0.14
1986	18.15	34.07	4.47	0.24	0.13
1987	19.68	38.91	4.69	0.23	0.12
1988	21.25	43.99	4.93	0.23	0.11
1989	22.84	49.33	5.18	0.22	0.10
1990	24.47	54.93	5.44	0.22	0.09
1991	26.13	60.81	5.72	0.21	0.09
1992	27.81	66.99	6.01	0.21	0.08
1993	29.53	70.00	6.32	0.21	0.09
1994	31.28	70.00	6.65	0.21	0.09
1995	33.07	70.00	7.00	0.21	0.09
1996	34.89	70.00	7.36	0.21	0.10
1997	36.74	70.00	7.75	0.21	0.11
1998	38.63	70.00	8.16	0.21	0.11
1999	40.56	70.00	8.59	0.21	0.12
2000	42.52	70.00	9.04	0.21	0.12
2001	44.52	70.00	9.52	0.21	0.13
2002	46.56	70.00	10.03	0.21	0.14
2003	48.63	70.00	10.57	0.21	0.15
2004	50.75	70.00	11.14	0.21	0.15
2005	52.90	70.00	11.74	0.22	0.16
2006	55.10	70.00	12.38	0.22	0.17
2007	57.34	70.00	13.05	0.22	0.18
2008	59.62	70.00	13.77	0.23	0.19
2009	61.94	70.00	14.52	0.23	0.20
2010	64.31	70.00	15.33	0.23	0.21
2011	66.73	70.00	16.17	0.24	0.23
2012	69.18	70.00	17.07	0.24	0.24
2013	70.00	70.00	18.02	0.25	0.25
2014	70.00	70.00	19.03	0.27	0.27
2015	70.00	70.00	20.10	0.28	0.28
2016	70.00	70.00	21.24	0.30	0.30
2017	70.00	70.00	15.87	0.22	0.22

LOW GROWTH RATE = 1.9 PERCENT
HIGH GROWTH RATE = 5.0 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY.
** LOW DEMAND FROM ANNUAL GROWTH RATE. YEARS 1976 THROUGH 1980.

DATE = 1/28/82
TIME = 14:43

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R01

SWAN LAKE HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1984	2,700,000	2,700,000	1,350,000	4,050,000
1985	2,700,000	2,808,000	1,444,500	4,252,500
1986	2,700,000	2,920,300	1,545,600	4,465,900
1987	2,700,000	3,037,100	1,653,800	4,690,900
1988	2,700,000	3,158,600	1,769,600	4,928,200
1989	2,700,000	3,285,000	1,893,500	5,178,400
1990	2,700,000	3,416,400	2,026,000	5,442,400
1991	2,700,000	3,553,000	2,167,800	5,720,800
1992	2,700,000	3,695,100	2,319,600	6,014,700
1993	2,700,000	3,842,900	2,481,900	6,324,900
1994	2,700,000	3,996,700	2,655,700	6,652,300
1995	2,700,000	4,156,500	2,841,600	6,998,100
1996	2,700,000	4,322,800	3,040,500	7,363,300
1997	2,700,000	4,495,700	3,253,300	7,749,000
1998	2,700,000	4,675,500	3,481,100	8,156,600
1999	2,700,000	4,862,500	3,724,7[illegible]	8,587,300
2000	2,700,000	5,057,000	3,985,50[illegible]	9,042,500
2001	2,700,000	5,259,300	4,264,400	9,523,800
2002	2,700,000	5,469,700	4,563,000	10,032,600
2003	2,700,000	5,688,500	4,882,[illegible]00	10,570,800
2004	2,700,000	5,916,000	5,224,[illegible]00	11,140,200
2005	2,700,000	6,152,700	5,5[illegible]6,[illegible]	11,742,500
2006	2,700,000	6,398,800	5,9[illegible],[illegible]00	12,379,900
2007	2,700,000	6,654,700	6,3[illegible],800	13,054,500
2008	2,700,000	6,920,900	6,847,800	13,768,700
2009	2,700,000	7,197,700	7,327,100	14,524,900
2010	2,700,000	7,485,600	7,840,000	15,325,700
2011	2,700,000	7,785,100	8,388,900	16,173,900
2012	2,700,000	8,096,500	8,976,100	17,072,600
2013	2,700,000	8,420,300	9,604,400	18,024,700
2014	2,700,000	8,757,100	10,276,700	19,033,900
2015	2,700,000	9,107,400	10,996,100	20,103,500
2016	2,700,000	9,471,700	11,765,800	21,237,600
2017	900,000	3,283,500	12,589,900	15,873,000
TOTAL	90,000,000	182,048,600	173 151,700	355,200,600

3 PERCENT OF PRINCIPAL REPAID EACH YEAR. NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON PRINCIPAL = 4 PERCENT. INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O & M COST = 1.5 PERCENT OF CONSTRUCTION COST.

PLANNED FIRST YEAR OF CONSTRUCTION IS 1981. CONSTRUCTION TIME IS 3 YEARS.
CONSTRUCTION COST OF PROJECT IS 90,000,000 DOLLARS.

DATE = 1/28/82
TIME = 14:44

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

TERROR LAKE HYDROELECTRIC PROJECT, WITH COAST GUARD SALES

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1985	84.48	94.48	6.28	0.07	0.06
1986	85.92	98.26	6.56	0.07	0.06
1987	87.38	102.19	6.86	0.07	0.06
1988	88.86	106.27	7.17	0.08	0.06
1989	90.37	110.52	7.50	0.08	0.06
1990	91.91	114.94	7.84	0.08	0.06
1991	93.47	119.54	8.20	0.08	0.06
1992	95.06	124.32	8.58	0.09	0.06
1993	96.68	129.30	8.97	0.09	0.06
1994	98.32	134.47	9.39	0.09	0.06
1995	99.99	139.85	9.82	0.09	0.07
1996	101.69	145.00	10.28	0.10	0.07
1997	103.42	145.00	10.76	0.10	0.07
1998	105.18	145.00	11.26	0.10	0.07
1999	106.97	145.00	11.79	0.11	0.08
2000	108.78	145.00	12.35	0.11	0.08
2001	110.63	145.00	12.93	0.11	0.08
2002	112.51	145.00	13.55	0.12	0.09
2003	114.43	145.00	14.19	0.12	0.09
2004	116.37	145.00	14.87	0.12	0.10
2005	118.35	145.00	15.58	0.13	0.10
2006	120.36	145.00	16.33	0.13	0.11
2007	122.41	145.00	17.12	0.13	0.11
2008	124.49	145.00	17.95	0.14	0.12
2009	126.61	145.00	18.82	0.14	0.12
2010	128.76	145.00	19.74	0.15	0.13
2011	130.95	145.00	20.71	0.15	0.14
2012	133.17	145.00	21.73	0.16	0.14
2013	135.44	145.00	22.80	0.16	0.15
2014	137.74	145.00	23.93	0.17	0.16
2015	140.08	145.00	25.12	0.17	0.17
2016	142.46	145.00	26.37	0.18	0.18
2017	144.88	145.00	27.69	0.19	0.19
2018	145.00	145.00	16.46	0.11	0.11

LOW GROWTH RATE = 1.7 PERCENT
HIGH GROWTH RATE = 4.0 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM FEASIBILITY STUDY.
** LOW DEMAND FROM ANNUAL GROWTH RATE, YEARS 1976 THROUGH 1980.

DATE = 1/28/82
TIME = 14:44

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

R0

TERROR LAKE HYDROELECTRIC PROJECT, WITH COAST GUARD SALES

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1985	5,190,000	5,190,000	1,088,000	6,278,000
1986	5,190,000	5,397,600	1,164,200	6,561,800
1987	5,190,000	5,613,500	1,245,700	6,859,200
1988	5,190,000	5,838,000	1,332,800	7,170,900
1989	5,190,000	6,071,600	1,426,100	7,497,700
1990	5,190,000	6,314,400	1,526,000	7,840,400
1991	5,190,000	6,567,000	1,632,800	8,199,800
1992	5,190,000	6,829,700	1,747,100	8,576,800
1993	5,190,000	7,102,900	1,869,400	8,972,300
1994	5,190,000	7,387,000	2,000,300	9,387,200
1995	5,190,000	7,682,500	2,140,300	9,822,700
1996	5,190,000	7,989,800	2,290,100	10,279,900
1997	5,190,000	8,309,300	2,450,400	10,759,800
1998	5,190,000	8,641,700	2,621,900	11,263,700
1999	5,190,000	8,987,400	2,805,500	11,792,900
2000	5,190,000	9,346,900	3,001,900	12,348,700
2001	5,190,000	9,720,800	3,212,000	12,932,700
2002	5,190,000	10,109,600	3,436,800	13,546,400
2003	5,190,000	10,514,000	3,677,400	14,191,400
2004	5,190,000	10,934,500	3,934,800	14,869,400
2005	5,190,000	11,371,900	4,210,300	15,582,200
2006	5,190,000	11,826,800	4,505,000	16,331,800
2007	5,190,000	12,299,900	4,820,300	17,120,200
2008	5,190,000	12,791,900	5,157,800	17,949,600
2009	5,190,000	13,303,500	5,518,800	18,822,300
2010	5,190,000	13,835,700	5,905,100	19,740,800
2011	5,190,000	14,389,100	6,318,500	20,707,600
2012	5,190,000	14,964,700	6,760,800	21,725,500
2013	5,190,000	15,563,200	7,234,100	22,797,300
2014	5,190,000	16,185,800	7,740,400	23,926,200
2015	5,190,000	16,833,200	8,282,300	25,115,500
2016	5,190,000	17,506,500	8,862,000	26,368,600
2017	5,190,000	18,206,800	9,482,400	27,689,200
2018	1,730,000	6,311,700	10,146,200	16,457,900
TOTAL	173,000,000	349,938,900	139,547,500	489,486,400

3 PERCENT OF PRINCIPAL REPAID EACH YEAR. NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON PRINCIPAL = 4 PERCENT. INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O&M COST BASED ON APA REPORT. FIRST YEAR O&M COST IN 1981 DOLLARS IS $830,000.

PLANNED FIRST YEAR OF CONSTRUCTION IS 1982. CONSTRUCTION TIME IS 3 YEARS.
CONSTRUCTION COST OF PROJECT IS 173,000,000 DOLLARS.

DATE = 1/28/82
TIME = 14:43

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

LAKE TYEE HYDROELECTRIC PROJECT

YEAR	LOW DEMAND** IN MILLIONS OF KILOWATT HOURS	HIGH DEMAND* IN MILLIONS OF KILOWATT HOURS	ANNUAL COST IN MILLIONS OF DOLLARS	LOW DEMAND** DOLLAR COST PER KILOWATT HOUR	HIGH DEMAND* DOLLAR COST PER KILOWATT HOUR
1984	21.82	23.92	4.25	0.19	0.17
1985	22.64	25.36	4.46	0.19	0.17
1986	23.49	26.85	4.68	0.19	0.17
1987	24.35	28.40	4.91	0.20	0.17
1988	25.23	30.02	5.16	0.20	0.17
1989	26.14	31.71	5.41	0.20	0.17
1990	27.07	33.46	5.68	0.20	0.16
1991	28.03	35.29	5.97	0.21	0.16
1992	29.00	37.19	6.27	0.21	0.16
1993	30.00	39.16	6.59	0.21	0.16
1994	31.03	41.22	6.92	0.22	0.16
1995	32.08	43.37	7.27	0.22	0.16
1996	33.16	45.60	7.64	0.23	0.16
1997	34.27	47.92	8.04	0.23	0.16
1998	35.40	50.34	8.45	0.23	0.16
1999	36.56	52.86	8.89	0.24	0.16
2000	37.75	55.48	9.35	0.24	0.16
2001	38.97	58.20	9.84	0.25	0.16
2002	40.22	61.04	10.35	0.25	0.16
2003	41.51	64.00	10.90	0.26	0.17
2004	42.82	67.08	11.47	0.26	0.17
2005	44.17	70.28	12.08	0.27	0.17
2006	45.55	73.62	12.72	0.27	0.17
2007	46.96	77.09	13.40	0.28	0.17
2008	48.41	80.70	14.12	0.29	0.17
2009	49.90	84.46	14.88	0.29	0.17
2010	51.42	88.38	15.68	0.30	0.17
2011	52.99	92.46	16.53	0.31	0.17
2012	54.59	96.70	17.43	0.31	0.18
2013	56.23	101.12	18.39	0.32	0.18
2014	57.91	105.72	19.40	0.33	0.18
2015	59.64	110.00	20.47	0.34	0.18
2016	61.40	110.00	21.60	0.35	0.19
2017	63.21	110.00	15.57	0.24	0.14

LOW GROWTH RATE = 2.5 PERCENT
HIGH GROWTH RATE = 4.1 PERCENT

GROWTH RATES IN DEMAND ARE APPLIED TO 1980 TOTAL ELECTRICITY SALES IN PROJECT AREA.
1980 HYDROPOWER SALES ARE SUBTRACTED FROM TOTAL SALES TO OBTAIN PROJECT HYDROPOWER DEMAND.
* HIGH DEMAND FROM ANNUAL GROWTH RATE, YEARS 1976 THROUGH 1980.
** LOW DEMAND FROM FEASIBILITY STUDY.

DATE = 1/28/82
TIME = 14:43

STATE OF ALASKA
OFFICE OF THE GOVERNOR
DIVISION OF BUDGET AND MANAGEMENT

LAKE TYEE HYDROELECTRIC PROJECT

PERIOD ENDING	PRINCIPAL REPAYMENT	INFLATION ADJ REPAYMENT	O & M COST	ADJ REPAYMENT PLUS O&M COST
1984	2,970,000	2,970,000	1,282,600	4,252,600
1985	2,970,000	3,088,800	1,372,400	4,461,200
1986	2,970,000	3,212,400	1,468,500	4,680,800
1987	2,970,000	3,340,800	1,571,200	4,912,100
1988	2,970,000	3,474,500	1,631,200	5,155,700
1989	2,970,000	3,613,500	1,798,900	5,412,400
1990	2,970,000	3,758,000	1,924,800	5,682,800
1991	2,970,000	3,908,300	2,059,600	5,967,900
1992	2,970,000	4,064,600	2,203,800	6,268,400
1993	2,970,000	4,227,200	2,358,000	6,585,200
1994	2,970,000	4,396,300	2,523,100	6,919,400
1995	2,970,000	4,572,200	2,699,700	7,271,900
1996	2,970,000	4,755,100	2,888,700	7,643,700
1997	2,970,000	4,945,300	3,090,900	8,036,100
1998	2,970,000	5,143,100	3,307,300	8,450,300
1999	2,970,000	5,348,800	3,538,800	8,887,600
2000	2,970,000	5,562,700	3,786,500	9,349,200
2001	2,970,000	5,785,300	4,051,500	9,836,800
2002	2,970,000	6,016,700	4,335,100	10,351,800
2003	2,970,000	6,257,300	4,638,600	10,895,900
2004	2,970,000	6,507,600	4,963,300	11,470,900
2005	2,970,000	6,767,900	5,310,800	12,078,700
2006	2,970,000	7,038,600	5,682,500	12,721,100
2007	2,970,000	7,320,200	6,080,300	13,400,500
2008	2,970,000	7,613,000	6,505,900	14,118,900
2009	2,970,000	7,917,500	6,961,300	14,878,800
2010	2,970,000	8,234,200	7,448,600	15,682,800
2011	2,970,000	8,563,600	7,970,000	16,533,600
2012	2,970,000	8,906,100	8,527,900	17,434,100
2013	2,970,000	9,262,400	9,124,900	18,387,300
2014	2,970,000	9,632,900	9,763,700	19,396,500
2015	2,970,000	10,018,200	10,447,100	20,465,300
2016	2,970,000	10,418,900	11,178,400	21,597,300
2017	990,000	3,611,900	11,960,900	15,572,800
TOTAL	99,000,000	200,253,900	164,506,800	364,760,400

3 PERCENT OF PRINCIPAL REPAID EACH YEAR.
INFLATION RATE ON PRINCIPAL = 4 PERCENT.
FIRST YEAR O&M COST BASED ON APA REPORT.

NUMBER OF YEARS TO PAY OFF PRINCIPAL IS 33.333.
INFLATION RATE ON O & M = 7 PERCENT.
FIRST YEAR O&M COST IN 1981 DOLLARS IS $1,047,000

PLANNED FIRST YEAR OF CONSTRUCTION IS 1981.
CONSTRUCTION COST OF PROJECT IS 99,000,000 DOLLARS.

CONSTRUCTION TIME IS 3 YEARS.

Alaska State Legislature
HOUSE OF REPRESENTATIVES
COMMITTEE ON RESOURCES

KEN FANNING, CO-CHAIRMAN
ERIC SUTCLIFFE, CO-CHAIRMAN
POUCH V
JUNEAU, ALASKA 99811
(907) 465-3715

M E M O R A N D U M

To: All Legislators

From: Rep. Eric Sutcliffe

Date: February 11, 1982

Subject: HB 758 - "An Act relating to the energy program for Alaska"

House Bill 758 by the House Resources Commictee makes two changes to Hb 655.

The first change requires that a utility which purchases power from a state funded power project to establish a certain rate structure. This rate structure is as follows:

For the first 250 KWh per month, per customer, the retail rate must exclude the payback of capital construction costs. In other words, for this level of usage, a rate is charged as if the project were built as a state grant.

Higher rates for residential customers must be charged for that level of usage above 250 KWh per month. One additional rate step increase is mandated - more are optional. In order to encourage conservation, these rates should be higher for higher usages (inverted rates.)

The payback to the State for construction of the project would therefore, be borne by those consuming in excess of 250 KWh per month.

The second change, alters the term of payback to the state from thirty-three and one-third years (HB 655), to thirty-three and one-third years or, three-fourths of the life of the project, whichever is less.

TESTIMONY BEFORE HOUSE RESOURCES COMMITTEE

ON FEBRUARY 26, 1982

MR. CHAIRMAN, MY NAME IS BUDD GOODYEAR. I AM A MEMBER AND A CUSTOMER OF MATANUSKA ELECTRIC ASSOCIATION AND I AM EMPLOYED BY MEA AS PUBLIC INFORMATION OFFICER.

HOUSE BILL 758 IS NOT A HYDRO FINANCING AMENDMENT, IT IS AN ELECTRIC ENERGY TAX RATE BILL, BECAUSE HOUSE BILL 655 IS NOT A HYDRO FINANCING BILL, IT IS A REVENUE BILL.

IT IS OUR UNDERSTANDING THAT THE PEOPLE OF THE STATE OWN THE WEALTH OF THE STATE AND THAT WE ELECT STATE GOVERNMENT TO MANAGE THAT WEALTH

FOR EXAMPLE, THAT THE SUSITNA PROJECT IS OVER BUILD AND THE RAILBELT AREA WILL NEVER USE THE POWER WHICH IT WILL GENERATE. THEY THEN PROCEED TO DEVELOP AND INTRODUCE A FINANCING PLAN AND RATE STRUCTURE WHICH WILL NOT ALLOW THE CONSUMER TO AFFORD TO BUY HYDRO PROJECT ENERGY. UNDER HB 655 AND HB 758, HYDRO POWER ELECTRIC ENERGY MIGHT WHOLESALE FOR 20¢ PER KWH, RETAIL COSTS FOR MEA CUSTOMERS IS RUNNING 2.5 TIMES WHOLESALE COST. THESE TWO BILLS WILL CAUSE UPWARD SPIRALING ELECTRICAL RATES.

MR. CHAIRMAN, HB 758 IS UNACCEPTABLE A SECOND WAY -- IN PROPOSING INVERTED RATES. WE ESTIMATE THAT WE HAVE THREE TO FOUR THOUSAND HOMES WHICH USE ELECTRIC HEAT AS THE BASIC HOME HEATING SOURCE. TO CAUSE THEM SEVERE

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IT IS OUR UNDERSTANDING THAT THE PEOPLE OF THE STATE OWN THE WEALTH OF THE STATE AND THAT WE ELECT STATE GOVERNMENT TO MANAGE THAT WEALTH

AND PROVIDE BENEFITS TO THE PEOPLE FROM IT.

WHERE ARE THE BENEFITS IN HOUSE BILL 655 AND

758? THERE ARE NONE.

MR. CHAIRMAN, OUR RATE PAYERS ARE EXPRESSING

CONCERN AT BD TODAY'S ELECTRIC RATES BY PETITIONS.

THEY ARE NOT GOING TO WELCOME AN ELECTRIC

ENERGY TAX WHICH MIGHT RAISE THE WHOLESALE

COST OF ELECTRIC ENERGY TO 20¢ A KILOWATT HOUR

~~33 YEARS AFTER A PROJECT COMES ON LINE.~~ BD

HOUSE BILL 655 AND 758 HAVE THAT POTENTIAL

BECAUSE THEY ARE REVENUE BILLS NOT FINANCING

BILLS AND THEY ARE NOT BILLS BENEFITING

TODAY'S RESIDENTS OF THE STATE.

THOSE WHO OPPOSE HYDRO-POWER ARE VERY INCON-

SISTANT IN WHAT THEY SAY. FIRST, THEY TELL YOU,

FOR EXAMPLE, THAT THE SUSITNA PROJECT IS OVER BUILD AND THE RAILBELT AREA WILL NEVER USE THE POWER WHICH IT WILL GENERATE. THEY THEN PROCEED TO DEVELOP AND INTRODUCE A FINANCING PLAN AND RATE STRUCTURE WHICH WILL NOT ALLOW THE CONSUMER TO AFFORD TO BUY HYDRO PROJECT ENERGY. UNDER HB 655 AND HB 758, HYDRO POWER ELECTRIC ENERGY MIGHT WHOLESALE FOR 20¢ PER KWH, RETAIL COSTS FOR MEA CUSTOMERS IS RUNNING 2.5 TIMES WHOLESALE COST. THESE TWO BILLS WILL CAUSE UPWARD SPIRALING ELECTRICAL RATES.

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UNNECESSARY RATE INCREASES, AS HB758 AND HB655 WOULD DO, WHEN THE ALTERNATIVES ARE EXPENSIVE, INEFFICIENT FOSSIL FUELS IS UNACCEPTABLE

DO NOT CONSIDER US A SUPPORTER OF ELECTRIC SPACE HEATING, BUT LET ME TELL YOU A COUPLE OF THINGS ABOUT ELECTRIC ENERGY EFFICIENCIES. 100% OF THE ELECTRIC ENERGY DELIVERED TO A HOME FOR HEATING PURPOSES IS USED. THAT'S RIGHT, ELECTRIC HEAT IS 100% EFFICIENT WHEN YOU CONSIDER HEATING ENERGY AVAILABLE AT THE DELIVERY POINT.

THE INEFFICIENCIES OF ELECTRICITY COME IN GENERATION OF ELECTRIC ENERGY USING FOSSIL FUELS. IT IS FOSSIL FUEL GENERATION WHICH CAUSES MOST OF THE INEFFICIENCIES IN ELECTRIC ENERGY. EVEN A NUCLEAR REACTOR RUNNING 98%

EFFICIENT LOSES THAT EFFICIENCY BECAUSE THE STEAM GENERATOR IT OPERATES IS ONLY 65 TO 70% EFFICIENT. NONE OF THESE EFFICIENCIES EXIST IN HYDRO-POWER. IT FOLLOWS THAT HYDRO-POWER, A RENEWABLE ENERGY USED, FOR SPACE HEATING IS THE MOST EFFECTIVE AND EFFICIENT USE OF ENERGY AVAILABLE TODAY. AGAIN, I AM NOT, REPEAT NOT, ADVOCATING ELECTRIC SPACE HEATING, I AM EXPLAINING EFFICIENCIES. FROM A HYDRO-POWER SITE TO A CUSTOMER'S HOME 10% TRANSMISSION AND DISTRIBUTION LINE LOSS MAY OCCUR. THAT WOULD MAKE THE OVERALL EFFICIENCY OF ELECTRIC HEAT FROM A HYDRO-PROJECT AT 90%, MUCH HIGHER THAN ANY OTHER ENERGY SOURCE. THE POINT IS, WE SHOULD NOT AUTOMATICALLY ELIMINATE OR PENALIZE SOME ELECTRIC ENERGY USES. WE SHOULD PLAN WISELY FOR ENERGY DEVELOPMENT AND HB 655 AND HB 758 ARE BAD PLANS.

ONE FINAL POINT, OUR FIXED COSTS ASSOCIATED WITH SERVING SINGLE-PHASE ENERGY USERS - NORMAL RESIDENTIAL SERVICE - RAN APPROXIMATELY $38 PER SERVICE PER MONTH IN 1980. 1981 FIGURES ARE NOT YET AVAILABLE, TO INSTITUTE A LIFELINE RATE, DISCOUNT RATE, OR INVERTED RATE, AND FORCE US TO SELL THE FIRST 250 KWH, AT SAY A PENNY EACH, WOULD CAUSE US TO LOSE APPROXIMATELY $35.50 ON THE 250 KWH SOLD. IN ORDER FOR US TO MEET OUR FINANCIAL OBLIGATIONS THEN, SOME OTHER USER GROUP WOULD HAVE TO SUBSIDIZE A LARGE PORTION OF COSTS ASSOCIATED WITH SERVING CUSTOMERS WHO USE LESS THAN 250 KWH. WE BELIEVE THESE SUBSIDIES ARE NOT FAIR, AND MAY VIOLATE STATE STATUTES ON EQUITABLE RATES.

WE ARE NOT IGNORANT OF, OR INSENSITIVE TO THE NEEDS OF ALASKA PIONEERS, PEOPLE ON FIXED INCOMES, OR THE POOR. WHAT WE ARE SAYING IS, ENERGY RATES ARE A POOR PLACE TO CARRY OUT A IAL PROGRAM. IT IS NOT HONEST, IT HIDES THE SUBSIDIES, IT HIDES THE SOCIAL PROGRAM REQUIREMENT. MR. CHAIRMAN, AND COMMITTEE HB 758 IS BAD FOR THE STATE, KILL IT, PLEASE. THAT GOES FOR HB 655 TOO.

THANK YOU FOR THE OPPORTUNITY TO SPEAK.

Budd Goodyear

House Resources

THE LEGISLATURE OF THE STATE OF ALASKA
TWELFTH LEGISLATURE

FISCAL NOTE

I. REQUEST
Bill/Resolution No. House Bill No. 758
Title "An Act relating to the energy program for Alaska."
Requested by House Resources Date 4/2/82

II. FISCAL DETAIL
Agency Affected Office of the Governor
Program Category Affected Division of Elections
BRU, Program, Or Subprogram(s) Affected Division of Elections
(Note: If more than one budget component is affected, separate line-item amounts and funding for each component in the analysis section.)

EXPENDITURES (Thousands of Dollars)

	FY 82	FY 83	FY 84	FY 85	FY 86	FY 87
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL		4.0		4.0		
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS,CLAIMS,ETC.						
TOTAL	-0-	4.0	-0-	4.0	-0-	-0-

FUNDING (Thousands of Dollars)

GENERAL FUND		4.0		4.0		
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS No additional positions required.

FULL TIME						
PART TIME						
TEMPORARY						

III. ANALYSIS (See Fiscal Note Preparation Instruction, Section III)

Assume:

1. That special elections on power projects will be held simultaneously with November general elections in affected areas.
2. That the Official Election Pamphlet will be the vehicle for delivery of descriptions of each power project to each registered voter prior to the appropriate election.
3. That three elections will be held during FY 83 (at the 1982 General Election) affecting a) Terror Lake (Kodiak precincts), b) Bradley Lake (Kenai precincts), and c) Black Bear Lake (Craig, Klawock, and Hydaburg precincts).
4. That one election will be held during FY 85 (at the 1984 General Election) for the Susitna project (Anchorage, Fairbanks [Railbelt], and Valdez precincts).
5. That all expenditures, with the exception of printing costs for one additional ballot and some advertising costs, will be absorbed into the general detail budget for the Division of Elections as projected during a general election budget year.

IV. DATE 4/5/82 PREPARED BY Danith D. Arnoldt, Deputy Director
AGENCY Office of the Governor, Div. of Elections
PHONE 586-6181

Original: Legislative Finance
cc: Budget and Management
Prime Sponsor (First Legislator Named)
33-001 (Rev. 12/81)

Attachment

III. ANALYSIS (continued)

If the Legislature deems it necessary to place these questions on special election ballots separate from the General Election in those years specified, these costs must be recalculated and will increase significantly.

Leslie Kochan
P.O. Box 4414
Soldotna, AK.
99669

To Members of the House Resource Committee:

I urge your support of House Bill 758. I do not wish to see the state of Alaska grant $5 billion (including an estimated $6 billion in lost revenue, thus an actual $11 billion commitment) to electrical development which will, in the long run, discourage the development of alternative energy sources and smaller hydro-electric projects. and will encourage a waste of electrical power. I attended the public informational meeting presented by N.W. Pacific Laboratories on Susitna and alternatives. After evaluating their studies and information, as well as information presented by ACRES and other groups doing research, I feel that reasonable electrical cost can be maintained without relying on increased coal, natural gas, or projects such as Susitna which, under SB 25-26, would drain us of state revenues needed for

other state budget items such as education, transportation, police protection, and health care.

Fairbanks stands as a prime example of the savings incurred in electrical use by simple conservation applications within the home. More effective use of insulation, especially, has helped Fairbanksans decrease their electricity use by 12% a year since 1975. Washington State and Bonneville Power Administration, on the other hand, serve as a prime example of the increased electrical consumption which can occur and eventually cost consumers due to the initial incentive of cheap electrical power. The lure of cheap electricity will also cause an influx of new industry within the railbelt area and along with that a boom/bust effect on land use, increased crowding in our urban areas, and increased pollution. Also to be considered are the impacts the dams itself would have on present land use and wildlife in the proposed Susitna project site area. Please support HB 758.

Sincerely Yours,

Leslie Kochan

DEPD-82-530-R3

STATE OF ALASKA

LONG TERM ENERGY PLAN

1982 REPORT

PRELIMINARY DRAFT
PUBLIC REVIEW COPY

EXECUTIVE SUMMARY

Prepared For

Jay Hammond
Governor

By

Department of Commerce and Economic Development
Division of Energy and Power Development

Charles Webber
Commissioner

Lloyd M. Pernela
Director

FEBRUARY 1982

With all of its indigenous energy resources, its large revenues from energy production, and with many of its citizens depending on high-priced fuels, the state of Alaska has a responsibility to involve itself in energy planning. The state legislature recognized this responsibility in 1980 by requiring the development of an annual state long term energy plan*. The 1980 Act required that the plan and its annual revisions include:

- An "end-use" study examining and reporting on the nature and amount of energy used and the purposes of its use
- An energy development component for meeting projected thermal, electrical and transportation energy needs in the state at the lowest reasonable cost
- An energy conservation component, including regional conservation goals and measures to achieve those goals
- A component for emergency energy conservation measures applicable during times of emergency
- A report on areas or subjects of energy research, development and demonstration projects involving alternative energy systems, local energy sources, and energy conservation.

By addressing the required elements presented above, the plan provides an overview of the statewide energy situation, and helps the state legislature develop just and equitable solutions to Alaska's energy problems. The overall purpose of this year's report is to focus existing energy information to support current decision making needs and provide a sense of priority across state projects and programs. To this end, the plan report describes the current and future energy situation, the least cost energy alternatives for different regions, and the consequences of pursuing these different alternatives.

The 1982 report on the long term energy plan builds on the initial 1981 long term energy plan, as well as other recent and ongoing studies, including: the Susitna feasibility study by Acres American; the Railbelt Electrical Power Alternatives study, and the Historical and Projected Oil and Gas Use study

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*State Statute HCS CCSB 438 (Finance) amH, section 44.56.224

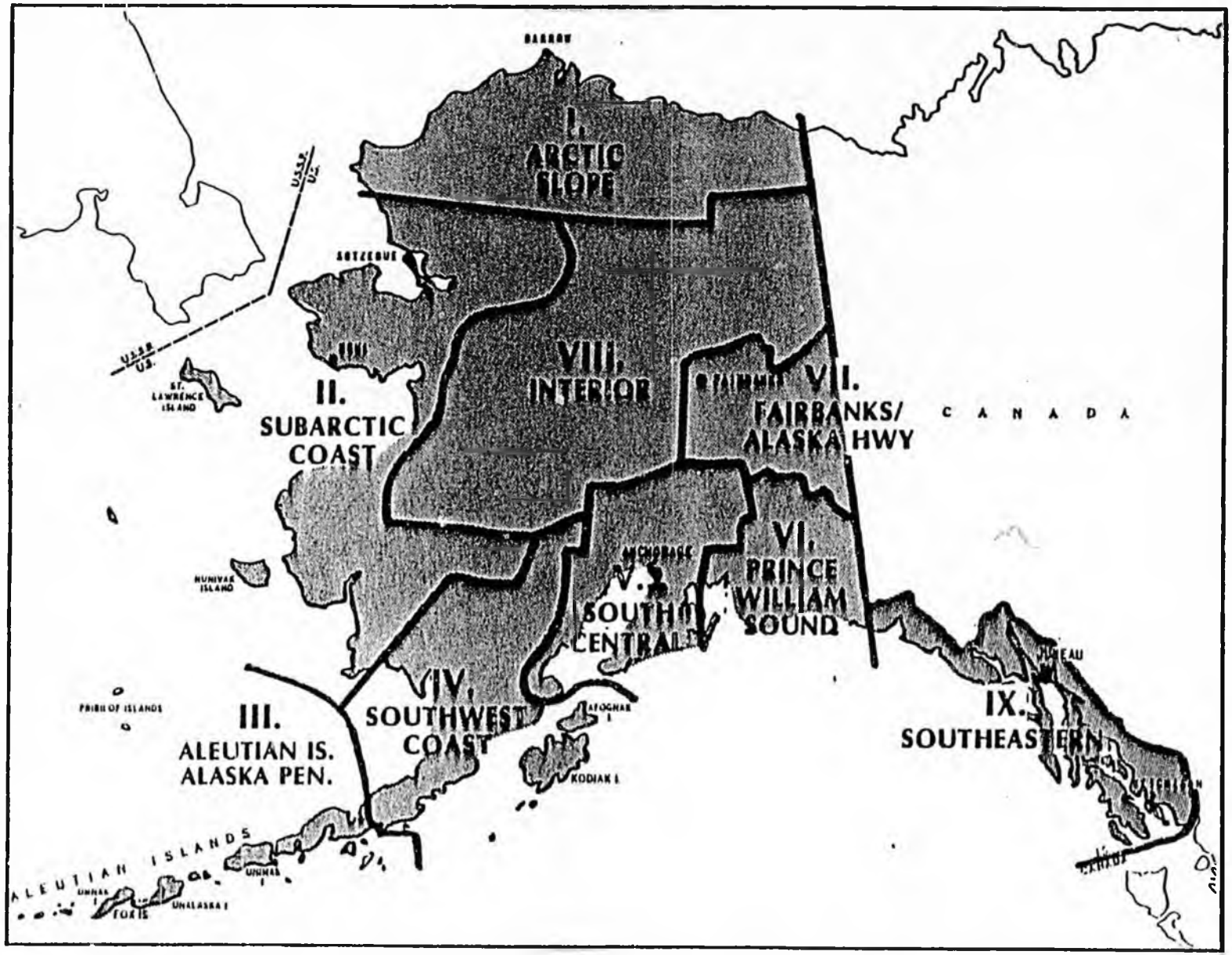
by Battelle Northwest Laboratories. Only the Historical and Projected Oil and Gas Use study had been completed in time to support the development of this year's plan. However, information from interim reports, working papers and draft reports from the other studies was incorporated wherever possible. This information may differ slightly from that contained in the final reports for those studies.

The primary policy objective (or question) addressed by the 1982 plan is (how) "to use Alaskan resources to meet, at the lowest reasonable cost, Alaska's current and future in-state residential, commercial, industrial and transportation energy needs." While it is recognized that there are other state social, environmental and economic objectives that must be considered in energy planning, this "least cost" objective was chosen to provide an analytical framework for the plan. The quantitative estimates of energy costs and benefits provided in the plan can be viewed as a basis for broader policy decisions involving energy and non-energy decisions.

While currently available energy data are limited, particularly at the regional and subregional levels, a regional perspective is critical to state energy planning efforts. To provide the necessary regional energy perspective the state was first divided into three major regions and ultimately into nine regions, as shown in Exhibit 1 and described in Appendix A. The major regions are used for discussion purposes in most instances, since existing data do not support analysis at a nine region level. The three aggregate regions and their components are:

- Extended Railbelt Area
  - South Central Region (Region V)
  - Prince William Sound (Region VI)
  - Fairbanks/Alaska Highway (Region VII)
- The "Bush"
  - Arctic Slope (Region I)
  - Subarctic Coast (Region II)
  - Aleutian Islands/Alaska Peninsula (Region III)
  - Southwest Coast (Region IV)
  - Interior (Region VIII)
- Southeast Area
  - Southeast (Region IX)

EXHIBIT 1
ENERGY PLANNING REGIONS



These regions were developed by aggregating Alaska's census regions to produce geographical areas having similar energy use patterns, energy problems and energy resources.

The importance of a regional disaggregation to analyze Alaska's energy situation is illustrated in the following example. Average per capita residential electricity use in the state is only slightly higher than that in the lower 48 states - approximately 3,275 kilowatt hours (KWH) in 1980, compared with the U.S. average of 3,250 KWH. Average electricity costs are also similar: Alaska's weighted average cost is approximately 6 cents per KWH, compared with 5.5 cents in the lower 48 states. However, as shown in Exhibit 2, both electricity and fuel oil prices vary substantially across the state.

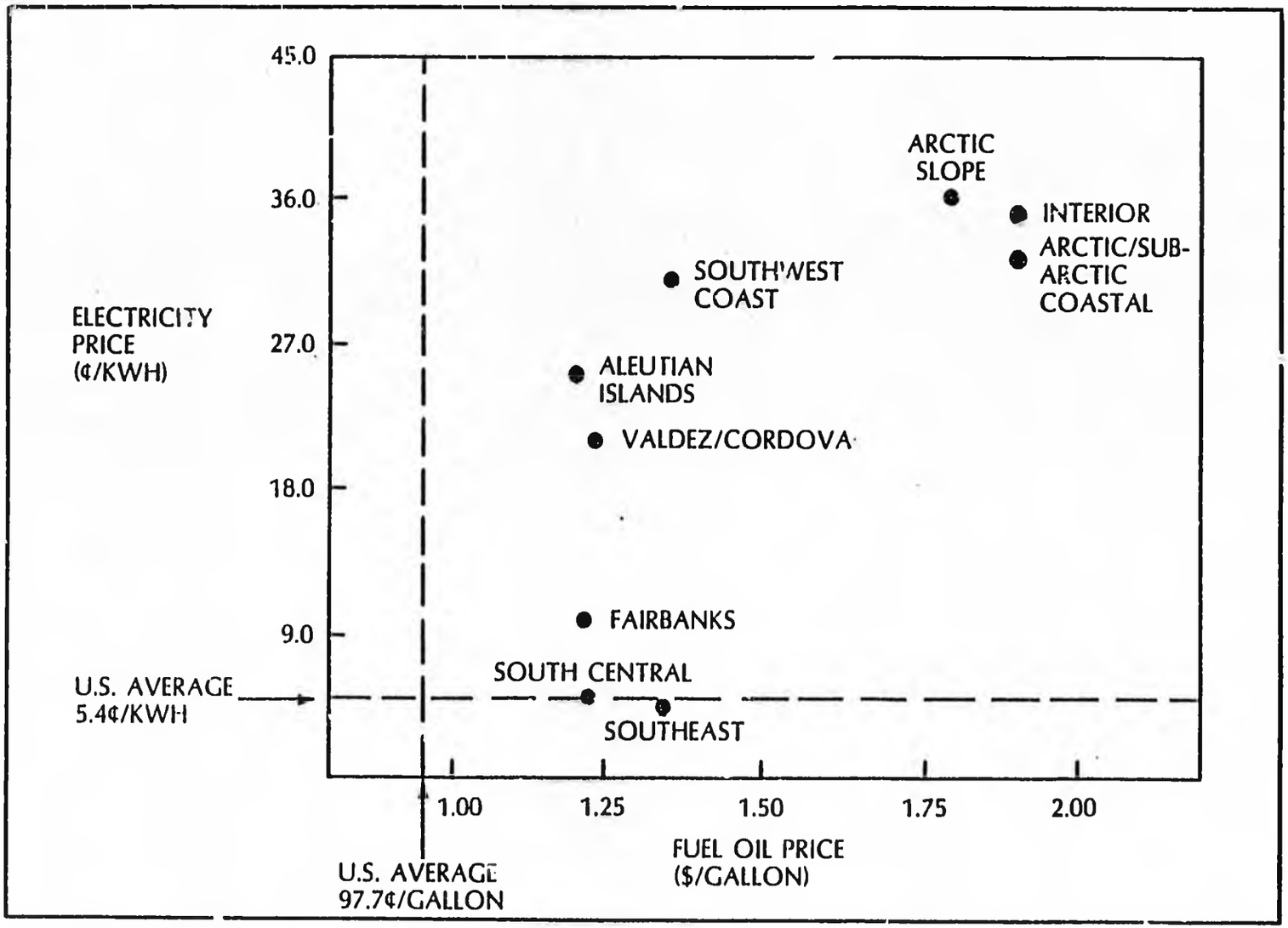
To illustrate these differences and evaluate their implications for energy planning, this plan provides as much detail as possible at a regional level given existing energy data. It is recognized that these data are often incomplete and different sources are likely to be inconsistent. Because of the current data problems, this year's report should be viewed as a preliminary description of detailed regional energy problems. However, the plan does provide an operational regional framework that can be utilized as a basis for energy planning from the state level all the way down to the local and community level.

In conducting the analysis to support this year's report three basic questions are used to provide a means for focusing the existing information and to provide a better understanding of the policy and program options available to the state. These questions are:

- What type of energy problem does Alaska face (where, when, why, how severe)?
  - An energy price problem
  - A resource exhaustion problem or energy production constraints
  - An energy vulnerability/reliability problem?
- What technology options are most attractive for reducing each problem?

EXHIBIT 2

COMPARISON OF RESIDENTIAL OIL AND ELECTRIC PRICES IN ALASKA: 1980



SOURCE: DEPD COMMUNITY ENERGY SURVEY
ALASKA PUC ANNUAL REPORT
EIA 1980 ANNUAL REPORT TO CONGRESS

- What is the most effective set of state energy projects and programs?

By focusing directly on existing and potential energy problems it is possible to establish a close link between the energy needs of Alaskans and the potential technological solutions and state programs that address these needs. This process will provide a basis for determining whether or not individual projects are directed towards the most pressing problems. The remaining portions of the Overview and Summary describe the most pressing existing and potential energy problems, the most attractive technological alternatives and provide recommendations for future state activities.

1. HIGH PRICES REPRESENT ALASKA'S MAJOR NEAR AND MID TERM ENERGY PROBLEM

Energy prices vary substantially throughout the state (illustrated in Exhibit 2, above). The most populated areas the--South Central and Southeast--currently pay relatively low electricity prices. Much of the natural gas used to generate electricity in the South Central region, is purchased under long-term contracts negotiated in the early 1960s. The Southeast region benefits from hydropower facilities which were built prior to recent large cost increases.

Similarly, fuel oil prices in the South Central and Southeast regions are only 25 to 30 percent higher than the U.S. average. These cost differentials are not out of line with many consumer goods, which, also cost more in Alaska than in the lower 48 states.

This is not the case for Alaska's rural consumers--with almost total reliance upon petroleum products--who are hit the hardest by high energy prices. Based on regional averages, they pay up to 8 times more for electricity than urban Alaskans and up to double for fuel oil. These high costs are a result of two key factors:

- High Petroleum Distribution Costs--In the bush, small volumes of diesel fuel must be shipped long distances between communities The product changes hands many times, driving up its cost. Large inventories must be financed and kept on hand, especially during the winter, when the waterways are icebound.

- Low Conversion Efficiencies--In many communities, generating equipment has a conversion efficiency of

only 12 to 18 percent. Larger bush communities such as Kotzebue have diesel generating efficiencies approaching 32 percent, and correspondingly lower electricity costs.

Since bush region consumers pay high energy prices, they use substantially less energy to meet electrical and thermal energy needs than do consumers in the Extended Railbelt and Southeast region. This outcome results for several reasons:

- Higher electricity and fuel oil prices mandate conservation
- Dwellings are of a smaller size
- Fewer electrical appliances are used.

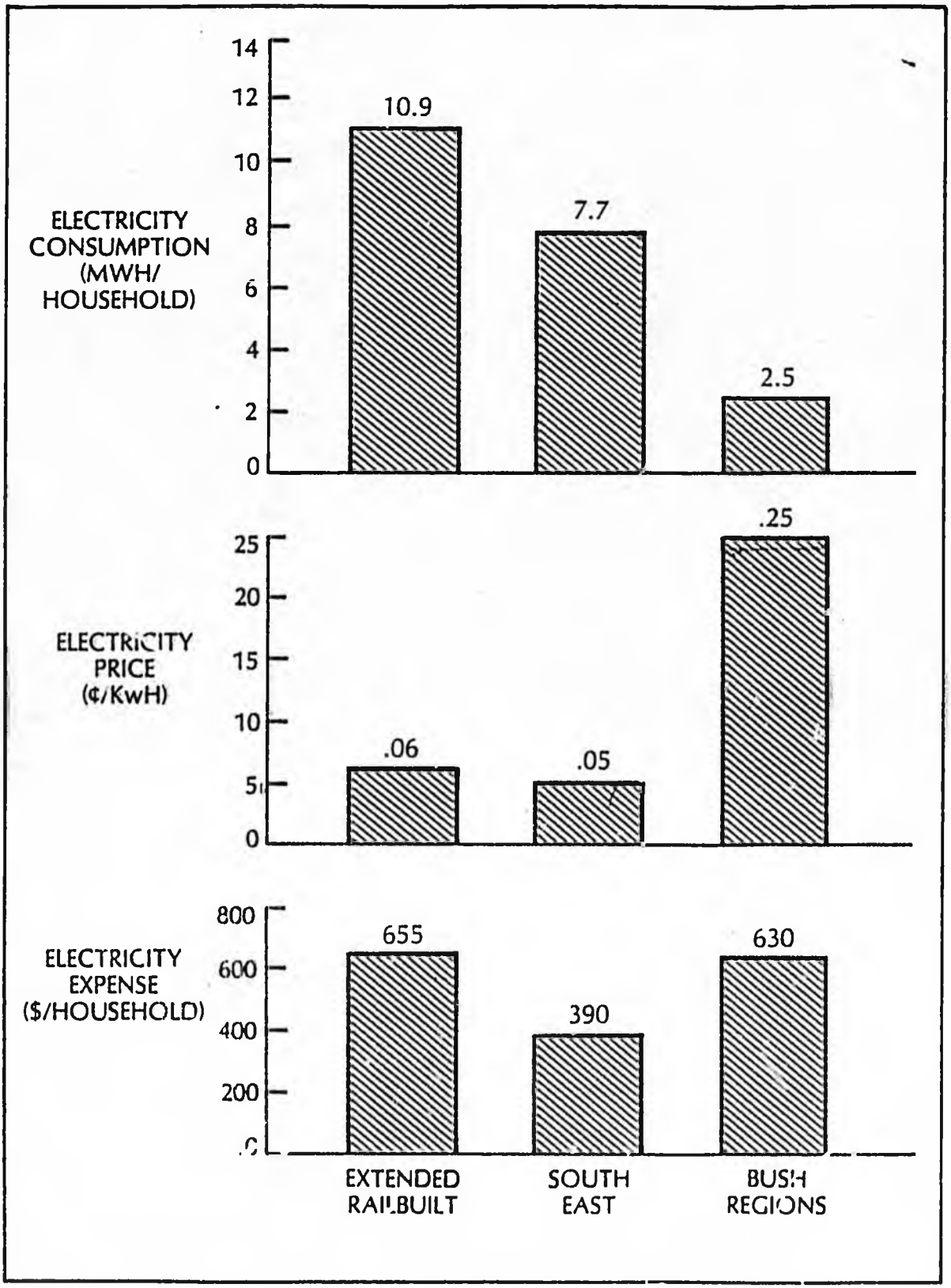
Even though substantially less electrical and thermal energy is used in the bush regions, bush households spend approximately the same annual amount for electricity and spend substantially more to meet their thermal needs than residents of the Extended Railbelt. Electricity and thermal energy consumption patterns--including average household consumption, prices and expenditures--for the three regions are shown in Exhibits 3 and 4.

The relatively large household thermal energy consumption in the Southeast results from per capita thermal consumption slightly lower than that in the Extended Railbelt, but larger households. In addition, only the cost of heating with fuel oil was considered for the Southeast, while both oil and natural gas were considered in determining the thermal energy prices in the bush and Extended Railbelt regions. The fuel oil prices used for the bush region include those in major population centers, which are substantially lower than those in outlying areas.

All Alaskans, urban and rural, will be affected by oil and natural gas price trends in the coming years. It appears that crude oil prices will remain level or even decline during the next few years. Current world economic conditions coupled with a substantial increase in energy use efficiency have greatly reduced world oil demand. Worldwide economic recovery, which would stimulate oil demand, is not likely to take place for at least a year. An excess demand for oil, which would push prices upward, may not be felt in the world oil markets until after 1985. These conditions suggest that excess oil supplies will continue until the late 1980s.

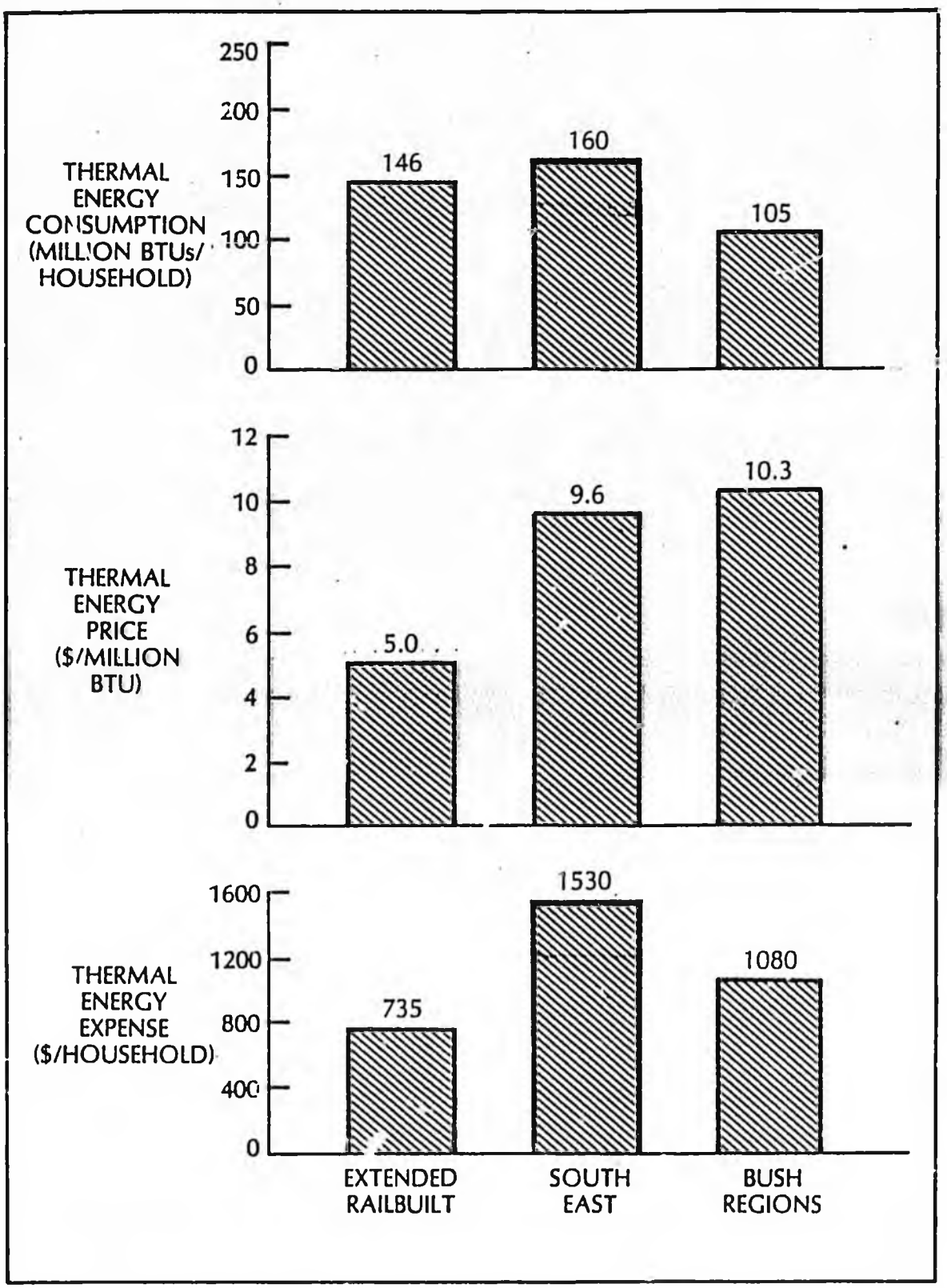
EXHIBIT 3

HOUSEHOLD RESIDENTIAL ELECTRICITY EXPENSE



SOURCE: DEPD COMMUNITY ENERGY SURVEY APPENDIX I-A, STATE ENERGY BALANCE

EXHIBIT 4
HOUSEHOLD RESIDENTIAL THERMAL ENERGY EXPENSE



SOURCE: DEPD COMMUNITY ENERGY SURVEY
APPENDIX I-A, STATE ENERGY BALANCES

During the late 1980s and 1990s, world energy prices can be expected to increase, but at a more moderate rate than that experienced during the 1970s. Alaskan oil prices can be expected to track this more moderate real annual growth rate of about 2.5 percent through the year 2000.

High oil prices mean that Alaskan's also pay more for transportation fuels than residents of the lower 48 states. Even though approximtely 50 percent of transportation fuel is used for international and domestic jet aviation, high prices for highway gasoline and diesel have a substantial impact on individual energy expenditures. If a household used 1,000 gallons of fuel annually, their expenditures would range between $1,400 and $1,700 depending upon exact fuel prices. This is roughly equal to the amount spent on thermal energy and not quite twice the amount spent on electricity.

Alaskan natural gas prices are expected to stay relatively level through the early 1980s, for a special reason. Currently the Anchorage area relies primarily on Cook Inlet natural gas to meet its thermal and electrical needs. Many 20 year contracts for this gas were initiated in the 1960s. The gas purchased today under these contracts is very low-priced (e.g., 18¢ to 25¢/MCF) compared with other energy sources. When these contracts expire in the mid-1980s, prices should rise to $2.00 to $2.68 per MCF.

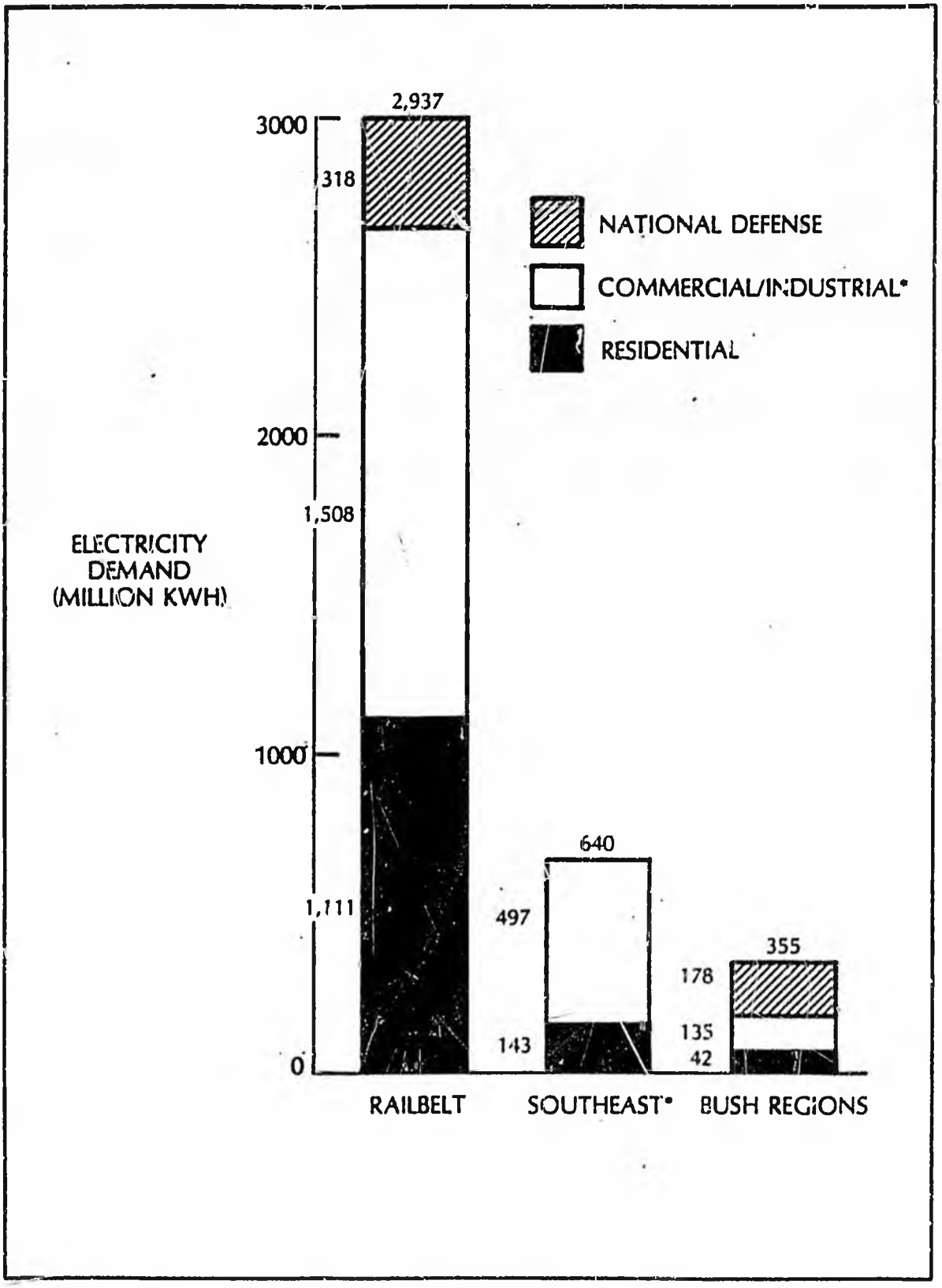
2. ELECTRICITY AND THERMAL ENERGY USE PROVIDE THE GREATEST OPPORTUNITY FOR NEAR AND MID TERM ENERGY COST SAVINGS

Electricity use currently represents the smallest portion of total state energy use. However, it represents one of the fastest growing uses, approximately 10 percent annually over the last decade. The commercial/industrial sector was the dominant user of electricity in each of the three regional groups (see Exhibit 5). That sector accounted for over half of the states total electricity consumption.

Although electricity costs for most Alaskans are low, bush region residents have very high power costs. Substantial improvements can be made in the efficiency of electricity generation in the bush regions. There are two ways that these high costs can be mitigated:

- Fuel Substitution--Wind power, hydropower, and fossil fuels have the potential to generate electricity at a lower cost

EXHIBIT 5
ELECTRICITY USE BY SECTOR



* COMMERCIAL/INDUSTRIAL SECTOR INCLUDES NATIONAL DEFENSE PURCHASES
SOURCE: APPENDIX I-A, STATE ENERGY BALANCES

- Increased Generation Efficiency--costs can be reduced by improving maintenance and operating procedures and more efficiently matching generator size to electricity demand.

There is substantial incentive to explore fuel substitution possibilities, since many technologies look to be attractive even under modest fuel escalation assumptions (Exhibit 6). As the exhibit illustrates, small wind machines with installed costs of $5,000 per KW, running at a capacity factor (C.F.) of 25 percent, would be competitive with diesel generators today. Despite the initial attractiveness of fuel substitution options, the feasibility of substituting alternative fuels and technologies for diesel oil are severely limited by resource availability and the small scale of village electricity demand. The actual cost effectiveness of these alternatives must, therefore, be determined on a community by community basis.

Diesel generator efficiency can be increased by improved maintenance and by matching generator size with electrical demand. Exhibit 7 shows the wide variation in electrical generator efficiency in the bush regions. Achievement of efficiencies above 30 percent would be an ambitous, but beneficial the goal for all local utilities. For those utilities with operating efficiencies below 20 percent, such improvements could result in fuel cost reductions of up to 50 percent. Commensurate consumer savings would follow. Generator maintenance may be improved through state sponsored training and outreach programs. The state can also help in matching generator size with demand.

The most cost effective method of matching generator size with demand is to down size the diesel generators. This option, where feasible, will be more attractive on a purely economic basis than increasing total system demand through construction of a relatively expensive intertie system -- costs range from $40,000 to $90,000 per mile depending upon system type and location. This results from the fact that the maximum efficiency of a small--less than 5-10 MW--intertie system, before transmission losses, is not significantly better than a set of well run independent diesels.

If an ntertie system could create a concentration of demand large enough to warrant a power plant fired by inexpensive non-oil fuels it may prove economical. In that case, fuel expenses may be decreased enough to justify the expense of an intertie system. The major problem with this

EXHIBIT 6
INDIFFERENCE PRICES
CAPITAL COST OF ALTERNATIVE TECHNOLOGIES TO COMPETE WITH DIESEL GENERATION IN THE BUSH REGIONS

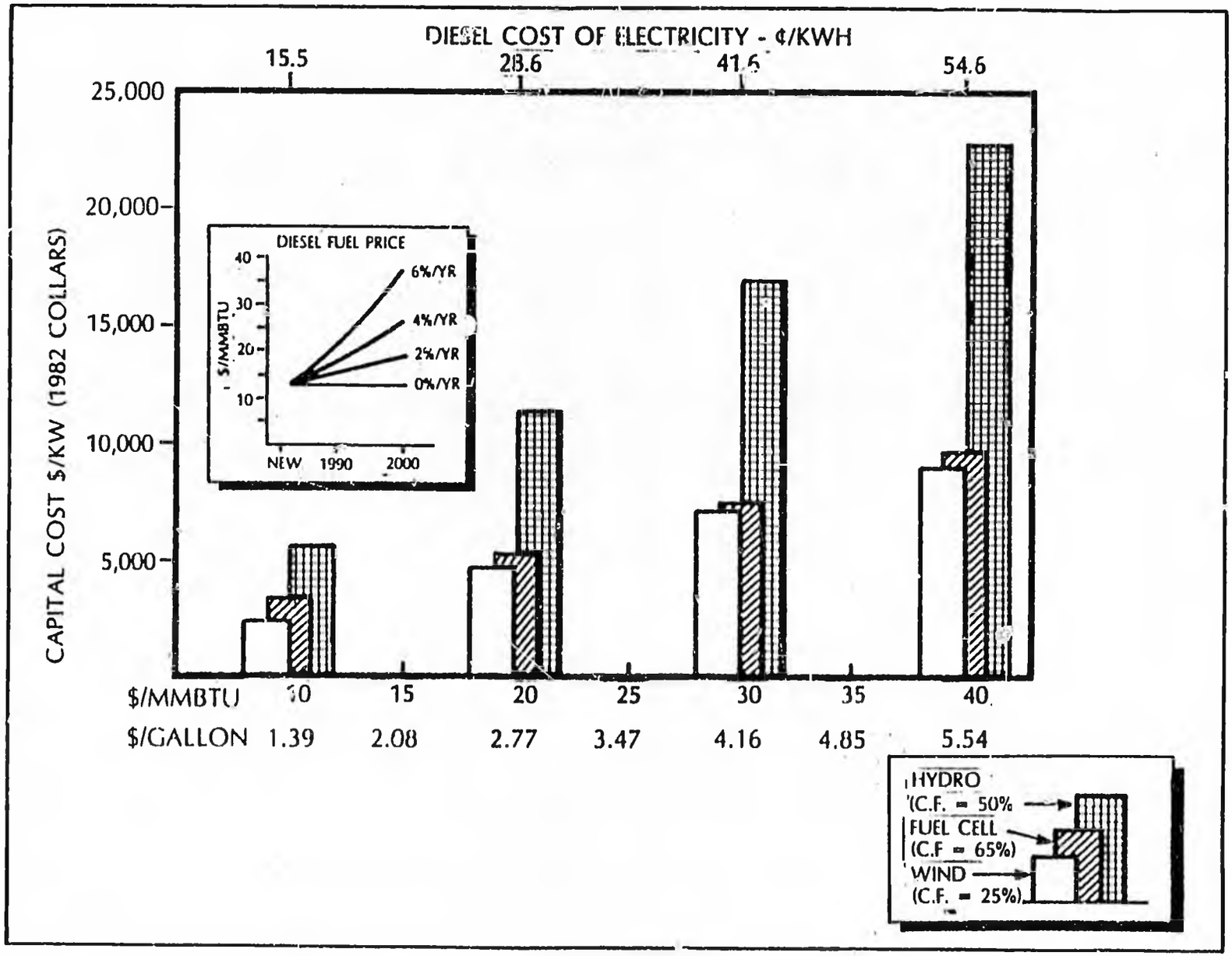
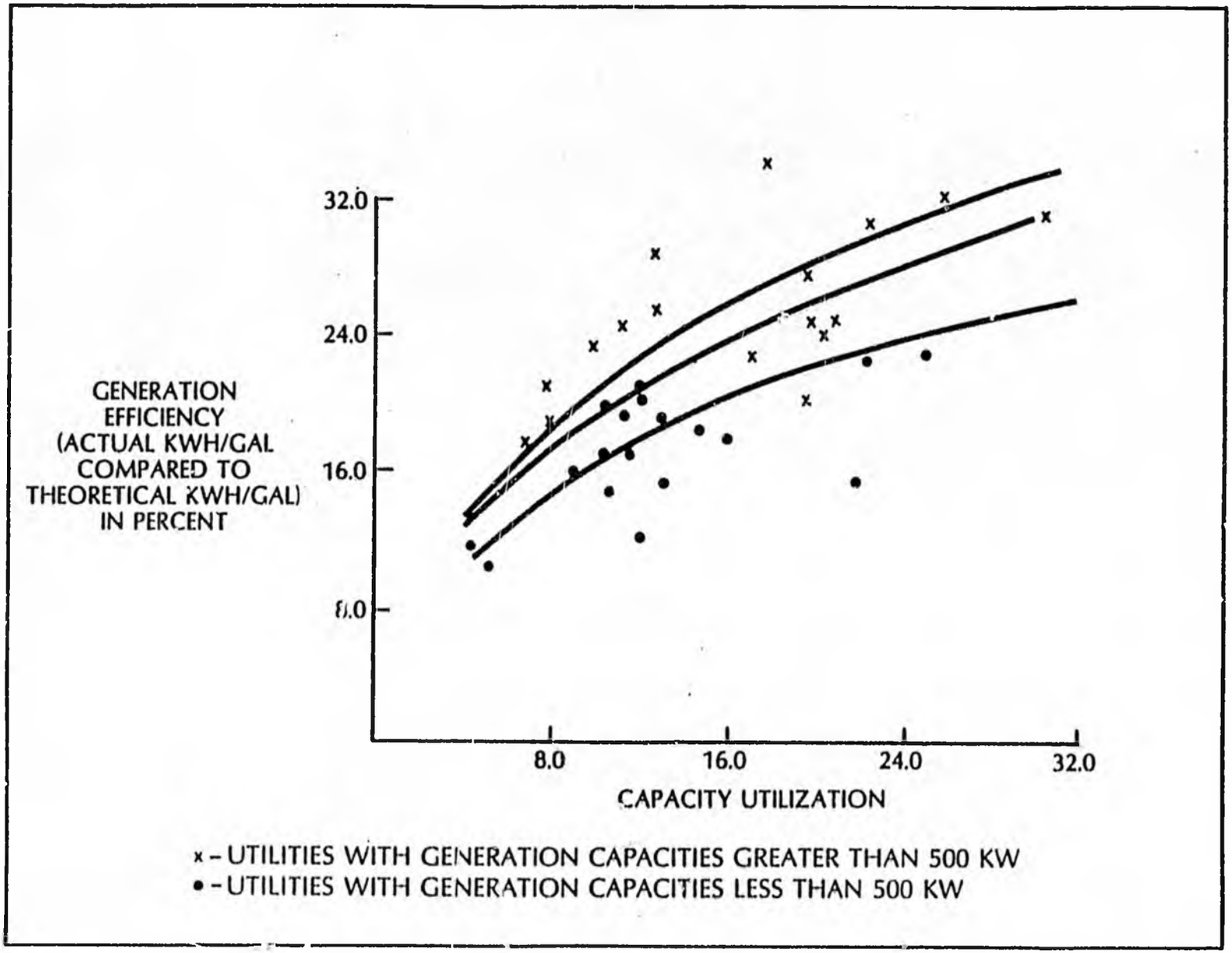


EXHIBIT 7
CAPACITY UTILIZATION IN BUSH REGIONS



option is finding the necessary scale of demand. A 10 MW plant could serve a community network with aggregate average demand of 6 or 7 MW. This size plant would require a supporting population of over 40,000 people at current electricity utilization rates, which is well in excess of current concentrations of population. While intertie systems may not be attractive from an economic standpoint, they may offer significant non-economic, social and institutional benefits.

The state's thermal energy needs are met principally by oil and natural gas. Both the quantity of energy used and the mix of fuels differs substantial by region (see Exhibit 8). The Southeast and bush regions rely primarily on oil for meeting thermal energy needs, while oil, natural gas and electricity are all used in the Extended Railbelt Region.

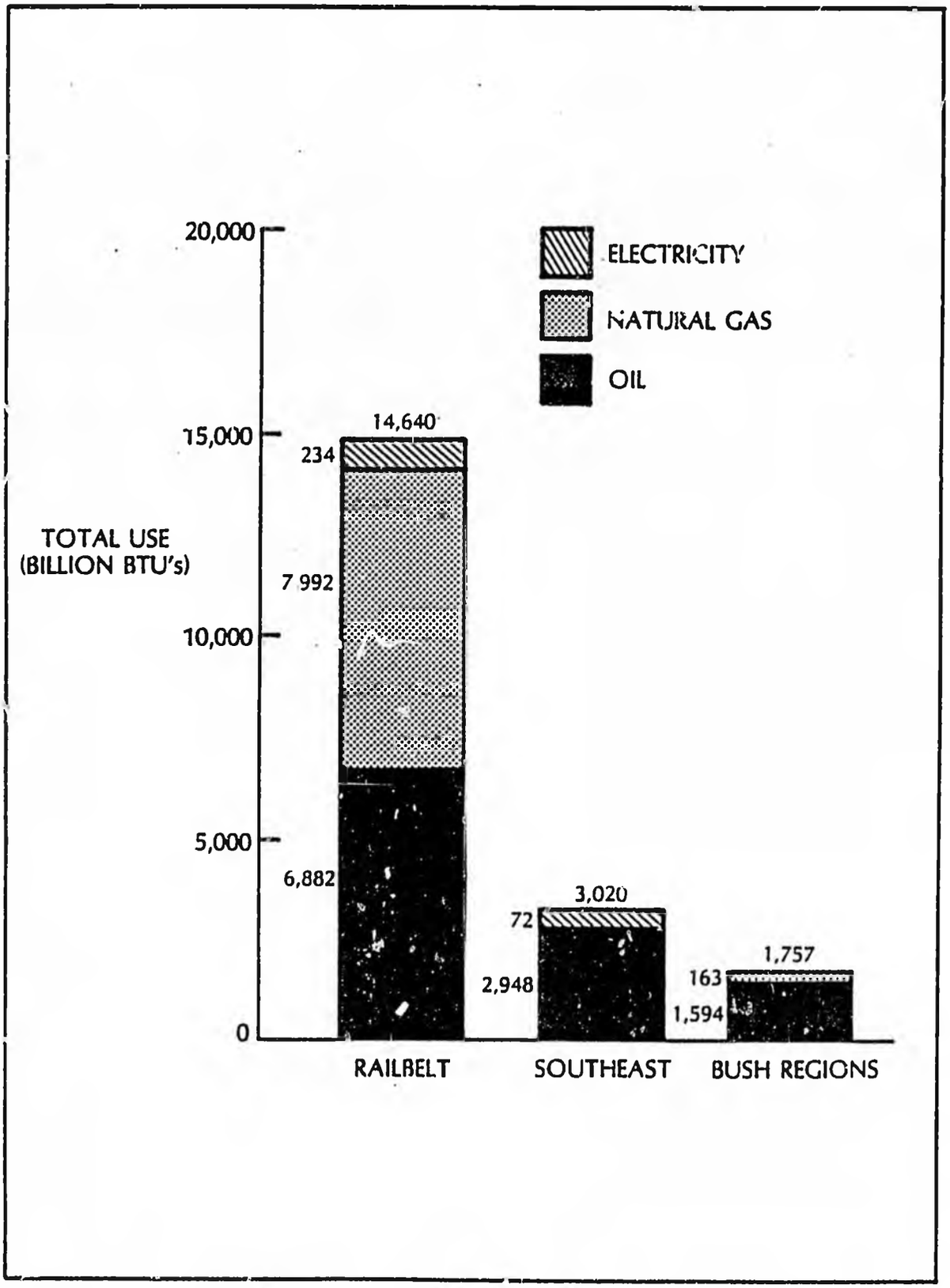
Thermal energy efficiency in Alaska's existing buildings is low relative to today's construction practice. Three elements affect the overall cost of meeting thermal energy needs in residential and commercial buildings:

- The fuel--cost and energy content
- The building shell integrity--thermal gain and loss characteristics
- The fuel conversion unit (e.g., furnace)--cost and efficiency.

Where fuel is expensive, as it is in the bush regions, there is substantial incentive to substitute fuels and/or improve conversion efficiency and building shell integrity. For those consumers who use low-cost natural gas or low cost electricity--primarily in the Railbelt and Southeast regions--the incentive to substitute fuel sources or increase efficiency is low. As energy prices rise in the late 1980s and early 1990s, however, more efficient technologies such as waste heat recovery and heat pumps--which have proven successful during a one-year demonstration in Juneau and Ketchikan--will be introduced, particularly as diesel costs rise in the Southeast.

Thermal losses in Alaska's buildings can be reduced from 10 to 30 percent or even more in rural areas. In many cases an expenditure of $300 will result in a 10 percent reduction in building energy use and savings of $180 annually; while a reduction of 30 percent and savings over $500 annually, can be achieved with expenditures of $1000-$2500 per building. The

EXHIBIT 8
RESIDENTIAL THERMAL DEMAND BY ENERGY SOURCE



SOURCE: APPENDIX I-A, STATE ENERGY BALANCES

relative effectiveness of a variety of conservation and alternative energy measures is shown in Exhibit 9. Information from current state audit programs will be used to confirm and refine these estimates for use in next year's plan.

Substantial advances have been made in furnace and heating technologies during the last decade. For Alaskans, improved oil furnaces, natural gas furnaces, and wood stoves can result in immediate cost savings. For example, a 30 percent improvement in furnace efficiency, offered by advanced natural gas and fuel oil furnaces can save $500-$1000 per residence.

3. WHILE ALASKA'S ENERGY SUPPLIES ARE PLENTIFUL IN THE NEAR TERM, PROJECTED GROWTH IN ELECTRICITY CONSUMPTION DICTATES IMMEDIATE CONSIDERATION OF SUPPPLEMENTAL ELECTRICAL SUPPLIES

In light of the projected price trends and regional energy use patterns discussed above, Alaska's overall energy demand is expected to grow moderately during the coming years. The projected growth rates vary by region:*

- In the Extended Railbelt - electricity demand is projected to grow at 3.5 percent annually; thermal energy demand will increase about 2 percent per year. Transportation fuel demand will increase at slightly less than 0.5 percent per year and feedstock demand is projected to remain constant, since no new projects are assumed to be built.

- The Southeast - should experience slow thermal energy demand growth (less than 1 percent per year), and strong growth in electricity demand (about 4 percent per year) and transportation fuel demand (about 1.5 percent per year).

- In the Bush - thermal energy demands will grow by less than 1 percent per year, while demand for electricity should increase by 7 percent per year and transportation fuel demand should increase by about 1 percent per year.

Electricity consumption is expected to grow more rapidly in the bush and Southeast regions than in the Extended Railbelt, because less electricity is currently used per capita in those regions, and even small increases in population growth and appliance usage will result in significant percentage increases.

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*Source: Battelle, "Historic Oil and Gas Consumption and Projections through the Year 2000," for the Department of Natural Resources.

EXHIBIT 9

COMPARISON OF EQUIVALENT ENERGY COST FOR SELECTED CONSERVATION/END-USE TECHNOLOGIES

TECHNOLOGY	EXAMPLE LOCATION	TYPICAL INITIAL INSTALLED COST	EXPECTED LIFETIME (Years)	ANNUAL PRIMARY ENERGY SAVINGS (Mil. Btu/Yr.)	BASIS OF ENERGY SAVINGS	LEVELIZED ANNUAL ENERGY COST $/Mil Btu
Attic insulation and weather stripping owner	Anchorage	$ 300	25	20	10% of base 200 MCF gas/yr.	$1.90
Insulation/storm windows, etc. (high level)	Anchorage	$2,500	25	82	30% of base 200 MCF gas/yr.	$5.20
Weatherization package for rural housing projects	Small, remote village	$1,000/house	15	42	25% of base 1,200 gal oil/year	$3.50
Advanced oil fired boiler for a house	Juneau	$1,000 (incremental cost over std. unit)	15	36	20% of base 1300 ga. oil/yr.	$4.10
Wood stove using free wood	Skagway/ Southeast	$ 900	10	137	75% of base 1300 gal. oil/yr.	$1.20
Wood stove using purchased wood @ $50 cord	Skagway/ Southeast	$ 900	10	137	75% of base 1300 gal. oil/yr.	$6.20
Passive solar (250 sq. ft. direct gain system	Fairbanks	$3,750	20	28	20% of base 1500 gal. oil/yr. (assumes a super insulated house)	$17.90
Generator waste heat recovery	Small rural village with 100K diesel generator	$100,000	20	1400	Supplies 100% of heat for local 20,000 sq. ft. school (or 10,000 gal. oil/yr. savings	$9.60

Notes:

1. Discount rate assumed is 12%.
2. Maintenance and other operating expenses assumed to be small compared to cost savings.

Electricity consumption in the Extended Railbelt is projected to increase modestly in the absence of major economic developments. Yet even under this condition, major capacity additions will be required in the early 1990s, unless effective load management can be undertaken to increase capacity utilization rates.

Alaska's total energy resources are sufficient to easily meet projected needs well into the 21st century. However, it is not yet clear how these resources will be used to satisfy future needs. During recent years, growth in natural gas use has far outstripped growth in petroleum use. During the last decade, petroleum use has grown at 5-6 percent annually, while natural gas use has grown substantially faster--averaging 9-10 percent annually. These figures reflect the rapid population and energy use growth in the South Central region, where natural gas is the leading fuel.

Despite substantial future price increases, such as those discussed above, natural gas is likely to remain the fuel of choice in the South Central region to meet thermal needs and provide for peak load electricity generation. Hydropower and coal-fired power plants are the most attractive options for baseload power generation in this region due to the long term availability of coal and hydro resources. Natural gas prices would have to rise to at least $10 per MCF before power generation alternatives such as hydropower become economically attractive, or before fuel oil or coal-generated electricity replace natural gas for space heating. Wood at nominal prices may be competitive with natural gas for home heating; commercially sold wood may be competitive if wood prices can be kept below $40 - $50 per cord as natural gas prices rise in real terms.

Given the economic attractiveness and convenience of natural gas for meeting thermal and electrical needs, there is only one factor that may inhibit its future use: the adequacy of Cook Inlet reserves. The Alaska Department of Natural Resources conducts an annual forecast of the likely future trends in oil and natural gas demand and supplies. Results of that study indicate that sufficient Cook Inlet reserves exist to supply the South Central region until the year 2000, provided that:

- New coal or hydropower generation plants are used to meet future electricity demands

- No additional Cook Inlet reserves are used commercially except for ammonia/urea production at historic levels, Tokyo LNG at existing production levels, and Pacific LNG Phase I at planned levels.

If these conditions are met, current reserves could very well exceed demand through the year 2000. A shortfall of approximately 13 percent--about 500 billion cubic feet or approximately 2 1/2 years consumption--of current reserves will occur, however, if natural gas is used for expanded electric power generation. While Cook Inlet reserve production ratios are declining rapidly, there may be substantial additional reserves in the region. Estimates of undiscovered recoverable reserves in the South Central region range from 7 to 50 TCF.

These factors lead to the conclusion that the major pressure to reduce natural gas use will be to mitigate the impact of price increases, rather than the need to extend supply through the year 2000. Such price pressure may not be severe when compared to natural gas prices in the lower 48 states, or to the costs of thermal energy alternatives in the South Central region and the rest of Alaska. However, efforts must be undertaken now to assure that alternatives to natural gas exist for electricity generation and to encourage residential natural gas users to anticipate the price shocks through conservation.

Oil production on lands where the state has a royalty interest is expected to decline more than 50 percent by 1997. Total statewide oil production averaged 1.6 million barrels per day (BPD) in 1980. North Slope production accounted for 1.5 million BPD; while the remainder was produced in the Upper Cook Inlet. Overall, oil production on those North Slope lands in which the state holds at least a partial royalty interest is expected to peak at about 1.7 million BPD in 1990. At the peak, production from the Lisbourne, Flaxman Island and Point Thompson reservoirs will offset declines in the Sadlerochit Reservoir. After this peak, production is expected to decline to about 725 thousand BPD in 1997. At the same time, Cook Inlet production will decline to 14,000 BPD by 1997. The major impact of the decline in oil production will be felt in state revenues, rather than on the availability of petroleum products in the state. Sufficient west coast refinery capacity and the likelihood of increased oil production on non-state lands will likely assure sufficient supplies.

In addition to oil and gas, Alaskans use solid fuels such as coal, wood and peat, as well as renewable energy sources

such as hydropower and wind. Vast amounts of these resources exist in Alaska; however, together they supply only six percent of Alaska's current energy needs. This percentage will increase as the costs of existing energy supplies increase.

The transition to alternative energy sources is hampered by a number of factors:

- Not enough is known about regional resource quantity, quality and expected extraction and delivery costs
- Distances between known energy sources and centers of use may be substantial
- Limited, small-scale demand makes economical large-scale resource development unfeasible

The importance of these factors varies dramatically by region.

- In the Bush regions, where less costly energy alternatives are badly needed, little is known about the quantity, quality and costs associated with alternative energy sources. In addition, there is a mismatch between the scale of energy demand and the scale required for local commercial development of alternatives.
- In contrast, the Railbelt regions has abundant supplies of coal, hydropower, and peat as well as demand sufficient to support the large-scale extraction, delivery and conversion. However, the economic attractiveness of these alternatives are not fully determined.
- In the Southeast region, where current energy costs vary dramatically, the costs of extracting, delivering, converting and transmitting alternative energy sources are high.

Making these resources economically viable require an understanding of the range of technologies available to meet Alaska's energy needs. This subject is addressed in the following section.

4. ANALYSIS OF ALASKA'S CURRENT AND FUTURE ENERGY SITUATION POINTS TO A NUMBER OF STATE-SPONSORED ACTIVITIES THAT COULD HELP ALASKANS MEET FUTURE ENERGY NEEDS AT THE LOWEST POSSIBLE COST

Given current data limitations and the limited operating experience of many research development and demonstration projects, it is impossible to chart an all-encompassing long-term course at this time. There is sufficient information available, however, to support a number of low-risk, high-payoff activities. In addition to these activities the state can seek additional information to estimate the benefits and costs of other programs more accurately. Five specific recommendations are highlighted to help the state determine how Alaska's vast energy resources can be most effectively used to meet future needs.

(1) Determine The Attractiveness of Hydropower Projects and Fossil Fuel Power Plants for Satisfying Future Electrical Generating Requirements

In the Extended Railbelt and in some Southeast communities, electricity demand is projected to increase enough to require the addition of substantial new electrical generation capacity. The major generation alternatives are:

- Hydropower projects
- Coal-fired steam power plants
- Residual oil-fired steam power plants.

Hydropower projects and fossil fuel power plants represent two fundamentally different types of long-term generation alternatives:

- Hydropower Projects--have high construction costs but no fuel costs and relatively low operating and maintenance requirements, as a percentage of installed capital cost.

- Fossil Fuel Power Plants--have lower construction costs but substantial fuel costs and relatively high operating and maintenance costs.

Three major factors drive the variability of hydroelectricity prices, as shown in Exhibit 10:

- The size and location of the project. The upper panel of Exhibit 10 shows the variability in the price of hydroelectricity for four randomly selected hydroelectric projects. The prices shown assume the Governor's proposal for capital recovery of the initial investment.* Some projects (e.g., Tyee Lake) have high prices in the early years, but prices remain relatively flat as demand for electricity keeps pace with inflation adjusted operating costs. Other projects (e.g., Terror Lake) have very competitive electricity prices in the early years, but prices escalate rapidly in later years as growth in demand lags the inflation rate.

- Policies regarding recovery of capital. The middle panel of Exhibit 10 illustrates the variability in electric prices over time as a function of the financing assumptions used. In the example, electricity prices are relatively flat over time under the Governor's capital recovery proposal, but they increase dramatically if the state decides to earn a real return on the money invested.** If the state demands a real return on the capital invested in hydro projects, the price of electricity could triple over 30 years--which would double the price of electricity in later years compared to the Governor's proposal.

- Assumptions about growth in demand. The lower panel of Exhibit 10 shows the effect of demand growth rates on the price of electricity. The high demand case (4 percent annual growth through the year 2015) reflects the historic growth in demand from 1976 through 1980. The high demand case produces lower prices because the greater

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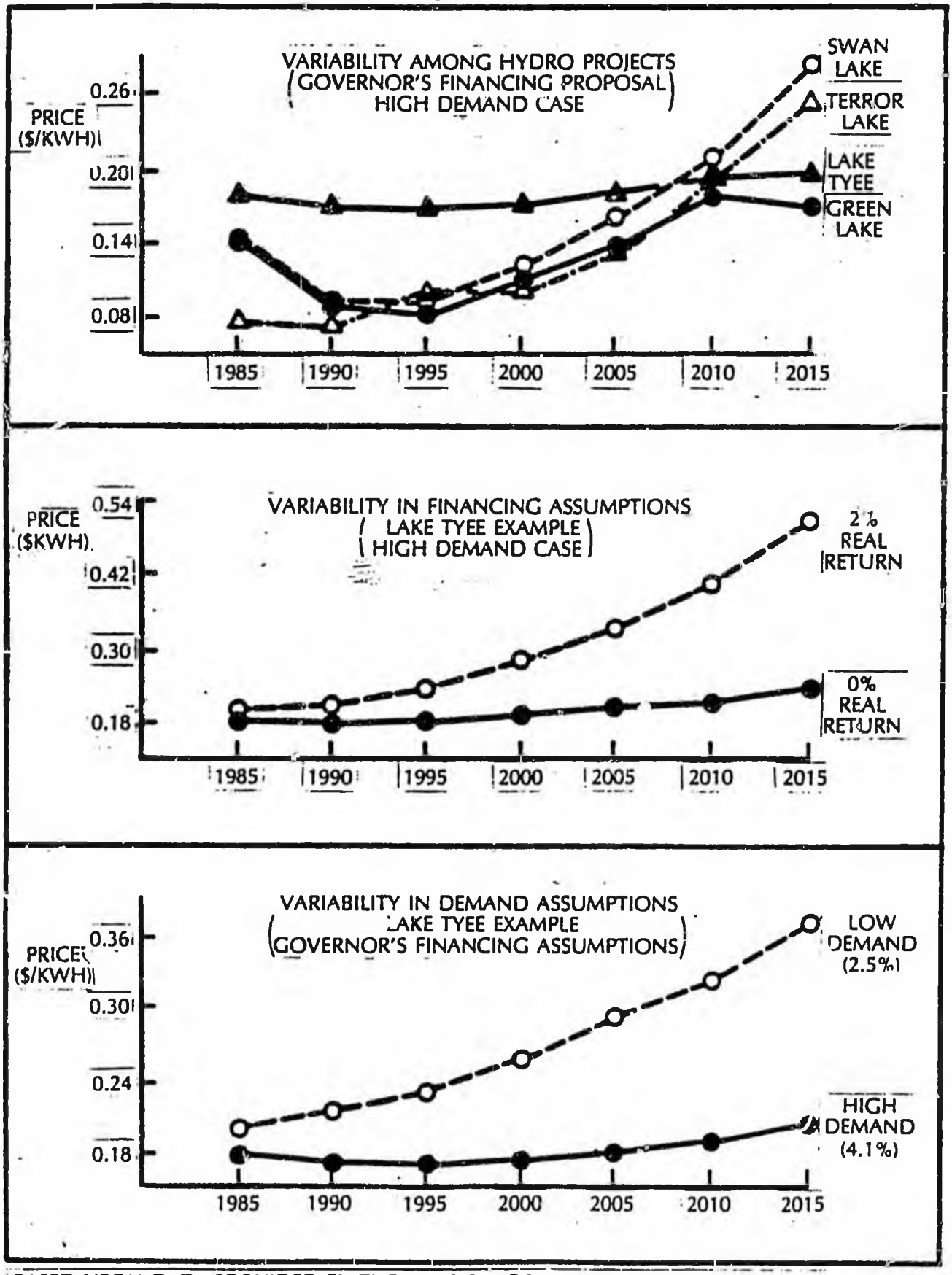
*The Governor's proposed capital recovery approach is a 33 year repayment of the initial investment, plus an inflation adjusted annual repayment of capital based upon the average inflation rate during the preceding 20 years, plus repayment of O&M expenses.

**For example, the state may decide to require a return on hydroelectric projects that equals the return achieved by investing the money in market securities. In today's markets, even "riskless" securities (e.g., Treasury Bills) provide a return greater than inflation.

EXHIBIT 10

FACTORS THAT DRIVE HYDROELECTRICITY IN ALASKA*



*BASED UPON DATA PROVIDED BY THE DIVISION OF BUDGET AND MANAGEMENT, OFFICE OF THE GOVERNOR

volume of KWH hours is spread over the same fixed costs. The low demand case (2.5 percent annual growth) reflects the projections of demand growth provided in the feasibility study of Lake Tyee. As can be seen from the lower panel of Exhibit 10, the price of electricity could double by the year 2015, should demand for Lake Tyee hydroelectricity grow at 2.5 percent rather than 4 percent.

Thus, hydropower projects may reduce the risk of escalating fossil fuel prices, but they reduce planning flexibility and are more costly in the mid-term. Even though hydropower projects insulate future consumers from the possibility of high future fossil fuel prices, they represent a substantially higher cost alternative in the near- and mid-term. This situation is illustrated in Exhibit 11.

For comparison purposes, hydro electricity prices are assumed to range between 10¢/KW and 20¢/KW--similar to the range for the four projects shown in Exhibit 10--between now and the year 2000. The range is shown as a shaded band in Exhibit 11. Currently, all of the fossil-fired generation alternatives, except diesel, compare favorably with projected hydro electricity prices. The relative attractiveness of the fossil-fuel alternatives diminishes by the year 2000, if substantial real rates of price escalation are assumed. However, as shown, coal-fired, steam-electric plants are likely to remain an attractive alterntive to hydropower plants even with substantial price increases.

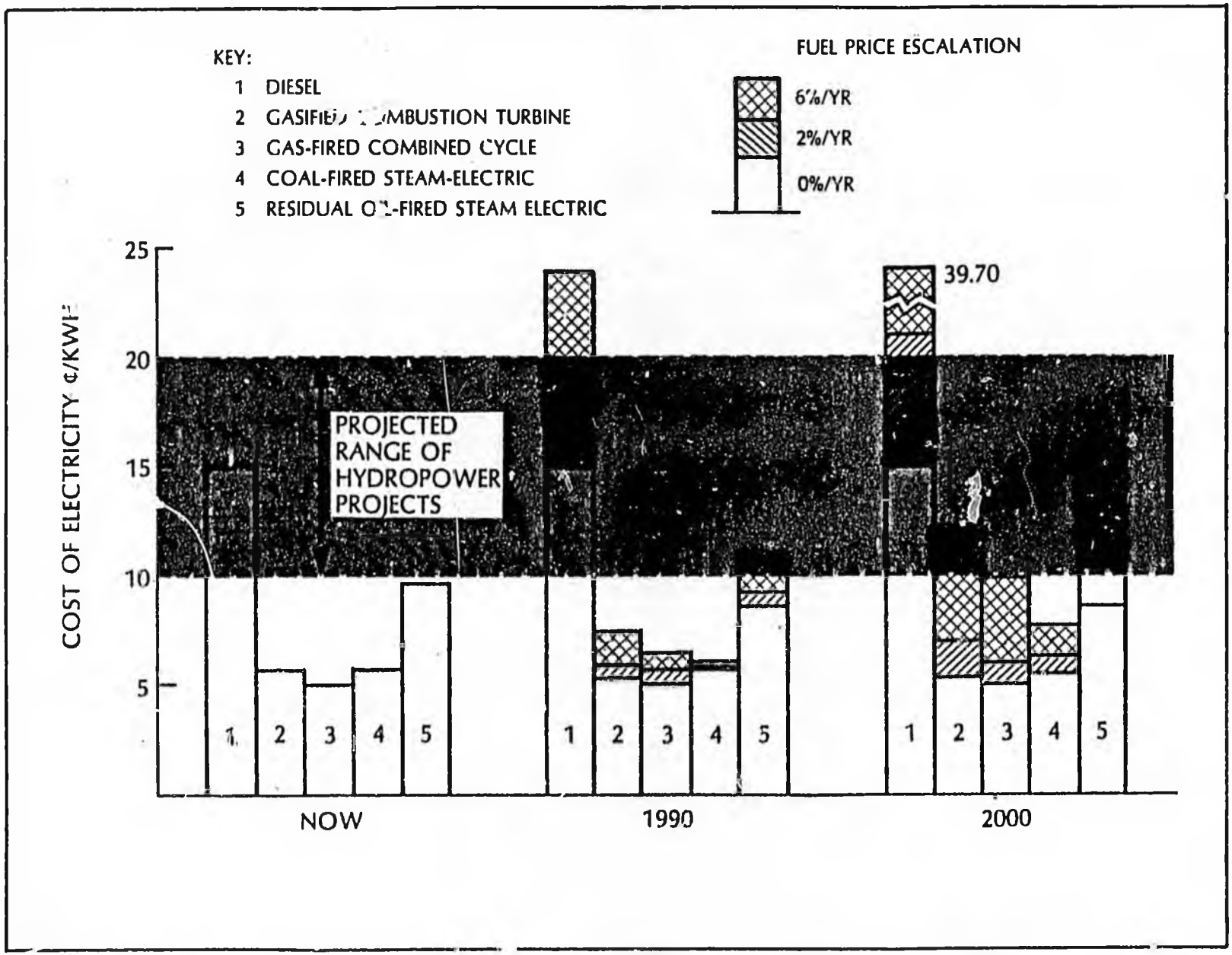
Viewed from the present, conventional power plants represent a less risky investment for the state, because less current money is spent and near-term electricity costs can be reduced to a level below both the diesel and hydro alternatives. However, if one believes that conventional fuel costs will escalate rapidly for a substantial period of time, the conventional options may be riskier, because they would expose Alaskans to the risk of escalating fuel prices.

(2) <u>The State Must Move Quickly to Determine the Economic Viability of Alternative Energy Resources to Lower Energy Costs in the Bush Regions</u>

Energy costs in the bush are high and likely to escalate even higher during the late 1980s. Many resource

EXHIBIT 11

COMPARATIVE COST OF ELECTRICITY FOR CONVENTIONAL TECHNOLOGY OPTIONS ¢/KWH IN CONSTANT 1982 DOLLARS



SOURCE: BOOZ, ALLEN & HAMILTON ESTIMATES

options appear to offer lower costs than diesel fuel. The state is already moving to develop these alternatives. However, the state should focus more precisely on:

- Determining the costs of extracting and delivering alternative fuels to bush communities, in order to establish economic distances and quantities for resource development

- Determining the quantity and quality of the energy resources within economic distances of the rural communities.

The purpose of these efforts should be to determine the viability of energy resources for individual communities or groups of communities, rather than to simply document the statewide energy resource base.

(3) The State Should Increase Energy Conservation and Energy Efficiency Activities to Meet Near-Term Energy Needs

Over the next five years, substantial reductions in energy use with corresponding reductions in energy expenditures can be achieved through relatively simple energy conservation actions. These improvements are applicable to meeting thermal and electrical needs in all regions of the state. The cost-effectiveness of the measures differs substantially among climate and fuel types.

Specific programs and types of activities include:

- Energy audit and conservation programs can reduce residential thermal losses by up to 40 percent. Average household savings would range between $400 and $800 annually. It is estimated that total energy savings of between $10 and $20 million per year could be achieved with a state investment of less than $100 million in state funds (assuming the state purchases and installs the conservation measures).

- Increased Generating Efficiency of Small Diesel Power Plants can reduce fuel use by as much as 35 percent. Estimated savings for a typical rural household range from $200 to $400 annually, assuming all reductions in fuel costs are passed on to consumers.

- Substitution of advanced fuel oil and kerosene heaters. These heaters can be up to 95 percent efficient, compared with currently popular "drip" oil furnaces which have efficiencies below 50 percent. Shifting to the advanced furnaces can reduce fuel use by 25 to 50 percent and reduce total fuel costs in the average home by roughly $900 per year. If other conservation measures are incorporated in the home first, a new furnace would save only $600, but the total heating bill would be reduced from approximately $2300 to below $1000 as a result of both energy conservation and improved furnace efficiency.

State sponsored demonstration projects must focus on establishing the expected economic performance of those alternative technologies with the greatest promise for meeting mid-term energy needs. At present many efforts are underway to demonstrate the feasibility of alternative technologies in the unique Alaskan environment. These efforts must be viewed as a test of the potential economic attractiveness of the technologies, in addition to demonstrating their technical feasibility. Economic performance criteria must be met or exceeded before technologies and projects receive further emphasis.

(4) Existing State Energy Policies and Programs Must be Assessed to Assure That They Effectively Address the Most Critical State Energy Problems

Alaska has greatly expanded its energy policies and programs over the past few years. Major emphasis has been placed on establishing programs and providing funds for specific energy projects and to directly minimize the impacts of rising prices. The intent of most of these actions is clear; to develop renewable energy resources--primarily hydropower, to assist in the electrification of rural Alaska and to equalize the burden of higher energy prices for all Alaskans.

In many cases the impacts of these programs have not been felt, since most have been in existence for less than two years. The lack of experience makes it difficult to assess the relative effectiveness of the different policies in encouraging the use of Alaskan resources to meet at the lowest reasonable cost, Alaska's thermal, electric and transportation energy needs. However, it is possible to

establish a framework for this assessment to provide insights into how effective alternative policies are likely to be.

As highlighted earlier, the types of energy problems facing Alaskans can be reduced to basically three types:

- High costs and/or prices--resulting in high levels of energy expenditures
- Resource exhaustion and capacity constraints--leading to future energy shortages
- Supply vulnerability and reliability--causing short-term emergencies.

Given this structure, it is possible to identify the existence, location, timing, cause and severity of energy problems. For example, the major energy problems identified in Chapters I and II include:

- <u>High costs and/or prices which are</u>:
  - Current electricity costs in the bush
  - Current fuel oil prices in the bush
  - Current electricity costs in rural Southeast Communities
  - Mid to long term natural gas prices in the South Central region
- <u>Resource exhaustion and/or capacity constraints, which are:</u>
  - Cook inlet natural gas in the long term
  - Long-term electrical generation capacity in the Extended Railbelt
  - Long-term electrical generation capacity in the urban areas of the Southeast
- <u>Supply vulnerability and reliability, which are:</u>
  - Current fuel supplies to bush communities

- Reliability of current electrical generation and distribution in the bush.

Existing and proposed state polices can be quickly assessed to see which type of problem they address, and their relative effectiveness in solving specific energy problems can utilimately be evaluated.

For example, the Power Cost Assistance Program subsidizes 95 percent of the price of electricity above 12¢/KWH but not exceeding 45¢/KWH. This program was initiated to minimize the hardship of transition from expensive diesel generated electricity to cheaper alternatives. In so doing, however, the symptom is being treated rather than the cause--which in itself is not an improper policy goal--but the likely outcomes of this program may not encourage the required increased generation efficiency or the subsitution of lower cost generation alternatives.

As illustrated in Exhibit 12 and explained more fully in Chapter IV, a consumer's electrical bill may in fact rise as a result of this subsidy program. If a customer was at point A paying 45¢/KWH and consuming 840 KWH annually, the total bill would be approximately $380. With the subsidy, however, the customer may move to point B where his effective price would be roughly 14¢/KWH and annual consumption would increase to approximately 6000 KWH. If this were true the state would pay a subsidy of 31¢/KWH for all 6000 KWH consumed, or nearly $1900 annually. If the customer desired to keep total electricity expenditures constant--$380 annually--consumption would only rise to 2700 KWH. At that level the state subsidy would be approximately $850 annually. Because of the substantially lower effective price faced by the consumer, demand is likely to increase significantly over time and the state may end up with an expense as large as $2000 per customer annually.

Clearly, this is an expensive way for the state to mitigate the impacts of higher diesel fuel prices and encourage increased electricity use in the bush, since inefficiencies develop when consumers do not base their decisions on actual costs of production.*

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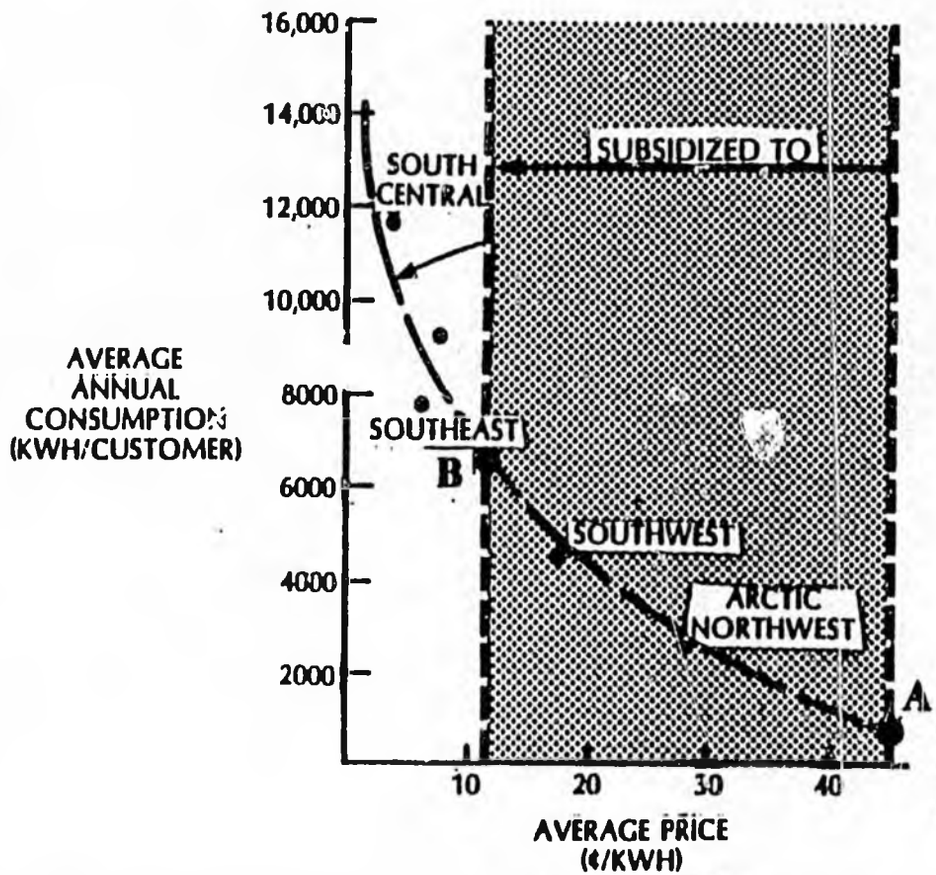
*It must be noted that increased electricity sales may result in improved diesel utilization which would have a beneficial impact on unit costs. However, this impact is expected to be very small relative to the total state subsidy.

EXHIBIT 12

COMPARISON OF RESIDENTIAL ELECTRICITY PRICES AND USE



FOR A "TYPICAL" COMMUNITY

PRICE (¢/KWH)	QUANTITY (KWH/COST.)	ANNUAL COST ($/CUSTOMER)
5.0	10,280	515
10.0	7,300	730
12.0	6,500	780
15.0	5,560	830
20.0	4,320	860
30.0	2,580	770
45.0	840	380

AFTER SUBSIDY APPLIED:

- CUSTOMER BILL INCREASES FROM $380 TO $780
- SUBSIDY PAID BY STATE EQUALS $2015 ($0.31/KWHX6500 KWH)

REGRESSION EQUATION: Y = 17,200-4300 LN (P); $R^2$0.71

SOURCE: AP ADMIN.; REGRESSION BASED UPON DATA FROM OVER 70 COMMUNITIES

Because of the state's third party payment, consumers will not see the total electricity consumption and utilities would see little decline in sales if they raised prices up to 45¢/KWH. In that sense the test of the marketplace is removed from the transaction between utilities and their customers. Less pressure exists for utilities to be productive and for consumers to be efficient in their electricity consumption.

Similarly, inefficiencies may result, and the state would not achieve the lowest costs possible, when one electrical generation source--hydropower--is given favorable financial treatment over another alternative--coal. As was discussed above, a coal-fired steam power plant may be the lowest cost near term alternative source of electricity. However, if hydropower projects received subsidized financing--i.e., less than the market rate of return--hydroelectricity may actually be "priced" more cheaply than electricity generated from coal. This lower "price" results not from lower "costs" of generation, but rather, from the subsidy being given to electricity consumers by the state.

As discussed above, if the probem being addressed is the lack of future electrical generation capacity in the Extended Railbelt and Southeast regions, all options should be evaluated on a consistent basis. If substantially different financing assumptions are used for each alternative, their true relative costs may not be fully understood and the state may undertake projects that do not provide the lowest energy costs.

(5) Next Year's Long Term Energy Plan Report Must Provide the Strategic Context for Energy Planning in the State

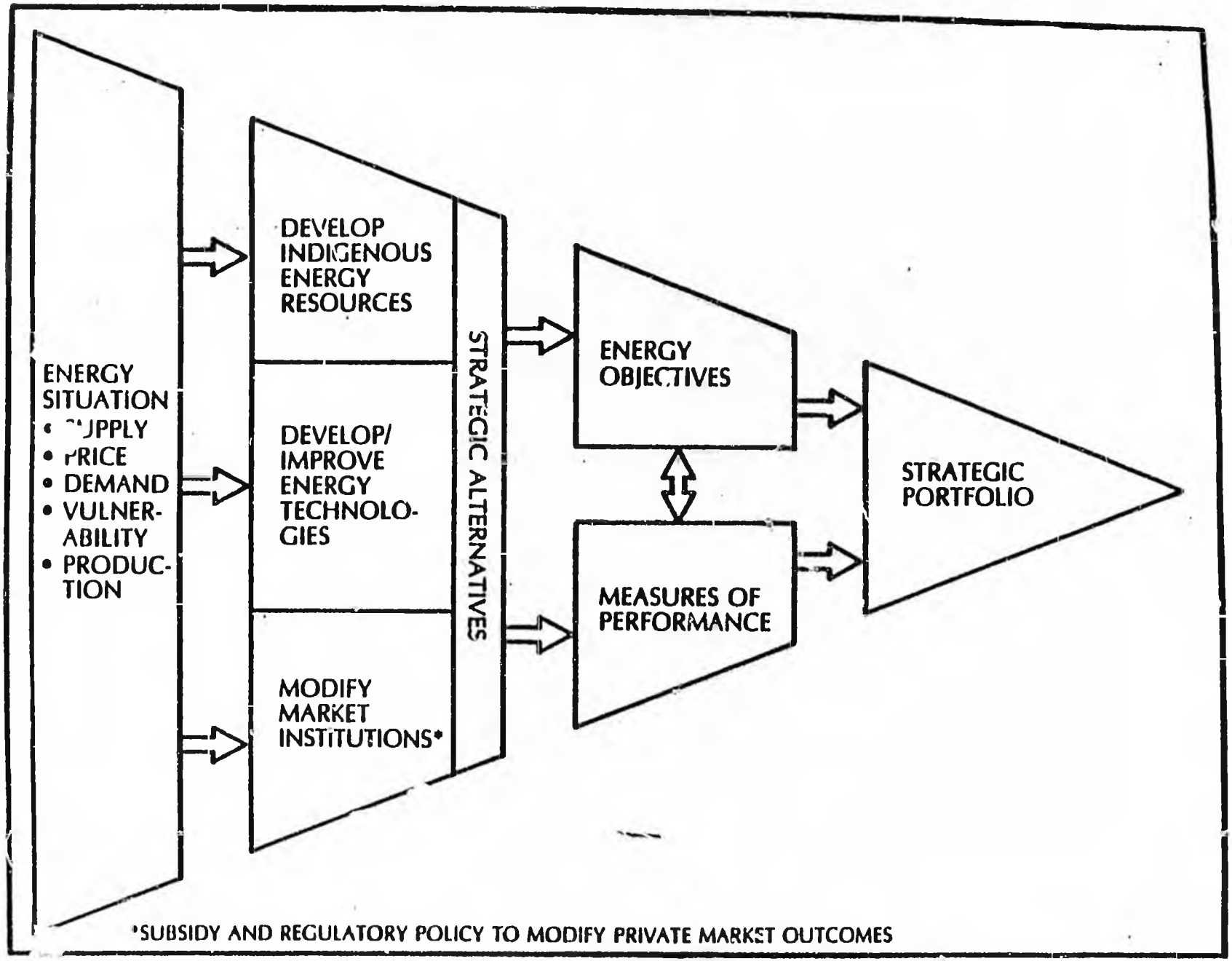
Many of the items addressed above emphasize the need for a statewide strategic energy plan. This years report addressed many of the requirements of a strategic plan, but it did so in an uneven manner due to data limitations and time constraints. Exhibit 13 illustrates the key elements of a strategic energy planning process for the state. The elements and their roles include:

- Energy Situation--which highlights the types of energy problems facing the state in the near, mid and long term

- Strategic Alternatives--which respresent the basic program and policy alternatives available to the state

EXHIBIT 13

STRATEGIC ENERGY PLANNING PROCESS



- Energy Objectives--which represent the consensus of Alaskans regarding the most desirable energy future for the state and are used to evaluate strategic alternatives

- Measure of Performance--which can be used as a basis for evaluating the performance of strategic alternatives

- Strategic Portfolio--which represents the "best" set of energy resource and technology development activities, as well as the most attractive subsidy and regulatory policies.

While each of these elements have been addressed to the extent possible in this year's report, substantial refinements are needed to produce a definitive 1983 report. The requirements for refining each of these elements during the next year are discussed more fully below.

- Analysis of Alaska's Energy Situation is Critically Dependent Upon the Development of a "Bottoms-up" Picture of Regional Energy Needs. Because of the variability in energy problems across the state it is necessary to define the energy problems and available strategic alternatives on a regional or community basis. Reliable regional data are necessary for the establishment of sound and effective programs which address the specific energy needs of each region. To date, much of the states energy use data has been collected independently within many private and government agencies and compiled at the statewide level, in turn, with regional estimates often derived from the aggregate state data.

  Regional data fabricated from statewide data are of limited usefulness when policy and program decision making requires a higher level of understanding as to what is actually taking place within each region. For example, to set reasonable program objectives for subsidizing rural electricity rates or for assisting in the purchase of bulk fuel storage capacity for rural communities, the state should have better information on the current energy needs of each rural community. Currently this information is sketchy at best.

These village specific and regional data needs could be vastly improved through the upgrading and expansion of DEPD's Rural Community Energy Survey. This survey could be modified slightly and supplemented by a regular field survey conducted by state energy personnel. The modified/supplemented DEPD survey would form the nucleus of a comprehensive state regional energy data base.

- Strategic Alternatives Must be Accurately Characterized. This year's, report provides estimates of the cost and energy savings for many of the resources and technologies under consideration. Actual data based on Alaskan experience is incomplete and needs to be improved. In addition, specific evaluations of the impacts of subsidy programs such as the Power Cost Assistance Program, discussed earlier in this chapter, should be undertaken to better understand actual program impacts.

- Greater Emphasis Must Be Placed on Clearly Specifying Energy Objectives and Developing Measures of Performance. Collectively, existing state energy programs implicitly define Alaska's energy objectives. However, without a more explicit definition of the State's economic and energy development objectives, a basis for resolving policy and program conflicts will not exist. Furthermore, without this definition the measure of whether or not a particular policy best meets the state's energy resource development and use needs are by definition impossible to measure. The net result is an under directed approach to program implementation with a high likelihood for misallocation of state resources.

- A Formal Evaluation Process Must be Undertaken To Establish the Relative Importance of the Strategic Alternatives. Currently, the state lacks a systematic approach for the review and prioritization of all energy programs and technology projects. To ensure the state funds are spent most effectively, it should develop and implement a consistent and economically rational methodology for evaluating and comparing energy programs and projects. The evaluation of energy programs, such as energy conservation grants, should take into account the following:

  - Program costs or expenditures including administration costs

- Program benefits or impacts either qualitative -- number of home receiving assistance and type of assistance received or quantitative -- the actual level of reduction in energy use.

Technical evaluations of projects such as wind machine demonstrations should include the following:

- Total costs of the project and the state's share
- Construction, operating, and maintenance costs
- Data on the project's performance and reliability.

Given this type of information, it will be possible to calculate expected energy costs and expected total energy impacts for different programs and projects. Their relative benefits and cost can be compared and they can be matched explicitly with state energy objectives.

The strategic planning process outlined above will provide the state with an objective system for assessing likely program benefits and evaluating program results. This planning process should involve an independent review of major programs and projects and should measure progress against clear quantifiable objectives.

The state's energy policy and program activities appear comprehensive -- covering all functional aspects of energy program planning and development. However, given the recent rapid increase in energy policy and program activities the state should undertake a consistent and economically rational approach for an evaluation of existing energy programs and projects with the objective of modifying them to more effectively meet overall state energy goals.

* * * * *

This section has presented the key findings and recommendations of the 1982 Report on the State of Alaska Long Term Energy Plan. The main body of the 1982 Report follows. It addresses each of the areas required in the legislation and is organized in the following manner:

- Chapter I - Current and Projected Energy Use--which examines the amount and purpose of energy use in the state and the prices of different energy sources.

- Chapter II - Energy Supplies and Resources--Which documents existing and projected energy supplies and their potential applicability for meeting projected energy needs and lowering energy costs

- Chapter III - Regional Technology Options--which presents an analysis of the potential energy savings for those technology options including conservation measures, that have the lowest costs for meeting near, mid and long term state energy needs

- Chapter IV - State Energy Programs and Policies--which reports on current state energy activities and provides recommendations for program modifications and additions, including those dealing with the possibility of energy emergencies.