

Introduced: 2/2/83
Referred: Finance

| | |
|----------------------------|--------------------|
| <u>Funding Information</u> | |
| General Fund | \$4,500,000 |
| Other Funds | -0- |
| | <u>\$4,500,000</u> |

1 IN THE SENATE

BY RAY

2

SENATE BILL NO. 105

3

IN THE LEGISLATURE OF THE STATE OF ALASKA

4

THIRTEENTH LEGISLATURE - FIRST SESSION

5

A BILL

6

For an Act entitled: "An Act amending an appropriation made in ch. 90, SLA

7

1981, making an appropriation to the Alaska Power

8

Authority for the Snettisham power project; and pro-

9

viding for an effective date."

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

11 * Section 1. Section 6(7); ch. 90, SLA 1981, page 2, line 22 (Snetti-
12 sham power project) is repealed.

13 * Sec. 2. The sum of \$4,500,000 is appropriated from the general fund
14 to the Alaska Power Authority for feasibility studies, preconstruction
15 design, engineering, and construction at the Snettisham (Crater Lakes)
16 power project.

17 * Sec. 3. The appropriation made by this Act is for a capital project
18 and is subject to AS 37.25.020.

19 * Sec. 4. This Act takes effect immediately in accordance with AS 01.-
20 10.070(c).

Senate Finance Committee
Letter of Intent on SB 105

It is the intent of the Legislature that the Alaska Power Authority expend funds appropriated to it for the purpose of expediting the completion of the Snettisham Hydroelectric Project (addition of third power unit, Crater Lake) by the Corps of Engineers, if the Federal appropriations are insufficient to accomplish the job. It is the desire of the Legislature to see the construction started in 1983 and completed by 1987 at the latest, in order to minimize the economic hardships to the community.

Senator Don Bennett
Co-Chairman, Sen. Fin. Cmte.

Senator John Sackett
Co-Chairman, Sen. Fin. Cmte.

2/14/83

SENATE BILL 105 (Amending an appropriation made in Chapter 90, SLA 1981, making an appropriation to the Alaska Power Authority for the Snettisham Power Project; and providing for an effective date)

2-02-83 Introduced by Senator Ray
Ref: Senate Finance

Summary: Would repeal a \$4.5 million appropriation made in 1981 for the Snettisham power project near Juneau and reappropriates the money to the Alaska Power Authority for "feasibility studies, preconstruction design, engineering, and construction at the Snettisham (Crater Lakes) power project". The 1981 appropriation, contained in Ch. 90, SLA 1981, Sec. 6(7), was part of a \$37,300,000 allocation to the Power Authority for "feasibility projects, preconstruction design, and engineering" for various projects around the state (specifically did not include "construction").

Appropriation is for capital project and is subject to AS 37.25.020 (it does not lapse).

Immediate effective date.

Note: Identical bill introduced January 28 in House.

ALASKA POWER AUTHORITY

334 WEST 5th AVENUE - ANCHORAGE, ALASKA 99501

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

February 17, 1983

Honorable John Sackett
Senate Finance Committee
Alaska State Legislature
Pouch V
Juneau, Alaska 99811

Dear Senator Sackett:

You have requested information on the Snettisham hydropower project and the potential cost to the State if no or only partial federal funding is provided. As you know, Snettisham is a federal project presently consisting of 47 mw being fed from a reservoir at Long Lake. The phase presently being contemplated is the Crater Lake phase which would add another 27 mw of generation capacity and 106,000,000 kwh of energy. Present wholesale cost of energy is 1.5 ¢/kwh and this is projected to rise to 2.5 ¢/kwh in 1985 for the Long Lake phase.

In that Snettisham is a federal project the Power Authority has conducted no independent assessments of the need or cost of the Crater Lake phase. Thus, we have secured cost estimates from the Corps of Engineers and load demand projections from the federal Alaska Power Administration. On the surface, the project would appear quite economic based on the face value of the information provided by the two federal agencies.

In the event the State requires that a portion of the project is debt financed, power sales contracts would be required from the local utilities. This in turn would necessitate that we attempt to estimate a cost of power for the project. Cost of power would be dependent upon the mix of State, federal, and revenue bond financing provided. Present indications from the Alaska Power Administration are that federal interest rates would be roughly 3.5%. I have yet to see this in writing, however. Theoretically, it could be as high as the prevailing federal interest rate. Not knowing what the federal contribution might be, I have based our preliminary cost of power analysis on a mix of State and revenue bond financing. Our analysis assumes Snettisham is a "stand alone" project and that 10% - 35-year debt financing could be secured. Furthermore, our analysis covers cost of power only from the Crater Lake phase rather than the total melded cost of the two phases. If you wished to determine the melded cost, a close approximation would be two-thirds at 2.5¢/kwh plus one-third at our estimated rates below. Our projections of wholesale power cost are tentative in that there was little time to refine the model and verify the data used to generate the cost of power numbers.

February 17, 1983

Project Assumptions
(per telephone call from Mr. R. Cross,
Alaska Power Administration, Juneau)

Project Cost \$55,387,000
Project Sales 106 Million Killowatt Hours

First year 60 percent of capacity sales.
Third year 100 percent of capacity sales.

| | | |
|--------------------|-------|----------------|
| Project Cash Flow: | 1982 | \$ 3,770,000 |
| | 1983 | 12,000,000 |
| | 1984 | 27,000,000 |
| | 1985 | 8,000,000 |
| | 1986 | 4,000,000 |
| | 1987 | <u>617,000</u> |
| | Total | \$55,387,000 |

Interest During Construction (IDC):

IDC was computed through the end-of-construction (1987) rather than to mid-point due to the lack of time necessary to reprogram the model. This results in an overstatement of IDC, but this should not result in a material distortion in the cost of power.

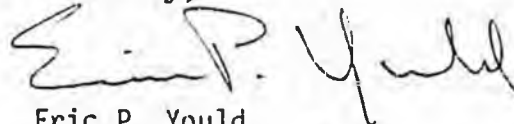
Inflation: DRI (Approximately seven percent per year.)
Interest: Ten percent, 35-year maturity.
Operation and maintenance: Rough estimate by Power Authority.

Estimated Cost of Power

| <u>State Contribution</u> (\$ million) | <u>Debt</u> (%) | <u>Cost of Power</u> | |
|---|--------------------|------------------------|------------------------|
| | | <u>1988</u> (¢/kwh) | <u>1990</u> (¢/kwh) |
| 61.4 | 0% | 0.83 | 0.58 |
| 36.8 | 40% | 6.58 | 4.03 |
| 0.0 | 100% | 15.77 | 9.60 |

Once again, please note that these are tentative numbers generated on a 24-hour turnaround basis. We have not had sufficient time to varify project data from the Federal Government nor have we projected IDC to the mid-point of construction. Please call upon me if you desire additional information.

Sincerely,



Eric P. Yould
Executive Director

EPY/wfs 3/9
Enclosures
cc: Dick Lyon
Bob Cross
Neil Saling

CRATER LAKE 0% DEBT CASE D/S=1.10 IDC INCLUDED NO REAL O&M ESCALATION

POWER RATE BASED ON THE INCLUSION OF: CRATER LAKE

PROJECT POWER RATE SUMMARY FOR : CRATER LAKE

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| YEAR | PROJ COST | | SALES GWH | W/O CAP | WITH CAP | O/M | TOTAL |
|------|------------|------------|--------------|----------|----------|-------|-------|
| | INCL IDC | DEBT DR/W | | D/S RATE | D/S RATE | RATE | RATE |
| | \$MILLIONS | \$MILLIONS | | C/KWH | C/KWH | C/KWH | C/KWH |
| 1982 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1983 | 16.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1984 | 46.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1985 | 55.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1986 | 60.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1987 | 61.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1988 | 61.40 | 0.00 | 63.60 | 0.00 | 0.00 | 0.83 | 0.83 |
| 1989 | 61.40 | 0.00 | 84.80 | 0.00 | 0.00 | 0.68 | 0.68 |
| 1990 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.58 | 0.58 |
| 1991 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.62 | 0.62 |
| 1992 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.67 | 0.67 |
| 1993 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.71 | 0.71 |
| 1994 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.76 | 0.76 |
| 1995 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.82 | 0.82 |
| 1996 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.87 | 0.87 |
| 1997 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 0.93 | 0.93 |
| 1998 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| 1999 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 1.07 | 1.07 |
| 2000 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 1.14 | 1.14 |
| 2001 | 61.40 | 0.00 | 106.00 | 0.00 | 0.00 | 1.22 | 1.22 |

(\$MILLIONS)

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ENERGY GWH | - | - | - | - | - | - | 63.6 | 84.8 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | - | - | - | - | - | - | 0.6 | 0.5 | 0.4 | 0.4 |
| INFLATION INDEX | 100.0 | 100.0 | 107.0 | 114.5 | 122.5 | 131.1 | 140.3 | 150.1 | 160.6 | 171.8 |
| PRICE- C/KWH | - | - | - | - | - | - | 0.8 | 0.7 | 0.6 | 0.6 |
| <u>INCOME</u> | | | | | | | | | | |
| REVENUE | - | - | - | - | - | - | 0.5 | 0.6 | 0.6 | 0.7 |
| LESS OPERATING COSTS | - | - | - | - | - | - | 0.3 | 0.3 | 0.3 | 0.4 |
| OPERATING INCOME | - | - | - | - | - | - | 0.2 | 0.3 | 0.3 | 0.3 |
| ADD INTEREST EARNED ON FUNDS | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| LESS INT ON LONG TERM DEBT | - | - | - | - | - | - | - | - | - | - |
| NET EARNINGS FROM OPERATIONS | - | - | - | - | - | - | 0.2 | 0.3 | 0.3 | 0.3 |
| <u>CASH SOURCE AND USE</u> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | - | - | - | - | - | - | 0.2 | 0.3 | 0.3 | 0.3 |
| STATE GRANTS | - | 16.3 | 29.8 | 9.4 | 5.0 | 0.8 | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | - | - | - | - | - | - | - | - | - |
| WORCAP DEBT DRAWDOWNS | - | - | - | - | - | - | 0.6 | - | - | 0.1 |
| TOTAL SOURCES OF FUNDS | - | 16.3 | 29.8 | 9.4 | 5.0 | 0.8 | 0.9 | 0.3 | 0.3 | 0.3 |
| LESS CAPITAL EXPENDITURES | - | 16.3 | 29.8 | 9.4 | 5.0 | 0.8 | 0.2 | 0.3 | 0.3 | 0.3 |
| LESS WORCAP AND FUNDS | - | - | - | - | - | - | 0.6 | - | - | 0.1 |
| LESS DEBT REPAYMENTS | - | - | - | - | - | - | - | - | - | - |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | - | - | - | - | - | - | - | - | - | - |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | - | - | - | - | - | - | - | - | - | - |
| <u>BALANCE SHEET</u> | | | | | | | | | | |
| RESERVE AND CONT. FUND | - | - | - | - | - | - | 0.5 | 0.6 | 0.6 | 0.6 |
| OTHER WORKING CAPITAL | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 | 0.1 |
| CUM. CAPITAL EXPENDITURE | - | 16.3 | 46.1 | 55.5 | 60.6 | 61.4 | 61.6 | 61.9 | 62.2 | 62.5 |
| CAPITAL EMPLOYED | - | 16.3 | 46.1 | 55.5 | 60.6 | 61.4 | 62.3 | 62.6 | 62.9 | 63.2 |
| STATE CONTRIBUTION | - | 16.3 | 46.1 | 55.5 | 60.6 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | - | - | - | - | - | - | 0.2 | 0.5 | 0.8 | 1.1 |
| DEBT OUTSTANDING-SHORT TERM | - | - | - | - | - | - | 0.6 | 0.7 | 0.7 | 0.8 |
| DEBT OUTSTANDING-LONG TERM | - | - | - | - | - | - | - | - | - | - |
| DEBT SERVICE COVER | - | - | - | - | - | - | - | - | - | - |
| ANNUAL BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| ANNUAL STATE GRANTS \$1983 | - | 16.3 | 27.9 | 8.2 | 4.1 | 0.6 | - | - | - | - |
| CUM. STATE GRANTS \$1983 | - | 16.3 | 44.2 | 52.4 | 56.5 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 |
| TOTAL ANNUAL FINANCING \$1983 | - | 16.3 | 27.9 | 8.2 | 4.1 | 0.6 | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | - | 16.3 | 44.2 | 52.4 | 56.5 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 |

SOURCES:

:PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS

:O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

(\$MILLIONS)

| Y E A R | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ENERGY G&H | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| INFLATION INDEX | 183.8 | 196.7 | 210.5 | 225.2 | 241.0 | 257.9 | 275.9 | 295.2 | 315.9 | 338.0 |
| PRICE- C/KWH | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 |
| <hr/> INCOME <hr/> | | | | | | | | | | |
| REVENUE | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.3 |
| LESS OPERATING COSTS | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |
| OPERATING INCOME | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| ADD INTEREST EARNED ON FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS INT ON LONG TERM DEBT | - | - | - | - | - | - | - | - | - | - |
| NET EARNINGS FROM OPERATIONS | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 |
| <hr/> CASH SOURCE AND USE <hr/> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 |
| STATE GRANTS | - | - | - | - | - | - | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | - | - | - | - | - | - | - | - | - |
| WORCAP DEBT DRAWDOWNS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| TOTAL SOURCES OF FUNDS | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 |
| LESS CAPITAL EXPENDITURES | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 |
| LESS WORCAP AND FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS DEBT REPAYMENTS | - | - | - | - | - | - | - | - | - | - |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | - | - | - | - | - | - | - | - | - | - |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | - | - | - | - | - | - | - | - | - | - |
| <hr/> BALANCE SHEET <hr/> | | | | | | | | | | |
| RESERVE AND CONT. FUND | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 |
| OTHER WORKING CAPITAL | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| CUM. CAPITAL EXPENDITURE | 62.8 | 63.1 | 63.5 | 63.9 | 64.3 | 64.7 | 65.2 | 65.7 | 66.2 | 66.8 |
| CAPITAL EMPLOYED | 63.6 | 64.0 | 64.4 | 64.9 | 65.4 | 65.9 | 66.4 | 67.0 | 67.7 | 68.3 |
| STATE CONTRIBUTION | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 | 61.4 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | 1.4 | 1.7 | 2.1 | 2.5 | 2.9 | 3.3 | 3.8 | 4.3 | 4.8 | 5.4 |
| DEBT OUTSTANDING-SHORT TERM | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.5 |
| DEBT OUTSTANDING-LONG TERM | - | - | - | - | - | - | - | - | - | - |
| DEBT SERVICE COVER | - | - | - | - | - | - | - | - | - | - |
| ANNUAL BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| ANNUAL STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. STATE GRANTS \$1983 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 |
| TOTAL ANNUAL FINANCING \$1983 | - | - | - | - | - | - | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 |

SOURCES:

:PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS

:O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

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CRATER LAKE 40% DEBT CASE D/S=1.10 IDC INCLUDED NO O&M ESCALATION

POWER RATE BASED ON THE INCLUSION OF: CRATER LAKE

PROJECT POWER RATE SUMMARY FOR : CRATER LAKE

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| YEAR | PROJ COST | | PROJ DEBT DRAW | SALES GWH | W/O CAP | WITH CAP | O/M | TOTAL |
|------|------------|------------|-------------------|--------------|----------|----------|-------|-------|
| | INCL | IDC | | | D/S RATE | D/S RATE | RATE | RATE |
| | \$MILLIONS | \$MILLIONS | | C/KWH | C/KWH | C/KWH | C/KWH | |
| 1982 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1983 | 16.61 | 6.84 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1984 | 47.72 | 20.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1985 | 59.33 | 26.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1986 | 67.07 | 30.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1987 | 70.99 | 34.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1988 | 70.99 | 34.15 | 63.60 | 6.12 | 6.12 | 0.45 | 6.58 | |
| 1989 | 70.99 | 34.15 | 84.80 | 4.59 | 4.59 | 0.42 | 5.01 | |
| 1990 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.36 | 4.03 | |
| 1991 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.38 | 4.05 | |
| 1992 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.40 | 4.08 | |
| 1993 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.43 | 4.10 | |
| 1994 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.46 | 4.14 | |
| 1995 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.52 | 4.19 | |
| 1996 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.57 | 4.25 | |
| 1997 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.63 | 4.31 | |
| 1998 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.70 | 4.37 | |
| 1999 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.77 | 4.44 | |
| 2000 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.84 | 4.52 | |
| 2001 | 70.99 | 34.15 | 106.00 | 3.67 | 3.67 | 0.92 | 4.60 | |

(\$MILLIONS)

| YEAR | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ENERGY GWH | - | - | - | - | - | - | 63.6 | 84.8 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | - | - | - | - | - | - | 4.7 | 3.3 | 2.5 | 2.4 |
| INFLATION INDEX | 100.0 | 100.0 | 107.0 | 114.5 | 122.5 | 131.1 | 140.3 | 150.1 | 160.6 | 171.8 |
| PRICE- C/KWH | - | - | - | - | - | - | 6.6 | 5.0 | 4.0 | 4.1 |
| <hr/> | | | | | | | | | | |
| REVENUE | - | - | - | - | - | - | 4.2 | 4.3 | 4.3 | 4.3 |
| LESS OPERATING COSTS | - | - | - | - | - | - | 0.3 | 0.3 | 0.3 | 0.4 |
| OPERATING INCOME | - | - | - | - | - | - | 3.9 | 3.9 | 3.9 | 3.9 |
| ADD INTEREST EARNED ON FUNDS | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| LESS INT ON LONG TERM DEBT | - | - | - | - | - | - | 3.4 | 3.4 | 3.4 | 3.4 |
| NET EARNINGS FROM OPERATIONS | - | - | - | - | - | - | 0.5 | 0.5 | 0.5 | 0.5 |
| <hr/> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | - | - | - | - | - | - | 0.5 | 0.5 | 0.5 | 0.5 |
| STATE GRANTS | - | 9.8 | 17.9 | 5.7 | 3.0 | 0.5 | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | 6.8 | 13.2 | 6.0 | 4.7 | 3.4 | - | - | - | - |
| MORCAP DEBT DRAWDOWNS | - | - | - | - | - | - | 1.0 | - | - | - |
| TOTAL SOURCES OF FUNDS | - | 16.6 | 31.1 | 11.6 | 7.7 | 3.9 | 1.5 | 0.5 | 0.6 | 0.6 |
| LESS CAPITAL EXPENDITURES | - | 16.6 | 31.1 | 11.6 | 7.7 | 3.9 | 0.2 | 0.3 | 0.3 | 0.3 |
| LESS MORCAP AND FUNDS | - | - | - | - | - | - | 1.0 | - | - | - |
| LESS DEBT REPAYMENTS | - | - | - | - | - | - | 0.1 | 0.1 | 0.2 | 0.2 |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 | 0.1 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 | 0.1 |
| <hr/> | | | | | | | | | | |
| RESERVE AND CONT. FUND | - | - | - | - | - | - | 0.5 | 0.6 | 0.6 | 0.6 |
| OTHER WORKING CAPITAL | - | - | - | - | - | - | 0.5 | 0.5 | 0.5 | 0.5 |
| CUM. CAPITAL EXPENDITURE | - | 16.6 | 47.7 | 59.3 | 67.1 | 71.0 | 71.2 | 71.5 | 71.8 | 72.1 |
| CAPITAL EMPLOYED | - | 16.6 | 47.7 | 59.3 | 67.1 | 71.0 | 72.2 | 72.5 | 72.8 | 73.2 |
| STATE CONTRIBUTION | - | 9.8 | 27.7 | 33.3 | 36.3 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | - | - | - | - | - | - | 0.4 | 0.8 | 1.2 | 1.7 |
| DEBT OUTSTANDING-SHORT TERM | - | - | - | - | - | - | 1.0 | 1.0 | 1.1 | 1.1 |
| DEBT OUTSTANDING-LONG TERM | - | 6.8 | 20.1 | 26.0 | 30.7 | 34.1 | 34.0 | 33.9 | 33.7 | 33.6 |
| DEBT SERVICE COVER | - | - | - | - | - | - | 1.1 | 1.1 | 1.1 | 1.1 |
| ANNUAL BORROWING \$1983 | - | 6.8 | 12.3 | 5.2 | 3.9 | 2.6 | - | - | - | - |
| CUM. BORROWING \$1983 | - | 6.8 | 19.2 | 24.4 | 28.2 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 |
| ANNUAL STATE GRANTS \$1983 | - | 9.8 | 16.7 | 4.9 | 2.5 | 0.4 | - | - | - | - |
| CUM. STATE GRANTS \$1983 | - | 9.8 | 26.5 | 31.4 | 33.9 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 |
| TOTAL ANNUAL FINANCING \$1983 | - | 16.6 | 29.1 | 10.1 | 6.3 | 3.0 | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | - | 16.6 | 45.7 | 55.8 | 62.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 |

SOURCES:

\$PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS
 \$O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

| | (\$MILLIONS) | | | | | | | | | |
|--------------------------------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Y E A R | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| ENERGY GWH | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | 2.2 | 2.1 | 2.0 | 1.9 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 | 1.4 |
| INFLATION INDEX | 183.8 | 196.7 | 210.5 | 225.2 | 241.0 | 257.9 | 275.9 | 295.2 | 315.9 | 338.0 |
| PRICE- C/KWH | 4.1 | 4.1 | 4.1 | 4.2 | 4.2 | 4.3 | 4.4 | 4.4 | 4.5 | 4.6 |
| <u>-----INCOME-----</u> | | | | | | | | | | |
| REVENUE | 4.3 | 4.3 | 4.4 | 4.4 | 4.5 | 4.6 | 4.6 | 4.7 | 4.8 | 4.9 |
| LESS OPERATING COSTS | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |
| OPERATING INCOME | 3.9 | 3.9 | 4.0 | 4.0 | 4.0 | 4.0 | 4.1 | 4.1 | 4.1 | 4.2 |
| ADD INTEREST EARNED ON FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 |
| LESS INT ON LONG TERM DEBT | 3.4 | 3.3 | 3.3 | 3.3 | 3.3 | 3.2 | 3.2 | 3.2 | 3.1 | 3.1 |
| NET EARNINGS FROM OPERATIONS | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 |
| <u>-----CASH SOURCE AND USE-----</u> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 |
| STATE GRANTS | - | - | - | - | - | - | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | - | - | - | - | - | - | - | - | - |
| WORCAP DEBT DRAWDOWNS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| TOTAL SOURCES OF FUNDS | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 |
| LESS CAPITAL EXPENDITURES | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 |
| LESS WORCAP AND FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS DEBT REPAYMENTS | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | - | - | - | - | - | - | - | - | - | - |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | - | - | - | - | - | - | - | - | - | - |
| <u>-----BALANCE SHEET-----</u> | | | | | | | | | | |
| RESERVE AND CONT. FUND | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 |
| OTHER WORKING CAPITAL | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 |
| CUM. CAPITAL EXPENDITURE | 72.4 | 72.7 | 73.1 | 73.5 | 73.9 | 74.3 | 74.8 | 75.3 | 75.8 | 76.4 |
| CAPITAL EMPLOYED | 73.6 | 73.9 | 74.4 | 74.8 | 75.3 | 75.8 | 76.4 | 77.0 | 77.6 | 78.3 |
| STATE CONTRIBUTION | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 | 36.8 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | 2.2 | 2.7 | 3.3 | 3.9 | 4.6 | 5.3 | 6.1 | 7.0 | 7.9 | 8.9 |
| DEBT OUTSTANDING-SHORT TERM | 1.2 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 |
| DEBT OUTSTANDING-LONG TERM | 33.4 | 33.2 | 33.0 | 32.7 | 32.4 | 32.1 | 31.8 | 31.5 | 31.1 | 30.6 |
| DEBT SERVICE COVER | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.2 |
| ANNUAL BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. BORROWING \$1983 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 | 30.9 |
| ANNUAL STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. STATE GRANTS \$1983 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 | 34.3 |
| TOTAL ANNUAL FINANCING \$1983 | - | - | - | - | - | - | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 | 65.1 |

SOURCES:

:PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS

:O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

CRATER LAKE 100% DEBT CASE D/S=1.10 IDC INCLUDED NO REAL O&M ESCALATION

POWER RATE BASED ON THE INCLUSION OF: CRATER LAKE

PROJECT POWER RATE SUMMARY FOR : CRATER LAKE
 //////////////////////////////////////

| YEAR | PROJ COST INCL IDC DEBT \$MILLIONS | PROJ DRAW \$MILLIONS | SALES GWH | W/O CAP D/S RATE C/KWH | WITH CAP D/S RATE C/KWH | O/M RATE C/KWH | TOTAL RATE C/KWH |
|------|--|----------------------------|--------------|------------------------------|-------------------------------|----------------------|------------------------|
| 1982 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1983 | 17.10 | 17.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1984 | 50.13 | 50.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1985 | 65.03 | 65.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1986 | 76.83 | 76.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1987 | 85.37 | 85.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1988 | 85.37 | 85.37 | 63.60 | 15.31 | 15.31 | 0.45 | 15.77 |
| 1989 | 85.37 | 85.37 | 84.80 | 11.48 | 11.48 | 0.49 | 11.97 |
| 1990 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.41 | 9.60 |
| 1991 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.44 | 9.62 |
| 1992 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.46 | 9.65 |
| 1993 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.48 | 9.67 |
| 1994 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.51 | 9.70 |
| 1995 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.54 | 9.73 |
| 1996 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.57 | 9.76 |
| 1997 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.61 | 9.79 |
| 1998 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.64 | 9.83 |
| 1999 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.68 | 9.87 |
| 2000 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.72 | 9.91 |
| 2001 | 85.37 | 85.37 | 106.00 | 9.19 | 9.19 | 0.77 | 9.95 |

ALASKA POWER AUTHORITY FINANCIAL FORECAST FOR FISCAL YEARS ENDING JUNE 30

1983 2 15

(\$MILLIONS)

| Y E A R | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ENERGY O&M | - | - | - | - | - | - | 63.6 | 84.8 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | - | - | - | - | - | - | 11.2 | 8.0 | 6.0 | 5.6 |
| INFLATION INDEX | 100.0 | 100.0 | 107.0 | 114.5 | 122.5 | 131.1 | 140.3 | 150.1 | 160.6 | 171.8 |
| PRICE- C/KWH | - | - | - | - | - | - | 15.8 | 12.0 | 9.6 | 9.6 |
| <u>INCOME</u> | | | | | | | | | | |
| REVENUE | - | - | - | - | - | - | 10.0 | 10.2 | 10.2 | 10.2 |
| LESS OPERATING COSTS | - | - | - | - | - | - | 0.3 | 0.3 | 0.3 | 0.4 |
| OPERATING INCOME | - | - | - | - | - | - | 9.7 | 9.8 | 9.8 | 9.8 |
| ADD INTEREST EARNED ON FUNDS | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | - | - | - | - | - | - | - | 0.2 | 0.2 | 0.2 |
| LESS INT ON LONG TERM DEBT | - | - | - | - | - | - | 8.5 | 8.5 | 8.5 | 8.4 |
| NET EARNINGS FROM OPERATIONS | - | - | - | - | - | - | 1.2 | 1.2 | 1.3 | 1.3 |
| <u>CASH SOURCE AND USE</u> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | - | - | - | - | - | - | 1.2 | 1.2 | 1.3 | 1.3 |
| STATE GRANTS | - | - | - | - | - | - | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | 17.1 | 33.0 | 14.9 | 11.8 | 8.5 | - | - | - | - |
| WORCAP DEBT DRAWDOWNS | - | - | - | - | - | - | 1.6 | 0.1 | - | - |
| TOTAL SOURCES OF FUNDS | - | 17.1 | 33.0 | 14.9 | 11.8 | 8.5 | 2.8 | 1.3 | 1.3 | 1.4 |
| LESS CAPITAL EXPENDITURES | - | 17.1 | 33.0 | 14.9 | 11.8 | 8.5 | 0.2 | 0.3 | 0.3 | 0.3 |
| LESS WORCAP AND FUNDS | - | - | - | - | - | - | 1.6 | 0.1 | - | - |
| LESS DEBT REPAYMENTS | - | - | - | - | - | - | 0.3 | 0.3 | 0.4 | 0.4 |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | - | - | - | - | - | - | 0.6 | 0.6 | 0.6 | 0.6 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | - | - | - | - | - | - | 0.6 | 0.6 | 0.6 | 0.6 |
| <u>BALANCE SHEET</u> | | | | | | | | | | |
| RESERVE AND CONT. FUND | - | - | - | - | - | - | 0.5 | 0.6 | 0.6 | 0.6 |
| OTHER WORKING CAPITAL | - | - | - | - | - | - | 1.0 | 1.1 | 1.1 | 1.1 |
| CUM. CAPITAL EXPENDITURE | - | 17.1 | 50.1 | 65.0 | 76.8 | 85.4 | 85.6 | 85.9 | 86.1 | 86.4 |
| CAPITAL EMPLOYED | - | 17.1 | 50.1 | 65.0 | 76.8 | 85.4 | 87.2 | 87.5 | 87.8 | 88.2 |
| STATE CONTRIBUTION | - | - | - | - | - | - | - | - | - | - |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | - | - | - | - | - | - | 0.6 | 1.2 | 1.8 | 2.5 |
| DEBT OUTSTANDING-SHORT TERM | - | - | - | - | - | - | 1.6 | 1.6 | 1.7 | 1.7 |
| DEBT OUTSTANDING-LONG TERM | - | 17.1 | 50.1 | 65.0 | 76.8 | 85.4 | 85.1 | 84.7 | 84.3 | 83.9 |
| DEBT SERVICE COVER | - | - | - | - | - | - | 1.1 | 1.1 | 1.1 | 1.1 |
| ANNUAL BORROWING \$1983 | - | 17.1 | 30.9 | 13.0 | 9.6 | 6.5 | - | - | - | - |
| CUM. BORROWING \$1983 | - | 17.1 | 48.0 | 61.0 | 70.6 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 |
| ANNUAL STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| TOTAL ANNUAL FINANCING \$1983 | - | 17.1 | 30.9 | 13.0 | 9.6 | 6.5 | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | - | 17.1 | 48.0 | 61.0 | 70.6 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 |

SOURCES:

:PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS

:O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

:

(\$MILLIONS)

| Y E A R | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ENERGY GWH | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 | 106.0 |
| REAL PRICE- C/KWH | 5.2 | 4.9 | 4.6 | 4.3 | 4.0 | 3.8 | 3.6 | 3.3 | 3.1 | 2.9 |
| INFLATION INDEX | 183.8 | 196.7 | 210.5 | 225.2 | 241.0 | 257.9 | 275.9 | 295.2 | 315.9 | 338.0 |
| PRICE- C/KWH | 9.6 | 9.7 | 9.7 | 9.7 | 9.8 | 9.8 | 9.8 | 9.9 | 9.9 | 10.0 |
| <u>INCOME</u> | | | | | | | | | | |
| REVENUE | 10.2 | 10.3 | 10.3 | 10.3 | 10.3 | 10.4 | 10.4 | 10.5 | 10.5 | 10.5 |
| LESS OPERATING COSTS | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 |
| OPERATING INCOME | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.9 | 9.9 | 9.9 |
| ADD INTEREST EARNED ON FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS INT ON SHORT TERM DEBT | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| LESS INT ON LONG TERM DEBT | 8.4 | 8.3 | 8.3 | 8.2 | 8.2 | 8.1 | 8.0 | 8.0 | 7.9 | 7.8 |
| NET EARNINGS FROM OPERATIONS | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 |
| <u>CASH SOURCE AND USE</u> | | | | | | | | | | |
| CASH INCOME FROM OPERATIONS | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 |
| STATE GRANTS | - | - | - | - | - | - | - | - | - | - |
| LONG TERM DEBT DRAWDOWNS | - | - | - | - | - | - | - | - | - | - |
| WORCAP DEBT DRAWDOWNS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| TOTAL SOURCES OF FUNDS | 1.4 | 1.4 | 1.5 | 1.6 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 |
| LESS CAPITAL EXPENDITURES | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 |
| LESS WORCAP AND FUNDS | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| LESS DEBT REPAYMENTS | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 |
| LESS PAYMENT TO STATE | - | - | - | - | - | - | - | - | - | - |
| CASH SURPLUS(DEFICIT) | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| CASH RECOVERED | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 |
| <u>BALANCE SHEET</u> | | | | | | | | | | |
| RESERVE AND CONT. FUND | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 |
| OTHER WORKING CAPITAL | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 |
| CUM. CAPITAL EXPENDITURE | 86.8 | 87.1 | 87.5 | 87.8 | 88.3 | 88.7 | 89.2 | 89.7 | 90.2 | 90.8 |
| CAPITAL EMPLOYED | 88.5 | 88.9 | 89.3 | 89.8 | 90.3 | 90.8 | 91.3 | 91.9 | 92.6 | 93.2 |
| STATE CONTRIBUTION | - | - | - | - | - | - | - | - | - | - |
| RECOVERY FROM HB9 | - | - | - | - | - | - | - | - | - | - |
| RETAINED EARNINGS FROM OPS. | 3.3 | 4.2 | 5.1 | 6.1 | 7.2 | 8.3 | 9.6 | 11.0 | 12.6 | 14.2 |
| DEBT OUTSTANDING-SHORT TERM | 1.8 | 1.8 | 1.9 | 2.0 | 2.0 | 2.1 | 2.2 | 2.3 | 2.3 | 2.4 |
| DEBT OUTSTANDING-LONG TERM | 83.5 | 82.9 | 82.4 | 81.8 | 81.1 | 80.4 | 79.5 | 78.6 | 77.7 | 76.6 |
| DEBT SERVICE COVER | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| ANNUAL BORROWING \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. BORROWING \$1983 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 |
| ANNUAL STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| CUM. STATE GRANTS \$1983 | - | - | - | - | - | - | - | - | - | - |
| TOTAL ANNUAL FINANCING \$1983 | - | - | - | - | - | - | - | - | - | - |
| TOTAL CUM. FINANCING \$1983 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 | 77.1 |

SOURCES:

:PROJECT COST: \$55,387,000.00 MID 1982 DOLLARS

:O&M FROM MYLES YERKES OF ALASKA POWER AUTHORITY

:

7-1223

Alaska State Legislature

Advisory Council Members
Senator Kerrettula, Chairman
Senator Bennett
Senator Dankworth
Senator Fahrenkamp



Pouch V
State Capital
Juneau, Alaska 99811
Phone: (907) 465-3114

SENATE ADVISORY COUNCIL

MEMORANDUM

TO: Senator Ray .
FROM: Kurt S. Dzinich *KSD*
Senior Advisor
RE: Crater Lake
DATE: February 1, 1983

Since my previous memo of November 3, 1982, the following significant events have taken place:

1. The U.S. Congress passed a continuing resolution for FY83 urging the Corps of Engineers to proceed with the construction of the third unit and chided them for not initiating the construction in FY82 with the \$2,000,000 appropriated for that purpose.
2. The AEL&P has requested a moratorium on new electric space heating and hot water installation.
3. Colonel Saling, District Engineer, Alaska District Corps of Engineers, has initiated action through his chain of command to obtain \$2,000,000 in FY83 funds (in addition to carry-over funds of \$250,000 from FY82) and permission to initiate construction in FY83 (ends on September 30, 1983).
4. Introduction of HB134 by Representatives Duncan and Miller amending earlier Snettisham legislation. Copy attached.

Assuming that the Corps can obtain permission to start the construction in FY83, of the 2.25 million total requirement in FY83 about 1.3 million would be for construction while the remainder would be for engineering and design. In FY84 the requirement would be about 12 million of which 10 million would be for construction. Power-on-line would be in 1987 according to their current schedule.

The best and simplest solution remains for the Corps to finish the Snettisham project using only Federal funds. It is essential that the project construction be initiated in 1983 and completed as expeditiously as possible in order to minimize the negative impacts on the Juneau community.

Given sufficient funds, I don't see any reasons why the Corps should not complete the project in three years i.e. power-on-line in 1986. In order for this scenario to succeed, maximum participation and pushing will be required by our Congressional Delegation. As an additional inducement to obtain Federal funding, we could offer to start negotiations for the eventual takeover of Federal power projects in Alaska.

If the construction is initiated by the Feds in 1983 and if they provide all needed funds in a manner allowing for the most expeditious completion of the project, then there is not much left for the State to do. If, however, the Feds choose not to initiate construction in 1983, or if they provide insufficient funds to allow for an expeditious completion of the project, then there is something that the State could and should do.

If the Feds do not want to fund the start of construction in 1983, the State should provide the funds to the Corps on the basis of some type of cost sharing. (It should be made clear to all that this cost sharing would not have anything to do with the "Innovative Financing" program proposed by the Administration and the Corps last year). In order for the cost sharing to work the following would have to be accomplished:

1. The Corps must obtain Congressional approval to receive the State funds.
2. The Corps must obtain permission to initiate construction in 1983 as desired by Congress.
3. The State must appropriate sufficient funds to the Corps with minimum red tape to allow for the most expeditious start and completion of the project. (In this regard, recently introduced HB134 will probably have to be revised.)

With reference to item 3 above, I believe that the best way of coming up with a fund transfer mechanism would be to have the Legal Services draft appropriate legislation. Towards that end I have prepared a memo to Bill Berrier and attached it for your signature.

For the longer term, pending completion of ongoing intertie studies by the Alaska Power Administration, we will probably need to have a study to determine the next best energy source for the Juneau area after Snettisham. As you are probably aware, interties to Canada or other S.E. communities and additional hydro such as Dorothy Lake are just some of the more attractive alternatives. Because of the various ongoing actions, it would probably be better to wait until the FY85.

Please let me know if you need additional information.

Alaska State Legislature

Advisory Council Members
Senator Nerttula, Chairman
Senator Bennett
Senator Dankworth
Senator Fahrenkamp



Pouch V
State Capital
Juneau, Alaska 99811
Phone: (907) 465-3114

SENATE ADVISORY COUNCIL

MEMORANDUM

TO: Senator Bill Ray
FROM: Kurt S. Dzinich *KSD*
Senior Advisor
RE: Crater Lake
DATE: November 3, 1982

According to the latest forecasts by the Alaska Power Administration, and based on Juneau remaining the Capital, the second stage of the Snettisham project -- Crater Lake -- should be completed as soon as possible. If the Hoonah intertie is built, the energy use would increase an additional 13% (includes Noranda).

Due to a phenomenal growth in the past couple of years, Juneau's energy demand is expected to grow 23% and peak demand by 30% just between 1981 and 1982. The energy demand has almost equaled the existing Snettisham capacity. In order to preclude serious energy problems, it is essential that Crater Lake construction be initiated in 1983, and completed as expeditiously as practical. Any delays in the construction of Crater Lake will significantly constrain the economic growth and diversification of the Juneau area.

Since you are well up on the history of Snettisham, as well as the current Federal status of the project, I would like to explore the alternatives under which Crater Lake can be built. In my opinion these are:

- Alternative 1. Federal Government completes the project using Federal funds and the Corps of Engineers and Alaska Power Administration operates the project
- Alternative 2. Federal and State cost sharing; built by the Corps and operated by APA(DOE)
- Alternative 3. State funds totally, Corps builds, APA(DOE) operates
- Alternative 4. State funds totally, APA builds and operates

Alternative 5. State completes project as part of a takeover package deal of APA(DOE) functions and facilities

Based on my experience with Bradley Lake project and attempts to resolve many complex issues, many of which will again be involved in Crater Lake, my evaluation of the above alternatives is as follows:

Alternative 1. In view of the Administration's policies to date, there is very little likelihood of the Feds totally funding this project with an estimated cost now at about 68 million. Except for that, this alternative is the cleanest method with the least number of pitfalls.

Alternative 2. This method is very similar to the one we tried to implement on the Bradley project. These were the key issues that had to be resolved:

- a. Three way agreement between APA, APA(DOE) and Corps
- b. Bonding and ownership
- c. Congressional approval for Corps to proceed with State funds
- d. Use of State funds for a Federal project

To make a long story short, the agreement was not consummated because bonding experts convinced the APA and its Board of Directors that revenue bonding would be almost impossible without ownership and because it appeared that the Corps would have difficulty in obtaining Congressional approval. Only the issue of using State funds for a Federal project was successfully solved through legislative action.

Because Alaska is now perceived as being rich, the chances of Feds sharing in the costs of building Crater Lake are only slightly better than Alternative 1, while all other unresolved issues would still have to be solved.

Alternative 3. This is better than the previous two because the State can appropriate the funds as needed thereby expediting construction as much as possible. If the State can not appropriate all of the funds, then it could provide a low interest loan. By providing all of the funds, the issue of bonding vs. ownership can be avoided although a special agreement between APA, APA(DOE) and the Corps would still be required. In order to make it easier to achieve the agreement, Crater Lake should be built as a special project outside of the existing criteria applying to other projects in the Energy Program.

Under both Alternative 2 & 3, existing State legislation would have to be amended to allow the use of the 4.5 million for construction, as well as supplemental funding to allow maximum progress in 1983. This alternative is better than the previous two. Maximum progress in 1983 would probably require more than 14 million currently envisioned by the Corps and based on their Oct. 87 power on live date.

Alternative 4. Under this scenario APA would take the project over and construct it with State funds only, or in combination with bond financing. The takeover agreement would be quite complex as Shettishan would be Federal

while Crater would be State owned. I believe the complexity and the risk of delays to be the greatest under this scenario.

Alternative 5. This scenario is similar to Alternative 4 above except the State would take over Crater Lake as part of a package of taking over all APA(DOE) facilities and functions. Based on similar problems as the Railroad, I believe that the negotiations would be hard and long -- one to two years -- and that considerable delay of power on line would result.

Based on the above, I would recommend proceeding with Alternative 3 as the option with the highest chance of succeeding in a timely fashion. Because the power consumption has increased over 50% in the last two years, time is of essence and the implementing actions designed to start construction in 1983 will have to be pursued aggressively and wholeheartedly by all concerned.

Proceeding expeditiously with Alternative 3 will require action by the Congressional as well as Juneau's legislative delegations. Authority for the Corps to use State funds could be obtained at the upcoming lame duck session as part of an appropriation bill. Failing that, the issue would have to be addressed by the next Congress early in 1983. This action has to be accomplished regardless of whether the costs are shared or solely State funded.

On the State side, the Legislature would have to pass legislation authorizing use of existing funds for construction and provide additional appropriations if at all possible, probably as part of FY83 supplemental appropriations. Specific language would also have to be provided to insure that the project is not needlessly delayed. The bottom line would be to allow the Corps to start construction as early as possible in 1983.

I would be happy to discuss the problem and solution(s) with you at your convenience.

November 19, 1982

NOTES ON JUNEAU AREA POWER SUPPLY

Juneau faces an important electric energy supply problem for the next few years. Starting in the 1982-1983 winter, power use levels will equal or exceed the energy supply available from APA and AEL&P hydro-electric projects. The difference, or hydro energy deficit, is expected to get larger each year until power becomes available from the Crater Lake Unit of Snettisham. With a 1983 construction start, Crater Lake power would be available in the 1986-1987 winter. However, funding has not yet been secured for construction.

The deficits can be met in only two ways: reducing growth in demand or producing power from oil-fired generators.

Most Juneau power consumers are aware that producing power from oil is very expensive. Fuel is the major cost item, amounting to over 10 cents per kilowatt-hour. Thus it will be very important to the community to try to keep the deficit as small as possible.

This paper is intended to provide current information on several of the issues relating to the power supply problem as well as the status on Crater Lake.

The attachments provide additional detail:

- o November 3, 1982, summary sheet on costs, capacity, and energy capability for the Snettisham Project, including Crater Lake.
- o November 10, 1982, update of Juneau area power requirement study.
- o November 1982 APA policy statement on electric space and water heating.

Status of Crater Lake

The 1962 legislation which authorized the Snettisham Project covers both the present or Long Lake stage and the Crater Lake stage. The Corps of Engineers, which has design and construction responsibility, is presently

preparing the detailed design and construction specifications and is prepared to initiate construction in 1983 if funding is secured. The Corps estimates power on line in June 1986, again depending on funding.

The Crater Lake Unit would be rated at 27 MW and estimated new firm energy is 106 million kWh/year. This is approximately a 60 percent increase in firm energy capability for the project.

Congress appropriated \$2 million for Crater Lake in FY 1982 which is being used by the Corps for designs and specifications.

The President's FY 1983 budget request did not include funds to continue construction of Crater Lake. Alaska's congressional delegation requested funding for the project, however, Congress has not yet completed action on the 1983 appropriations.

Amount of Deficit

APA estimates of hydro deficit are contained in table 6 of the power requirement study. Separate numbers are shown for "firm" and "average" conditions.

Firm hydro energy is the amount expected in a critical year of low water supply. More energy is available in most years, so average available energy is higher than the firm.

Expected firm energy deficits and the approximate fuel costs associated with the deficits are as follows:

| | <u>Requirements</u> kWh x 10 ⁶ | <u>Deficit</u> | | <u>Fuel cost at</u> 10c/kWh |
|---------|--|-----------------------|----|--------------------------------|
| | | kWh x 10 ⁶ | % | |
| FY 1983 | 232 | 11 | 4 | \$1,100,000 |
| FY 1984 | 253 | 32 | 13 | 3,200,000 |
| FY 1985 | 273 | 52 | 19 | 5,200,000 |
| FY 1986 | 301 | 80 | 27 | 8,000,000 |

Table 6 also indicates the deficits could be reduced significantly if the trend to electric space heating is abated.

The weather, the area economy, and individual decisions on power use are the factors that will determine the size of the hydro deficits, and the fuel bills that accompany them.

From the power supply side, amount of energy available in the winter controls. This is limited by storage in the reservoir and water inflow during the winter. Water inflow is smallest when the weather is the coldest. In a mild, wet winter the inflow is higher and more energy can be produced.

Power use is also related to the weather--normally the highest use levels occur in the coldest days of winter. APA estimates that weather factors can cause at least a 10 percent difference in winter season electric energy use--higher use levels if the weather is unusually cold; lower if the winter is mild. The weather impact on peak demands is even more noticeable.

Increases in Juneau area electric energy and peak demand since 1970 are shown on table 1 of the load forecast. Increases in 1981 and 1982 are substantially larger than in the earlier years. The FY 1982 increases of 21.7 percent for energy and 30.4 percent for peak demand are by far the largest of record. Part of this very large increase is attributable to weather (the 1981-1982 winter season was much colder than the prior year); part is due to the continued strength in the Juneau economy; part is due to the trend to use of electric energy for space and water heating.

APA's estimates of future requirements involve somewhat lower rates of growth than in recent years. FY 1983 growth is estimated at 14.3 percent; 1984 at 9.1 percent, and 1985 at 7.9 percent. If the growth turns out to be higher, the deficits would be larger.

The immediate outlook for 1982-1983 is not too bad: a fairly small deficit if critical year water supply conditions occur, but a "most probable" outlook that hydro energy supply will be sufficient if consumers use the energy wisely.

However, the outlook for the following years is not so good. The deficits will get larger each year until Crater Lake becomes available.



Department of Energy
 Assistant Secretary for Energy
 2000 Building
 United States Capitol

November 3, 1982

COST DATA, CAPACITY, AND ENERGY CAPABILITY
 FOR SNETTISHAM PROJECT

Investment and repayment obligations, for first or Long Lake stage of Snettisham Project. (Figures as of the end of FY 1981.)

| | |
|-----------------------------|--------------|
| Cumulative Investment: | \$79,414,583 |
| Balance to be Repaid: | 77,767,774 |
| Deferred Interest: | 12,941,794 |
| Total Repayment Obligation: | \$90,709,568 |

Cost estimates for second or Crater Lake stage. (Data from Corps of Engineers, 8/82.)

| | |
|---|-----------|
| | (1,000's) |
| (1) Est. expenditures thru FY 1982 | \$3,770 |
| (2) Balance to completion | 51,617 |
| (3) Construction cost of Crater Lake Unit | 55,387 |

Funding requirements by year (\$1,000's):

| | |
|---|----------|
| 1 | \$12,000 |
| 2 | 27,000 |
| 3 | 8,000 |
| 4 | 4,000 |
| 5 | 617 |
| | \$51,617 |

(\$ millions)

Funding requirements, with allowance for inflation

| Year | Inflation estimate | 1984 Start | 1983 Start | Inflation multiplier |
|------|--------------------|------------|------------|----------------------|
| 1983 | 7% | -- | 12.8 | 1.07 |
| 1984 | 9% | 14.0 | 31.6 | 1.17 |
| 1985 | 10.5% | 34.8 | 10.3 | 1.29 |
| 1986 | 10.5% | 11.4 | 5.7 | 1.41 |
| 1987 | 10.5% | 6.3 | 1.0 | 1.57 |
| 1988 | 10.5% | 1.1 | -- | 1.73 |
| | | 67.6 | 61.4 | |

(POL 1987) (POL 1986)

Alaska Power Administration

Partial Update of July 1982 Juneau Load Forecast

November 1982

Introduction

Alaska Power Administration (APA) has compared the actual Juneau area power requirements through the end of fiscal year 1982 (September 30, 1982) with projections made in July 1982. The earlier projections were based on data through April 1982 and this comparison reflects any changes due to a differing growth pattern than originally forecast for the remainder of the fiscal year.

Basic Data

The basic data and assumptions used previously were essentially the same for this study with minor changes in the distribution among user classes made to reflect actual conditions.

The projections for the base case and the case with electric heat restrictions at the end of FY 1983 were updated and new projections were also made for a case involving electric heat restrictions at the end of calendar year 1982.

Results and Conclusions

Table 1 presents annual system net generation and peak demand for fiscal years 1970 through 1982 along with annual percent increases. The only elements differing from the July 1982 study are the net generation and percent increase for 1982. The actual net generation for 1982 was 202,900 MWh for an increase of 21.7 percent. The earlier study had forecast only slightly higher figures--205,000 MWh and a 23 percent increase.

Table 2 presents the estimates of future demand for the base case. Compared to the earlier projections the actual totals for FY82 were:

- o higher for total residential customers (2%)
- o higher for general class (8%)
- o lower for hot water class (9%)
- o lower for all electric class (5%)
- o total residential use slightly lower (3%)
- o commercial use slightly higher (5%)

The residential sector was expected to have fewer general class customers than the previous year due to customers switching from general class to hot water class. This apparently did not happen as there were actually more general class customers than the previous year. Slight adjustments were thus made to reflect this in future years. The total sales and net generation were also adjusted for future years to reflect slightly lower figures for FY82 than expected. This resulted in somewhat lower total loads in the forecast.

Table 1. Juneau Area Energy and Peak Demand

| Fiscal Year | System Net Generation MWH* | MWH % Annual Increase | Peak Demand Mw | MW % Annual Increase |
|-------------|-------------------------------------|-----------------------------|----------------------|----------------------------|
| 1970 | 58,266 | | 12.4 | |
| 1971 | 63,786 | 9.5 | 13.8 | 11.3 |
| 1972 | 70,255 | 10.1 | 14.9 | 8.0 |
| 1973 | 75,753 | 7.8 | 15.5 | 4.0 |
| 1974 | 83,059 | 9.6 | 16.2 | 4.5 |
| 1975 | 94,609 | 13.9 | 17.8 | 9.9 |
| 1976 | 106,296 | 12.4 | 19.8 | 11.2 |
| 1977 | 112,197 | 5.6 | 20.4 | 3.0 |
| 1978 | 126,800 | 13.0 | 23.4 | 14.7 |
| 1979 | 138,900 | 9.5 | 23.1 (R) | -1.3 |
| 1980 | 145,200 | 4.5 | 26.2 | 13.4 |
| 1981 | 166,700 | 14.8 | 32.2 | 22.9 |
| 1982 | 202,900 | 21.7 | 42.0 | 30.4 |

* Includes AEL&P and GHEA sales and losses.

(R) Revised from previously published data.

Table 2. Estimate of Future Demands
Base Case

| Fiscal Year | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1995 | 2000 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Population | 20,085 | 21,495 | 22,353 | 23,250 | 24,180 | 25,146 | 25,650 | 26,160 | 26,603 | 27,220 | 30,050 | 33,100 |
| People per Customer | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Residential Customers (Average) | 7,725 | 8,267 | 8,600 | 8,940 | 9,300 | 9,670 | 9,865 | 10,060 | 10,260 | 10,470 | 11,560 | 12,760 |
| Residential Sales | | | | | | | | | | | | |
| General Class, Customers | 5,165 | 5,287 | 5,160 | 4,900 | 4,880 | 4,860 | 4,730 | 4,790 | 4,545 | 4,505 | 4,055 | 4,065 |
| KWH/Customer | 6,074 | 7,052 | 7,083 | 6,890 | 6,890 | 6,890 | 6,890 | 6,750 | 6,620 | 6,480 | 5,870 | 5,870 |
| KWH, Million | 31.4 | 37.3 | 36.6 | 34.3 | 33.6 | 33.5 | 32.6 | 32.3 | 30.1 | 29.2 | 23.8 | 23.9 |
| Hot Water Class, Customers | 2,040 | 1,935 | 1,780 | 2,085 | 2,190 | 2,275 | 2,375 | 2,455 | 2,535 | 2,615 | 2,765 | 2,805 |
| KWH/Customer | 12,000 | 13,100 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 |
| KWH, Million | 24.5 | 25.3 | 25.9 | 26.7 | 28.3 | 29.6 | 30.6 | 31.7 | 32.7 | 33.7 | 35.7 | 37.2 |
| All Electric Class, Customers | 520 | 1,043 | 1,460 | 1,875 | 2,230 | 2,515 | 2,760 | 2,815 | 3,100 | 3,350 | 4,740 | 5,010 |
| KWH/Customer | 23,000 | 26,700 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 |
| KWH, Million | 12.4 | 27.8 | 40.2 | 51.6 | 61.3 | 69.2 | 75.9 | 77.4 | 87.5 | 92.1 | 130.4 | 159.0 |
| Subtotal Residential, KWH, Million | 68.4 | 90.9 | 102.2 | 112.0 | 123.2 | 122.3 | 139.1 | 141.4 | 150.2 | 155.1 | 189.0 | 220.9 |
| Commercial Sales (historic (30%)) | | | | | | | | | | | | |
| Subtotal Commercial, KWH, Million | 39.7 | 46.7 | 53.7 | 59.0 | 64.0 | 69.0 | 71.0 | 74.0 | 77.0 | 80.0 | 95.0 | 110.0 |
| Government Sales (historic (26%)) | | | | | | | | | | | | |
| Subtotal Govt., GWH | 34.7 | 37.1 | 44.6 | 47.0 | 48.9 | 58.9 | 60.8 | 62.7 | 64.6 | 72.9 | 82.4 | 102.0 |
| Street Lighting, Residential & Government, GWH | | | .1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 |
| Total Sales, GWH | 142.5 | 174.2 | 201.6 | 220.0 | 237.3 | 261.4 | 272.1 | 279.4 | 293.1 | 309.3 | 360.76 | 434.4 |
| Net Generation, GWH (110% of Sales) | 166.7 | 202.7 | 231.9 | 253.0 | 272.9 | 300.6 | 312.9 | 321.3 | 337.1 | 359.6 | 425.9 | 497.9 |
| System Cap. Factor % | 59.0 | 59.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 |
| Peak Demand, MW | 32.2 | 42.0 | 48.1 | 52.5 | 56.6 | 62.4 | 65.0 | 66.7 | 70.0 | 73.0 | 80.0 | 107.7 |

(Revised) APA 11/82

Table 3 and 4 present the estimates of future demand if electric heat-- including hot water--is restricted at the start of calendar year 1983 and fiscal year 1984 respectively. Restricting electric heat at the earlier date would result in about 6 percent lower net generation in 1985 and 16 percent lower in 1990. Restrictions at the later date would result in 5 percent lower in 1985 and 14 percent lower in 1990 compared to the base case. Table 5 summarizes the net generation and peak demand for the three cases.

Table 6 compares the hydro resources and estimated loads for the Juneau area under the three cases. The firm energy figure for Snettisham is higher than used in previous studies. Original power studies by the Corps had indicated 168 GWh of firm energy while the latest studies associated with the design of Crater Lake show 179 GWh of firm energy. Both these figures are theoretical and actual firm energy will have to be proven through operation of the project. All cases indicate an energy deficit of firm energy while only the base case experiences deficits of average energy in a few years. Restricting electric space and hot water heating in January versus October of 1983 would result in slightly lower deficits of firm energy.

Table 4. Estimate of Future Demands
Electric Heat Restricted 10/03

| Fiscal Year | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1995 | 2000 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Population | 20,085 | 21,495 | 22,333 | 23,250 | 24,100 | 25,146 | 25,650 | 26,160 | 26,685 | 27,220 | 30,050 | 33,180 |
| People per Customer | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Residential Customers (Average) | 7,725 | 8,267 | 8,600 | 8,940 | 9,300 | 9,670 | 9,865 | 10,060 | 10,260 | 10,470 | 11,560 | 12,760 |
| Residential Sales | | | | | | | | | | | | |
| General Class, Customers | 5,165 | 5,209 | 5,160 | 5,185 | 5,545 | 5,915 | 6,110 | 6,305 | 6,505 | 6,715 | 7,005 | 7,005 |
| KWH/Customer | 6,074 | 7,052 | 7,083 | 6,760 | 6,900 | 7,040 | 6,900 | 6,760 | 6,630 | 6,500 | 5,890 | 5,890 |
| KWH, Million | 31.4 | 37.3 | 36.6 | 35.1 | 38.3 | 41.6 | 42.2 | 42.6 | 43.1 | 43.6 | 46.0 | 53.0 |
| Hot Water Class, 1/ Customers | 2,040 | 1,935 | 1,980 | 2,055 | 2,055 | 2,055 | 2,055 | 2,055 | 2,055 | 2,055 | 2,055 | 2,055 |
| KWH/Customer | 12,000 | 13,100 | 12,700 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 |
| KWH, Million | 24.5 | 25.3 | 25.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 | 26.5 |
| All Electric Class, Customers | 520 | 1,043 | 1,460 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 | 1,700 |
| KWH/Customer | 23,800 | 26,700 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 |
| KWH, Million | 12.4 | 27.8 | 40.2 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 |
| Subtotal Residential, KWH, Million | 60.4 | 90.3 | 102.2 | 108.3 | 111.5 | 114.9 | 115.4 | 115.7 | 116.4 | 116.9 | 119.2 | 126.3 |
| Commercial Sales (historic (30%)) | | | | | | | | | | | | |
| Subtotal Commercial, KWH, Million | 37.7 | 46.7 | 51.6 | 53.6 | 56.2 | 57.0 | 58.0 | 57.0 | 60.0 | 61.0 | 66.0 | 71.0 |
| Government Sales (historic (26%)) | | | | | | | | | | | | |
| Subtotal Govt., GWH | 31.9 | 37.1 | 44.6 | 46.5 | 46.4 | 51.1 | 53.0 | 54.9 | 55.8 | 57.8 | 67.3 | 76.0 |
| Street Lighting, Residential & Government, GWH | | | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 |
| Total Sales, GWH | 142.5 | 174.2 | 199.5 | 209.6 | 215.3 | 224.2 | 227.6 | 231.1 | 233.5 | 237.0 | 253.9 | 275.6 |
| Net Generation, GWH (115% of Sales) | 166.7 | 202.9 | 229.3 | 241.1 | 247.6 | 257.8 | 261.8 | 265.7 | 268.5 | 272.6 | 292.0 | 316.9 |
| System Cap. Factor % | 57.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 | 55.0 |
| Peak Demand, MW | 32.2 | 42.0 | 47.6 | 50.0 | 51.4 | 53.5 | 54.3 | 55.2 | 55.7 | 56.6 | 60.6 | 65.0 |

1/ Hot Water Class included in restriction.

Table 3. Estimate of Future Demands
Electric Heat Restricted 1/83

| Fiscal Year | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1995 | 2000 |
|---|--------|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Population | 20,000 | 21,493 | 22,355 | 23,250 | 24,180 | 25,146 | 25,630 | 26,160 | 26,600 | 27,220 | 30,030 | 33,100 |
| People per Customer | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| Residential Customers (Average) | 7,725 | 8,267 | 8,600 | 8,940 | 9,300 | 9,670 | 9,865 | 10,060 | 10,240 | 10,470 | 11,560 | 12,760 |
| Residential Sales | | | | | | | | | | | | |
| General Class, Customers | 3,163 | 3,287 | 3,220 | 3,560 | 3,920 | 4,190 | 4,483 | 4,600 | 4,880 | 7,070 | 8,100 | 9,300 |
| KWH/Customer | 6,074 | 7,052 | 7,083 | 6,760 | 6,900 | 7,040 | 6,900 | 6,760 | 6,630 | 6,500 | 5,890 | 5,890 |
| KWH, Million | 31.4 | 37.3 | 37.0 | 37.6 | 40.8 | 44.3 | 44.7 | 43.2 | 45.6 | 46.1 | 40.2 | 55.2 |
| Hot Water Class, 1/ Customers | 2,040 | 1,935 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 | 1,980 |
| KWH/Customer | 12,000 | 13,100 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 | 12,900 |
| KWH, Million | 24.5 | 25.3 | 25.3 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 | 25.5 |
| All Electric Class, Customers | 520 | 1,043 | 1,400 2/ | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 | 1,400 |
| KWH/Customer | 23,000 | 26,700 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 | 27,500 |
| KWH, Million | 12.4 | 27.8 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 | 38.5 |
| Subtotal Residential, KWH, Million | 68.4 | 90.3 | 101.0 | 101.6 | 104.7 | 108.3 | 108.8 | 109.2 | 109.7 | 110.1 | 112.2 | 119.3 |
| Commercial Sales (historic (30%)) | | | | | | | | | | | | |
| Subtotal Commercial, KWH, Million | 39.7 | 46.7 | 51.6 | 53.6 | 56.2 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 66.0 | 71.0 |
| Government Sales (historic (26%)) | | | | | | | | | | | | |
| Subtotal Govt., GWH | 34.9 | 37.1 | 44.6 | 46.5 | 46.4 | 51.1 | 53.0 | 54.7 | 55.8 | 57.8 | 67.3 | 76.8 |
| Street Lighting, Residential & Government, GWH | | | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 |
| Total Sales, GWH | 142.9 | 174.2 | 198.3 | 202.7 | 208.7 | 217.6 | 221.0 | 224.4 | 226.8 | 230.2 | 246.9 | 260.6 |
| Net Generation, GWH (115% of Sales) | 166.7 | 202.7 | 228.1 | 233.4 | 240.0 | 250.3 | 254.1 | 258.1 | 260.8 | 264.8 | 284.0 | 300.7 |
| System Cap. Factor % | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 |
| Peak Demand, MW | 32.2 | 42.0 | 47.3 | 48.4 | 49.8 | 51.9 | 52.7 | 53.6 | 54.1 | 55.0 | 58.9 | 64.1 |

1/ Hot Water Class included in restriction.

2/ Total all electric customers on 7/30/82 was 1,303.

APA 11/02

Table 5. Juneau Area Power Requirements

| Fiscal Year | Basic Case | Electric Heat Restricted 1/83 | Electric Heat Restricted 10/83 |
|-------------|---------------|-------------------------------------|--------------------------------------|
| 1981 GWH | 166.7 | | |
| MW | 32.2 | | |
| 1982 GWH | 202.9 | 202.9 | 202.9 |
| MW | 42.0 | 42.0 | 42.0 |
| 1983 GWH | 232 | 228 | 230 |
| MW | 48 | 47 | 48 |
| 1984 GWH | 253 | 233 | 241 |
| MW | 52 | 48 | 50 |
| 1985 GWH | 273 | 240 | 248 |
| MW | 57 | 50 | 51 |
| 1986 GWH | 301 | 250 | 258 |
| MW | 62 | 52 | 54 |
| 1990 GWH | 356 | 265 | 273 |
| MW | 74 | 55 | 57 |
| 1995 GWH | 424 | 284 | 292 |
| MW | 88 | 59 | 61 |
| 2000 GWH | 500 | 309 | 317 |
| MW | 104 | 64 | 66 |

(Revised)

APA 11/82

Table 6. Comparison of Juneau Area Hydro Resources and Estimated Loads

| Resource | | Annual Energy GWH | |
|----------------------|--|-------------------|---------|
| | | Firm | Average |
| Snettisham Long Lake | | 179 (R) | 216 (R) |
| AEL&P Hydro | | 42 | 48 |
| | | 221 | 264 |

| Estimated Loads and Deficits | | | | | | | | | |
|------------------------------|---------------------|------------------|---------|---------------------------------|------------------|---------|----------------------------------|------------------|---------|
| FY | Base Case | | | Electric Heat Restricted 1/0/0* | | | Electric Heat Restricted 10/0/0* | | |
| | Estimated Loads-GWH | Deficit-GWH Firm | Average | Estimated Loads-GWH | Deficit-GWH Firm | Average | Estimated Loads-GWH | Deficit-GWH Firm | Average |
| 1983 | 232 | -11 | +32 | 228 | -7 | +36 | 230 | -7 | +34 |
| 1984 | 253 | -32 | +11 | 233 | -12 | +31 | 241 | -20 | +23 |
| 1985 | 273 | -52 | -9 | 240 | -19 | +24 | 248 | -27 | +15 |
| 1986 | 301 | -80 | -37 | 250 | -29 | +14 | 259 | -38 | +5 |
| 1987 | 313 | -92 | -49 | 254 | -33 | +10 | 262 | -41 | +3 |

(R) Revised from previously published data.

* Includes electric hot water heating.



Department Of Energy

Alaska Power Administration
P.O. Box 50
Juneau, Alaska 99802

November 1982

POLICY STATEMENT/ELECTRIC SPACE AND WATER HEATING FOR JUNEAU

Juneau has had substantial growth in use of electricity for space and water heating in the past several years. This is most notable in residential classes of consumers, but is significant also for commercial, industrial, and government customers.

There have been substantial benefits--important amount of oil saved through substitution of electricity from hydro, improved utilization of the hydro resource, and so forth, as well as substantial dollar benefits to consumers and local firms.

The hydro resources are finite. The latest studies show power demands will exceed firm hydro energy capability from now until completion of the Crater Lake unit of Snettisham. This is further complicated because the funding for Crater Lake construction has not yet been secured. Longer term concerns include knowledge that future hydro projects (after completion of Snettisham) will have substantially higher financing and construction costs--depending of course on future inflation and interest rates.

Much work has been accomplished in identifying energy options for Juneau. Increased use of local renewable resources (principally hydro and wood) and reduced dependency on petroleum products have been proposed as desirable objectives and supported by the community, along with the all important objective of increasing efficiency of all energy uses.

Now we face at least a short term future in which increases in electric power consumption will also increase consumption of oil. That situation calls for careful examination of policies of APA and area utilities which may influence consumer decisions on power use.

The following policy guides are considered appropriate for the current situation:

A. With respect to electric space heat:

1. Continue for the present policies of:
 - a. No promotion of electric heat.
 - b. Encouraging builders and owners who are considering electric heat first to seek optimum building efficiency, and second consider maximizing efficiency of heating systems.
2. Provide added emphasis on builder/owner options such as audits, dual heating systems, sectional controls, load management, and proper sizing of installations.
3. Encourage those contemplating conversion to electric heat to:
 - a. Consider deferring the conversion for a few years until power from Crater Lake is available.
 - b. Plan on retaining oil systems as a backup wherever possible.
4. Encourage those contemplating electric heat in new construction to:
 - a. Strive for heating efficiency at least as great as average heat pump performance in a "code" building through a combination of additional thermal efficiency measures and heating system design.
 - b. Include a backup heating system.

B. With respect to electric hot water heating:

1. Encourage maximum efficiency in design of heating system, including consideration to pre-heating methods and insulation.
2. Encourage use of dual systems which can use oil for water heating as well as electricity.

C. With respect to all classes of power use:

1. Encourage continued activities by consumers to improve efficiency of power use.

- 2. Monitor overall system loads and be prepared to institute program to actively discourage or prohibit new electric heating applications if necessary.

It is noted that AEL&P is considering additional measures including a possible prohibition of new all-electric services pending availability of Crater Lake power and seasonal rates. APA supports and endorses those measures.



Robert J. Cross
Administrator

MISCELLANEOUS

DATA

SHEETS

NET GENERATION (million kWh)

| FY. | Snettisham | AEL&P Hydro | AEL&P Diesel | Total |
|------|----------------------|----------------|-----------------|-------|
| ==== | ===== | ===== | ===== | ===== |
| 78 | 78.4 (62%) (5%) | 42.9 (34%) | 3.5 (4%) | 124.8 |
| 79 | 82.3 (59%) (15%) | 47.6 (34%) | 8.9 (7%) | 138.9 |
| 80 | 94.6 (65%) (24%) | 49.1 (34%) | 1.5 (1%) | 145.2 |
| 81 | 117.0 (70%) (25%) | 48.7 (29%) | 1.0 (1%) | 166.7 |
| 82 | 146.5 (72%) | 39.9 (20%) | 16.5 (8%) | 202.9 |

ELECTRIC HEAT

| | 1979 | 1980 | 1981 | 1982 |
|--------------------|------|------|------|-------|
| | ==== | ==== | ==== | ==== |
| All Electric Homes | 69 | 145 | 520 | 1,043 |

SNETTISHAM PROJECT DATA

| Stage | Installed Capacity Kw | Energy Million kWh | |
|---------------|-----------------------------|-----------------------|---------|
| | | Firm | Average |
| ===== | ===== | ===== | ===== |
| Existing | 47,160 | 179 | 216 |
| Crater Lake | 27,000 | 106 | 118 |
| Long Lake Dam | --- | 57 | 25 |
| | ----- | ----- | ----- |
| Total | 74,160 | 342 | 359 |

Snettisham Peaks -- Dec. '79 = 23.2 MW; Nov. '82 = 36 MW

ADDITIONAL PROJECTS

| | Installed Capacity Kw | Firm Energy kWh |
|-----------------|-----------------------------|-----------------------|
| | ===== | ===== |
| Lake Dorothy | 34,000 | 150 |
| Sweetheart Lake | 29,000 | 125 |
| Speel River | 63,000 | 275 |
| Tease Creek | 16,000 | 70 |
| | ----- | ----- |
| Total | 142,000 | 620 |

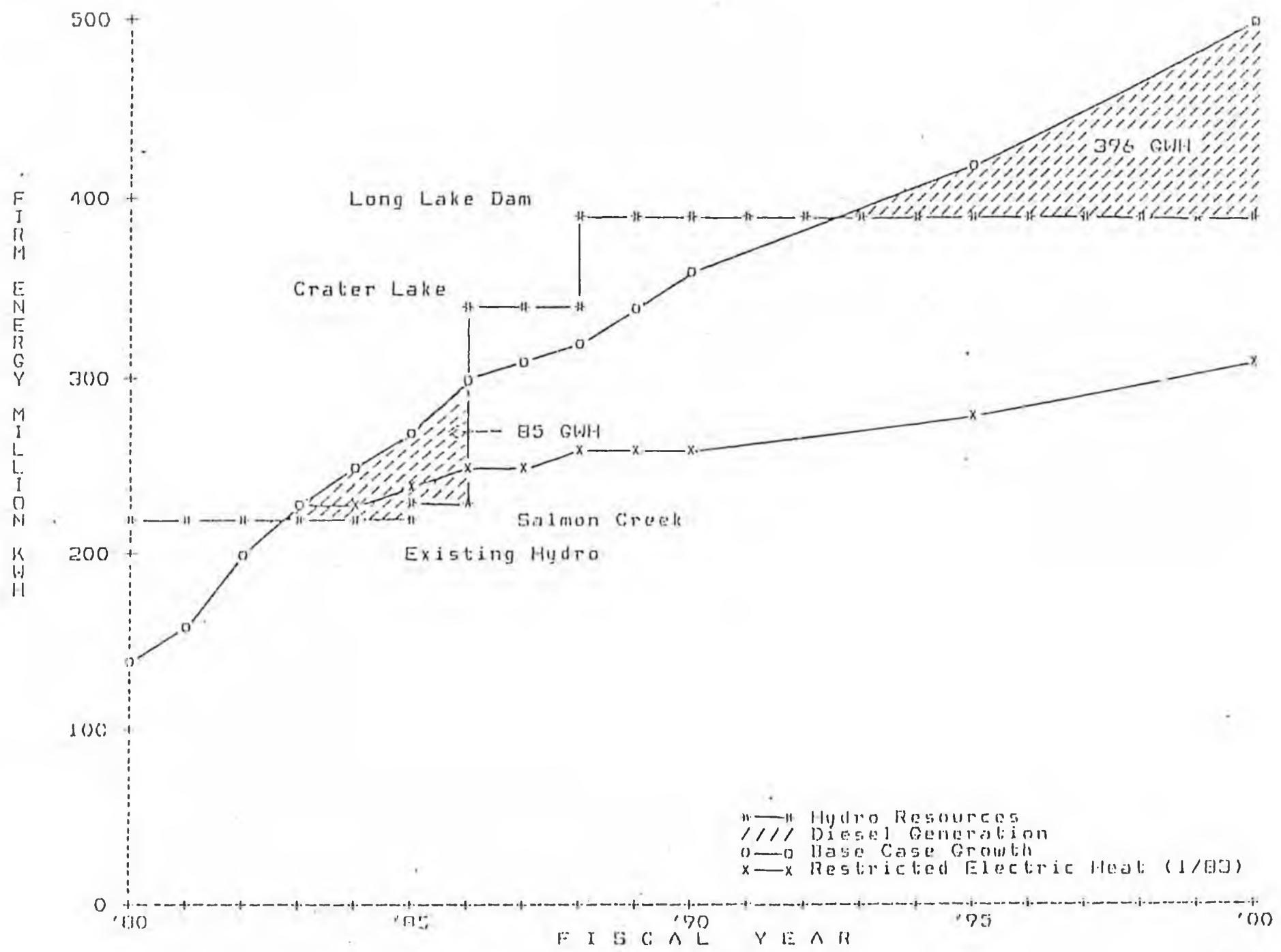
JUNEAU AREA HISTORIC ENERGY AND PEAK DEMAND

| Fiscal Year ===== | System Generation MWh ===== | Peak Demand MW ===== |
|----------------------|--------------------------------------|-------------------------------|
| | 1970 | 58,266 |
| 1971 | 63,786 | 13.8 |
| 1972 | 70,255 | 14.9 |
| 1973 | 75,753 | 15.5 |
| 1974 | 83,059 | 16.2 |
| 1975 | 94,609 | 17.8 |
| 1976 | 106,296 | 19.8 |
| 1977 | 112,197 | 20.4 |
| 1978 | 126,818 | 23.4 |
| 1979 | 138,922 | 23.1 |
| 1980 | 145,200 | 26.2 |
| 1981 | 166,700 | 32.2 |
| 1982 | 202,900 | 42.0 |

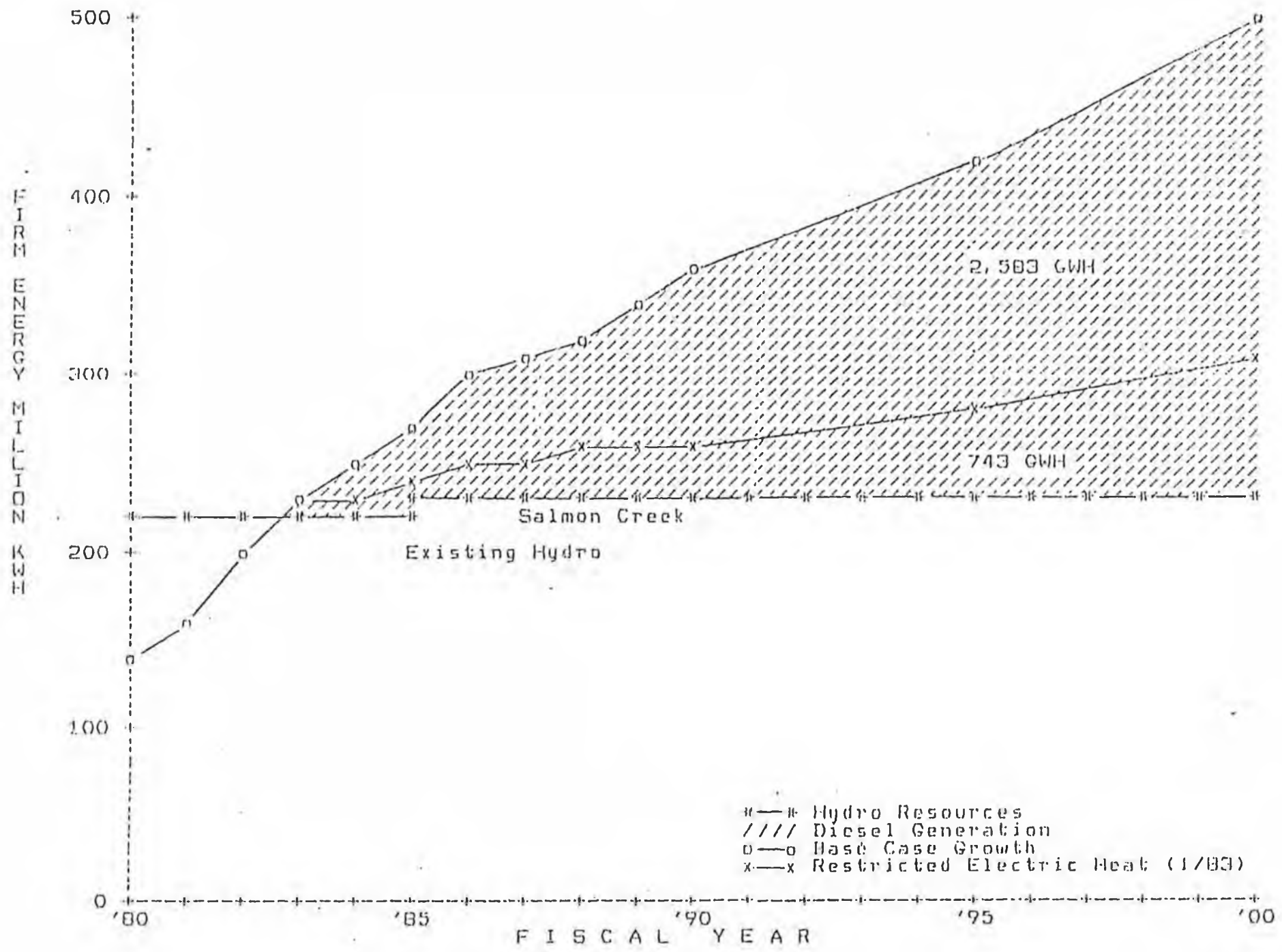
EXISTING JUNEAU AREA GENERATION CAPABILITY

| PROJECT | Capacity | Firm Energy |
|------------------|----------|-------------|
| ===== | (kW) | (kWh) |
| ===== | ===== | ===== |
| Snettisham | 47,160 | 179 million |
| Utility Hydro | 8,200 | 42 million |
| Utility Diesel * | 38,200 | |
| | ----- | ----- |
| | 93,560 | 221 million |

* - includes combustion turbine unit



JUNEAU LOADS & RESOURCES



JUNEAU LOADS & RESOURCES
WITHOUT CRATER LAKE

BACKGROUND Snettisham Project

The Snettisham Project was authorized and designed as a staged project to meet the long-term power needs of the Juneau area. The Corps of Engineers is responsible for design and construction, and the Alaska Power Administration is responsible for operation and maintenance of Federal project facilities. The first or Long Lake stage was completed and has been in commercial operation since October 1975.

Snettisham is the largest hydroelectric project in Alaska and the main power source for Juneau, Alaska's capital city. The Snettisham Powerplant is 28 air miles southeast of Juneau.

The Long Lake stage, now on-line, includes a low dam at the outlet of Long Lake, power tunnel and penstock totaling 10,000 feet in length, and an underground powerplant with two generators, each with a rated capacity of 23,580 kilowatts. Power is transmitted to Juneau over a 44-mile-long, 138,000-volt transmission line, which includes a 3-mile underwater section. The Juneau Substation, located 4 miles south of Juneau, is the point of delivery to the local utility system. Supervisory control equipment provides for operating the Snettisham Powerplant from the Juneau Substation.

The powerplant site is remote, accessible only by air or water. Onsite facilities include an air strip, barge dock and boat harbor, a local road system, living quarters, warehouses, and water and sewer systems, all maintained by the APA maintenance staff stationed at the Project. The staff also has capability to operate the project onsite in case of problems with the supervisory control system.

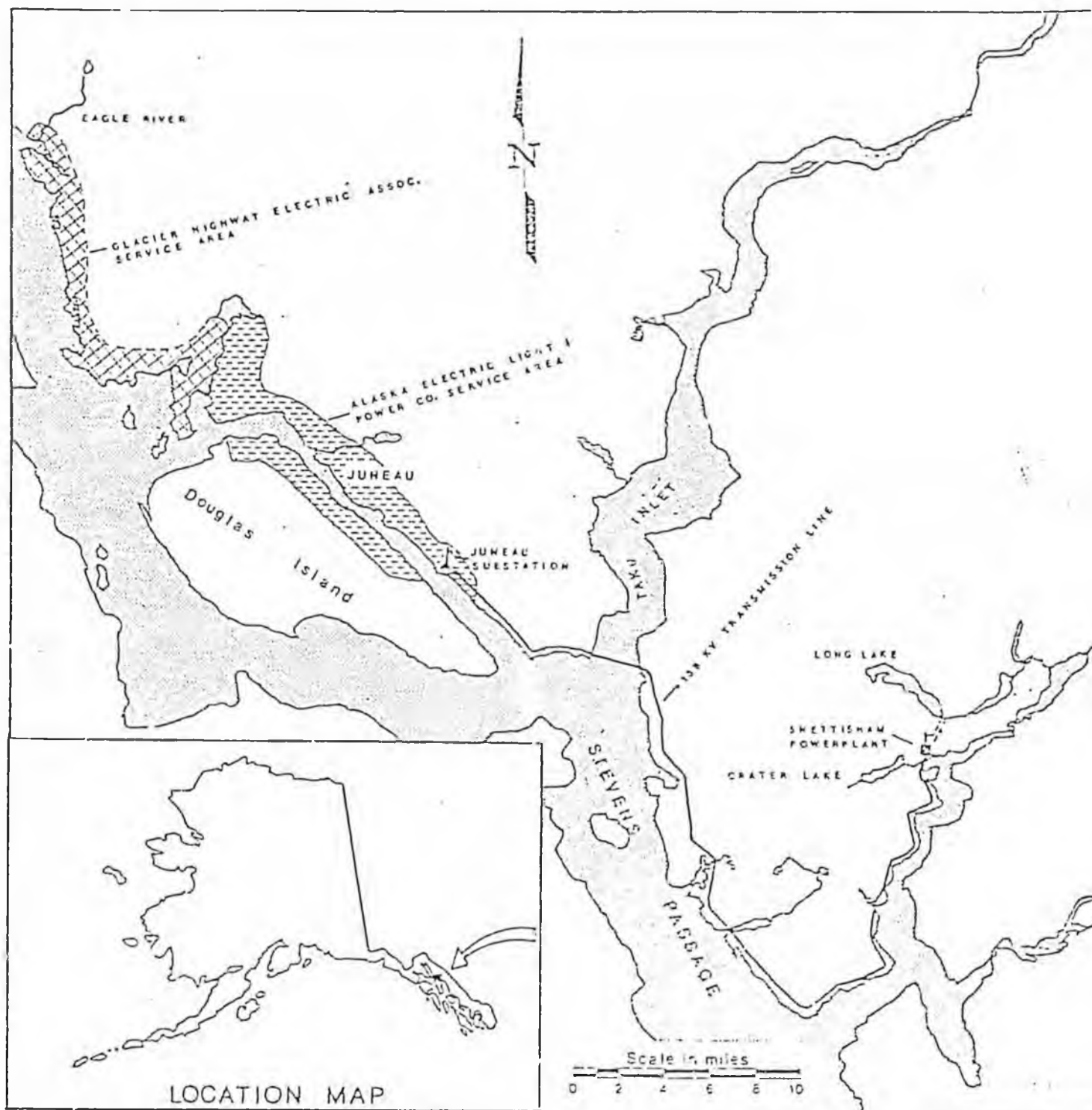
Crater Lake stage is an authorized future addition which would add 27,000 kilowatts of capacity and 106 million kWh per year annual firm energy. New facilities to develop Crater Lake include a tunnel and penstock to tap the existing lake and installation of a new turbine-generator set in the existing powerplant. The existing powerplant was constructed with provisions for the Crater Lake turbine-generator set.

The addition of Long Lake dam would add 57 million kWh of firm annual energy to the project. The new dam would raise the water surface elevation of Long Lake from the present maximum of 313 feet MSL to elevation 385 feet MSL.

The existing transmission line is capable of transmitting the additional power from the Crater Lake and Long Lake dam features.

LOCATION MAP

Snettisham Project and Juneau Power Market Area



A summary of the capabilities of the existing Snettisham Project and the Crater/Long Additions is shown in the following table:

| <u>Project</u> | <u>Capacity (kW)</u> | <u>Firm Annual Energy (1,000 kWh)</u> |
|----------------|--------------------------|---|
| Existing | 47,160 | 179,000 |
| Crater Lake | 27,000 | 106,000 |
| Long Lake Dam | <u>-----</u> | <u>57,000</u> |
| Total Project | 74,160 | 342,000 |

Snettisham Project repayment criteria are governed by language in the initial project authorization (Flood Control Act of 1962) as amended by the Water Resources Development Act of 1976. The present wholesale rate of 15.6 mills per kilowatt-hour reflects deferral of portions of the interest expense for an initial 10-year period pursuant to the 1976 Act. All costs, including the deferred interest, are to be repaid in a subsequent 50-year period which begins in 1986.