

MINING  
BRIEFING

1-14-81



Alaska State Legislature  
Senate

JUNEAU, ALASKA

SENATE RESOURCES COMMITTEE

January 14, 1981  
1:30 p.m.

Beltz Room  
Capitol 211

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MEMBERS PRESENT

SENATOR FAHRENKAMP  
SENATOR ELIASON  
SENATOR FISCHER  
SENATOR GILMAN  
SENATOR MULCAHY  
SENATOR STURGULEWSKI

MEMBERS ABSENT

SENATOR BRADLEY

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Phil Holdsworth (former Commissioner of DNR, Consultant and lobbyist) briefed the Committee on mining in the State.

During 1980 the mining industry: employed approximately 3-4,000 people; \$65-75 million was spent on exploration; gold production was 70,000 ounces figured at \$500.00 per ounce - \$35 million; and, coal production, with only one operator in the state was 700,000 tons - \$10 million.

He expects mineral exploration and other mining activities to increase because of a higher degree of certainty within the industry over the status of land in Alaska following the passage of the Alaska Lands Act. Hardrock and placer gold claim staking doubled in 1980 over the two previous years. Some 19,500 claims were staked last year, roughly half of them on placer gold prospects and the other half on hardrock mineral claims.

Mining Loan Program: The \$10 million revolving loan fund established last year has made loans totaling \$4.6 million; another \$3.7 million is expected to be committed for pending applications, leaving a balance of approximately \$1.6 million. He suggested that perhaps another \$10 million be appropriated to handle the additional applications anticipated.

Surface Mining Control & Reclamation Act of 1977: this took the power to regulate coal and other surface mining away from all of the states, but it provides a mechanism by which this power can be partially restored to the states upon approval by the federal Office of Surface Mining (OSM) provided the state program incorporates minimum federal management standards. The deadline to submit a state plan

was March 3, 1980 and OSM has stated that programs that were not approved would require a Federal program. The state has argued that since section 708 of the Act required a special study by the National Academy of Science-National Academy of Engineering thus dictating a different time frame for Alaska. This study was turned in only a couple of weeks ago.

He would like to see the state help miners by providing transportation by establishing a long range transportation program because there are some mineral areas that are economically viable but do not have transportation to market. .

J.P. Tangen: Past President of the Alaska Miners Association and an attorney for mining companies. OSM and the Surface Mining Control and Reclamation Act are quite a problem. The law is one of the greatest sources of litigation and a portion of it is before the Supreme Court. He stated that the state and federal government lack the personnel and expertise to enforce it.

Jeff Haynes .. Department of Natural Resources. The OSM wanted uniform regulations which were not in the best interest of the state. The study by the Academy had to be done before the state could submit its plan. The last reading was that the federal government was to acquire jurisdiction in late February or early March. The tone of the Academy study will officially and scientifically back the suggestions of the state.



Alaska State Legislature  
Senate

JUNEAU, ALASKA

MEMORANDUM

TO: SENATE RESOURCES COMMITTEE MEMBERS

FROM: SENATOR BETTYE FAHRENKAMP  
CHAIRMAN

RE: ATTACHED MATERIALS

DATE: JANUARY 16, 1981

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I would like to bring to your attention the attached memorandum prepared by the House of Representatives' Research Agency. The memorandum deals with the feasibility of using State royalty gas in the Beluga and Cook Inlet Region to generate electricity for the Fairbanks area.



ALASKA STATE LEGISLATURE  
HOUSE OF REPRESENTATIVES  
RESEARCH AGENCY

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

January 12, 1981

MEMORANDUM

TO: Senator Pat Rodey  
Attn: Jim Kelly

FROM: Jack Kreinheder *JK*  
Issues Analyst

RE: Production of Fairbanks Electric Power from Cook Inlet Natural Gas  
Research Request No. 171

You requested that we explore the feasibility of using State royalty gas in the Beluga and Cook Inlet region to generate electricity for the Fairbanks area, and that we provide information on the volumes of proven gas reserves and committed and uncommitted State royalty gas in the area.

Summary of Findings

- The feasibility of providing Fairbanks power from the Cook Inlet area appears to depend primarily on the economics of the Anchorage - Fairbanks transmission intertie, rather than the availability of royalty gas. Although the sale of royalty gas at subsidized or below-market prices could enhance the viability of the intertie, it does not appear to be a deciding factor.
- A 1979 study by Retherford Associates, Inc. estimated that Anchorage power could be delivered to Fairbanks through a 138 kilovolt intertie at a cost of about 3 cents per kilowatt hour less than Fairbanks power rates. This intertie system could provide about 47 percent of Fairbanks current power needs, thus reducing residential power rates by about 1.4 cents per kilowatt hour, or 15 percent. An update of this analysis by Commonwealth Associates will be available in the coming week.
- The remaining recoverable gas reserves in Cook Inlet total about 3,766 billion cubic feet (BCF). Of this volume, approximately 2,358 BCF are currently committed under contract, leaving 1,408 BCF in uncommitted reserves. About 251 BCF of remaining recoverable reserves of State royalty gas are estimated to exist in the Cook Inlet area<sup>1</sup>. No estimate of the portion of this royalty gas which is committed is available at this time. Table 1, attached, provides a breakdown of remaining reserves by field.

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<sup>1</sup> Estimate of total reserves by the Oil and Gas Conservation Commission, as of January 1, 1980. New estimates for reserves as of January 1, 1981 will be prepared by March. Estimate of committed and uncommitted reserves and of State royalty reserves by Division of Minerals and Energy Management, as of January 1, 1980.

The key question with respect to the feasibility of generating power for Fairbanks with Cook Inlet gas does not appear to be the availability or price of royalty gas, but rather the economic feasibility of an electric transmission intertie between Anchorage and Fairbanks. Although the State could conceivably enhance the viability of the intertie by selling royalty gas to Anchorage utilities at below-market prices, the effect of such an action on the intertie would be limited, for two reasons. First, the State's royalty share of total Cook Inlet gas production is relatively small, so the benefit of any price advantage for royalty gas would be diminished by the higher cost of the much larger quantities of gas needed by Anchorage utilities. Even if the royalty gas were provided free, the total cost of gas for Anchorage utilities would decline only moderately. Second, most of the benefit of reduced gas prices for Anchorage utilities would go to Anchorage consumers, because only a small percentage of the power generated would be transmitted to Fairbanks.

The possibility of interconnecting the power systems of Anchorage and Fairbanks has been discussed and studied for a number of years. Because of the relatively small size of the two populations, the distance between them, and the low cost of fossil fuels before the OPEC embargo of 1973, an intertie of this type had not been found to be economically feasible. However, the rapid increase in the price of fuels during the mid-1970's significantly improved the viability of an intertie between the two communities, and in 1978 the Alaska Power Authority (APA) undertook a new intertie study.

The APA selected Robert W. Retherford Associates as the principal consultant for the study. The primary focus of this study was on the feasibility of building an intertie line large enough to accommodate future power production from the proposed Susitna hydroelectric facility. The study looked at two line sizes: 345 kilovolts (kV) and 230-kV. The Retherford study found that the 345-kV line was not feasible, but that the smaller 230-kV line was economically feasible if built by 1984.

The study indicated only marginal feasibility for the 230-kV intertie line. The railbelt utilities then suggested that the APA consider a smaller intertie which would utilize existing transmission lines that now end at Willow on the south and Healy on the north. Retherford Associates also conducted this second analysis, which concluded that an intertie of 138kV from Willow to Healy was feasible, based on the transfer of surplus Anchorage power to the Fairbanks area. The study estimated that because of the lower price of Cook Inlet gas relative to the cost of oil and coal burned by Fairbanks utilities, this surplus Anchorage power could be delivered in Fairbanks at a cost approximately 3 cents per kilowatt hour lower than the prevailing power rates in Fairbanks.

An update of this analysis is now being prepared by Commonwealth Associates, Inc. for the APA. In 1980, the legislature passed three bills

which appropriated money for the Anchorage-Fairbanks transmission intertie and directed the APA to proceed with preliminary design, route selection, and development of a financing plan. In late August, 1980 the APA selected Commonwealth to do this work and also to complete an updated feasibility study which considered the benefits of both reserve sharing and the transfer of economy energy, as explained below. The Retherford study had considered only the latter benefit. The results of this updated analysis are expected to be available by mid-January and we will convey these findings to you as soon as we receive them. The transmission intertie offers two types of potential benefits to railbelt residents: reserve sharing and the transfer of economy energy. Reserve sharing would benefit primarily Anchorage, but also Fairbanks, by:

(1) allowing Anchorage utilities to take advantage of the greater generating capacity reserves in Fairbanks, thus reducing the need for construction of new generating capacity in Anchorage during the coming years; and

(2) providing greater reliability for the power system as a whole through the linking of generation capacity in the two cities. This improved reliability would reduce generation reserve requirements, thereby reducing the operating and construction costs of new generating capacity for both Anchorage and Fairbanks.

Power generation reserves are necessary to enable utilities to cope with failure of generating units, unanticipated loads such as those caused by unusually cold weather, rapid population growth, and so on. This reserve or excess capacity usually averages between 20 and 25 percent of the peak or heaviest demand for utilities in the contiguous United States. In other words, utilities usually maintain enough generation capacity to generate 1.2 to 1.25 times more power than is actually demanded by its customers. For a number of reasons, including slowed economic growth following completion of the Trans-Alaska pipeline, Fairbanks has a reserve of nearly 56 percent, compared to the Anchorage reserve of about 33 percent<sup>2</sup>. The transmission intertie would allow the greater Fairbanks reserves to be shared with Anchorage, and would permit utilities in both cities to maintain a lower level of reserve capacity in the future than would otherwise be needed in the absence of the intertie. Although power consumers would receive no immediate benefits from reserve sharing, electricity costs in future years would be significantly lower than without the intertie.

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<sup>2</sup>These figures and much of the intertie information in this memorandum prepared by David Wozniak, Intertie Project Manager for the APA.

Anchorage rates average about 4.0 cents per kWh. (rates vary significantly between utilities in each city, but these figures are approximate averages for the cities as a whole). Anchorage power rates are therefore about 5.2 cents per kWh lower than those of Fairbanks. Of course,

Fairbanks consumers would not see their power bills drop by the full 5.2 cents per kWh cost differential if the intertie were built, because the cost of building and maintaining the intertie would have to be added to the cost of the delivered power. As mentioned earlier, Retherford Associates estimated in their 1979 study that the delivered cost of Anchorage power in Fairbanks, including intertie expenses, would be approximately 3 cents per kWh less than power generated in Fairbanks. The delivered power cost would therefore be about 6.2 cents per kWh at present rates, or about one third less than the current Fairbanks average.

The 138 kV intertie line on which the Retherford analysis was based would be capable of transferring up to 35 megawatts of power from Anchorage to Fairbanks. This figure compares to the existing Fairbanks generation capacity of approximately 271 megawatts (excluding military and University of Alaska facilities). Although the transmission capacity of the 138 kV intertie would be only 13 percent of Fairbanks generation capacity, less than half of the Fairbanks capacity is usually producing power at any given time, so the potential contribution of the intertie to Fairbanks power needs is larger than the capacity figures alone would indicate.

Retherford estimated that on an annual basis, the 138 kV intertie would be able to transmit at least 200 million kWh from Anchorage to Fairbanks. To put this figure in context, the two Fairbanks electric utilities generated a total of about 400 million kWh during 1979. Therefore, this intertie system would be capable of supplying about 47 percent of Fairbanks power needs. If the Retherford estimates of the delivered cost of Anchorage power are accurate, consumer power costs in the Fairbanks area could be expected to drop by about 1.4 cents per kWh, or 15 percent (3 cents per kWh x .47).

Although the benefits of reserve sharing could allow Anchorage utilities to provide more than 47 percent of Fairbanks power needs, at least in the short run, the economic feasibility of transmitting this additional power to Fairbanks is doubtful. The feasibility of the 138 kV intertie discussed above is largely dependent on the use of existing transmission facilities from Anchorage to Willow and Fairbanks to Healy. Increasing the 35 megawatt capacity of this intertie system would require a substantial upgrading of the existing power lines, thus increasing the cost of delivered power in Fairbanks. The marginal feasibility of the larger 230 kV line analyzed by Retherford Associates suggests that the economies of using the existing power lines would outweigh the advantages of providing a larger percentage of Fairbanks power needs from Anchorage. Another factor is that even with reserve sharing, the amount of surplus

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power which would be available from Anchorage would decline as Anchorage continues to grow and need more power for its own needs. In the long run, Anchorage utilities might not be able to spare more power than the 138 kV line could carry. These questions should be addressed in more detail by the Commonwealth Associates study.

I hope this information is useful. We should be able to provide you with an update of this memorandum based on the Commonwealth study by the week of January 19. Please let us know if you have any questions or would like additional research in this area.

JK/bf

TABLE 1  
 Remaining Proven Recoverable Natural  
 Gas Reserves in Cook Inlet  
 (Billions of Cubic Feet)

Field	Total Reserves	State Royalty Reserves
Albert Kaloa	0	0
Beaver Creek	240	0
Beluga River	767	61
Birch Hill	11	0
Falls Creek	13	0
Ivan River	101	0
Kenai	1,313	43
Lewis River	90	0
McArthur River	78	10
Moquawkie	0	0
Nicolaï Creek	17	2
North Cook Inlet	1,074	134
North Fork	12	0
North Middle Ground Shoal	0	0
Sterling	23	1
Swanson River	0	0
West Foreland	20	0
West Fork	<u>7</u>	<u>0</u>
TOT	3,766	251

SOURCE: Oil and Gas Conservation Commission and Division of Minerals and Energy Management, as of 1/1/80.