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**220**

Original sponsor: Kerttula, Szymanski,  
Kelly, and Fischer

1 IN THE SENATE

BY THE LABOR AND  
COMMERCE COMMITTEE

2 CS FOR SENATE BILL NO. 220 (L&C)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - FIRST SESSION

5 A BILL

6 For an Act entitled: "An Act authorizing certain transmission lines and  
7 approving construction costs for those lines; and  
8 providing for an effective date."

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

10 \* Section 1. In accordance with AS 44.83.185(c), the Anchorage to Kenai  
11 Peninsula 230 kilovolt transmission line is authorized at a construction  
12 cost of \$82,000,000 in 1987 dollars.

13 \* Sec. 2. In accordance with AS 44.83.185(c), the upgrade of the trans-  
14 mission interties from Wasilla to Willow and from Healy to Fairbanks to 345  
15 kilovolt transmission lines is authorized at a construction cost of  
16 \$118,000,000 in 1987 dollars.

17 \* Sec. 3. This Act takes effect immediately under AS 01.10.070(c).  
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6-1021H  
Cramer  
3/9/90

Original sponsor(s): SEN. KERTTULA, Szymanski, Kelly, Fischer

1 IN THE SENATE

BY THE LABOR & COMMERCE COMMITTEE

2 CS FOR SENATE BILL NO. 220 (L&C)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act authorizing a transmission line between  
7 Anchorage and the Kenai Peninsula; and providing for  
8 an effective date."

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

10 \* Section 1. AUTHORIZATION. In accordance with AS 44.83.185(c), the  
11 Alaska Energy Authority is authorized to design and construct a 138 kilo-  
12 volt electric transmission line between Anchorage and the Kenai Peninsula  
13 at a cost of \$89,000,000 in 1990 dollars if the authority meets the con-  
14 ditions set out in sec. 2 of this Act.

15 \* Sec. 2. CONDITIONS. The authorization contained in sec. 1 of this  
16 Act is contingent upon the Alaska Energy Authority and participating elec-  
17 tric utilities entering into a written agreement in which the participating  
18 utilities agree to pay the amount by which the design and construction  
19 costs for the transmission line between Anchorage and the Kenai Peninsula  
20 exceed \$74,664,430. The authorization is also contingent upon the util-  
21 ities and the authority entering into a written agreement in which the  
22 participating utilities agree to pay the operating and maintenance costs  
23 for the transmission line.

24 \* Sec. 3. This Act takes effect immediately under AS 01.10.070(c).  
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27  
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6-2336A  
Cramer  
3/8/90

BY THE LABOR AND COMMERCE COMMITTEE

1 IN THE SENATE

2 SENATE BILL NO.

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act authorizing a transmission line between Healy  
7 and Fairbanks; and providing for an effective date."

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

9 \* Section 1. AUTHORIZATION. In accordance with AS 44.83.185(c), the  
10 Alaska Energy Authority is authorized to design and construct a 138 kilo-  
11 volt electric transmission line between Healy and Fairbanks at a cost of  
12 \$60,000,000 in 1990 dollars if the authority meets the conditions set out  
13 in sec. 2 of this Act.

14 \* Sec. 2. CONDITIONS. The authorization contained in sec. 1 of this  
15 Act is contingent upon the Alaska Energy Authority and participating elec-  
16 tric utilities entering into a written agreement in which the participating  
17 utilities agree to pay the amount by which the design and construction  
18 costs for the transmission line between Healy and Fairbanks exceed  
19 \$50,335,570. The authorization is also contingent upon the utilities and  
20 the authority entering into a written agreement in which the participating  
21 utilities agree to pay the operating and maintenance costs for those trans-  
22 mission lines.

23 \* Sec. 3. This Act takes effect immediately under AS 01.10.070(c).  
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# CHUGACH ELECTRIC ASSOCIATION, INC.

April 26, 1990

Senator Richard I. Eliason  
Alaska State Legislature  
P.O. Box V (MS 3100)  
Juneau, Alaska 99811

Dear Senator Eliason

Attached are two letters of rebuttal which the Anchorage Daily News refused to print in response to Representative Sam Cotten's Compass Article (copy attached) of April 13, 1990, concerning the Railbelt Interties.

I was told by the Daily News Managing Editor Dave Carey that these responses could only be printed as a letter to the editor if their length was shortened to 250 words or less and that they would not be used as a Compass Article.

As I told Mr. Carey, limiting responses to an article that was nearly 1,000 words in length with a response one-fourth that size is unfair.

The Anchorage Daily News obviously opposes the interties. While they have printed a number of editorials and news stories which have opposed the projects, they refuse to let intertie supporters air their views with equal representation in their paper.

I realize that this is a busy time for you, but I would ask you to read the attached letters so that you will know both sides of this important issue.

Sincerely,

CHUGACH ELECTRIC ASSOCIATION, INC.

A handwritten signature in black ink, appearing to read "Daniel E. Bloomer", is written over the typed name.

Daniel E. Bloomer  
Executive Staff Assistant

DEB/sb  
DEB:82

Attachments

Response to Compass Article of 4/13/90

I read with interest Representative Sam Cotten's Compass Article concerning the Railbelt Intertie proposals. Representative Cotten expressed his opinion rather eloquently, however, a couple of the statements which were presented require rebuttal.

1. "The Railbelt Energy Fund was created by the Legislature in 1986". This is true, however, Representative Cotten fails to mention that the fund was earmarked specifically for energy projects in the railbelt. The reasoning behind the funds "legislative intent" is simple - the people who live in the bush were given Power Cost Equalization and certain other non-railbelt communities received hydroelectric generating plants, all in an effort to help keep energy costs down. The Railbelt Energy Fund, as it was earmarked, was the railbelt's "piece of the pie".
2. "A new study (prepared by the utilities) that intertie proponents claim show positive benefits for the construction of "downsized" projects". First of all the "new study" was not prepared by the utilities, the Railbelt Electric Utilities hired the firm Decision Focus (the same firm which the Alaska Energy Authority (AEA) had used for their analysis in 1987), to perform an economic feasibility study of building the intertie transmission lines at the downsized 138kV capacity. There were two major reasons for hiring Decision Focus - 1) The same basic data from the AEA study was used for the downsized capacity study which maintained the integrity of the study and minimized the cost. 2) The utilities recognized that a thorough study was required to secure funding from the legislature.
3. "Still, there is plenty of generation capacity available to take up the slack should Beluga go down... That power can be accessed without constructing new interties". Although, it is true that Alaska currently has more than adequate generation capacity, the contention that this power can be readily accessed without the new interties is false. In 1991 when the Bradley Lake Hydroelectric Plant comes on line there will be a total of 228 megawatts (million-watts) of generation capacity on the Kenai Peninsula. The existing transmission line between Anchorage and the Peninsula has the capability of delivering only 61 megawatts into Anchorage. The Homer Electric load on the Kenai Peninsula has never exceeded 82 megawatts. The math is simple:  $228 - (61 + 82) = 85$  megawatts of available generation which can never be transferred to the Anchorage area or north to Fairbanks in case of an emergency. The existing transmission line from Anchorage to Fairbanks has virtually the same transfer capability (62 megawatts) as the Southern line. The Northern line is used primarily for economy energy sales from Chugach to Golden Valley Electric in Fairbanks. During much of the winter months this line is

loaded to capacity. The result is lower cost electric service for the ratepayers in Fairbanks. The earnings to Chugach from these sales flow through to the Chugach ratepayers (including Homer Electric and Matanuska Electric Association members) to reduce the cost of service for the majority of the electric consumers in the railbelt.

The additional transmission line from Healy to Fairbanks would nearly double the transfer capability between Anchorage and Fairbanks and would allow even greater transfers of low cost energy. This would increase the savings. Additionally, the amount of energy which could be shipped to the Anchorage area from Fairbanks in an emergency would double. It's true there's plenty of generation in Alaska for the present, but the utilities need the interties so that they can utilize the lowest cost source of energy available today and also have the ability to move large blocks of power to areas in need during emergencies.

4. "Providing \$150 million from the Railbelt energy Fund for their construction would not be a responsible action on the part of the legislature". The most recent cost estimates for construction of the two interties (prepared by the Alaska Energy Authority) shows a cost of \$149 million. The railbelt electric utilities were told early on that they probably would not have any chance of receiving full project funding from the legislature. The utilities signed agreements with the Alaska Energy Authority agreeing to pay all construction costs over \$125 million (not \$150 million) and also to be responsible for operation and maintenance costs over the 50 year life of the projects. These agreements were widely distributed to the legislature.

The Railbelt Electric Utilities should be proud of these efforts to secure state funding for the interties, regardless of the ultimate outcome in Juneau of the energy fund. After all, providing reliable energy at the lowest cost to the member/consumers is their mission and the appropriate use of the Railbelt Energy Fund for the interties will help to meet that goal.

Dan Bloomer  
Employee of Chugach Electric Association, Inc.

# McGrane

Jewelers

345 West 5th Avenue  
Anchorage, Alaska 99501



*Diamonds*

April 18, 1990

Editor  
Anchorage Daily News  
P.O. Box 149001  
Anchorage, AK 99514-9001

Re: "Compass" Article of Friday, April 13

Dear Editor:

I have just perused Representative Sam Cotten's "Compass" article of Friday, April 13, 1990, and feel compelled to clear up several points about which Mr. Cotten reported inaccurate information. If, as Mr. Cotten says, looking out for the electrical consumers on the Railbelt is "stubborn dandelions", then so we are. I can't help but wonder what are the objectives of our elected representatives of the Railbelt and why they would differ from ours? Certainly it can't be to let the money, which has been earmarked for Railbelt energy projects, go to the Bush. One cannot deny that there is a public interest at stake here, particularly when we see more than 5,000 responses to the Chugach mail-out regarding the interties.

Rep. Cotten says that in the recent past, each session the Legislature has provided a resounding "NO" to use of the Railbelt Energy Fund for electrical interties. This statement is pure hogwash. In the past, the Legislature has not been able to get its act together to decide how to apportion the fund. No one has ever provided a resounding "NO."

Rep. Cotten also failed to fully explain the rationale behind the creation of the Railbelt Energy Fund. In 1986, the Railbelt share of what remained of the Susitna Hydroelectric project was placed in the Railbelt Energy Fund to ensure meeting future Railbelt energy needs. That was the original guidance, that remains the guidance today, and that is the rationale the Legislature should use in appropriating the money, for the good of the Railbelt consumer.

Rep. Cotten has selectively chosen studies to support his point that the interties are not a wise expenditure of money. The original Alaska Energy (Power) Authority (AEA) intertie study, which commenced in 1987 and was completed in 1988, showed that building of the high-capacity (230kV) line was not cost-effective

under the original set of circumstances. The second study, the so-called "new" information mentioned by Mr. Cotten, showed positive benefits for a lower-capacity (138kV) line. Rep. Cotten states that utilities can purchase power wholesale from Chugach cheaper than they can generate it themselves and that is why Beluga is the cornerstone of the Railbelt generation system. This is true. Then he states that this power can be accessed without the construction of new interties. We do not know how to do this. It is a known technical fact that the current intertie system is inadequate to effectively use the output of the \$328 million Bradley Lake project that will be on-line by mid-1991. Rep. Cotten further takes exception to the so-called intertie advocates who argue that the December 11, 1989 outage would have been of a shorter duration had the interties been in place. The fact of the matter is, with the limited capacity on the southern line, it was impossible to capitalize on all available generation; a great deal of which, was in the Kenai Peninsula.

Rep. Cotten further states that \$150 million is far too much money for the State to pay simply to reduce the off-time during a major power outage. First, Mr. Cotten is wrong about the numbers. The utilities agreed to a maximum of \$125 million. Secondly, I should make it clear at this point that no one ever suggested that the rationale for the interties was simply to reduce downtime, so to speak. We believe the interties are necessary to effectively use available generation capacity in the Railbelt, and thereby, to reduce rate impacts on the consumer. Mr. Cotten cites two independent reviews of the latest Railbelt utility-funded study that are in disagreement with the results. He fails to examine the basis for the independent reviews and takes them as straight gospel.

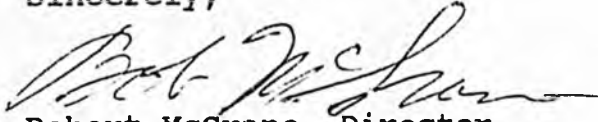
Mr. Cotten then says that if the interties were such a good deal, the utilities should be willing to use their own money to build these projects. It is clear that Rep. Cotten does not understand the nature of cooperative enterprises, more specifically that the utility business is a highly-regulated environment and the cooperative utilities don't have any money of their own. They only have consumer's money. If it is necessary for the utilities to build the interties without State help, then the only possible place that the money can come from inevitably is the consumer, who must pay for the project. That is, rates will go up.

As a finale, Rep. Cotten states that the AEA, the Legislative Research Agency and the State utility consumer advocate have all taken a close look at the proposed interties and found that they fail an economic feasibility test, implying that it would be irresponsible to fund the interties. I submit that to not use the fund for energy projects is the irresponsible act. To not fund these interties is unconscionable as the Railbelt consumers who

April 18, 1990

utilize the energy will inevitably have to provide the capital. Until the interties are built, the Bradley Lake project will be grossly under-utilized. It is clear to this writer that Mr. Cotten would do well to learn a bit more about the nature of the utilities in his own district.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bob McGrane".

Robert McGrane, Director  
Chugach Electric Association, Inc.

By REP. SAM COTTEN

The Railbelt interties have a life similar to that of stubborn dandelions. No matter how hard you work to keep them from coming up, every spring their rear their heads.

Each session since the Railbelt Energy Fund was created, the legislature has been lobbied by Southcentral electric utilities to appropriate money from the fund to construct electrical interties that would stretch from Fairbanks to the Kenai Peninsula. Each session the legislature has provided the same answer: a resounding "No!"

The Railbelt Energy Fund was created by the legislature in 1986. It is an account within the state's general fund that contains \$230 million. The money was originally earmarked for the Susitna hydroelectric project which has been shelved indefinitely.

In 1986, the utilities proposed constructing new, 230-kilovolt electrical interties to upgrade the existing transmission system. The legislature responded by directing the Alaska Energy Authority (AEA) to perform a comprehensive feasibility study of all proposed energy projects and alternatives in the Railbelt, including new interties. An appropriation of \$2.5 million was made to the AEA to fund the study. After two years of exhaustive analysis, the AEA released its report March 31, 1989.



The conclusions were clear: The Railbelt interties will cost far more to build than they can provide in benefits. Based on the AEA's study, the legislature chose not to appropriate any money for the interties or for further study of the projects last session.

Two recent developments have given "new life" to the interties:

1) the system-wide power outage in the Railbelt on Dec. 11, 1989, and;

2) a new study (prepared by the utilities) that intertie proponents claim show positive benefits for the construction of the "down-sized" projects. Neither of these new developments have persuaded me that the interties are an appropriate use of \$150 million of public funds.

The power outage that inconvenienced Railbelt consumers Dec. 11 resulted from a valve failure that cut off the flow of natural gas to Chugach Electric Association's Beluga power plant. At the time of the outage, approximately 50 percent of the electrical load in the Railbelt was being serviced by Beluga. The loss of that much power from the system caused widespread failure and

most consumers in the Railbelt lost power.

It has been suggested that utilities in Southcentral rely too heavily on Beluga-generated power. However, Beluga provides only 28 percent of the total power supply in the Railbelt. The reason that utilities want to use Beluga power to provide electricity to their consumers is that it is inexpensive.

Utilities can purchase power wholesale from Chugach cheaper than they can generate it themselves. That is why Beluga is the cornerstone of the Railbelt generation system. Still, there is plenty of generation capacity available to take up the slack should Beluga go down; it just costs a little more to use. That power can be accessed without constructing new interties.

Intertie advocates argue that the outage would have been shorter if the interties were in place. This is misleading, at best. The truth is that Golden Valley Electric Association had power flowing to all its consumers in Fairbanks within 30 minutes, and was delivering power to Matanuska Electric Association one hour and 15 minutes after the Beluga plant went down.

Chugach Electric was able to get power from Anchorage Municipal Light and Power and from facilities on the Kenai Peninsula. All Anchorage consumers had power back within a few hours of the failure. The interties would not have prevented the Railbelt blackout, and even if construction of the interties would have shortened the

length of the outage, \$150 million is far too much money for the state to pay to simply reduce the "down-time."

The utilities now argue that scaling the interties down to 138-kilovolt lines would make the projects economically attractive, and they paid for a study that says so. However, two independent reviews of the utility-funded study are in sharp disagreement. These independent reviews found major methodological flaws with the utility study including a single mathematical error that inflated intertie benefits by \$25 million. In short, even the smaller "down-sized" 138-kilovolt projects are not economically justified.

The utilities say the interties must be built, yet they have not been willing to use their own money and have rejected the idea of low-interest loans from the Railbelt energy fund to build the projects.

The Alaska Energy Authority, the Legislative Research Agency and the State Utility Consumer Advocate have all taken a close look at the proposed interties and all have found that these projects fail the economic cost-benefit test. Providing \$150 million from the Railbelt energy fund for their construction would not be a responsible action on the part of the legislature.

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Rep. Sam Cotten is Speaker of the House of Representatives

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4/13/90 Daily News



ALASKA SYSTEMS COORDINATING COUNCIL

An association of Alaska's electric power systems  
promoting improved reliability through systems coordination

P.O. Box 190869  
Anchorage, Alaska 99519-0869

Council Chairman:  
Michael P. Kelly

March 20, 1990

Vice Chairman:  
David S. Nease

Secretary-Treasurer:  
Robert E. LeResche

The Honorable Richard I. Eliason  
Alaska State Senator  
P.O. Box V  
Juneau, Alaska 99811

Executive Committee:

Thomas Stahr  
David Highers  
B. Kent Wick  
Dan Bloomer  
James Webb  
Lloyd Hodson

Dear Senator Eliason:

A report is enclosed from the North American Electric Reliability Council (NERC) that evaluates the reliability of Alaska's Railbelt interconnected electric utility systems for the 1990-1999 period. I have found this report quite useful and enlightening. I hope this information will aid you in evaluating the proposed Kenai-Anchorage intertie and the Healy-Fairbanks intertie. Please call if you have any questions.

Sincerely,

Michael P. Kelly, Chairman  
Alaska Systems Coordinating Council

PH:MPK:it

Enclosure as stated

**FINAL REPORT**

**RELIABILITY ASSESSMENT  
OF THE  
RAILBELT INTERCONNECTED ELECTRIC UTILITY SYSTEMS  
OF THE  
ALASKA SYSTEMS COORDINATING COUNCIL  
1990-1999**

**March 16, 1990**

**by**

**a Subgroup of**

**NERC's 1990 Reliability Assessment Subcommittee**

**John H. Stout, Chairman**  
(Manager of Engineering Design and Development  
Houston Lighting & Power Company)

**Chisna H. Fleming, Vice Chairman**  
(Manager, Advanced Engineering and Planning  
Ohio Edison Company)

**Richard E. Phillips, Operating Committee Representative**  
(Operating Manager  
New York Power Pool)

**Virginia C. Sulzberger, NERC Staff Coordinator**  
(Director-Engineering  
North American Electric Reliability Council)

## Preface

A subgroup of NERC's 1990 Reliability Assessment Subcommittee (RAS) recently reviewed the overall reliability of the Railbelt interconnected electric utility systems of the Alaska Systems Coordinating Council (ASCC) at the request of ASCC. This assessment reviewed the adequacy of the existing system and the proposed generation and transmission plans for the Railbelt electric systems over the 1990-1999 period. Included in this review were the reliability impacts of two proposed transmission interconnections — a Soldotna to University 138 kV line and a Healy to Fort Wainwright 138 kV line.

This assessment was performed over an approximate eight week period from mid January to mid March 1990.

In preparing this report, the RAS subgroup interviewed representatives of the Alaska Energy Authority, Anchorage Municipal Light & Power, Chugach Electric Association, and Golden Valley Electric Association. These interviews were conducted February 12-14, 1990 in Anchorage, Alaska.

In addition to the interviews, the assessment is based primarily on electric utility data and plans for 1990-1999 provided by the Railbelt interconnected systems on a basis consistent with the annual April 1 Coordinated Bulk Power Supply Program (IE-411) Reports submitted to the U.S. Department of Energy by each of NERC's nine Regional Reliability Councils and from the completion of additional annual data submittals generally requested by the Reliability Assessment Subcommittee from the nine Regions. Several reports of others, either prepared by outside consultants for the Railbelt electric systems or prepared by individual Railbelt electric systems, were also reviewed and provided background information.

This reliability assessment report is the culmination of these efforts and reflects the expertise, judgment, and interpretations of the RAS subgroup.

## Reliability Assessment of the Railbelt Interconnected Electric Utility Systems

### Overview

*The Alaska Railbelt electric utility systems began interconnected operations in 1984 by linking together the Fairbanks area with the Anchorage Bowl. (The Anchorage Bowl had been previously interconnected with the Kenai Peninsula in the 1960s.) The unique geographic, economic, and electrical characteristics of the electrical systems in these three areas have resulted in an interconnection that is far less reliable than the four major electric Interconnections of the North American Electric Reliability Council (NERC). For example, the relatively small electrical size of the Railbelt interconnection causes automatic shedding of customer load to take place following most generation and Railbelt interconnection transmission line contingencies. Nonetheless, this Railbelt interconnection has improved the reliability of electric supply to utility customers, primarily in the Anchorage Bowl area.*

*Two important reliability issues face the Alaska Railbelt interconnected systems. First is the need for additional transmission interconnection lines between the three major load centers and their generation facilities. The existing area interconnection lines are single, limited capacity lines prone to outage by weather and avalanche. Second, is the need to maintain a proper balance between economy and reliability. The cost of reliability is exceptionally high for the Railbelt systems resulting in compromises to the generally accepted electric utility reliability criteria in the lower 48 states and most of Canada. The expectations of the Alaska Railbelt customers toward reliable electric supply show signs of increasing. As a result, the interconnected Railbelt's seven members are recognizing that, along with sharing the economic benefits of interconnection operation, they must also share the responsibilities of reliability.*

*Assessment of the 1990-1999 generation adequacy clearly indicated that sufficient generating capacity margins exist in each of the three major load areas: the Fairbanks area, the Anchorage Bowl, and the Kenai Peninsula. Neither forced outages or maintenance outages are expected to adversely impact generating reserve adequacy. These three areas all have capacity margins well above the interconnection agreement requirement of 30% generation reserves. As electric demand within the Railbelt systems increases, the member systems should recognize that these margins will likely move down toward the 30% minimum. Of concern is the fact that the 30% reserve criteria is not founded on technical reliability studies such as loss of load probability analyses. The Alaska Railbelt systems should reassess carefully the justification of a 30% criteria and revise their interconnection agreement in accordance with such a reassessment.*

*The existing single line transmission interconnections between the Kenai Peninsula and the Anchorage Bowl and between the Anchorage Bowl and the Fairbanks area constrain the sharing of generation between and among load centers and pose a significantly higher than traditional reliability risk for system-wide blackouts due to single contingency outages.*

*In terms of traditional reliability criteria, the proposed Soldotna-University 138 kV transmission line provides a second circuit between the Kenai peninsula and the Anchorage Bowl and is necessary to help improve the reliability of electric supply to the Kenai peninsula, the Anchorage Bowl, and the Fairbanks area. This line will increase the electric transfer capability between the Kenai peninsula and the Anchorage area, improve system stability, and help to reduce the number of load shedding incidents in the Anchorage and Fairbanks areas and the black out or loss of electric supply to Kenai peninsula customers following certain system outages or contingencies. It will also help to reliably distribute the output of the Bradley Lake hydro generating facility to the appropriate utility purchasers of the hydro capacity. Without this line, reliability in the Kenai peninsula will likely be reduced following the completion of the Bradley Lake project.*

*The proposed Healy-Fort Wainwright 138 kV transmission line is needed for the reliability of electric supply to the Fairbanks area. It provides a second transmission path from Healy to the Fairbanks area for both Healy generation capacity and capacity purchases from the Anchorage area (and the Kenai peninsula). This line provides both improved reliability and economic benefits (Bradley Lake capacity) to the Fairbanks area. Its reliability impact, however, will not be as dramatic as the Soldotna-University 138 kV line, but based on traditional planning criteria, the tie is required to assure an adequate source-to-load path from Healy to the Fairbanks area. In fact, under traditional reliability criteria, a second transmission line between the Anchorage Bowl and the Fairbanks area would likely be required (either via Teeland and Healy, or preferably via a separate transmission path such as from the Anchorage Bowl to Glennallen to Jarvis Creek).*

*Finally, many of the planning and operating practices and procedures followed by the Railbelt systems have evolved and been developed from years of experience. In many systems, these guidelines needed for reliability have not been written down or formalized. Therefore, the Railbelt utilities should develop, formulate in writing, and approve appropriate planning and operating reliability criteria for their respective systems and service areas as well as for interconnected planning and operations.*

### **Peak Demand and Generation Adequacy**

A comparison of planned capacity resources, projected available resources, and projected winter peak demands in Figure 1 indicates that the Alaska Railbelt interconnected electric utility systems should have adequate capacity resources throughout the 1990-1999 assessment period. However, the assessment of the Alaska Railbelt systems generation adequacy should not be made solely on an aggregate interconnection basis. This is because the transmission interconnections between the three major load centers: the Fairbanks area, the Anchorage Bowl, and the Kenai Peninsula consist of single, limited capacity transmission lines. As such, these interconnection lines constrain the sharing of generation between load centers. A proper assessment of generation adequacy requires that the Fairbanks (Golden Valley-Fairbanks) area, the Anchorage Bowl, and Kenai Peninsula be evaluated individually.

The distribution of installed generating capacity among the three geographical regions of the Railbelt electric utilities is generally proportional to the load distribution as shown in Table 1. About 63% of the winter peak demand of the Railbelt is located in the Anchorage Bowl area, 22% in the Fairbanks area, and 15% in the Kenai Peninsula. Similarly, the installed generating capacity is 67% in the Anchorage Bowl, 20% in the Fairbanks area, and 13% on the Kenai Peninsula. The small mismatch is not significant as all areas have capacity margins of 35% or more in the early years of the assessment period.

With the addition of Bradley Lake hydro plant in 1991 at the southern extremity of the Kenai Peninsula, along with some planned retirements and replacements of capacity, the distribution of installed capacity by the winter of 1999/2000 will shift slightly resulting in about 61% in the Anchorage Bowl, 20% in the Fairbanks area, and nearly 19% on Kenai. The capacity margins will continue to be adequate in the three load areas and are projected to range from 38% to 54% at the end of the assessment period.

The makeup of the generating capacity and the relative economics of operating the various types of capacity in the three areas distort the apparent balance of generating resources and demand requirements. As shown in Figure 2, about 92% of the 1989/1990 installed capacity is primarily gas- or oil-fired with only about 4% consisting of coal-fired steam turbines (with all 45 MW of that located in the Fairbanks area) and the remainder about 4% hydro. About 32 MW of the 49.2 MW of hydro capacity is located in the Anchorage Bowl with the remaining hydro on the Kenai Peninsula. With the addition of Bradley Lake hydro plant (and other generating capacity replacements and retirements through 1999), the proportion of

hydro will shift to nearly 13% with 125 MW of the 157 MW being concentrated on the Kenai Peninsula.

Due to relative fuel costs, the Fairbanks area relies primarily on its coal-fired steam generation and significant imports from the south. That is, depending on the time of the year, some 50% or more of its electrical energy requirements are imported over the single 170 mile line from the Anchorage Bowl area. These imports plus the output of the 25 MW coal-fired steam turbine at Healy, in turn, depend upon the single 103 mile line to Gold Hill substation to reach the Fairbanks area customers.

Similarly, except for a small amount of hydro and one combustion turbine spinning in standby at Bernice Lake, there is limited generation normally operated on the Kenai Peninsula, and the 89 mile transmission interconnection line from Quartz Creek to the Anchorage Bowl is relied on for imports approaching 60% of the load requirements of the Kenai area. However, after the completion of the Bradley Lake 108 MW hydro plant, that import situation will change. The Kenai Peninsula will become a net exporter of capacity entitlements to the systems north of the peninsula via the Anchorage Bowl during most of the year over that same single 89 mile interconnection line.

In the Anchorage Bowl area today, the electrical generation output is generally equal to twice the customer requirements in the area, or more. Net exports from the Bowl therefore equal or exceed the Bowl area demand. Nearly one-half of the generation in the Anchorage Bowl is located at Beluga generating facility at the western extremity of the Bowl on the western shore of Cook Inlet. This is also the most economical generation. The output of Beluga and the 32 MW of hydro at Eklutna (near Palmer), along with some generation in downtown Anchorage are relied upon heavily to support both the Anchorage Bowl load and the exports to the Fairbanks area and the Kenai Peninsula. This result is a mix of generation of some 80% or more of the total operating capacity in the Railbelt interconnection concentrated in the Anchorage Bowl, 10 to 15% in the Fairbanks area, and 5% or so in the Kenai Peninsula.

After the addition of Bradley Lake in 1991, it appears that the typical operating generation mix would shift to approximately 65 to 70% in the Anchorage Bowl, 20% in the Kenai Peninsula, with the Fairbanks area retaining its 10% to 15% share.

Sufficient generating capacity exists in the three major Railbelt electric areas for normal and emergency operation. However, the economic realities of the cost of operating that generation results in a preponderance of the electrical energy requirements of the Railbelt interconnection being generated in the Anchorage Bowl area. The Fairbanks and Kenai areas rely heavily on imports of that generation to supply their electrical requirements. Therefore, the transmission interconnection transfer capability and its reliability both north and south of the Bowl are critical. Although the addition of the Bradley Lake hydro plant will somewhat reduce the generation requirements in the Anchorage Bowl area and would result in Kenai Peninsula being a net exporter much of the time, the same transmission interconnection between Anchorage and the Kenai Peninsula would be relied upon to maintain that supply and the capability and reliability of the north and south transmission interconnection lines would continue to be important.

Assessment of generation adequacy clearly indicates that sufficient generating capacity margins exist in each of the three Alaska Railbelt areas. Neither forced outages or maintenance outages are expected to adversely impact generating reserve adequacy. However, while the individual utilities or areas may have capacity margins well above the interconnection agreement requirement of 30% reserves, the Railbelt member systems should recognize that as demand increases the margins will likely move down toward the 30% minimum. Of concern is the fact that the 30% criteria is not founded on technical reliability studies such as loss of load

probability analyses. The Alaska Railbelt systems should reassess carefully the justification of a 30% criteria and revise their interconnection agreement in accordance with such a reassessment.

### Transmission Adequacy

As the loads and generating capacity of the Railbelt electric systems are generally in three geographically separate areas, each of the areas had developed its own transmission systems prior to establishing interconnected operation. As a consequence, there are three transmission voltages (115 kV, 138 kV, and 230 kV) in use that are interconnected by transformation at five substations in the Anchorage Bowl area as shown in Figure 3. In addition, there is underlying subtransmission in each of the areas consisting primarily of 69 kV facilities as well as some 34.5 kV.

In the Golden Valley area, which encompasses Fairbanks and extends from Denali Park up the Tanana River valley past Fairbanks to Delta Junction, the transmission system is a single 138 kV circuit of approximately 212 miles in length, except for a 33 mile section between the North Pole and Carney substations currently bridged by 69 kV facilities. However, there are plans to add a 138 kV segment to complete this system in 1994. The Fairbanks area (Golden Valley and Fairbanks) is interconnected with the Anchorage Bowl area by 170 miles of single circuit line between the Healy generating plant near Denali Park to Teeland substation. Teeland substation is an interconnection point for all three transmission voltages of these systems and is located in the northwestern portion of the Anchorage Bowl area.

The Kenai Peninsula is the southernmost of the three areas and has a transmission system of 115 kV which is essentially a single circuit serving the peninsula with branches to Homer, Lawing, and Bernice Lake. Approximately 180 miles of 115 kV transmission line serves the Kenai Peninsula. (Future plans are to convert 24 miles of 69 kV line south of Lawing to 115 kV thereby extending the 115 kV branch to Seward.) The Kenai Peninsula is interconnected with the Anchorage Bowl by a 89 mile 115 kV circuit between Quartz Creek substation (41 miles north of Seward) and University substation. University substation is another interconnection point for three transmission voltages and is located in the southeastern portion of the Anchorage Bowl area.

The Anchorage Bowl area includes the city of Anchorage and the surrounding countryside between the Turnagain and Knik Arms of Cook Inlet, extending northward to Palmer and the Matanuska Valley area, and westward to the area north and west of the Knik Arm. The transmission system within Anchorage is 115 kV with an extension southward to the three voltage University substation and one north to Palmer and westward to the Teeland substation interconnection point. In addition, there is an overlay of about 98 miles of 230 kV transmission extending from Beluga generating station on the west shore of Cook Inlet to a 230/138 kV stepdown substation at Point MacKenzie, then north to the Teeland substation interconnection point as well as eastward from Point MacKenzie across Knik Arm (via submarine cable) to Anchorage where it is interconnected to the 115 kV system, and then southward to University substation with another transformation to 115 kV. The 230 kV loop is closed by 138 kV, transformed from 115 kV at University substation, along the southern boundaries of Anchorage to Point MacKenzie stepdown substation and extended west to the Beluga generating plant.

The transmission in the Anchorage Bowl area is such that it can be considered a network and, as such, should be able to withstand loss of any given circuit. The Kenai Peninsula is essentially a branched circuit with underlying subtransmission on the cross-peninsula sections, such that loss of any branch should be sustainable with only loss of the area served by that branch. However, the 89 mile single circuit tie between Kenai Peninsula and the Anchorage Bowl is, and has historically been, subject to outages due in large part to avalanches. These

outages place the Kenai Peninsula in jeopardy from the effects of isolation from the Anchorage Bowl. The addition of the 108 MW Bradley Lake hydroelectric plant at the southern extremity of the peninsula near Homer along with 60 miles of 115 kV transmission between Fritz Creek and Soldotna will tend to exacerbate this situation with the further problem that loss of the existing Kenai-Anchorage Bowl interconnection would interrupt Bradley Lake capacity entitlements of the Anchorage Bowl and Fairbanks area utilities.

The addition of the proposed 138 kV circuit between Soldotna substation, requiring transformation from 115 kV at that point, to the 138 kV portion of University substation would not only provide a parallel path to the existing tie but would also make the Kenai electric system more of a loop arrangement. It is in view of this that the following comments are offered as regard reliability aspects:

- The existing 115 kV interconnection line has a poor reliability history and has a transmission transfer capacity limit under 75 megawatts (MW). The chances of significantly improved performance is not great due to its physical/geographical location and system conditions that exist.
- The second (currently proposed Soldotna to University 138 kV line) Kenai interconnection to the Anchorage Bowl area would improve reliability by preventing the shedding of customer load if the existing interconnection line trips, (with the possible exception of those times when the Kenai Peninsula generation is operating in anticipation of loss of the existing tie).
- When Bradley Lake comes into service, reliability will suffer without a second interconnection tie. That is, the second Kenai Peninsula to Anchorage Bowl line is necessary to support Bradley Lake and to help reliably distribute the Bradley Lake capacity to the purchasing systems, to minimize blackouts in the Kenai Peninsula, and to minimize underfrequency load shedding in the Fairbanks area and the Anchorage Bowl.

As indicated above, the Golden Valley-Fairbanks area transmission system is essentially a 212 mile single circuit from the primary electrical source at the Healy generating plant to the eastern extremities of the system at Jarvis Creek substation near Delta Junction. Of this, only about 50 miles has underlying transmission and therefore this system is highly exposed for loss of any single 138 kV circuit segment, particularly the 103 mile circuit between Healy and Gold Hill. It is in view of this that the following comments are offered as regard reliability aspects.

- The addition of the proposed 105 mile 138 kV circuit between Healy generating plant and Fort Wainwright substation would not only provide an alternate path for loss of the circuit to Gold Hill, but would also provide essentially loop service between the Healy plant and the major part of the load in this area.
- The reliability of the Healy-Gold Hill line has been good, such that additional facilities will not have as dramatic an impact on reliability as the second Kenai Peninsula to Anchorage Bowl tie. However, based on traditional planning criteria, the Healy-Fort Wainwright tie is required to assure an adequate source-to-load path from the dual sources at Healy (Healy generation plus the capacity purchases from the Anchorage Bowl and later from Bradley Lake) to the Fairbanks area.

The 170 mile interconnection line between Teeland substation and Healy generating plant is vulnerable to single circuit outage and would cause loss of transfer capability between the Anchorage Bowl area and Healy. Future consideration should be given to providing an additional transmission path between the Anchorage Bowl area and the Fairbanks area. Under

traditional reliability criteria, a second transmission line between the Anchorage Bowl and the Fairbanks area would likely be required (either via Teeland and Healy, or preferably via a separate transmission path such as from the Anchorage Bowl to Glennallen to Jarvis Creek).

## Operations

The following comments are made concerning the operational aspects of the Alaska Railbelt interconnected systems:

- Each Railbelt system indicated it brings on additional generation for reserves in recognition of adverse weather conditions. These reserves were indicated to be geographically located such that they would not be bottled by transmission contingencies. This type of response enhances reliability and should be encouraged.
- It was indicated in the interviews that customer load would be shed if economy or non-firm transactions were interrupted. This does not confirm to the traditional interpretation of NERC criteria for these types of transactions in the interconnected systems of the lower 48 states. The three traditional broad categories of electrical transactions and a summary of their application is as follows:

Economy – Economy transactions are, by definition, immediately withdrawable. Receiving systems have the obligation to maintain generation backed-off and spinning to replace the economy without loss of load.

Non-Firm or Interruptible – The receiving system must have generation available to replace the purchase within a specified time. The seller must maintain the delivery for the duration of this same specified time. Interruption of the transaction within this predetermined time frame is accomplished without any loss of load.

Firm – A firm purchase is treated as a generator on the receiving system and a load on the sellers system.

- Lack of agreement exists over who must cut what generation schedules if a transmission constraint exists. This condition is partially due to conflicting terms between new and existing contracts, e.g. contracts between Chugach and Fairbanks and contracts associated with Bradley Lake. There is also a lack of definition in the area of transmission ownership vs use. These are policy decisions that should not wait for shift dispatchers to solve when the condition occurs.
- Additional spinning generator reserves will not always prevent underfrequency load shedding for the loss of generation. Reliance on load shedding as spinning reserve is not traditional and is avoided by most NERC systems. However, due to the unique nature of the Railbelt systems, their generation inertia and size of loads, this technique may not only be appropriate, but essential.
- Each Railbelt system should develop written operating criteria and procedures for its system. These criteria and procedures could then be compared and utilized to develop overall operating criteria and procedures for the Railbelt interconnection.

## Reliability Issues

The existing Railbelt utilities lack comprehensive planning and operating criteria as well as interconnection criteria for integrated planning and operations. Therefore, the existing and proposed Railbelt electric utility systems were evaluated against traditional reliability criteria and practices followed by the interconnected electric systems of NERC's Regional Reliability Councils in the lower 48 states and Canada.

For example, NERC's Planning Guides recommend to the extent practicable that an excessive concentration of generating capacity in one unit, at one location or in one area, be avoided, that excessive dependence on a single transmission line be avoided, and that a system be designed to withstand credible contingency situations. Under traditional criteria, a single generation or transmission contingency generally would not black out an entire interconnected system or cause the shedding of a portion of system load. In contrast, within the Alaska Railbelt systems, a single contingency such as the loss of fuel supply to the Beluga generating plant on December 11, 1989 can and has blacked out the interconnected Railbelt electric systems. Similarly, based on information given to the RAS subgroup, during periods of high capacity transfers from the Kenai Peninsula Bradley Lake project, the sudden outage of the existing 115 kV interconnection line between the Kenai peninsula and the Anchorage Bowl would likely cause load shedding in the Anchorage and Fairbanks areas and a blackout of the complete Kenai electric system. These two examples illustrate the lack of compliance with traditional NERC planning and operating criteria.

Based on a comparison of the current Railbelt interconnected systems planning and operating procedures with traditional electric utility planning and operating reliability criteria in NERC-U.S. and NERC-Canada, the RAS subgroup offers the following comments:

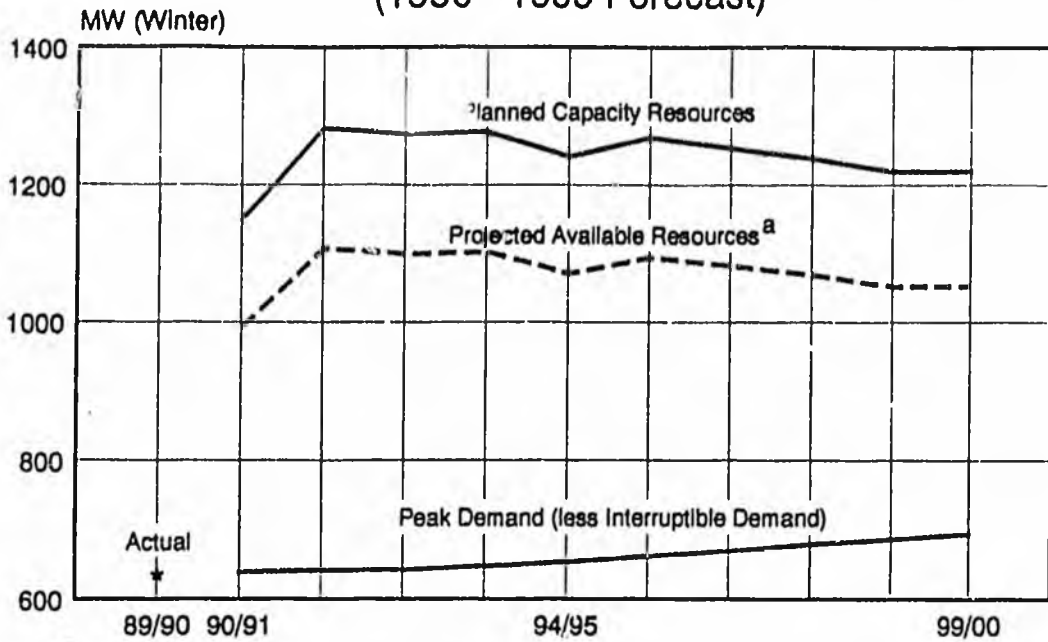
- Planning and Operating Criteria The Railbelt utilities should develop, formulate in writing, and approve appropriate planning and operating reliability criteria for their respective electric systems and service areas. In addition, coordinated interconnection planning and operating reliability criteria should similarly be developed, formulated in writing, and approved under the auspices of the existing Interconnection Agreement or under the ASCC umbrella. NERC's Planning Policies encourage the development of planning and design criteria by Regional Councils, power pools, and individual systems applicable to their Region or area.
- Load Shedding and Spinning Reserve Studies The Railbelt utilities are currently conducting two important reliability related studies. The first involves the application of underfrequency load shedding schemes. Underfrequency load shedding is critical to the Railbelt utilities, because it is the primary method of preventing system blackouts following a loss of generation or certain transmission line outages. This is because the relatively small electrical size of the Railbelt interconnection and the mismatch between generator governor response and system transient response require that automatic load shedding take place following most generation and Railbelt interconnection transmission line contingencies. The second study involves spinning reserve requirements after the Bradley Lake hydro project comes into service. This study will also play an important role in determining the ability of the Railbelt utilities to avoid uncontrolled loss of customer load following a system disturbance. Both studies are likely to result in Railbelt members having to make difficult decisions affecting the balance between economy and reliability. Interconnected operation will require that such decisions be made, and complied with, as one, rather than as seven separate systems. The importance of these studies dictates that they be completed promptly and that the Railbelt utilities quickly determine and implement whatever policy and procedures are identified by those studies.

- Bradley Lake Hydro Project The Bradley Lake hydro project, on the Kenai Peninsula, is nearing completion, but the Railbelt utilities have not yet received approval for construction of the transmission facilities needed to reliably transfer capacity from the project to major load centers. As discussed elsewhere in this assessment, this is a direct threat to the reliability of the Railbelt systems. However, it is also an indication of an even greater threat, the lack of an integrated, coordinated process of planning transmission to accompany generation resources. Electric system reliability is much like a chain, with generation, transmission, and distribution facilities as individual links. Making the generation link stronger is ineffective unless the transmission link is at least as strong. In the future, the Railbelt utilities must proactively and collectively plan and build transmission to support any generation or purchased capacity options. Reliability will likely suffer if transmission planning and construction continue to lag behind the planning and construction of new generation sources.
- Economy vs Reliability The most significant issue affecting the reliability of the Railbelt utilities is maintaining a proper balance between economy and reliability. If judged against the reliability levels generally maintained by the NERC Interconnections, it would appear that, within the Railbelt utilities, economics has encroached on reliability. However, given the unique geographic, electrical, and economic circumstances facing the Railbelt systems, the existing balance may be proper. The cost of providing reliability is exceptionally high for the Railbelt utilities, but there are indications that the reliability expectations of the customers in the Railbelt utilities are increasing. The lack of a clear, written definition of what constitutes adequate reliability for the Railbelt utilities makes a final judgment impossible. However, one judgment that can be made is that more than in any other NERC Region, the balance between economy and reliability is of concern. The members of the Railbelt utilities must pay utmost attention to this balance. It is easy to share in the economic benefits of an interconnected system. It is more difficult, but nevertheless just as important, to also share the responsibilities of maintaining reliability.

**Table 1**  
**RAILBELT INTERCONNECTED ELECTRIC UTILITY SYSTEMS OF ASCC**  
**PEAK DEMAND & CAPACITY RESOURCES – MW**  
**Winter Season**

| Major Electric Load Centers  | Utilities | 1989/1990  |              | 1999/2000  |              |
|--|-----------|------------|--------------|------------|--------------|
|  |           | Demand     | Capacity     | Demand     | Capacity     |
| Fairbanks Area   | GVEA      | 109        | 197          | 122        | 221          |
|  | FMUS      | <u>30</u>  | <u>44</u>    | <u>33</u>  | <u>28.5</u>  |
|  | Total     | 139        | 241          | 155        | 249.5        |
| Anchorage Bowl   | CEA       | 163.8      | 413.8        | 170.0      | 383.9        |
|  | APAD      | 0          | 32           | 0          | 32           |
|  | MEA       | 97         | 0            | 113        | 0            |
|  | AML&P     | <u>143</u> | <u>331.8</u> | <u>155</u> | <u>331.8</u> |
|  | Total     | 403.8      | 777.6        | 438        | 747.7        |
| Kenai Peninsula  | CEA       | 13         | 99           | 13.3       | 63.7         |
|  | HEA       | 73.9       | 40           | 76.3       | 40           |
|  | SES       | 10.5       | 10.5         | 14         | 13.5         |
|  | AEA       | <u>0</u>   | <u>0</u>     | <u>0</u>   | <u>108</u>   |
|  | Total     | 97.4       | 149.5        | 103.6      | 225.2        |
| All Systems  | Total     | 640.2      | 1168.1       | 696.6      | 1222.4       |
| Sources: Draft of the Railbelt interconnection's responses for the 1990-1999 period to the U.S. Department of Energy's annual April 1 Coordinated Bulk Power Supply Program (IE-411) Report and the NERC Reliability Assessment Subcommittee's data request forms 01 through 08. |           |            |              |            |              |

**Figure 1**  
**Alaska Railbelt Electric Utility Systems**  
**Peak Demand & Projected Available Resources**  
 (1990 - 1999 Forecast)

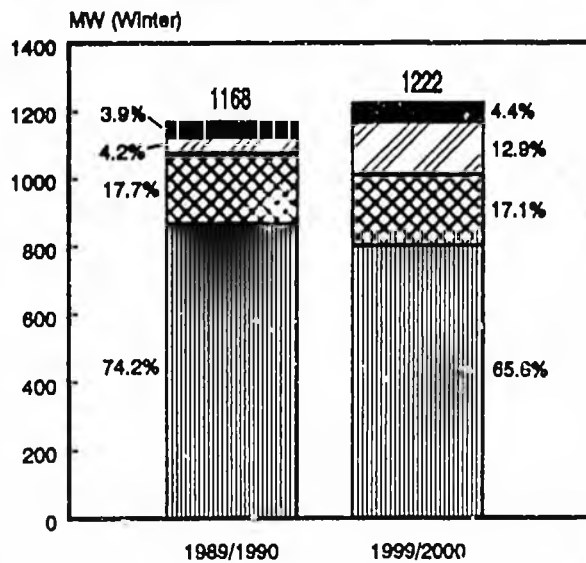


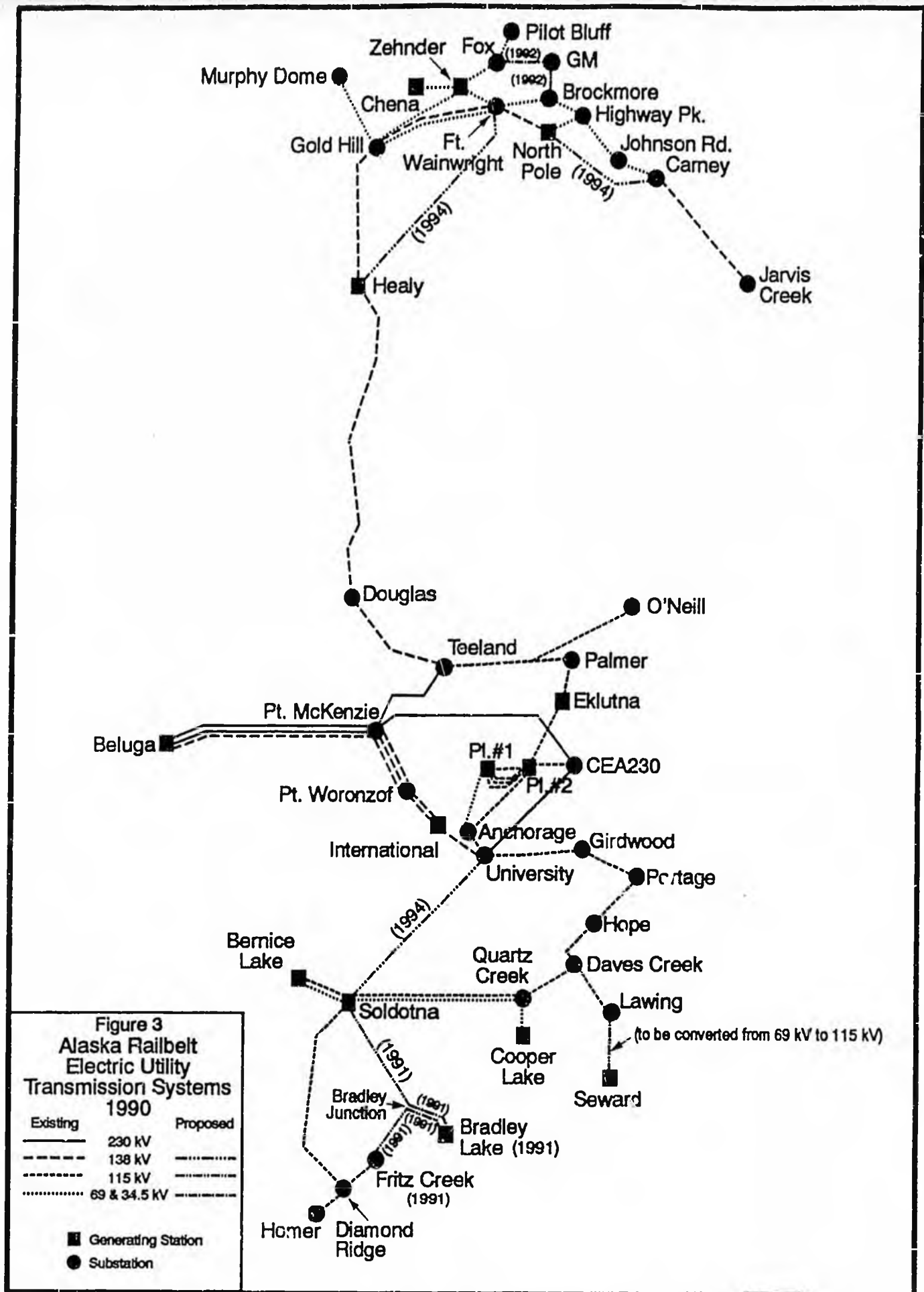
<sup>a</sup> Projected Available Resources are equal to Planned Capacity Resources less average unavailable capacity at the time of system peak.

**Figure 2**

**Alaska Railbelt Electric Utility Systems**  
**Generating Capacity by Fuel**

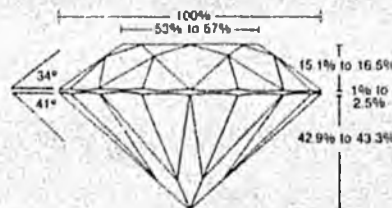
Gas
  Oil
  Hydro
  Coal





# McGrane Jewelers

345 West 5th Avenue  
Anchorage, Alaska 99501



PRECISION CUT MAKES THE DIFFERENCE

## *Diamonds*

March 5, 1990

Senator Dick Eliason  
Alaska State Legislature  
P.O. Box V (MS 3100)  
Juneau, Alaska 99811

Dear Senator Eliason:

Recently there has been a lot of talk about the proposed electrical interties connecting Anchorage with Kenai and Fairbanks. What most people have failed to recognize is that if the interties are not funded from the Railbelt Energy Fund, then you and I will have to pay for them as part of our monthly power bills in the near future.

The interties are needed now, but will require up to five years to secure the right of way, proper permits and construct. In the meantime, people from Girdwood to Homer will experience power outages due to avalanches and other occurrences. Much of this inconvenience could be eliminated with the addition of the proposed Southern Intertie. The additional line south would offer a contingency if a natural disaster occurs. It would also allow low cost energy to be transferred either north to Anchorage or south to the Kenai Peninsula depending on where the energy could be generated at the lowest cost. Especially with Bradley Lake coming on line in 1991 leaving Chugach with more excess power for Fairbanks.

By utilizing the existing intertie to the north, Fairbanks is purchasing excess power generated in Anchorage. This benefits customers in Fairbanks by purchasing energy which is less expensive than the cost of generating it locally. It also benefits the customers in Anchorage since profits of the sales to Fairbanks flow through to the Anchorage rate payers. This is a win-win situation. Additional energy could be transferred in this manner if the northern intertie was upgraded.

What I am trying to point out is that the interties are not just for the benefit of Kenai and Fairbanks alone, but for the good of all railbelt electrical users.

Support using the Railbelt Energy Fund for the interties this year, or we will pay for them in the future through higher rates.

Sincerely,

Robert McGrane  
Vice-President, Board of Directors  
Chugach Electric Association, Inc.

# The Alaska Scene Alaska REC Association



by Dave Hutchens,  
executive director,  
Alaska Rural Electric  
Cooperative Association

## Use Railbelt Energy Fund to improve railbelt electrical transmission system

The Railbelt Energy Council was correct in its 1987 report to the legislature: The highest and best use of the Railbelt Energy Fund (REF) is construction of electrical interties to more solidly interconnect railbelt sources of power with the communities in which the power is consumed.

Much of the generating capacity for the whole railbelt region is located on the Kenai Peninsula. Existing plants include Chugach Electric Association's Bernice Lake gas-fired plant and the Cooper Lake hydroelectric plant, and the Soldatna #1 plant, owned by Alaska Electric Generating and Transmission Cooperative. When the Alaska Power Authority's Bradley Lake plant comes on line in 1991, there will be 221 megawatts of generating capacity on the Kenai, with only one weak transmission line connecting it to most of the people it should serve in Anchorage and beyond.

This existing transmission line can only carry about 55 megawatts of power from the Kenai Peninsula to Anchorage, and it is susceptible to outages caused by avalanches and windstorms. The peak demand on the Kenai Peninsula is about 80 megawatts. When you take the generating capacity and subtract the power used locally, that leaves 141 megawatts of capacity available to meet the needs of people in Anchorage, the Mat-Su valleys, and the Fairbanks area.

But the transmission line can only carry about 55 megawatts.

Faults will occur naturally on any electrical system. A tree falls across the line, or the wind tosses the wires around until they come in contact with each other. The lights go out. The goal of the utility is to have as few of these outages as possible, and when they occur, to have them affect as few people for as short a time as possible.

A recent study of the operating characteristics of the electrical transmission system in southcentral Alaska shows that we are facing enormous problems if we try to use the generating resources even to the limits of existing transmission capacity. Without substantial changes in the transmission system outages will be unacceptably widespread and long-lasting.

The number one priority for using the Railbelt Energy Fund should be construction of a new Anchorage-Kenai Peninsula intertie. The cost of the new line is estimated at \$80 million to \$100 million, depending on the route selected.

Sales of economy energy from Anchorage to Fairbanks were made possible by the Willow-to-Healy intertie, built a few years ago. Those sales are now limited by the transfer capacity on the old lines south of Willow and north of Healy.

Upgrading the transmission capacity

between Anchorage and Fairbanks, Alaska's largest cities, should be the other priority use of REF money. The upgrade can be accomplished by either eliminating the bottlenecks at both ends of the existing intertie, or by constructing a new line along a different route, from Palmer through Glennallen to Delta Junction.

The benefits of the proposed new transmission line between Anchorage and Fairbanks via Glennallen are substantial. Constructing a new 230-kv line—a northeast intertie—would tie Valdez, Glennallen, and the Copper River basin into the grid system, giving those communities access to low-cost, gas-fired electrical power from the Anchorage area. New opportunities for mining or other development would be enhanced with this line, and military facilities such as the Backscatter radar installation could be served economically. This new line would provide railbelt utilities access to approximately 14 million kilowatt-hours of electricity annually from the Solomon Gulch Hydroelectric Project, one of the "four-dam pool" projects. This energy is now spilled as water over the dam because there is no market for it within the area which can be reached by the existing Copper Valley Electric Association transmission system. Sale of this power to railbelt utilities could earn the state an additional \$400,000 or more in revenues each year.

The most important benefit associated with the new northeast intertie proposal is increased reliability. The intertie would provide a second line between Anchorage and Fairbanks, significantly improving the transmission system security between the two largest load centers of the railbelt.

The cost of the northeast intertie is estimated at \$150 million.

Two key benefits of upgrading the existing Parks Highway transmission circuit between Anchorage and Fairbanks are lower cost and increased transfer capacity. At present, Fairbanks electric utilities must run oil-fired generation to meet peak loads when temperatures are lower than minus 10°F. This condition will only worsen as electric loads grow. Improving the existing system to allow for operation at 230 kv would increase transfer capacity by three to four times the present capacity. This would allow Fairbanks electric utilities to purchase more low-cost, gas-fired electric power from Anchorage, reducing the cost of power to consumers in both cities. The reliable, high-capacity electrical link would also allow Fairbanks to assist Anchorage during periods when avalanches separate the city from Kenai generation, or other natural disasters, such as volcanoes or earthquakes, threaten Anchorage generation sources.

The cost of upgrading the existing Parks Highway transmission system is estimated to be \$118 million.

## Benefits of having the grid

The benefits of improving the transmission grid between the Kenai Peninsula and Anchorage and between Anchorage and Fairbanks justify the cost.

There are several types of benefits associated with the proposed improvements in the railbelt transmission system:

• **Economy interchange:** An improved transmission system would allow for higher capacity transfer, allowing lower-cost generation produced in one area to displace higher-cost generation produced in another area. Economy interchange between Anchorage and Fairbanks is limited by the capacity of the fully loaded existing transmission line.

• **System reliability:** Improvements to the transmission system can reduce the number and extent of power outages especially between Anchorage and the Kenai Peninsula, where lines are plagued by natural occurrences such as avalanches and windstorms.

• **System efficiency:** Power transfers between Anchorage and Fairbanks presently suffer losses exceeding 10%. If the voltage of the transmission system were increased from 138 kv to 230 kv, those losses would be reduced dramatically.

• **Reserve sharing:** With an improved, reliable transmission system in place, electric utilities could reduce the amount of costly reserve capacity they maintain. They could rely instead on reserves available elsewhere in the interconnected system.

• **Flexibility for new generation:** An improved transmission system in the railbelt would allow greater flexibility in choosing a site for future generation facilities. New plants could be sited wherever the cost of operation and fuel are least expensive, while still maintaining access to any load center in the railbelt. To highlight the current limitations on power plant siting, it should be pointed out that a mine-mouth power plant of optimum size cannot be located at the site of Alaska's only operating coal mine (Usibelli)

because of severe transmission constraints.

• **Access to Bradley Lake power:** An improved transmission system would ensure that all railbelt electric utilities have freer and more direct access to the full peaking output of Bradley power, resulting in equal distribution of benefits from the project for all railbelt communities.

• **Utility coordination:** Strengthening the transmission system in the railbelt would afford electric utilities increased opportunity to better coordinate their planning and operations.

• **Fuel supply competition:** Improvements to the railbelt transmission system would provide electric utilities with full access to a variety of energy sources, enhancing competition among fuels and fuel suppliers.

The Railbelt Energy Fund has been held in trust pending two conditions that must be met in order for it to be spent: 1) it must be spent only to benefit railbelt consumers; and 2) it must reduce railbelt energy costs.

If the legislature appropriates the REF for construction of the interties, the state will own a money-saving project which we can point to with pride for the next 50 to 100 years.

On the other hand, if the fund is raided to balance the state operating budget, we challenge the governor and the legislature to show us how we have benefited from their stewardship five years from now.

Two final points: 1) The interties are being subjected to tough cost-benefit scrutiny. Those who would raid the fund propose no such tests for their spending plans. 2) If we build the interties, the state will not suffer one penny of operations and maintenance costs. The 300,000 railbelt consumers will gladly pay the tab out of the long-term savings they will realize from these worthwhile projects.

The Railbelt Energy Fund

Prepared By: The Alaska Rural Electric  
Cooperative Association

ities to rural Alaska. Almost half of the money appropriated went to proposed hydro projects that would serve the Petersburg-Wrangell area, Kodiak, Sitka, Ketchikan, Glennallen and Valdez, and the Kenai Peninsula. Another \$300 million was appropriated for hydropower projects during the 1982 legislative session. \$122.5 million of the appropriations for power projects was used to construct the Parks Highway Intertie between Willow and Healy.

The Susitna project received \$124.7 million of the total appropriations to hydro projects in the period 1979-1984, all of which was used for work related to feasibility studies, APA administration, and Federal Energy Regulatory Commission (FERC) licensing.

During the 1984 session, the legislature also set aside \$100 million in the Power Development Fund for the construction of Susitna. It was the first appropriation earmarked strictly for construction of the project. An additional \$200 million was set aside for Susitna in the PDF during the 1985 session. Appropriations for the construction of Susitna then totaled \$300 million.

In mid 1985, after the legislature had adjourned, the APA Board of Directors determined that the Susitna project, as proposed, could not be financed on terms that were acceptable to the State. The price of oil had begun its downward spiral and the

developed. It was the REC's job to develop that alternative plan, and its directive from the legislature was to "recommend the best options for planning, financing, constructing, and managing electric power facilities in the Railbelt area." The REC was comprised of representatives of the seven Railbelt electric utilities, four legislators - two from each body and two public members appointed by the Governor. The group worked through the summer and fall of 1986 and presented its report to the legislature early in the 1987 legislative session.

The best alternative use of the REP, the Council's report stated, is to construct an intertie between the Kenai Peninsula and Anchorage and upgrade the transmission system between Anchorage and Fairbanks. The estimated cost to complete the proposed transmission projects was \$200 million.

The Council concluded that "the prudent strategy to follow at this time is to increase utilization and operational efficiency of the existing Railbelt generation and transmission facilities under construction." The REC specifically cited the Bradley Lake Hydroelectric Project and the interties as projects that should be completed in a timely manner.

A strong coalition of business, labor, and utility groups lobbied hard during the 1987 session for the legislature to pursue the recommendations of the REC by appropriating \$200

Gov. Sheffield also froze an appropriation of \$50 million to the Bradley Lake project in July of 1986. During the 1987 session the legislature changed the source of funding from the State's General Fund to the REF. That reduced the balance of the REF to approximately \$235 million.

Several bills were introduced in the legislature in 1987 that called for spending part or all of the Railbelt energy fund. One of those bills was SB 206. This measure, put forth by Sen. Jack Coghill (R-Nenana), proposed to establish a new power project loan fund from which loans and grants could be made for various projects. The measure would have combined many of the State's existing energy loan programs and would have been funded initially by the balance of the REF after the interties and Bradley Lake had been funded to the extent necessary. The bill, as originally written, received marginal legislative support and eventually died in the House Judiciary Committee.

Sen. Bettye Fahrenkamp (D-Fairbanks) introduced legislation midway through the session to authorize construction of a natural gas pipeline between Wasilla and Fairbanks. The two measures (SB 417 and SB 418) proposed the REF be used to fund the gas line's construction. The bills were not given a committee hearing until the 1988 session, and did not move from their first committee of referral. The lobby supporting the gas line, headed by Enstar Natural Gas Company, was successful in getting the

The exception was a \$7 million appropriation needed to complete the Bradley Lake financing plan, which the legislature did approve.

Gov. Cowper advocated using the REF in 1988 as a means of covering projected budget deficits. Other proposals for using the REF were also being advocated, and it appeared the fund might be swept up in general spending and not be used for energy purposes at all.

The only new proposal during the 1988 legislative session for using the REF for its intended purpose was put forth by Rep. Sam Cotten (D-Eagle River). HB 482 and HB 483 would have loaned approximately \$165 million at a below-market interest rate to the APA for the construction of Bradley Lake. This would have prevented the necessity for the APA to issue revenue bonds - which would have a higher interest rate - to complete construction of the project.

Electric utilities reluctantly embraced HB 482 and 483 on the grounds that the lower interest rate would save Railbelt rate payers roughly \$100 million during the first 30 years of the project's operation, and because it appeared that might be the only way to retain the REF for energy purposes. The bills were brought to the House floor for a vote, but amendments calling for additional expenditures from the REF got out of hand and the

REF relate to the fund's intended purpose. It is seen by many as a pot of money to be used to help reduce the State's projected budget deficit, or as a source of capital funding for projects that are totally unrelated to energy.

A new 230-kV transmission line would eliminate these stability problems and greatly increase the overall reliability and the transfer capacity of the transmission system between the Kenai Peninsula and Anchorage. In addition to Bradley Lake, other generation facilities on the peninsula totaling 131 megawatts include the Cooper Lake and Bernice Lake plants and Soldotna Unit #1. Reliability of the link between these generating plants and Anchorage is crucial to the many thousands of people who live in the area.

The utilities believe an upgrade in the Anchorage-Kenai Peninsula transmission system must be the number one priority for use of the REF. The cost of this new line is estimated at \$80 million to \$100 million, depending on the route selected.

Upgrading the transmission capacity between Anchorage and Fairbanks, Alaska's largest cities, should also be a priority use of REF money. The upgrade can be accomplished by either eliminating the existing bottlenecks at both ends of the State's Parks Highway intertie that exist between Willow and Healy, or by constructing a new line along a different route from Palmer through Glennallen to Delta Junction.

The benefits of the proposed new transmission line between Anchorage and Fairbanks via Glennallen are substantial. Constructing a new 230 kV line - a northeast intertie - would tie

cost and increased transfer capacity. At present, Fairbanks electric utilities must run oil-fired generation to meet peak loads when temperatures are lower than minus 10 degrees Fahrenheit. This condition will only worsen as electric loads grow. Improving the existing system to allow for operation at 230 kV would increase transfer capacity by three to four times the present capacity. This would allow Fairbanks electric utilities to purchase more low-cost, gas-fired electric power from Anchorage, reducing the cost of power to consumers in both cities. The reliable, high-capacity electrical link would also allow Fairbanks to assist Anchorage during periods when avalanches separate the city from Kenai generation or other natural disasters, such as when volcanoes erupt or earthquakes threaten Anchorage generation sources.

The cost of upgrading the existing Parks Highway transmission system is estimated to be \$118 million.

\* Reserve Sharing: With an improved, reliable transmission system in place, electric utilities could reduce the amount of costly reserve capacity they maintain. They could rely instead on reserves available elsewhere in the interconnected system.

\* Flexibility for New Generation: An improved transmission system in the Railbelt would allow greater flexibility in choosing a site for future generation facilities. New plants could be sited wherever the cost of operation and fuel are least expensive while still maintaining access to any load center in the Railbelt. To highlight the current limitations on power plant siting it should be pointed out that a minemouth powerplant of optimum size cannot be located at the site of Alaska's only operating coal mine (Usibelli) because of severe transmission constraints.

\* Access to Bradley Lake Power: An improved transmission system would ensure that all Railbelt electric utilities have freer and more direct access to the full peaking output of Bradley power, resulting in equal distribution of benefits from the project for all Railbelt communities.

\* Utility Coordination: Strengthening the transmission system in the Railbelt would afford electric utilities increased opportunity to better coordinate their planning and operations.

April 14, 1989

Senator Dick Eliason, Chairman  
P. O. Box V  
Juneau, AK 99811-3100

Dear Senator Eliason:

NorthEast Intertie Concerned Residents (NEICR) are dismayed by the release of the Railbelt Intertie Feasibility Study published by the Alaska Power Authority April 11, 1989. NEICR's dismay stems from the lack of public notification and public input in the study process. Such public participation is mandated by AS 44.62.312 and AS 44.83.177(4). When NEICR members expressed their concerns at a meeting with APA officials the night of April 11, NEICR was assured by those officials that the document titled Railbelt Intertie Feasibility Study is in fact NOT a feasibility study, but is merely a reconnaissance study. In a truly cavalier fashion, Mr. Richard Emerman, the project manager for the Railbelt Intertie Feasibility Study, shrugged off the discrepancy as "a poor choice of words". NEICR emphatically disagrees. We believe that an error much more grievous than word choice was made.

In his introductory letter enclosed in the copies of the Railbelt Intertie Feasibility Study, Mr. Emerman four times refers to the document and its contents as a feasibility study. Several times during the meeting of April 11, he referred to the document as a feasibility study. He further stated several times during the same meeting that the intent of the preparers of the Railbelt Intertie Feasibility Study was to do "feasibility study level work". Throughout the Railbelt Intertie Feasibility Study, the document itself and its contents are referred to as a feasibility study. The Table of Contents of the Railbelt Intertie Feasibility Study indicates that the contents of the study fulfill the requirements of a feasibility study as outlined in AS 44.83.181. After examination of the contents of the Railbelt Intertie Feasibility Study, NEICR feels that the Railbelt Intertie Feasibility Study is indeed what its title says it is: a FEASIBILITY study.

If, as NEICR claims, this document is a feasibility study, then APA is in violation of AS 44.83.177-179, which requires that a reconnaissance study be done before embarking on the preparation of a feasibility study. If, as claimed by Mr. Emerman, this document is a reconnaissance study, then APA is in violation of AS 44.83.185, which requires that, before being presented to the legislature for action, any study must be carried to the feasibility stage, and of AS 44.83.177(4), which requires public input in reconnaissance studies. In any case, APA has not followed mandated procedures and is in a legally untenable position.

We of NEICR do not mean to be picking at semantic nits. This is more than a simple misnaming of a document. We feel threatened by the lack of public input into the Railbelt Intertie Feasibility Study and by APA's failure to follow mandated procedures in the study process. We fear that APA may, in the future, fail again to follow Alaska statutes. We feel that the intent and possibly the letter of Alaska State Law was violated by the preparation of the Railbelt Intertie Feasibility Study. AS 44.83.177(4) requires that such feasibility studies provide for public input through "comment from residents of the community and adjacent area" during the reconnaissance phase of the study. This simply was not done. Calling the Railbelt Intertie Feasibility Study a reconnaissance study changes none of the facts.

The objectionable matter in this case is the Railbelt Intertie Feasibility Study, but we are really disgusted with the actions and attitudes of the Alaska Power Authority and it's officials.

Sincerely,

*Tom Wright Jr*

Tom Wright

Vice Chair Person NEICR, HC03, Box 8496, Palmer, AK 99645, 745-4763

James Colver, Co Chair Person, 745-8474

Stan Gillespie, Co Chair Person, 745-4203



Greater Fairbanks

**Chamber**

of Commerce

709 Second Avenue

(907) 452-1105

P.O. Box 7444

Fairbanks, Alaska 99707

RESOLUTION #11-0389


A RESOLUTION URGING SUPPORT FOR INTERTIE  
CONSTRUCTION USING RAILBELT ENERGY FUNDS

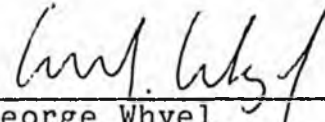
- WHEREAS, the Railbelt Energy Fund was originally appropriated to be used exclusively to meet the energy needs of Alaskans in the railbelt region, and
- WHEREAS, Alaskans in other regions of the state continue to enjoy the benefits of state-financed energy projects and the Bush continues to receive annual energy cost subsidies through the Power Cost Equalization program, and
- WHEREAS, the Railbelt Energy Fund is in danger of being diverted almost entirely to uses other than its original purpose unless it is appropriated for Railbelt energy projects this legislative session, and
- WHEREAS, the Railbelt Energy Council endorsed use of a portion of the Railbelt Energy Fund to upgrade the Anchorage-Fairbanks electrical intertie system, including construction of a new transmission line between Fairbanks and Healy, and
- WHEREAS, because of limited intertie capability between Fairbanks and Anchorage, Golden Valley Electric Association is currently required to operate oil-fired generation to meet load whenever temperatures are below -10 degrees F, and
- WHEREAS, a new electrical transmission line between Healy and Fairbanks will enable the Usibelli cogeneration project to deliver its full output to the Fairbanks electrical load center, and
- WHEREAS, the original estimate for the Anchorage to Fairbanks 230 kV transmission upgrade was \$118 million, and
- WHEREAS, the utilities have been asked by key legislators to reduce their request for intertie funding in recognition of state financial difficulties, and

WHEREAS, the Golden Valley Electric Association, working with the Alaska Power Authority, has reduced their request for the Anchorage-Fairbanks intertie upgrade from \$118 million to approximately \$60 million by reducing design voltage from 230 kV to 138 kV and by eliminating the request for a new transmission line between Wasilla and Willow;

NOW, THEREFORE BE IT RESOLVED, that the Greater Fairbanks Chamber of Commerce urges the Governor and the legislature to support an appropriation of \$60 million from the Railbelt Energy Fund to the Alaska Power Authority for construction of a new 138 kV line between Healy and Fairbanks and the addition of construction of a new 138 kV line between Healy and Fairbanks and the addition of voltage compensation on the existing Anchorage-Fairbanks transmission system.

Signed this 4<sup>th</sup> day of April, 1989.

By   
W.R. Cox  
President and CEO

By   
George Whyel  
Chairman of the Board

Distribution:

Governor Steve Cowper  
Members, Alaska State Senate  
Members, Alaska State House  
Robert LeResche, Alaska Power Authority  
Dave Hutchens, Alaska Rural Electrification Assn.



Greater Fairbanks

**Chamber**

of Commerce

709 Second Avenue

(907) 452 1105

P.O. Box 7446

Fairbanks, Alaska 99707

RESOLUTION #10-0389

RESOLUTION URGING THE LEGISLATURE TO SUPPORT AN APPROPRIATION OF \$30 MILLION FROM THE RAILBELT ENERGY FUND TO ENHANCE THE OPPORTUNITY OF SECURING FEDERAL CLEAN COAL FUNDS IN 1989

- WHEREAS, the Healy Cogeneration Project (HCP) is a prospective significant development in Alaska's economically depressed Railbelt Region; and
- WHEREAS, the HCP, comprising a 50 MW high-technology coal-fired powerplant and a coal processing (drying) plant which will produce 500,000 tons of premium fuel per year, will bring major economic benefits to Alaska and the Railbelt region in particular; and
- WHEREAS, the HCP will utilize and promote the increased and wise use of Alaska's most abundant non-renewable resource - Coal - in an environmentally sound and efficient manner; and
- WHEREAS, the HCP will create at least 130 direct long-term quality jobs as well as numerous indirect jobs exclusive of a construction force which could peak at 300, and
- WHEREAS, the HCP could be a prototype development leading to broad commercialization of coal-drying (beneficiation) technology to produce large volumes of premium low-sulfur fuel having great potential in export markets; and
- WHEREAS, the electrical power to be produced from the HCP will be used in the Northern Railbelt to meet power requirements and support economic expansion in the region; and
- WHEREAS, the Board of Golden Valley Electric Association is supportive of the HCP construction using federal, state and private financing to provide a long-term source of reliable and attractively priced electrical power; and
- WHEREAS, the HCP sponsors recognize that a new transmission line from Healy to Fairbanks is essential to deliver HCP produced electricity to Fairbanks; and

WHEREAS, the project sponsors are being encouraged to submit the HCP for possible federal funding under the Department of Energy Clean Coal Technology Program; and

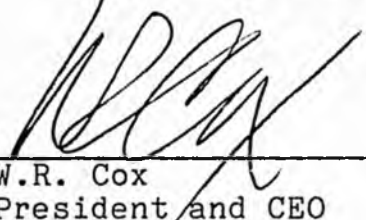
WHEREAS, chances of obtaining federal clean coal funds, which could approximate \$55 million for the HCP, will be greatly enhanced by the demonstration of strong political and financial support for the HCP from the State of Alaska; and

WHEREAS, the HCP is an energy producing project located in the Railbelt.

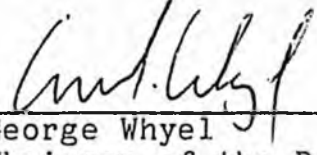
NOW, THEREFORE BE IT RESOLVED that the Greater Fairbanks Chamber of Commerce urges the Governor and Legislature to support an appropriation of \$30 million from the Railbelt Energy Fund to enhance the opportunity of securing federal clean coal funds in 1989 for this very important economic development project.

Passed this 27<sup>th</sup> day of March, 1989.

By

  
\_\_\_\_\_  
W.R. Cox  
President and CEO

By

  
\_\_\_\_\_  
George Whyel  
Chairman of the Board



# GRASLE AND ASSOCIATES, INC.

ELECTRICAL CONTRACTORS

P.O. BOX 1187 • FAIRBANKS, ALASKA 99707 • (907) 452-4415 • FAX #451-8533

March 6, 1990

Senator Dick Eliason  
State of Alaska Senate  
P.O. Box V  
Juneau, AK 99811

Dear Senator Eliason:

As you are aware, the Railbelt Energy Fund was established in the early 1980's as a savings account to provide lower cost and reliable electrical energy to the Railbelt area. All other areas of the State of Alaska received similar grants which have been spent on hydro-electrical projects with the exception of those areas which had no hydro-electric potential and those areas were granted funds through the Power Production Assistance Program.

We would like to see this fund remain available for its original purpose and not be spirited away for other budget concerns. Your support for the upgrade of the Soldotna to Anchorage and the Healy to Fairbanks electrical intertie projects will greatly help to stabilize the cost and provide reliable electrical energy within the Railbelt area from Fairbanks to Seward/Homer and all points in between. Don't let this fund disappear, leaving the Railbelt area with no alternatives to high energy costs. Please work with us to protect this fund.

Sincerely,

GRASLE AND ASSOCIATES, INC.

Robert M. Herman  
President

RMH:jfc

March 31, 1989

Senator Dick Eliason  
P. O. Box V  
Juneau, AK 99811-3100

Dear Senator,

Enclosed is a copy of a letter sent to Alaska Power Authority in Juneau along with a Resolution of NEICR (Northeast Inter-Tie Concerned Residents), residents near the Matanuska Glacier.

The matter of an inter-tie power line being placed in the sight of the Matanuska River Valley is of grave concern to us and we request your assistance in the matter.

The enclosed material is information to assist you in making intelligent decisions in the days to come. This matter is not a small one when it affects life, property, and the future of one of our main industries in the State, that being tourism.

Thank you for your time given to this matter and we will appreciate any communication you can give us at this time.

Sincerely,



Stan Gillespie  
Co-Chair Person of NEICR  
HCO3, Box 8392  
Palmer, AK 99645-9405 745-4203

James Colver, Co-Chair Person 745-8474  
Tom Wright, Vice Chair Person 745-4763

Enclosures

mg

March 31, 1989

Alaska Power Authority  
P. O. Box AM  
Juneau, AK 99811

Attention: Bob LeResche, Director

Dear Mr. LeResche,

On March 30, 1989 at 7:00 PM, a meeting of N. E. I. C. R. (North East Inter-Tie Concerned Residents) representing Glacier View, Victory and Sheep Mountain was held. This meeting also included residents from Chickaloon, Eureka, and Nelchina.

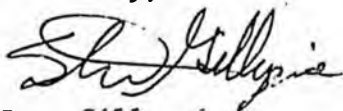
During this meeting, the enclosed Resolution was ratified representing the feelings of this very well attended meeting. There was also a good cross-section of these communities from Mile 70 to Mile 140 of the Glenn Highway.

On March 30th at 12:00 noon a representative of your office hurriedly set up a meeting for April 11, 1989 at 8:30 PM to discuss the "New Comprehensive Study". This was the first communication for a meeting from your office. We request that a full discussion of your response to the enclosed Resolution be dealt with at that time and also a response in written form.

It is not our intent to disrupt the Northeast Inter-Tie or either of the two present line extensions: one at Sheep Mountain with Copper Valley and the second at Fish Lake near Chickaloon with Matanuska Electrical Association. It is our intent to develop a dialogue to see our concern of the Northeast Inter-Tie out of sight and presence in the beautiful Matanuska River Valley dealt with.

We are looking forward to your quick response and future dialogue.

Sincerely,



Stan Gillespie  
Co-Chair Person of N.E.I.C.R.  
745-4203

James Colver, Co-Chair Person 745-8474  
Tom Wright, Vice Chair Person 745-4763

RESOLUTION Serial #89-1

We submit the following resolution for the purpose of rerouting the proposed Northeast Intertie out of the Matanuska River Valley corridor and into the valley corridors immediately behind the mountains on the north side of the highway where applicable, and beyond the visual range in the other areas where appropriate.

Let it be known that we are not against the installation of the intertie powerline. Indeed, we sincerely seek to establish an avenue of communication whereas we, the North East Inter-tie Concerned Residents (NEICR) and the Alaska Power Authority (APA), may work amicably together toward a more favorable rerouting process, culminating in a mutually beneficial solution.

However, let it also be known that the APA has been remiss in its obligations to the citizens of the state of Alaska, specifically the residents living along the Glenn Hwy., in that the residents, to this date, have not been informed in any way, nor has APA made any attempt to do so, of the designing or routing plans and procedures of this proposed power line, and that we have been unsuccessful in acquiring accurate, uncontradictory, and timely information when we have attempted to contact pertinent agencies, and that, therefore, we believe our legal rights have been usurped, and that the law-given rules of procedure have been miscarried, pursuant to the following Alaska Statutes (AS):

AS44.62.310 Agency meetings published.

"All meetings...are open to the public..."

AS44.62.312 State policy regarding meetings.

(2) "...actions of those units [i.e. APA] be taken openly and that their deliberations be conducted openly."

(4) "The people...do not give their public servants [i.e. APA] the right to decide what is good for the people to know and what is not good for them to know."

(5) "The people's right to remain informed shall be protected so that they may retain control over the instruments they have created."

AS44.82.220. Public records; open meetings.

"The authority [i.e. APA] shall publish a proposed agenda of its meetings and afford the public an opportunity to be heard in accordance with AS44.62.312."

and, whereas the APA is required at the reconnaissance study phase to "include public comment from residents of the community and adjacent area" (as per AS44.83.177. [4] Reconnaissance study.)

and, whereas the APA, by which they are required by law to

do so pursuant to AS44.83.177 (a) "...the authority shall...complete a reconnaissance study for each proposed new power project or combination of projects" (there are no exceptions mentioned within this law),

and, whereas the reconnaissance study phase is to precede the feasibility study phase (into which the APA is currently acting upon),

and, whereas in recognition of the APA's power of eminent domain as granted them by section as44-83-080 inaccordance with AS09.55.240-09.55.460,

we feel sufficiently concerned, and compelled, to list items to accomplish the following:

I. Declare, and give reasons for, our desire to reroute the inter-tie.

II. Submit our own route proposal.

III. Initiate a number of requirements and guarantees in accordance with our right to do so under the Alaska laws.

I. Reasons for rerouting.

A. Scenic and Tourism:

1. Scenic qualities disrupted, due to right-of-way clearings, and steel tower and line placements.

2. Tourism adversely affected, due to disrupted scenic qualities.

a. Mat-Su Convention and Visitors Bureau's efforts to designate the "Golden Circle" route, of which the Glenn Hwy. is a major portion of, would be seriously damaged, again hurting tourism.

3. Local businesses, therefore, would also be adversely affected, due to a decrease in highway touring use.

B. Effects upon residents.

1. Relocation of residents, due to close proximity of powerline, concern for health risks from electromagnetic radiation and unsightliness of powerline.

2. Relocation of businesses, for the same reasons as above.

3. Decrease in property values, for the same reasons as above.

4. Possible communications interference.

5. Increased activities along powerline right-of-way, resulting in a potentially unpleasant and dangerous environment, due to increases in firearm use, ATV use, and noise levels associated with these activities. The Jan. 27th, 1989 Feasibility Study warns to that effect in sec IX> p.7, "There is potential for increased hunting and fishing due to access from right-of-way."

C. Health hazards.

1. Higher risks of leukemia (especially in children), brain cancer, and various brain disfunctions. Abundant, eclectic, recent research very strongly correlates extremely low frequency (ELF) radiation, such as given off by high-powered electric lines, with abnormally high incidences of all of the above mentioned maladies. The APA, as stated in its

Feasibility Study, had decided to disregard any potential health hazard concerns in any further reports, based entirely upon a single, antiquated report issued by the U.S. Dept. of Energy (1982). We believe the more recent research demonstrates enough evidence of health problems to call into question the wisdom of APA's decision, that the evidence should not be avoided, nor disregarded, so easily, and that, at the very least, it warrants further consideration.

II. Our powerline proposal.

A. (see exhibit A. of attached sheets for maps and routes).

B. The route generally runs from Sutton to Gunsight Mt. behind the Talkeetna mountains immediately facing the highway from the north, and follows various valley corridors therein. From Gunsight Mt. on, it generally should remain far enough away from the highway so as not to be visually disruptive, or be of much consequence to humans healthwise.

(see exhibit B. of attached sheets for more detailed descriptions).

C. This new proposed route is more favorable for the following reasons:

1. It is shorter than the APA's proposed Northwest and Southeast routes. due to a more direct, less encumbered, and straighter route.

2. It has fewer potential avalanche hazards.

3. Much, or most of the route is on already existing roads or trails, and traverses high-ground areas in the Talkeetna mountains, consisting mostly of treeless and/or low brush or tundra vegetation, thus affording minimal clearing and eliminating much future vegetation control.

5. The scenic view and health hazard consequences would be virtually negligible.

Whereupon we declare

III. Our requirements and guarantees.

A. We require representation by an individual, or individuals, approved by the NEICR, for the purpose of reviewing and approving all research designs, actively participating in field investigations, attending all meetings relating to any matters concerning the proposed Northeast Inter-tie, or at least having the opportunity to do so for all of the above.

B. A guarantee of ample notification of all meetings or actions relating to the proposed Northeast Inter-tie, pursuant to Alaska State Law.

C. A guarantee of public participation in any and all matters pertaining to the routing and/or design of the Notheast Inter-tie, pursuant to Alaska State Law.

D. A guarantee that the APA will abandon for ever its proposed routes, specifically the segments that traverse through residential communities, along the Glenn Hwy. route, ad infinitum, and that the APA will endeavor to earnestly and

honestly work with the residents of the highway to plan a more favorable route.

E. That the APA Northeast Transmission Inter-tie Feasibility Design and cost Estimate Study, and any subsequent, updated draft or reports thereof, be amended to reflect and accommodate the aforementioned proposals, suggestions, and concerns of the residents.

F. That a meeting be arranged and conducted post-haste at the Glacier View School with members and/or representatives of the NEICR and representatives from the APA, for the purpose of discussing any and all matters concerning the routing of the Northeast Inter-tie.

We expect the APA will recognize that our route is a proposal, and that, therefore, we are not limited by it.

It is of our opinion that Hart Crowser, Inc. and Power Engineers, Inc., the firms responsible for conducting and drawing up the feasibility study, overemphasized system studies in lieu of drastically underemphasizing the selection process of the physical route, as evidenced by APA's statement that, "...a significant part of the criteria for selection was the ease of obtaining the right-of-way" (sec. IX p.1 of the feasibility study) and, "To minimize potential problems with acquiring rights-of-way...the route is contained within the highway rights-of-way" (sec. X. p.1 of feasibility study), and that this plicity was followed, together with the exclusion of the reconnaissance study phase, for the express purpose of expediting the entire powerline routing process, in order to reach the feasibility study phase, so that the project could be submitted to the legislature this session to show a viable need for the Railbelt Energy Fund moneys, all at our expense.

We regret, and abhor, the temerity with which the APA has conducted itself in this entire matter. As proclaimed in AS44.62.312 (3), "the people of this state do not yield their sovereignty to the agencies which serve them." We have blatantly been misled, disregarded, and ignored repeatedly by the APA since October, when our inquiries first began. Numerous letters have been sent, and phone calls made to no avail.

In light of the evidence, we sincerely believe that the spirit and intent of the law have not been honored and served by the APA, that APA is in violation of the law, and that the best interests of the citizens of this state have been served with callous disregard.

Therefore, we, the members of NEICR, hereby summon the APA to rectify all transgressions, and contact and inform us of its reactions, opinions, and/or recommendations regarding this resolution and its proposals, requirements, guarantees, and findings, no later than April 15, 1989, and that further actions are pending upon receipt.

We sincerely hope for an expeditious and equitable solution to this entire matter for all parties concerned.

Herein, witness the attached list of residents who, herewith, did ratify and sign this resolution in concurrence with its contents thereof, on this day of March 30, 1989.

The list of residents who are in concurrence with the attached said resolution, dated March 30th, 1989.

| PRINTED NAME        | SIGNATURE           | ADDRESS                              |
|---------------------|---------------------|--------------------------------------|
| FRANCE L. WHITMILL  | France Whitmill     | HCO3 Box 8445 PALMER, AK.            |
| Cecilia T Rinke     | Cecilia T Rinke     | HCO3 Box 8447-A Palmer, AK.          |
| JAMES C. COLVER     | James C. Colver     | PO Box 427 Palmer, Alaska            |
| Elden Reese         | Elden Reese         | HCO3 Box 8451 Palmer, AK             |
| Nancy Reese         | Nancy Reese         | HCO3 Box 8451 Palmer, AK.            |
| EUGENE WHITMILL     | Eugene Whitmill     | HCO3 Box 8445 PALMER AK              |
| Michael J MEEKIN    | Michael J Meekin    | HCO3 Box 8513 Palmer AK              |
| Mark D. Owen        | Mark D. Owen        | HCO-3 Box 8426 Palmer, AK.           |
| Herbert P. Simon    | Herbert P. Simon    | HCO-3 Box 8591, PALMER, AK           |
| Jacqueline H. Simon | Jacqueline H. Simon | HCO3 Box 8591 Palmer AK              |
| Linda DenBleyker    | Linda DenBleyker    | HCO3 Box 8376, Palmer, AK            |
| Thomas H. Wright    | Thomas H. Wright    | HCO-3, Box 8496, Palmer, AK<br>99645 |
| JOHN MITCHNER       | John M. Mitchner    | HCO-3 Box 8425 PALMER, AK<br>99645   |
| Arlo D. Reddick     | Arlo D. Reddick     | HCO3 Box 8425 Palmer AK 99645        |
| Herbert L. Fey      | Herbert L. Fey      | PO Box 110 Chickaloon, AK 99674      |
| Virginia Brannum    | Virginia Brannum    | P.O. Box 110 Chickaloon AK 99674     |
| Sherry May          | Sherry May          | HCO3 Box 8438-Z Palmer AK 99645      |
| Leona May           | Leona May           | SRC box 8438-Z Palmer AK 99645       |
| Dennis Potocnik     | Dennis Potocnik     | HCO3 Box 8442-A Palmer, AK. "        |
| William C. Wagner   | William C. Wagner   | HCO3 Box 8454-Z Palmer, AK 99645     |
| RICHARD P. WOOD     | Richard P. Wood     | HCO3 8407 Palmer 99645               |
| DIANE MOFFATT       | Diane E. Moffatt    | P.O. Box 1122 Chickaloon, AK 99674   |
| Loren M. Thomas     | Loren M. Thomas     | HCO3 Box 8364-Y, Palmer 99645        |
| RONALD S. ANTAYA    | Ronald S. Antaya    | HCO3 Box 8184 PALMER, AK 99645       |
| Robert Dietrich     | Robert Dietrich     | HCO3 Box 8494 PALMER, AK 99645       |
| Drew Taylor         | Drew Taylor         | HCO3 Box 8449 Palmer, AK 99645       |
| DENNIS ALLEN        | Dennis Allen        | HCO3 Box 8443D Palmer, AK 99645      |
| Colleen Dietrich    | Colleen Dietrich    | HCO3 8484 Palmer, AK 99645           |
| Keith W. Allen      | Keith W. Allen      | HCO3 8443 Palmer AK 99645            |
| Katherine Wright    | Katherine Wright    | HCO3 8496 Palmer AK. 99645           |
| Nancy H. Cohen      | Nancy H. Cohen      | HCO3 8378 Palmer AK 99645            |
| Patrick A. Cohen    | Patrick A. Cohen    | HCO3 Box 8378 PALMER, AK. 99645      |
| MARVIN DEN BLEYKER  | Marvin DenBleyker   | HCO3 Box 8376 PALMER, AK 99645       |
| DOROTHY STEADMAN    | Dorothy Steadman    | HCO3 Box 8453 PALMER, AK 99645       |
| CLIFFORD B STEADMAN | Clifford B Steadman | HCO3 Box 8453 Palmer, AK 99645       |
| Roger M. Wimmer     | Roger M. Wimmer     | HCO3 Box 8449B Palmer, AK 99645      |

PRINTED NAME

SIGNATURE

ADDRESS

STAN GILLESPIE

*Stan Gillespie*

HQ03 BOX 8392 PALMER

*Signed and Sealed before  
me on the 30<sup>th</sup> day of  
March 1989*

*Frances L. Whitmill*

FRANCES L. WHITMILL, NOTARY PUBLIC  
STATE OF ALASKA  
MY COMMISSION EXPIRES 1/19/92

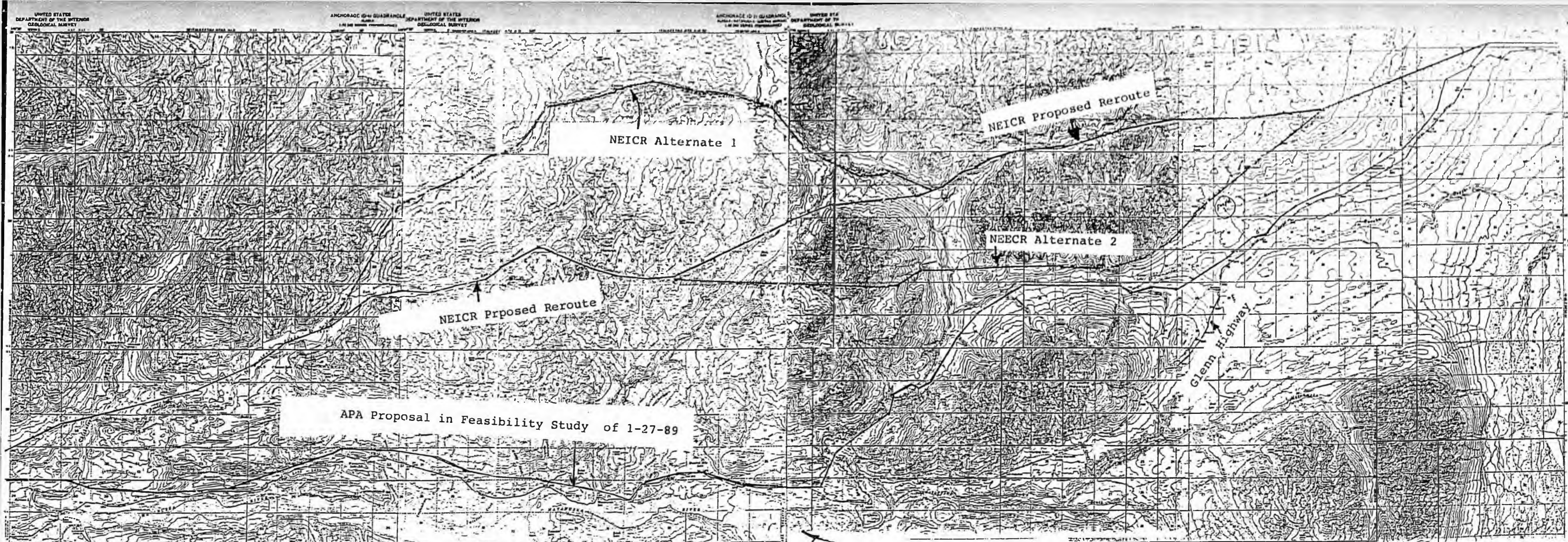


EXHIBIT "A"  
NORTHEAST INTERTIE CONCERNED RESIDENTS  
RESOLUTION 89-1  
March 30, 1989

Northeast Intertie Concerned Residents  
NEICR

EXHIBIT B  
RESOLUTION 89-1

The purpose of this description is to describe a rerouting of a portion of the Northeast Intertie. This reroute description begins at the Chickaloon River approximately mile 70 of the Glenn Highway then goes through the foothills of the Talkeetna Mountains north of the highway and the Matanuska River Valley to Eureka at mile 140 of the Glenn Highway. There are several alternate routes that branch off the main reroute centerline.

The aforementioned reroute is more particularly described as follows; commencing at the NW 1/4 corner of Sec. 23, T.20 N, R.5 E, S.M., Ak; thence Northeasterly north of Boulder Creek to the W 1/4 corner of Sec. 33 T.21 N., R 7 E, which is common with the point of beginning for the alternate route 1; thence easterly along Boulder Creek to the section corner common to sections 21,22,15 & 16 of T 21 N., R 8 E.; thence Southeasterly to the SE 1/16 Cor of Sec. 19, T 21 N., R 9 E, said point being the point of beginning for alternate route 2; thence Northeasterly to the W 1/4 corner of Sec. 12, T 21 N., R 9 E.; thence generally Northeasterly to the SE Sec. Corner of Sec 36, T 22 N, R 10 E; thence easterly along the southerly section line of Section 31, T 22 N, R 11 E to the SE section corner of said section; thence Northeasterly to the Section Corner common to Secs. 25,26,35,36 T 22 N, R 11 E; thence Easterly to the peak of a hill within the SE 1/4 of Sec. 27 T 22 N, R 12 E; thence Northeasterly to a point within Section 33, T 3 N, R 10 W, C.R. Meridian Alaska, said point is the terminus of this description for the purpose of describing a proposed rerouting of a portion of the NE Intertie proposal.

Alternate route 1 described as follows: Commencing at the W 1/4 corner of Sec. 33, T. 21 N, R 7 E, S.M.; thence Northeasterly along Boulder Creek, through Chitna Pass, along Chitna creek, along Caribou creek; this route generally follows a trail as designated on USGS Anchorage (D 3) Quadrangle; Terminus of alternate 1 is an intersection of the afore described and the main reroute centerline, said intersection lying in the NW 1/4 of Sec. 10 T 21 N, R 10 E.

Alternate route 2 is described as follows: Commencing at the afore described SE 1/16 Cor of Section 19; thence Easterly to the W 1/4 corner of Sec. 21, T 21 N., R 11 E; thence Northeasterly to the peak of a hill located within the SE 1/4 of Sec. 27, T 22 N, R 12 E, S.M., AK., said point being the terminus of alternate route 2.



GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707-1249, Phone 907-452-1151

March 30, 1989

TO: Senator John Coghill

FROM: Mike Kelly, General Manager, Golden Valley Electric Assn. 

**STATUS REPORT CONCERNING USE OF A PORTION OF THE RAILBELT ENERGY FUND FOR THE NORTHERN ELECTRICAL INTERTIE (ANCH-FBKS)**

The Governor's Railbelt Energy Council recommended use of the Railbelt Energy Fund (1) to construct a 230 kV Southern electrical intertie between Soldotna and Anchorage (original APA-estimated cost - \$80 million); and (2) to upgrade the existing Northern intertie system between Anchorage and Fairbanks by constructing new 230 kV lines from Wasilla to Willow and Healy to Fairbanks (original APA-estimated cost - \$118 million.) These intertie lines are needed to increase electrical transfer capability between Alaska's major population centers thereby improving reliability and reducing costs by increasing economy energy transactions, reducing electrical losses, increasing reserve sharing, etc.

The purpose of this communication is to apprise you of a dramatic cost reduction in the utility request for the Northern Intertie System - from \$118 million to \$60 million. This has been done with the concurrence of Bob LaResche, ARECA and the other Railbelt utilities. Why? Because we realize the financial crunch that the legislature is dealing with and have made a good-faith attempt to pare our request to a minimum. We have backed off from a request for a "four-lane electrical highway" to a two-lane country road. This, when combined with a reduced-cost Southern Intertie, will give over 75% of Alaska's population a reduced, but reasonable share of their energy entitlement and will still leave the legislature over one hundred million of the REF to dedicate to other energy and non-energy needs.

Here are a few technical points to help make clear what we propose:

- (1) The original \$118 million plan would have provided a 230 kV, 300 megawatt low-loss electrical intertie system between Anchorage and Fairbanks. This would increase transfer capability from the present 70 megawatts.
- (2) Our \$60 million proposal will (a) eliminate the request for a new Wasilla to Willow 230 kV line; (b) reduce the request for a new Healy to Fairbanks line from 230 kV to 138 kV (same voltage as the existing GVEA 138 kV line which the new line will roughly parallel); and (c) will add voltage compensation to the line. These actions will result in an Anchorage-to-Healy total delivery capability of 100 MW and a Healy-to-Fairbanks total delivery capability of 200 MW. This will substantially reduce Healy-to-Fairbanks electrical line losses; will increase transfer capability to-from Anchorage; will accommodate GVEA's existing 25 MW Healy coal-fired powerplant plus Usibell's proposed 35 MW cogeneration plant and will leave room for addition of another 40 MW plant at Healy in the future.

## GOLDEN VALLEY ELECTRIC ASSOCIATION INC.

Status Report - REF  
March 30, 1989  
Page 2

- (3) The dual transmission lines will substantially increase the reliability of future power deliveries from Healy to the Fairbanks load center.
- (4) GVEA has retained Harza Engineering and Power Technologies, Inc. to fine tune our cost estimate and line configuration calculations. Decision Focus, Inc. will assist in calculating the benefit to cost ratio. The draft APA report demonstrated a base case expected SCR of .7 for the original \$118 million plan. We are very confident that at one-half the cost our new \$60 million plan will demonstrate a 1+ BCR.

I purposefully kept this short. Therefore it lacks detail. I would be happy to help clarify any questions by phone or can come to Juneau on very short notice to testify, etc.

DAILY NEWS  
WEDNESDAY  
3/30/89

# GVEA chops request for intertie funds by half

By SAM HENNING  
Staff Writer

Gulfstream Valley Electric Association has cut in half its request for state money to build a larger electric line connection to Anchorage.

"It was a first-class four-lane divided highway," GVEA General Manager Mike Kelly said. The amount of the old request, which was dropped from \$120 million to \$60 million.

"The facts are we had to cut back

in a two-lane country road," he said.

GVEA wants the state bank with state money so it can import cheap gas-fired power from Anchorage and will not have to start up expensive oil-fired generators in North Pole. Even with the existing intertie line, the North Pole generators must be used whenever winter temperatures fall to 10 below zero or lower, Kelly said.

GVEA wants the money taken from the state's \$220-million Public Energy Fund, which legisla-

tors and Gov. Steve Cooper may need to balance the budget.

Kelly presented the new plan to legislators as they gathered for the constitutional conferences held every other Tuesday from 7-8 p.m.

Legislators reacted favorably to the Kelly's revised plan.

"A revised proposal is more realistic, given the financial situation the state's facing, but I think everyone is being very cautious because we absolutely don't know the revenue situation," Rep. Mike

Davis, D-Fairbanks, said this morning.

Until a few weeks ago, GVEA and other utilities had asked legislators to allocate \$220 million for interties between Anchorage and Willow and Healy and Fairbanks. Another \$60 million was requested to build a larger line between the Bradley Lake dam on the Kenai Peninsula and Anchorage.

The new plan would drop plans to build the higher capacity line between Anchorage and Willow. Instead, voltage compensation

measures would be installed to increase the line's capacity, Kelly said. The proposed line between Healy and Fairbanks would be built, but on a smaller scale than previously planned. It would have the same capacity as the existing line.

Taken together, the lines into Fairbanks could carry roughly 200 megawatts under the new plan, down from 300 megawatts under the \$120-million plan. At present, the line can carry 70 megawatts.

The 200-megawatt line allow GVEA to import cheap power generated in Anchorage gas-fired plants, Kelly said. Kelly would also leave plenty of power generated at Unit Mine's proposed plant to sell.

Kelly said Anchorage also are attempting to pay their request for the line Bradley Lake and Anchorage. Kelly said he expects they will save \$20 million to \$30 million off the price tag of \$80 million.



GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707-1249, Phone 907-452-1161

March 29, 1989

Mr. Brian Phillips  
Manager, City of Fairbanks  
410 Cushman Street  
Fairbanks, Alaska 99701

RE: Railbelt Energy Fund

Dear Brian,

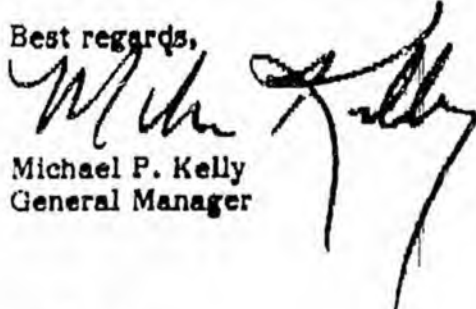
Attached are copies of:

1. The resolution I drafted which was approved by the Chamber Energy Committee which reflects GVEA's position regarding the Northern intertie construction. I expect Chamber Board approval on April 3, 1989.
2. A resolution which Kathy Usbell-Fulp and I collaborated on which passed the Chamber Board on March 27 supporting the Usbell power plant/coal drying facility.

You have indicated that Councilman Hayes may be interested in introducing similar resolutions before the City Council. I believe this would be an excellent idea. Last night I testified before the Interior delegation by teleconference concerning usage of the Railbelt Energy Fund for purposes reflected in #1 above. We discussed the fact that the Interior is far more united concerning use of the REF than the Southern railbelt. For example, we have delegation, utility, Borough, Chamber, labor, and hopefully the City, united behind the plans reflected in the attached resolutions. If I can be of any help, or Jim needs me to testify, please call.

On another matter, I was pleased to learn that you will soon be addressing long-range plans concerning FMUS. As I promised, I will send you a preliminary letter-proposal regarding FMUS power supply, Chena purchase, etc. by April 10.

Best regards,

  
Michael P. Kelly  
General Manager

cc. Best Stamp  
Ron Saylor



Greater Fairbanks

# Chamber

## RESOLUTION

### A RESOLUTION URGING SUPPORT FOR INTERTIE CONSTRUCTION USING RAILBELT ENERGY FUNDS

- WHEREAS, the Railbelt Energy Fund has not been fully utilized; and
- WHEREAS, Alaskans in other regions of the state continue to enjoy the benefits of state-financed energy projects and the Bush continues to receive annual energy cost subsidies through the Power Cost Equalization program; and
- WHEREAS, the Railbelt Energy Fund is in danger of being diverted almost entirely to uses other than its original purpose unless it is appropriated for Railbelt energy projects this legislative session; and
- WHEREAS, the Railbelt Energy Council endorsed use of a portion of the Railbelt Energy Fund to upgrade the Anchorage-Fairbanks electrical intertie system, including construction of a new transmission line between Fairbanks and Healy; and
- WHEREAS, because of limited intertie capability between Fairbanks and Anchorage, Golden Valley Electric Association is currently required to operate oil-fired generation to meet load whenever temperatures are below  $-10^{\circ}\text{F}$ ; and
- WHEREAS, a new electrical transmission line between Healy and Fairbanks will enable the Usibelli cogeneration project to deliver its full output to the Fairbanks electrical load center; and
- WHEREAS, the original estimate for the Anchorage to Fairbanks 230 kV transmission upgrade was \$118 million; and
- WHEREAS, the utilities have been asked by key legislators to reduce their request for intertie funding in recognition of state financial difficulties; and
- WHEREAS, the Golden Valley Electric Association, working with the Alaska Power Authority, has reduced their request for the Anchorage-Fairbanks intertie upgrade from \$118 million to approximately \$60 million by reducing design voltage from 230 kV to 138 kV and by eliminating the request for a new transmission line between Wasilla and Willow;



Greater Fairbanks

# Chamber

OF COMMERCE

1000 Ashcroft Street  
Fairbanks, Alaska

Resolution \_\_\_\_\_  
Page 2

NOW, THEREFORE, BE IT RESOLVED, that the Greater Fairbanks Chamber of Commerce urges the Governor and the legislature to support an appropriation of \$60 million from the Railbelt Energy Fund to the Alaska Power Authority for construction of a new 138 kV line between Healy and Fairbanks and the addition of voltage compensation on the existing Anchorage-Fairbanks transmission system.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 1989.

By: \_\_\_\_\_  
George Whyel  
Chairman

By: \_\_\_\_\_  
W. R. Cox  
President and CEO

**DISTRIBUTION:**

- Governor Steve Cowper
- Members, Alaska State Senate
- Members, Alaska State House
- Robert LeResche, Alaska Power Authority
- Dave Hutchens, Alaska Rural Electrification Assn.



Greater Fairbanks

**Chamber**

OF COMMERCE

709 Second Avenue

(907) 452-1105

FAIRBANKS, ALASKA 99701

**RESOLUTION #10-0389**

**RESOLUTION URGING THE LEGISLATURE TO SUPPORT AN APPROPRIATION OF \$30 MILLION FROM THE RAILBELT ENERGY FUND TO ENHANCE THE OPPORTUNITY OF SECURING FEDERAL CLEAN COAL FUNDS IN 1989**

- WHEREAS, the Healy Cogeneration Project (HCP) is a prospective significant development in Alaska's economically depressed Railbelt Region; and
- WHEREAS, the HCP, comprising a 50 MW high-technology coal-fired powerplant and a coal processing (drying) plant which will produce 500,000 tons of premium fuel per year, will bring major economic benefits to Alaska and the Railbelt region in particular; and
- WHEREAS, the HCP will utilize and promote the increased and wise use of Alaska's most abundant non-renewable resource - Coal - in an environmentally sound and efficient manner; and
- WHEREAS, the HCP will create at least 130 direct long-term quality jobs as well as numerous indirect jobs exclusive of a construction force which could peak at 300, and
- WHEREAS, the HCP could be a prototype development leading to broad commercialization of coal-drying (beneficiation) technology to produce large volumes of premium low-sulfur fuel having great potential in export markets; and
- WHEREAS, the electrical power to be produced from the HCP will be used in the Northern Railbelt to meet power requirements and support economic expansion in the region; and
- WHEREAS, the Board of Golden Valley Electric Association is supportive of the HCP construction using federal, state and private financing to provide a long-term source of reliable and attractively priced electrical power; and
- WHEREAS, the HCP sponsors recognize that a new transmission line from Healy to Fairbanks is essential to deliver HCP produced electricity to Fairbanks; and

WHEREAS, the project sponsors are being encouraged to submit the HCP for possible federal funding under the Department of Energy Clean Coal Technology Program; and

WHEREAS, chances of obtaining federal clean coal funds, which could approximate \$55 million for the HCP, will be greatly enhanced by the demonstration of strong political and financial support for the HCP from the State of Alaska; and

WHEREAS, the HCP is an energy producing project located in the Railbelt.

NOW, THEREFORE BE IT RESOLVED that the Greater Fairbanks Chamber of Commerce urges the Governor and Legislature to support an appropriation of \$30 million from the Railbelt Energy Fund to enhance the opportunity of securing federal clean coal funds in 1989 for this very important economic development project.

Passed this \_\_\_\_\_ day of \_\_\_\_\_, 1989.

By \_\_\_\_\_

By \_\_\_\_\_

By: Walt Johnson  
Chirs Birch  
J.B. Carnahan  
Paul Chlamar  
Hank Hove  
Don Lowell  
Jerry Norum  
Joe Ryan  
Jeff Waltzin  
Bonnie Williams

Introduced: 01/26/89  
Responed: 01/26/89  
Amended: 02/09/89  
Adopted: 02/09/89

### RESOLUTION NO. 89-011

#### A RESOLUTION RELATING TO THE RAILBELT ENERGY FUND AND THE CONSTRUCTION OF AN ELECTRICAL INTERTIE

WHEREAS, the Railbelt Energy Fund was established by the Fourteenth Alaska Legislature for the exclusive purpose of financing energy development within the Railbelt Region including the Matanuska Valley, Anchorage, Fairbanks, and Kenai Peninsula areas; and

WHEREAS, in 1980-1982 approximately one billion, two hundred seventy thousand dollars was spent on various large hydroelectric projects, energy loans, rate stabilization and power generation and distribution facilities to rural Alaska; and

WHEREAS, the Legislature established the Railbelt Energy Council to recommend the best options of planning, financing, constructing and managing power facilities in the Railbelt; and

WHEREAS, the Railbelt Energy Council has determined that transmission interties are a necessary part of any Railbelt energy development program; and

WHEREAS, construction of electric interties would eliminate problems in the present transmission system which include limited capacity, transmission stability problems, and reliability throughout the Railbelt region; and

WHEREAS, upgrading the Healy-Fairbanks line would increase the transfer capacity and lower costs to Fairbanks North Star Borough residents; and

WHEREAS, there seems to be a feeling that if the funds in the Railbelt Energy Fund are not used for Railbelt energy projects in the near future the Railbelt region may lose those funds.

NOW, THEREFORE BE IT RESOLVED by the Fairbanks North Star Borough as follows:

Section 1. That the Fairbanks North Star Borough Assembly urges the Alaska Legislature and the Administration to ensure that the monies in the Railbelt Energy Fund are used for their designated purpose of energy development within the Railbelt, region where more than three-fourths of the state's population resides.

Section 2. That the Fairbanks North Star Borough Assembly supports the use of the Railbelt Energy Fund for the construction of the Anchorage-Homer intertie and the upgrading of the Healy-Fairbanks intertie.

Section 3. That copies of this resolution shall be sent to the Honorable Steve Cowper, Governor, State of Alaska; Senators Binkley and Uehling, Co-chairmen of the Senate Finance Committee; Senator Fahrenkamp, Chair of the Senate Resources Committee; Representatives Larson and Hoffman, Chairmen of the House Finance Committee; Representatives Menard and Davidson, Co-chairmen of the House Resources Committee; and all members of the Interior Delegation.

PASSED AND APPROVED THIS 9TH DAY OF FEBRUARY, 1989.

\_\_\_\_\_  
Presiding Officer

ATTEST:

\_\_\_\_\_  
Clerk of the Assembly

RESOLUTION NO. 89-011



GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707-1249, Phone 907-452-115

March 2, 1989

Mr. John Sims  
 Vice-President, Marketing  
 Usibelli Coal Mines  
 122 First Avenue, Suite 302  
 Fairbanks, Alaska 99701

RE: Healy Coal-fired Generation and Coal Drying Facility

Dear Mr. Sims:

Thank you for the update at our February 27, 1989 board meeting concerning UCM's plans to construct the 50 MW Healy coal generation and 500,000 ton/year coal-drying project. GVEA is very interested in a Healy mine-mouth project supplying our next increment of base-load generation if it can be done at competitive prices. GVEA may even be interested in an ownership share in any Healy project and would want to enter into an operating agreement for any Healy power plant. As we have discussed and agreed, such a project is really only feasible if a new transmission line is built between Healy and Fairbanks. GVEA has been working for five years with AEM Corporation in relation to their plans to build a Healy coal-fired plant. Although not privy to any of the details, we understand AEM and Usibelli may be discussing fuel supply for AEM.

If AEM does not proceed with their plant and if the State funds the proposed Healy-to-Fairbanks intertie, we enthusiastically support your proposal to use private capital, Federal Clean Coal Technology funds and State funds from Railbelt energy funds that are surplus to identified southern and northern intertie needs, to construct the plant. We understand from UCM that such a funding plan would result in very competitively priced firm power in the mid-1990's.

Best regards,

A handwritten signature in black ink that reads "Michael Kelly". The signature is written in a cursive, flowing style.

Michael P. Kelly  
 General Manager

cc: Governor Cowper  
 Interior Delegation  
 Bob LeResche, APA  
 Borough Assembly Members  
 City of Fairbanks Council Members  
 City of North Pole Council Members  
 Dave Hutchens, ARECA  
 Board of Directors/Staff, GVEA

Re: SB 220

## Alaska Power Authority

Project Approval Process  
Sequence of Events

March 20, 1984

All significant power projects that are undertaken by the Alaska Power Authority will follow the sequence of events listed below unless modified by Board on a project specific basis. Some events may be concurrent.

| Step No. | Description  | Approved By |       |     |     |
|----------|--|-------------|-------|-----|-----|
|          |  | Staff       | Board | OMB | Leg |
| 1.       | Annual Plan for Reconnaissance Studies   |             | X     |     |     |
| 2.       | Appropriation Request for Reconnaissance Studies   |             | X     | X   | X   |
| 3.       | Award Contract for Reconnaissance Study  | X           |       |     |     |
| 4.       | Authorization to submit Reconnaissance Study to OMB  |             | X     |     |     |
| 5.       | Approval of Reconnaissance Study   |             |       | X*  |     |
| 6.       | Annual Plan for Feasibility Studies  |             | X     |     |     |
| 7.       | Appropriation Request for Feasibility Study  |             | X     | X   | X   |
| 8.       | Award Contract for Feasibility Study   | X           |       |     |     |
| 9.       | Approve conditional Power Sales Agreements   |             | X     |     |     |
| 10.      | Authorization to submit feasibility study, and preliminary plan of finance to OMB and Legislature      |             | X     |     |     |
| 11.      | Recommend Project Approval or Disapproval to Governor and Legislature                                  |             |       | X*  |     |
| * 12.    | Authorization of Project and Construction Cost   |             |       |     | X*  |
| 13.      | Approval to submit license application to FERC   |             | X     |     |     |
| 14.      | Annual Plan for Design   |             | X     |     |     |
| 15.      | Appropriation Request for Design   |             | X     | X   | X   |
| 16.      | Approval of Initiation of Detailed Design, updated Power Sales Agreements, and Updated Plan of Finance |             | X     |     |     |
| 17.      | Award Contract for Detailed Design   | X           |       |     |     |
| 18.      | Annual Plan for Construction   |             | X     |     |     |
| 19.      | Approval of Final Plan of Finance and Power Sales Agreements   |             | X     |     |     |
| 20.      | Appropriation for Construction   |             | X     | X   | X   |
| 21.      | Approval of Start of Project Construction  |             | X     |     |     |
| 22.      | Award Construction Contracts   | X           |       |     |     |

\* Statutory requirements.

Approved

  
Chairman

Date

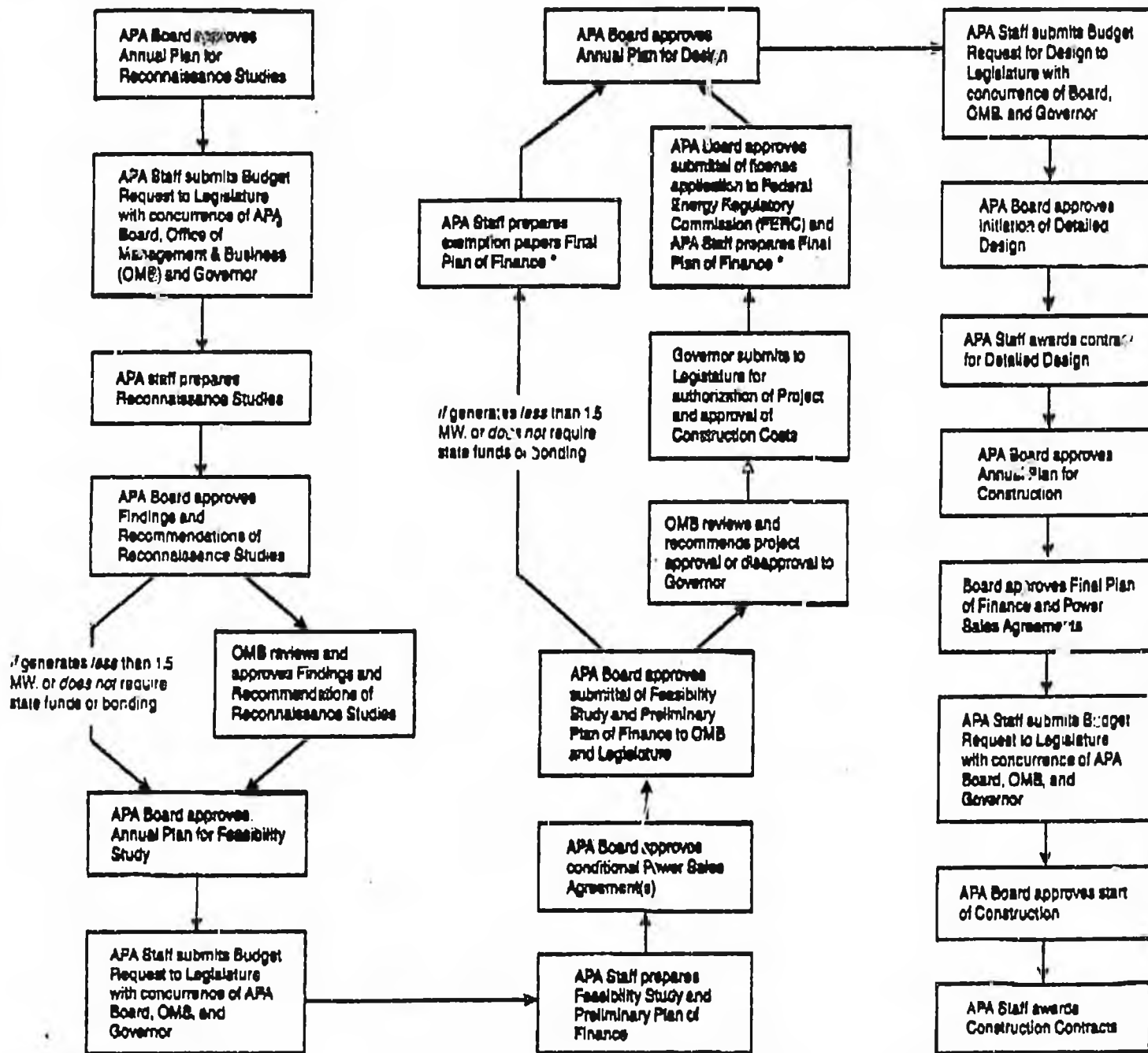
4.11.84

Note:

OMB's review is required for new projects that are larger than 1.5 MW for generation projects or cost more than \$3,000,000 for transmission

# Project Approval Process

All significant projects undertaken by the Alaska Power Authority follow the sequence of events outlined below. This project approval process, adopted in 1984, serves to clarify staff, Board, Office of Management and Budget and legislative approvals necessary for project completion. Public and agency input is also identified.



\* includes Loan & Bond Agreements, Power Sales Agreements & Operation Agreements

DATE BOARD ADOPTED 4-11-84

Northeast Intertie Concerned Residents  
P.O. Box 427  
Palmer, Alaska 99645  
745-8474 561-7669

March 31, 1989

Alaska State Senate  
Labor & Commerce Committee  
P.O. Box V  
Juneau, Ak 99811

RE:SB 220 Railbelt Energy Fund; Anchorage-Fairbanks Intertie, Northeast  
Routing

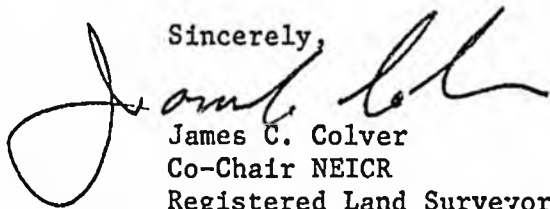
Dear Senators:

Enclosed is a copy of Resolution 89-1 as ratified unanimously by the Northeast Intertie Concerned Residents (NEICR) on March 30, 1989 at a meeting at Glacier View School. Also Enclosed are supporting documents and research we have gathered. Many of our concerns are with the Northeast Intertie Feasibility Study of January 27, 1989 prepared for the Alaska Power Authority. Our goal is to get the preliminary design of this Intertie relocated North of the Matanuska River Valley into the foothills of the Talkeetna Mts., and to get the Alaska Power Authority to comply with Alaska Law.

Your assistance in investigating APA's procedures will be appreciated by us and all Alaskans. Senators thank you for the opportunity appear before the committee in a teleconference on Monday April 3rd.

This letter and enclosures that are being faxed to you today will be followed by finalized documents. Please contact me if I can be of assistance.

Sincerely,



James C. Colver  
Co-Chair NEICR  
Registered Land Surveyor

## RESOLUTION Serial #89-1

A resolution for the purpose of rerouting the proposed Northeast Intertie out of the Matanuska River Valley corridor and into the valley corridors immediately behind the mountains on the north side of the highway where applicable, and beyond the visual range in the other areas where appropriate.

Let it be known that we are not against the installation of the intertie powerline. Indeed, we sincerely seek to establish an avenue of communication whereas we, the North East Intertie Concerned Residents (NEICR) and the Alaska Power Authority (APA), may work amicably together toward a more favorable rerouting process, culminating in a mutually beneficial solution.

However, let it also be known that the APA has been remiss in its obligations to the citizens of the state of Alaska, specifically the residents living along the Glenn Hwy., in that the residents, to this date, have not been informed, in any way, nor has APA made any attempt to do so, of the designing or routing plans and procedures of this proposed power line, and that we have been unsuccessful in acquiring accurate, uncontradictory, and timely information when we have attempted to contact pertinent agencies, and that, therefore, we believe our legal rights have been usurped, and that the law-given rules of procedure have been miscarried, pursuant to the following Alaska Statutes (AS):

AS44.62.310 Agency meetings published.

"All meetings...are open to the public..."

AS44.62.312 State policy regarding meetings.

(2) "...actions of those units [i.e. APA] be taken openly and that their deliberations be conducted openly."

(4) "the people...do not give their public servants [i.e. the right to decide what is good for the people to know and what is not good for them to know,".

(5) "the people's right to remain informed shall be protected

so that they may retain control over the instruments they have created."

AS44.82.220. Public records; open meetings.

"The authority [i.e.] shall publish a proposed agenda of its meetings and afford the public an opportunity to be heard in accordance with AS44.62.312."

and, whereas the APA is required at the reconnaissance study phase to "include public comment from residents of the community and adjacent area" (as per AS44.83.177. [4] Reconnaissance study.)

and, whereas the APA, did in fact, never conduct, nor ever draw up, a reconnaissance study, by which they are required by law to do so pursuant to AS44.83.177 (a) "...the authority shall...complete a reconnaissance study for each proposed new power project or combination of projects" (there are no exceptions mentioned within this law),

and whereas the reconnaissance study phase is to precede the feasibility study phase (into which the APA is currently acting upon),

and, whereas in recognition of the APA's power of eminent domain as granted them by AS09.55.240-09.55.460,

we feel sufficiently concerned, and compelled, to list items to accomplish the following:

I. Declare, and give reasons for, our desire to reroute the intertie.

II. Submit our own route proposal.

III. Initiate a number of requirements and guarantees in accordance with our right to do so under the Alaska laws.

I. Reasons for rerouting.

A. Scenic and Tourism:

1. Scenic qualities disrupted, due to right-of-way clearings, and steel tower and line placements.

2. Tourism adversely affected, due to disrupted scenic qualities.

a. Mat-Su Convention and Visitors Bureau's efforts to designate the "Golden Circle" route, of which the Glenn Hwy. is a major portion of, would be seriously damaged, again hurting tourism.

3. Local businesses, therefore, would also be adversely affected, due to a decrease in highway touring use.

B. Affects upon residents.

1. Relocation of residents, due to close proximity of powerline, concern for health risks from electromagnetic radiation, and unsightliness of powerline.
2. Relocation of businesses, for the same reasons as above.
3. Decrease in property values, for the same reasons as above.
4. Possible communications interference.
5. Increased activities along powerline right-of-way, resulting in a potentially unpleasant and dangerous environment, due to increases in firearm use, ATV use, and noise levels associated with these activities. The Jan. 27th, 1989 Feasibility Study warns to that affect in sec. IX p.7, "There is potential for increased hunting and fishing due to access from right-of-way."

C. Health hazards.

1. Higher risks of leukemia (especially in children), brain cancer, and various brain dysfunctions. Abundant, eclectic, recent research very strongly correlates extremely low frequency (ELF) radiation, such as given off by high-powered electric lines, with abnormally high incidences of all of the above mentioned maladies. The APA, as stated in its Feasibility Study, has decided to disregard any potential health hazard concerns in any further reports, based entirely upon a single, antiquated report issued by the U.S. Dept. of Energy (1982). We believe the more recent research demonstrates enough evidence of health problems to call into question the wisdom of APA's decision, that the evidence should not be avoided, nor disregarded, so easily, and that, at the very least, it warrants further consideration.

II. Our powerline proposal.

A (see exhibit A. of attached sheets for maps and routes).

B. The route generally runs from Sutton to Gunsight Mt. behind the Talkeetna mountains immediately facing the highway from the north, and follows various valley corridors therein. From Gunsight Mt. on, it generally should remain far enough away from the highway so as

not to be visually disruptive, or be of much consequence to humans healthwise.

(see exhibit B. of attached sheets for more detailed descriptions).

C. This new proposed route is more favorable for the following reasons:

1. It is shorter than the APA's proposed Northwest and Southeast routes, due to a more direct, less encumbered, and straighter route.

2. It has fewer potential avalanche hazards.

3. Much, or most, of the route is on already existing roads or trails, and traverses high-ground areas in the Talkeetna mountains, consisting mostly of treeless and/or low brush or tundra vegetation, thus affording minimal clearing and eliminating much future vegetation control.

4. There are far fewer private properties to cross.

5. The scenic view and health hazard consequences would be virtually negligible.

Whereupon we declare

### III. Our requirements and guarantees.

A. We require representation by an individual, or individuals, approved by the NEICR, for the purpose of reviewing and approving all research designs, actively participating in field investigations, attending all meetings relating to any matters concerning the proposed Northeast Intertie, or at least having the opportunity to do so for all of the above.

B. A guarantee of ample notification of all meetings or actions relating to the proposed Northeast Intertie, pursuant to Alaska State Law.

C. A guarantee of public participation in any and all matters pertaining to the routing and/or design of the Northeast Intertie, pursuant to Alaska State law.

D. A guarantee that the APA will abandon its proposed routes, specifically the segments that traverse through residential communit-

ies, along the entire Glenn Hwy. route, ad infinitum, and that the APA will endeavor to earnestly and honestly work with the residents of the highway to plan a more favorable route.

E. That the APA Northeast Transmission Intertie Feasibility Design and Cost Estimate Study, and any subsequent, updated draft or reports thereof, be amended to reflect and accommodate the aforementioned proposals, suggestions, and concerns of the residents.

F. That a meeting be arranged and conducted post haste at the Glacier View School with members and/or representatives of the NEICR and representatives from the APA, for the purpose of discussing any and all matters concerning the routing of the Northeast Intertie.

We expect the APA will recognize that our route is a proposal, and that, therefore, we are not limited by it.

It is of our opinion that Hart Crowser, Inc. and Power Engineers, Inc., the firms responsible for conducting and drawing up the feasibility study, over emphasized system studies in lieu of drastically underemphasizing the selection process of the physical route, as evidenced by APA's statement that, "...a significant part of the criteria for selection was the ease of obtaining the right-of-way" (sec. IX p.1 of feasibility study) and, "To minimize potential problems with acquiring rights-of-way...the route is contained within the highway right-of-way" (sec. X. p.1 of feasibility study), and that this policy was followed, together with the exclusion of the reconnaissance study phase, for the express purpose of expediting the entire powerline routing process, in order to reach the feasibility study phase, so that the project could be submitted to the legislature this session to show a viable need for the Railbelt Energy Fund moneys, all at our expense.

We regret, and abhor, the temerity with which the APA has conducted itself in this entire matter. As proclaimed in AS44.62.312 (3), "the people of this state do not yield their sovereignty to the agencies which serve them " We have blatantly been misled, disregarded, and ignored repeatedly by the APA since October, when our inquiries first began. Numerous letters have been sent, and phone calls made to

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no avail.

In light of the evidence, we sincerely believe that the spirit and intent of the law have not been honored and served by the APA, that APA is in violation of the law, and that the best interests of the citizens of this state have been served with callous disregard.

Therefore, we, the members of NEICR, hereby summon the APA to rectify all transgressions, and contact and inform us of its reactions, opinions, and/or recommendations regarding this resolution and its proposals, requirements, guarantees, and findings, no later than April 15th, 1989, and that further actions are pending upon receipt.

We sincerely hope for an expeditious and equitable solution to this entire matter for all parties concerned.

Herein, witness the attached list of residents who, herewith, did ratify and sign this resolution in concurrence with its contents thereof, on this day of March 30th, 1989.

(7)

The list of residents who are in concurrence with the attached said resolution, dated March 30th, 1989.

| PRINTED NAME        | SIGNATURE           | ADDRESS                              |
|---------------------|---------------------|--------------------------------------|
| FRANCES L. WHITMILL | Frances Whitmill    | HCO3 Box 8445 PALMER, AK.            |
| Gaila T Rinke       | Gaila T Rinke       | HCO3 Box 8447-A Palmer, AK.          |
| JAMES C. COLVER     | James C. Colver     | PO Box 427 Palmer, Alaska            |
| Elden Reese         | Elden Reese         | HC 03 Box 8451 Palmer, AK            |
| Nancy Reese         | Nancy Reese         | HC 03 Box 8451 Palmer AK.            |
| EUGENE WHITMILL     | Eugene Whitmill     | HCO3 BOX 8445 PALMER AK              |
| Michael J MEEKIN    | Michael J Meekin    | HCO3 Box 8513 Palmer AK              |
| Mark D. Owen        | Mark D. Owen        | HCO-3 Box 8426 Palmer, AK.           |
| Herbert P. Simon    | Herbert P. Simon    | HCO-3 Box 8591, PALMER, AK           |
| Jacqueline M. Simon | Jacqueline M. Simon | HCO 3 Box 8591 Palmer AK             |
| Linda Den Bleyker   | Linda Den Bleyker   | HCO3 Box 8376 Palmer, AK             |
| Thomas H. Wright    | Thomas H. Wright    | HCO-3, Box 8496, Palmer, AK<br>99645 |
| JOHN M. THATCHER    | John M. Thatcher    | HCO-3 Box 8425 PALMER, AK<br>99645   |
| Aulis D Rialla      | Aulis D Rialla      | HCO3 Box 8438 Palmer AK 99645        |
| Herbert L. Fey      | Herbert L. Fey      | PO Box 1101 Chickaloon AK 99674      |
| Virginia Brannum    | Virginia Brannum    | P.O. Box 1101 Chickaloon AK 99674    |
| Sherry May          | Sherry May          | HCO3 Box 8438-Z Palmer AK 99645      |
| Lewis May           | Lewis E. May        | SRC box 8438-Z Palmer AK 99645       |
| Dennis Potocnik     | Dennis Potocnik     | HCO3 Box 8442-A Palmer, AK. "        |
| William E Wagner    | William E Wagner    | HCO3 Box 8484-Z Palmer, AK 99645     |
| RICHARD P. WOOD     | Richard P. Wood     | HCO3 8407 Palmer 99645               |
| DIANE MOFFATT       | Diane Moffatt       | P.O. Box 1122 Chickaloon, AK 99674   |
| Loren M. Thomas     | Loren M. Thomas     | HC 03 Box 8364-Y, Palmer 99645       |
| RONALD J. ANTAYA    | Ronald J. Antaya    | HCO3 Box 8484 PALMER, AK 99645       |
| Joseph Dietrich     | Joseph Dietrich     | HCO3 Box 8484 PALMER, AK 99645       |
| Dewey Taylor        | Dewey Taylor        | HCO3 Box 84494 Palmer, AK 99645      |
| DENNIS ALLEN        | Dennis Allen        | HCO3 Box 8443D Palmer, AK 99645      |
| Colleen Dietrich    | Colleen Dietrich    | HCO3 8484 Palmer, AK 99645           |
| Keith W. Allen      | Keith W. Allen      | HCO3 8443 Palmer AK 99645            |
| Katherine Wright    | Katherine Wright    | HCO3 8496 Palmer AK. 99645           |
| Nancy H. Cohen      | Nancy H. Cohen      | HCO3 8378 Palmer AK 99645            |
| Patrick A. Cohen    | Patrick A. Cohen    | HCO3 Box 8378 PALMER, AK 99645       |
| MARVIN DEN BLEYKER  | Marvin Den Bleyker  | HCO3 Box 8376 PALMER, AK 99645       |
| DOROTHY STEADMAN    | Dorothy Steadman    | HCO3 Box 8453 PALMER, AK 99645       |
| CLIFFORD B STEADMAN | Clifford B Steadman | HCO3 Box 8453 Palmer AK 99645        |
| Roger M. Wimer      | Roger M. Wimer      | HCO3 Box 8449B Palmer, AK 99645      |

| PRINTED NAME    | SIGNATURE             | ADDRESS                 |
|-----------------|-----------------------|-------------------------|
| STAN GILLBESPIR | <i>Stan Gillbepir</i> | H.A.M.3 Box 8392 PALMER |

*Signed and Sealed before me on the 30<sup>th</sup> day of March 1989*

*Frances J. Whitmill*

FRANCES J. WHITMILL, NOTARY PUBLIC  
STATE OF ALASKA  
MY COMMISSION EXPIRES 1/19/92

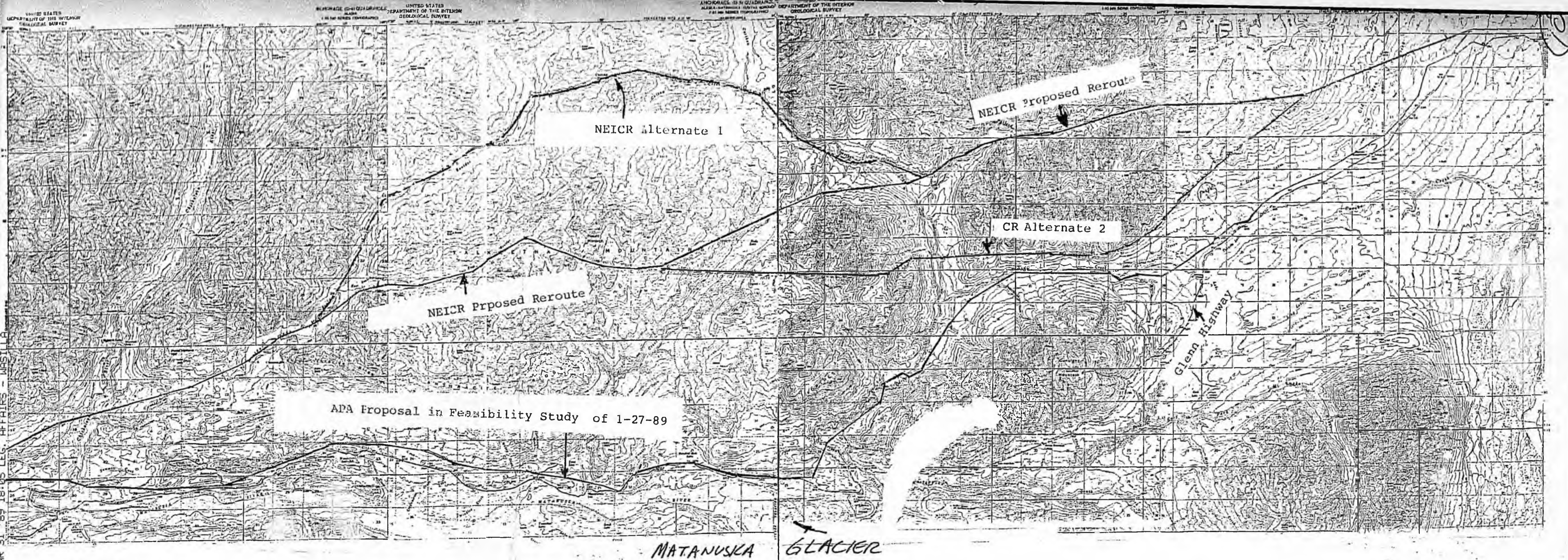


EXHIBIT "A"  
NORTHEAST INTERIE CONCERNED RESIDENTS  
RESOLUTION 89-1  
March 30, 1989

Northeast Intertie Concerned Residents  
NEICR

EXHIBIT B  
RESOLUTION 89-1

The purpose of this description is to describe a rerouting of a portion of the Northeast Intertie. This reroute description begins at the Chickaloon River approximately mile 70 of the Glenn Highway then goes through the foothills of the Talkeetna Mountains north of the highway and the Matanuska River Valley to Eureka at mile 140 of the Glenn Highway. There are several alternate routes that branch off the main reroute centerline.

The aforementioned reroute is more particularly described as follows; commencing at the NW 1/4 corner of Sec. 23, T.20 N, R.5 E, S.M.,Ak;thence Northeasterly north of Boulder Creek to the W 1/4 corner of Sec. 33 T.21 N., R 7 E, which is common with the point of beginning for the alternate route 1; thence easterly along Boulder Creek to the section corner common to sections 21,22,15 & 16 of T 21 N., R 8 E.;thence Southeasterly to the SE 1/16 Cor of Sec. 19, T 21 N., R 9 E, said point being the point of beginning for alternate route 2; thence Northeasterly to the W 1/4 corner of Sec. 12, T 21 N., R 9 E.; thence generally Northeasterly to the SE Sec. Corner of Sec 36, T 22 N, R 10 E; thence easterly along the southerly section line of Section 31, T 22 N, R 11 E to the SE section corner of said section; thence Northeasterly to the Section Corner common to Secs. 25,26,35,36 T 22 N, R 11 E; thence Easterly to the peak of a hill within the SE 1/4 of Sec. 27 T 22 N, R 12 E; thence Northeasterly to a point within Section 33, T 3 N, R 10 W, C.R. Meridian Alaska, said point is the terminus of this discription for the purpose of describing a proposed rerouting of a portion of the NE Intertie proposal.

Alternate route 1 described as follows: Commencing at the W 1/4 corner of Sec. 33, T. 21 N, R 7 E, S.M.; thence Northeasterly along Boulder Creek, through Chitna Pass, along Chitna creek, along Caribou creek; this route generally follows a trail as designated on USGS Anchorage (D 3) Quadrangle; Terminus of alternate 1 is an intersection of the afore described and the main reroute centerline , said intersection lying in the NW 1/4 of Sec. 10 T 21 N, R 10 E.

Alternate route 2 is described as follows: Commencing at the afore described SE 1/16 Cor of Section 19; thence Easterly to the W 1/4 corner of Sec. 21, T 21 N., R 11 E; thence Northeasterly to the peak of a hill located within the SE 1/4 of Sec. 27, T 22 N, R 12 E, S.M., AK., said point being the terminus of alternate route 2.

①

# Power Lines and Cancer: The Evidence Grows

*At a time when studies suggest a link between cancer and exposure to the magnetic fields generated by electrical power lines, government research funds are drying up.*

**U**TILITY companies long ago realized that building power plants, whether coal or nuclear, could be the cause of major headaches. Those headaches are becoming migraines as more and more studies suggest a link between cancer and the extremely low frequency (ELF) fields emitted by electrical power lines. For each power plant, utility planners have to grapple with the "not in my backyard" syndrome. But when it comes to power lines, they face an endless series of backyards. In the United States alone, there are 600,000 miles of overhead transmission lines in place, and thousands more under construction or being planned.

The risk of developing cancer from exposure to power line fields is still far from proven. While some studies suggest an association between living or working near power lines and a higher incidence of cancer, others show no such association. U.S. juries, however, are already making sizable awards based on the available data. In late 1985, for instance, a Texas jury ordered Houston Lighting and Power Co. to pay a local school district \$25 million in punitive damages after the utility built a transmission line through school property without permission. The

BY LOUIS SLESIN

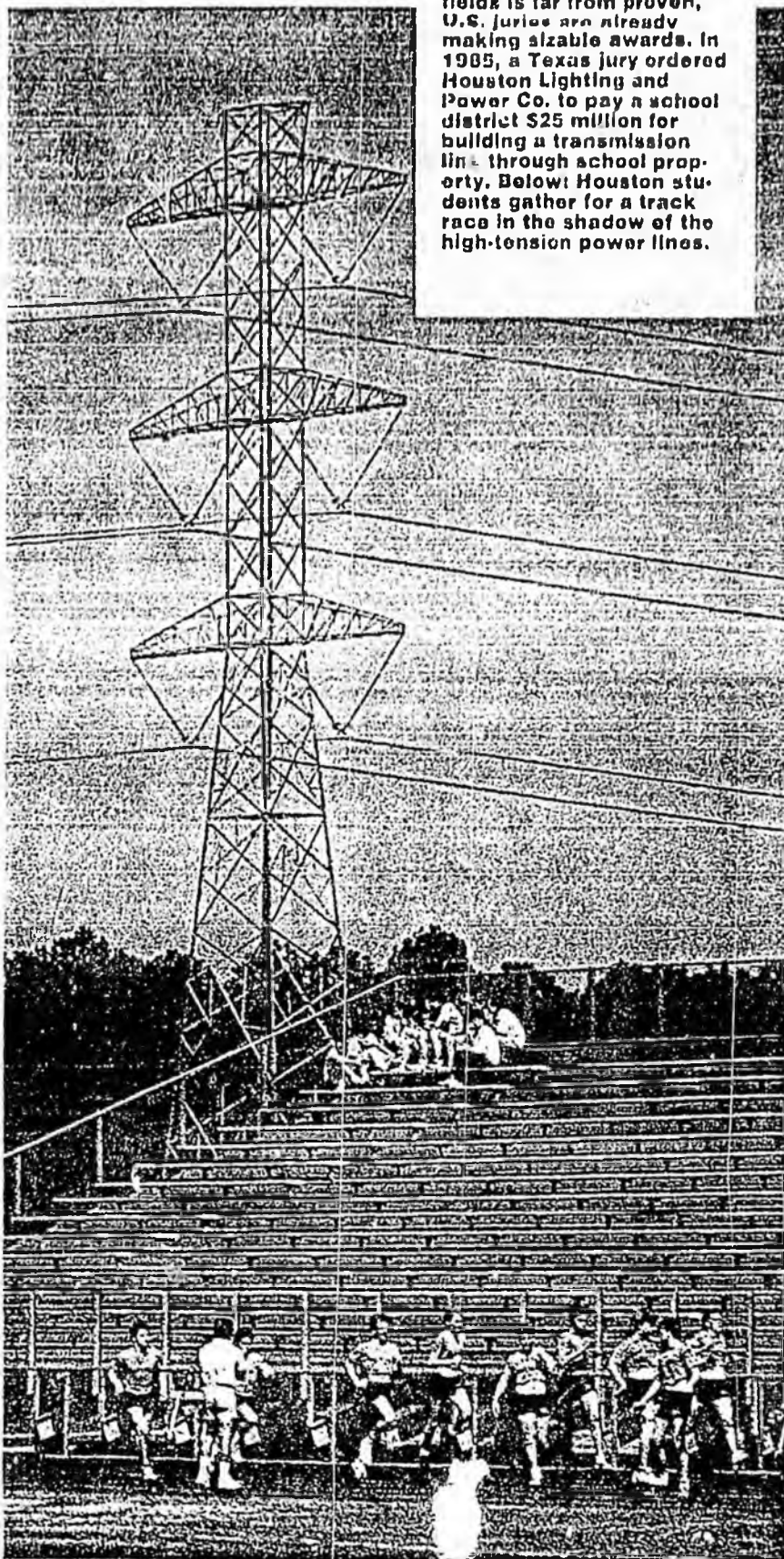
ILLUSTRATION: JOAN HEIDERSOHN/VISUAL CONSPIRACY



Provided by James Colver, NE Intertie  
Concern Residents

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**E**ven though the cancer threat from power line fields is far from proven, U.S. juries are already making sizable awards. In 1985, a Texas jury ordered Houston Lighting and Power Co. to pay a school district \$25 million for building a transmission line through school property. Below: Houston students gather for a track race in the shadow of the high-tension power lines.



jury's award was based almost entirely on the potential cancer threat, according to H. Dixon Montague, the plaintiff's attorney. In Florida, juries have awarded more than \$1 million to owners of land next to high-voltage power lines. Here again, expert testimony on the cancer link has been pivotal. Without doubt, juries are the wrong forums in which to settle complex scientific controversies. But they can indicate the relative credibility of each side's expert witnesses.

All of these cases are under appeal. Nevertheless, such large sums of money are strong incentives to other plaintiffs, and to lawyers looking for ways to make a name for themselves. That fact, coupled with the sheer pervasiveness of power line fields, explains why a senior executive with the Electric Power Research Institute (EPRI), a utility-supported group, recently called the ELF-cancer link a "juggular issue" for the industry.

### A Priceless Natural Resource

Electromagnetic fields (EMFs) and radiation are the cornerstones of the electronic age. The non-ionizing electromagnetic spectrum ranges from the ELF fields associated with power lines—60 cycles per second, or hertz (Hz), in North America and 50 Hz in Europe—to visible radiation from the sun at 500 trillion Hz. The electromagnetic spectrum is a priceless natural resource; its applications are without limit and, like all resources, competition for its use is fierce.

Radio and television stations broadcast between 530 kilohertz (kHz: 1 kHz equals 1 thousand Hz) and 806 megahertz (MHz: 1 MHz equals 1 million Hz). Microwave ovens operate at 2.45 gigahertz (GHz: 1 GHz equals 1 billion Hz), a frequency similar to those used for satellite communications and telephone links. Radars and electronic warfare systems use a host of different types of radiation in the MHz and GHz bands. Hyperthermia heat treatments for can-

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*Power station operators  
were found to have 2.5 times the death  
rate from leukemia.*

cerous tumors operate in frequencies from 50 MHz to 1 GHz, and the nuclear magnetic resonance imager, a powerful tool for diagnosing certain diseases, uses various types of MHz radio signals. Meanwhile, electric power lines share the ELF frequencies with some remote communication systems. The U.S. Navy's Project ELF, designed for sending messages to submerged submarines, operates at 76 Hz.

Unlike nuclear and X-ray radiation, EMFs are not powerful enough to break molecular bonds or create charged particles, called ions. As a result, many observers have concluded that as long as EMFs do not cause shock or heating of body tissue, there is nothing to worry about. Over the years, however, more and more studies have suggested that non-ionizing radiation can produce non-thermal effects.

Power line EMFs were first linked to cancer by Nancy Wertheimer and Ed Leeper in 1979. They combed childhood mortality records in the greater Denver, Colo., area and correlated the incidence of cancer with the network of high-current power lines. This landmark epidemiological study showed an association between long-term exposure to weak (60 Hz) magnetic fields and increases in the incidence of cancer. At the time, the findings seemed preposterous. After all, the magnetic fields in question were a hundred times smaller than that of the earth. There is one crucial difference, however. The earth's magnetic field is relatively steady, while power line fields are constantly oscillating.

The cancer issue resurfaced in 1982—this time in the workplace. "In the course of updating a study of occupational mortality, I noticed that among men whose occupation required them to work in electrical and magnetic fields there were more deaths due to leukemia than would be expected," Samuel Milham told readers of the *New England Journal of Medicine*. For instance, compared with other people not exposed to EMFs, power station operators had two-and-a-half times the death rate from all types of leukemia.

By publishing his work in one of the world's leading medical journals, Milham, a well-known occupational health physician at the Washington State Department of Social and Health Services, prompted renewed interest in EMF interactions. A bustle of

activity followed as researchers checked whether Milham's findings for Washington State workers held true for other sets of cancer data. Letters to the editor soon appeared in the medical literature, and most supported what Milham had called a "suspicious association."

By early 1986 even skeptics were becoming troubled by the weight of evidence. Out of 17 occupational surveys of electrical and electronic workers, 15 showed some link between ELF fields and cancer. That February, at a meeting of power engineers, Tom Tenforde, a researcher in the Biology and Medicine Division of the Lawrence Berkeley Laboratory in California, warned that "something is going on," and that there is a "real need" for further studies, given the "apparent correlation between cancer and EMFs." Yet few in the utility business seemed to care. Only a couple dozen of the more than 2,000 attending the meeting bothered to come to the specially organized symposium on the biological effects of power lines.

Meanwhile, new evidence supported the Wertheimer/Leeper contention that the general public—those not employed at work—might also be at risk. Dr. Lennart Tomenius, a Swedish researcher, working in his spare time, without funding, had painstakingly repeated and found support for the original 1979 findings. In a study published in *Bioelectromagnetics*, he confirmed that the distribution of childhood cancer in Stockholm was linked to power line magnetic fields. Meanwhile, Wertheimer and Leeper had extended their findings to adults: though the association between cancer and EMFs was weaker than the one they had observed in children, it was still statistically significant.

#### A Mini-Explosion of Activity

Many scientists, however, were not convinced. They wanted more substantial evidence of a cancer risk. Yet large epidemiological studies are notoriously expensive and time-consuming. Without major funding, no one could try to repeat the Wertheimer/Leeper study for the general public or initiate a full-scale occupational study. Money was scarce, and the Reagan administration had no interest in opening up a new front of environmental activity. The field might have stayed quiescent had it not been for a 10-year-old power line dispute in New York State.

In 1973 the New York Power Authority an-

LOUIS SLESIN is the editor and publisher of *Microwave News*, a New York City-based newsletter that covers the health effects of all types of non-ionizing electromagnetic fields and radiation.

weak high-frequency fields.

The greatest pressure to admit the existence of non-thermal EMF effects has come from those who believe that electromagnetic fields can mend broken bones, neutralize chronic pain, and even regenerate nerve cells. Indeed, Becker and Marino, who played a central role in the New York power line dispute, were initially interested in the potential biomedical applications of ELF fields. Becker's laboratory started working on EMF effects in the late 1950s, and one of his earliest efforts was to find out how salamanders harness internal electromagnetic forces to regenerate limbs.

Other scientists have been trying to understand just how ELF fields affect basic molecular processes in animal and human cells. In the 1970s, Dr. W. Ross Adey and Suzanne Bawin, now at the Veterans Hospital in Loma Linda, Calif., discovered that 16 Hz fields, as well as microwave radiation modulated at 16 Hz, could alter the behavior of calcium ions in brain tissue. Calcium plays a key role in a large number of cellular reactions.

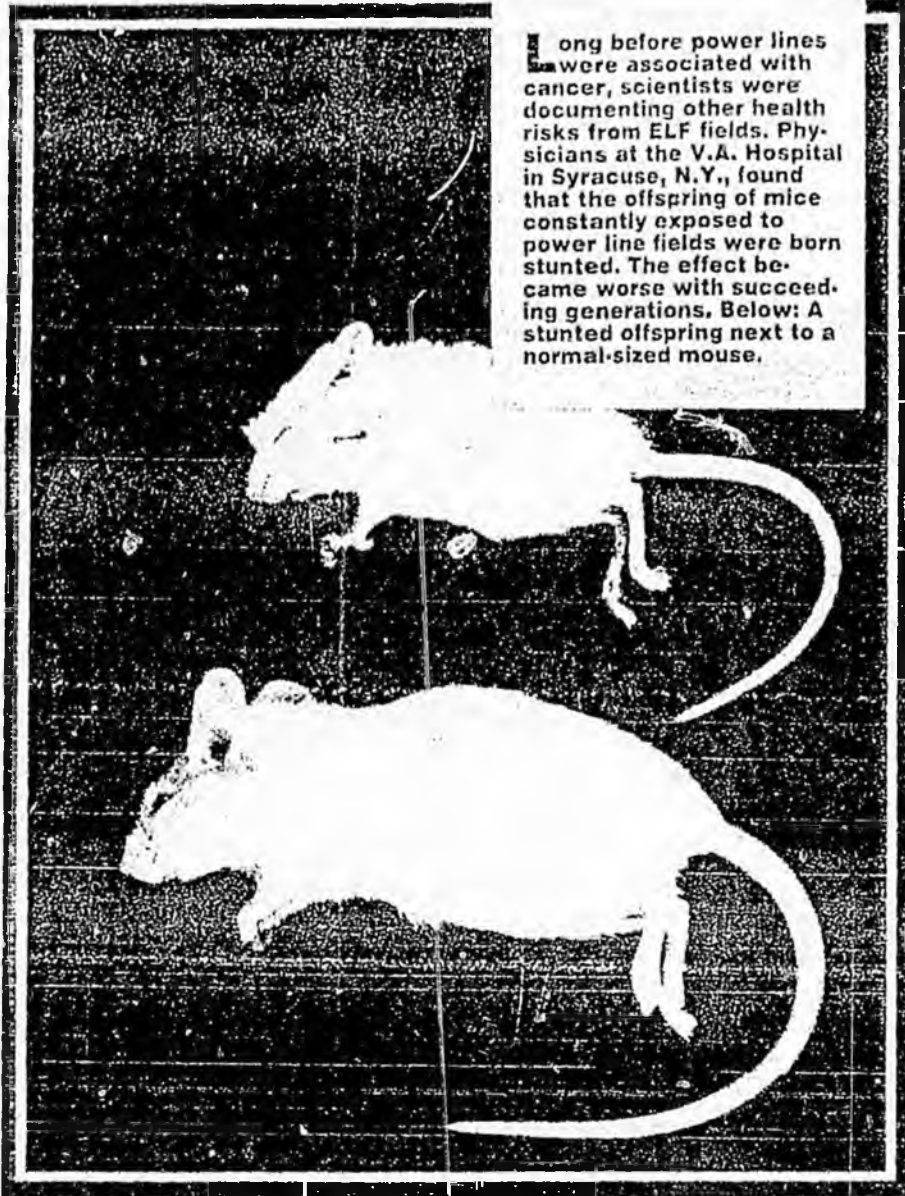
The calcium work has been repeated and extended in a number of labs—notably by Carl Blackman of the EPA. He has found that fields of 50 Hz and 60 Hz can activate the movement of calcium within cells. Also, Adey and Blackman have discovered that other changes occur in cells exposed to ELF fields. Such exposure, for instance, can alter the surface of cell membranes.

The research by Adey and Blackman clearly shows that ELF interactions are very subtle: changes occur only at certain "windows" of frequencies and power levels. For example, as the frequency of the field increases above 16 Hz, the calcium flow subsides, only to bounce back at 45 Hz. Small changes in the length of the field can induce a similar disappearing-reappearing act.

More recently, Adey has pieced together a three-stage theory to explain how weak ELF fields (at 60 Hz) might promote cancer. The field hits the cell,

sparking a chemical change on its surface, and the altered chemical signal is transmitted into the cell interior. Once there, it triggers a sequence of chemical reactions that distorts the normal flow of biochemical information in the cell and between cells. A key step is the amplification of the weak field on the membrane surface.

The result is a cell whose growth is out of control. Adey's theory is controversial, and more experimental work is needed to provide confirmation. However, other research supports the idea that EMFs can affect cell regulation. Abraham Liboff, a professor at Oakland University in Rochester, Mich., has shown that a wide range of magnetic fields can enhance DNA production in cell cultures. According to research by Reba Goodman of Columbia University, EMFs can induce RNA to generate proteins that would otherwise not be found in cells. And Jerry Phillips of the Cancer Therapy and Research Foundation in San Antonio, Tex., has discovered that human tumor cells, when exposed to power line fields, proliferate more easily and are more immune to attack.



Long before power lines were associated with cancer, scientists were documenting other health risks from ELF fields. Physicians at the V.A. Hospital in Syracuse, N.Y., found that the offspring of mice constantly exposed to power line fields were born stunted. The effect became worse with succeeding generations. Below: A stunted offspring next to a normal-sized mouse.

*Phillips sent a chill  
through the crowd when he said he would not buy a house  
along a right-of-way.*

nounced plans to build a 765-kilovolt (kv) transmission line to import cheap hydroelectricity from Canada. Environmental groups fought the line, citing studies that even then pointed to health risks. The state's Public Service Commission (PSC) okayed the line, but, after acknowledging that the hearing record contained "unrefuted inferences of possible risks that we cannot responsibly ignore," ordered the utilities to chip in \$5 million for a five-year research project on the health effects of EMFs. In 1981, the New York Department of Health began soliciting proposals.

One of the experiments the PSC found especially persuasive showed that the offspring of mice constantly exposed to power line fields were born stunted. In 1976, Dr. Robert Becker and Andrew Marino, then working at the Veterans Administration Hospital in Syracuse, N.Y., reported that the effect became worse with succeeding generations. Their study, done on a shoestring budget, was corroborated by Richard Phillips and Larry Anderson in a well-funded experiment sponsored by EPRI.

The New York Power Line Project initiated a mini-explosion of activity that permanently transformed research on the biological effects of EMFs. The money not only paid for new studies but also brought fresh ideas into an otherwise stagnating field.

Most important, the New York project paid for a repetition of the Wertheimer/Leeper epidemiological research—an initiative that neither the federal Department of Energy nor EPRI had been willing to support. David Savitz, a young epidemiologist then at the University of Colorado, teamed up with two colleagues in the school's Department of Electrical Engineering and embarked on a \$350,000 study. They made extensive measurements of the local power line magnetic fields in the homes of children who had developed cancer as well as those of healthy children. But even after they took every precaution they could think of to ensure that their results would be sound, there were still insoluble problems: the researchers would never know the precise magnetic fields the children had been exposed to years earlier. Any conclusions from the Savitz group could therefore always be disputed.

By the fall of 1986, results were overdue. Rumors began to circulate that Savitz would support the Wertheimer/Leeper cancer link. In September utility managers assembled in Toronto for the first inter-

national symposium on the health effects of power line fields. The attendance itself told much of the story: it was double the expected number. Savitz was there but still not ready to disclose his findings.

The meeting might have simply been a tutorial for the uninitiated had it not been for the disaffection of one of the leading EMF researchers, Richard Phillips. After years of doing ELF research at the Battelle Pacific Northwest Labs, a private consulting firm in Washington State, Phillips had joined the Environmental Protection Agency (EPA) in 1984.

No one regards Phillips as a Cassandra. The editor-in-chief of the Bioelectromagnetics Society's journal, Phillips is well known and trusted in the utility industry. In fact, many of his studies at Battelle were funded by the utilities through EPRI. So Phillips told a jammed audience at the Toronto conference that he would not buy a house along a power line right-of-way—not even with a \$25,000 discount to mitigate any perceived risk—he sent a chill through the crowd. He said that prospective home owners often consulted him on such matters, and that his usual response was, "If it bothers you, don't buy it." For years utility companies had sloughed off such queries. The Edison Electric Institute, a trade association based in Washington, D.C., attempted to allay any public anxiety about living near power lines by telling readers of its brochure, "The electric utility industry is confident that the voltage levels currently in operation pose no risks to humans or animals."

At another conference two months later, Savitz finally announced that "prolonged exposure to low-level magnetic fields may increase the risk of developing cancer in children." This July when the New York project released its final report, it endorsed Savitz's conclusion but maintained that the cancer link was still a hypothesis, albeit now a "stronger one." The cancer story made headlines all over the world.

### How ELF Fields Affect the Body

If ELF power line fields can promote cancer, they are obviously capable of affecting human biochemistry. Even though some experts still regard both propositions as heretic, no one should find them surprising. Fish and birds can detect and interpret minuscule fields for orientation and navigation. Most significantly, the human eye can detect extraordinarily

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*At stake is the entire network by which utilities move electricity into customers' homes.*

Such findings are hard to believe because the fields at issue are so small. Indeed, the Wertheimer/Leeper and Savitz studies implicate not only high-voltage transmission lines but the smaller, primary distribution lines that run along every Main Street in the United States. (Any wire conducting electric current will generate a magnetic field.) At stake in this debate is the entire network by which utilities move electricity from generating stations into customers' homes. (Some utilities are switching to direct current, or DC, power lines, which avoids the cancer issue but may raise other environmental concerns. DC lines, however, remain a tiny fraction of the existing network.)

**Holes in the ELF-Cancer Link**

The utility industry now realizes that the power line cancer dispute will not be settled without much more research. EPRI has recently expanded its EMF effects program and hired new staff. Leonard Sagan, EPRI's recently appointed manager for radiation studies, wants to expand even further. "The utilities are taking this matter very seriously," he says, "though there is still a lot of skepticism."

Some epidemiologists and utility experts who have had the chance to read Savitz's report for the New York project also remain unconvinced. Florida is drafting power line exposure standards, and Dr. Philip Cole, chairman of the Department of Epidemiology at the University of Alabama, Birmingham, has informed the state that the Savitz study is only "suggestive of a weak effect," and that the data are inconsistent. Moreover, Cole says the research shows no "dose-response relationship"—that is, it provides no direct proof of a relationship between ELF exposure and cancer. Indeed, Cole characterizes the entire ELF literature as showing that "either there is no relationship between EMFs and cancer in human beings or if there is an effect it must be of very low magnitude even among people who are moderately to heavily exposed."

Others, like Dr. Sol Sax, chief physician at Ontario Hydro, argue that the Savitz data are "ambiguous," because the study found a weaker association between cancer and *measured* ELF fields within homes than between cancer and the index used to *predict* exposure. The index, first developed by Wertheimer and Leeper, estimates the long-term exposure that children would have had to ELF fields, given the type

of power lines near their homes. If a 60-Hz power line is 240 kv, for instance, the index predicts that the exposure would be higher than it would be in a house at the end of the electrical distribution network.

Wertheimer, Leeper, and Savitz, among many others, argue that the index is a far better indicator of long-term exposures than a few instantaneous readings. Field surveys suggest large variations in ambient ELF fields, and the index provides a way of addressing this variability.

With or without the index, much more work needs to be done to address people's exposure to EMF. Sax would like to see additional health surveys of individuals and workers with higher exposures than those in the Savitz study. On this point, he agrees with Wertheimer and Leeper, who have been pressing for studies on users of electric blankets. (The zigzagging wires in the blankets carry electric current that generates both heat and ELF magnetic fields.) Wertheimer and Leeper have already shown that pregnancies among couples who use electric blankets are more likely to end in miscarriages than those among couples who do not heat their beds electrically. However, a possible cancer connection has yet to be investigated.

**The Funding Dilemma**

Risk assessment will not be easy. Regulators used to setting standards for nuclear radiation and toxic chemicals on the basis of direct dose-response relationships will scratch their heads when confronted by EMF effects that can come and go as the field becomes stronger. Mechanisms of cause and effect will have to be verified and thresholds discerned. Yet at the precise time when new studies are showing increasing cause for concern, government research funds have dried up.

The Reagan administration has consistently slashed budgets within the various federal agencies for research on the health effects of non-ionizing radiation. Sometimes those budgets are reinstated by Congress; other times they're not. For instance, Phillips's bioelectromagnetics lab at EPA hung on through budget cycles from fiscal 1983 to fiscal 1986, fighting each year to remain open. In 1980, there were 26 scientists working in that area, but by the end of 1986 there were none. EPA officials in Washington had finally succeeded in forcing Phillips

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The extremely low frequency (ELF) fields generated by power lines can modify cells' biochemistry. Below is an artist's rendering of one theory of how these fields could promote cancer. The field hits a cell's surface (a), causing chemical change, and a "forest" of highly charged proteins (b) amplifies the

altered signal. The signal is transmitted through the cell membrane (c), where it affects powerful chemical reactions. For instance, it can affect two important enzymes: adenylylase (d), which controls the cell's metabolism, and ornithine decarboxylase (e), which is essential for DNA synthesis.



to completely disband his research group. A similar  
ame has occurred at the Department of Energy. Its  
fiscal 1986 budget for EMF research was cut in half  
from the fiscal 1985 level.

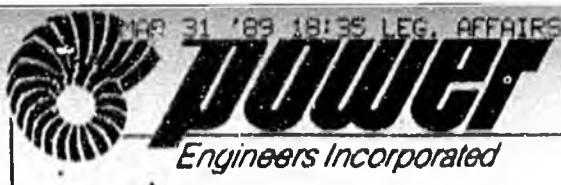
The New York State Power Line Project has  
folded, stranding most of those who had been at-  
tracted to the field. The funding paradox has not  
been lost on Savitz, who is now at the University of  
North Carolina in Chapel Hill. "The credibility  
keeps growing, but the money keeps shrinking," he  
sres.

The U.S. Congress could take a cue from Sweden.  
ere, health officials have already embarked on a  
large-scale epidemiological study of all those with  
certain types of cancer who lived within 300 meters  
of a 220- or 400-kv power line for at least one year  
between 1960 and 1983. This and related ELF re-  
search will cost the Swedish government \$1 million.  
Sweden, a relatively small country, continues to lead  
the world in its commitment to the environment and

occupational health.

The Savitz study has prompted Congress to hold  
hearings, but the funding burden will probably fall  
elsewhere—perhaps again on New York State. Early  
this year, a group of more than 55 landowners filed  
a \$60 million suit against the New York Power Au-  
thority, alleging that a power line—a half-completed  
extension of the originally disputed line from Can-  
ada—could create a "cancerphobia corridor," de-  
stroying the market value of their property.

Some observers claim that these landowners are  
primarily concerned about the aesthetic damage re-  
sulting from the construction of large power lines.  
But regardless of their motivations, their attorneys  
will take the cases to court. Because the industry and  
the government have refused to fund the necessary  
studies, policies for siting power lines will remain in  
the hands of local juries across the country, and there  
is now plenty of credible data supporting those who  
allege a cancer risk. □



PROJECT NO. 1361  
ISSUED TO: \_\_\_\_\_

**ALASKA POWER AUTHORITY  
NORTHEAST TRANSMISSION INTERTIE  
FEASIBILITY DESIGN AND COST  
ESTIMATE STUDY**

**DRAFT REPORT**

**JANUARY 27, 1989**

HART CROWSER, INC.

*Provided by James  
Colver, NE Intertie  
Concern Residents*

1020 AIRPORT WAY  
P.O. BOX 1066  
HAILEY, IDAHO 83333  
(208) 788-3456

POWER ENGINEERS, INC.



19

**HARZA** ENGINEERING COMPANY CONSULTING ENGINEERS

*Handwritten:*  
Khan  
Dick

September 13, 1988

RECEIVED BY  
ALASKA POWER AUTHORITY

88 SEP 16 P4:31

Messrs. D. Shira and A. Khan  
Alaska Power Authority  
701 East Tudor Road  
Anchorage, Alaska 99519-0869

Subject: North East Intertie Feasibility Study

Reference: RFP - APA88-R-33

Gentlemen:

The decision to select a competing firm for the North East Intertie Study is a disappointment for us, but we accept it as being in the best interest of the State and South Central Utilities.

We understand that your decision turned on the fact that the selected firm emphasized system studies over route selection. In our case, we felt that the assignment would require more work on selection of the physical route. Our work plan included basic system studies. We are confident that the feasibility of the project can be established on the basis of information obtained from load flow studies.

*Handwritten star symbol*

The Power Authority's Request for Proposal confronted us with an ambitious scope of services and a fixed budget. The fixed budget and total scope required us to decide which tasks were most important. Our opinion is that route selection should be emphasized more at this stage than system studies because an infeasible physical route will be more costly to rectify than the incremental cost to revise the engineering plan.

Our work plan was based on extensive load flow studies and did not include transient stability studies. We expected that there would be a great deal of work done on the Teeland-Palmer, Palmer-Eklutna, Palmer-Glen Allan sections, and that power flow levels at 115 kV would not be acceptable thus requiring a scope change to study more 230 kV. In our technical judgment, load flow studies will be sufficient to establish necessary system configuration and project alignment as well as provide basic technical information about transient stability.

Based on our experience with development of electric utility systems, we would like to suggest that the Power Authority and Utilities consider a separate Reliability Study of the existing system with the recommended

*Handwritten circled number:* 20

Messrs. D. Shira and A. Khan

September 13, 1988

Page 2

system expansion. Under this suggestion, the study system would consist of Bradley Lake Project and one of the following:

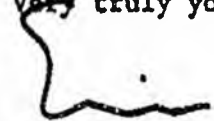
Anchorage - Kenai Transmission Intertie  
Anchorage - Fairbanks Intertie Upgrade  
North East Intertie

The scope of the suggested future study would refine the proposed system and establish certain equipment and operating constraints. The study would require: transient stability calculations, short circuit calculations, transient network analyzer studies, and relay coordination studies. The suggested study would be similar to the Reliability Study for the Railbelt System done in 1982 (AFA study R 2499).

If this approach is taken, then the Power Authority will have route selection feasibility reports for three projects. That is (1) Anchorage - Kenai, (2) Anchorage - Fairbanks Intertie Upgrade, and (3) North East Intertie. After the legislature has agreed to fund one of these projects, it will be possible for the Power Authority and Utilities to carry out the proposed Reliability Study for the actual system that will be built, and the results will be of immediate value to the design effort.

We appreciate the opportunity to have presented our proposal and look forward to future consideration in future projects.

Very truly yours,

  
Eric P. Yould  
Vice President

EPY/cs

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## Alaska Power Authority

State of Alaska

March 28, 1989

Dwight and Colleen Dietrich  
HC03, Box 8484  
Palmer, Alaska 99645

Subject: Northeast Transmission Intertie Study

Dear Mr. and Mrs. Dietrich:

Thank you for your letter of February 16, 1989 in which you expressed concerns related to the Northeast Transmission Intertie Feasibility Study. Allow me to explain the purpose of this study and how it fits into the context of a larger, overall Railbelt study.

In July 1987, \$2.5 million was appropriated by the Alaska State Legislature from the Railbelt Energy fund for preparing studies dealing with electric interties the Kenai Peninsula and Fairbanks. Subsequently, the amount of the appropriation has been reduced to \$2.25 million and the scope of the studies expanded until, now, they contain the following projects proposed for assessment:

1. A new transmission line between Anchorage and the Kenai Peninsula.
2. Upgrade of the existing intertie between Anchorage and Fairbanks to substantially higher transfer capability.
3. A new transmission line from Palmer through Glennallen to Delta Junction where it would connect with the Golden Valley system in the Fairbanks area.
4. A natural gas pipeline from Cook Inlet to Fairbanks.
5. Coal fired powerplants in the Railbelt.
6. Electric end-use conservation programs designed to promote higher levels of efficiency among electric energy consumers.

A feasibility level assessment is being performed on these selected projects and programs and will result in a comparison of their expected economic costs and benefits. A comparison of their expected environmental consequences will also be performed as part of the feasibility study.

The Northeast Transmission Intertie Feasibility Study will provide preliminary design, environmental, and cost information to be used in the larger Railbelt Intertie Feasibility Study. All of these studies

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X PO Box 190869 701 East Tudor Road Anchorage, Alaska 99519-0869 (907) 861-7877

5264/953(1)

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Mr. and Mrs. Dietrich

March 28, 1989

Page 2

are informational tools for the decision making process and in no way serve as a recommendation that any of these projects/programs will be built or adopted.

Regarding the project of your particular interest, the Northeast Intertie, the capital cost is estimated to be \$155 million with operation and maintenance costs of approximately \$2.3 million per year. To be initially considered for construction, the economic benefits would need to outweigh the costs. To be constructed with the Railbelt Energy fund, this project would need to be more beneficial than any of the proposed alternatives. In essence, the Northeast Intertie is far from being a sure thing.

With respect to the concerns you raise regarding aesthetics, the Northeast Intertie routing study recognizes the scenic value of the Matanuska Glacier and Sheep Mountain and identifies the preferred route on the North side of the Glenn Highway in this area.

Concerning potential health hazards associated with transmission lines, we would like to first point out that the National Electric Safety Code (NESC) prohibits construction of transmission lines over buildings, one may not live directly beneath the lines.

The effect of transmission lines on health has been studied intensively for many years. These studies focus on two different types of fields, magnetic and electric.

The magnetic field of a transmission line is directly related to the current flowing in the conductors and to the height and configuration outside of the right-of-way, the strength of the field decreases approximately in proportion to the inverse square of the distance from the centerline. In other words, it decreases rapidly. Ground level magnetic fields of Extremely High Voltage (EHV) transmission lines (500-1000kV) rarely exceed 50 micro-Tesla. For transmission lines of the order we are investigating such as the Northeast Intertie which is designed at 138KV, the field strength at the edge of right-of-way would generally be less than 2 micro-Tesla. Few structures provide shielding to magnetic fields. Even so, the magnetic fields encountered in homes frequently come from electrical appliances and typical values range from 0.1 to 1000 micro-Tesla. The following table gives the magnetic fields of several low power appliances.

| DEVICE         | DISTANCE<br>(inches) | MAGNETIC FIELD<br>(micro-Tesla) |
|----------------|----------------------|---------------------------------|
| Welders        | 20                   | 1000                            |
| Soldering Gun  | Contact              | 1000                            |
| Arc Furnace    | 80                   | 300                             |
| Wall Clock     | 2                    | 300                             |
| Alarm Clock #1 | Contact              | 300                             |
| Massager       | 2                    | 200                             |

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Mr. and Mrs. Dietrich  
March 28, 1989  
Page 3

| DEVICE            | DISTANCE<br>(inches) | MAGNETIC FIELD<br>(micro-Tesla) |
|-------------------|----------------------|---------------------------------|
| Fluorescent Light | 2                    | 200                             |
| Teakettle         | Contact              | 30                              |
| Heating Pad       | Contact              | 17                              |
| Razor             | Contact              | 10                              |
| Alarm Clock #2    | 1                    | 10                              |
| Television        | 10                   | 1                               |



The second type of field propagated by a transmission line is an electric field. Its strength is proportional to the voltage of the line and to the height and configuration of the conductors. As with magnetic fields, the strength of the field decreases approximately in proportion to the inverse square of the distance from the conductor. In summary, we do not expect any health or safety hazards associated with this line or lines of similar design.

With respect to your last concern related to funding of a Sheep Mountain distribution line, you should be aware that the Power Authority is not requesting funding for either the Northeast Intertie or the Sheep Mountain completion at this time due to the limitation of state monies. Copper Valley Electric Association (CVEA) strongly supports the Sheep Mountain project and, although the Sheep Mountain distribution line was not included in the Power Authority's FY89 budget request, we have informed the legislature that there is strong local interest in the project. We would consider a loan in support of the project should that be of interest to CVEA.

In closing, if there is interest, we can schedule a public meeting in your area later this spring to further discuss the Northeast Intertie study. Mrs. Marnie Isaacs, our Information Officer, is coordinating that effort. Please feel free to contact her at 561-7877 if you have any other questions or concerns.

Sincerely,

Robert E. LeResche  
Executive Director

TJA:REL:tlj

cc: Marnie Isaacs, Alaska Power Authority  
Donald L. Shira, Alaska Power Authority  
Afzal Khan, Alaska Power Authority

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have been made

**T**ime and time sequence, past and  
future, are serious problems in all  
of physics. Time is something that  
everyone apprehends, yet great minds -  
from Newton for example - have had

difficulties involving possibilities  
choices and facts, but a serious difficulty  
still remains. The now, the sliding in-  
stant in which we live, is what we know and  
do, that is, do it. The boundary between  
chosen fact and possibilities still to be  
chosen, remains undetermined. (C. D.  
Wozniak, quoted in *Fasten* - The no-  
reality explained by physics)

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- J. Rutoff

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## ELF under suspicion in new report

*Science News p. 39 July 13, 1987*

Exposure to electromagnetic fields  
like those emitted by appliances and  
residential power lines apparently can  
affect behavior in laboratory animals  
and may increase the risk of childhood  
cancer, concludes a recently released  
report on a five-year program funded by  
the New York State Power Lines Project.  
But researchers failed to prove a deli-  
nite cause-and-effect relationship be-  
tween the extremely low-frequency  
(ELF) fields studied and the biological  
and behavioral effects observed, leav-  
ing the debate over the danger of ELF  
exposure still simmering.

Established by the New York Public  
Service Commission in response to  
public concern over power line con-  
struction, the \$5 million project in-  
cluded 16 studies of possible health  
effects from 60-hertz electric and mag-  
netic fields, which are commonplace in  
residential and work environments. As  
pointed out in the oversight commit-  
tee's report, most of the research stud-  
ies found no effects from ELF exposure.  
There were, however, some thought-  
provoking results in terms of cancer  
risk and behavioral changes.

In an epidemiologic study of the Den-  
ver area, David A. Savitz of the Univer-  
sity of North Carolina in Chapel Hill  
classified houses on the basis of their  
proximity to residential power lines and  
the intensity of ELF exposure (SN:  
2, 14/87, p. 107). Savitz and his co-workers  
concluded that the cancer risk among  
children in higher-exposure homes is  
1.7 times greater than that among chil-  
dren in lower-exposure homes, and that

the chances of developing leukemia in  
particular are 2.1 times greater.

Perhaps even more disturbing are the  
studies that found learning and neuro-  
logical effects from ELF exposure,  
project leader David O. Carpenter of the  
State University of New York at Albany  
said in an interview. Among those were  
rat experiments by Kurt Balzinger and  
others of Polytechnic Institute of New  
York at Brooklyn. Pregnant rats ex-  
posed to ELF fields for 30 days devel-  
oped temporary learning problems, de-  
tected when the scientists tried to train  
them to release food by pushing levers.  
Their offspring, exposed both in the  
womb and for nine days after birth,  
developed permanent learning deficits.

Ironically, Klaus-Peter Ossenkopp of  
the University of Western Ontario in  
London, Canada, told SCIENCE NEWS he  
was surprised to find a beneficial effect  
in rats with epilepsy: Magnetic fields  
like those associated with ELF exposure  
may actually decrease the length and  
severity of epileptic seizures. "One  
might explore the whole phenomenon  
as a therapeutic approach," he suggests.

Ossenkopp also discovered that mag-  
netic-field exposure diminishes the  
painkilling effects of drugs like opium,  
as well as those of the opiates made by  
the body - an inhibitory effect seen in  
the rats only at night.

Carpenter emphasizes that there is no  
need for panic over the negative find-  
ings, but he says the results are signifi-  
cant enough to justify more research, as  
well as a reevaluation of how electrical  
power is distributed. - D.D. Edwards

dict when the experiments may progress  
to human clinical trials, they say that "On  
the whole, these data indicate a good  
prospect for developing recombinant ad-  
enovirus vaccines that will effectively  
immunize humans against [hepatitis B]."

"It's certainly an unusual approach,"  
says Stephen C. Hadler, chief of epi-  
demiologic activities at the Centers for  
Disease Control's hepatitis branch in At-  
lanta. Because hepatitis is not normally  
contracted by oral or nasal routes, he told  
SCIENCE NEWS, "one would anticipate ma-

however. A spokesperson for Wyeth says  
the oral vaccine would "probably be  
cheaper" than the current vaccinations  
but one hepatitis specialist at Merck  
Sharp & Dohme - makers of the only  
hepatitis B vaccines currently sold in the  
United States - says he knows of no data  
to support that claim.

Meanwhile, other fruits may emerge  
from Hung's research. For example, the  
team may have helped settle a long-  
standing question about the function of a  
particular gene sequence in the ade-  
novirus genome. That sequence known

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Power lines? Electric blankets? Do they really give off bad vibes?

# An electrifying new hazard

*On cold Colorado nights, Nancy Wertheimer likes to warm her bed with an electric blanket—but she unplugs it before going to sleep. The University of Colorado health researcher suspects that the electromagnetic fields given off by the blanket may promote cancer and birth defects.*

*Biophysicist Andrew Marino of Louisiana State University wouldn't live in a house near an overhead power line. Says Marino: "The chances of getting sick are just too great."*

*David Savitz, an epidemiologist at the University of North Carolina at Chapel Hill, has just finished a two-year study of young leukemia victims. "Prolonged exposure to low-level magnetic fields may increase the risk of developing cancer in children," he concludes.*

*Dr. Leonard Sagan, a physician with the utility-sponsored Electric Power Research Institute in Palo Alto, Calif., says the growing evidence that ordinary electricity may be a health hazard is an increasing worry for power-industry executives. "They'd like the whole thing to go away," he says.*

Ghostly fields of electromagnetism surround every wire that carries electric power. The fields course through our bodies as we work in the office, mow the lawn or read a book. They pulse from household wiring and TV's, hair dryers and myriad other appliances that use electricity. Few people have given it much thought—until now. Electromagnetic radiation, or EMR, has become the newest threat of the modern age, suspected of damaging the body's ability to fight disease and regulate the central nervous system.

**No easy explanations**

"We're seeing troubling health effects that can't be easily explained away," warned Richard Phillips, director of the developmental and cell-toxicology division of the Environmental Protection Agency's health-effects research laboratory, at a recent meeting of 350 utility executives in Toronto. Phillips, who is also editor of the *Bioelectromagnetics Journal*, calls electromagnetic fields "a potent and probably hazardous biological force." And new sources of "electropollution" are proliferating, from medical imagers such as

nuclear magnetic-resonance machines to underground radio-transmitter grids and video display terminals.

The latest studies focus on radiation at frequencies below 300 hertz, or cycles per second. These extremely low frequencies, nestled at the very bottom of the electromagnetic spectrum, take in the 60-hertz alternating current that powers U.S. homes, offices and factories. This radiation, as well as microwaves and radar waves higher in frequency, is "non-ionizing." Unlike ionizing radiation, such as X-rays, gamma rays and nuclear radiation at much higher frequencies, non-ionizing radiation is too weak to rip electrons away from atoms and molecules, converting them to charged ions. Instead, it just holds and shakes these bits and pieces of matter. At relatively high fre-

quencies, the shaking generates heat—which is how a microwave oven cooks food. At the lowest frequencies, the consequence of the shaking is less well known, and that's what researchers are trying to understand.

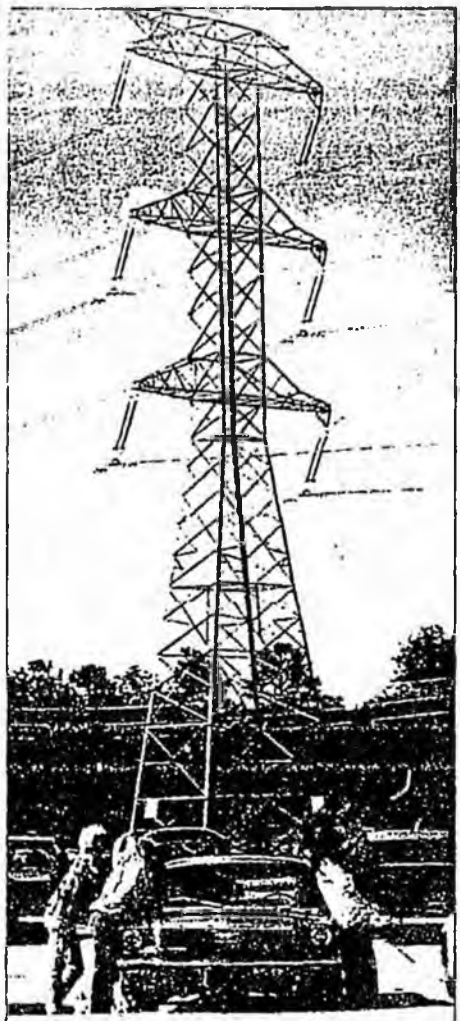
**Pattern of cancer cases**

Public concern has erupted sporadically since the 1950s over the high-voltage transmission lines, strung from tall poles and assemblages of girders, that crisscross the nation. They still are a major source of alarm. Some residents living near the lines long have complained of headaches, lethargy, memory loss, more illnesses than usual—and a constant, irritating hum. Farmers grumble about stunted crops, calves with birth defects and less milk from dairy herds that graze under the wires. The list is impressive—but no one has ever proved that the high-voltage lines are responsible.

Nonetheless, such anecdotal evidence led in 1973 to a still continuing debate in New York over the potential health effects of a proposed 765,000-volt power line running 200 miles, from the Canadian border to Utica. A prolonged public investigation delayed construction of the line for five years. It also triggered the interest of health physicists and other academics in the possible biological hazards of all kinds of electromagnetic fields.

The first fruits of that interest emerged in 1979—a landmark report by the University of Colorado's Wertheimer and physicist Edward Leeper that found more cancer cases than would have been expected among children in the Denver area living near power-distribution lines. More recent studies have shown the same pattern. Last November, epidemiologist Savitz reported that, applying Wertheimer and Leeper's methods to a different sample of Denver homes, he confirmed their findings. The intensity produced by ordinary utility lines strung along a street clearly seemed to increase the risk of leukemia in children living nearby. In homes with the greatest exposure, five times more children got cancer than would have been expected by chance.

Savitz declines to suggest corrective measures, such as shielding, until more studies are done. "There is a definite correlation, but it needs to be confirmed by others," he says. It's difficult to prove cause and effect, because epi-



Parking lot of Klein Oaks High School in Houston and a 345,000-volt power line

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