

Chugach Electric Association, Inc.

## Update on Southern Intertie Studies

Board of Directors

January 15, 2003



### Part I:

**Chronology of Major Studies**

### Part II:

**Comparison of Recent Studies**

### Part III:

**Breakeven Analysis on  
Construction Cost**

## Part I

# Southern Interie Chronology of Major Studies

## Chronology of Major Studies

Year	Study	Purpose	Outcome
1982	Southern Engineering Company – System Planning Report	Long-term planning	Recommended second Anchorage – Kenai Line
1983	Alaska Power Authority – Bradley Lake Feasibility Study	Feasibility analysis for Bradley Lake hydroelectric project	Study stated if most of Bradley energy is transported to Anchorage, a new tie would be needed
1983	Burns & McDonnell – Transmission System Studies	Transmission long range planning	Showed a second line was required for reliable Kenai – Anchorage transfers

## Chronology of Major Studies

Year	Study	Purpose	Outcome
1987	Bradley Lake Energy Agreement for the Wheeling of Electric Power and Related Services	To determine how utilities would pay for wheeling their share of Bradley energy until the Southern Intertie is built	Utilities agreed on wheeling charges for Bradley energy until Southern Intertie is built
1989	DFI Economic Feasibility of the Proposed 138 kV Transmission Lines in the Railbelt	To measure the economic value of the project from a statewide perspective	Concluded the project was economic
1990	Dept. of Commerce and Economic Development – A Review of Economic Feasibility of the Proposed 138 KV Transmission Lines in the Railbelt	To review 1989 DFI study	Refuted 1989 DFI benefit estimate

## Chronology of Major Studies

Year	Study	Purpose	Outcome
1990	DFI – Addendum to Economic Feasibility of the Proposed 138 KV Transmission Lines in the Railbelt	Refute the report “A Review of Economic Feasibility of the Proposed 138 KV Transmission Lines in the Railbelt”	Refuted Dept. of Commerce and Economic Development’s 1990 report
1991	Alaska Energy Authority – Railbelt Intertie Feasibility Study	Provide construction cost estimate and economic assessment	Concluded life-cycle benefits exceeds project costs
1992	Chugach Transmission Long Range Planning Study	Transmission long range planning	Recommended second Anchorage-Kenai line to be in-service by 1999
1996	Route Selection	Define available routes	Identified three alternative routes

## Chronology of Major Studies

Year	Study	Purpose	Outcome
1997	Aeronomics Incorporated – Rate Impacts of the Southern Intertie Project Draft Final Report	IPG study to estimate Southern Intertie's Railbelt ratepayer impact	Lower revenue/sales
1998	DFI-Aeronomics – Rate Impacts of the Southern Intertie Project Final Report – ATLAS	Chugach study to estimate the Southern Intertie's impact to the Chugach ratepayer	Estimated Chugach ratepayer impact
1998	DFI-Aeronomics for Power Engineers Incorporated – Update and Reevaluation of Economic Benefits of Southern Intertie Project - EIS	To update the 1989 DFI study for use in the EIS	Updated the 1989 DFI – Economic Feasibility of the Proposed 138 KV Transmission Lines in the Railbelt. Project shown to be economic.

## Chronology of Major Studies

Year	Study	Purpose	Outcome
2001	Draft Environmental Impact Study	To prepare environment analysis required by the National Environmental Protection Act (NEPA)	Determined that only two of the three identified routes were feasible
2002	Final Environment Impact Study	Further evaluation of the Environmental impact	Tesoro route preferred
2002	Chugach Electric – Southern Intertie Economics	To assess the economic, financial and electric bill impact from a Chugach System perspective	Project is economic, financially feasible and reduces the average residential electric bill

## Part II

### Comparison of Recent Studies

- Final Environmental Impact Study (FEIS)
- ATLAS
- Chugach

## Study Objectives

FEIS	ATLAS	Chugach
Measured economic value of the project from a <u>statewide</u> perspective.	Compared the benefits and <u>each utilities'</u> share of the costs.	Measured economic, financial and electric bill impact from a <u>Chugach</u> system perspective.
Estimated the benefits and costs based on cash flows.	Used benefit/cost ratios based on the net present value of each utilities' change in revenue requirements.	Estimated a subset of the benefits and full costs using a discount cash flow analysis.
The State grant <u>was not</u> included.	The State grant <u>was</u> included.	The State grant <u>was</u> included.

## Study Assumptions

Variable	FEIS	ATLAS	Chugach
1. Discount Rate	4.5% real	9.0% nominal	8.0% nominal
2. Fuel Price Escalation	1% to 2020 real Flat 2020+	4.0% nominal	2.2% nominal
3. Inflation	0%	3.0% nominal	2.8%
4. Present Value	1997	1999	2003
5. In-Service Date	2004	2004	2006
6. Anchorage and Mat Su Load in 2010	510 MW	541 MW	560 MW <sup>2</sup>
7. Submarine Cable Replacements	½ in 17 years ¼ in 34 years	Not included	All in 23 years per 1999 depreciation study
8. Grant with Interest Earnings	\$0	N A <sup>1</sup>	\$70 Million

1. NA – not available – study does not show these values  
 2. 2000 ASCC Coordinated Bulk Supply Report for Anchorage area

## ATLAS

The ATLAS report does not model the Railbelt system with sufficient accuracy due to\*:

1. Load representation
2. Generation Unit Availability and Transmission Constraints
3. Generation Unit Retirements and Additions
4. Interpolation of Results

\* For detailed explanation of these reasons, see Chugach memorandum dated December 5, 2002 regarding "Ratepayer Impacts of Proposed Transmission Projects Final Report, February 16, 1998" and Chugach Staff Review. The memorandum is attached to the report.

## Part III

### Breakeven Analysis on Construction Costs

## Breakeven Analysis \$ in Millions

	Chugach Construction Cost if All but MEA Participate	Breakeven Economics <sup>1</sup> on the Construction Cost
Construction Cost	\$100.0	\$131.0
<u>Less Grant</u>	<u>\$70.0</u>	<u>\$70.0</u>
<u>Construction Cost to Utilities</u>	<u>\$30.0</u>	<u>\$61.0</u>
<u>Chugach Retail % of Cost</u>	<u>35%</u>	<u>35%</u>
<u>Chugach Share of Construction Cost</u>	<u>\$10.5</u>	<u>\$21.7</u>

1. Based on Chugach Electric Association's Preliminary Economic Evaluation Report of the Southern Intertie for the Chugach Electric System that only includes the benefits of production savings, 115 rebuild deferral and wheeling revenue. Does not include the benefits of capacity sharing, reliability, reduced line maintenance costs, avoided minimum CT generation on the Kenai, and avoid not loading line during bad weather/construction identified in the FEIS.



**Questions?**