

Chugach Electric Association

DRAFT

2003

Southern Intertie Economic Analysis
Update

Project Economics
with and without
Interest Earnings on Grant Funds.

6/5/03

June 2003

Southern Intertie Economic Analysis
June 2003 Update

**Project Economics with and without
Interest Earnings on Grant Funds**

	<u>With Interest Earnings</u>	<u>Without Interest Earnings</u>
Project Costs		
Dollars in millions		
Construction Costs (April 2003)	\$119	\$119
Grant	\$70	\$40
Cost to All Utilities	<u>\$49</u>	<u>\$79</u>
Chugach share of initial construction cost (assume all but MEA participates)	\$17	\$28

Railbelt Economic Analysis

Present value dollars in millions

This is the sum of all costs and benefits for the 40-year life of the project.

Net value (benefits less costs)	\$18	(\$6)
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Southern Intertie Economic Analysis
June 2003 Update

**Project Economics with and without
Interest Earnings on Grant Funds**

Utility Shares

Economic Analysis

Present value dollars in millions

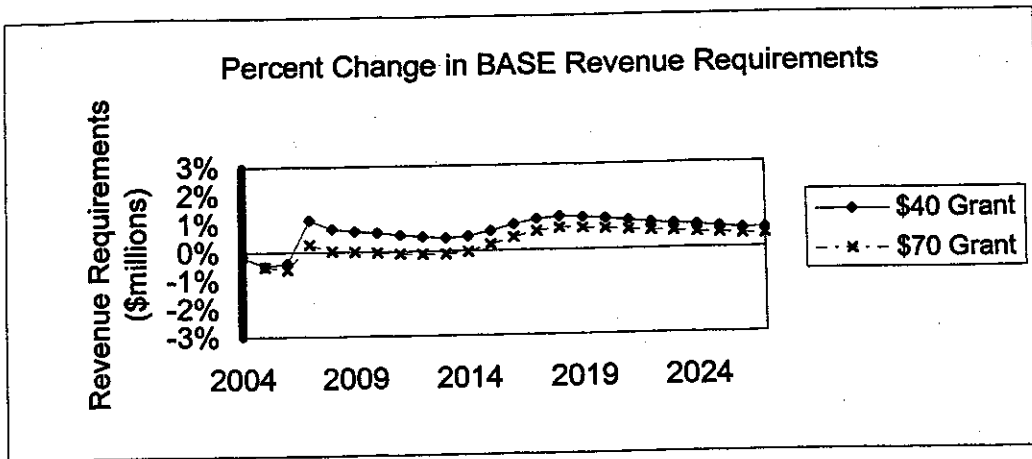
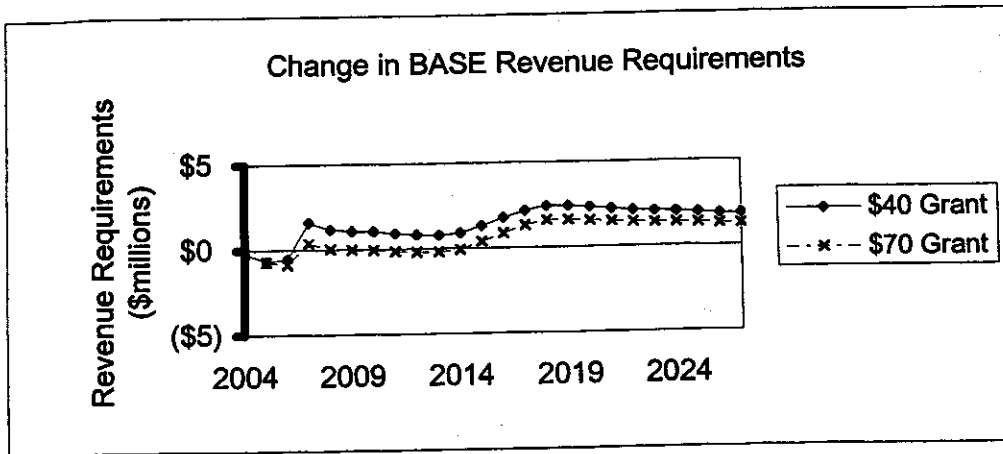
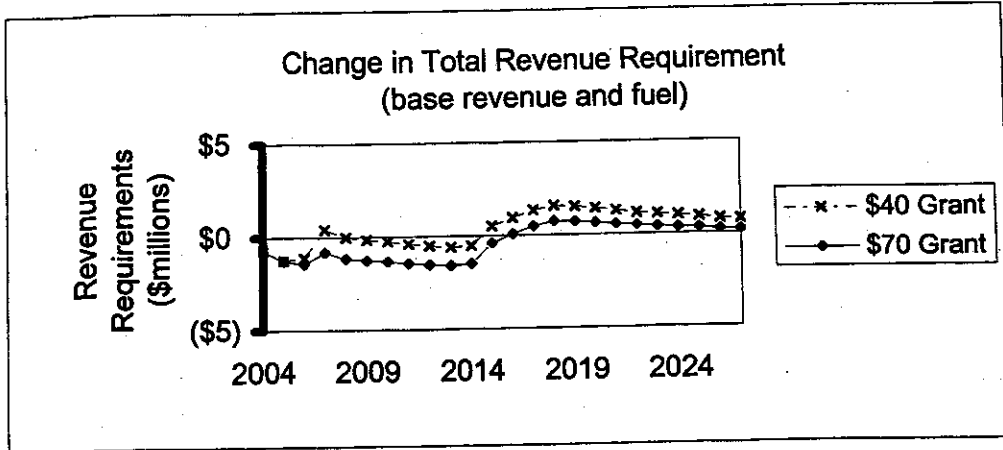
This is the sum of all costs and benefits for the 40-year life of the project.

Net value (benefits less costs)

<u>Utility</u>	<u>\$70 Grant</u>	<u>\$40 Grant</u>
Chugach Retail	\$6	(\$1)
ML&P	(\$4)	(\$10)
HEA	\$14	\$11
SES	\$6	\$6
MEA	\$6	\$4
GVEA	(\$9)	(\$15)
Total	<u>\$18</u>	<u>(\$6)</u>

Southern Intertie Economic Analysis
 June 2003 Update

Change in Revenue Requirements



Compare NPV

Southern Intertie Evaluations
Present Value - In Millions

	FEIS (1998 Update)	ATLAS (1998)	Chugach Analysis (Prelim. 2002)	Chugach Analysis (Updated 2003)	Comments
Objective	State-wide benefit/cost analysis	Individual utility share of benefits (Enstar Route)	Chugach System benefit/cost analysis ONLY Chugach System Participates (Tesoro Route)	Railbelt benefit/cost analysis (Tesoro Route)	
Major Assumptions					
Construction Costs (nominal)	\$90.0	\$90.0	\$100.0	\$118.8	
Grant	\$0.0	NA	\$70.0	\$39.7	
Dollars	1997	1999	2003	2003	
Benefits					
Production Cost Savings					Chugach 2002 system analysis assumed more restricted operations than 2003 analysis.
Economy Energy Transfer	\$37.8	\$15.5		-	
Spinning Reserve Sharing	\$9.3	-		-	
Total Production Cost Savings	\$47.1	\$15.5	\$43.0	\$9.9	
Capacity Sharing	\$20.9	\$4.2	Not Included	\$0.0	New Railbelt generation is driven by retirements of units and replacement with more efficient units. The Southern Intertie does not defer generation additions.
Reliability	\$49.4	\$24.4	Not Included	\$46.0	Chugach assumes the quantity of outages increases proportionally with load growth and ATLAS did not.
Avoid Minimum Combustion Turbine Generation on Kenal	\$10.7	Not Included	Not Included	\$0.0	With Nikiski base loaded, there is no turbine to avoid running.
Avoid Outages on Existing Line During 115kV Rebuild, Adjacent Construction, High Winds, etc.	\$11.4	\$9.6	Not Included	\$7.7	The cost to generate power increases when the 115kV is out of service for rebuilding, maintenance and weather.
Four-year Deferral of and Reduced Overtime on Rebuild of 115kV Line with Southern Intertie	\$4.0	\$3.0	\$11.0	\$11.4	The rebuild of the existing 115kV line is deferred 4 years and is estimated to be rebuilt 10% more efficiently (less overtime) because the Southern Intertie is in place. ATLAS only assumed no deferral of 115kV rebuild.
Wheeling Revenue	Not Included	Not Included	\$2.0	Not Included	Chugach System would receive wheeling revenue from GVEA and ML&P's Bradley Lake shares.
Telecommunications	Not Included	Not Included	Not Included	Not Included	
Total Benefits	\$143.5	\$56.7	\$56.0	\$74.9	
Total Costs	\$124.0	NA	\$42.0	\$80.9	This is the present value of the initial construction cost, submarine cable replaced in 23 years and O&M expense. For the Chugach cases, the cost is less the grant.
Total Costs with Interest Income				\$56.5	
Net Value	\$19.5	NA	\$14.0	(\$6.0)	
Net Value with Interest Income				\$18.4	

Discounted Cash Flow

Southern Intertie
Discounted Cash Flow Analysis
\$ million, NPV 12/31/2003

Year	COSTS				BENEFITS								NET
	Initial and Submarine Replacement		Grant	Total Cost	Production Savings	Capacity Deferral	Reliability	Minimum Kenai Thermal Generation	Avoid Outages	115KV Rebuild Deferral & Efficiency	Total Benefits		
Capital Cost	O&M Cost	Total Cost											
2003	\$0.5	\$0.0	(\$0.5)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
2004	\$10.0	\$0.0	(\$10.0)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$5.0	\$5.6	\$5.6	(\$0.2)
2005	\$35.0	\$0.0	(\$29.2)	\$5.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$5.0	\$5.6	\$5.6	(\$59.4)
2006	\$65.0	\$0.0	\$0.0	\$65.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.6	\$5.0	\$9.3	\$9.3	\$0.5
2007	\$8.3	\$0.4	\$0.0	\$8.7	\$0.8	\$0.0	\$2.7	\$0.0	\$0.8	\$5.0	\$4.9	\$4.9	\$4.5
2008	\$0.0	\$0.4	\$0.0	\$0.4	\$0.8	\$0.0	\$2.8	\$0.0	\$0.8	\$0.5	\$5.1	\$5.1	\$4.7
2009	\$0.0	\$0.5	\$0.0	\$0.5	\$0.8	\$0.0	\$3.0	\$0.0	\$0.9	\$0.5	\$5.3	\$5.3	\$4.8
2010	\$0.0	\$0.5	\$0.0	\$0.5	\$0.8	\$0.0	\$3.1	\$0.0	\$0.9	\$0.5	\$5.5	\$5.5	\$5.0
2011	\$0.0	\$0.5	\$0.0	\$0.5	\$0.8	\$0.0	\$3.2	\$0.0	\$0.9	\$0.5	\$5.7	\$5.7	\$5.2
2012	\$0.0	\$0.5	\$0.0	\$0.5	\$0.9	\$0.0	\$3.4	\$0.0	\$0.9	\$0.5	\$5.9	\$5.9	\$5.4
2013	\$0.0	\$0.5	\$0.0	\$0.5	\$0.9	\$0.0	\$3.6	\$0.0	\$1.0	\$0.5	\$6.1	\$6.1	\$5.6
2014	\$0.0	\$0.5	\$0.0	\$0.5	\$0.9	\$0.0	\$3.7	\$0.0	\$1.0	(\$4.5)	\$1.1	\$1.1	\$0.6
2015	\$0.0	\$0.5	\$0.0	\$0.5	\$0.9	\$0.0	\$3.9	\$0.0	\$0.3	(\$4.5)	\$0.7	\$0.7	\$0.1
2016	\$0.0	\$0.5	\$0.0	\$0.5	\$0.9	\$0.0	\$4.1	\$0.0	\$0.3	(\$4.5)	\$0.9	\$0.9	\$0.3
2017	\$0.0	\$0.6	\$0.0	\$0.6	\$1.0	\$0.0	\$4.3	\$0.0	\$0.3	(\$4.5)	\$1.1	\$1.1	\$0.5
2018	\$0.0	\$0.6	\$0.0	\$0.6	\$1.0	\$0.0	\$4.5	\$0.0	\$0.4	\$0.0	\$5.8	\$5.8	\$5.2
2019	\$0.0	\$0.6	\$0.0	\$0.6	\$1.0	\$0.0	\$4.7	\$0.0	\$0.4	\$0.0	\$6.1	\$6.1	\$5.5
2020	\$0.0	\$0.6	\$0.0	\$0.6	\$1.1	\$0.0	\$4.9	\$0.0	\$0.4	\$0.0	\$6.3	\$6.3	\$5.7
2021	\$0.0	\$0.6	\$0.0	\$0.6	\$1.1	\$0.0	\$5.1	\$0.0	\$0.4	\$0.0	\$6.6	\$6.6	\$6.0
2022	\$0.0	\$0.6	\$0.0	\$0.6	\$1.1	\$0.0	\$5.4	\$0.0	\$0.4	\$0.0	\$6.9	\$6.9	\$6.2
2023	\$0.0	\$0.7	\$0.0	\$0.7	\$1.2	\$0.0	\$5.6	\$0.0	\$0.4	\$0.0	\$7.2	\$7.2	\$6.5
2024	\$0.0	\$0.7	\$0.0	\$0.7	\$1.2	\$0.0	\$5.9	\$0.0	\$0.4	\$0.0	\$7.5	\$7.5	\$6.8
2025	\$0.0	\$0.7	\$0.0	\$0.7	\$1.2	\$0.0	\$6.1	\$0.0	\$0.4	\$0.0	\$7.8	\$7.8	\$7.1
2026	\$0.0	\$0.7	\$0.0	\$0.7	\$1.3	\$0.0	\$6.4	\$0.0	\$0.4	\$0.0	\$8.1	\$8.1	\$7.4
2027	\$0.0	\$0.7	\$0.0	\$0.7	\$1.3	\$0.0	\$6.7	\$0.0	\$0.5	\$0.0	\$8.5	\$8.5	\$7.7
2028	\$0.0	\$0.8	\$0.0	\$0.8	\$1.3	\$0.0	\$7.0	\$0.0	\$0.5	\$0.0	\$8.8	\$8.8	\$8.1
2029	\$0.0	\$0.8	\$0.0	\$0.8	\$1.4	\$0.0	\$7.4	\$0.0	\$0.5	\$0.0	\$9.2	\$9.2	(\$83.8)
2030	\$92.3	\$0.8	\$0.0	\$93.1	\$1.4	\$0.0	\$7.7	\$0.0	\$0.5	\$0.0	\$9.6	\$9.6	\$8.8
2031	\$0.0	\$0.8	\$0.0	\$0.8	\$1.5	\$0.0	\$8.1	\$0.0	\$0.5	\$0.0	\$10.0	\$10.0	\$9.2
2032	\$0.0	\$0.8	\$0.0	\$0.8	\$1.5	\$0.0	\$8.4	\$0.0	\$0.5	\$0.0	\$10.5	\$10.5	\$9.6
2033	\$0.0	\$0.9	\$0.0	\$0.9	\$1.5	\$0.0	\$8.8	\$0.0	\$0.5	\$0.0	\$10.9	\$10.9	\$10.0
2034	\$0.0	\$0.9	\$0.0	\$0.9	\$1.6	\$0.0	\$9.2	\$0.0	\$0.6	\$0.0	\$11.4	\$11.4	\$10.5
2035	\$0.0	\$0.9	\$0.0	\$0.9	\$1.6	\$0.0	\$9.7	\$0.0	\$0.6	\$0.0	\$11.9	\$11.9	\$10.9
2036	\$0.0	\$1.0	\$0.0	\$1.0	\$1.7	\$0.0	\$10.1	\$0.0	\$0.6	\$0.0	\$12.4	\$12.4	\$11.4
2037	\$0.0	\$1.0	\$0.0	\$1.0	\$1.7	\$0.0	\$10.6	\$0.0	\$0.6	\$0.0	\$12.9	\$12.9	\$11.9
2038	\$0.0	\$1.0	\$0.0	\$1.0	\$1.8	\$0.0	\$11.1	\$0.0	\$0.6	\$0.0	\$13.5	\$13.5	\$12.4
2039	\$0.0	\$1.1	\$0.0	\$1.1	\$1.8	\$0.0	\$11.6	\$0.0	\$0.6	\$0.0	\$14.0	\$14.0	\$13.0
2040	\$0.0	\$1.1	\$0.0	\$1.1	\$1.9	\$0.0	\$12.1	\$0.0	\$0.7	\$0.0	\$14.7	\$14.7	\$13.6
2041	\$0.0	\$1.1	\$0.0	\$1.1	\$1.9	\$0.0	\$12.7	\$0.0	\$0.7	\$0.0	\$15.3	\$15.3	\$14.2
2042	\$0.0	\$1.1	\$0.0	\$1.1	\$2.0	\$0.0	\$13.3	\$0.0	\$0.7	\$0.0	\$16.0	\$16.0	\$14.8
2043	\$0.0	\$1.2	\$0.0	\$1.2	\$2.0	\$0.0	\$13.9	\$0.0	\$0.7	\$0.0	\$16.6	\$16.6	\$15.5
2044	\$0.0	\$1.2	\$0.0	\$1.2	\$2.1	\$0.0	\$14.6	\$0.0	\$0.7	\$0.0	\$17.4	\$17.4	\$16.2
2045	\$0.0	\$1.2	\$0.0	\$1.2	\$2.1	\$0.0	\$15.2	\$0.0	\$0.7	\$0.0	\$18.1	\$18.1	\$16.9
2046	\$0.0	\$1.3	\$0.0	\$1.3	\$2.2	\$0.0	\$15.9	\$0.0	\$0.8	\$0.0	\$18.9	\$18.9	\$17.6
PV =	\$109.9	\$5.7	(\$34.8)	\$80.9	\$9.86	\$0.0	\$46.0	\$0.0	\$7.7	\$11.4	\$74.9	\$74.9	(\$6.0)

Utility Allocation

Southern Intertie Discounted Cash Flow Analysis - Allocation of Costs and Benefits \$ million, NPV 12/31/2003

COSTS

Allocation base on Southern Intertie Agreement. Even though it is assumed MEA does not participate, it is expected MEA would pay 25% of Chugach's Retail share.

BENEFITS

Production Savings is allocated based on load (same allocation as Costs). This is an approximate allocation, but the dollar amount is small so the impact is minor. Because Chugach owns the 115KV line, Avoid Outages and the 115KV Rebuild Deferral & Efficiency benefits are allocated to Chugach System members based on load. Reliability is allocated based on estimate outage reductions by utility.

Southern Intertie Agreement	
CEA Retail	26%
ML&P	26%
HEA	14%
SES	2%
MEA	9%
GVEA	23%
	100%

Chugach System	
CEA Retail	50%
ML&P	0%
HEA	25%
SES	0%
MEA	25%
GVEA	0%
	100%

Year	COSTS				BENEFITS						NET	
	Initial and Submarine Replacement			Total Cost	Production Savings	Capacity Deferral	Reliability	Minimum Kenai Thermal Generation	Avoid Outages	115KV Rebuild Deferral & Efficiency		Total Benefits
	Capital Cost	O&M Cost	Grant									
\$40 Grant												
CEA Retail	\$29	\$2	(\$9)	\$21	\$3	\$0	\$9	\$0	\$4	\$6	\$21	(\$1)
ML&P	\$29	\$1	(\$9)	\$21	\$3	\$0	\$9	\$0	\$0	\$0	\$11	(\$10)
HEA	\$15	\$1	(\$5)	\$11	\$1	\$0	\$15	\$0	\$2	\$3	\$22	\$11
SES	\$2	\$0	(\$1)	\$1	\$0	\$0	\$7	\$0	\$0	\$0	\$7	\$6
MEA	\$10	\$1	(\$3)	\$7	\$1	\$0	\$5	\$0	\$2	\$3	\$11	\$4
GVEA	\$26	\$1	(\$8)	\$19	\$2	\$0	\$1	\$0	\$0	\$0	\$4	(\$15)
	\$110	\$6	(\$35)	\$81	\$10	\$0	\$46	\$0	\$8	\$11	\$75	(\$6)
\$70 Grant												
CEA Retail	\$29	\$2	(\$16)	\$15	\$3	\$0	\$9	\$0	\$4	\$6	\$21	\$6
ML&P	\$29	\$1	(\$15)	\$15	\$3	\$0	\$9	\$0	\$0	\$0	\$11	(\$4)
HEA	\$15	\$1	(\$8)	\$8	\$1	\$0	\$15	\$0	\$2	\$3	\$22	\$14
SES	\$2	\$0	(\$1)	\$1	\$0	\$0	\$7	\$0	\$0	\$0	\$7	\$6
MEA	\$10	\$1	(\$5)	\$5	\$1	\$0	\$5	\$0	\$2	\$3	\$11	\$6
GVEA	\$26	\$1	(\$14)	\$13	\$2	\$0	\$1	\$0	\$0	\$0	\$4	(\$9)
	\$110	\$6	(\$59)	\$56	\$10	\$0	\$46	\$0	\$8	\$11	\$75	\$18