

11-18-02  
 Fouts, Thibaut presentation to  
 Chugach Consumers

**DRAFT**

## Difference between EIS and Chugach Evaluation of Southern Intertie

Present Value – In Millions

Major Assumptions Attached at Page Two

*Chugach System*  
 pays for all - includes  
 (HEA, CE, HEA, Sewer)  
 Production benefits only

	EIS	Chugach <i>only</i>
<b>Objective</b>	State-wide benefit/cost analysis	Chugach System economic, financial and rate impact
<b>Benefits</b>		
Capacity Sharing	\$20.9	Not Included
Economy Energy Transfer	\$37.8	See Chugach Production
Reliability	\$49.4	Not Included
Spinning Reserve Sharing	\$9.3	See Chugach Production
Reduced Line Maintenance Costs	\$4.0	Not Included
Avoid Minimum CT Generation on Kenai	\$10.7	Not Included
Avoid Not Loading Line During Bad Weather/Construction	\$11.4	Not Included
Chugach Production (Fuel and O&M Savings)	See Economy Energy Transfer & Spinning Reserve Sharing	\$43.0
Deferred 115kV Rebuild	Not Included	\$11.0
Wheeling Revenue	Not Included	\$2.0
<b>Total Benefits</b>	<b>\$143.5</b>	<b>\$56.0</b>
<b>Total Costs</b>	<b>\$124.0</b>	<b>\$42.0*</b>
<b>Net Benefit</b>	<b>\$19.5</b>	<b>\$14.0</b>

\* Net of Grant

- 70.0 grant  
 56.0 LOSS!

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**Major Assumptions:**

	<u>EIS</u>	<u>Chugach</u>
1. Discount Rate	4.5% real	8.0% nominal
2. Fuel Price Escalation	1% to 2020 real Flat 2020+	2.2% nominal
3. Inflation	0%	2.8% nominal
4. Present Value	1997	2003
5. In-Service Date	2004	2006
6. Load Forecast	510 MW in 2010	560 MW in 2010*
7. Submarine Cable Replacement	½ in 17 years ¼ in 34 years	All in 23 years per 1999 depreciation study
8. Grant	\$0	\$70 Million

\* 2000 ASCC Coordinated Bulk Supply Report for Anchorage area.

**Chugach Electric Association**

**Preliminary  
Economic Evaluation Report  
of the  
Southern Intertie  
for the  
Chugach Electric System**

November 12, 2002

**Chugach System Economic Evaluation of Southern Intertie - Summary**

This analysis of the Southern Intertie only shows the direct benefits and costs to the Chugach System. The Chugach System is Chugach retail, MEA, HEA and SES. The Final EIS for the Southern Intertie quantifies the costs and benefits for the entire Railbelt.

This analysis shows the Southern Intertie should be beneficial to the Chugach System, even if the Chugach System (Chugach Retail, MEA, HEA and SES) is the only participant.

Ownership Scenarios	Costs	Benefits		Net	
	Southern Intertie Capital & O&M	Production Savings	Defer Existing Line Rebuild		Wheeling Revenue
Dollars in Millions, NPV					
Chugach System - All Participate	\$24	\$43	\$11	(\$8)	\$22
Chugach System - Only Participant	\$42	\$43	\$11	\$2	\$14

The participation of ML&P and GVEA in the Southern Intertie reduces the capital and O&M cost of the Southern Intertie to the Chugach System and more than offsets the loss of wheeling revenue from ML&P and GVEA to the Chugach System.

**Sensitivities**

The Southern Intertie has value even if the capital cost and production costs vary 10% from the estimates. In the combined cases, the net present value ranges from breakeven to double the base case estimate. The values below are for the scenario that only the Chugach System participates.

	Net Present Value \$millions		
	<u>Worse</u>	Base Case	<u>Better</u>
Capital Cost	+10%		-10%
	\$4	\$14	\$24
Production Cost	-10%		+10%
	\$10	\$14	\$18
Combined	\$0	\$14	\$28

**Chugach System Economic Evaluation of Southern Intertie - Assumptions**

This analysis is limited to only the change in capital and operating costs, and wheeling revenues with and without the proposed new Southern Intertie.

**Production Cost**

Production costs (fuel and O&M) are expected to be less with the new Southern Intertie because of improved hydro-thermal coordination of Chugach's generation resources and increased line capacity (75MW vs new line of 125MW).

**Analysis of Production Cost Estimate**

The production cost was computed based on a multi-area model (New Energy's Strategist software) of five geographic service areas in the Railbelt. The five areas are Chugach retail, MEA, HEA, GVEA and ML&P.

**Defer Existing Line Rebuild**

Portions of the existing southern transmission line would be scheduled for rebuilding beginning in 2003. However, with the new Southern Intertie scheduled to be constructed by year-end 2006, this rebuild project can be delayed until 2008. Another benefit of deferring the rebuild is that it can be accomplished at less cost. The new Southern Intertie allows the existing line to be taken out of service without the increased fuel cost of islanding the Kenai Peninsula. The new Intertie also provides greater flexibility in scheduling the existing line reconstruction which reduces overtime costs.

**New Southern Intertie**

The cost to construct the Southern Intertie is estimated to be \$100 million. Less the State grant of approximately \$70 million, the Railbelt utility's share is estimated to be \$30 million. Chugach's share is 30%, or \$8.8 million. As a 30% owner, Chugach would also have to pay for 30% of the new Southern Intertie's line maintenance, and replacement of the submarine cables every 23 years based on the Chugach 1999 Depreciation Study.

**Wheeling Revenue**

The "No Southern Intertie" reference case assumes ML&P and GVEA would continue to pay the Chugach System wheeling for their Bradley Lake energy. The charge is half the fully allocated rate through 2011 and the fully allocated rate after 2011. The "Build Southern Intertie" case assumes ML&P and GVEA as Southern Intertie participants would not pay wheeling to the Chugach System. If the Chugach System is the only participant, it is assumed the Chugach System would receive revenue for wheeling ML&P's and GVEA' Bradley Lake energy. The wheeling rate charged to ML&P and GVEA as non-participants with the Southern Intertie built is the fully allocated rate after the Southern Intertie is built.

**Other Assumptions (\$000)**

1. Discount rate	8.0%	Chugach discount rate
2. Present value	2003	Reference year
3. Project term	40	2007-2046
4. Fuel price escalation rate	2.20%	Chugach 2002 Financial Forecast
5. Transmission O&M annual expense	\$331	Final EIS, July 2002, 1997 dollars
6. Transmission O&M escalation rate	2.8%	Chugach 2002 Financial Forecast
7. Submarine replacement cost	\$40,000	Final EIS, July 2002, 1997 dollars
8. Submarine replacement - capital escalation rate	2.8%	Chugach 2002 Financial Forecast
9. Submarine cable life (years)	23	Life based on 1999 Depreciation Study
10. Southern Intertie - construction cost	\$100,000	Final EIS, July 2002
11. Grant funding and forecasted interest earnings	\$70,728	Includes interest earnings 2002-2006
12. Southern Intertie - utility share of construction cost	\$29,272	Construction cost less State grant
13. Rebuild existing Anchorage to Kenai line 2004-2013	\$5,000	\$/year, rough estimate, assume no escalation
14. Rebuild existing Anchorage to Kenai line 2008-2017	\$4,500	\$/year, rough estimate, assume no escalation

**Other Benefits**

Reliability benefits are not included in the discounted cash flow analysis. Capacity deferring benefits are not included. Reduced line O&M expense on the existing 115kV line Anchorage to the Kenai Peninsula are not included. Possible benefits of locating new generation on Kenai Peninsula are also not included.

**Chugach System Economic Evaluation of Southern Intertie - Discounted Cash Flow**

**Southern Intertie Participants: Chugach System - All Participate**

Chugach System share is 57.46% based on the summation of IPG shares for Chugach Retail, MEA, HEA and SES.

**SAVINGS = \$22 million  
present value**

Dollars in thousands.

Year	No Southern Intertie				Build Southern Intertie					Net Cash Flow	
	Chugach System Production Cost	Existing Anchorage to Kenai Line Rebuild	Wheeling Revenue	Total	Chugach System Production Cost	Existing Anchorage to Kenai Line Rebuild	New Southern Intertie Capital Cost	New Southern Intertie O&M Cost	Wheeling Revenue		Total
2003	\$0	\$0		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2004	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$0	\$0	(\$508)	(\$508)	(\$5,000)
2005	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$0	\$0	(\$508)	(\$508)	(\$5,000)
2006	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$16,820	\$0	(\$508)	\$16,311	\$11,820
2007	\$80,700	\$5,000	(\$508)	\$85,192	\$77,100	\$0	\$0	\$251	\$0	\$77,351	(\$7,841)
2008	\$78,900	\$5,000	(\$508)	\$83,392	\$75,400	\$4,500	\$0	\$258	\$0	\$80,158	(\$3,234)
2009	\$82,800	\$5,000	(\$508)	\$87,292	\$80,200	\$4,500	\$0	\$265	\$0	\$84,965	(\$2,327)
2010	\$84,200	\$5,000	(\$508)	\$88,692	\$80,800	\$4,500	\$0	\$272	\$0	\$85,572	(\$3,119)
2011	\$95,300	\$5,000	(\$508)	\$99,792	\$91,800	\$4,500	\$0	\$280	\$0	\$96,580	(\$3,212)
2012	\$99,800	\$5,000	(\$1,079)	\$103,821	\$96,600	\$4,500	\$0	\$288	\$0	\$101,388	(\$2,434)
2013	\$110,700	\$5,000	(\$1,079)	\$114,621	\$106,900	\$4,500	\$0	\$296	\$0	\$111,896	(\$2,926)
2014	\$112,800	\$0	(\$1,079)	\$111,721	\$108,600	\$4,500	\$0	\$304	\$0	\$113,404	\$1,683
2015	\$118,900	\$0	(\$1,079)	\$117,821	\$114,600	\$4,500	\$0	\$313	\$0	\$119,413	\$1,581
2016	\$130,100	\$0	(\$1,079)	\$129,021	\$125,900	\$4,500	\$0	\$321	\$0	\$130,721	\$1,700
2017	\$133,800	\$0	(\$1,079)	\$132,721	\$129,400	\$4,500	\$0	\$330	\$0	\$134,230	\$1,509
2018	\$137,500	\$0	(\$1,079)	\$136,421	\$133,000	\$0	\$0	\$340	\$0	\$133,340	(\$3,082)
2019	\$141,400	\$0	(\$1,079)	\$140,321	\$136,700	\$0	\$0	\$349	\$0	\$137,049	(\$3,272)
2020	\$145,300	\$0	(\$1,079)	\$144,221	\$140,900	\$0	\$0	\$359	\$0	\$140,959	(\$3,263)
2021	\$149,400	\$0	(\$1,079)	\$148,321	\$144,500	\$0	\$0	\$369	\$0	\$144,869	(\$3,453)
2022	\$153,600	\$0	(\$1,079)	\$152,521	\$148,600	\$0	\$0	\$379	\$0	\$148,979	(\$3,542)
2023	\$157,900	\$0	(\$1,079)	\$156,821	\$152,700	\$0	\$0	\$390	\$0	\$153,090	(\$3,732)
2024	\$162,300	\$0	(\$1,079)	\$161,221	\$157,000	\$0	\$0	\$401	\$0	\$157,401	(\$3,821)
2025	\$166,800	\$0	(\$1,079)	\$165,721	\$161,400	\$0	\$0	\$412	\$0	\$161,812	(\$3,910)
2026	\$171,500	\$0	(\$1,079)	\$170,421	\$165,900	\$0	\$0	\$423	\$0	\$166,323	(\$4,098)
2027	\$176,300	\$0	(\$1,079)	\$175,221	\$170,600	\$0	\$0	\$435	\$0	\$171,035	(\$4,186)
2028	\$181,200	\$0	(\$1,079)	\$180,121	\$175,300	\$0	\$0	\$447	\$0	\$175,747	(\$4,374)
2029	\$186,300	\$0	(\$1,079)	\$185,221	\$180,200	\$0	\$55,617	\$460	\$0	\$236,277	\$51,055
2030	\$191,500	\$0	(\$1,079)	\$190,421	\$185,300	\$0	\$0	\$473	\$0	\$185,773	(\$4,649)
2031	\$196,900	\$0	(\$1,079)	\$195,821	\$190,500	\$0	\$0	\$486	\$0	\$190,986	(\$4,835)
2032	\$202,400	\$0	(\$1,079)	\$201,321	\$195,800	\$0	\$0	\$500	\$0	\$196,300	(\$5,022)
2033	\$208,100	\$0	(\$1,079)	\$207,021	\$201,300	\$0	\$0	\$514	\$0	\$201,814	(\$5,208)
2034	\$213,900	\$0	(\$1,079)	\$212,821	\$206,900	\$0	\$0	\$528	\$0	\$207,428	(\$5,393)
2035	\$219,900	\$0	(\$1,079)	\$218,821	\$212,700	\$0	\$0	\$543	\$0	\$213,243	(\$5,579)
2036	\$226,000	\$0	(\$1,079)	\$224,921	\$218,700	\$0	\$0	\$558	\$0	\$219,258	(\$5,663)
2037	\$232,400	\$0	(\$1,079)	\$231,321	\$224,800	\$0	\$0	\$574	\$0	\$225,374	(\$5,948)
2038	\$239,900	\$0	(\$1,079)	\$237,821	\$231,100	\$0	\$0	\$590	\$0	\$231,690	(\$6,132)
2039	\$245,600	\$0	(\$1,079)	\$244,521	\$237,600	\$0	\$0	\$606	\$0	\$238,206	(\$6,315)
2040	\$252,400	\$0	(\$1,079)	\$251,321	\$244,200	\$0	\$0	\$623	\$0	\$244,823	(\$6,498)
2041	\$259,500	\$0	(\$1,079)	\$258,421	\$251,000	\$0	\$0	\$641	\$0	\$251,641	(\$6,781)
2042	\$266,800	\$0	(\$1,079)	\$265,721	\$258,100	\$0	\$0	\$659	\$0	\$258,759	(\$6,963)
2043	\$274,200	\$0	(\$1,079)	\$273,121	\$265,300	\$0	\$0	\$677	\$0	\$265,977	(\$7,144)
2044	\$281,900	\$0	(\$1,079)	\$280,821	\$272,700	\$0	\$0	\$696	\$0	\$273,396	(\$7,425)
2045	\$289,800	\$0	(\$1,079)	\$288,721	\$280,400	\$0	\$0	\$716	\$0	\$281,116	(\$7,806)
2046	\$297,900	\$0	(\$1,079)	\$296,821	\$288,200	\$0	\$0	\$736	\$0	\$288,936	(\$7,886)
PV =	\$1,246,959	\$33,550	(\$9,713)	\$1,270,796	\$1,204,098	\$22,194	\$20,871	\$3,294	(\$1,310)	\$1,249,148	(\$21,648)

**Chugach System Economic Evaluation of Southern Intertie - Discounted Cash Flow**

Southern Intertie Participants: Chugach System - Only Participant

Chugach System share is 100.00%.

**SAVINGS = \$14 million  
present value**

Dollars in thousands.

Year	No Southern Intertie				Build Southern Intertie						Net Cash Flow	
	Chugach System Production Cost	Existing Anchorage to Kenai Line Rebuild	Wheeling Revenue	Total	Chugach System Production Cost	Existing Anchorage to Kenai Line Rebuild	New Southern Intertie Capital Cost	New Southern Intertie O&M Cost	Wheeling Revenue	Total		
2003	\$0	\$0		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2004	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$0	\$0	(\$508)	(\$508)	(\$5,000)	(\$5,000)
2005	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$0	\$0	(\$508)	(\$508)	(\$5,000)	(\$5,000)
2006	\$0	\$5,000	(\$508)	\$4,492	\$0	\$0	\$29,272	\$0	(\$508)	\$28,763	\$24,272	\$24,272
2007	\$80,700	\$5,000	(\$508)	\$85,192	\$77,100	\$0	\$0	\$436	(\$1,079)	\$76,458	(\$8,734)	(\$8,734)
2008	\$78,900	\$5,000	(\$508)	\$83,392	\$75,400	\$4,500	\$0	\$448	(\$1,079)	\$78,270	(\$4,122)	(\$4,122)
2009	\$82,800	\$5,000	(\$508)	\$87,292	\$80,200	\$4,500	\$0	\$461	(\$1,079)	\$84,082	(\$3,209)	(\$3,209)
2010	\$84,200	\$5,000	(\$508)	\$88,692	\$80,800	\$4,500	\$0	\$474	(\$1,079)	\$84,685	(\$3,998)	(\$3,998)
2011	\$95,300	\$5,000	(\$508)	\$99,792	\$91,800	\$4,500	\$0	\$487	(\$1,079)	\$89,508	(\$4,083)	(\$4,083)
2012	\$99,900	\$5,000	(\$1,079)	\$103,821	\$96,600	\$4,500	\$0	\$501	(\$1,079)	\$100,522	(\$3,299)	(\$3,299)
2013	\$110,700	\$5,000	(\$1,079)	\$114,621	\$106,900	\$4,500	\$0	\$515	(\$1,079)	\$110,836	(\$3,785)	(\$3,785)
2014	\$112,800	\$0	(\$1,079)	\$111,721	\$108,800	\$4,500	\$0	\$529	(\$1,079)	\$112,551	\$829	\$829
2015	\$118,900	\$0	(\$1,079)	\$117,821	\$114,900	\$4,500	\$0	\$544	(\$1,079)	\$118,565	\$744	\$744
2016	\$130,100	\$0	(\$1,079)	\$129,021	\$125,900	\$4,500	\$0	\$559	(\$1,079)	\$129,861	\$859	\$859
2017	\$133,800	\$0	(\$1,079)	\$132,721	\$129,400	\$4,500	\$0	\$575	(\$1,079)	\$133,396	\$675	\$675
2018	\$137,500	\$0	(\$1,079)	\$136,421	\$133,000	\$0	\$0	\$591	(\$1,079)	\$132,512	(\$3,909)	(\$3,909)
2019	\$141,400	\$0	(\$1,079)	\$140,321	\$136,700	\$0	\$0	\$607	(\$1,079)	\$136,229	(\$4,093)	(\$4,093)
2020	\$145,300	\$0	(\$1,079)	\$144,221	\$140,600	\$0	\$0	\$624	(\$1,079)	\$140,146	(\$4,076)	(\$4,076)
2021	\$149,400	\$0	(\$1,079)	\$148,321	\$144,500	\$0	\$0	\$642	(\$1,079)	\$144,063	(\$4,258)	(\$4,258)
2022	\$153,600	\$0	(\$1,079)	\$152,521	\$148,600	\$0	\$0	\$660	(\$1,079)	\$148,181	(\$4,340)	(\$4,340)
2023	\$157,900	\$0	(\$1,079)	\$156,821	\$152,700	\$0	\$0	\$678	(\$1,079)	\$152,300	(\$4,522)	(\$4,522)
2024	\$162,300	\$0	(\$1,079)	\$161,221	\$157,000	\$0	\$0	\$697	(\$1,079)	\$156,619	(\$4,603)	(\$4,603)
2025	\$166,800	\$0	(\$1,079)	\$165,721	\$161,400	\$0	\$0	\$717	(\$1,079)	\$161,038	(\$4,683)	(\$4,683)
2026	\$171,500	\$0	(\$1,079)	\$170,421	\$165,900	\$0	\$0	\$737	(\$1,079)	\$165,558	(\$4,863)	(\$4,863)
2027	\$176,300	\$0	(\$1,079)	\$175,221	\$170,600	\$0	\$0	\$758	(\$1,079)	\$170,279	(\$4,942)	(\$4,942)
2028	\$181,200	\$0	(\$1,079)	\$180,121	\$175,300	\$0	\$0	\$779	(\$1,079)	\$175,000	(\$5,121)	(\$5,121)
2029	\$186,300	\$0	(\$1,079)	\$185,221	\$180,200	\$0	\$96,792	\$801	(\$1,079)	\$276,714	\$91,493	\$91,493
2030	\$191,500	\$0	(\$1,079)	\$190,421	\$185,300	\$0	\$0	\$823	(\$1,079)	\$185,044	(\$5,377)	(\$5,377)
2031	\$196,900	\$0	(\$1,079)	\$195,821	\$190,500	\$0	\$0	\$846	(\$1,079)	\$190,267	(\$5,554)	(\$5,554)
2032	\$202,400	\$0	(\$1,079)	\$201,321	\$195,800	\$0	\$0	\$870	(\$1,079)	\$195,591	(\$5,730)	(\$5,730)
2033	\$208,100	\$0	(\$1,079)	\$207,021	\$201,300	\$0	\$0	\$894	(\$1,079)	\$201,116	(\$5,906)	(\$5,906)
2034	\$213,900	\$0	(\$1,079)	\$212,821	\$206,900	\$0	\$0	\$919	(\$1,079)	\$206,741	(\$6,081)	(\$6,081)
2035	\$219,900	\$0	(\$1,079)	\$218,821	\$212,700	\$0	\$0	\$945	(\$1,079)	\$212,566	(\$6,255)	(\$6,255)
2036	\$226,000	\$0	(\$1,079)	\$224,921	\$218,700	\$0	\$0	\$971	(\$1,079)	\$218,593	(\$6,329)	(\$6,329)
2037	\$232,400	\$0	(\$1,079)	\$231,321	\$224,800	\$0	\$0	\$999	(\$1,079)	\$224,720	(\$6,601)	(\$6,601)
2038	\$238,900	\$0	(\$1,079)	\$237,821	\$231,100	\$0	\$0	\$1,026	(\$1,079)	\$231,048	(\$6,774)	(\$6,774)
2039	\$245,600	\$0	(\$1,079)	\$244,521	\$237,600	\$0	\$0	\$1,055	(\$1,079)	\$237,577	(\$6,945)	(\$6,945)
2040	\$252,400	\$0	(\$1,079)	\$251,321	\$244,200	\$0	\$0	\$1,085	(\$1,079)	\$244,206	(\$7,115)	(\$7,115)
2041	\$259,500	\$0	(\$1,079)	\$258,421	\$251,000	\$0	\$0	\$1,115	(\$1,079)	\$251,037	(\$7,385)	(\$7,385)
2042	\$266,800	\$0	(\$1,079)	\$265,721	\$258,100	\$0	\$0	\$1,146	(\$1,079)	\$258,168	(\$7,554)	(\$7,554)
2043	\$274,200	\$0	(\$1,079)	\$273,121	\$265,300	\$0	\$0	\$1,178	(\$1,079)	\$265,400	(\$7,722)	(\$7,722)
2044	\$281,900	\$0	(\$1,079)	\$280,821	\$272,700	\$0	\$0	\$1,211	(\$1,079)	\$272,833	(\$7,989)	(\$7,989)
2045	\$289,800	\$0	(\$1,079)	\$288,721	\$280,400	\$0	\$0	\$1,245	(\$1,079)	\$280,567	(\$8,155)	(\$8,155)
2046	\$297,900	\$0	(\$1,079)	\$296,821	\$288,200	\$0	\$0	\$1,280	(\$1,079)	\$288,402	(\$8,420)	(\$8,420)
<b>PV =</b>	<b>\$1,246,959</b>	<b>\$33,550</b>	<b>(\$9,713)</b>	<b>\$1,270,796</b>	<b>\$1,204,098</b>	<b>\$22,194</b>	<b>\$36,323</b>	<b>\$5,732</b>	<b>(\$11,520)</b>	<b>\$1,256,828</b>	<b>(\$13,988)</b>	

Preliminary Economic Evaluation of Southern Intertie for Chugach System

Supporting Computations

Original IPG Ownership Shares

	Scenarios	
	Chugach System Only Participant	All Participate per IPG shares
Chugach System		
Chugach Retail		30.23%
HEA		14.19%
MEA		11.60%
SES		1.44%
Total	100.00%	57.46%

Bradley Lake Shares

	Bradley Share	Average Annual Energy 360,000 (GWH)	Capacity 120.0 (MW)	Wheeling 3.3 mills	Wheeling 7.00 mills
Chugach	30.4%	109,440	36.5		
HEA	12.0%	43,200	14.4		
MEA	13.8%	49,680	16.6		
SES	1.0%	3,600	1.2		
MLP	25.9%	93,240	31.1	\$307,692	\$652,680
GVEA	16.9%	60,840	20.3	\$200,772	\$425,880
		360,000		\$508,464	\$1,078,560