Chakachamna Hydro Power

- Studied by Alaska Power Authority in early 1980's
- Divert streamflow from Chakachatna River to a powerhouse on the McArthur River by way of a 10 mile 25 foot diameter power tunnel
- Minimal dam on Chakachamna Lake
- Installed capacity of 330 MW, generating 1.6 billion KWH annually
- Total cost of project in 1980 dollars = $1.0 billion
- Project is 40 miles from Chugach Electric power facilities at Beluga

Coal Emission Trends

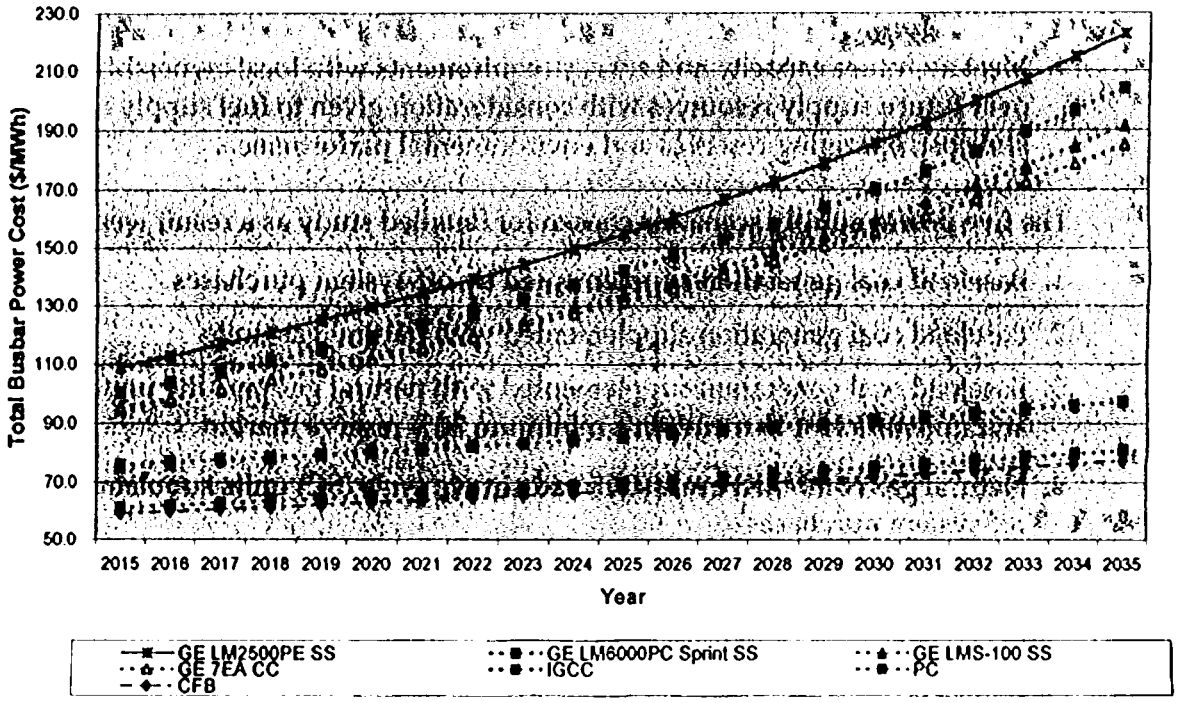
Emissions (lb/MW hr)

	1980's	1990's	Today
SO_2	12	2	1
NOx	7	7	0.7-1
PM	1	0.3	0.12
CO	NA	NA	1.5

New Thermal Resource Options
Typical Emissions and Power Costs

	NOx (Lb/MWh)	SO_2 (Lb/MWh)	Hg (Lb/MWh)	CO_2 (Lb/MWh)	2015 Power Cost ($/MWh)
GE LM2500 SC	0.93	0.00	0.00	1,235	109.0
GE LM6000 SC	0.84	0.00	0.00	1,118	100.3
GE LMS100 SC	0.78	0.00	0.00	1,039	94.6
GE 7EA CC	0.26	0.00	0.00	920	95.2
PC	0.76	1.08	0.00000347	2,607	61.2
CFB	0.96	1.06	0.00000341	2,560	59.3
CFB w/30% Biomass	0.96	0.74	0.00000239	1,792	59.3
IGCC	0.74	0.32	0.000000635	2,545	76.0

FIGURE E-1. BUSBAR POWER COSTS



On the basis of the thermal option screening analysis, 100 MW Circulating Fluidized Bed (CFB) units were chosen from among the coal options considered for inclusion in the expansion scenarios/supply portfolios analyses based on their low busbar cost and emissions profile, the expectation that MEA can meet a state cap on Hg emissions with CFB technology (depending in part on the actions of the other Railbelt utilities in terms of generation additions), and the fact that at a 100 MW unit size, IGCC is hypothetical as opposed to demonstrated. Combined cycle and simple cycle gas turbines are also included in select expansion scenarios.