

• Table 1-1
 Example Benefits from Increased Transmission Capability

| | Capacity (MW) | Plant Factor | Annual Hours | Energy (MWh) | Cost/kWh | Annual Costs |
|----------------------------|------------------|-----------------|-----------------|-----------------|----------|---------------|
| Without Project | | | | | | |
| Healy # 1 | 25 | 0.85 | 7,446 | 186,150 | \$ 0.018 | \$ 3,350,700 |
| HCCP | 53 | 0.85 | 7,446 | 394,638 | \$ 0.045 | \$ 17,758,710 |
| Bradley Lake (37% of time) | 20 | 0.37 | 3,241 | 64,824 | \$ 0.050 | \$ 3,241,200 |
| Anchorage gas units | 22 | 0.66 | 5,813 | 127,896 | \$ 0.022 | \$ 2,813,706 |
| Subtotal | | | | | | \$ 27,164,316 |
| Fairbanks generation | 82 | 0.50 | 4,403 | 361,017 | \$ 0.034 | \$ 12,274,587 |
| Aurora Energy | 18 | 0.85 | 7,446 | 134,028 | \$ 0.040 | \$ 5,361,120 |
| Total | | | | 1,268,553 | | \$ 44,800,023 |
| With Project | | | | | | |
| Healy # 1 | 25 | 0.85 | 7,446 | 186,150 | \$ 0.018 | \$ 3,350,700 |
| HCCP | 53 | 0.85 | 7,446 | 394,638 | \$ 0.045 | \$ 17,758,710 |
| Bradley Lake (37% of time) | 20 | 0.37 | 3,241 | 64,824 | \$ 0.050 | \$ 3,241,200 |
| Anchorage gas units | 62 | 0.90 | 7,886 | 488,913 | \$ 0.022 | \$ 10,756,094 |
| Subtotal | | | | | | \$ 35,106,704 |
| Fairbanks generation | 82 | 0.00 | - | - | \$ 0.034 | \$ - |
| Aurora Energy | 18 | 0.85 | 7,446 | 134,028 | \$ 0.040 | \$ 5,361,120 |
| Total | | | | 1,268,553 | | \$ 40,467,824 |
| Annual Benefits | | | | | | \$ 4,332,199 |

The load requirements for 1997 through 2006 are taken directly from the R.W. Beck study, and a straight-line interpolation is used between the R.W. Beck projections for 2006 and 2016. Fifty-year projections were extrapolated beyond 2016 using the average annual increase in system requirements between 2006 and 2016. Assuming constant price differentials between generating units, fixed utilization factors for the coal plants, the same order of dispatch as the listing of generation units in Table 1-1, and employing the annual electrical requirements described above results in a net present value for this benefit of \$57.3 million. This relatively simple model provides an estimate of current 1997 benefits that is comparable to that estimated in the 1989 DFI study and the 1991 AEA study, after adjusting for the HCCP and other factors that have changed since the early 1990s. The economical energy benefit identified in the Railbelt Intertie Feasibility Study was about \$43 million in 1991 dollars (AEA, 1991), or about \$51.6 million in 1997 dollars.

1.2 REDUCTION OF TRANSMISSION LOSSES

Currently, approximately 13.1 MW of electricity is lost to GVEA and its members during the transfer of power from Healy to Fairbanks over the existing intertie, operating at 105 MW. By constructing another intertie and splitting the electric load between the two interties, the loss between Healy and Fairbanks on both lines would be reduced to 4.3 MW, for a loss reduction of 8.8 MW. Table 1-2 shows the calculations for estimating transmission losses over the 50-year life of the transmission line.