



Energy Management & Planning

Client
General Services Administration

Location
Alaska, USA

Joint Long-Range Energy Study of the Greater Fairbanks Military Complex



Project Description

CH2M HILL conducted a comprehensive evaluation of long-term heat and power supply options for four military bases in interior Alaska: Ft. Wainwright, Ft. Greely, the Missile Defense Command, and Eielson AFB. The effort included review of engineering studies of the Ft. Wainwright central heating and power plant and utilidor systems, and development and evaluation of long-term alternatives for Ft. Wainwright and Eielson AFB, such as continued operation of the existing central plant and construction of a new central plant. In total, 17 alternatives were analyzed. The study was jointly sponsored by the US Army and the US Air Force.

Both Ft. Wainwright and Eielson AFB have central heat and power plants with six coal-fired boilers with about 25 MW of installed steam turbine generators. The plants are approximately 50 years old and in need of repair and upgrade. This effort was accomplished in 5 months. A two-day strategic energy forum was arranged and held in Fairbanks to gather experts in the various energy areas (coal supply, natural gas, Alaska Regulatory Commission, Alaska Department of Environmental Conservation, the installations, Golden Valley Electric Association, and others) to share information and perspectives on the long-term energy framework for interior Alaska.

The study included numerous site visits to the central plants at Ft. Wainwright, Eielson AFB, and Ft. Greely, and discussions with plant personnel about recent upgrades, ongoing work, and future plans. The assessments included:

- Projected energy needs of the installations, including mission reliability requirements
- Assessment of the existing facilities providing heat and power
- Evaluation of current and future technologies that might be used to supply heat and power
- Evaluation of available fuels and projected fuel prices
- Evaluation of renewable energy sources, including geothermal, wind, solar, hydropower, and biomass
- Development and execution of a 2-day strategic energy forum that gathered the area's energy industry players for a wide-ranging discussion on how to meet the heat and electricity needs of the installations
- Determination and evaluation of third-party providers of heat and power services, including the local electric utility
- Evaluation of the existing electric transmission capacity and reliability

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- Definition and development of both regional and stand-alone solutions for each installation
 - Capital cost estimates for each alternative
 - Twenty-five-year net present value analysis of each alternative
 - A priori development of evaluation criteria and the weighting and scoring system to be used for each
 - Evaluation of each alternative using the criteria
 - Extensive on-installation work
 - Coordination and review with each installation; a multiple-agency guidance committee; and presentations to each installation, the guidance committee, and the U.S. Army Assistant Chief of Staff for Infrastructure Management