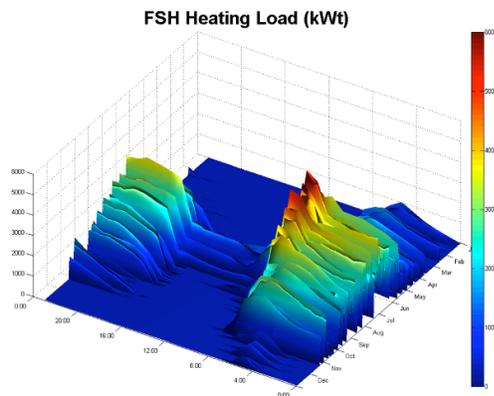
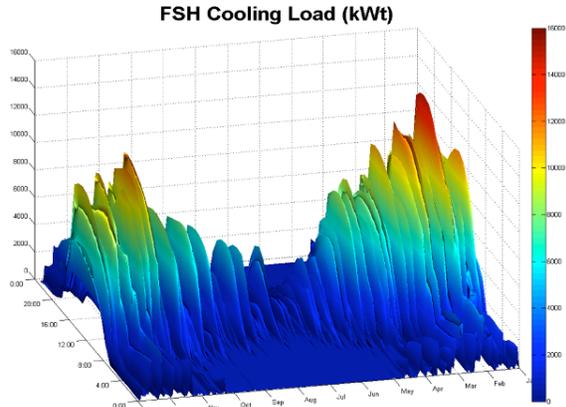


Fiona Stanley Hospital – Central Energy Plant (CEP) Configuration Study Murdoch, Australia

The Fiona Stanley Hospital (FSH) is a new green field hospital to be constructed at Murdoch in Western Australia, approximately 15 km south of Perth. The hospital will be built in two stages with an ultimate build-out of about 2.15 million square feet.

In August 2007, WM Group Engineers was engaged to provide a detailed central energy plant (CEP) configuration study including cooling, heating, thermal storage, power and cogeneration. FSH has been designated as a Group 1 hospital and will be required to operate in post-disaster conditions. As such, the CEP configuration study includes a minimum equipment redundancy requirement of N+1 and includes the potential operation of the hospital in “island mode”.



In order to compare the energy cost of the various combinations of CEP equipment configurations, a detailed energy cost model was developed for this project based on cooling, heating and power profiles, utility and fuel costs, equipment performance, local weather data and process load estimates.

A 35 year life cycle cost analysis was performed for each configuration to determine the most economically attractive plant configuration. The life cycle cost analysis included first costs, discount rate, energy costs, staffing costs, maintenance costs, utility backup charges, and annual escalation of utility and fuel costs and staffing and maintenance costs.

Plant configuration options included providing a hybrid (electric/steam) chilled water plant, fire tube boilers, chilled water thermal storage, gas turbine generator and engine generators for cogeneration.

A sensitivity analysis was performed to review the impact of fluctuating electric and fuel costs. Equipment block layouts were prepared to evaluate the physical feasibility of each option.

Environmental and permitting issues were a prime consideration in selection of the recommended CEP configuration – the recommended configuration reduces the carbon dioxide emissions by nearly 44% as compared to the base plant configuration.

Project Award: August 2007

Configuration Study Complete: November 2008

Carbon Dioxide Emissions Reduction: 44%*

* Carbon Dioxide emission reduction: Recommended configuration versus the base plant configuration.

