

Executive Summary

City Hospital – Phase 1 is the first phase of a multiphase development. The entire project will eventually result in the construction of approximately one million square feet of research space, one million square feet of ambulatory care and clinical office space, and one million square feet of parking and support services.

Phase 1 in essence consisted of three buildings, a three-level sub grade vivarium, a three-level sub grade Central Utility Plant (CUP), and a Support Services at street level. The vivarium is chosen for analysis. The mechanical, electrical, and plumbing (MEP) system of the vivarium is supported by the CUP, and its occupants gain access to the street level through Support Services above.

This report looks into the existing mechanical system design for City Hospital – Phase 1. Design objectives and requirements, as well as energy source and their corresponding rates, are studied in order to better understand the design criteria for City Hospital. The design of mechanical system for City Hospital Campus development is based on occupant health, cost, and energy saving criteria.

The mechanical system is found to be adequately designed to deliver a proper indoor air quality. On the other hand, high energy consumption is a result of ensuring occupant health. Several energy and cost saving methods are incorporated into the design. It eventually conveyed the fact that dual fuel boilers and steam turbine/electric centrifugal chiller combination are system of choice. They reduce energy cost and add reliability to the system.