



MID-ATLANTIC
CHP
APPLICATION
CENTER

combined heat & power in federal campus

White Oak FDA Campus

26 MW CHP Application

Project Profile

Quick Facts

Location:

Silver Spring, MD

Campus Size:

3 million sq. ft upon completion

Campus Loads (current, peak):

2,900 tons cooling
18,000 Mbh heating
6,900 kVA power

Major Components:

One 5.8 MW dual-fuel recip engine
One 2 MW standby diesel generator
One 1130-ton absorption chiller
Two 1130-ton electric chillers
Three 10 MMBtu/hr boilers
30 KW photovoltaic array

Annual Energy Cost Savings:

\$1.4M (estimated)

System Performance:

70% average total system efficiency

Installed System Cost

\$24.6M for original delivery

Began Operation

Partial, Oct 03; full, Jul 04

Reasons for Installing CHP

Energy reliability was the primary driver in the decision to use CHP. Different sources of power generation, fuel types, and distribution paths were used to achieve a high level of energy security, while simultaneously enhancing the energy performance of the White Oak campus. Capital funding limitations were also a concern, and using an ESPC for this CHP project freed up over \$27 million that was reapplied to meet other functional requirements of FDA.



Project Overview

In 1990, the FDA was scattered among 23 different buildings at seven different sites in the Washington, DC area. The numbers rose to 40 buildings in 18 sites by 1996, which included a converted 1930s chicken coop, remodeled bathrooms and freezers, and other unacceptable facilities. Inadequate electrical, heating and cooling, and waste disposal systems were also a problem. The 'FDA Revitalization Act', passed in November 1990, sought to fix these problems.

One of the primary goals of the act was the consolidation of the FDA offices at one facility. In 1994, OMB approved an \$890M consolidation plan for the FDA headquarters, providing a total of 3.6 million gross square feet of laboratory, office, and support space. In mid-1995, when the BRAC Commission decided to close the Naval Surface Warfare Center at White Oak, that location became the prime candidate site for the FDA project. GSA then proceeded with a no-cost acquisition of the property and development of a new campus.

As part of the White Oak facility expansion, Sempra Energy Services was awarded a 20-year, \$98M Energy Savings Performance Contract (ESPC) to construct a central utility plant using CHP technology to provide electricity, heat and air conditioning. This is one of the largest ESPCs undertaken to date, and FDA expects to realize substantial annual operating savings from this program.

System Construction

The campus will be constructed in phases, hence the CHP capabilities are to be staged in-time with the phased construction of the other facilities. The first increment of the CHP plant consists of a 5.8 MW dual-fuel engine, 2 MW standby diesel generator, 1130-ton absorption chiller, two 1130-ton electric chillers, and three 10 MMBtu/hr boilers.

This initial CHP system supports a 129,000 SF laboratory building and 554,000 SF office building. Loads for these facilities are approximately 2,900 tons cooling; 18,000 Mwh heating; and 6,900 kVA peak demand. At completion, the CHP plant will be capable of reliably satisfying 100% of facility loads (with diversity) for a total system efficiency of 70%.



Boilers



Chillers

Historic Preservation:

The energy plant includes beneficial reuse of an historic structure on the White Oak campus, an added benefit of this project.

Interconnection Challenges:

- The interconnection process was relatively new to GSA and turned out to be one of the most challenging aspects of the project. Better understanding of ISA/CSA process would have saved time.
- Accurately calculating the savings from an ESPC project (to include when those savings will be realized) is essential to ensure that the FDA-to-GSA payments are adequately budgeted.
- Interconnection and system upgrade charges from the local electric utility were more than planned – communication between the utility and customer is essential during project implementation.



Cooling Towers

Mid-Atlantic CHP Application Center

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“The General Services Administration is always looking for ways to meet its energy savings goals and to be good stewards of how the agency uses energy – this ESPC/CHP project goes a long way in helping GSA meet those goals...”

**Harry Debes, GSA
Project Executive**

