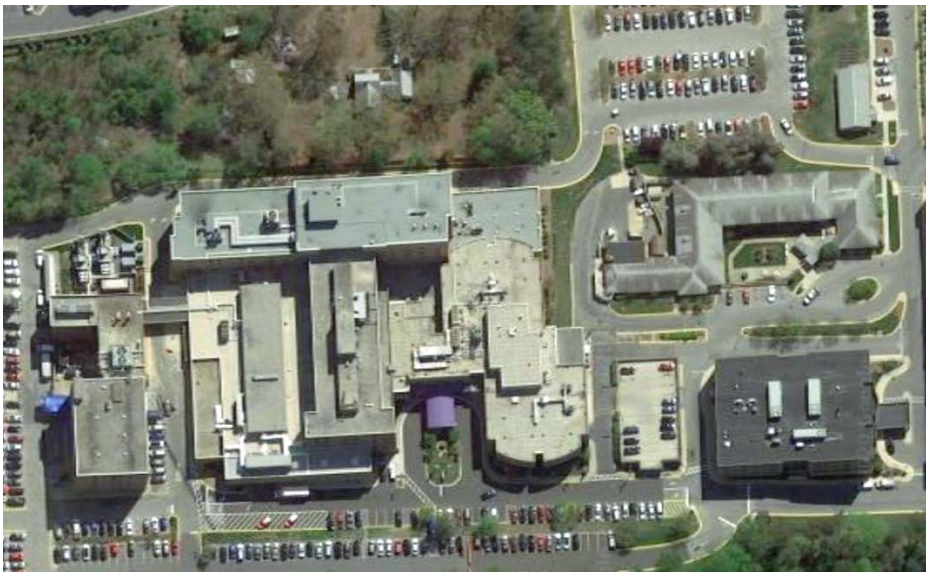
PROJECT PROFILE

MID-ATLANTIC CHP TECHNICAL ASSISTANCE PARTNERSHIPS

Doctors Community Hospital

1.2-MW CHP System

Site Description



Doctors Community Hospital, Lanham, Maryland

Doctors Community Hospital was founded in 1975 by a team of physicians who were committed to improving local access to quality medical and surgical care. This nonprofit hospital has grown into a modern facility with 212 available beds, over 1,600 employees with 700 medical staff. In 2017, Doctors Community Hospital launched a cutting-edge green energy initiative with the construction of its Combined Heat & Power plant.

Quick Facts

LOCATION: Lanham, Maryland
MARKET SECTOR: Healthcare
FACILITY SIZE: 212 licensed hospital beds
FACILITY PEAK LOAD: 1.9 megawatts (MW)
EQUIPMENT: 2 x 600 kW Recip Engines
FUEL: Natural Gas
USE OF THERMAL ENERGY: Heating, Domestic Hot Water and Reheat
CHP ANNUAL TOTAL EFFICIENCY: 63%
ENVIRONMENTAL BENEFITS: reduces greenhouse gas emissions by 54% or 6,300 tons of CO_2 per year.
YEARLY ENERGY SAVINGS: Energy Service Agreement with $300,000 reduction in energy cost
CHP IN OPERATION SINCE: 2017
RESILIENCE: The CHP plant can be islanded if the electric grid fails

Reasons for CHP

Doctors Community Hospital launched a cutting-edge green energy initiative in July 2017 and the hospital began this effort with the construction of a CHP plant. This internal power plant lowers the hospital's carbon emissions, reduces energy costs and ensures continued patient services in the event of an electric grid failure. In addition to basic electrical system improvements, Doctors has realized the following operating benefits from the two Packaged CHP systems:

- Electricity offset of 80% of its annual consumption
- Thermal offset of 90% of its annual gas consumption net of boiler efficiency
- The Maryland Energy Administration provided a $494,320 CHP grant for this project
- PEPCO provided a $1,186,596 CHP grant for this project
- Annual GHG of reduction of 54%
- Reduced energy costs, and
- Increased reliability

CHP Equipment and Configuration

Two 2G Energy – 600 kW Packaged CHP Systems
SOURCE: UNISON ENERGY

The CHP system consists of two 600 kilowatt (kW) natural gas-fired reciprocating internal combustion engines with exhaust heat recovery. The system operates approximately 8,250 hours per year at 1050 kW or higher and has achieved a minimum system efficiency of 63%. The two CHP systems normally operate on separate utility feeds, but their output can be combined during a utility outage to support the hospital in island mode. At the same time, the CHP systems deliver hot water to both the main boiler plant and an auxiliary boiler plant on the roof of the patient tower. The hospital was able to take its boilers out of operation for much of the year, greatly reducing its maintenance requirements. The CHP uses selective catalytic reduction to minimize the emissions from the system and meet state and local air permit requirements. Unison Energy, the project developer, needed to upgrade the hospital's electrical equipment in order to successfully integrate the new CHP system. Much of the hardware was aging, but the major concern was that the hospital had grown past the capacity of its two existing utility transformers. If one utility feed failed, the hospital did not have sufficient redundancy in place and would have to sacrifice certain loads.

Lessons Learned

To support the hospital's high energy needs and insulate it from outages required an intensive system upgrade and installation process. During the installation, Unison Energy brought in temporary on-site generation to fully run half the hospital for several days as it replaced the two existing utility transformers. The temporary power included 1 MW of primary generation, with another 1 MW of backup generation and an automatic transfer switch for redundancy. They also coordinated with the utility company to relocate utility meters to a newly designed switchgear lineup, including a brand new 3,000-amp tie breaker.

"A consistent energy supply is critically important in a hospital setting. Even during a hurricane or blizzard, we need to keep the lights on and the medical devices running. The best part is that it didn't cost the hospital a dime out of our pockets to do, and we're able to save about $300,000 dollars a year on our electric bill."

Jerry Dyer, Director of Plant Operations
Doctors Community Hospital

Energy Service Agreement

Unison Energy managed the total project from design to installation, and now owns, operates, maintains, and monitors the CHP plant under an Energy Services Agreement with Doctors, providing energy optimization and savings, as well as added power resiliency for the facility. Unison Energy has a full team of technicians in Maryland that monitors the system and maintains system performance 24/7/365.

For More Information

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More CHP Project Profiles:
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UNISON ENERGY is a Recognized Solution Provider and 2G Energy is a Recognized Packager in the U.S. DOE Packaged CHP Systems eCatalog:
chp.ecatalog.lbl.gov

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