



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

Peninsula Regional Medical Center

3.12-MW CHP System

Site Description

Peninsula Regional Medical Center (PRMC) in Salisbury, Maryland, a subsidiary of the Peninsula Regional Health System, offers the widest array of specialty and subspecialty services on the Delmarva Peninsula. PRMC is also the largest and most experienced health care provider in the region.



Peninsula Regional Medical Center, Salisbury, Maryland

At 266 licensed hospital beds, PRMC has been meeting the healthcare needs of Delmarva Peninsula residents since 1897. Its 3,300 physicians, staff and volunteers provide safe, compassionate and affordable care designed to exceed the expectations of the nearly 500,000 patients who rely on the Medical Center team each year for inpatient, outpatient, diagnostic, subacute and emergency/trauma services.

Quick Facts

LOCATION: Salisbury, Maryland

MARKET SECTOR: Healthcare

FACILITY SIZE: 266 licensed hospital beds

FACILITY PEAK LOAD: 5 megawatts (MW)

EQUIPMENT: 2 x 1,560 kW Recip Engines

FUEL: Natural Gas

USE OF THERMAL ENERGY: Heating, DHW and Reheat

CHP ANNUAL TOTAL EFFICIENCY: 68%

CHP MAX EFFICIENCY: 81%

ENVIRONMENTAL BENEFITS: reduces greenhouse gas emissions by 50%

YEARLY ENERGY SAVINGS:

Energy Service Agreement (ESA) with 17% reduction in energy cost

CHP IN OPERATION SINCE: 2017

RESILIENCE: The CHP plant can be islanded if the electric grid fails

Reasons for CHP

PRMC was receiving between 10 and 15 short cycling events annually from the electric utility that cause flickering, which is not desirable during operations or diagnostics requiring digital telemetry. In addition to power quality improvement, PRMC has realized the following operating benefits from the two Packaged CHP systems:

- Electricity offset of 81% of its annual consumption
- System capacity covering ~95% of average annual demand load
- Thermal offset of 92% of its annual gas consumption net of boiler efficiency
- Annual GHG reduction of 50%
- Annual NOx reduction of about 15%
- Reduced energy costs
- Increased reliability

CHP Equipment and Configuration



Two 2G Energy – 1.56 MW Packaged CHP Systems

SOURCE: UNISON ENERGY

The CHP project consists of two 2G Energy – 1.56 MW Packaged CHP Systems. The power output of the two generators was combined through a 3,750-kVA step-up transformer to match the 25-kV operating voltage of the hospital’s electric distribution network. New switchgear was installed to interconnect to the network and controls were added to the existing primary gear to allow the CHP to load follow and operate in island mode.

To take full advantage of the heat available from the CHP, it had to be connected to the hospital’s main boiler plant and an auxiliary boiler room on the other side of the campus. This required over 4,000 linear feet of hot water piping from the CHP to the boiler rooms. The piping was routed underground in pre-insulated pipe with leak

detection, over a portion of the hospital roof and wall-mounted in a decorative case to match the existing architecture. Direct digital controls were installed and integrated into the existing building management system to optimize heat delivery to the boilers.

Delmarva Power & Light (DPL) required Direct Transfer Trip (DTT) via fiber-optic communications. DPL installed the fiber from two separate substations to the property line at the developer’s expense.

“Stewardship is one of Peninsula Regional’s core values. By installing the CHP, we achieve both environmental and economic stewardship that is a benefit to our community. It also makes PRMC more resilient; in the event of a power grid failure or natural disaster, we have a built-in backup that will allow us to continue to care for our community.”

Dr. Peggy Naleppa – President/CEO of PRMC

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 PRMC, 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

U.S. DOE MIDATLANTIC CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)

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More CHP Project Profiles:

www.machptap.org

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UNISON ENERGY is a Recognized Solution Provider in the U.S. DOE Packaged CHP Systems eCatalog:

chp.ecatalog.lbl.gov

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