



Penn Medicine Princeton Health Design-Builder & Engineer of Record for CCHP Plant

PROJECT INFORMATION

CONCORD DIVISION

Power & Infrastructure

PROJECT LOCATION

Plainsboro, NJ

MARKET

Health Care/Hospital

SERVICES

Engineering Design
Construction Management

CONSTRUCTION COST

\$34 Million

ABOUT THE PROJECT

Designed by a team of internationally renowned architects and consultants, the new 636,000 sf hospital incorporated the latest green building technologies and airborne infectious disease mitigation among its features is an efficient on-site central energy plant that has the capacity to supply the facility with 100% of its heating, cooling and power. The project was developed by Clearview LLC.

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CENTRAL UTILITIES/COMBINED HEAT & POWER PLANT

Using a design-build approach, Concord Engineering minimized the time and costs necessary to design, build and commission the \$34 million plant facility for the Combined Cooling, Heating, and Power (CCHP) plant. As the plant's engineer and construction manager, Concord provided Clearway Energy, the plant owner operator, with a competitive construction management fee structure. Clearway's expertise in financing, developing, and operating similar projects, served as a catalyst to move the project forward.

The ability to integrate engineering and construction management from a single firm as a single point of responsibility was a significant factor in meeting scheduling and cost constraints for this \$34 million design-build project.

Performing as Engineer of Record and Construction Manager, Concord completed detailed engineering documents and procured the equipment and sub-contractors required to complete the project on an accelerated timeline.

The chiller plant uses a nominal 1-million-gallon chilled water storage tank and is strategically located to minimize energy costs to the hospital. The combined heat and power plant utilizes a 4.6 MW Solar Mercury 50 gas turbine coupled to a heat recovery steam generator (HRSG) to produce 14,000 pph unfired (ISO). A 6MW diesel generator plant supports the plant and hospital critical electrical loads. Concord designed the medium voltage substation and interconnection to PSE&G standards.

ENERGY RESILIENCY AND ISLAND MODE CAPABILITY

The plant was designed to provide the hospital with onsite power (resiliency power) from the CHP gas turbine along with BLACK START Generator, in addition to the emergency diesel generators during a grid failure. The plant required a detailed understanding of protective relaying and microgrid controls to ensure the plant would be able to support critical and non-critical loads during an outage. *It should be noted all testing for the island mode was performed while patients were in the operating hospital.*