Princeton HealthCare System

University Medical Center of Princeton at Plainsboro, NJ

Building in absolute reliability from the start, with a highly cost-efficient solution.

The opportunity

When Princeton HealthCare System first envisioned building a new 636,000-square-foot acute-care hospital with 231 single-patient rooms in Plainsboro, New Jersey, initial plans called for a conventional HVAC system to address the facility's requirements. Because of stringent patient-care needs, hospitals traditionally insist on two energy sources: their local utility, which acts as the primary power source; and their emergency generators, which can deliver a limited power supply in the event of an unexpected grid failure. Visionary leadership prompted an exploration of non-traditional energy-efficiency solutions, to determine if there was an opportunity to capitalize on more significant cost savings.

The challenge

After discussions with NRG industry specialists, the institution's decision makers altered their plans and opted to build in absolute energy reliability for their new hospital – choosing a sophisticated energy-efficiency solution that, in the words of Princeton HealthCare System President and CEO, Barry Rabner,

"...will fully meet our hospital's energy needs while reducing our operating costs and protecting the environment".

OUTAGE PROOF
This integrated solution can operate continuously, even in the event of a total local grid outage.

"BLACK START"
Even after the local grid goes black, backup generators can start up this system's gas turbines.

ADVANCED CONTROL
Each component is managed by a programmable logic controller to optimize plant performance

"WIRE-TO-WATER"
Drives system efficiency by using a control algorithm that finds the most efficient speed to run cooling water and chilled water pump motor.

nrg

Power to be free℠

COMBINED HEAT AND POWER PLANT

NRG recommended the installation of a highly cost-efficient combined heat and power (CHP) plant that would produce enough electricity onsite to power the entire facility, without having to draw from the local grid. This state-of-the-art CHP plant would also generate sufficient amounts of steam for heating and chilled water for air conditioning the hospital year-round.

The solution

Under a multiyear contract, NRG technologists will provide the facility with electricity from a 4.6 MW gas turbine-powered CHP. Plus a cogeneration plant that will serve as the hospital's primary energy resource, meeting 100% of its heating, cooling and sterilization needs. This plant is backed up by 6 MW diesel-fired generators in an N+1 scheme that can be supplemented by an interconnection to the local utility's power grid, if the need arises.

NRG's energy-efficiency solution also uses electricity from a 1 million-gallon chilled water thermal-energy storage tank—literally a thermal "battery" that can be charged during off-peak hours and discharged during peak-demand periods—plus a 200 kW solar array with panels distributed over the parking lot.

The integrated nature of this solution enhances the hospital's energy reliability at an overall cost that is significantly less than the costs needed to provide and implement these energy sources individually. It dramatically reduces the facility's monthly electric bills and harmful emissions. And it provides the institution with the flexibility to export power to the local grid when rates are high or quickly draw power from the grid when rates are low (or if additional energy is needed).

All of which firmly establishes Princeton HealthCare System's energy independence, while enhancing its ability to generate a welcome revenue stream that can fund critical services.

4.6 MW
gas turbine-powered CHP

1 M
gallon chilled water thermal-energy storage tank

200 kW
of solar panels

STEAM BOILER

Contact NRG Business

NRG Business specializes in putting together comprehensive energy systems—from solar to fuel cells to distributed heat and power— for commercial, industrial and institutional enterprises with national scope. So you get your system on time and on budget.

We understand your enterprise's unique power demands. We can help improve your energy efficiency, which moves you closer to your sustainability goals.

Contact us today to connect with the most diverse portfolio of innovative energy products and services in the country.

nrg
Power to be free℠

FOR MORE INFORMATION: **nrg.com | 1.888.315.1558**