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College and universities: Leveraging campus environment for greener, more energy efficient buildings

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Energy is a major component of a comprehensive sustainability strategy at any academic institution. Thermal and electrical energy may be optimized to reduce greenhouse gas emissions and reduce both fuel and energy costs. Energy audits and master plans that identify potential improvements in energy efficiency continue to be an effective way for universities to undercover opportunities for both immediate and long-term cost savings. Therefore, leveraging the skills of energy experts, capable of developing custom, holistic, and sustainable energy and facility operations and management solutions, is crucial.

Well-suited for a campus environment, a district energy network delivers the energy requirements of customers in individual buildings and across a community of densely-clustered buildings, helping to meet the diverse energy demands of a wide variety of occupants. A district energy network includes a central energy plant, or several small ones, connected by distribution pipes to the buildings served. By aggregating the needs of many buildings, a district energy network aggregates a steady load that can be served more efficiently.

Combined heat and power (CHP) is an efficient energy solution that generates power and thermal energy (heating or cooling) simultaneously. Installing a dedicated, on-campus CHP plant is a good solution to address frequent brown outs and black outs, and this solution typically reduces fuel consumption by 40% because it recycles the waste heat of traditional power generation. CHP plants are sized to optimally meet the thermal energy requirements of the campus, but they also produce valuable power and reduce the amount of electricity purchased from the local grid.

When combined with a district energy network, CHP represents a terrific one-two punch for large university campuses committed to improving their overall efficiencies, reducing their carbon footprints, controlling energy costs, and increasing reliability. A further advantage of CHP is that plants may be fueled by renewable fuels such as biomass and landfill gas, so the environmental benefits of greenhouse gas reduction are even more pronounced.

Educational institutions are consistently looking for ways to obtain and maintain the best atmosphere for their current students and faculty; reliability plays a major role in a facility's atmosphere, especially on a college or university campus. New York University (NYU) benefited from the reliability of its own CHP plant during Hurricane Sandy. While the majority of Manhattan was without power, most of NYU's Greenwich Village campus had electricity, heat and hot water from its 13.4 MW natural gas-fired CHP plant. NYU's expanded CHP plant has driven $5 million in annual energy savings and prevents an estimated 43,400 tons per year of CO2 emissions. NYU is also able to sell excess electricity to the utility when campus demand is low, resulting in additional savings.

Colleges and universities have access to a wide variety of efficient energy strategies and solutions

that deliver both savings and proven benefits to the environment. The campuses that best leverage these strategies will be the hubs to inspire future energy innovations.

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