

Queens University of Charlotte cuts annual energy costs by \$190,000

Through LED lighting, new chillers, water efficiency measures and an updated Building Automation System, Queens University of Charlotte significantly reduced their energy costs, with no up-front investment.



Founded in 1857, Queens University of Charlotte is a private, co-ed masters-level university, nestled in the historic neighborhood of Myers Park, just minutes from uptown Charlotte, NC. With a student population of more than 2,500, the university is focused on delivering collaborative learning experiences that prepare individuals for purposeful and fulfilling lives.

Many of their buildings were equipped with aged and inefficient building controls, chillers, lighting and water fixtures, which negatively impacted the efficiency, comfort and sustainability of their campus. They looked for a partner who could reduce energy costs across their facilities; maintain and improve the existing environment within each building; and provide improved operational control over their equipment and systems – without adversely impacting their balance sheet.

Queens University of Charlotte partnered with Centrica Business Solutions and Metrus Energy to make energy systems upgrades across 25 campus buildings. After completing a comprehensive investment grade audit of their site to understand the scope of work, a number of areas were identified which would significantly improve the efficiency of the site: LED lighting, new chillers, water-efficiency measures and an updated Building Automation System.

Significantly improving energy efficiency

The interior and exterior lighting across their buildings included inefficient T8 fluorescent, compact fluorescent, incandescent, and High Intensity Discharge fixtures. These fixtures were replaced with LED technology, which use around 50% less electricity than traditional options, delivering significant cost savings. What's more, since quality LEDs have a lengthy lifespan of 30,000-50,000 hours, further cost savings were delivered in the reduced maintenance costs. In addition, occupancy sensors were also installed in select areas to automatically shut off lights when spaces are unoccupied.

Three of their buildings each had a single air-cooled chiller, which had reached end of life and needed replacement. Replacing these with new units increased efficiency from an average Energy Efficiency Ratio (EER) of 8.24 in the old chillers, to 10.53 in the replacements. Additional maintenance savings were also achieved, based on the costs of continuing to replace the compressors and condenser fans in the old units. The university also had 240 water

1,444

tons in annual CO2 savings

\$190K

annual energy cost savings

15

year Energy-as-a-Service agreement

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It was exciting to watch the transformation of our campus with the installation of state-of-the-art equipment that will increase our efficiency and resiliency. More than just savings, these upgrades reflect our values as a school and a community, and our belief in a sustainable energy future”

Troy Luttmann

Campus Architect at Queens University Charlotte

fixtures located across 16 buildings, and making upgrades here achieved a reduction in water consumption, alongside hot water thermal savings.

Enhanced control

The aged Building Automation System used across the university didn't provide them with sufficient control over their energy infrastructure. In some circumstances, manual overrides were required to maintain occupant comfort, at the expense of energy efficiency. It also did not provide them with detailed insight into energy consumption, or provide alerts when issues occurred. In addition, it was becoming increasingly difficult to find replacement parts.

Centrica Business Solutions replaced outdated controls system with a new IP-based Building Automated System, with remote



access capabilities. This enabled them monitor equipment in real-time and detect inefficiencies before they became a problem. It also gave them the ability to set a simple, efficient heating and cooling schedule for each area of their campus, which could be easily overridden if occupancy changed. This provided them with increased control over their energy usage which, in turn, delivered greater energy efficiency and lower operating and maintenance costs.

Turnkey approach

Harnessing a turnkey approach, Centrica Business Solutions guaranteed the quality of the engineering and construction works, alongside the long-term performance of the upgrades. Each year, comprehensive reviews are conducted to ensure all equipment is operating correctly, and that all savings are being realized as they should.

The program was underpinned by a 15-year Energy-as-a-Service agreement provided by Metrus Energy, which shifted all implementation and asset ownership costs to Metrus Energy. This meant that Queens University of Charlotte did not have to make any capital investment, and the guaranteed savings that were delivered through the upgrades paid for the cost of the program.

Improved energy efficiency

By transforming the campus with LED lighting, new chillers, water-efficiency measures and an updated Building Automation System, Queens University of Charlotte have significantly reduced their energy consumption, which will reduce their annual energy costs by \$190,000.

These turnkey improvements have also provided the university with the opportunity to reduce its carbon footprint and reduce harmful environmental impacts, by reducing CO₂ consumption by 1,444 tons annually.

Why Centrica Business Solutions?

- Reduced utility costs: Increasing efficiencies and eliminating wasted energy can reduce utility costs by up to 30%.
- Reduced maintenance costs: Upgrading inefficient equipment and adding automatic controls cuts maintenance costs dramatically.
- Increased business intelligence: Business Automation systems provide real-time equipment performance data.
- Improved working conditions: Lighting and ventilation upgrades are proven to improve occupant comfort, morale and performance.
- Reduced greenhouse gasses: Energy efficiency is the most cost-efficient way to reduce carbon dioxide emissions.