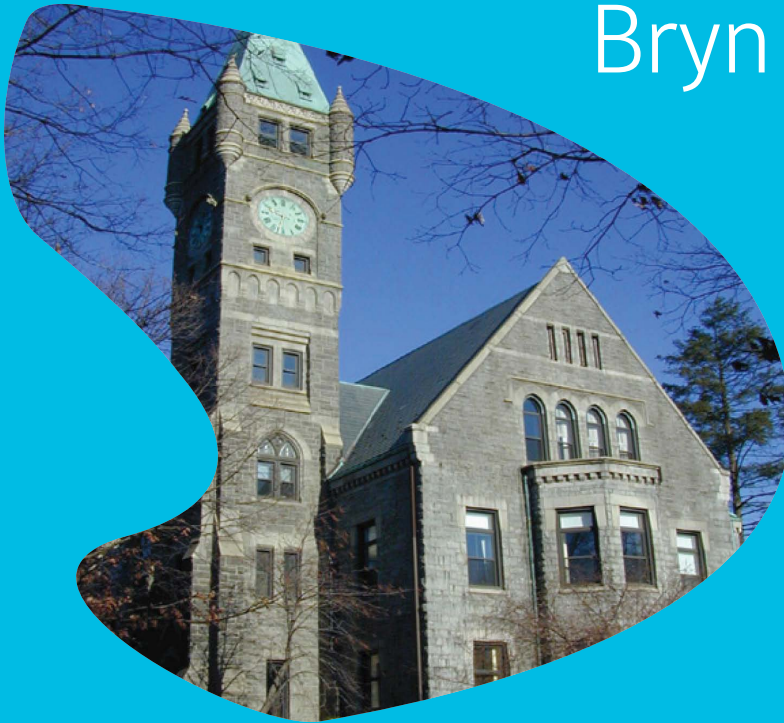


Case study

Bryn Mawr College

Bryn Mawr, Pennsylvania



Historic campus reduces carbon footprint through unique demand response program

Founded in 1885 in Pennsylvania, Bryn Mawr College is one of the world's most distinctive, distinguished liberal arts colleges. Its drive for excellence is reflected in its approach to sustainability and a greener future, in which EnergyConnect™ has played an important role.

The opportunity

The historic campus has 50+ buildings spread over 120 acres. It showcases an excellent example of how effective use of demand response (DR) delivers significant energy and cost savings, even at an institution where the average age of the buildings is over 88 years! In February 2010, Bryn Mawr's president, Jane McAuliffe, set a goal to further reduce its overall carbon footprint by 10 percent within 10 years. To address this challenge in a fast changing regulatory environment, Bryn Mawr sought a solution that offered the visibility and flexibility to quickly adjust to constantly moving targets and opportunities.

The solution

The Bryn Mawr team, led by Jim McGaffin, facilities engineer, engaged with EnergyConnect three years ago to address its energy goals. Bryn Mawr chose EnergyConnect because its FlexConnect™ platform opened up easy access to voluntary demand response programs and allowed them to quickly adapt to market rule changes. For the first nine months, the facilities team looked at the FlexConnect scheduling screens and gained valuable insights about potential load shifting or shedding opportunities. By providing a clear understanding of load profile and energy usage patterns as related to campus activities, weather and other factors, FlexConnect enabled them to easily identify any wasteful overhead. This "inform and motivate" approach thus drove them to explore further opportunities for curtailment and savings.

“Working with EnergyConnect helped us understand our load profile and energy usage patterns as related to campus activities, weather, etc. We now have the ability to look at these patterns and predict opportunities for effective curtailment with maximum cost savings. This education component of the process is the single most important reason we have been so successful with FlexConnect.”

JIM MCGAFFIN
FACILITIES ENGINEER

At a glance:

The project is targeted to provide:

- Available load shed: 200 kW – 1000 kW
- Peak load: 3 MW
- Three-year cost savings: >\$300,000
- Carbon savings: >2000 tons of CO₂ emissions avoided since 2007

Active participation brings rewards

Bryn Mawr College participates in demand response as a community. The facilities department and the president's office are the first to be curtailed and the last to go back on. It has an excellent track record with no student or faculty complaints due to the impact of energy reductions. In three years the only complaint they received was that building background noise went away when fans ramped down!

Bryn Mawr partnered with Tustin Mechanical Services, PA to develop an automated load shifting strategy (a.k.a. “easy button”). At the start of an event, the building automation system randomly turns off fans in many buildings. This in turn causes chillers to back off and pumps to ramp down, creating additional efficiencies. As building temperatures rise, fans and AC units are reactivated to maintain comfort. Buildings are never permitted to rise above 77°F. Depending on the outside temperature, load sheds of 500 kW are sustained for several hours. On hot days, they achieve load reductions as high as 1,000 kW. The easy button is fully automated, obviating the need for a facilities expert to initiate the reduction. Anyone with access to the control screens can initiate participation at the touch of a button.

“Key to an effective curtailment strategy is to always try new ideas to see how they work within our systems,” says Jim. “In the end, it is not about

the money. It is about reducing our carbon footprint, being a good steward of the campus and reducing wasteful consumption. EnergyConnect's FlexConnect program gives us the control to lead by example, so we all benefit from a cleaner, brighter future.”

Bryn Mawr has reinvested DR earnings into control systems and building system upgrades. It gradually upgraded all HVAC systems to include variable frequency drives (VFDs), further increasing efficiencies and DR participation. The earnings also funded compact fluorescent light bulb replacements, improved heating systems in three dorms, a carbon footprint study and a windmill project. This virtuous cycle of earning and investment has set Bryn Mawr firmly on track for further campus improvements moving forward.

In addition to enhanced energy management and cost savings, Bryn Mawr's participation in DR using FlexConnect delivers many side benefits. It reduces their carbon footprint, makes environmental stewardship profitable, prevents rolling blackouts and brownouts, improves the reliability and efficiency of the electrical grid and ultimately decreases the need for new power generation.

For more information,
call 866-488-7642 or visit
[www.johnsoncontrols.com/
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