CPower

CASE STUDY: VIRGINIA STATE UNIVERSITY

Virginia's Opportunity University: successfully seized the opportunity to earn additional revenue for the school through demand response

The Customer: Virginia State University

Virginia State University (VSU), founded in 1882, is one of Virginia's two land-grant institutions. It boasts a current student population of approximately 4,700. VSU's 231-acre campus includes 11 residence halls, 18 academic buildings and a 412-acre working farm used for agriculture research. VSU features academic environments within six colleges, and is ranked No. 12 institution in the United States for historically black colleges or universities (HBCUs) by College Choice.

Ms. Jane Harris, Assistant Vice President for Facilities and Capital Outlays, was enthusiastic about PJM Interconnection's demand response (DR) program, which pays organizations for curtailing energy use during times of high demand that strain the region's electrical grid. She felt VSU had a good probability of a successful outcome, generating revenue to fund needed campus upgrades. In 2014, she was given the go-ahead to enroll in DR.

Team of Professionals

To make sure the university's DR participation had a successful launch, Ms. Harris built a leadership team which included the facilities management staff and building managers. The team was led by one of her project managers, Mr. George "Bubba" Bowles. Mr. Bowles brought deep knowledge of utility operations and was tasked with managing the project. CPower, represented by Ms. Leigh Anne Ratliff, brought unmatched expertise in PJM's DR curtailment program.

Planning and Communication

Mr. Bowles developed a demand response action plan that included a survey of all campus buildings, and the energy technology available in each building. The campus infrastructure was not designed to curtail energy quickly and easily. Not every building was equipped with sub meters and automated controls, and some generators could supply power for only emergency lighting. Nonetheless, Mr. Bowles felt that with proper planning, training, and communication, VSU would succeed.

Communication--specifically communicating the program's benefits--proved to be the key component of the plan. Months before the first test event, which required the university to reduce their usage at a particular date and time, the leadership team undertook an extensive communication program that targeted the university's building managers, campus facilities maintenance contractor, information technology staff, facilities inspector, campus safety officer, and Yourdonus James, Conference Services Manager, who schedules outside groups for events on campus. Each step of the plan was explained in detail, emphasizing the real and substantial benefits the university would receive from DR. As the test date approached, specific tasks were assigned to facilities staff and the safety officer that would help VSU meet their targeted curtailment goals, from turning on generators to turning off the breakers to entire buildings. Ms. James explained that she was concerned when first informed of the demand response program, but the actual test proved transparent with no noticeable impact on her clients.

In June 2015, VSU participated in its first test event, and exceeded its curtailment goal. In 2016, they set their curtailment goal even higher, and exceeded that as well. In 2017, they set their goal higher.

Record-Setting Reduction

The event test for 2017 was scheduled for a June afternoon at exactly 2:00 p.m. Around noon the plan, improved and streamlined over the past two years, was put into action. HVAC was cut off to 19 buildings, which were pre-cooled. In 10 buildings, energy could not be curtailed, so building managers enlisted the tenants to close blinds, turn off lights and computers, and schedule a late lunch to reduce usage during the test. Power to another 19 buildings was shut off completely.

As the plan proceeded, they faced an "11th-hour-and-59th-minute" challenge that threatened their continuing success. The team learned that at that moment, VSU was hosting 900 potential students at all academic buildings, including Daniel Gymnasium, one of the buildings targeted for complete shutdown. Not only that, but the students were to be sent out to explore any building of their choosing--many of them already curtailed--at exactly 2:00 p.m. Shifting gears, the team quickly "un-curtailed" Daniel Gymnasium.

At 2:00 p.m, with the temperature outside registering 87 degrees, VSU began its test curtailment. VSU had committed to curtailing their load by approximately 4 MW. By the time the event ended, of a total campus load of 6 MW, VSU curtailed 4.5 MW--an unprecedented 75% campus-wide load reduction.

Secret of Success

The one factor that all team leaders agree was critical to success is effective communication. By communicating clearly not only what had to be done, but why, the team was able to get buy-in from the entire campus community. Ms. Harris made it clear that the revenue generated by DR would benefit them directly--they would have the funds to do things that they normally wouldn't be able to afford. Each building manager became an enthusiastic stakeholder, which assured campus-wide success. As Mr. Bowles notes, "We make it easy for them to say 'Yes' by showing that it benefits them."

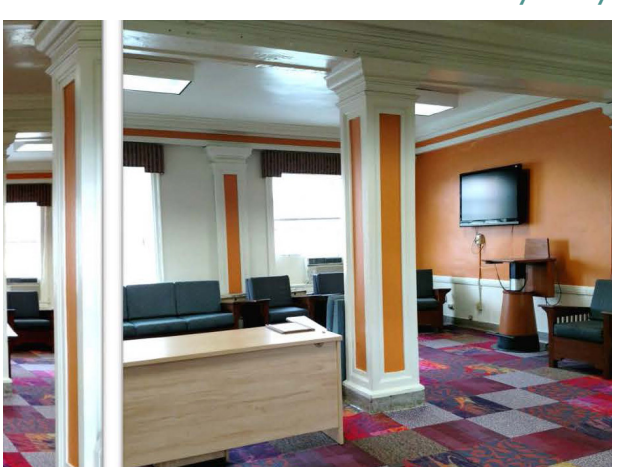
Rewards of Demand Response

Three years of increasingly profitable participation has funded a number of university facility projects. Chief among them are upgrades to two residence halls in the historical section of campus. The upgrades turned residence halls into destinations for which students now compete for assignment.

VSU has also been able to pursue energy efficiency projects that result in permanent curtailment and energy savings. Residence halls are being upgraded to highly efficient LED lighting, and generators are being upgraded to full building operation. Both upgrades, besides saving energy, have the potential for adding more revenue from DR participation.

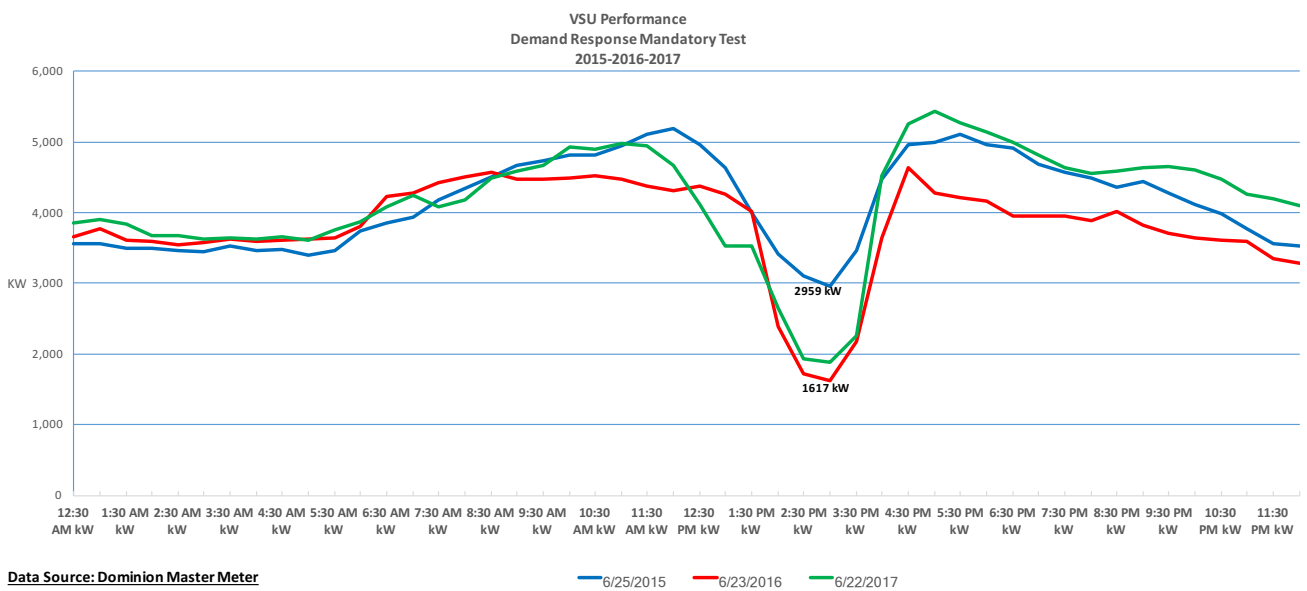
Perhaps more importantly, the success of DR at VSU has helped create a culture of energy conservation and sustainability on campus. Faculty, staff, and students increasingly embrace programs such as recycling, energy conservation, and research into environmental programs and economic development. "Virginia's Opportunity University" is also becoming "Virginia's Sustainability University," true stewards of the earth that anchors their mission.

Seward Hall Lobby Today



Virginia State University:
Load Response Performance Report

The below graph and table illustrate your performance during the June 22, 2017 2:00pm to 3:00pm curtailment event.



Data Source: Dominion Master Meter