

PSECU — 81 Years of Financial and Environmental Stewardship

Dramatically reduced CO₂ emissions and water usage, energy savings help win LEED® Gold certification for energy efficient building

By Christopher S. Gray

As a corporate citizen, the Pennsylvania State Employees Credit Union recognizes the need to do our part to conserve precious natural resources. This goal, in part, steered us toward our branchless business model decades ago. Conservation also helps our members because we are a member-owned institution, so when we pay less for our energy needs, we are able to direct those savings back to fund our many free services.

Recently, PSECU was honored to be featured in the Pew Charitable Trust's "Clean Energy Rising" research report. Released on Nov. 24, 2014, the report focuses on clean energy use by corporations in each state. Pew featured the credit union's innovative use of combined heat and power for our corporate headquarters. Known as co-generation, the cornerstone of our new building is part of an industrial energy-efficient system that supports the electricity and heating needs of the credit union. Using this technology enables us to meet our energy-security needs, while reducing operation costs and the traditional energy-loss impacts that effect the environment.

Our commitment to being socially and environmentally responsible influenced key building design decisions. We recently received the distinction of LEED® Gold certification for our building's energy efficient



design and the integrated Capstone Gas Turbine used to generate electricity and provide supplemental heating and cooling.

Some other building elements that helped to achieve this prestigious status included:

- Designed the structure so natural daylight could provide lighting in 75 percent of the building
- Installed automatic shades
- Designed an energy-efficient HVAC system with underfloor air distribution
- Installed rooftop gardens to reduce stormwater runoff and provide natural insulation to help reduce heating and cooling costs



Quandel Construction and UGIPS worked together to develop a savings assessment associated with on-site power generation, as well as backup diesel generation. A C1000 Capstone turbine (with four 200 kW turbine generators expandable to five) and a Thermax absorption chiller were selected as the best solution to provide 800 kWh of power and 300 tons of chilled water to the data center. This project will reduce emissions of CO₂ by 4,434 tons per year, which is equivalent to moving 732 cars from the road.

To date, PSECU has exported over 450,000 kWh of electric back to the utility grid. In total, PSECU has produced over 4 million kWh of electric since the Capstone generator has been on line. This would equate to an estimated \$300,000 in commodity charges for electricity.

The co-generation system enables PSECU to increase its redundancy needs in case of emergencies. Should the electrical grid go offline, our data center would see no interruptions and run in "island mode" indefinitely. The current turbine combination is capable of generating up to 800 kW, enabling PSECU to provide excess power back to the grid when it is not needed for core functions.

While our new building is state-of-the-art and features leading-edge technology, the reasons behind its design and construction are completely old school: to protect our members' information, direct savings back to our members, and protect our natural resources. 🍀

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Through our efforts, the numbers show that by optimizing energy performance, we have achieved 37.4 percent energy savings and reduced water usage by 44.7 percent. Using natural gas to both power and provide climate control for the building will provide an estimated \$741,236 in annual savings. Currently, this four-turbine system powers 100 percent of the building in the fall and winter months and 60 percent to 70 percent during the peak summer months. These results will enable the system to pay for itself in 5.6 years.

PSECU teamed up with premier Mid-Atlantic energy solutions provider, UGI Performance Solutions, the energy arm of UGI Corporation. UGIPS exclusively developed an on-site power generation system that supports energy security and reliability for the PSECU data center, in conjunction with Bala Engineering and The Capstone Corporation. UGI HVAC's mechanical and electrical divisions implemented the installation of this portion of the project.