



SHOWCASE PROJECT: CITY OF ATLANTA: TECHNOLOGY SQUARE RESEARCH BUILDING

SOLUTION OVERVIEW

Built in 2002, the Technology Square Research Building (TSRB) is a 5-floor, 400-occupant mixed use facility containing office, retail, research, data center, and conference space. The building sits on the campus of Georgia Tech Research Institute and is owned by The University Financing Foundation, Inc. ("TUFF") and operated by Gateway Facility Services, LLC. It is occupied by Georgia Institute of Technology's School of Electrical and Computer Engineering and College of Computing.

TSRB was originally built by TUFF as part of the revitalization of the Technology Square neighborhood. At the time, Georgia Tech was looking to expand their footprint and the mostly vacant underdeveloped area across the highway held potential to connect the campus with the City of Atlanta. Georgia Tech partnered with TUFF to develop TSRB as part of 1.3 million sq. ft. of academic, office, research space, restaurants and retail with the plans to attract private sector development. The project has been extremely successful in creating a community of large companies, start-ups, students and researchers.

In 2011, TSRB became one of the initial participants in the Atlanta Better Buildings Challenge (ABBC) when the program launched. The building, already undergoing a series of retrofits, benefited from a free building assessment complimentary of the ABBC.

SECTOR TYPE

Education, Local Government

LOCATION

Atlanta, Georgia

PROJECT SIZE

210,000 Square Feet

FINANCIAL OVERVIEW

Project Cost: \$280,000*

SOLUTIONS

The ABBC building assessment identified additional energy and water efficiency solutions on top of the previously scheduled retrofits – the majority of which were operational, controls and sensor changes. The building team implemented a continuous commissioning program in June 2011, to maintain optimum performance of the HVAC system. TSRB reduced its annual energy cost by 23.5% and water costs by 8.5% compared to baseline years, saving more than \$123,000.

The complete list of upgrades is detailed below.

- Instituted global temperature set points and increased the “dead band” - the range of temperatures in which no heating or cooling is required
- Enhanced electrical metering of HVAC loads. Real time monitoring of water and electrical use via dashboard - \$25,000
- Installed VFD's on outside air makeup fans. Calibrated ventilation to ASHRAE 62.1 ventilation rate procedure including all building exhaust. Installed demand control ventilation on first floor (CO2 monitoring) - \$15,000
- Installed line reactor capacitors on all induction motors (above 5 horsepower) for power factor correction - \$125,000
- Added controls in MDF Rooms - \$40,000
- Upgraded HVAC controls from scheduled start to optimal start
- Implemented supply air temperature reset
- Replaced halogen lights with LED lighting
- Installed LED exterior lighting - \$9,000
- Installed Tridium building automation system - \$44,000
- Installed numerous sub-metering points – more in progress
- Installed condensate recovery systems for water reuse
- Increased cycles of concentration in cooling tower loop
- Enhanced water metering - \$10,000
- Programmed reset on cooling tower supply temp, air handler supply temp and duct static - \$5,000

TSRB also hosted and participated in Pacific Northwest National Lab's Commercial Building Re-tuning Training, sponsored by the Department of Energy. This program utilizes a train-the-trainer approach to teach energy managers and facility operators low-cost strategies to identify and correct building operational problems that lead to energy waste. TSRB staff utilizes the strategies from the training to continuously improve the building's performance.

OTHER BENEFITS

The project completed the installation of a condensate recovery system for water reuse. Planned projects include upgrades of restroom fixtures to high-efficiency toilets and urinal flush valves expected to save almost 62,600 gallons of water annually. All of the projects costs have gone to community businesses that performed the building upgrade work.

The building earned BOMA 360 certification in June 2015, which is heavily weighted towards sustainability. TSRB's initial ENERGY STAR score was 39, due in part to the large data center that it houses and 24 hour operating schedule. The building recently earned an ENERGY STAR score

of 75, one year ahead of schedule.

*Energy project costs: \$251,000; Water project costs: \$29,000

Annual Energy Use

(Source EUI)

Baseline(2010)



Actual(2016)



Energy Savings

32%

Annual Energy Cost

Baseline(2010)



Actual(2016)



Cost Savings

\$110,000



TSRB Exterior



Condensate recovery returned to cooling tower



TSRB Courtyard