



Sustainability, Inc.

CASE STUDY

Property: Centergy One

Location: Atlanta, Georgia

Size: 500,000 square feet

Description: Multi-tenant commercial office building with retail



Sustainability Case Study Highlights

- 🔧 LEED Silver Certification applied for 2010
- 🔧 First commercial building to implement “Day Cleaning” – 12% energy reduction
- 🔧 First commercial building to implement “Xeriscaping” – 95% irrigation reduction
- 🔧 Design/Install HVAC condensate recovery/recycle system – reclaim/recycle over 490,000 gallons of water annually
- 🔧 22% increase in \$/kWh 2007 – 2009
- 🔧 15.2% decrease in building’s electric expense 2007 – 2009
- 🔧 \$.22/sf electricity expense reduction to tenants
- 🔧 Increased recycled waste by > 300%
- 🔧 Reduced CO2 emissions by >2,000 tons 2007 - 2009
- 🔧 Conducted total building energy audit – resulted in > 20% reduction in energy expense
- 🔧 Performed total system “Re-Commissioning”
- 🔧 Instituted total system “Continuous Commissioning” program

CASE STUDY

Centergy One at Technology Square

The Centergy One facility is a 500,000 sf multi-tenant office building in Atlanta, GA that was completed in 2003. The building has been virtually 100% leased and occupied since 2005. Energy rates have risen 41% over the 2005 – 2010 time period while budgeted electrical expenditure (\$) has dropped 15% during the same period. Fifth Street's comprehensive approach to energy reduction at the property involved several key strategies which, in aggregate, produced immediate and on-going energy efficiencies. Below are highlights of the energy, water and indoor-air-quality programs at Centergy One and their results.



Energy Strategies - Solutions Partner 5th Street Management

In Q3 2007 multiple strategies were implemented to reduce energy consumption at the 500,000 sq ft Centergy property measurably and sustainably:

1. The Centergy One building was the first in Atlanta to implement a day cleaning program resulting in a reduction in electricity cost of approximately 10 percent. This reduction is achieved by the reduced need for lighting after normal business hours. Additionally, the program incorporates Green Cleaning Equipment and High Efficiency Particulate Air (HEPA) filtration technology that allows for approximately 99 percent of minute particles to be captured and removed without blowback to the atmosphere. All cleaning products utilized have been certified by Green Seal, Inc. as environmentally safe.



Energy Strategies (cont.)

2. Identify the primary energy consumers: It was determined that the kilowatt hours (kWh) consumption during the off peak hours of operation would offer excellent opportunity for impact due to the building's equipment functioning below 100% capacity during this period of reduced occupancy.
3. Analyze HVAC trends with the building automation system (BAS):
 - a. Start/Stop cycles
 - b. Discharge air temperatures
 - c. Ventilation rates
 - d. Duct static pressures
 - e. Temperature and Duct Static reset as well as Optimized Start strategies were employed to reduce off peak demand.
 - f. Raising and lowering the "night set back" temperature set point relative to the season reduced start stop cycles when the building was unoccupied lowering significantly the after-hours use of energy.
4. Achieved 17% reduction in kWh consumption 2007 – 2009
The Georgia Power average kWh rate increased 22% (\$0.0852 vs. \$0.103) from 2007 to 2009. The team at Centergy One lowered the overall billable annual kWh usage by 15.2% netting an over \$103,988 (>\$0.23/sf) reduction for the FY2008.
5. Performed energy audit Q4 2007 producing expense recovery of over \$100,000 annually:



A comprehensive audit of above standard tenant loads (as defined in the lease agreements) commenced in the fall of 2007. With above standard loads identified, a network of *smart meters* was installed to monitor and record the kWh use. The smart meter network and data base was installed "in house" using engineering personnel. The data base exists on the same computer as the Building Automation System and it allows

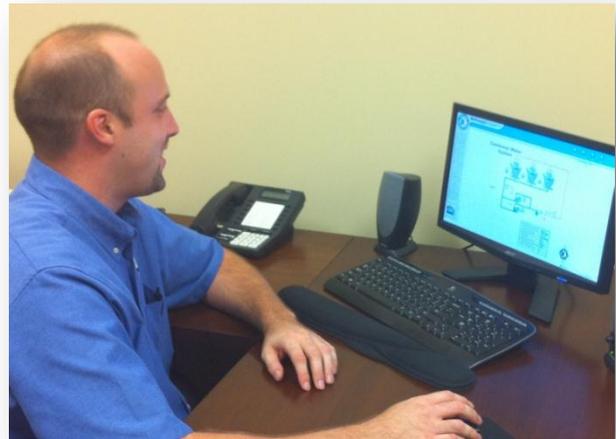


Energy Strategies (cont.)

the engineering department to read and generate monthly bills for the above standard users directly from the BAS computer. Infrastructure improvements were installed by engineering staff to support expansion of the meter network.

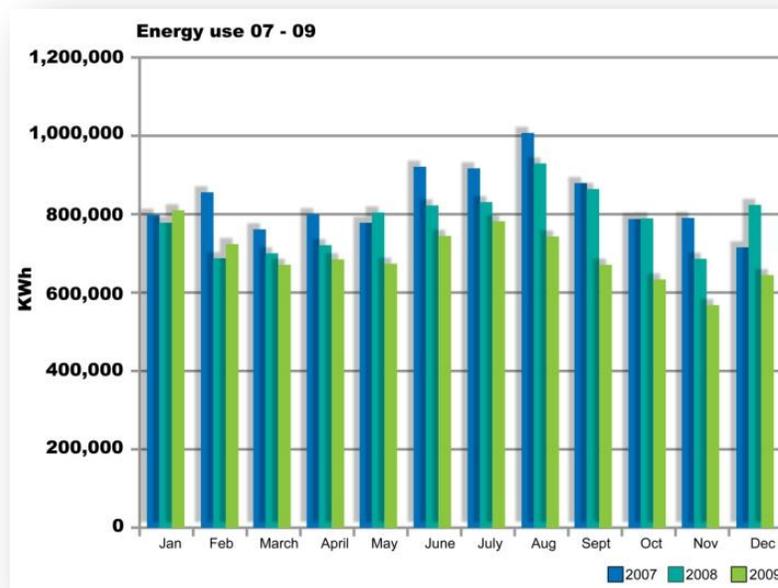
6. Instituted Continuous Commissioning Program:

The BAS allows for real time monitoring of all of the HVAC systems. Information regarding the initial settings with regards to temperatures and pressures for each piece of equipment exists in the programming for the BAS and in documents from the Test and



Balance report generated when the building was opened. It is not uncommon to find that over time buildings tend to drift away from the initial engineered set points defined in the Test and Balance (TAB) report. Engineering personnel initiated the process of measuring real time operating parameters on every component and comparing them to the BAS and TAB reports. Some drift had in fact occurred, and as it was identified, the drift was corrected to the original design set points. A typical example would be a Variable Air Volume controller designed to move 1300 CFM would be moving 1700 CFM. The condition would be verified and corrected

using calibration techniques built into the BAS. The team has as a standard operating procedure a daily protocol to review all mechanical systems for alarm conditions or systems operating out of their design range.



Controls Strategies - Tridium Niagara

The team maximized the analytical and programmable capabilities of the building's BAS system to configure all components to their optimal settings.



1. Programming: The BAS was programmed to incorporate the local meters on the Main Building Switch Gear.

Redesign of the main switch gear data retrieval system: The GE switch gear in use at Centergy One is equipped with local digital meters that provide real time kVa, kW, Power Factor, and kVar metrics.

2. Integration of existing technologies: Identified the key communications protocols, MODBUS and LONTALK.
3. Engineering designs/installs system modifications: New system allows for the development of Load Shed strategies which are reducing Electric Demand (kW) charges.
4. Peak Demand Management: Automation of energy alarm monitoring ensures prevention of peak demand increases and load shed strategies are automatically initiated.



Lighting Strategies - Solutions Partner E. Sam Jones Distributor

The building was retrofitted with high efficiency lighting with a payback on under 2 years.

1. Design/install of Common Area lighting control system: Expanded conduit backbone to accommodate networking.
2. Relay system: Enables LONTALK communication chip networked with the Tridium Niagara BAS.
3. Secondary Relays: Automatically switch off common area lighting in BAS programming.



Lighting Strategies (cont.)

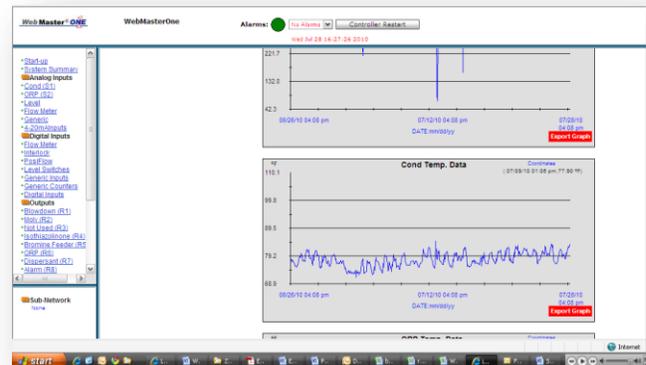
4. Lighting Retrofit Q4 2008: Total building lighting retro-fit program is ongoing.
5. Immediate consumption reduction: Retrofit achieves a 115.5 kW reduction annually and saves >\$67,000 (\$0.16/sf) annually.
6. Lighting strategies reduce CO2: Total reduction in CO2 emissions due to lighting strategies for the period 2007 – 2009 equals over 2,000 tons.

Water Strategies - Solutions Partner 5th Street Management

Water Treatment

Fifth Street Management implements robust water conductivity monitoring at each of our commercial operating facilities:

1. Monitoring conductivity ensures systems are performing optimally.
2. Reduces energy and water expenses.
3. Extends the useful-life of the equipment.



Centergy utilizes state-of-the art online analytical process controllers for water treatment management at its commercial properties.

1. Programs controls for multiple cooling towers, boilers, closed loops, waste streams and virtually any water treatment process.
2. Systems monitor and control based on Conductivity, pH and ORP sensor inputs.



Water Treatment (cont.)

3. Captures inputs from other devices such as corrosion, chlorine dioxide, level, temperature and pressure.

Summary of Water Treatment Technology Features and Benefits

- Resides on the web, accessible 24/7
- Auto-notify (email, text, pager) engineering upon
- Ultra-secure, patented Internet Connectivity On Demand (ShoulderTap)
- 24/7 management of multiple assets
- Ethernet and USB are standard for simple connectivity
- Modbus is available for seamless integration with building energy management, distributed control, process management and SCADA systems



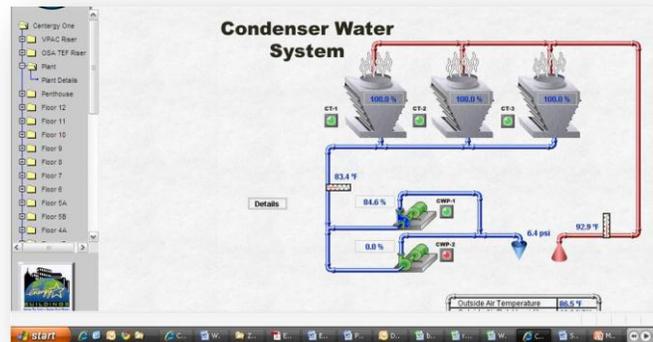
Condensate Recovery System

Designed and installed a condensate recovery system in 2008:

1. Recover and recycle over 490,000 gallons annually.
2. Saving \$0.04/sf annually.
3. Designed and installed by engineering.

Other Water Strategies

1. Converted exterior landscaping to Xeriscape landscape, reduced irrigation by 95% in Q4 2007.
2. Re-commissioned all restroom plumbing fixtures with aeration and low flow valves reducing restroom usage by 25%.



Indoor Air Quality - Solutions Partners 5th Street & ICS Contract Services

Developed its corporate standard for IAQ based on the ASHRAE 62.1 Ventilation Procedure.

1. Programmed BAS to audit proper ventilation rates.
2. Programming ensures tenant comfort and proper fresh-air introduction.
3. Programming reduces energy costs related to fan operation.
4. Programming sets proper ventilation requirements for the building.
5. Variable Air Volume controls introduce outside air into the mixed air plenum.
6. CO2 levels are monitored via the BAS and proper ventilation rates managed.

Waste Stream Management - Solutions Partner American Recycling & WastePro

The building was converted to “single-stream” recycling Q3 2007.

1. % of waste stream recycled increased 70% in one year
2. Annual CO2 reduction > 7 tons
3. 248 tons mixed recycled material
4. >780 Cubic yards of landfill reduction
5. >Significant reduction in disposal costs

