



ING Office Building West Chester, Pennsylvania

BUILDING BACKGROUND

Building Usage
Office Building

Occupants
450-500

Size
125,000 sq ft

Stories
Three

Year Built
1999

Weekly Operating Hours
92 hours/week

Start Year for Energy Management
2005

Energy Efficiency Typology
Retro-Commissioning, Operations & Maintenance

retrofit at a glance

-Retro-Commissioning
-HVAC Scheduling
-Thermostat Set Point
-Building Control System
- Revised Lighting Layout
-Compact Fluorescent Light Bulbs
-Lighting & Computer Controls
-Water Conservation

Overview & Scope

ING is a Dutch financial institution specializing in banking, investments, life insurance, and retirement services with facilities across the United States. Within the past decade, ING has reevaluated their business practices in light of the overwhelming evidence of human-caused emissions on climate change, making it a priority to reduce their direct and indirect greenhouse gas emissions. ING has begun to improve operational management in their buildings, located in more than 40 nations across the globe. ING determined that a series of low-cost, energy efficiency upgrades within their facilities would greatly reduce a significant portion of their overall greenhouse gas emissions.

The ING West Chester, Pennsylvania office is an excellent example of a building that significantly improved energy efficiency through operational improvements and efficiency upgrades. Constructed in 1999, the brick building has three stories, 125,000 SF of office space, holds approximately 450-500 people, and is in use for 92 hours per week. In 2005, working in coordination with the building management team, a sustainability director identified three main areas to improve energy efficiency: the heating and cooling equipment, lighting, and the power management system.

Project Details

Building

Retro-Commissioning - Building management conducted a thorough investigation of their current mechanical systems to determine if they were running at peak efficiency. System upgrades and general maintenance was conducted to optimize performance.

HVAC

HVAC Scheduling - Deficiencies in the operation of heating and cooling systems were alleviated by the readjusting when the building's mechanical systems were powered. Scheduling mechanical systems to be in sync with working hours greatly reduced unnecessary energy expenditure.

Thermostat Set Point - In 2009, ING raised its summer thermostat set point to 75 degrees across its portfolio, effectively reducing the amount of cooling provided, and decreasing the energy consumed throughout the summer.

Building Control Systems - Building management also installed Trane's Tracer Summit energy management system to more efficiently coordinate the mechanical system's response to user needs.

Lighting Measures

Revised Lighting Layout - An analysis of the lighting plan was performed to identify areas of excessive illumination. Simply unscrewing, or de-lamping portions of the facility that were over-lit contributed to a reduction in energy expenditure without any cost.

Upgrade Lighting Control Technology - Building management installed timers on multiple light sources to respond and control to varying demand for illumination throughout the day or night; (e.g. exterior parking lot lamps). Over a four year period, motion sensors were purchased and mounted in several offices and conference rooms throughout the building.

Compact Fluorescent Light Bulbs - Building management exchanged inefficient (e.g. incandescent) light bulbs with highly efficient compact fluorescent fixtures.

Power Management

Computer Controls - The facility installed power management technology to shut down monitors while they were not being used.

Non-Energy Improvements

Water Conservation - Building management increased their overall sustainability by installing water conservation mechanisms. They brought in high efficiency/low flow toilets and integrated automatic shut-off faucets to reduce the amount of waste water generated throughout the facility.

Employee Initiatives - The company supports employee driving reductions by providing subsidies for public transportation, working with the community to increase transportation options, and by offering flexible working hours and encouraging telecommuting to reduce unnecessary travel. ING has also curbed the quantity of trash produced by its employees with "bring your own mug to work" programs, increasing the number and visibility of recycling bins and broadening the types of items that can be reprocessed. Through these initiatives, there was a 54 percent reduction (582 tons) in ING's nation-wide waste from 2007 to 2009 and a 24 percent increase in recycled materials.

Performance

ING's energy efficiency measures have been a financial success. A capital investment of less than \$30,000 has created an inflation-adjusted savings of over \$100,000 between 2006 and 2010. The company saved enough money over the first year of the program to finance the rest of the project. Monthly energy bills have decreased by over 20 percent on average. Together, ING's strategic capital improvements and cost-free behavioral changes have increased the company's energy efficiency and saved thousands of dollars.

The West Chester Sustainability Director also used EPA's ENERGY STAR Portfolio Manager to organize and track energy use within the building. From the baseline reading and an initial Energy Star rating of 69 five years ago, they were able to conserve enough energy to raise the rating to an 82, giving the West Chester ING office the ENERGY STAR label.

Lessons Learned

Identifying the most cost-effective and practical measures to initiate an energy efficiency campaign can be challenging. ING's building management team suggests that individuals familiarize themselves with the free on-line resources provided by the ENERGY STAR program including its software programs, such as Portfolio Manager. These programs are tremendously helpful in identifying methods and organizational strategies for reducing energy consumption in one or more buildings.

Economic Analysis

Energy Savings Investments	
	COST
Energy Audit	\$ 4,200
Light Motion Sensors & Installation	\$ 12,703
Programming Exterior Lamps	\$ 550
Building Automation System (BAS)	\$ 12,000
Summary of Savings	
Reduction in Monthly Bills (avg)	20%
Annual Energy Reduction (Million kWh)	1.2
Energy Savings (2006-2010)	\$ 104,000
Greenhouse Gas Reduction (Tons CO ₂ e)	648