

Facts

Description:

Net zero energy bank branch

Location:

Fort Lauderdale, FL

Project Owner:

PNC Financial Services Group

Architect:

Gensler

Completion Date:

2012

Objective:

Exceed the goal of the DOE's Commercial Building Initiative and create a net-zero energy bank branch

Results

Targeting LEED Platinum

50% energy use reduction over ASHRAE 90.1-2004; the rest of energy use demand met through on-site solar power

40% reduction in water use

\$10,000 estimated annual energy savings

PNC BANK NET ZERO ENERGY BANK BRANCH



PNC Financial Services Group has been an established leader in green building for over a decade, certifying more new construction projects than other any organization on earth. In January of 2013, PNC opened the doors to its first net zero energy branch in Fort Lauderdale, a crowning achievement that took over two years of design and collaboration with the Department of Energy Pacific Northwest National Laboratory (PNNL).

The Fort Lauderdale branch is part of the DOE's Commercial Building Initiative, which aims to significantly improve the energy efficiency of new and existing commercial buildings. The grant program challenged PNC to develop a retail branch bank that was 50% more energy efficient than energy code (ASHRAE 90.1-2004) with goal of accelerating market adoption of energy efficient building technologies and solutions. Under the direction of PNC, the project goal was stretched to incorporate a net zero energy target.

Paladino Approach

As owner's representative for sustainability, Paladino supported the team during the concept development, site selection and technical analysis process. Paladino led an initial eco-charrette to define what "net zero" would mean for the branch. Two potential concepts centered on the ideas of revolution and evolution – would the branch be a complete departure from PNC's established Green Branch® prototype, or would it be a progression of the existing design? The team selected to evolve the existing prototype, which would allow PNC to more easily incorporate new efficiency strategies into its other branches. Next,

About Paladino

Paladino is an industry-leading green building consulting firm providing sustainability expertise over a wide range of building and business issues. We work with high aspiration organizations of all sizes to develop advanced green building strategies for both new and existing construction.

A pioneer of the green building movement and one of the original creators of the LEED green building rating system, Paladino's esteemed clients include ConAgra Foods, Starbucks, PNC Financial Services, Microsoft, Verizon Wireless, Corporate Office Properties Trust and many more. At Paladino, we help our clients create business value by optimizing human, environmental and financial performance. Our customized technical approaches center on the unique concept of abundance as a driving force for organizational transformation. To learn more, visit www.paladinoandco.com.



*Paladino's abundance framework
(people, planet, prosperity)*

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Paladino conducted energy modeling to evaluate the Green Branch prototype in different climate regions to help the team select the ideal site.

Load Reduction Strategies

To achieve net zero, the approach was to first reduce energy loads of the prototype design by 50%; then meet the remaining demand through renewable power. The design team first addressed architecture and building systems to drive down energy loads. Envelope upgrades were needed for the best passive performance, including additional insulation in the wall and roof and canopies to reflect sun and provide shading on the building's southern exposure. After weighing the lifecycle costs and benefits of air, water, and geothermal based mechanical system options, a variable air volume (VAV) system was chosen for its balance of energy savings, low maintenance complexity, and lower incremental cost.

Paladino developed a basis of design for the lighting scheme that defined criteria for efficiencies and lighting quality. Lighting experts from PNNL specified high efficiency fluorescent and LED-based fixtures, along with controls to dim lights with daylight availability. These changes yielded over 50% in lighting energy reduction, as well as incremental savings to cooling energy demands.

Finally, the team engaged additional collaborators from PNC to reduce operational energy uses. PNNL assisted in metering all equipment (computers, printers, video, and ATMs) in existing PNC branches to get detailed hourly energy use data. By identifying usage trends, all non-essential equipment could be placed on electrical circuits with automatic time-based shutoff. Information technology and marketing staff were also engaged to reduce loads for computer systems and signage.

Renewable Energy Generation

Paladino conducted feasibility studies to help the team select the most appropriate method of energy production and assisted the team in reviewing and selecting technologies. The branch is powered by 211 of the most efficient photovoltaic panels on the commercial market. Paladino calculated estimated solar output and recommended placement options for the PV panels based on cost, visibility and size. A direct current (DC) ceiling grid system powers the lighting, preventing the energy loss that normally occurs when converting DC solar power to alternating current (AC).

The branch also includes high recycled content materials for the building structure, wall materials and interior finishes. Native planting reduce irrigation needs, and natural drainage channels lined with plants filter out pollutants and permit ground absorption, diverting much of the site's stormwater from municipal sewer systems.

Results

The branch opened to the public in January 2013 as the first net zero project completed through the DOE program, and is seeking a LEED Platinum rating. Some of the branch's energy efficient features will be incorporated in the next

generation of PNC's green buildings. It is estimated the branch will save \$10,000 in annual energy costs compared to a typical building of its size located in Florida.