

SHOWCASE PROJECT: PNC BANK BRANCH: DAVIE BLVD. & ANDREWS

SOLUTION OVERVIEW

PNC faced the technical challenge of designing a branch that generates at least as much energy as it consumes. While PNC's signature Green Branch® locations conserve more energy than conventional branches, it wanted to achieve even greater energy performance. To meet this objective, PNC collaborated with Gensler, a leading global design firm, and the Department of Energy (DOE) as part of the DOE's Net-Zero Energy Commercial Building Initiative.

Recognizing the importance of wise investments, PNC strives to integrate conservation, including water and energy saving technology, into its building practices. In the late 1990s, PNC adopted green building practices to cut operating expenses, increase employee satisfaction and lower its environmental impact. To date, the organization has achieved LEED® certification on 207 projects in 16 states, Washington, D.C. and London. The bank's nationally recognized commitment to green construction has lowered costs, increased efficiency and productivity and enhanced the communities where people live, work and play.

In 2009 through a strategic acquisition and integration of another bank, the organization gained access to the Florida market. Naturally, new branches built in these markets would follow sustainable design, construction and operational principles. For this project, PNC decided to push the boundaries of its existing, high performance buildings.

The building is located in an up and coming neighborhood and was built to align with the South Andrews Master Plan's pedestrian friendly guidelines. Andrews Avenue connects the neighborhood to downtown and to the historic and cultural center of Fort Lauderdale. Davie Boulevard serves as an east-west corridor that connects the neighborhood to the North-South 95 Interstate and to Federal Highway (Route 1). This building and surrounding developments contribute to the City's initiatives to make the neighborhood more walkable, inviting, and connected to downtown Fort Lauderdale. The site is bordered by Tarpon River Park to the north and by residential areas further north and to the west. Commercial areas are located primarily to the east and south of the site, with a variety of restaurants, commercial businesses, not-for-profit organizations and medical offices located to the south of Davie Boulevard.

Construction began in January 2012 and was completed in December 2012, and the branch opening occurred in January 2013. The building has been occupied since January 14, 2013. Energy monitoring has begun and a comparison to predictive modeling will ensue.

SECTOR TYPE

Commercial

LOCATION

Fort Lauderdale, Florida

PROJECT SIZE

4,900 Square Feet

FINANCIAL OVERVIEW

Project Cost TBD

SOLUTIONS

PNC's process to achieve net-zero included: 1) Maximizing energy efficiency -- the net-zero branch is expected to perform 56 percent more efficiently than a conventional building designed to meet building codes; and 2) Supplying energy with on-site solar power -- some of the most advanced photovoltaic (PV) technology available will generate sufficient electricity to satisfy the building's annual energy demand.

Energy efficiency measures implemented are as follows:

- A high performance exterior wall system was selected to reduce heating and cooling demands.
- Cooling costs are reduced by a canopy, which reflects sunshine from the building's southern exposure during the hottest part of the day.
- An energy recovery system captures energy from conditioned air as it exits the building and recycles it to cool, fresh air entering the building.
- Solar panels transfer energy from the sun to a direct current (DC) ceiling grid interior lighting system that prevents the energy loss that would normally occur when converting DC to alternating current (AC).
- ENERGY STAR® office equipment and appliances are used, as well as LED lamps for ceiling grid lighting, parking light fixtures and branch signage.
- Photo sensors dim interior light fixtures as natural sunlight increases. Occupancy sensors and timers turn off lights and non-essential equipment in unoccupied spaces.

Renewable energy systems implemented are as follows:

- 211 panels made up of three PV system types have a total capacity of 55.1 kW.
- Anticipated annual system output is 84 MWh/yr.
- Electricity produced that exceeds the building's needs is automatically fed back to the grid.

OTHER BENEFITS

The building is pursuing LEED Platinum certification, and will also pursue ENERGY STAR certification and possibly other certifications related to the project's energy performance. In addition, the analysis performed in monitoring energy loads in an existing branch, which was used to develop the net-zero energy branch, has had profound effects on the work for the entire building portfolio.

Monitoring energy loads in an existing branch was critical to meeting ambitious energy goals. The monitoring showed that in the prototype branch design, HVAC equipment was oversized and could save energy and reduce capital costs for new and replacement equipment, e.g., by replacing roof top units (RTUs) reaching the end of their life with RTUs of the correct size. The Owner also learned that its existing buildings were performing differently from computer model predictions. Knowing actual load characteristics helped the Owner and DOE partners create more accurate models and assisted the Owner in making better energy management investments.

As overall energy demand for regulated systems (HVAC, lighting, power, service water heating) was reduced, the proportion of total energy required for process loads increased. As a result, the project team collaborated more closely than usual with its Technology Department to find ways to reduce energy consumption for computers, equipment and other plug loads.

Using the DC ceiling grid for lighting was also a change from standard design practice. This innovation was critical to achieving the 50% overall energy reduction compared to the baseline model, as required by the DOE Net-Zero Program.

Annual Energy Use

(Source EUI)

Baseline(2013)



Actual(2016)



Energy Savings

44%

Annual Energy Cost

Baseline(2013)



Actual(2016)



Cost Savings

\$1,000



Exterior - view from S. Andrews Ave.



Exterior - view from Davie Blvd.



Interior - main retail area and teller stations