

THE TOWER AT PNC PLAZA, PITTSBURGH, PA



Fast Facts

Description:

33-story commercial office tower

Project Owner:

PNC Financial Services Group

Architect:

Gensler

Completion Date:

Fall 2015

Results

The LEED Platinum project is the greenest commercial tower developed in the U.S.

Awards and Press

Architectural Record, [Natural Ventilation and Office Towers](#)

Building Design + Construction, [A Breath of Fresh Air](#)

Buildings Operations Management, [PNC Tower, World's Greenest High-Rise, Is A Study In Simplicity](#)

[AIA SF Design Award Winner](#)

[BD+C Building Team Award Winner](#)

The Tower at PNC Plaza is the LEED Platinum certified commercial office headquarters for The PNC Financial Services Group. Built to reflect PNC's leadership in green building, energy efficiency, and commitment to innovation, the approximately 800,000 square foot tower began construction in spring 2012 and opened in fall 2015. Designed to be the greenest office tower in the world, the building went beyond standard certification by adding unprecedented sustainable innovations and technologies. Paladino served as strategic green building advisor, guiding the owner and team through a sustainability design process embedded throughout design and construction.

Paladino Approach

Paladino was instructed to push the boundaries of the approach beyond LEED, which is exactly what we did. We began with an in-depth green building market scan including site visits to Europe's highest performing buildings; a building technology scan; a competitor scan; and a community scan encompassing buildings in PNC's territory.

Next Paladino developed sustainability performance criteria organized around three pillars that reflect PNC's values:

1. **Community Builder:** Support Pittsburgh's existing infrastructure, spur development and business growth downtown, and accentuate the skyline as a symbol of PNC's commitment to the city's sustainable future.
2. **Workplace Innovator:** Attract tomorrow's leaders to Pittsburgh through innovative space planning and building systems that promote collaboration and productivity, and set the bar for a healthy indoor environment.
3. **Energy Responder:** Respond to Pittsburgh's climate by aggressively pursuing strategies and technologies that minimize resource use and maximize renewable energy opportunities.

Paladino worked with PNC and the integrated design team to identify key performance indicators for each pillar, develop sustainability approaches, and articulate design criteria. This interactive process of setting goals, establishing criteria, and then validating the building's performance through concrete indicators created a dynamic relationship between the building, the occupants, and the community.

Paladino assisted PNC with RFP development and bid reviews, provided technical analysis and peer review of design team analyses, and managed the Tower's application for LEED Platinum certification.



Building Design

The Tower at PNC Plaza design addresses performance metrics for each of the three pillars.

Community Builder: Throughout the development process, PNC remained aware of its effect on the local community. About 2,500 temporary construction jobs were created as a result of this project, and nearly 20 percent of the tower's construction budget went to women- and minority-owned contractors. Moreover, similar to PNC's other Pittsburgh-based construction projects, PNC has noticed a domino effect in which its investment has led to other nearby façade renovations and new construction.

Workplace Innovator: One of the Tower's more innovative features is its breathable, occupiable double-skin facade. The exterior wall features a series of air gates that open automatically to vent the 36-inch deep façade cavity and admit outside air into the Tower. The interior wall has automatic louvers for natural ventilation and manually operated doors that allow occupants to "step outside" for fresh air on any floor. PNC promises to provide daylight and natural air for everyone, and the ventilation strategy exemplifies the company's assertion that every high-rise should include innovative, high performance design at a large scale. This advanced technology meets the criteria of all three pillars – it contributes to the Pittsburgh skyline and city's future; provides building occupants with fresh air to support a healthy workplace; and is highly energy efficient.

Energy Responder: The design integrates passive design strategies and systems. To maximize daylighting, the building's tower is shifted from the podium and street grid for optimum solar exposure. A double-walled breathable façade provides a thermal buffer while allowing air to pass through, and a narrow floor plate permits maximum daylight penetration. A solar chimney—a vertical shaft with a rooftop solar collection panel—creates an updraft that draws cool outside air through the skin, across the floors, and up and out of the building without expending fan energy.

Further, the design team analyzed the content, origin, and embodied energy/carbon of materials to select specific building materials. For instance PNC committed to using local materials, so recycled-content Pittsburgh steel was the obvious choice for the base structure. The team used advanced aerodynamic studies to design the top of the

The Tower at PNC Plaza – the world’s greenest office tower

tower to let wind pass through, and reduced the total steel needed. For the inner façade of the double skin, the team selected local red maple in lieu of recycled aluminum, which reduced embodied energy by 85% while imparting warmth to the building’s interior.



Technology and Features

Double-Skin Façade: The Tower at PNC Plaza’s most innovative green technology is its double-skin façade, which is the country’s only fully-automated double-skin façade that is part of a solar-assisted natural ventilation system.

Solar Chimney: The largest in a modern office building in the US, the solar chimney and double-skin façade creates a cycle in which fresh air enters the building, naturally warms, rises through the shafts, and exits at the roof skylight.

Workplace Amenities: The Tower offers occupants “living rooms,” collaborative spaces, outdoor terraces, observation decks, and an indoor park on the 28th floor. A cafeteria provides seating for more than 250 employees.

Blinds and Lighting: Blinds with automated controls prevent glare, help control indoor temperature and ensure that employees have sufficient lighting at their workspace.

Energy Recovery Wheel: Depending on the season, the energy recovery wheel efficiently humidifies or de-humidifies and heats or cools air before it enters the building.

Radiant Floors: To efficiently maintain interior comfort in large spaces, the Tower’s lobby and indoor park feature a radiant floor that both heats and cools. Warm or cool water is supplied in tubes embedded in the concrete floor.

The Beacon: An iconic sculptural installation located in the tower lobby that uses real-time data to visualize the building’s performance.

Results

The building achieved LEED Platinum certification in fall 2015, and officially opened in October 2015 to approximately 2,000 employees who moved from PNC’s other local office buildings. The tower operates close to net-zero during Pittsburgh’s moderate spring and fall months, while achieving a 50 percent reduction in energy use overall. This represents approximately 7,083 metric tons of CO₂ each year, and an estimated 92,079 metric tons by the year 2030. To accomplish a similar amount of greenhouse gas reduction, 213,182 barrels of oil would have to be kept underground over the next 13 years, or 87,162 acres of forests would need to be planted.