

SHOWCASE PROJECT: THE TOWER COMPANIES: THE PEARL

SOLUTION OVERVIEW

The Pearl is a multifamily building owned and managed by The Tower Companies in Silver Spring, Maryland, a suburb of Washington, D.C. The property is a mix of 284 residential studio, 1-, 2-, and 3-bedroom apartment units. The Tower Companies placed an emphasis on sustainability and resident health and wellness in the building's design. The building features a variety of energy and water saving components such as a solar PV array uniquely integrated into a 1,250-square-foot vegetated green roof, as well as efficient lighting and appliances. The Pearl is also the first Fitwel certified multifamily building in the world, delivering a unique living experience for its residents through its health and wellness features and programs.

The Tower Companies finished their first rooftop solar PV project on a commercial office building in late 2014, which was, at the time, the largest solar array on a privately-owned multi-tenant commercial office building in Washington, D.C. After building confidence and understanding the process for installing and owning a solar PV system, the Tower team spent the following year doing building assessments to determine the next viable solar PV project, and determined that The Pearl would be the best option despite construction being over 50 percent complete.

SECTOR TYPE

Commercial

LOCATION

Silver Spring, Maryland

PROJECT SIZE

391,615 square feet (includes 74,182 sq. ft. garage)

SOLUTIONS

The Tower Companies partnered with Prospect Solar, a local provider of solar energy systems, to install a 3.4 kW solar PV system on the roof of The Pearl and integrate it with their green roof. The 12 280-W American-made panels are designed to generate enough power to offset nearly 1 percent of the common area electricity load annually and can be monitored in real-time using an online dashboard. In 2018, the first full year of operation, the solar PV system generated nearly 4,000 kWh. This project is estimated to have a simple after-tax payback of approximately five years with a 75 percent return in just two years after considering electricity avoidance, Washington, D.C. solar renewable energy certificates (SREC), the 30 percent federal investment tax credit (ITC), and accelerated depreciation tax benefits. Although this building is located in Maryland, it was eligible for

D.C. SRECs because it is fed from D.C. feeder lines.

In addition to the rooftop solar installation, The Pearl features:

- Energy- and water-efficient appliances and fixtures
- Lighting and HVAC controls including Nest Thermostats for penthouse level
- 15 and 16 SEER heat pumps
- 4 Electric Vehicle (EV) charging stations
- An additional 5,000 square feet of green roof that can hold over 5,000 gallons during a rain event
- High-efficiency drip irrigation systems reducing potable water consumption by over 60 percent
- A robust recycling and [composting program](#)

These features helped The Pearl achieve LEED Gold certification in 2017.

Solar PV had been discussed in the building's design phase, but a certain amount of green roof space was necessary to meet strict stormwater management requirements and at the time, the design team did not think it was going to be possible to accomplish both and get required permit approvals. After further investigation and several months of research and due diligence, a racking solution was identified that would allow for solar PV without losing green roof square footage.

Another goal of the project was to complete a "demo" installation to understand the process and challenges at a small scale, so that Tower and others in the industry could take advantage of lessons learned and be equipped to implement an integrated green roof and solar PV rooftop project at a larger scale. The cost of the project was approximately \$14,000 for design, procurement, and installation. This does not include any additional consulting fees needed for stormwater management calculations and county approval. The cost per watt was approximately \$4.00 in 2016, which is higher than a typical solar PV rooftop project, however the team understood that there was a premium for the unique racking system and completing a "first time" installation.

Following best practices, The Tower Companies pursued rebates and incentives to create the business case for energy and sustainability at The Pearl. Beyond the benefits described above, Tower received over \$200,000 as an engaged partner of Pepco's Comprehensive Design Support for New Construction Program. This program included design support and guidance related to work on energy modeling, lighting, commissioning, heat pumps, and efficient appliances to yield a more efficient and thoughtful design. In addition, for achieving LEED Gold Certification, The Pearl earned a 5-year 25 percent property tax credit as part of Montgomery County, Maryland's Green Building Property Tax Credit program.

OTHER BENEFITS

In 2018, the U.S. Green Building Council, National Capital Region designated The Pearl as the Best Health & Wellness Project in the DMV for its exemplary commitment to its residents' wellbeing. The Pearl also received the Center for Active Design's Best in Building Health Award for achieving the highest multifamily residential Fitwel score in 2018.

The building's health and wellness features provide numerous benefits for residents. With a focus on natural daylight and views in over 90 percent of occupied areas, The Pearl has over 30,000 square feet of open space in addition to the building amenity spaces. Additional health and wellness features at The Pearl include:

- 2-acre park onsite with outdoor fitness equipment and playground for children
- Floating 2nd story fitness center
- Tobacco, smoke, and vapor free community
- Signage and design elements to promote stairwell usage
- Indoor air quality policy and annual assessments
- Secure and covered bike room with over 100 racks
- Green cleaning policy
- Integrated pest management policy
- A 5,000-square-foot Urban Farm to share fresh vegetables with residents and for use during healthy cooking demonstrations

Fitwel is a building rating system administered by the Center for Active Design (CFAD) that fosters positive impacts on occupant health and wellbeing through improvements to building design and operations. Developed by experts in public health and design, including the U.S. Centers for Disease Control and Prevention (CDC) and the General Services Administration (GSA), Fitwel is a cost effective, high-impact, and evidence-based building certification system.

The Tower Companies also includes green requirements and guidelines in their residential leases at The Pearl, making it the first multifamily green lease for the organization. Tower used its existing commercial green lease as a foundation and crafted the language to fit the needs of a multifamily property. Elements of the lease include interior lighting efficiency standards, temperature range guidelines, encouragement for use of ENERGY STAR® appliances, utility data sharing, and more. So far residents and leasing agents have embraced the provisions of the green lease. More information about The Tower Companies green leasing practices can be found in the Green Lease Leaders report [Using the Lease to Make Buildings More Healthy and Efficient](#).

Annual Energy Use

BaselineASHRAE 90.1
2007()

17,500,000 kBtu

Actual()

10,788,834 kBtu

Energy Savings

38%

Annual Energy Cost

Cost Savings



The Pearl exterior



Solar racking system



Lobby



Green roof