



SHOWCASE PROJECT: DISTRICT OF COLUMBIA HOUSING AUTHORITY: FORT LINCOLN

SOLUTION OVERVIEW

Fort Lincoln is a mid-rise development located in Washington DC's Ward 5, an area that is rich in both diversity and historical value. Built by the District of Columbia Housing Authority (DCHA) in 1971, Fort Lincoln has 120 residential units, including a mix of efficiency and one-bedroom apartments, all of which are dedicated to senior residents and those living with a disability.

Due to the advanced age of its HVAC and electrical systems over the years, by the early 2000s Fort Lincoln showed low levels of energy efficiency impacting the comfort of its residents and the operability of its systems.

SECTOR TYPE

Multifamily

LOCATION

Washington, District Of Columbia

PROJECT SIZE

62,664 Square Feet

FINANCIAL OVERVIEW

Project Cost \$2,500,000

SOLUTIONS

Under DCHA's Energy Capital Improvement Program (ECIP I and ECIP II), the building has undergone two phases of modernization. The first phase was completed in 2006, and involved replacement of fluorescent lighting, fan coil units, water efficiency measures, and replacement of other inefficient equipment. The most recent and impactful improvements were completed in 2020, including several energy efficiency improvements including a new air conditioning chiller, new boilers, new domestic hot water systems, new high efficiency system pumps, a building automation system, and the installation of a 120 kW solar photovoltaic system.

DCHA has partnered with ThinkBox Group since 2005 to perform substantive modernization work across its portfolio through the ECIP. Covering multiple properties, the program focuses on building

system improvements to increase energy and water savings and improve the standard of living for residents. The program's goals include incorporating sustainable energy and high efficiency equipment to reduce carbon emissions, as well as returning cost savings to the residents through a Sustainable Communities Program.

The DCHA Energy Capital Improvement Program Phase 2 (ECIP 2) is an \$87 Million self-performed energy performance contract utilizing HUD's [Frozen Rolling Base](#) energy incentive to fund capital improvements in 30 properties impacting over 4,900 units. This 20-year incentive started in 2009.

Construction at Fort Lincoln was completed in 2020 and included the following upgrades:

- 100% LED lighting in units, common areas, and exterior fixtures
- High efficiency condensing boilers
- Variable Frequency Drives (VFDs) and controls
- Magnetic Bearing Centrifugal chillers
- Building Automation System
- Low-flow showerheads
- Low-flow aerators in faucets
- Toilets and leak detectors
- 120 kW solar photovoltaic system

The total capital investment at Fort Lincoln for this second phase of modernization was \$2.5 million, which includes a \$557,000 DOE Solar-For-All grant for the installation of the Solar PV system. DCSEU (District of Columbia Sustainable Energy Utility) provided \$86,000 in energy efficiency rebates for lighting, cooling, and boiler installation.

OTHER BENEFITS

Along with the capital improvements to the building, as part of this second phase of modernization DCHA implemented a prescriptive maintenance program. The program consists of a data analytics-driven maintenance program, monitoring system performance in real time to predict equipment failure before it happens. This drastically improves the system uptime, reduces operation costs, and assures resident comfort.

The solar PV system has generated \$59,000 in solar renewable energy credits to date, which helps fund the DCHA Solar-for-All Resident Engagement program. This program provided job-training for 58 DC residents in solar PV installation through WDC Solar.

Annual Energy Use

(Source EUI)

Baseline(2018)



Actual(2021)



Energy Savings

31%

Annual Energy Cost

Baseline(2018)



Actual(2021)



Cost Savings

\$54,196



Front Façade of Fort Lincoln



Fort Lincoln, South view