



CASE STUDY

Stead Park Recreation Center: Historic Preservation meets Modern Energy

1625 P Street NW

Stead Park Recreation Center is a transformative project that preserves an 1888 carriage house and incorporates cutting-edge sustainable design, making it Washington, D.C.'s first net-zero-ready community center. The project comprises 1,700 square feet of historic restoration and 10,000 square feet of new construction. Built for high performance, the building's Energy Use Intensity (EUI) dropped from a baseline of 73 to 30 kBtu/ft²/yr in 2024, with a site EUI of 36.1 as of 2026, based on building energy performance data.

The project's success stemmed from early commitment to net-zero-ready goals, comprehensive energy modeling, collaborative design among architects, engineers, and contractors, and thorough commissioning. The planning process featured deeper community involvement, intensive modeling, and careful coordination between historic preservation and energy goals. The resulting building offers numerous benefits beyond energy savings, including improved indoor air quality, lower operating costs, greater resilience, positive public perception, and a revitalized community space. It reduces greenhouse gas emissions by 30 metric tons annually and sets a standard for future high-performance public buildings in D.C. By combining historic preservation with advanced sustainability features, the Stead Park Recreation Center raises the bar for civic architecture and reflects the District's dedication to healthier, more efficient, and resilient community infrastructure.

Key Stats

Size
11,700 square feet

Budget
\$11,200,000

Completion
2024

Awards

AIA DC
Citation for Design for
Integration

AIA Virginia
Design Award of Honor

AIA Central Virginia
Design Award of Merit

Net-Zero-Ready and Energy Efficiency Features

Net-zero ready design

LEED Gold

High-performance
envelope

Geothermal HVAC system

All-electric space and
water heating

85 kW photovoltaic
system with anticipated
generation of 138 MWh/
year - rooftop and canopy

DOAS with energy
recovery

Occupancy-based lighting
and HVAC controls

Daylight-responsive
lighting

Demand-controlled
ventilation

BMS-enabled
optimization

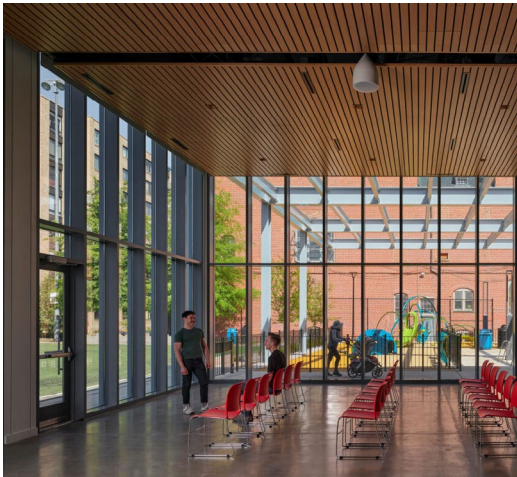
Site EUI
36.1

Source EUI
101.2

**Total GHG emissions
reduction**
33.7 Metric Tons CO₂e



The building features a high-performance envelope with optimized insulation and airtight construction, verified by multiple pressure tests. A geothermal system with 16 wells drilled 400 feet below the splash pad provides efficient, all-electric heating and cooling. Daylight-responsive LEDs, occupancy controls, demand-controlled ventilation, and energy recovery systems further optimize energy use and occupant wellness. To maximize on-site renewable energy generation while providing shaded outdoor space, the project includes infrastructure for a solar PV array that extends beyond the roof to create a community space. To address the minimal export allowance, the PV owner will install modular batteries, Yotta Blocks (1kVa capacity per battery block), charged by surplus PV generation and depleted at night, essentially load shifting to minimize the need for PV curtailment. Targeting LEED Gold, the project earned the 2024 AIA Virginia Design Award of Honor.



Meeting these performance goals involved overcoming challenges such as balancing historic preservation with modern systems and planning geothermal wells within strict site constraints. Focused on occupant health, the design incorporates increased ventilation, MERV 13 filters, DOAS technology, CO₂ and humidity sensors, and bipolar ionization to improve air quality. These measures maintain CO₂ levels between 800 and 1,000 ppm, supporting comfort and cognitive function. Notably, mechanical spaces occupy only 5% of the footprint, preserving valuable program space and avoiding rooftop equipment that could hinder sustainability efforts. Multiple envelope pressure tests identified opportunities to improve airtightness and performance, and early, iterative energy modeling informed design decisions.

Project Team

Architect

VMDO Architects

Mechanical Engineer

CMTA

**Electrical and
Plumbing Engineer**

Engenium Group

Structural Engineer

Silman

Civil Engineer

Wiles Mensch

Landscape Architect

MKSK, Inc.

Owner

Department of General
Services

Public Partners

Department of Parks and
Recreation

Commission of Fine Arts

Contractor

GCS Sigal

Photographer

Tom Holdsworth

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