

SUSTAINABLE CPC: A STUDY IN SAVINGS

A Deep Dive on Financing Electrification and Energy Efficiency

This case study examines the complex capital stack of a 60-unit, all-electric new construction project in upstate New York and considers how existing federal tax credits could play a role in how it has been financed.



BUILDING PROFILE

New Construction

Size: 3 Buildings, 4 Stories, 60 Units, 159 Rooms, 64,610 Gross Square Feet

HVAC: Air Source Heat Pumps, Heat Pump Hot Water Heaters

Utilities Provided by Owner: Heat, Hot Water, Electric, Water & Sewer, Internet

Certifications and Incentives: EGC 2020 Plus, HCR Clean Energy Initiative (CEI)

Affordability: Affordable to individuals or households earning at or below 60% AMI

CPC Loan Offering: \$14.3 million construction loan

Total Development Cost: \$27.3 million

This apartment complex has chosen an all-electric design for heating, cooling, and domestic hot water and is pursuing a NYS Homes and Community Renewal Agency (HCR) Stretch Goal. The project is exceeding baseline requirements, helping to set the precedent for future standards. Upon completion, the site will feature solar arrays, EV charging on-site, community spaces and modern amenities, and transportation services for residents.

SCOPE OF WORK

- High efficiency, ducted air source heat pumps for space heating and cooling
- Central heat pump water heaters for domestic hot water
- Solar arrays on-site producing 76,950 kWh/year, becoming carbon neutral after three years of use
- ERV installation for fresh air intake
- Duct and piping insulation
- Dual station electric vehicle charging stations on-site
- Units sealed for airtightness
- Insulated walls (R-21) and ceilings (R-38)
- High efficiency, electric appliances throughout
- High efficiency, ENERGY-STAR rated LED lighting throughout
- Low-flow plumbing fixtures in bathrooms and kitchens
- ENERGY STAR ceiling mount ventilating exhaust fan

SAVINGS SNAPSHOT

Below, we look at how this building's projected energy consumption and cost compares to the performance of a HERS reference project – a baseline theoretical model home that meets the energy requirements of the 2006 IECC.

HERS REFERENCE PROJECT			PROJECTED ENERGY USE		SAVINGS	
Consumption		Cost	Consumption	Cost	Consumption	Cost
Total Electricity/Unit (kwh/yr)	9,982	\$1,302	4,906	\$616	51%	53%

FURTHER SAVINGS WITH SOLAR

Solar panels can be mounted onto rooftops or integrated into building facades, capturing sunlight and converting it into electricity and, therefore, minimizing on-site combustion and reducing utility costs. Through the installation of solar panels, the building site will produce an additional 76,950 kwh/year (26% of owner-paid electrical load), saving an estimated \$6,156/year.

FUNDING SOURCES

Examining this capital stack reveals the many diverse and complex funding sources required to develop an all-electric affordable housing project. Incorporating numerous sustainable scope items alongside the all-electric heating systems, this building is at the leading edge of sustainable projects. However, the quantity in funding sources reveals that it can be difficult to finance this level of performance. During construction, the project will benefit from the following sources:

CPC Construction Loan.....	\$14,316,875
Low Income Housing Tax Credit Equity (LIHTC).....	\$5,613,571
NYC Office of Temporary and Disability Assistance Homeless Assistance Program (HHAP)	\$3499,650
Schenectady Metroplex	\$525,000
Capital Region Land Bank	\$200,000
Other Sources	\$3,807,616
Total	\$27,322,712

This project takes advantage of NYS programs for affordable housing, but this reveals that it would be even more difficult to finance a similar, market-rate project. The LIHTC and HHAP subsidy sources make this project possible, incentivizing this work in affordable housing. However, what would this look like as a market-rate project? What federal incentives could an owner also take advantage of?

MAXIMIZING CAPITAL OPPORTUNITIES THROUGH THE INFLATION REDUCTION ACT

Many sources of funding have been pulled together to finance this project – how might existing federal tax credits make it easier to finance projects like this one? The section below considers what this scope would be eligible for through the IRA tax credits:

TAX CREDIT	POTENTIAL IMPACT ON THIS BUILDING
Section 48 Clean Electricity Investment Tax Credit: Tax credit totaling 30% (if wage and apprenticeship conditions are met) of the cost of qualifying clean energy systems, including solar arrays, plus an additional 10% for projects serving low-income communities.	Because this is not a prevailing wage project, this building would receive a one-time credit of \$120,000, which would increase to \$240,000 if the project participated in the DOE Zero Energy Homes Program. <ul style="list-style-type: none"> Through 45L, credit is taken by the contractor in the tax year that the building was acquired 45L does not include direct pay or transfer provisions, but is now available for use with LIHTC projects without reducing LIHTC basis, increasing its value for affordable housing
Section 45L New Energy Efficient Homes Credit: Tax credit of up to \$2,500 per unit for buildings or homes that meet the Energy Star Multifamily New Construction program requirements and up to \$5,000 per unit for homes certified as a zero-energy ready home by the DOE (respective \$500/\$1000 reduction if prevailing wage conditions are not met).	This project would be eligible for a one-time credit of \$66,900 (the total cost of the solar array on-site is \$223,000), plus an additional \$6,690 as the project site meets the IRS' definition of a low-income community. <ul style="list-style-type: none"> Because the owner is a non-profit entity, direct pay is available even without tax liability Wage and apprenticeship provisions are not applicable because the project is smaller than 1MW

These two credits are most accessible to obtain and significantly contribute to offsetting a portion of the sustainability scope. Together, these federal tax credits equal \$193,590 (\$313,590 if attaining DOE certification), resembling one of the smaller sources in the project's capital stack. In addition, if you have conducted an energy model of your building against the latest ASHRAE standard, you would be eligible for the 179D tax deduction of \$0.50 per square foot for a building with 25% energy savings plus an additional \$0.02 per square foot for each percentage point of energy savings above 25%, up to a maximum of \$1.00 per square foot with 50% energy savings.

An in-depth analysis of this project uncovers a strong correlation between high sustainability standards, significant energy savings, and the need to access numerous funding sources. Given the complexity of assembling a capital stack, this case study highlights the crucial role of federal tax incentives as gap-fillers, particularly for market-rate projects, for sustainability scope items. Ultimately, this affirms the importance of strategic financial planning and access to diverse financing resources to achieve sustainable, high-performance goals.