Community Preservation Corporation

Leveraging Lending Tools for Retrofit Feasibility Screening and Avoided Emissions Calculations

May 6th, 2025

WELCOME AND INTRODUCTION

DANIELLE DONNELLY

AVP, Sustainability Programs and CFHF

CPC

IZZY NESCI

Sustainability Associate

CPC

TODAY'S AGENDA

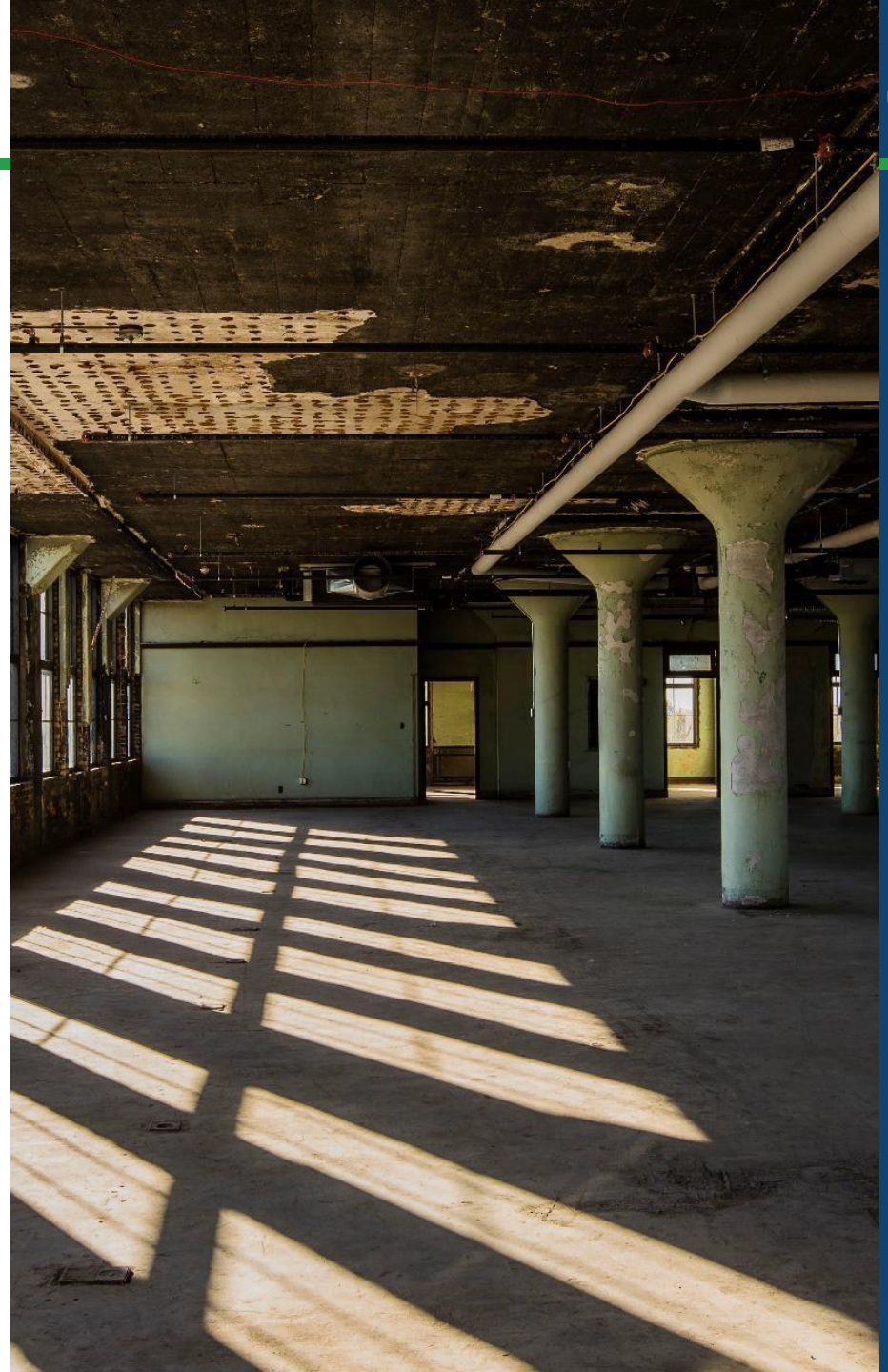
Welcome and Introduction	**Danielle Donnelly and Izzy Nesci**, Assistant Vice President of Sustainability Programs and Sustainability Associate, Community Preservation Corporation
The Development of VeriFi 2.0 for Green Underwriting	**Jonathan Braman**, EVP, Strategic Initiatives, Bright Power
New Use Case: Feasibility Screening for the Climate Friendly Homes Fund	**Jason Block,** Principal Mechanical Engineer, Cadence OneFive
New Use Case: Estimating Avoided Emissions	
Potential Next Steps	
Open Q&A	

MISSION-DRIVEN SINCE 1974

CPC believes housing is central to transforming underserved neighborhoods into thriving and vibrant communities.

CPC is a nonprofit affordable housing and community revitalization finance company providing flexible capital solutions, fresh thinking and a collaborative approach to the complex issues facing communities.

Our goal is to be more than just a lender. At CPC, we work as a partner to provide technical expertise and hands-on support to help meet the capital needs and broader community revitalization goals of our customers, local stakeholders and the communities we serve.



Adaptive Reuse
500 Seneca Street
Buffalo, NY

INVESTING IN OUR MISSION

CPC believes housing is central to transforming underserved neighborhoods into thriving communities. Today, CPC uses its unique expertise in housing finance and public policy to:

Expand housing access and seek new ways to lower the cost of producing affordable housing

Invest in closing the racial wealth gap, and increase diversity and equity in the development industry

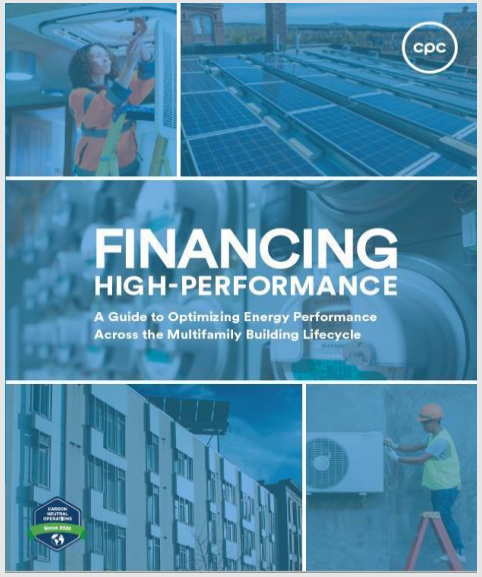
Commit to and expand investment in the green economy and lessen the impact of climate change

CPC SUSTAINABILITY

EDUCATION

Through its sustainability initiative, CPC has engaged partners, clients, and peers to provide important information about local and state policy, underwriting strategies, and financing opportunities for buildings incorporating energy efficiency.

CPC has conducted trainings and webinars to bring "underwriting savings" to a broader lending audience, published a white paper on Passive House performance, and convened a summit to address New York's shift to a carbon neutral economy.



Financing High-Performance Guide, 2020

1

CREATING CAPITAL SOLUTIONS

CPC pioneered the "underwriting savings" approach and cemented the methodology with the release of Underwriting Efficiency guide.

Following the creation of its sustainability initiative, CPC has continued to explore creative ways to finance energy efficiency and high-performance building measures and bring these practices to the forefront of affordable housing development.

Capital Solutions for High-Performance Construction, Troy, NY

2

DATA & TRACKING

The backbone of CPC's sustainability initiative is the impressive portfolio of loans that employ one or more Sustainability Criteria.

Tracking these loans, tagging the completed criteria, and benchmarking performance allow us to analyze long term performance and improve our lending practices.

Information from CPC's sustainability portfolio has helped our private and public partners to innovate and inform policy decisions and state funded programs.

Electric Metering from Financing High-Performance, 2020

3

CARBON NEUTRAL OPERATIONS
Since 2020

BUILDING PERFORMANCE WEBINAR SERIES

- Through our building performance webinar series, CPC provides important information about local and statepolicy, underwriting strategies, and financing opportunities for buildings incorporating energy efficiency

WEBINAR

Ground-Source Heat Pumps: Successful Applications and Opportunities for Expansion

WEBINAR

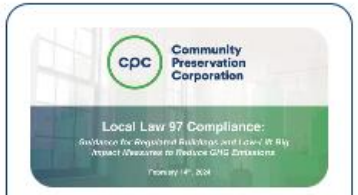
The Climate Friendly Homes Fund: Lessons Learned

WEBINAR

Heat Pumps in Your Home: Installation Dos and Don'ts to Improve Performance

WEBINAR

Electrifying Transit: Accessible EV Charging for Multifamily Renters and Owners



WEBINAR

Local Law 97 Compliance: Guidance for Regulated Buildings and Low-Lift Big Impact Measures to Reduce GHG Emissions

WEBINAR

Optimizing Energy Efficiency in Large Multifamily Buildings

WEBINAR

Finding Opportunity in a High Interest Rate Environment

WEBINAR

Climate Friendly Homes Fund Info Session

WELCOME AND INTRODUCTION

JONATHAN BRAMAN

EVP, Strategic Initiatives

Bright Power

JASON BLOCK

Principal Mechanical Engineer

Cadence OneFive

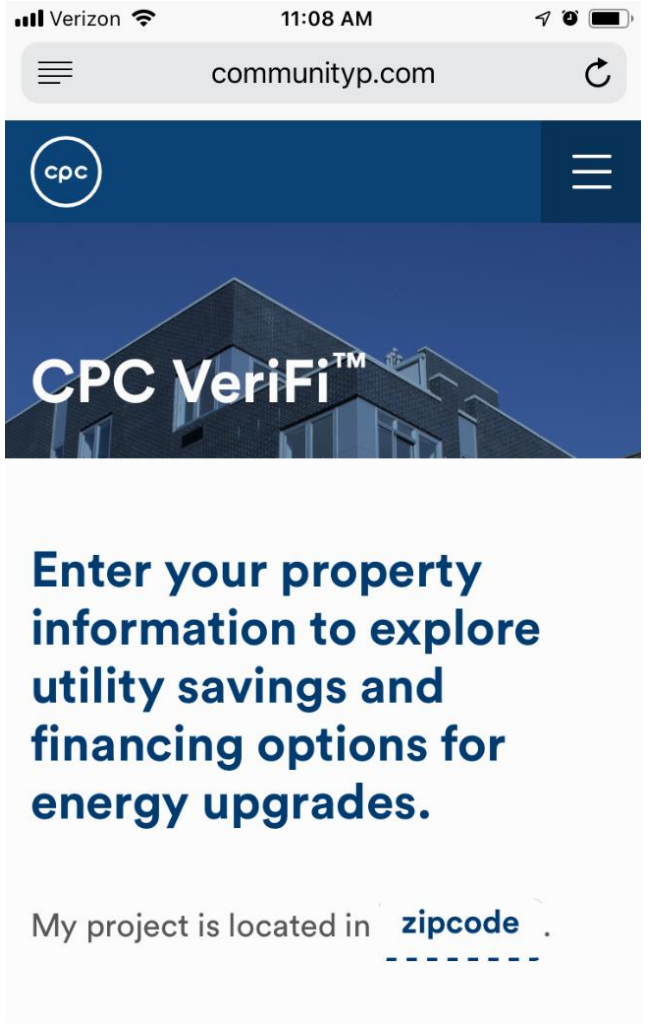
The Development of VeriFi 2.0 and Intended Use Case

VERIFI 1.0

Using data collected from thousands of multifamily buildings, CPC VeriFi calculates opportunities for cost savings driven by energy and water upgrades and improvements.

Visit CPCVeriFi.com to access:

- A scope of work to guide energy and water efficiency measures.
- Capital to finance simple, moderate, and substantial retrofits.
- Customized utility cost savings.

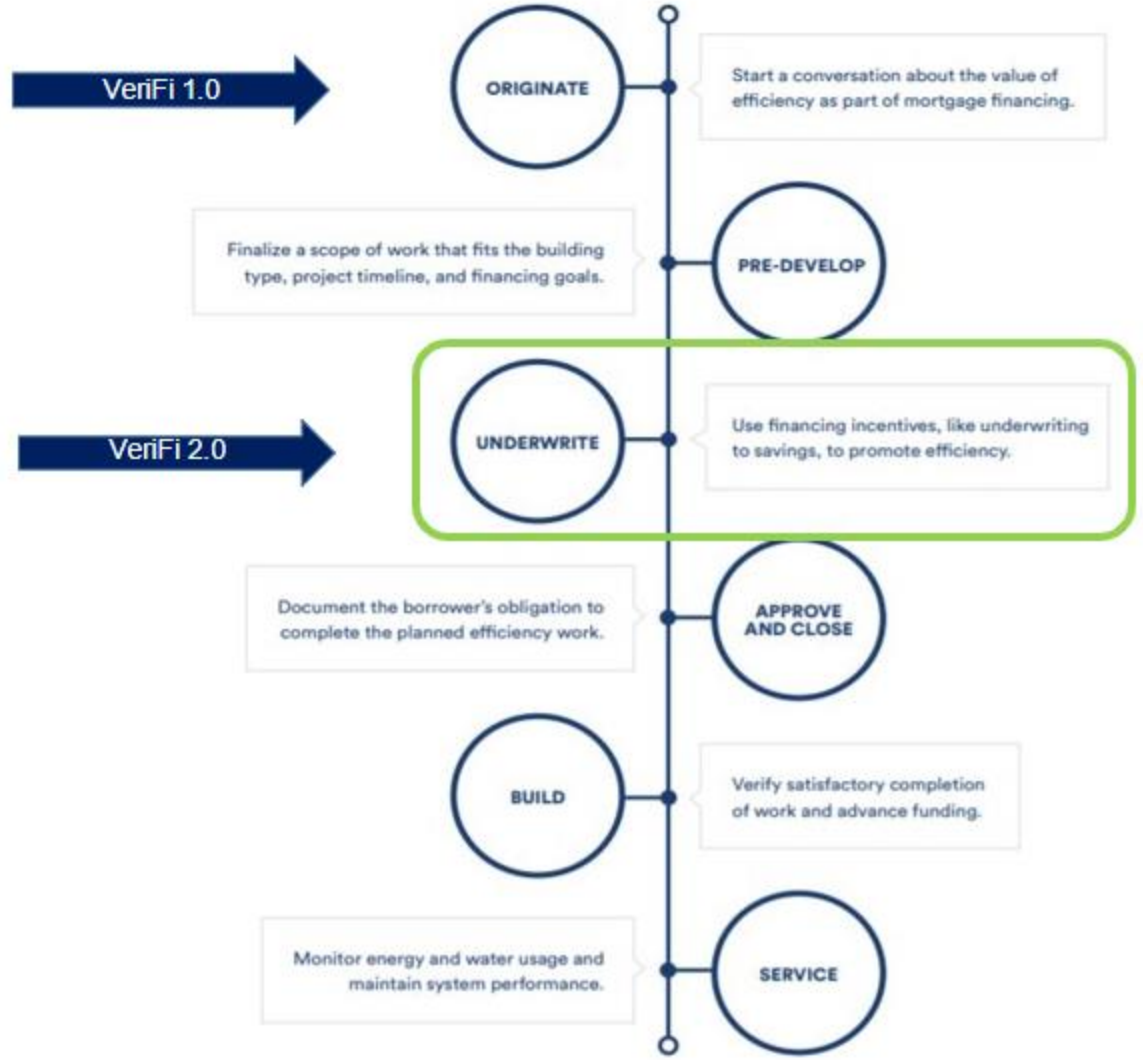


GOALS OF VERIFI 2.0 (BETA)

Create a tool for use **by underwriters and developers** to produce **typical utility expenses** according to basic building characteristics associated with different standards of energy efficiency to provide **better insight into the expected operating expenses of green projects**.

- Estimates are intended to help **underwrite different levels of energy efficiency**.
- Estimates should **be based on real data and experience**, but need not be precise and will include statistical confidence based on the available sample of buildings for comparison.
- Comps are anonymously displayed to showcase **a range of actual energy consumption** for similar properties in the database.

UNDERWRITING ENERGY EFFICIENCY



CPC VeriFi 2.0 will provide reliable utility expense estimates and comps to make underwriting green deals easier and more accurate.

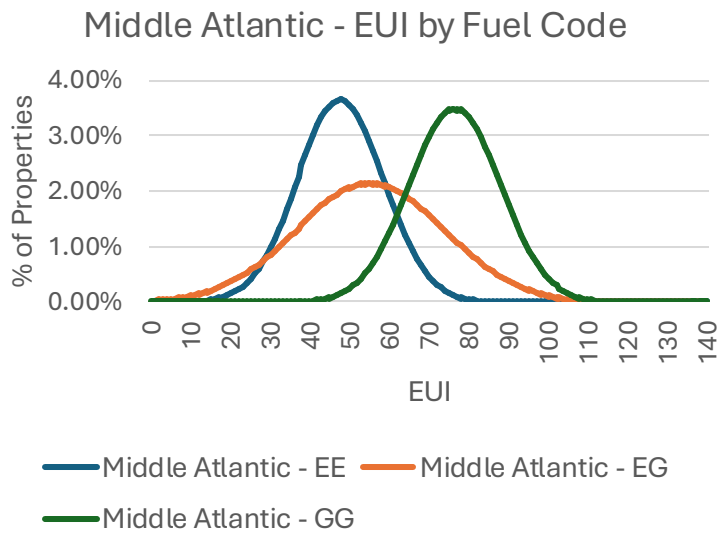
How does the data model work?

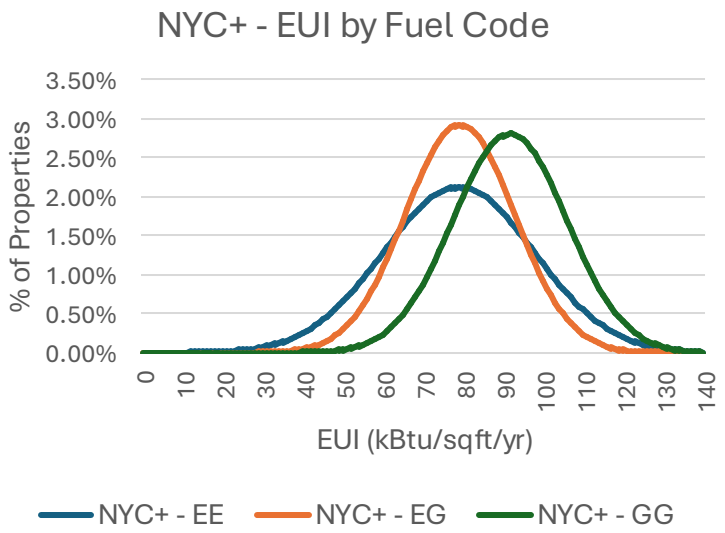
- Energy consumption estimates are based on whole-building energy consumption data from nearly 5,000 properties in EnergyScoreCards.
- Properties are segmented by region, heating and hot water fuels, and utility payers (resident vs owner) for in-unit electricity, cooling, heating, and hot water.

Region	Number of Properties
NYC+	3,538
Middle Atlantic	821
New England	370
Total	4,729

Energy Assessment – Multifamily Buildings in the Northeast

Assessed variations in EUI by heating/hot water fuels, metering, and vintage by region (NYC+, Middle Atlantic, New England)



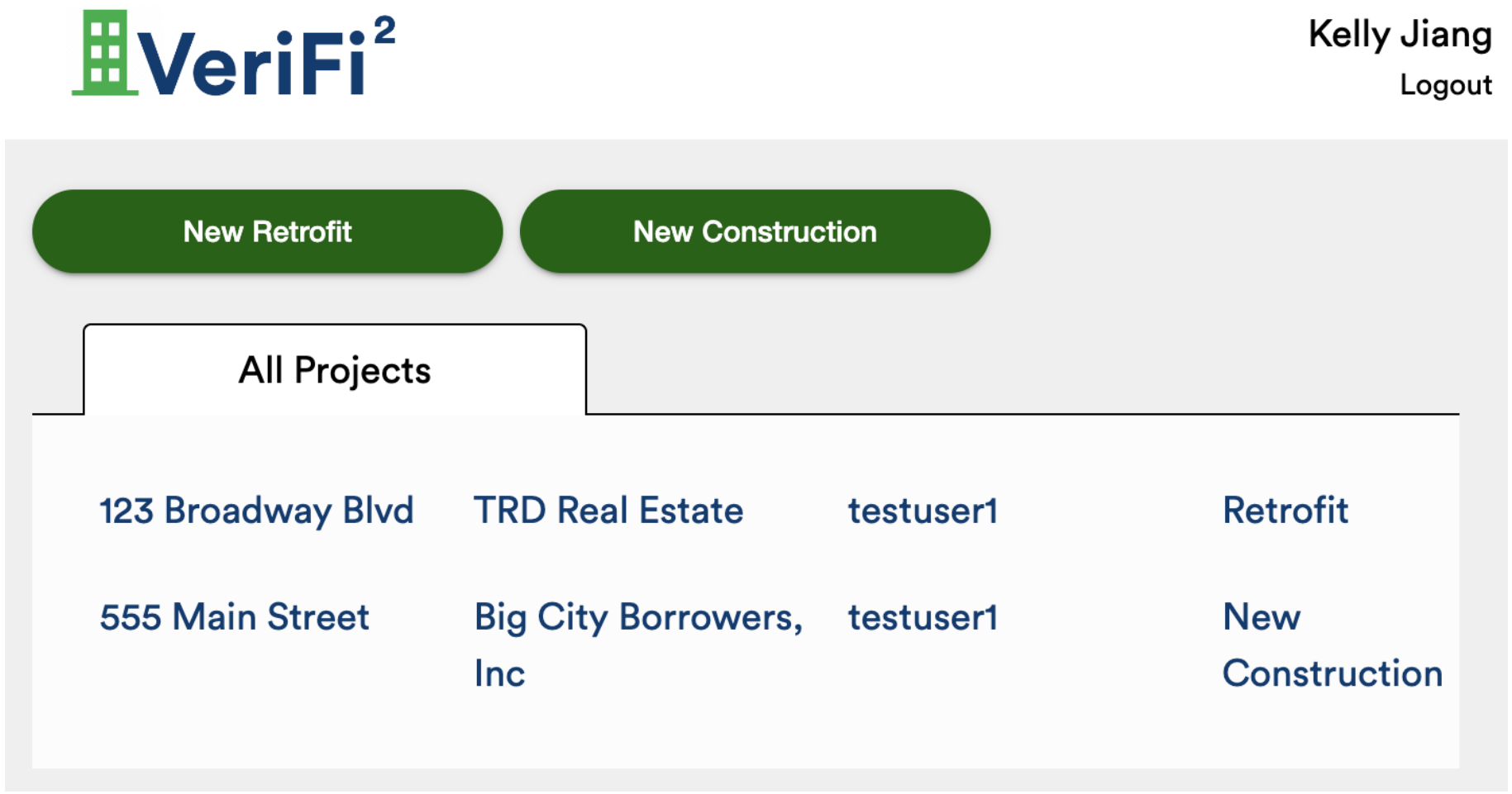


Fuel code legend:

- EE – electric heating, electric water heating
- EG – electric heating, gas water heating
- GG – gas heating, gas water heating

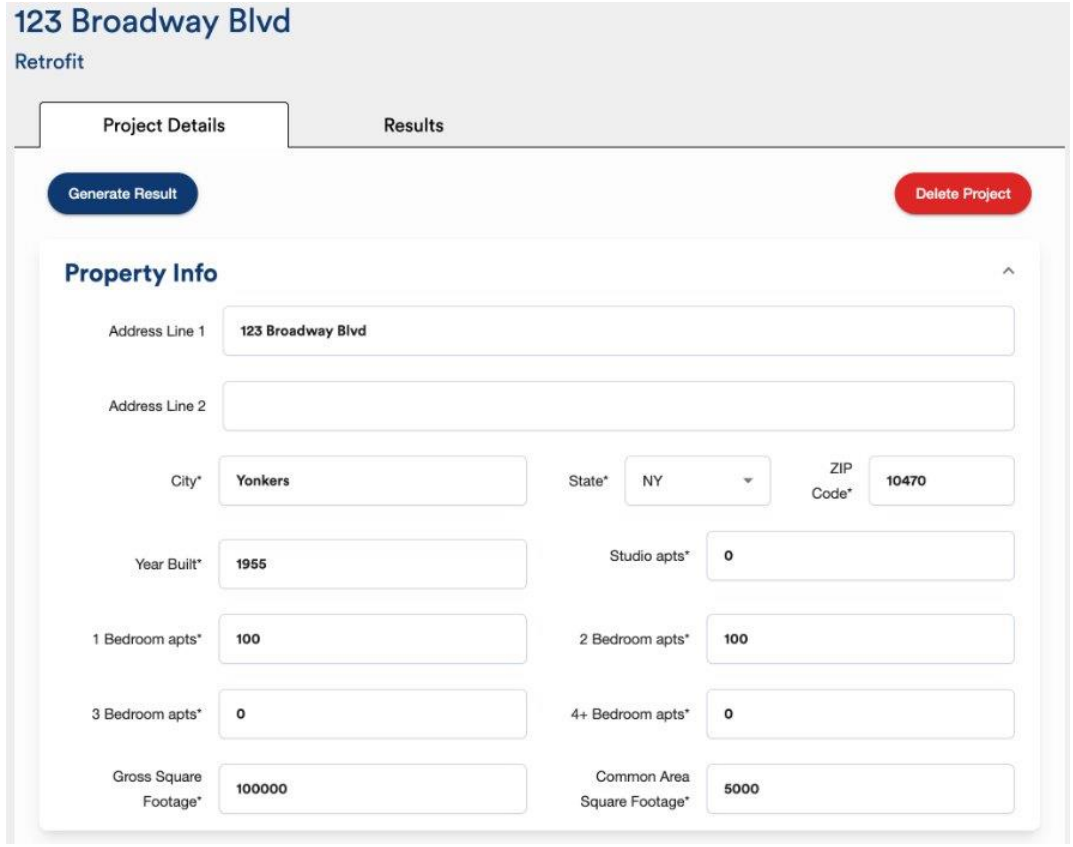
SOFTWARE OVERVIEW

Homepage

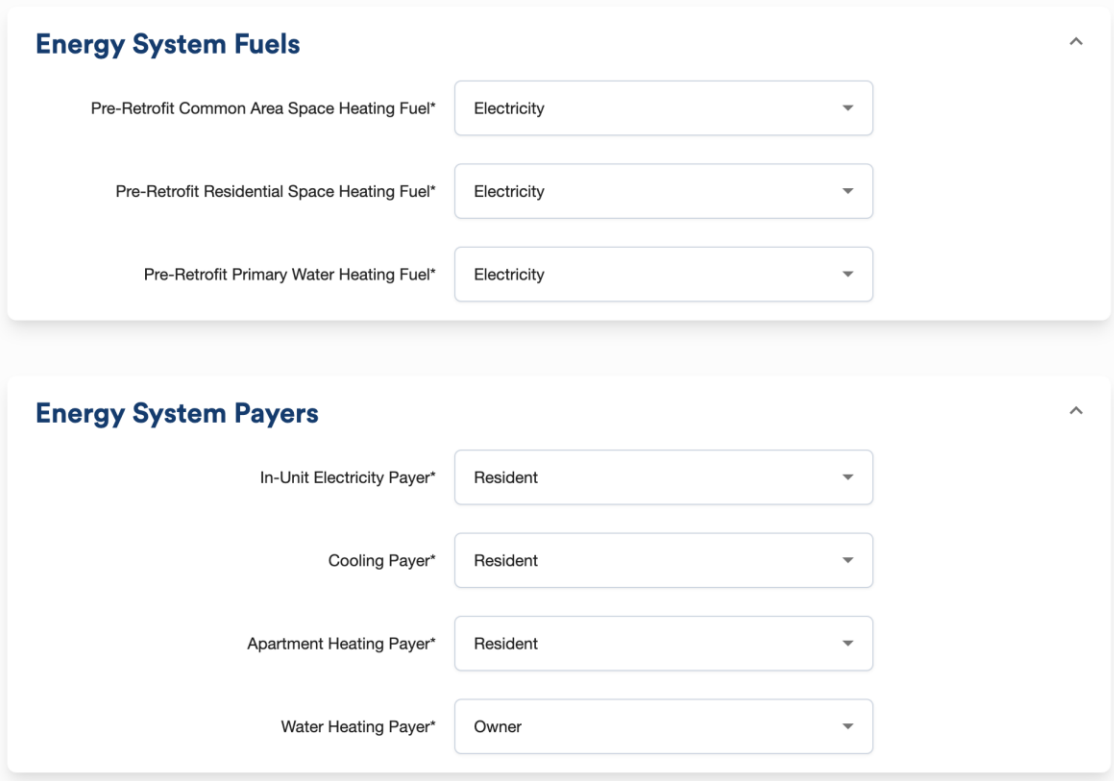


SOFTWARE OVERVIEW

Data inputs

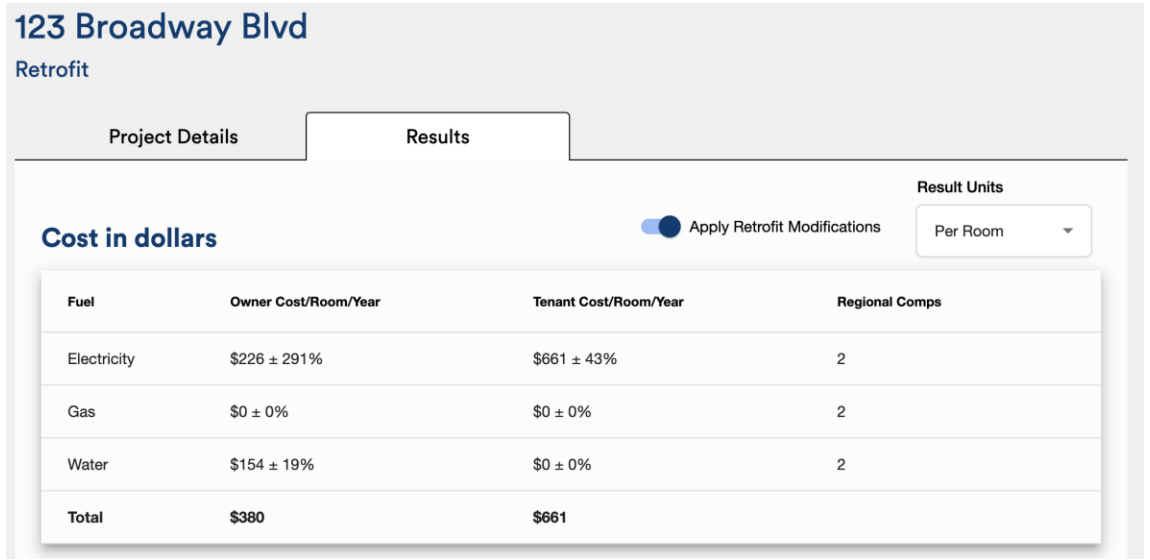


- Property info
- Energy system fuels
- Energy system payers



SOFTWARE OVERVIEW

Results



123 Broadway Blvd

Retrofit

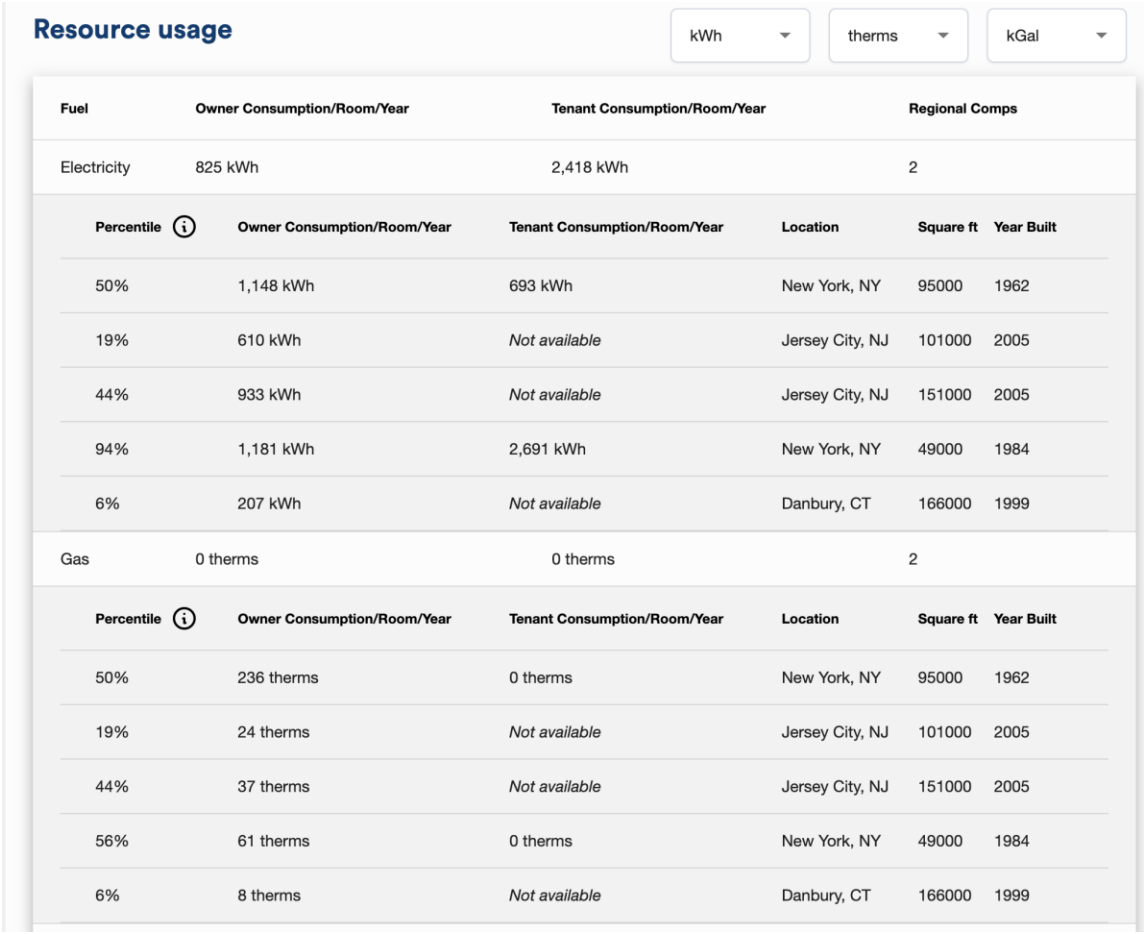
Project Details | Results

Result Units: Per Room

Apply Retrofit Modifications

Cost in dollars

Fuel	Owner Cost/Room/Year	Tenant Cost/Room/Year	Regional Comps
Electricity	$226 ± 291%	$661 ± 43%	2
Gas	$0 ± 0%	$0 ± 0%	2
Water	$154 ± 19%	$0 ± 0%	2
Total	**$380**	**$661**	



Resource usage

kWh | therms | kGal

Fuel	Owner Consumption/Room/Year	Tenant Consumption/Room/Year	Regional Comps
Electricity	825 kWh	2,418 kWh	2

Percentile	Owner Consumption/Room/Year	Tenant Consumption/Room/Year	Location	Square ft	Year Built
50%	1,148 kWh	693 kWh	New York, NY	95000	1962
19%	610 kWh	*Not available*	Jersey City, NJ	101000	2005
44%	933 kWh	*Not available*	Jersey City, NJ	151000	2005
94%	1,181 kWh	2,691 kWh	New York, NY	49000	1984
6%	207 kWh	*Not available*	Danbury, CT	166000	1999

Fuel	Owner Consumption/Room/Year	Tenant Consumption/Room/Year	Regional Comps
Gas	0 therms	0 therms	2

Percentile	Owner Consumption/Room/Year	Tenant Consumption/Room/Year	Location	Square ft	Year Built
50%	236 therms	0 therms	New York, NY	95000	1962
19%	24 therms	*Not available*	Jersey City, NJ	101000	2005
44%	37 therms	*Not available*	Jersey City, NJ	151000	2005
56%	61 therms	0 therms	New York, NY	49000	1984
6%	8 therms	*Not available*	Danbury, CT	166000	1999

- Estimated owner and tenant cost per fuel
- Actual fuel usage for selected comps

Audience Poll

Leveraging VeriFi 2.0 for CFHF Feasibility Screening

THE CLIMATE FRIENDLY HOMES FUND (CFHF) OVERVIEW

As part of the 2022 approved Housing Plan 2.0, the Climate Friendly Homes Fund was established to electrify affordable housing across the state.

CFHF will provide up to **$25,000/unit for regulated and unregulated affordable multifamily housing**, between 5 and 150 units, for full and partial electrification.

Key Goals of CFHF include:

- Targeting electrification in low-moderate income (LMI) census tracts and disadvantaged communities (DAC)
- Develop a benchmarking database
- Tracking bids and construction costs to identify trends in electrification hard-costs
- Comparing projected performance with actual, benchmarked performance
- Training, public awareness, and market building

ADMINISTRATOR CONSIDERATIONS

Originations – How do we recruit mid-cycle projects?

- Community Partners – 10 CBOs, CDCs, CDFIs, and non-profits
- CPC's network – LIHTC and affordable housing developers
- Reaching out to the utilities and NYSERDA

Reducing Soft Costs + Maximize Available Hard Costs – Engineering as a barrier to entry

- Procuring and funding engineering scopes – MSA with fees limited to 6%

Stacking Sources – Can we all play nice together?

- Bonded state capital allocated by the state legislature - CFHF
- Rate payer funded programs – NYSERDA
- Utility incentive programs – DPS, ConEd, National Grid, PSEG, etc
- CDBG, HOME, CIF, WAP

Building Condition – What can we feasibly electrify?

- Program funds cannot be utilized to cost-shift heating/DHW heating costs
- **Ideal:** modern buildings with minimal maintenance or EE requirements, electrical capacity to support DHW and space-heating electrification with panel upgrades and some upgraded wiring at most. Target buildings that "missed the boat" due to skepticism, cost, or available technology.
    - Oil to electric conversions preferred
- **Reality:** Building typologies, ages, system, and fuels types vary drastically across NYS.
    - Unitized systems preferred – no overlap with oil buildings
    - Most gas to electric conversions – no ability to realize savings

ADMINISTRATOR CONSIDERATIONS

Building Condition

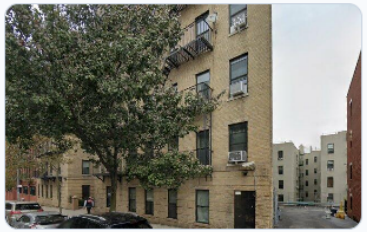
- **Buildings built before 1945 (pre-war)**
  - Asbestos and LBP concerns
  - Age of envelope components – little to no insulation, masonry buildings, poor quality windows
  - Age of roof and structure – siting outdoor units, roof
- **Buildings built 1945-1979**
  - Asbestos and LBP concerns
  - Age of envelope components – windows, wall R-value, weatherstripping and air-sealing
  - Age of roof
- **Buildings built 1980-2003 ("modern")**
  - Envelope performance – windows, wall R-value, weatherstripping and air-sealing
  - Ventilation components – balancing, fan replacement, duct-sealing
  - Air-sealing and compartmentalization
  - Fuel type + potential for increased OpEx
- **Buildings built 2004-2025**
  - Metering configuration and cost shifting
  - Fuel type + potential for increased OpEx

CADENCE ONEFIVE – MOMENTUM TOOL X CFHF

Momentum

Help Admin

BACK



[redacted]
THE BRONX, NY 10474
See alternate addresses

Year Built **1910**
Total Units **48**
Gross Floor Area **44,046 SF**
Above Grade Floors **6**
Affordable Housing **Yes**
NYC LL97 **Energy Data Not Available**

Edit Details

Project Scope

INITIAL CFHF SCOPE
$244K Rebates
$1.4M Net Cost
Last Saved On 9/13/2024

Customized Scenarios

INITIAL CFHF SCOPE
$244K Rebates
$1.4M Net Cost
Last Saved On 9/13/2024

Scope Of Work Impacts

Per Building | Per Unit

Incentives	Construction Cost	OpEx Savings	GHG Reduction	2024 LL97 Emissions	2030 LL97 Emissions
$244K	$1.0M - $1.3M	$11,485* Per Year	82 TCO2e Per Year	0 Tons Over Limit	0 Tons Over Limit

Scope Of Work

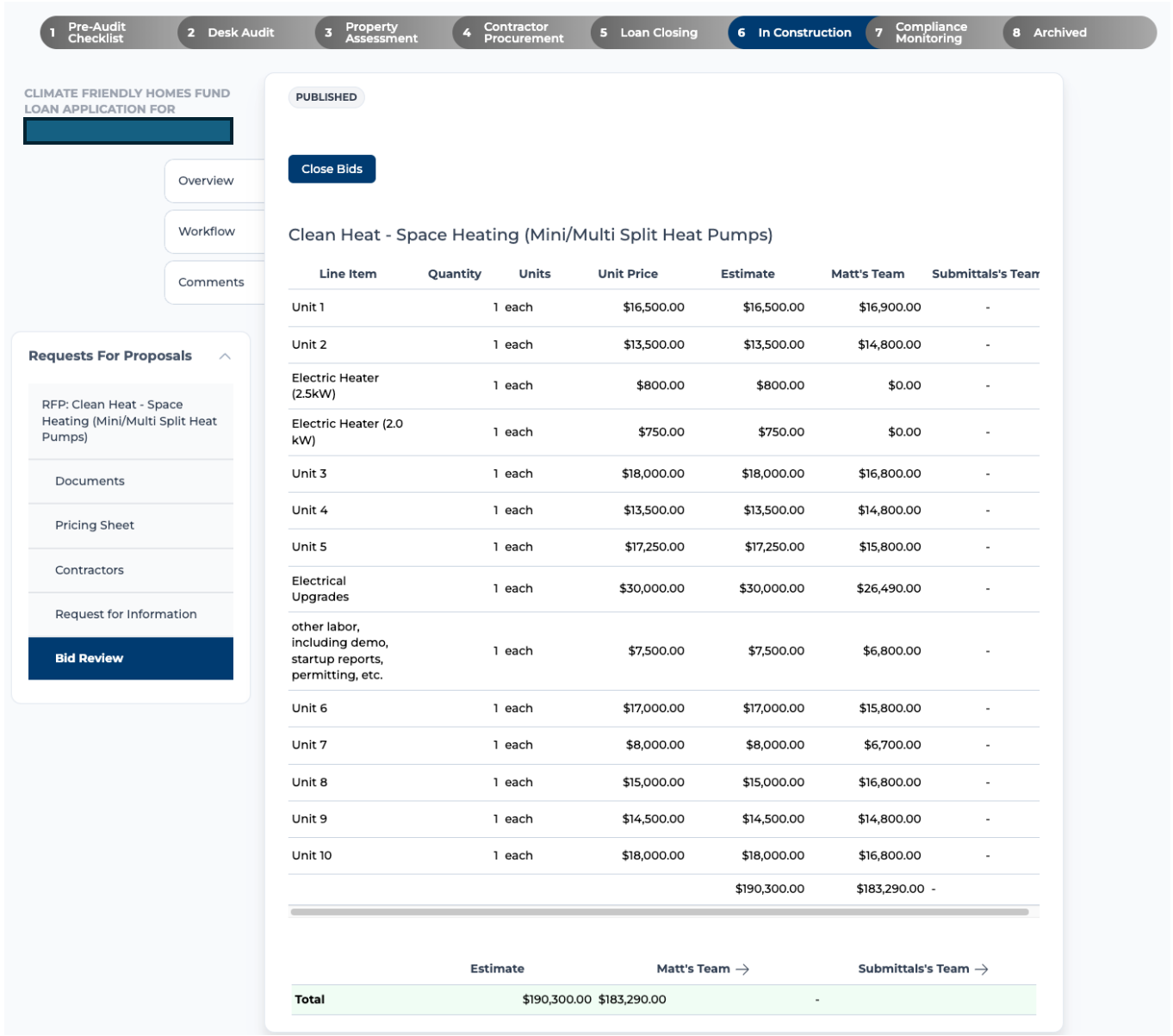
INITIAL CFHF SCOPE

Edit | Share

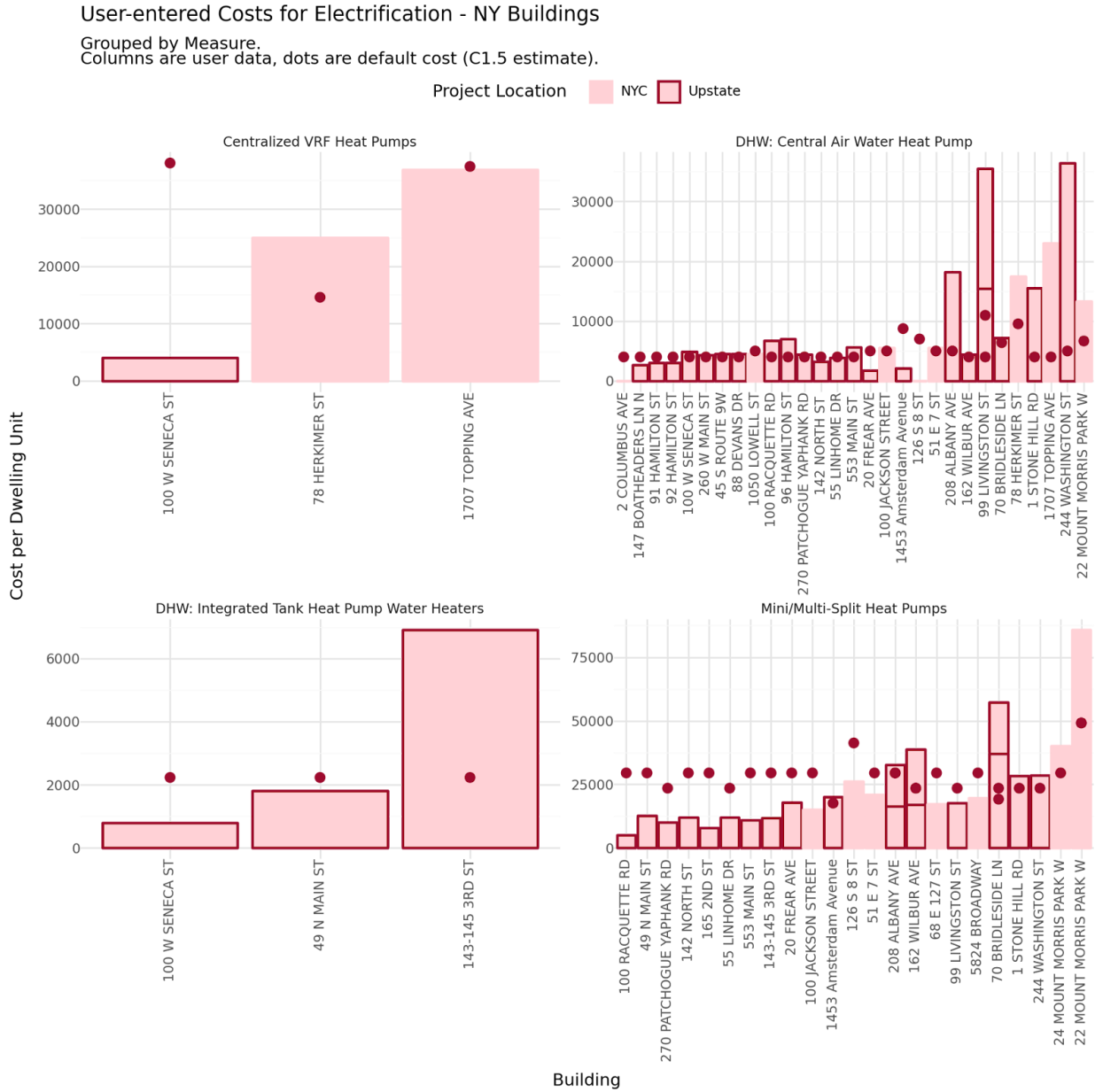
Custom Energy Rates
Electricity: $0.29 /kWh
Gas: $1.81 /therm

	Estimated Rebates	Estimated Total Cost	OpEx Savings	Energy Savings MMBTU	GHG Savings kgCO2e
Air Sealing & Insulation					
Air sealing package This measure involves comprehensive air sealing including: door weather stripping, door sweeps, door threshold/extender,... MORE	$4,080	$720 ~~$4,800~~	$3,436 *	40.4	3,423.6
VIEW COMMENTS (1)					
Heating & Cooling					
Clean Heat - Space Heating (Mini/Multi Split Heat Pumps) The replacement of an existing heating system with air source heat pumps, providing both heating and cooling, to improve... MORE	$240K	$906K ~~$1.1M~~	$8,049 *	1,681.4 *	78,731.3
VIEW COMMENTS (2)					
Existing Conditions					
Lead and Asbestos Testing and Abatement Older buildings may contain lead and/or asbestos-containing materials that may need to be addressed in some way (e.g., e... MORE	$0	$240K ~~$240K~~	$0 *	0.0	0.0
VIEW COMMENTS (1)					

CADENCE ONEFIVE – MOMENTUM TOOL X CFHF

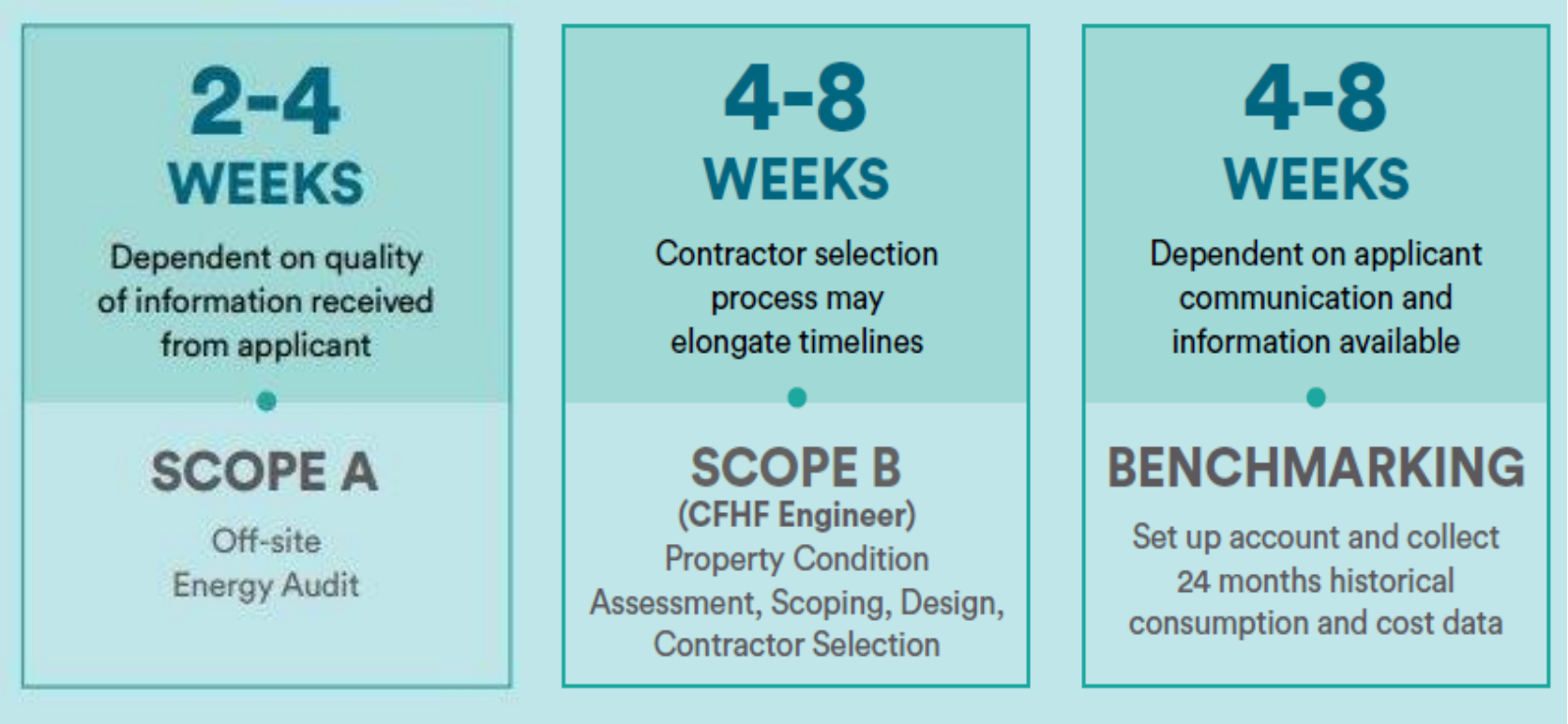


CADENCE ONEFIVE – MOMENTUM TOOL X CFHF



INITIAL TIMELINE FOR COMPLETION

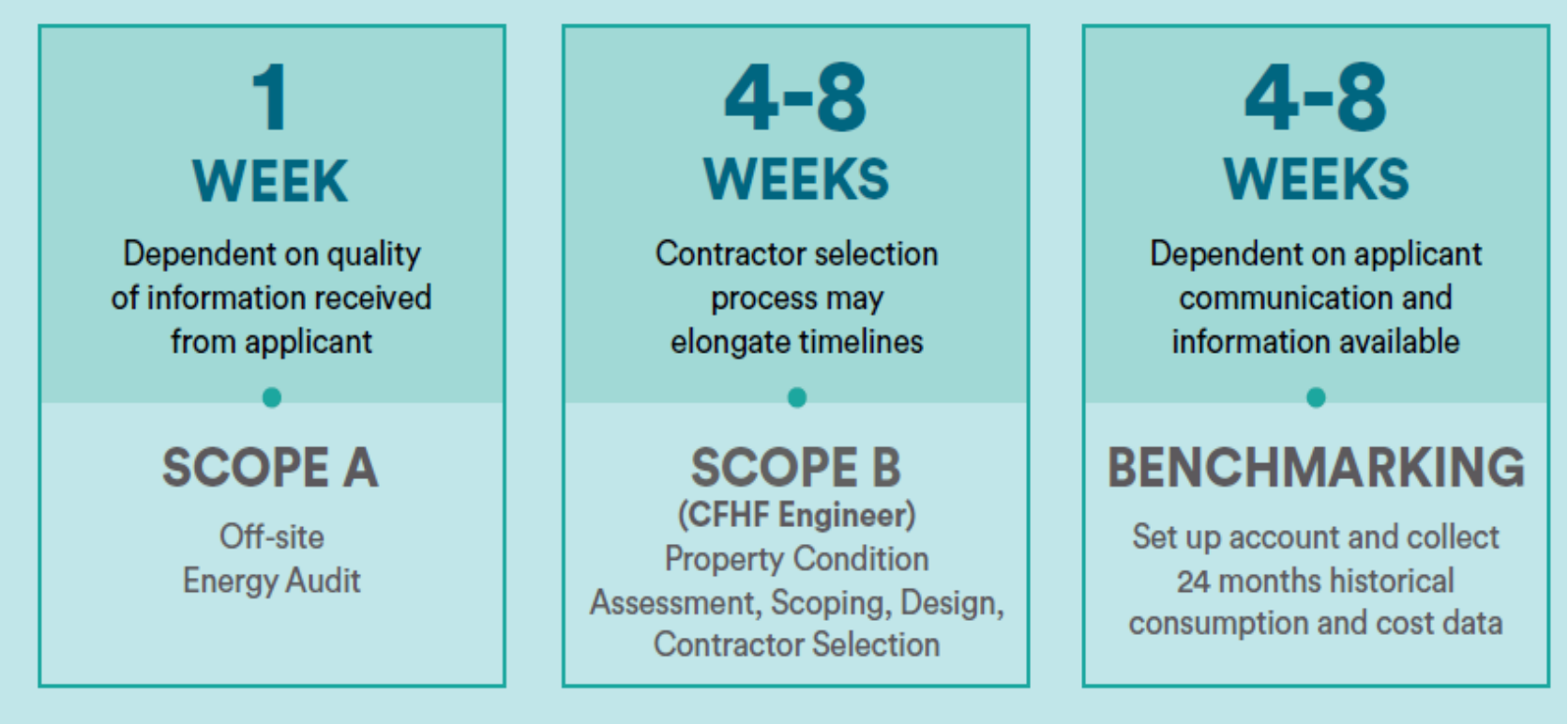
1. Application
2. Greenlight Approval



3. Closed in Construction

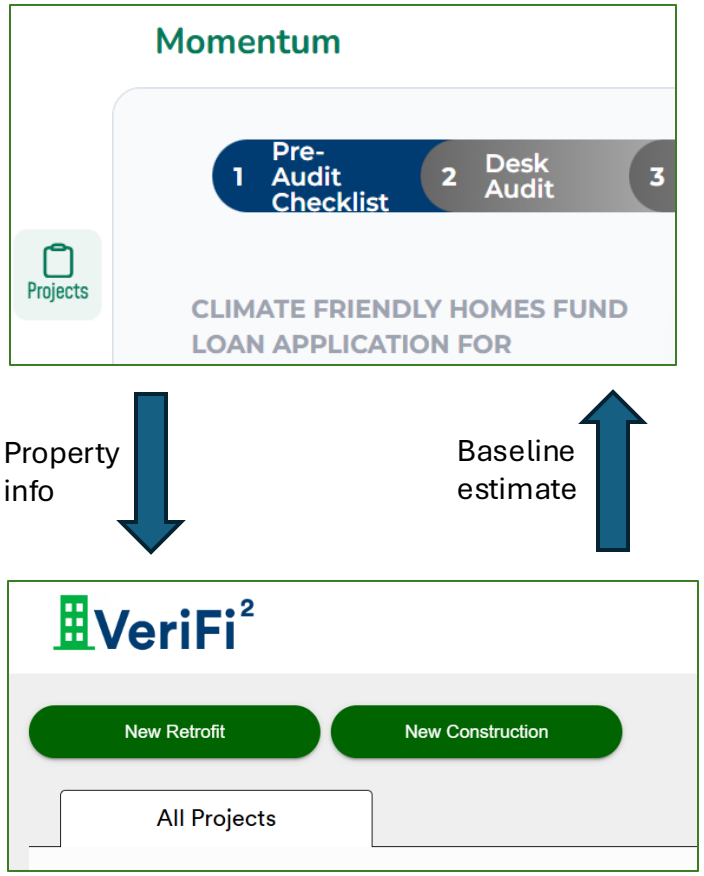
IMPROVED TIMELINE FOR COMPLETION

1. Application
2. Greenlight Approval

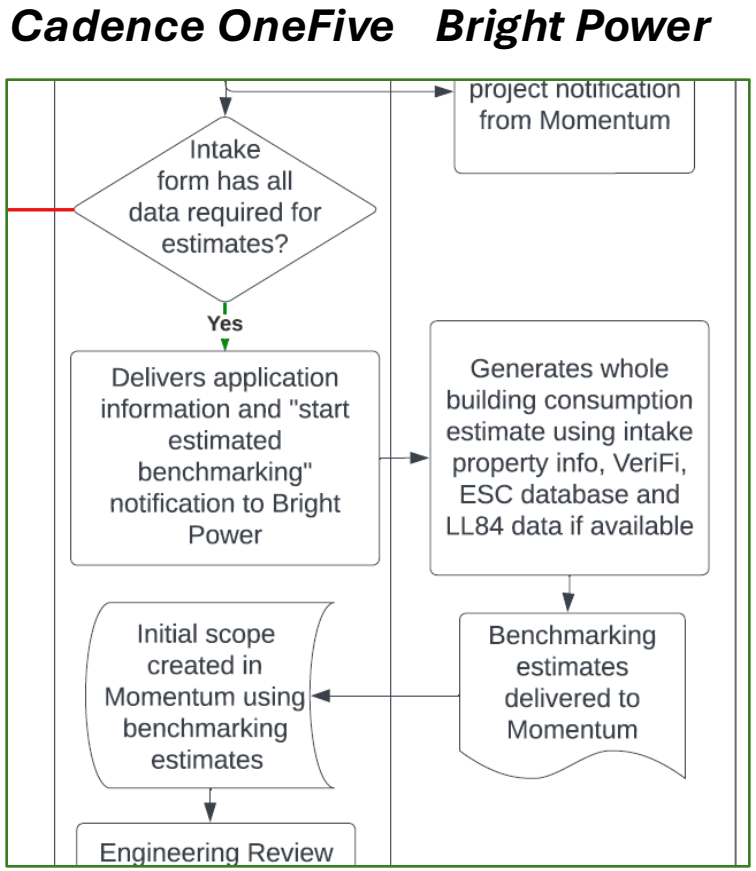


3. Closed in Construction

MOMENTUM AND VERIFI 2.0 INTEGRATION

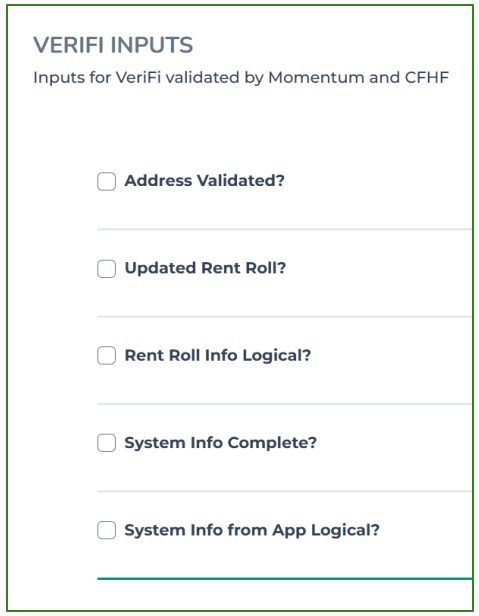


Process zoom in



Quick baseline estimates in VeriFi enable scope creation in Momentum so onsite engineering can start in parallel with utility benchmarking.

BACKEND DATA FLOW



A checklist in Momentum confirms data is ready for VeriFi.

input values

total gross sqft (whole building)	23,842
common area sqft	3,288
region	NYC+
year built	1903
who pays cooling	Tenant
who pays heating	Owner
who pays hot water	Owner
heating fuel	Electricity
hot water fuel	Gas
number of units	25
number of bedrooms	49
ZIP	10455
hdd	4,529
cdd	1,197

Simple inputs allow comparison to VeriFi data set.

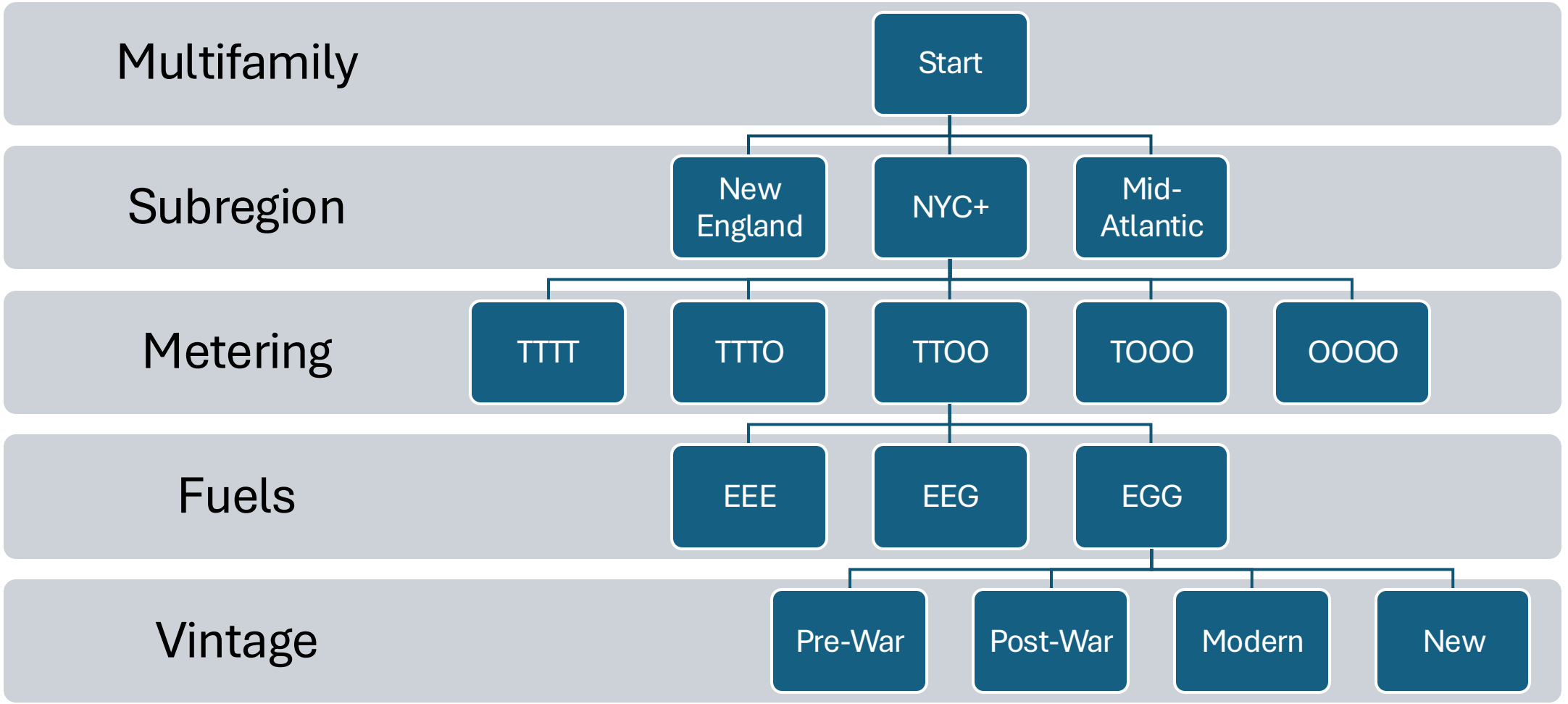
output values

energy usage:

	electricity	gas	total (all fuels)	EUI (kBTU/sf)
total heating btu	473,702,780	0	473,702,780	19.9
total cooling btu	63,202,092	0	63,202,092	2.7
total baseload btu	371,574,643	472,976,161	844,550,804	35.4
owner heating btu	432,507,286	0	432,507,286	18.1
owner cooling btu	24,503,765	0	24,503,765	1.0
owner baseload btu	234,914,268	472,976,161	707,890,429	29.7
tenant heating btu	41,195,494	0	41,195,494	1.7
tenant cooling btu	38,698,327	0	38,698,327	1.6
tenant baseload btu	136,660,375	0	136,660,375	5.7
owner btu	691,925,319	472,976,161	1,164,901,480	48.9
tenant btu	216,554,196	0	216,554,196	9.1
total btu	908,479,515	472,976,161	1,381,455,677	57.9

VeriFi outputs customized for program to include energy breakdown for engineer savings calcs.

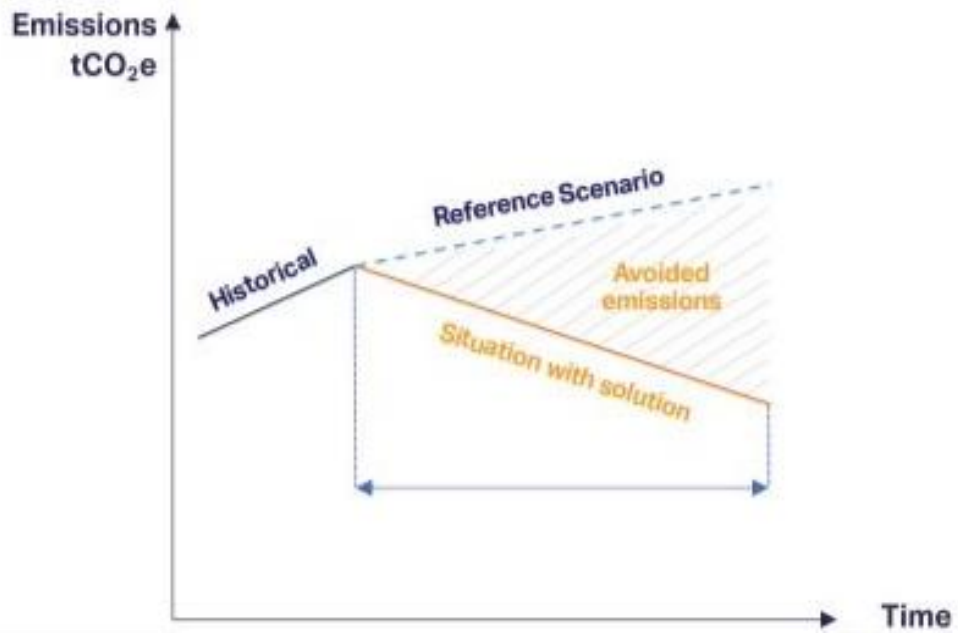
ESTIMATING CONSUMPTION WHILE KEEPING IT SIMPLE



Avoided Emissions (CPC)

INTRODUCTION: AVOIDED EMISSIONS

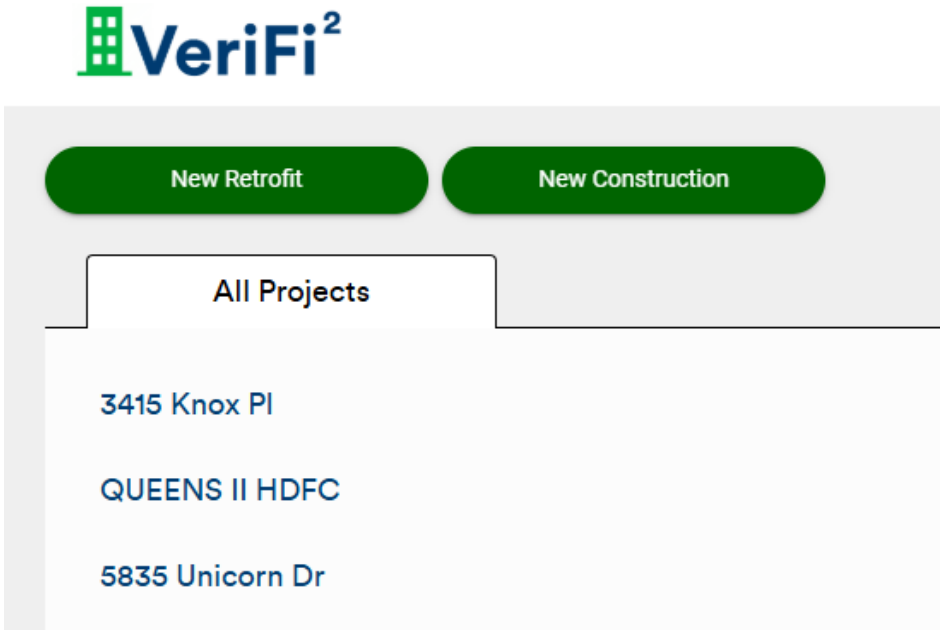
- Avoided emissions, also known as Scope 4 emissions, refer to the amount of GHG emissions not released into the atmosphere due to the implementation of sustainable practices or technologies
- This calculation compares the emissions produced under a "business as usual" scenario with those produced after implementing a sustainability scope



- Further understanding our organizational impact and establishing a replicable methodology for others to do so as well

AVOIDED EMISSIONS: OUR METHODOLOGY

- To calculate avoided emissions, we subtract the 'solution' scenario emissions from the 'baseline' scenario emissions to quantify what was reduced
- Defining our scope: CPC construction loans (permanent loans are not on our balance sheets) that meet at least one of our sustainability criteria (a green certification, incentive program, or scope item)
- Utilizing VeriFi 2.0 to estimate the annual electricity, gas, and water consumption of these projects



PROJECT EXAMPLE

- Internal sustainability criteria: EGC 2020, NYSERDA New Construction, Solar PV On-site, Carbon Neutral-Ready (all-electric systems), High Efficiency Systems; ASHP mini splits and heat pump hot water heaters
- New construction, 60 units in upstate NY
- Utilities Provided by Owner: Heat, Hot Water, Electric, Water & Sewer

PROJECT EXAMPLE: SCOPE OF WORK

Category	Measure
Appliances	Install ENERGY STAR-certified dishwashers
Appliances	install ENERGY STAR-certified clothes dryers
Appliances	Install ENERGY STAR-certified washing machines
Appliances	Install ENERGY STAR-certified refrigerators
Lighting	Install LED lighting in common areas
Lighting	Install LED lighting in apartments
Water Fixtures	Install all low flow fixtures
Heating	Replace gas boiler with heat pumps
Hot Water	Replace gas water heater with heat pump water heater
Renewable/Advanced Electric Systems	Install solar PV system
Ventilation	Install a Heat/Energy recovery ventilation (ERV/HRV)
Walls + Windows (Building Envelope)	Air seal external walls
Walls + Windows (Building Envelope)	Air seal / weatherstrip windows and doors

PROJECT EXAMPLE: VERIFI OUTPUT

Cost in dollars

Fuel	Owner Cost/Unit/Year	Tenant Cost/Unit/Year
Electricity	$593 ± 27%	$71 ± 21%
Gas	$756 ± 19%	$0 ± 0%
Water	$269 ± 17%	$0 ± 0%
Total	**$1,619**	**$71**

Fuel	Owner Cost/Unit/Year	Tenant Cost/Unit/Year
Electricity	$1,092 ± 21%	$71 ± 23%
Gas	$0 ± 0%	$0 ± 0%
Water	$235 ± 26%	$0 ± 0%
Total	**$1,326**	**$71**

PROJECT EXAMPLE + METHODOLOGY CONT.

- With the electricity, gas, and water consumption data for both the reference and solution scenarios, we then use emission factors to convert into GHG emissions
- Whole building data (60 units):

	Electricity Consumption (mmBtu)	Gas Consumption (mmBtu)	Water Consumption (mmBtu)
Baseline Scenario	1,211	2,892	25
Actual Scenario	2,147	0	22

	Emissions from Electricity Consumption (kg CO2e)	Emissions from Gas Consumption (kg CO2e)	Emissions from Water Consumption (kg CO2e)
Baseline Scenario	44,211	153,450	.19
Actual Scenario	78,371	0	.17

- Increase in electricity consumption compensated by decrease in gas consumption

PROJECT EXAMPLE + METHODOLOGY CONT.

- Subtracting the actual scenario from the baseline scenario:

	Electricity	Gas	Water	Total
Avoided Emissions (kg CO2e)	-34,160	153,450	0.02	119,290

- This equals 119.29 metric tons of CO2e avoided annually due to Mosaic Apartment's sustainability scope
- For comparison, this is roughly equivalent to the annual emissions from 25 passenger cars

AVOIDED EMISSIONS: PORTFOLIO RESULTS

- In FY24, CPC closed $137.7 million in sustainable construction financing. These projects result in an estimated:
  - 559.6 metric tons of CO2e avoided annually
  - 267.7 MMBtu in energy savings annually
- Looking at all the construction loans on our balance sheet in FY24 (how we report avoided emissions), these projects result in an estimated:
  - **4,036.8 metric tons of CO2e avoided annually**
  - **1,354.4 MMBtu in energy savings annually**
- Energy savings per project are increasing over time
  - 21.3% average energy savings across all projects
  - 32.2% average energy savings across FY23-24 projects

Conclusions and Potential Next Steps

NEXT STEPS

Potential additional features:

- Minor changes based on feedback from beta users
- Add oil heating to data model
- Add data from public benchmarking datasets in the Northeast
- Add geographies outside the Northeast
- Add data from public benchmarking datasets outside the Northeast
- Add carbon emissions/avoided emissions calculations
- Add utility allowances for selected geographies
- Develop API interface

NEXT STEPS

- Identifying which current features of VeriFi 2.0 are most useful to the industry
- Given both its opportunities and challenges, understanding how we can complement what already exists in the market
  - Audience poll
- Exploring funding opportunities

Audience Survey

Thank you!
Questions?

THANK YOU FOR TUNING IN

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