

Underwriting Standards for Low-Carbon Housing



Join Building Energy Exchange and Bright Power for a presentation and panel discussion on the Future Housing Initiative: Underwriting Standards for Low-Carbon Housing project, an initiative utilizing measured energy data from high-performance buildings to inform underwriting and financing practices. Learn about developing performance-based utility cost benchmarks and how lenders can improve current underwriting practices. This event will highlight the release of the Low-Carbon Underwriting Guidebook.

presenters:

Jon Braman, Executive Vice President, Strategic Initiatives, Bright Power
Khaleah Edwards, Project Manager, Bright Power
Katie Schwamb, Director, Educational Resources, Building Energy Exchange

moderator:

Katie Schwamb, Director, Educational Resources, Building Energy Exchange

panelists:

Jon Braman, Executive Vice President, Strategic Initiatives, Bright Power
Danielle Donnelly, AVP, Sustainability Programs, CPC
Jennifer Leone, Assistant Commissioner, Chief Sustainability Officer, HPD
Sunitha Sarveswaran, Sustainability Manager, NYS HCR

31 Chambers Street
New York, NY

June 27, 2024
9:30 to 11:00am

Underwriting Standards for Low-Carbon Housing



Driving the transition
to low-carbon,
multifamily housing with
real world data.



Project Team

Project Sponsor



Project Partners



Project Leads



Overview

- Learn about the process of developing of developing performance-based utility cost benchmarks
- Explore how lenders can change business-as-usual underwriting practices
- Review the importance of using real-world data to inform project financing



Future Housing Initiative

- Created to drive and ease transition to low-carbon, multifamily housing with real world data and analysis of building performance

Underwriting Standards for Low-Carbon Housing sponsored by NYSERDA

—
Equity, Health, & Carbon Database for Multifamily Housing sponsored by Bank of America



As multifamily building design and construction norms evolve, how should lenders underwrite new, high-performance buildings?

Underwriting Standards for Low-Carbon Housing

The Intent:

- Develop energy performance database
- Create utility cost benchmarks

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The Problem:

- Lack of real-world data

Underwriting Standards for Low-Carbon Housing

The Intent:

- Develop energy performance database
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The Problem:

- Lack of real-world data

The Solution:

- Provide tools and resources
- Remove financial barriers

Multifamily Passive House: Connecting Performance to Financing

playbook

Multifamily Passive House: Connecting Performance to Financing

How energy efficiency and operational savings can provide additional, ongoing cash flow.

be
ex
building
energy
exchange

NYC
ACCELERATOR

NYC
Department of
Housing Preservation
& Development

ed building that has exceeded its annual emissions limit on carbon, every year that they are non-compliant, could negatively affect a building's operational expenses

ties relative to the 2030 and 2050 targets, illustrating the buildings as a result of carbon regulation. While the base as, all of the Passive House study group buildings would in 2050.

ilding owners may be able to capitalize on their carbon ding owner who has emissions above the cap. These for building owners. For instance, in 2030, the Passive \$5,000 to \$132,000.¹¹

Category	Pre 2003	Post 2003	2050 Penalties
C-1	\$0.26	\$0.14	\$0.13
C-2	\$0.32	\$0.35	\$0.05
C-3	\$0.34	\$0.40	\$0.08
C-4	\$0.44	\$0.44	\$0.16

with Passive House construction increase NOI, which supports additional private debt and can also reduce reliance on public subsidies for certain types of buildings.

Income

-

utilities
other costs

=

NOI

→

supportable loan

public subsidy

Income

-

utilities
other costs

=

NOI

→

supportable loan

additional private debt

public subsidy

be-exchange.org

Underwriting to Incremental Costs and Passive House Savings

Incremental first construction costs of Passive House projects are likely to decrease as components become more widely available and cost-efficient, increasing demand for high-performance buildings.

Objectives 5 & 6: Demonstrate a methodology for underwriting incremental first costs and operational savings.

Offsetting Incremental First Costs

Information reviewed as part this study—including experience from other Northeast states employing Passive House to address climate goals – indicates that it is possible to construct Passive House multifamily buildings at minimal additional cost, ranging from 0- 5% for experienced project teams. Incremental costs are strongly correlated with the baseline of comparison, and are expected to approach zero as code requirements and market demand increase, and as products become more widely available and cost-competitive.¹²

Incremental costs for Passive House construction often include the following:

- Soft cost increases for Passive House include certification, consulting, verification, and performance testing, typically ranging from \$100K to \$200K for multifamily projects. This varies with building size and team experience.
- Hard cost increases for Passive House are primarily related to higher performing HVAC equipment, particularly variable refrigerant flow (VRF) and energy recovery ventilation (ERV). Building envelopes also contribute to costs – primarily triple-glazed windows – which are required for many projects.
- Maintenance & operating (M&O) costs can run up to \$200/apartment per year for ERV and VRF filter changes. This would be less for centralized systems and does not take into account the M&O costs of base case systems, like boilers and A/C units.
- The learning curve and “fear of the unknown” among contractors and subcontractors can increase costs for teams new to Passive House.

Translating Savings into Additional Private Debt

One way to cover incremental costs of Passive House construction is to factor energy performance cost savings into the first mortgage. Net operating income (NOI) is calculated based on the difference between rental and other income and M&O expenses. If lenders can prove some measure of cost reduction for certified Passive House and Passive House-like buildings, they can increase the supportable loan by reducing expenses and increasing NOI. This could also decrease the amount of subsidy often required from city and state agencies.

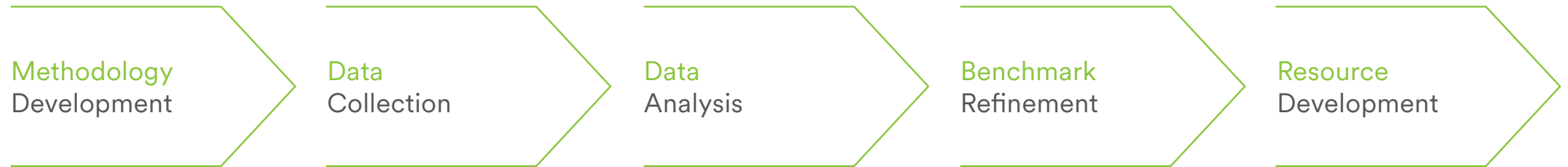
Underwriting to Improved Performance

Underwriting Passive House performance and cost reduction into a first mortgage takes into account the financial stability of the project. Below are key recommendations for lenders to consider:

1. Compare projected energy costs to conventional M&O standards to assess potential energy cost savings.
 - a. Confirm what portion of the energy cost savings will accrue to the owner. Those savings can be underwritten by the lender.
 - b. Ensure that renewables, if included, are factored into energy cost savings.
 - c. If applicable, factor in avoided costs (e.g. future carbon penalties, reduced vacancies) over the project's life cycle.
2. Collect relevant project information and relevant comparables (“comps”) to assess risk.
 - a. How does the projected performance compare to available Passive House comps?
 - b. Has the team (e.g. architect, contractor, etc.) built to a Passive House standard before?
 - c. Does the team plan to certify to a Passive House standard?
3. Determine the NOI.
4. Determine a reasonable percentage of energy cost savings that can be underwritten, and use that to assess the additional debt that the project can leverage.

Passive House: Connecting Performance to Financing

Project Process



Current Practice

How does the underwriting process work?

The Underwriting Process

What we have:

- M&O standards based on historic usage from conventional fossil fuel buildings



The Community Preservation Corporation

220 East 42nd St, 16th Floor
New York, New York 10017

The Community Preservation Corporation Hudson Valley M&O Standards for 2023

Category	Standard
Real Estate Tax:	Actual after exemption
Water/Sewer:	New Construction: \$110/room Existing Property: \$125/room
Insurance:	Bldgs >20 units: \$600-\$700 Bldgs <20 units: \$800-\$900
Staff salaries:	Bldgs >20 units: \$925/unit Bldgs <20 units: \$650/unit LIHTC projects: \$1,200/unit
Elevator:	\$4,000-\$5,000/elevator (or pursuant to contract)
Cleaning, Exterminating, & Garbage:	Bldgs >20 units: \$110/room Bldgs <20 units: \$100/room
Landscaping/Snow removal:	\$10,000-\$12,000/Building or Actual for Garden Style apartments. \$0 for urban sites.
Heat (Owner Provided – Common Furnace):	Gas: \$175 - \$200/room Oil: \$350/room
Electric (Common areas):	Elevator: \$150/room Walk-up: Bldgs >20 units: \$150/room Walk-up Bldgs <20 units: \$125/room

The Underwriting Process

What we have:

- M&O standards based on historic usage from conventional fossil fuel buildings

Interim solution:

- Use energy modeling to create an interim M&O for electric heating & hot water

MAINTENANCE & OPERATING EXPENSE GUIDELINES
NEW CONSTRUCTION
2024

Revised: 3/13/2024

	M&O Electric Heat (VRF)/Gas Water		M&O All Electric (assumes VRF)*		Passive House(assumes VRF)*		
	PW/Union Building Staff	Per	PW/Union Building Staff	Per	PW/Union Building Staff	Per	Per/
ADMINISTRATIVE							
Legal	\$24,000	\$240	\$24,000	\$240	\$24,000	\$240	/du
Accounting	\$19,000	\$19,000	\$19,000	\$19,000	\$19,000	\$19,000	/project
Management Fee ¹	\$123,613	6.5%	\$123,613	6.5%	\$123,613	6.5%	of ERI
Fire and Liability Insurance ²	\$150,000	\$1,500	\$150,000	\$1,500	\$150,000	\$1,500	/du
Tax Credit Monitoring ³	\$12,600	\$126	\$12,600	\$126	\$12,600	\$126	See footnote
Benchmarking Expense	\$600	\$600	\$600	\$600	\$600	\$600	/ldg
UTILITIES							
Heating ⁴	\$58,905	\$165	\$58,905	\$165	\$35,700	\$100	/rm (assumes VRF) ⁴
Owner Paid Cooling (if applicable) ⁵		\$85		\$85		\$68	/rm (assumes VRF) ⁴
Hot Water ⁶							/rm
Gas Hot Water	\$39,984	\$112					/rm
Electric Heat Pump Hot Water			\$66,045	\$185	\$66,045	\$185	/rm
Electric (common areas)	\$71,400	\$200	\$71,400	\$200	\$71,400	\$200	/rm
Water & Sewer	\$107,100	\$300	\$107,100	\$300	\$107,100	\$300	/rm
Broadband ⁷							
MAINTENANCE							
Supplies/Cleaning/Exterminating	\$49,980	\$140	\$49,980	\$140	\$49,980	\$140	/rm
Repairs/Replacement	\$100,000	\$1,000	\$110,000	\$1,100	\$110,000	\$1,100	/du
Super & Maintenance Salaries ⁸	\$260,981	\$2,610	\$260,981	\$2,610	\$260,981	\$2,610	/1 Super 1 Porter
Elevator Maintenance & Repairs (Assumes 2)	\$20,000	\$10,000	\$20,000	\$10,000	\$20,000	\$10,000	/elev
Bldg Reserve	\$40,000	\$400	\$40,000	\$400	\$40,000	\$400	/du
HDC Servicing Fee ⁹							
M&O Before Taxes and Debt Service	\$1,078,163	\$10,782	\$1,114,224	\$11,142	\$1,091,019	\$10,910	/du
		\$3,020		\$3,121		\$3,056	/rm

NOTES			
1. MANAGEMENT FEE: 8% for Supportive Housing Loan Program			
2. INSURANCE: Project Managers are directed to underwrite to an actual quote whenever possible.			
3. TAX CREDIT MONITORING: This fee is a combination of the building fee (\$100 per building), plus the unit fee (0.75% of the maximum annual tax credit rent for all LIHTC units). The unit fee is capped at \$12,600 for buildings of 150 units or less, and \$17,500 for buildings over 150 units.			
4. HEATING: Project Managers are directed to underwrite to the method of heating utilized, typically VRF at \$165/rm. If Packaged Terminal Heat Pump (PTHP), standard will be set at \$195/rm for heating. PTHP units are a type of Cold Climate Heat Pumps. Passive House: For all PH buildings, heating can be discounted by 40% (For VRF, this equates to \$100. For PTHP, this equates to \$117).			
5. OWNER PAID COOLING: Allowed only for VRF. Owner Paid Cooling is NOT allowed for PTHP systems except in PH. If PH, Owner Paid Cooling should be discounted by 20%.			
6. HOT WATER: Project Managers are directed to underwrite according to project type (gas/electric).			
7. BROADBAND: Project Managers are directed to include broadband and underwrite to an actual quote whenever broadband is incorporated into construction.			
8. SUPER & MAINTENANCE SALARIES: 1 staff member for every 65 units. Additional staff may be added per 65 units of housing. This schedule assumes 1 super + 1 porter for a 100 unit building at prevailing wage/union. In addition, use a 1.15 multiple to account for overtime/vacation assumptions. Handyperson will be considered on a case-by-case basis.			
Salary Assumptions:			
	Prevailing Wage	With Multiplier	Non-Union With Multiplier
FT Super	\$126,483	\$145,455	\$79,456
FT Porter	\$100,458	\$115,526	\$73,476
FT Super + FT Porter		\$260,981	\$84,497
FT Handyperson	\$107,084	\$123,146	\$175,871
*Salaries are estimated based on an hourly wage, 40 hour workweek, 52 weeks/year plus assumptions for payroll taxes, benefits, and workers comp.			
9. HDC SERVICING FEE: Servicing fee set at 0.25% of senior permanent loan.			

The Underwriting Process

What we have:

- M&O standards based on historic usage from conventional fossil fuel buildings

Interim solution:

- Use energy modeling to create an interim M&O for electric heating & hot water

What we need:

- M&O standards based on actual performance of new low-carbon technologies in high-performance buildings



Underwriting Steps:

Business as Usual

1	Determine building typology	<ul style="list-style-type: none">• Is the heating and water heating fueled by gas or oil?• Is there an elevator in the building?
2	Select the relevant utility expense level	Use expense levels based on a set of older properties with different technologies and usage profiles than new, low-carbon buildings.
3	Determine loan size	Base loan size on all expenses, including utilities, based on an updated set of standards and data. Follow credit rules and calculations approved by each lender.
4	Review performance data against “comps”	The lender, appraiser, or developer may offer comps from their own data sets, which may not include similar low-carbon properties.

New Business as Usual

The Future Housing team has determined a new approach to underwriting high-performance, low-carbon buildings.

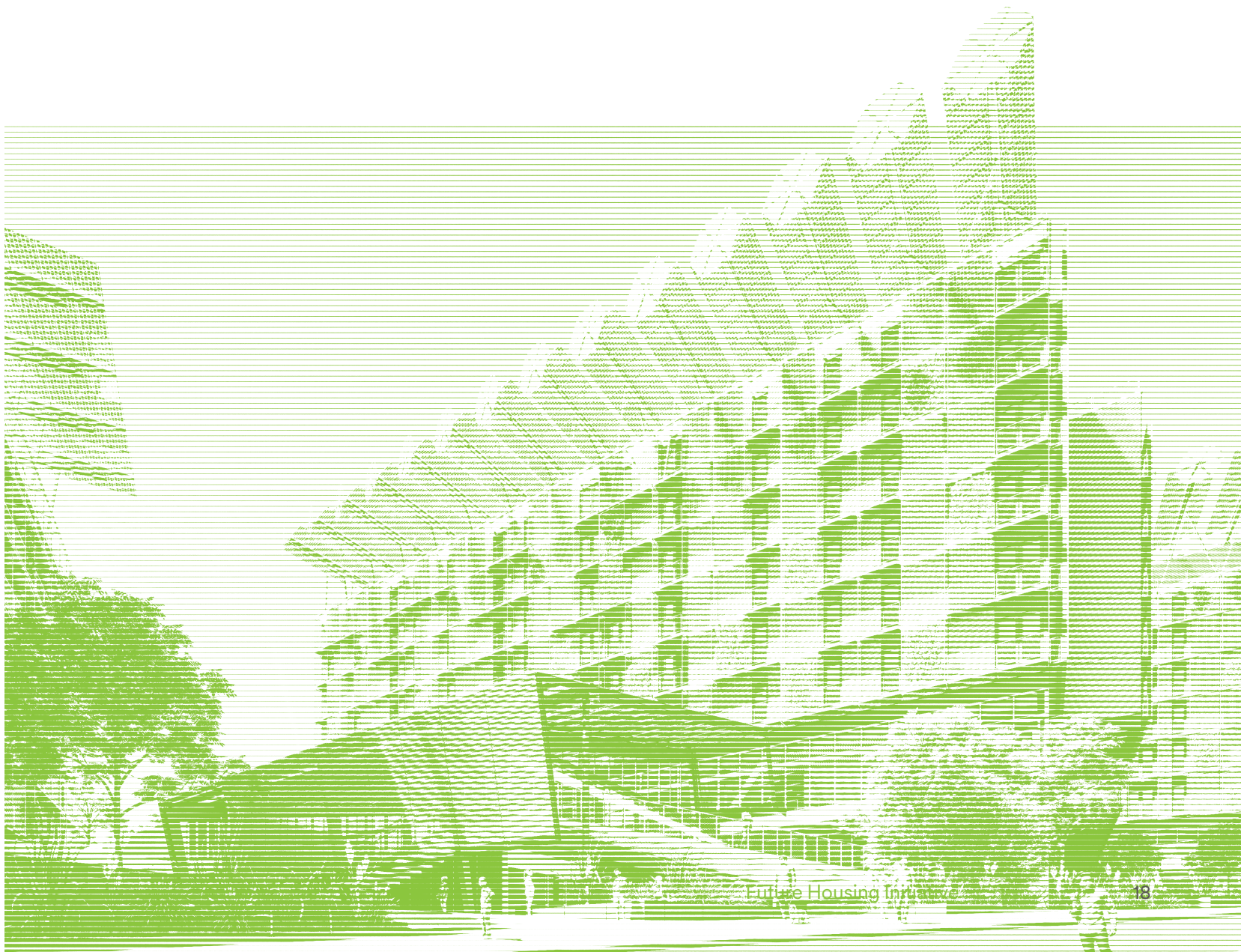
Underwriting Steps:

New Business as Usual

1	Determine building typology	<ul style="list-style-type: none">• Which utilities does the owner pay for?• Is heating provided by electricity or gas?• Is water heating provided by electricity or gas?• What level of efficiency is the building designed to?
2	Select the relevant utility expense level	Use expense levels based on real energy performance data from a set of buildings that match the building typology.
3	Determine loan size	Base loan size on all expenses, including utilities, informed by an updated set of standards and data that considers ever-changing energy prices and regional variation. Follow credit rules and calculations approved by each lender.
4	Review performance data against “comps”	Review performance data against comps from new and low-carbon properties, alongside other provided comps.

Future Housing Benchmarks

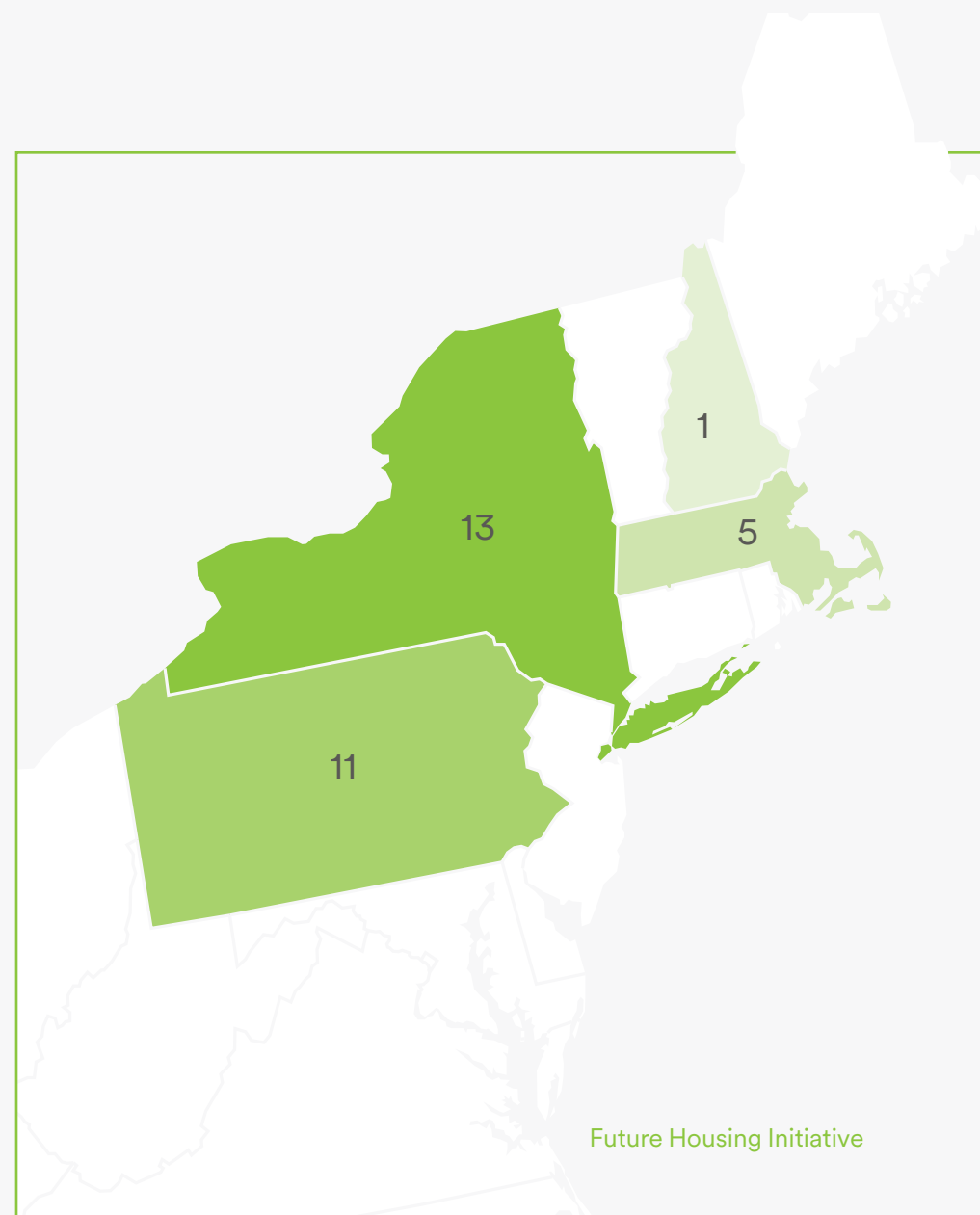
- Owner and whole building utility data collected
- Data used to create utility cost benchmarks for low-carbon multifamily buildings
- Tailored to complement existing M&O standard frameworks



Future Housing Benchmarks

Methodology

- At least one year of whole whole building utility data collection
- Defined new construction, low-carbon multifamily properties:
 - 5 or more apartment units
 - Built after 2003
 - Located in Northeast →
 - Met one or more of three low-carbon criteria pathways: certification, modeled performance, prescriptive



Future Housing Benchmarks Methodology

Step

1

Data collection, transfer,
and quality control

.....

Multifamily properties in Northeast
built after 2003

Step

2

Use the EnergyScoreCards
(ESC) platform

Step

3

Group for analysis

.....

Grouped by the primary fuel for each
end use

—

Compare Multifamily properties in
Northeast built after 2003
with ALL multifamily properties in
Northeast

Future Housing Benchmarks Methodology

Step

4

Remove outliers

Step

5

Analyze owner-paid consumption for energy-use components

.....
broken down by:

Building coverage

—
Fuel type

—
End use

Step

6

Calculate typical energy costs based on consumption and applicable prices

.....
*Energy consumption x
energy price = energy cost*

—
Discounting where sample sizes are small

—
Electricity and gas prices estimated and grouped by region: NYC and Long Island, Hudson Valley, Upstate

Future Housing Comparison Benchmarks

Owner-paid utilities			Dollars per room per year		
Building Coverage	Energy Component	Fuel	HDC M&O 2024 Passive House NYC	Peer post-2000 NYC+ ⁸	Future Housing NYC+
Whole Building (common area and apartments)	Cooling	Electric	\$68	\$63	\$60
	Heating	Electric	\$100 (VRF) / \$117 (PTHP)	\$160	\$147
		Gas	\$221 ⁹	\$144	\$87
	Water heating ⁷	Electric	\$185	n/a	n/a
		Gas	\$112	\$83	\$38
	Apartment baseload including water heating	Electric	n/a	\$570	\$559
	Apartment baseload excluding water heating	Electric	n/a	\$451	\$321
Common Area	Baseload ¹⁰	Electric	\$200	\$152	\$141

Making the Change

- Stakeholders must institutionalize new processes
 - Lenders, housing agencies, appraisers, mortgage insurers, and developers
- Bright Power held workshops with NY state lenders and housing agencies to develop Action Plans to improve low-carbon underwriting



Key Takeaways for Stakeholders

Lenders & Housing Agencies

Can improve underwriting practices for low-carbon multifamily by using the utility cost benchmarks

Policy Makers & Advocates

Can access the database to quantify the predicted carbon reductions, efficiency improvement, or other outcomes from proposed policies

—
Can write policies using projections from real-world results

Multifamily Building Owners & Developers

Can leverage underwriting standards to overcome cost barriers that currently hinder adoption in the affordable housing sector

Energy & Sustainability Consultants

Can use the database and underwriting standards to help make the business case to clients to design and build low-carbon housing

Future Housing Initiative Resources

Landing Page



Guidebook



discuss.

moderator

Katie Schwamb, Director, Educational Resources, Building Energy Exchange

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thank you.

