BUILDINGENERGY NYC

Future Housing: A New Paradigm for Building Performance Tracking

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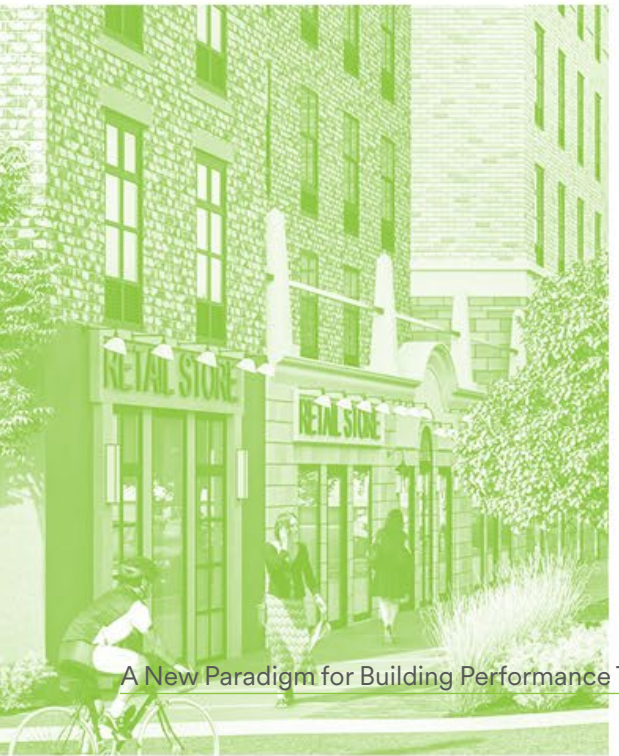
Agenda

- Future Housing Overview and Vision
- Low-Carbon Underwriting
- Introducing the New Paradigm
- Panel Discussion
- Q&A



Future Housing:
A New Paradigm for Building Performance Tracking

FUTURE HOUSING INITIATIVE

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

The Challenge

- Lack of real, assessible performance data
- Buildings are for people, so performance needs to center the experience of people in buildings

The Vision

- Create a public, open-source, national, equity-centered database of real-world performance data on low-carbon multifamily buildings.
- Engage with stakeholders to use the data to accelerate equitable multifamily building sector decarbonization.

Guiding Principles

- **Focus on data** collection, quality control, and maintenance
- **Make the data work for users**, don't make users work to understand the data
- **Prioritize resident voices** in the development of data structure and definitions
- **Present building data in context**, highlighting connections between carbon, energy, equity, health, and resident quality of life

Project Team

Project Leads

BRIGHT POWER

be ex
building energy exchange

Project Partners & Supporting Consultants

NYC Department of Housing Preservation & Development

Steven Winter Associates, Inc.

cpc Community Preservation Corporation

ERM

kc3 KINETIC COMMUNITIES

Co Equity CONSULTING

Simpson Strategic Solutions

Future Housing Projects

Project

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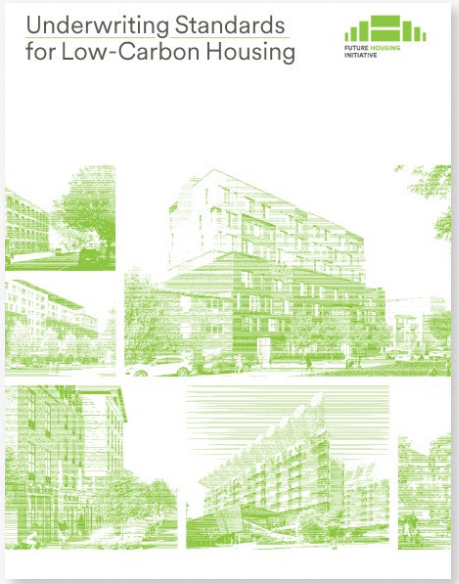
Underwriting Standards for Low-Carbon Housing



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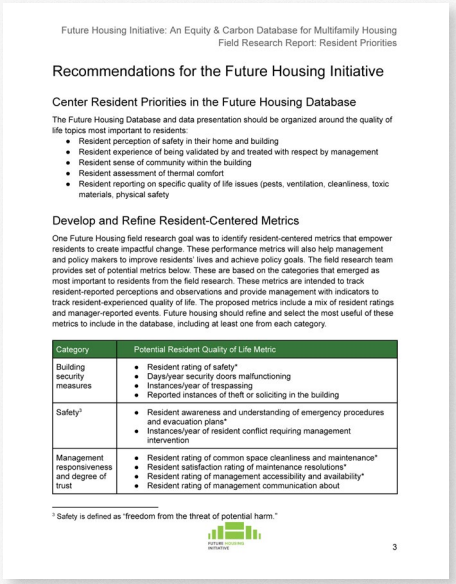
Equity, Health, and Carbon Database for Multifamily Housing



Future Housing Initiative: An Equity & Carbon Database for Multifamily Housing
Field Research Report: Resident Priorities

Recommendations for the Future Housing Initiative

Center Resident Priorities in the Future Housing Database

The Future Housing Database and data presentation should be organized around the quality of life topics most important to residents:

- Resident perception of safety in their home and building
- Resident experience of being validated by and treated with respect by management
- Resident sense of community within the building
- Resident assessment of thermal comfort
- Resident reporting on specific quality of life issues (pests, ventilation, cleanliness, toxic materials, physical safety

Develop and Refine Resident-Centered Metrics

One Future Housing field research goal was to identify resident-centered metrics that empower residents to create impactful change. These performance metrics will also help management and policy makers to improve residents' lives and achieve policy goals. The field research team provides set of potential metrics below. These are based on the categories that emerged as most important to residents from the field research. These metrics are intended to track resident-reported perceptions and observations and provide management with indicators to track resident-experienced quality of life. The proposed metrics include a mix of resident ratings and manager-reported events. Future housing should refine and select the most useful of these metrics to include in the database, including at least one from each category.

Category	Potential Resident Quality of Life Metric
Building security measures	• Resident rating of safety* • Days/year security doors malfunctioning • Instances/year of trespassing • Reported instances of theft or soliciting in the building
Safety[3]	• Resident awareness and understanding of emergency procedures and evacuation plans* • Instances/year of resident conflict requiring management intervention
Management responsiveness and degree of trust	• Resident rating of common space cleanliness and maintenance* • Resident satisfaction rating of maintenance resolutions* • Resident rating of management accessibility and availability* • Resident rating of management communication about

[3] Safety is defined as "freedom from the threat of potential harm."

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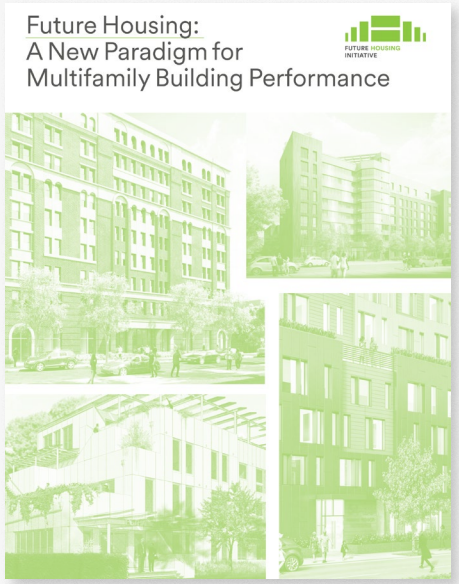
Resident and Health Data Toolkit and Pilot

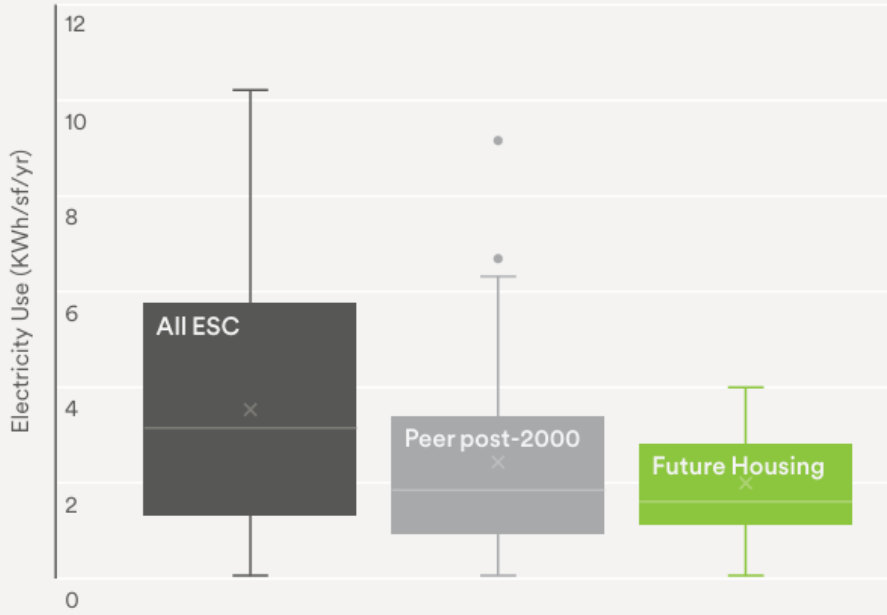


Underwriting Standards for Low-carbon Multifamily

Underwriting Standards for Low-Carbon Housing

- **Assembled data set** with owner and resident utility data from 30+ recently built, low-carbon multifamily properties in the Northeast
- Analyzed data to create **utility cost benchmarks for low-carbon multifamily** buildings in NY State
- Supported NY lenders and housing agencies in creating action plans to **institutionalize data-driven low-carbon underwriting**
- Project is a **proof of concept**

Electric heating



Dataset	Property Count	kWh /SF/yr	kWh /unit/yr	kWh /room/yr
All ESC	273	3.1	2,915	914
Peer post 2000	83	1.8	1,922	592
Future Housing	22	1.4	1,638	545

Low-Carbon Example: Future Housing NYS

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

Future Housing Building Performance Metrics

Resident Experience + Health Risk + Carbon/ Energy

Resident Findings

- The most important thing to residents is feeling safe in their home and building.
- Building management is key to people's experience in buildings.
- Residents place a high value on the sense of community within their buildings.

Future Housing Building Performance Metrics

Resident Experience Score	Health Risk Score	Carbon Performance
Composite score (out of 50 points)	Composite score (out of 50 deductions)	lbs CO2e/person/year
32	**18**	**2,375**
(Close to average)	(Close to average)	(Better than Average)

Resident Experience Metrics

Resident Experience Score	Health Risk Score	Carbon Performance
Composite score (out of 50 points)	Composite score (out of 50 deductions)	lbs CO2e/person/year
32	**18**	**2,375**
(Close to average)	(Close to average)	(Better than Average)

Resident Experience Score	Metric	Value
	Overall Quality of Life	6 / 8
	Management Responsiveness	5 / 10
	Cleanliness and Maintenance	7 / 10
	Safety and Security	8 / 10
	Sense of Community	2 / 8
	Thermal Comfort	4 / 4

Calculating Resident Experience Scores: Example

Resident Experience Score	Metric	Value
	Overall Quality of Life	6 / 8
	Management Responsiveness	5 / 10
	Cleanliness and Maintenance	7 / 10
	Safety and Security	8 / 10
	Sense of Community	2 / 8
	Thermal Comfort	4 / 4

Sense of Community	Component (Assessment Question)	Source	Point Range	Total
	How do residents rate their sense of community? (1-10)	Resident survey	2 to 5	8
	How often do residents greet neighbors?	Resident survey	0 to 1	
	Sentiment score: Resident Sense of Community	Qualitative source	-1 to 1	
	Sentiment score: Do staff treat residents with respect?	Qualitative source	-1 to 1	

Resident Experience Metrics

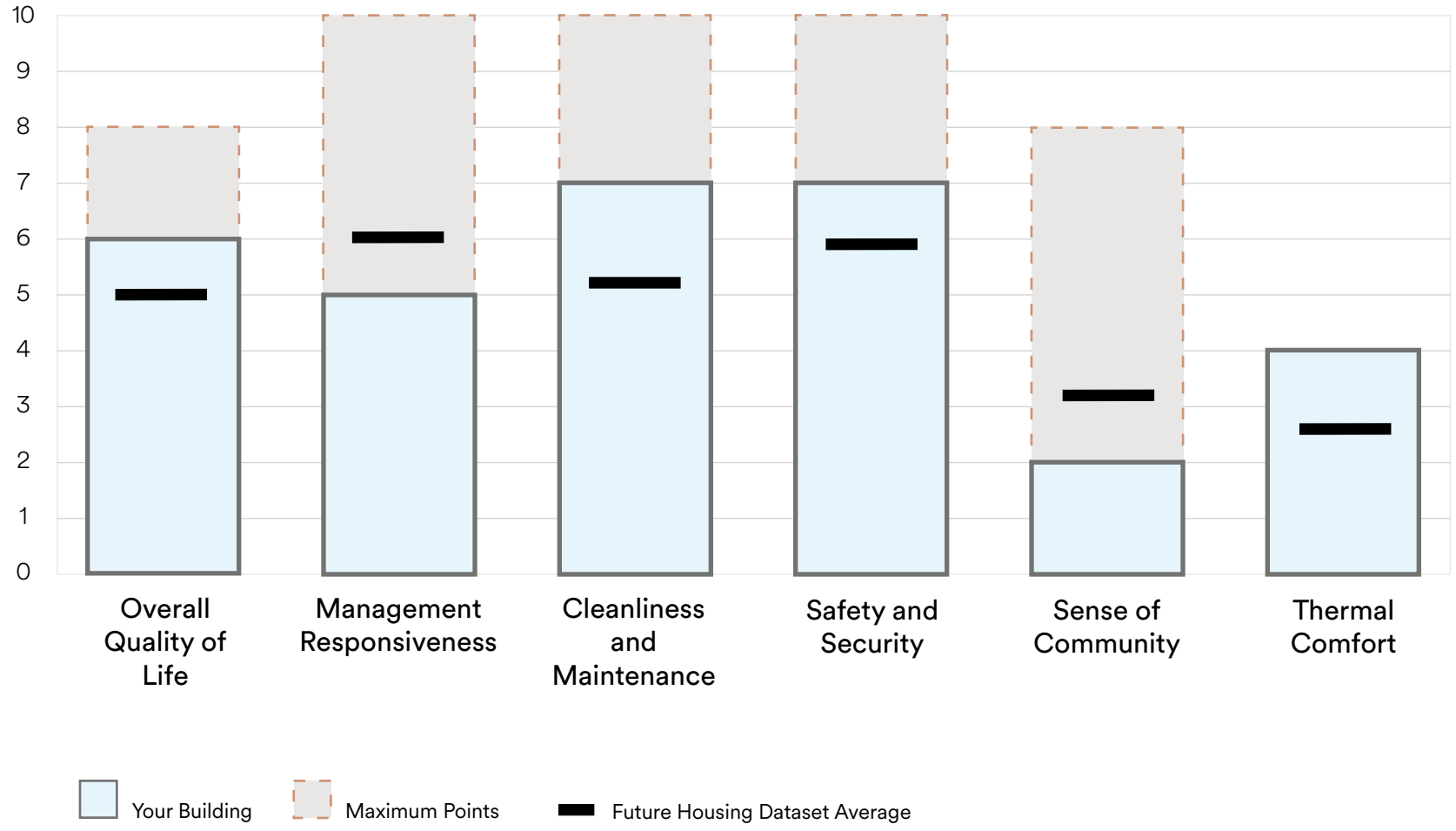
Nice and quiet.

I like everything about the beach. The water it's nice.

Building is clean, rarely ever have any issues. When something needs to be fixed or looked at, it is typically done in a reasonable time.

Building is not an easy access and no one can just walk in.

The 1st door entering the building is always broken.



Health Risk Metrics

Resident Experience Score	**Health Risk Score**	Carbon Performance
Composite score (out of 50 points)	Composite score (out of 50 deductions)	lbs CO2e/person/year
32	**18**	**2,375**
(Close to average)	(Close to average)	(Better than Average)

	Metric	Value
Health Risk Score	Presence of Mold or Mildew	0 / 10
	Presence of Pests	8 / 10
	Building Related Illness	1 / 6
	Evidence of Water Damage, Moisture, or Leaks	2 / 8
	Unaffordability of Maintaining Safe Temperatures	1 / 6
	Risk of Accident or Injury	4 / 6
	Lack of Adequate Ventilation	2 / 4

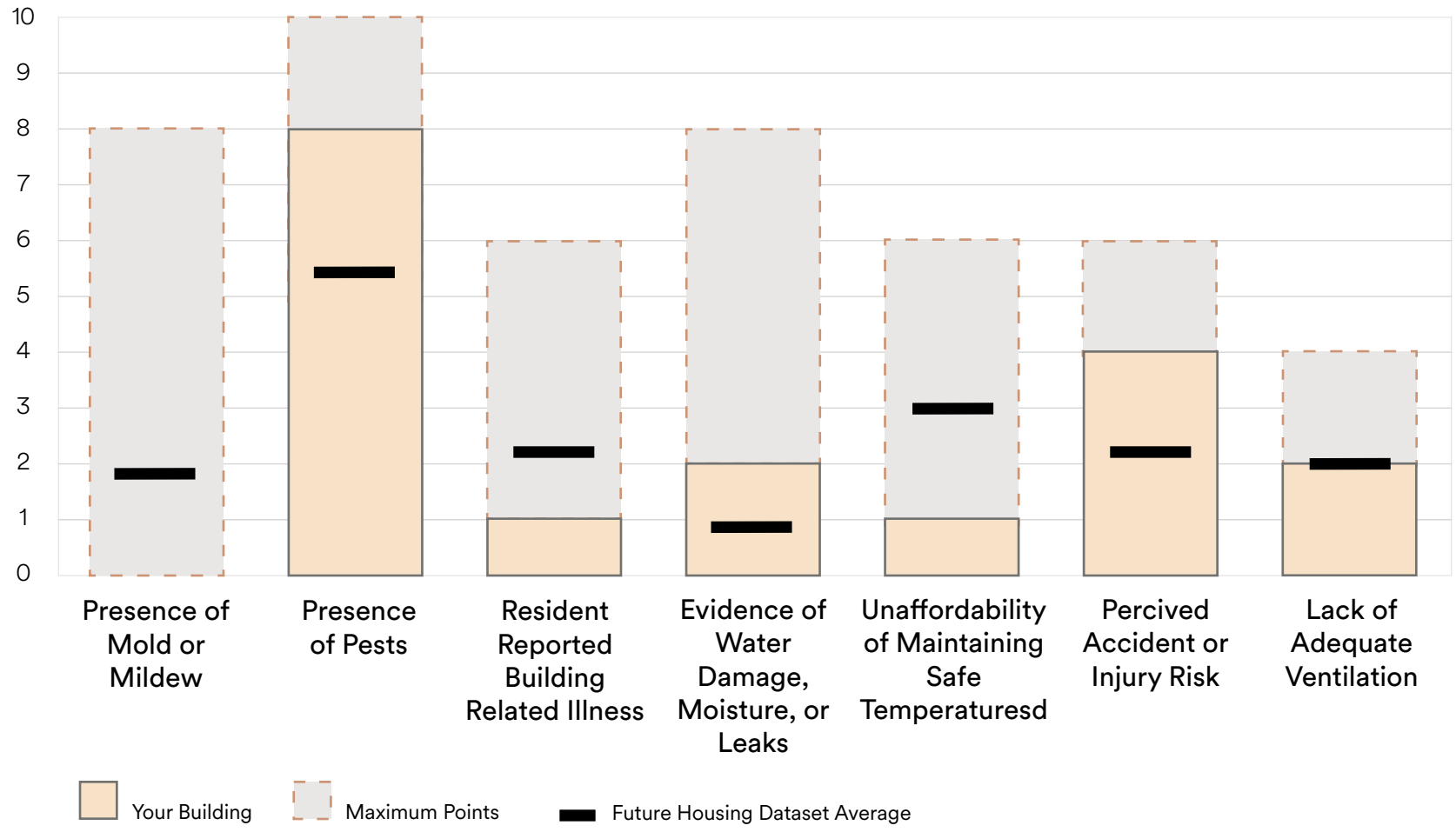
Health Risk Metrics

I had mold, mildew in my unit.

Exterminators come every two weeks.

Roaches come from the door and vents.

Building is clean, rarely ever any issues.



Carbon Performance Metrics

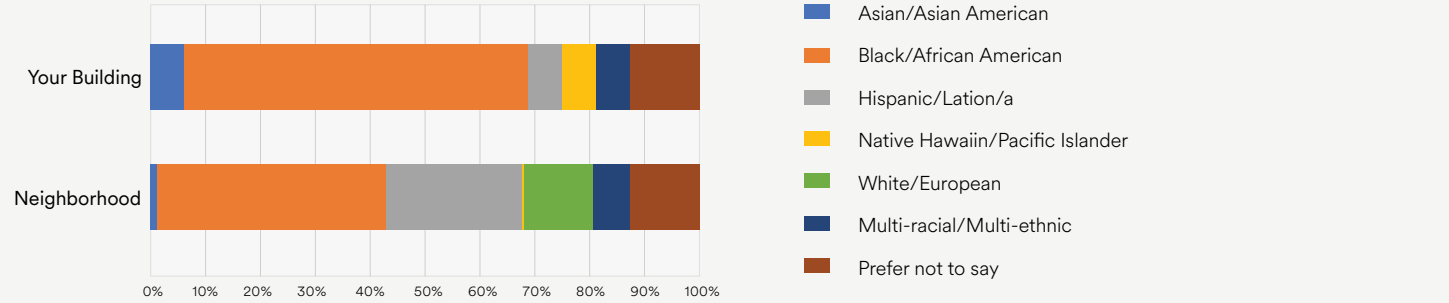
Resident Experience Score	Health Risk Score	**Carbon Performance**
Composite score (out of 50 points)	Composite score (out of 50 deductions)	lbs CO2e/person/year
32	**18**	**2,375**
(Close to average)	(Close to average)	(Better than Average)

Metric	Units	Value	Peer Percentile
Emissions per square foot	lbs CO2e/SF/yr	5.5	26%
Emissions per person	lbs CO2e/person/yr	2375	16%
Resident energy cost per square foot	$/SF/yr	$0.34	28%
Resident energy cost per unit	$/unit/yr	$323	29%
Emissions per square foot	$/SF/yr	$0.92	23%
Owner energy cost per square foot	$/unit/yr	$867	23%
Energy per person	mmBTU/person/yr	16	31%
Energy Use Intensity (EUI)	kBTU/SF/yr	36	31%

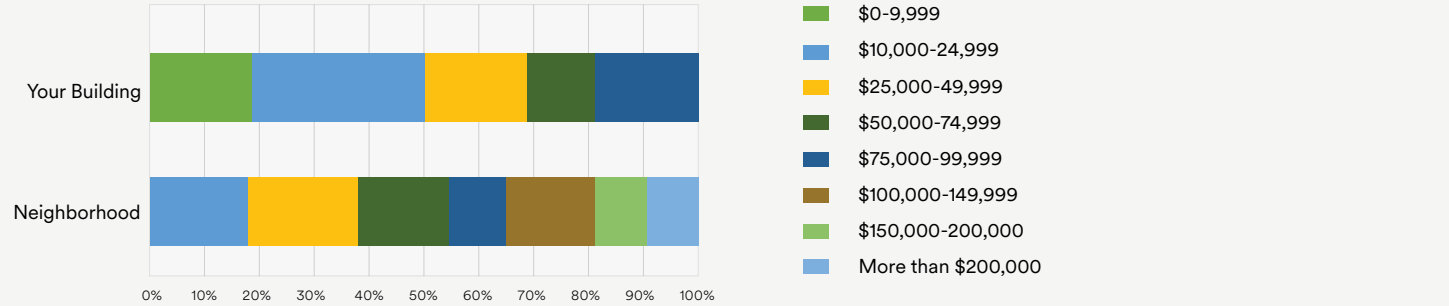
Property Overview

Property Photo	**Location**	City, State
	Owner Type	[For / Not for] Profit
	Year Built	YYYY
	Size	SQFT | Number of Units
	Future Housing Criteria	Certification
Property Affordability Rules		% AMI
Average Residents per Household		2 DP
Neighborhood Average Residents per Household		2 DP
Restricted Occupancy		Unrestricted / Senior / Homeless / Supportive / Student / Veteran

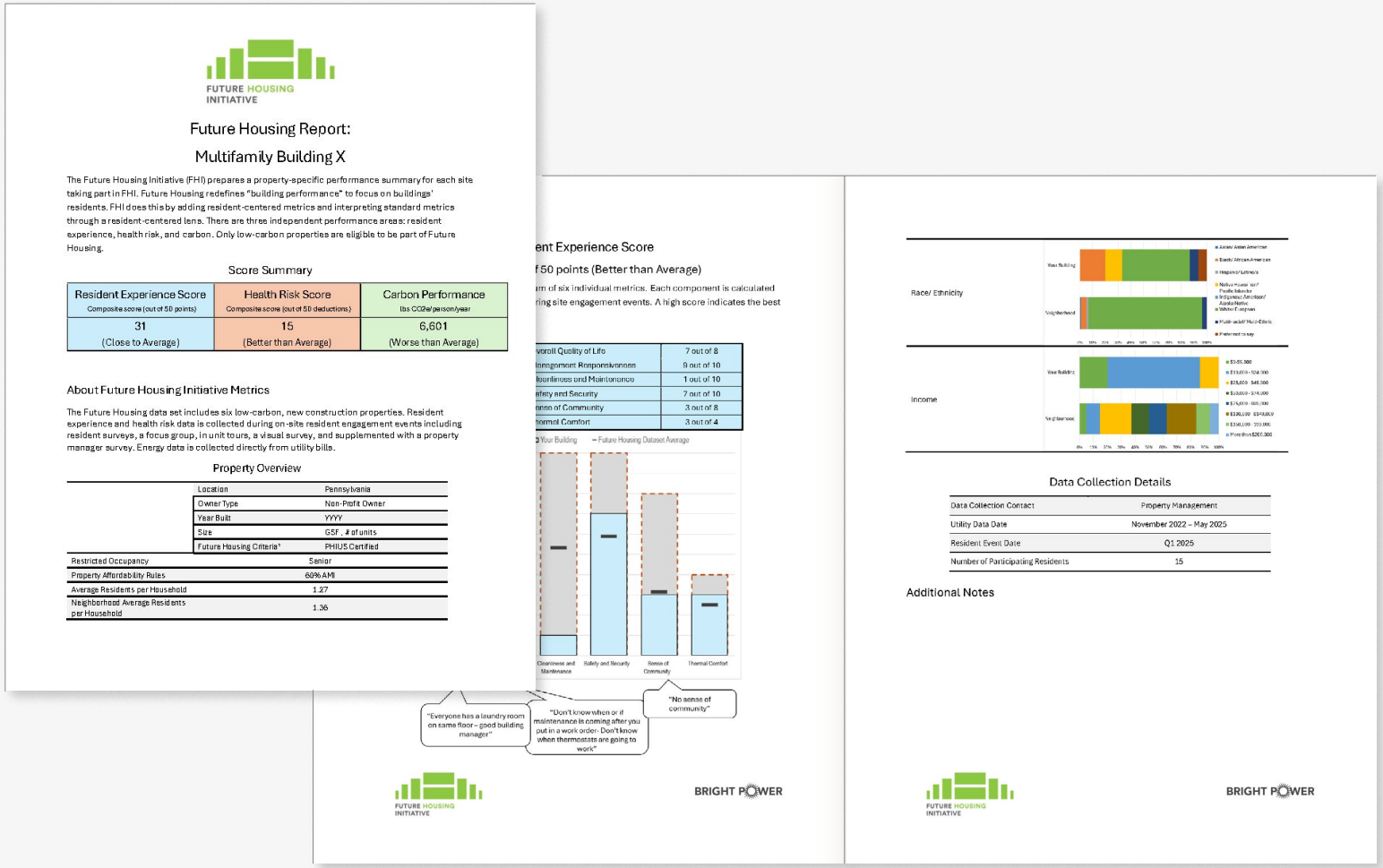
Race/ Ethnicity



Income



Sharing the Findings



FUTURE HOUSING INITIATIVE

Future Housing Report:

Multifamily Building X

The Future Housing Initiative (FHI) prepares a property-specific performance summary for each site taking part in FHI. Future Housing redefines "building performance" to focus on buildings' residents. FHI does this by adding resident-centered metrics and interpreting standard metrics through a resident-centered lens. There are three independent performance areas: resident experience, health risk, and carbon. Only low-carbon properties are eligible to be part of Future Housing.

Score Summary

Resident Experience Score Composite score (out of 50 points)	Health Risk Score Composite score (out of 50 deductions)	Carbon Performance lbs CO2e/person/year
31 (Close to Average)	15 (Better than Average)	6,601 (Worse than Average)

About Future Housing Initiative Metrics

The Future Housing data set includes six low-carbon, new construction properties. Resident experience and health risk data is collected during on-site resident engagement events including resident surveys, a focus group, in unit tours, a visual survey, and supplemented with a property manager survey. Energy data is collected directly from utility bills.

Property Overview

Location	Pennsylvania
Owner Type	Non-Profit Owner
Year Built	YYYY
Size	GSF , # of units
Future Housing Criteria*	PHIUS Certified
Restricted Occupancy	Senior
Property Affordability Rules	60% AMI
Average Residents per Household	1.27
Neighborhood Average Residents per Household	1.36

ent Experience Score

f 50 points (Better than Average)

m of six individual metrics. Each component is calculated ring site engagement events. A high score indicates the best

verall Quality of Life	7 out of 8
nagement Responsiveness	9 out of 10
eanliness and Maintenance	1 out of 10
fety and Security	7 out of 10
nse of Community	3 out of 8
ermal Comfort	3 out of 4

Your Building — Future Housing Dataset Average

Cleanliness and Maintenance | Safety and Security | Sense of Community | Thermal Comfort

"Everyone has a laundry room on same floor – good building manager"

"Don't know when or if maintenance is coming after you put in a work order- Don't know when thermostats are going to work"

"No sense of community"

FUTURE HOUSING INITIATIVE

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Race/ Ethnicity

Income

Data Collection Details

Data Collection Contact	Property Management
Utility Data Date	November 2022 – May 2025
Resident Event Date	Q1 2025
Number of Participating Residents	15

Additional Notes

FUTURE HOUSING INITIATIVE

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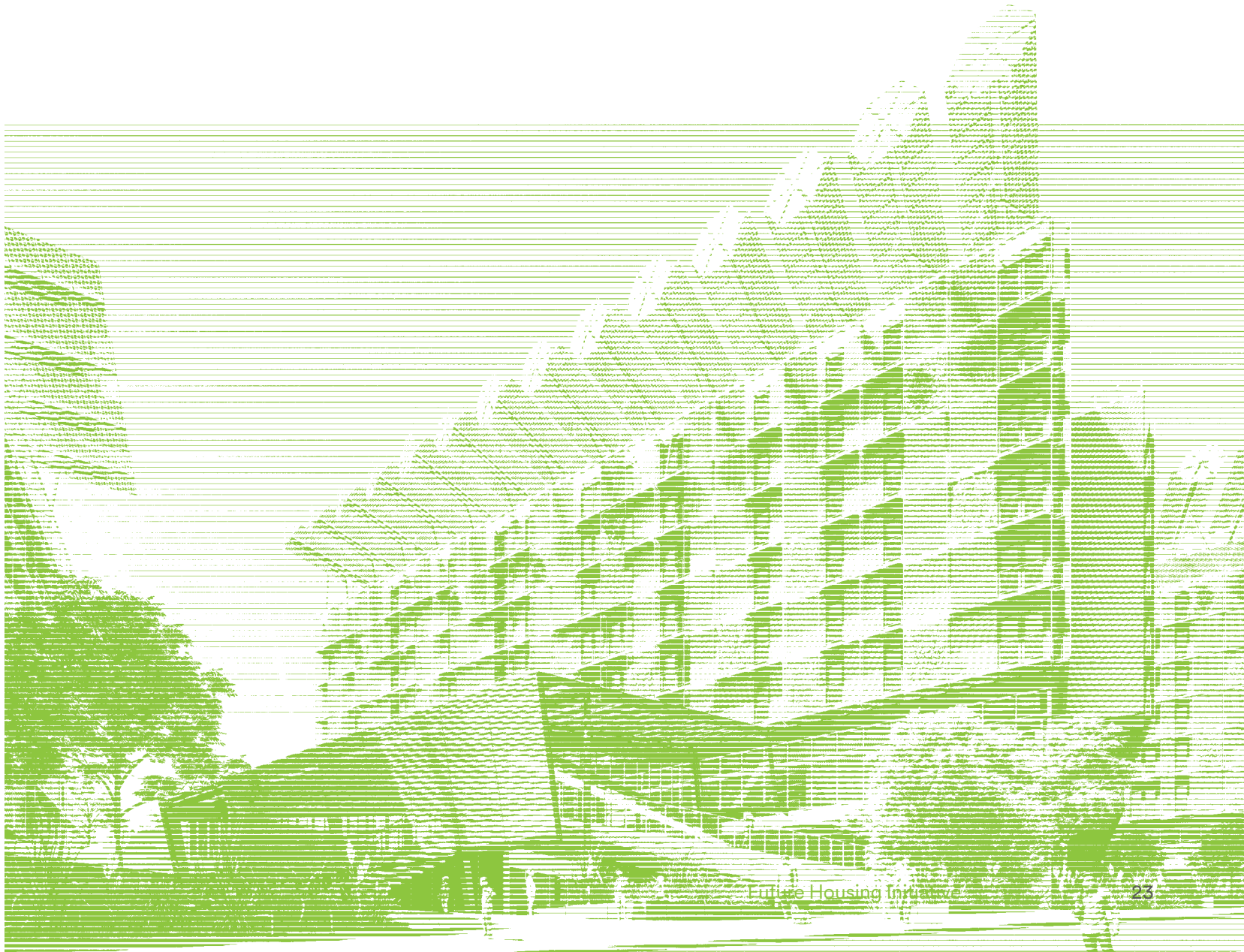
Future Housing Next Steps

- Conduct peer review of the Metrics
- Expand data set geographically and to retrofits
- Develop the Future Housing Data Hub



Learn More & Connect

Check out the Future Housing website

info@futurehousinghub.org

Future Housing: A New Paradigm for Building Performance Tracking

Join Building Energy Exchange and Bright Power for a presentation and moderated panel discussion of the Future Housing Initiative: Equity, Health, & Carbon Database for Multifamily Housing, an endeavor to increase access to equity and health-focused data and incorporate the resident experience into how we assess building performance.

moderator:
Katie Schwamb, Managing Director, Building Energy Exchange

panelists:
Yangchen Dolma, Sustainability Consultant, KC3
Khaleah Edwards, Sr. Energy Analyst, Bright Power
Laura Humphrey, Sr. Director of Energy & Sustainability, L+M Development
Jennifer Leone, Assistant Commissioner & Chief Sustainability Officer, NYC Department of Housing Preservation & Development

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Please fill out an evaluation for this session

or: *nesea.org/eval*

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