

Developing Long Term Sustainability

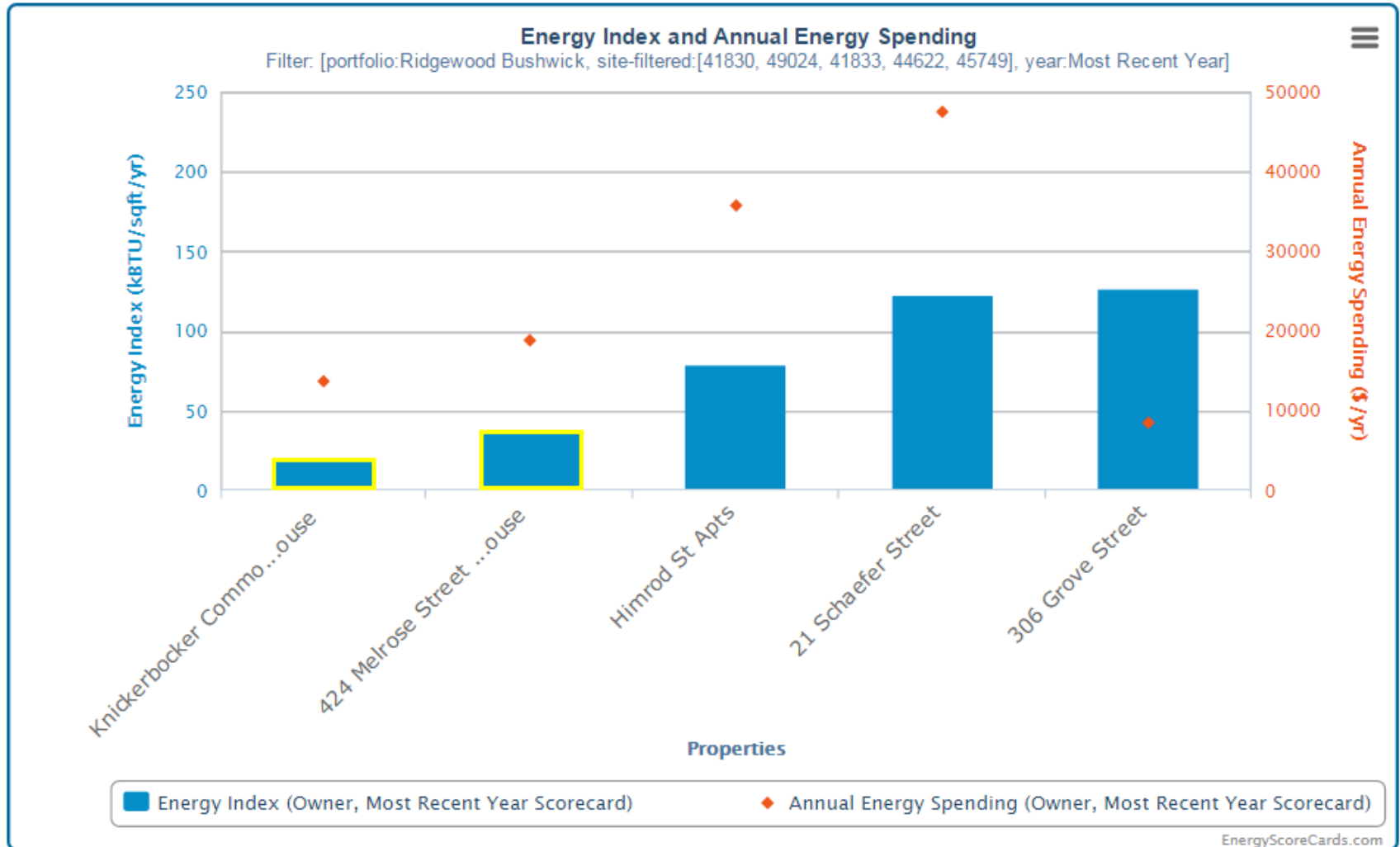
Two Paths to "80 by 50"



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"80 by 50" Is It Possible?



Pathway 1

Passive Rehab

- Standard YR15 Financing Methods
- Moderate Rehab/ Tenant In Place
- Underwrite to Savings
- Gap financing by NYSERDA
- Meet Passive House (PHIUS) Standard
- Bonus: Renewables/Solar

Pathway 1

Passive Rehab: Portfolio

<u>Building</u>	<u>Building Type</u>	<u>Current</u> <u>LL84</u>	<u>2018</u> <u>LL84</u>	<u>Stories</u>	<u>Elevator</u>	<u>Total</u> <u>Units</u>	<u>1BD</u>	<u>2BD</u>	<u>3BD</u>
420 Stockholm	Masonry/wood joist		Y	4		35	16	18	
150 Linden	block/plank	Y	Y	5	Y	40	3	28	9
557 Knickerbocker	block/plank	Y	Y	6	Y	43		33	10
75 Linden Street	Masonry/wood joist			4		12	4	5	3
104 Grove	Masonry/wood joist		Y	4		23		17	6
110 Grove	Masonry/wood joist		Y	4		23		17	6
116 Grove	Masonry/wood joist		Y	4		16	2	14	
120 Grove	Masonry/wood joist		Y	4		16	2	14	
93-95 Stockholm	Masonry/wood joist			4		14	6	8	
160 Harman	block/ poured concrete			4		14		14	
173 Harm	block/ poured concrete			4		14		14	
181 Harman	block/ poured concrete			4		14		14	
				Total		264	34	196	34



Pathway 1

Passive Rehab: Utility Analysis

UTILITIES	2014	2015	2016	Passive Rehab Operating Assumptions
Electric	\$107,903.29	\$119,977.50	\$94,777.90	\$ 104,256
Gas	\$158,408.07	\$206,052.16	\$163,239.19	\$ 81,620
Water & Sewer	\$314,726.04	\$230,287.15	\$336,003.35	\$ 266,112
Heating Oil	\$238,044.80	\$7,950.87	\$16,048.54	\$ -
TOTAL UTILITIES	\$819,082.20	\$564,267.68	\$610,068.98	\$ 451,987



Pathway 1

Passive Rehab: Means & Methods

- Improved HVAC Systems (VRF or mini splits)
 - **Opportunity**: Controlled, efficient distribution
 - **Challenge**: Billing, Submetering, cost
- Insulate Outside Existing Walls (Rainscreen or EIFS)
 - **Opportunity**: Run HVAC lines in new insulation
 - **Challenge**: Easements at lot lines for new insulation
 - **Opportunity**: New air & moisture barrier



Pathway 2: Leveraging Operational Savings

Collect Data

Empower/Inform Staff

Choose a Champion

Develop Standards/Identify Outliers

Build Scope of Work

Execute Project

Track Results



Pathway 2:

Leveraging Operational Savings: RBSCC Housing Portfolio

	2014	2015	2016
# Buildings	119	120	132
# Units	1778	1802	1900
SERVICE CONTRACTS	1,359,509.03	1,266,159.88	1,429,052.54
MAINTENANCE TOOLS & SUPPLIES	422,351.59	584,275.66	401,998.40
UTILITIES	4,059,882.62	3,857,547.79	3,295,448.75
per unit cost	2,283.40	2,140.70	1,734.45
REPAIRS & MAINTENANCE	671,336.82	899,908.79	972,189.29
TOTAL M&O	6,515,363.46	6,610,032.82	6,100,423.43



Future: Sustainable Construction & Renovation

Local Laws- 84, 87, 31, 11

Increased Data Collection

Improved Efficiency/
Technology

Renewables & Net Zero

One City: Built to Last

What is Passive House?

A building constructed to "Passive House" standards must meet strict energy efficiency criteria for its insulation, space heating and cooling, and primary energy demand within the building. These standards require minimizing heating and cooling loads through substantial insulation, the "passive" use of solar heat and internal heating sources, such as people and electrical equipment, to heat the building, solar shading to cool the building, and heat recovery systems for space heating that is required. Because the building is essentially airtight, a continuous supply of low volume filtered fresh air must also be supplied to living and working spaces, and stale air regularly exhausted from spaces with high-efficiency heat exchange to minimize heating losses.

Passive House standards can be applied to both new construction and renovations. For the renovation of existing buildings, the performance standard is slightly more lenient, but still results in a roughly 90 percent reduction in average heating and cooling energy usage and up to a 75 percent reduction in primary energy usage. A Passive House building can also be any type of building, including an apartment building, a school, an office building, a factory, a supermarket, or a single-family house.

Case Study: Knickerbocker Commons Affordable Housing

803 Knickerbocker Avenue, Brooklyn
Architect: Chris Benedict, R.A.
Owner: Ridgewood Bushwick Senior Citizen's Council
General Contractor: Galaxy Construction
Construction Cost: \$180/square foot
No. of Units: 24



Knickerbocker Commons, the first mid-sized apartment building designed to Passive House standards in the United States

Knickerbocker Commons, a six-story residential building containing 24 units of affordable housing, is the country's first mid-sized apartment building to conform to Passive House design standards. To achieve the strict Passive House standards, each rental unit in Knickerbocker Commons has its own ventilation system and small radiators for heating and airtight window air conditioning units for cooling. In addition, the building features triple-paned windows and a sculpted exterior that shade windows from the sun in the summer and maximize exposure in the winter. According to the project's architect, Chris Benedict, the building will use 85 percent less energy than is typically required to heat a New York City apartment building in the winter.

The apartment is located in the Bushwick neighborhood of Brooklyn and was developed through HPD's Low Income Rental Program. Of the 24 units, six units will be rented to households earning up to 30 percent of Area Median Income (AMI), five units will be rented to households earning up to 50 percent of AMI, 12 units will be rented to households earning up to 60 percent of AMI, and one unit will be set aside for a building superintendent. In addition to the residential units, the project includes almost 5,000 square feet of community facility space.

Resources

- **Architect & Designer**
 - **Chris Benedict, R.A.**
- **Utility Rebates**
 - ConEd- BQDM, LMI
 - National Grid- replacement incentives
 - DEP- MCP Program, TRP program
- **NYSERDA**
 - MPP Targeted
 - MPP Existing
- **NYC**
 - Retrofit Accelerator
 - Carbon Challenge
- **3rd Party Providers**
 - Water Conservation- aerators, wireless meters
 - Renewables- Solar Tax Credit

