



# NextGeneration NYCHA Sustainability Agenda

Better Buildings Summit | May 9, 2016

# NYCHA houses 1 in 12 New Yorkers



**77,000**  
**SENIORS**  
62 YEARS OLD OR OLDER



**110,000**  
**CHILDREN**  
UNDER 18 YEARS OLD



**\$23,000**  
AVERAGE  
HOUSEHOLD  
INCOME



**61%**  
ARE EMPLOYED  
(OF NON-DISABLED,  
WORKING AGE ADULTS)



**40%**  
OF HEADS OF HOUSEHOLDS  
ARE 62 YEARS OLD OR OLDER



**25%**  
OF NYCHA EMPLOYEES  
ARE RESIDENTS OF  
PUBLIC HOUSING



**41%**  
ON FIXED INCOME  
(SOC. SEC., SSI, PENSION, OTHER)



**12%**  
RECEIVE PUBLIC  
ASSISTANCE

# NYCHA's housing stock is aging



328  
DEVELOPMENTS



MADE UP OF 2,550 BUILDINGS

THAT CONSIST OF  178,000 APARTMENTS

CONTAINING OVER  175 MILLION  
SQUARE FEET OF SPACE

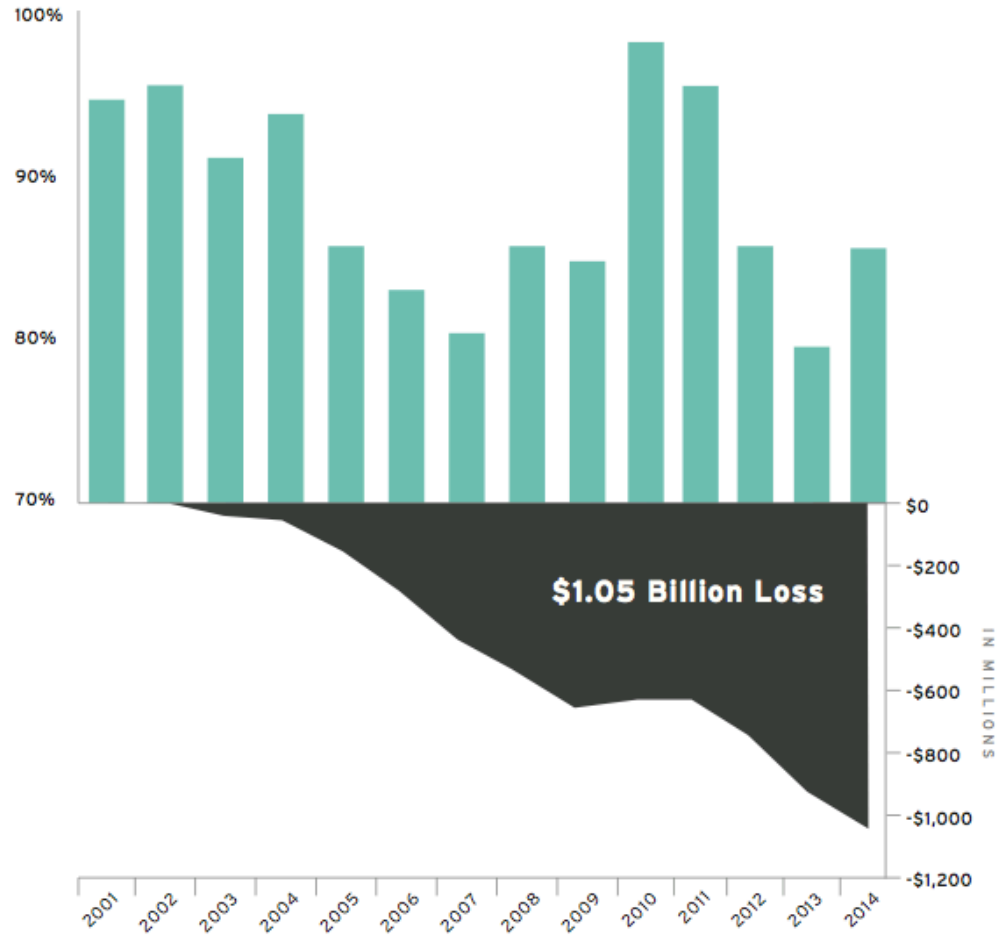
60% OF NYCHA'S BUILDING  
ARE 50+ YEARS OLD



THE LARGEST DEVELOPMENT: A 26-BUILDING  
APARTMENT COMPLEX WITH 7,000 RESIDENTS

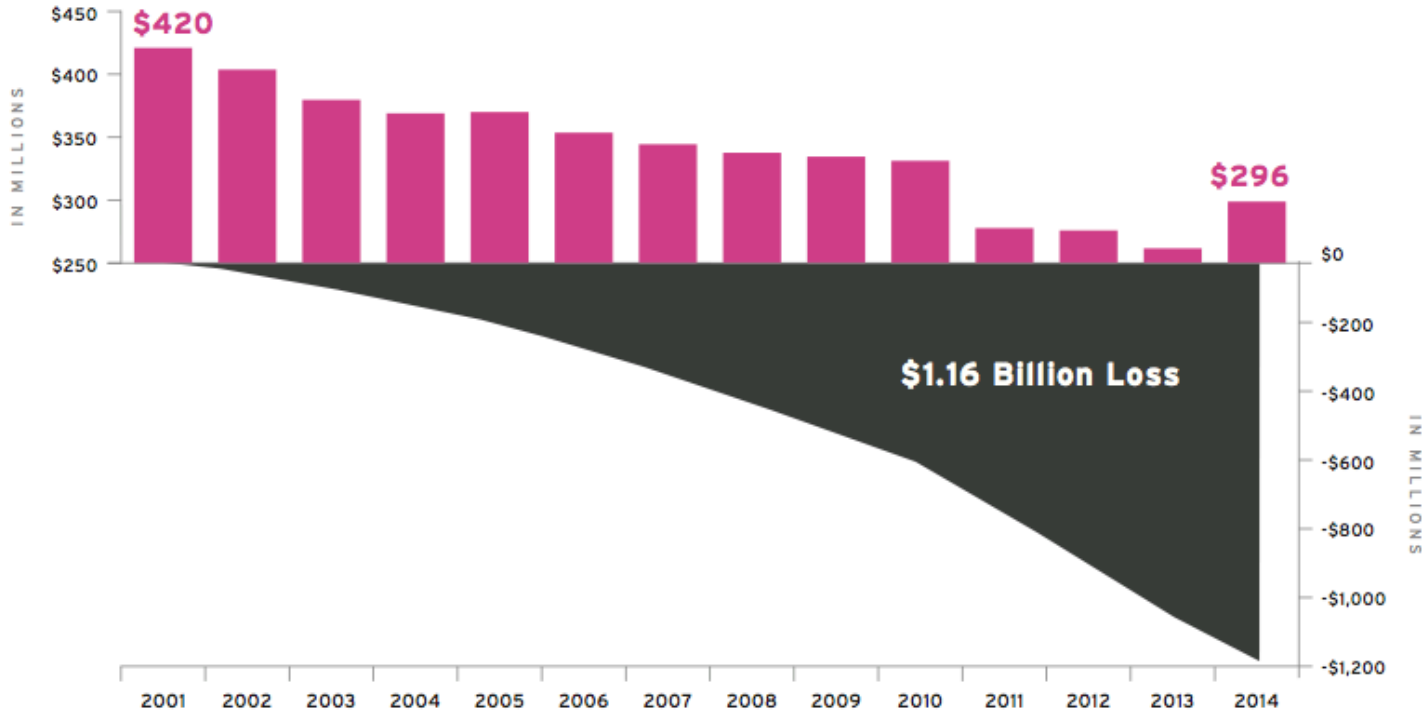
THE SMALLEST DEVELOPMENT: A SINGLE-STORY  
SENIOR BUILDING WITH 13 RESIDENTS

# \$1 billion loss in operating funding since 2001



Data Source: NYCHA Finance

# 30% loss in capital funding since 2001



Data Source: NYCHA Finance

■ Annual Federal Capital Grant  
■ Cumulative Loss versus 2001 Funding Level



# NextGeneration NYCHA

## Safe Clean Connected Communities

The Authority's **10-year strategic roadmap** to

1. Achieve short-term financial stability and diversify funding for the long term
2. Operate as an efficient and effective landlord
3. (Re)build, expand, and preserve public and affordable housing
4. Engage residents and connect them to best-in-class social services

# NextGeneration NYCHA

## Comprehensive Sustainability Agenda

NYCHA's **commitment** as a landlord to create healthy and comfortable homes that will withstand the challenge of climate change

An **invitation** to residents and surrounding communities to work with NYCHA to realize a shared long- term vision of equity, sustainability, and resiliency

# GOAL #1

## ACHIEVE SHORT-TERM STABILITY AND DIVERSIFY FUNDING FOR THE LONG TERM

Attract investments for **capital improvements**

Raise revenues through **clean and distributed energy** projects



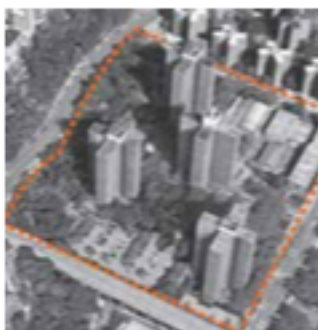
# GOAL #1 FUND

## Capital Improvements: Master-Planned Sites



Invest \$300 million via a series of large EPCs.

Scope of work: heating distribution controls, ventilation, and electric and water efficiency.



4 EPCs in development, serving 130 developments.

120,000 units in EPCs by 2018

Master-Planned sites at Polo Grounds in Harlem and Williamsburg Houses in Brooklyn.

# GOAL #1 FUND

## Capital Improvements: Scattered Sites



Invest \$30 million via WAP and utility programs

No HUD Capital Funds

Comprehensive retrofit scopes of work

\$1.4 million first WAP pilot (222 units)

5,000 unit pipeline in 60 developments



Scattered-site developments on Hunts Point Avenue in the Bronx and Ralph Avenue in Brooklyn.

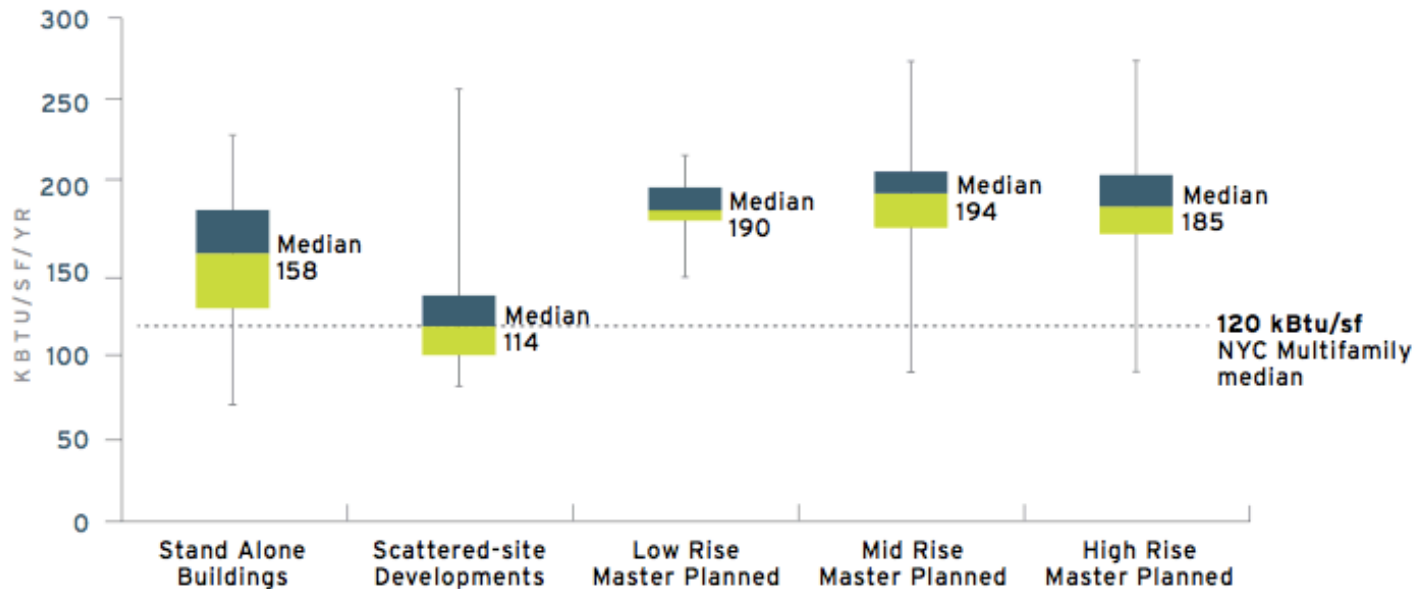
# GOAL #1 FUND

## Capital Improvements: Why 2 paths?

### Energy Intensity Varies by Development Type

Master planned developments use more energy on average than single buildings or scattered site developments.

Master-planned sites use campus-scale steam systems; scattered site buildings tend to use hot water heat.



# GOAL #1 FUND

## DER & Renewables

Renew300 commitment of 25MW by 2025

Red Hook Microgrid and Cogeneration Plant  
via Public Private Partnership

Support City in community-scale clean and  
distributed energy systems



2.5 million SF of solar panels

will provide

25 MW

of solar energy in 10 years

## GOAL #2

# OPERATE AS AN EFFECTIVE AND EFFICIENT LANDLORD

Create **healthy indoor environments**

Efficiently provide **comfortable and reliable heat and hot water**

Improve **water management**

Adopt a comprehensive **waste management plan**

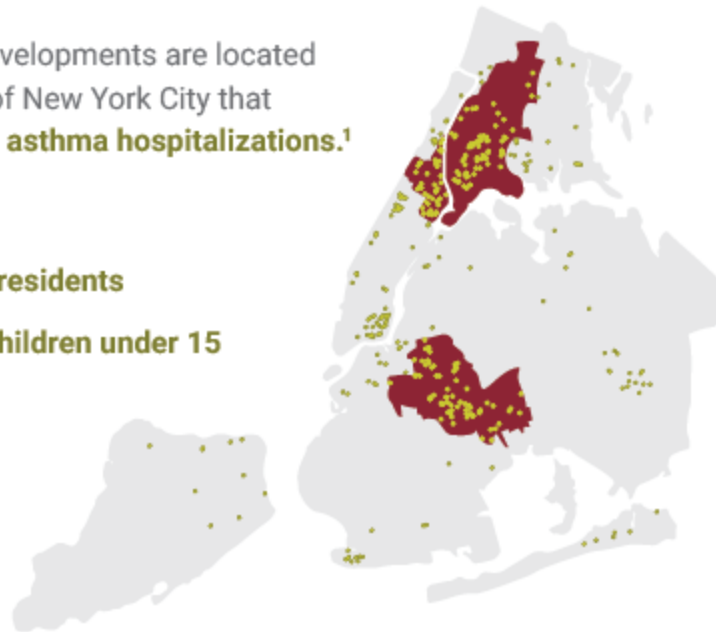
# GOAL #2 OPERATE

## Healthy Indoor Environments

43%

of NYCHA developments are located in the areas of New York City that see the most asthma hospitalizations.<sup>1</sup>

They house **151,000** residents  
**38,000** children under 15



New York City plans to have the **best air quality** among all large US cities by 2030.



NYCHA can't control outdoor air pollution, but its sustainability strategies can improve indoor air quality.

- Highest rate of asthma hospitalizations in NYC
- NYCHA development

Data Sources: NYC Department of Health and Mental Hygiene - Environment and Health Data Portal / United Hospital Fund Boundaries: NYCHA Department of Research and Management Analysis

# GOAL #2 OPERATE

## Healthy Indoor Environments

### VOCs

Volatile Organic Compounds are chemicals found in some maintenance products.

By 2017, new purchases will be low-VOC or VOC-free.

Improve the health of staff and residents

### Pests

Develop a comprehensive pest management approach and reduce the use of toxics.



23% of all New York City households reported seeing at least one cockroach daily in the span of a month in 2014.

### Mold

The presence of water is required in order for mold to thrive.

**Case-management approach** Thorough inspections and integrated solutions to eliminate the root cause.

### Smoke

Smoking is banned in common areas, yet 50%+ residents report smelling second-hand smoke in their homes.



Residents of 830 Amsterdam who took the first step by signing a pledge to keep their building smoke-free.

# GOAL #2 OPERATE

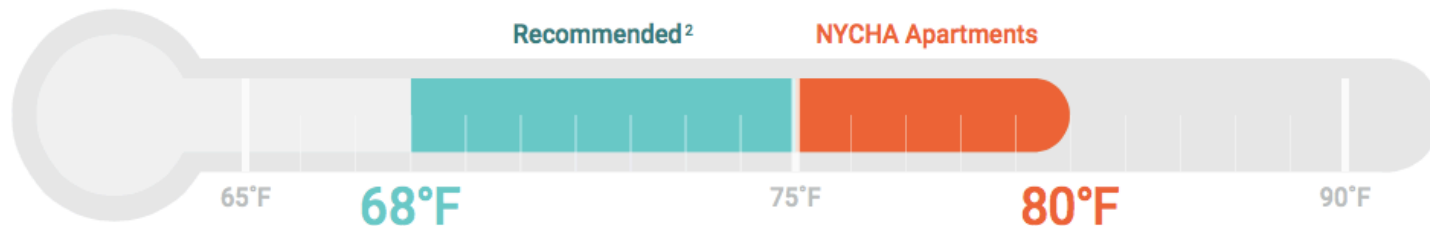
## Comfortable & Reliable Heat


92% of apartments are heated with steam, the most inefficient way to heat buildings.

1,379 boilers provide NYCHA's heat. Each has a life expectancy of 30 years. 45% are already 25+ years old.

**Apartments are overheated** because outdoor temperature sensors can't tell when it's hot inside—only that it's cold outside.

### Winter-time indoor temperature



 That's like keeping the lights on inside because it's dark outside—even when you're sleeping or not home.



## GOAL #3

# (RE)BUILD, EXPAND, AND PRESERVE PUBLIC AND AFFORDABLE HOUSING

Adopt **sustainability standards**

**Eliminate leaks** in roofs, façades, and plumbing

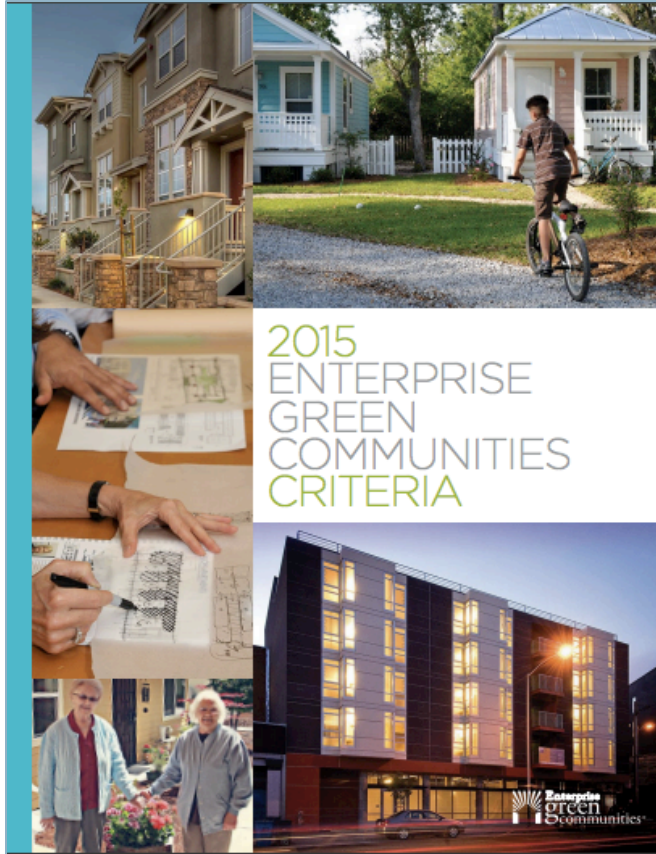
**Retrofit** master-planned and scattered site developments

Build **green infrastructure**

Incorporate **climate change resiliency** into capital planning

# GOAL #3 (RE)BUILD

## Sustainability Standards



New Construction on  
NYCHA land

Comprehensive rehabs

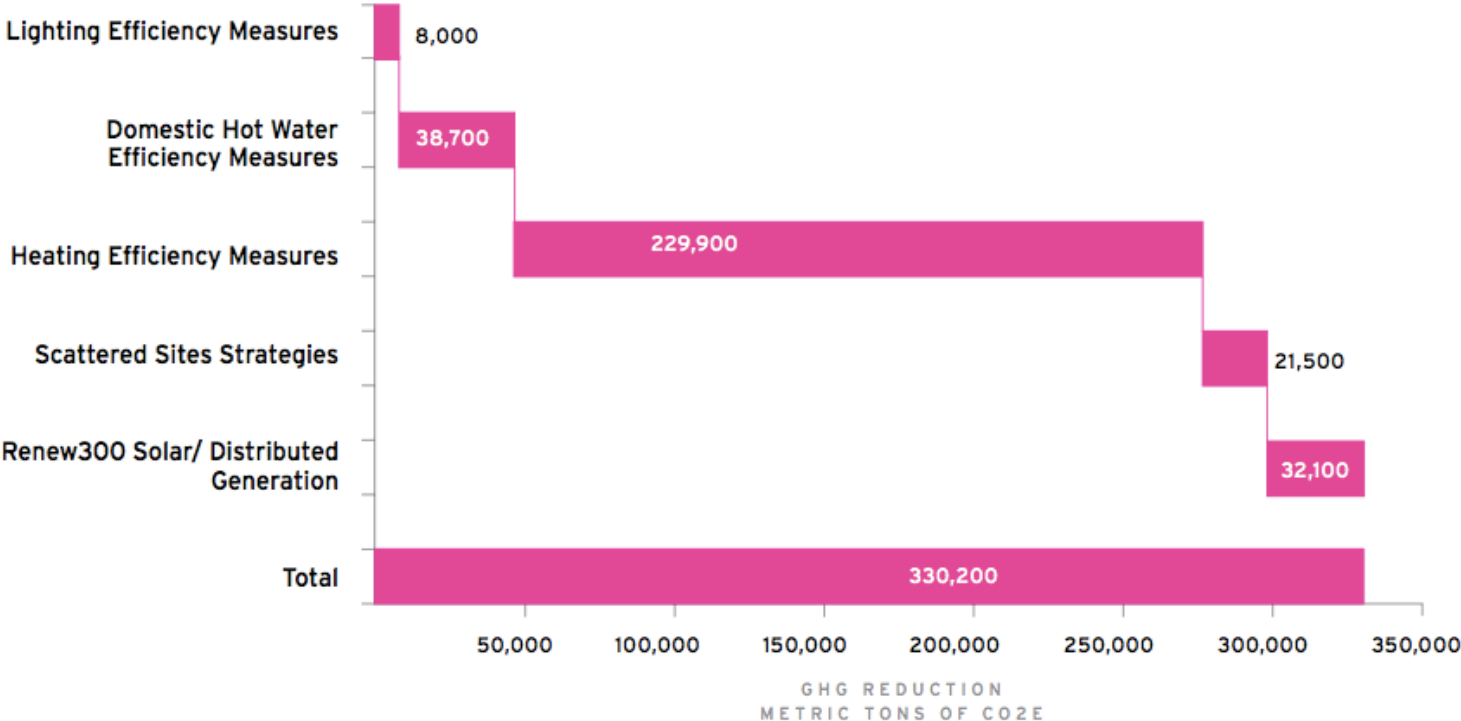
Preservation via RAD will  
meet a minimum EUI

System-specific upgrades

# GOAL #3 (RE)BUILD

## Energy Efficiency Retrofits

**GHG emissions reduction through 2025  
by energy conservation measure**



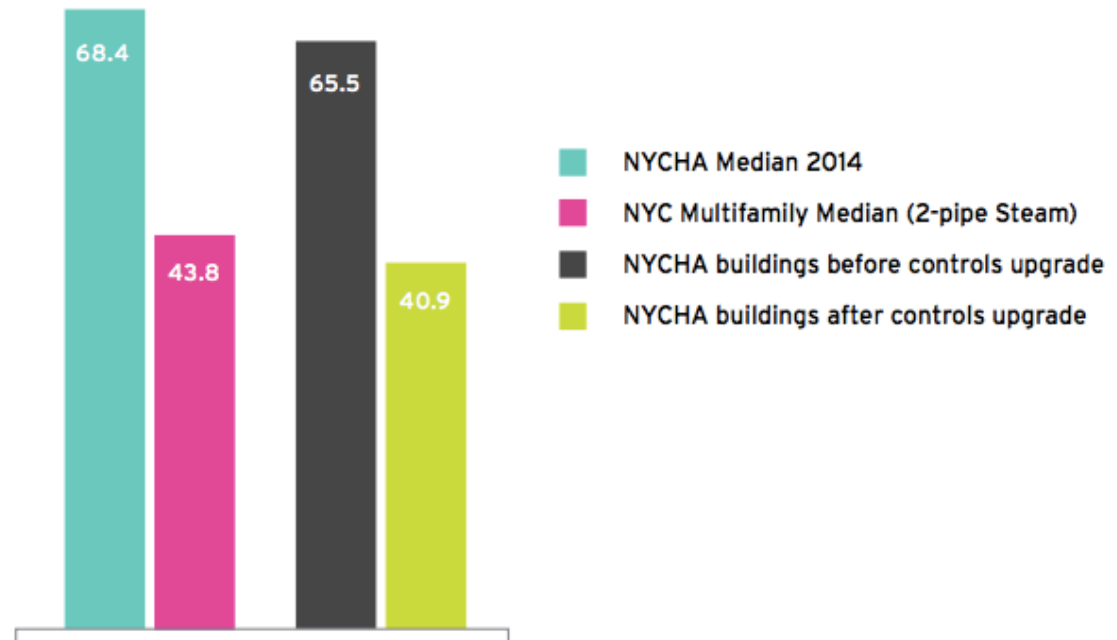
Source: NYCHA Dept. of Energy and Sustainability

# GOAL #3 (RE)BUILD

## Energy Efficiency Retrofits

### NYCHA's Heating Energy Use Intensity Can Be Improved Through Controls Upgrades

Heating Energy Use Intensity (kBtu/sf) before and after installation of indoor temperature feedback controls, compared to portfolio-wide median in 2014, and NYC multifamily median



# GOAL #3 (RE)BUILD

## Climate Resiliency

90°F days per year in New York City<sup>1</sup>



54,000 NYCHA residents are located in areas **subject to coastal flooding**

1 in 6 NYCHA buildings lost power during Superstorm Sandy

44% of NYCHA residents are children and seniors

<18 years old (27%)  
65+ years old (17%)



vs. New York City's population  
(21%) <18 years old  
(15%) 65+ years old

NYCHA also has almost **2x** more residents <65 years old with disability than the New York City average

## GOAL #4

# ENGAGE RESIDENTS AND CONNECT THEM TO BEST-IN-CLASS SOCIAL SERVICES

Support **resident- and community-led** sustainability initiatives

Connect residents to **green jobs**

# GOAL #4 ENGAGE

## Resident & Community Initiatives



# GOAL #4 ENGAGE

## Green Jobs





# 80 X 50

## WORK TOWARDS 80 PERCENT REDUCTION IN GREENHOUSE GASES BY 2050

Create an **80x50** roadmap

Create incentives for new **low-energy buildings**

Test “**deep**” **retrofit** strategies

# 80 X 50

## Low-energy Buildings



### **Knickerbocker Commons**

803 Knickerbocker Avenue, Brooklyn

Architect: Chris Benedict, R.A.

Owner: Ridgewood-Bushwick Senior Citizens Council

Year: 2014

Units: 24



### **HANAC Corona Senior Residence**

54-15 101st Street, Queens

Architect: Think Architecture and Design

Owner: Hellenic American Neighborhood Action Committee (HANAC), Inc.

Year: 2017 (est.)

Units: 68



### **Beach Green North**

44-19 Rockaway Beach Blvd., Queens

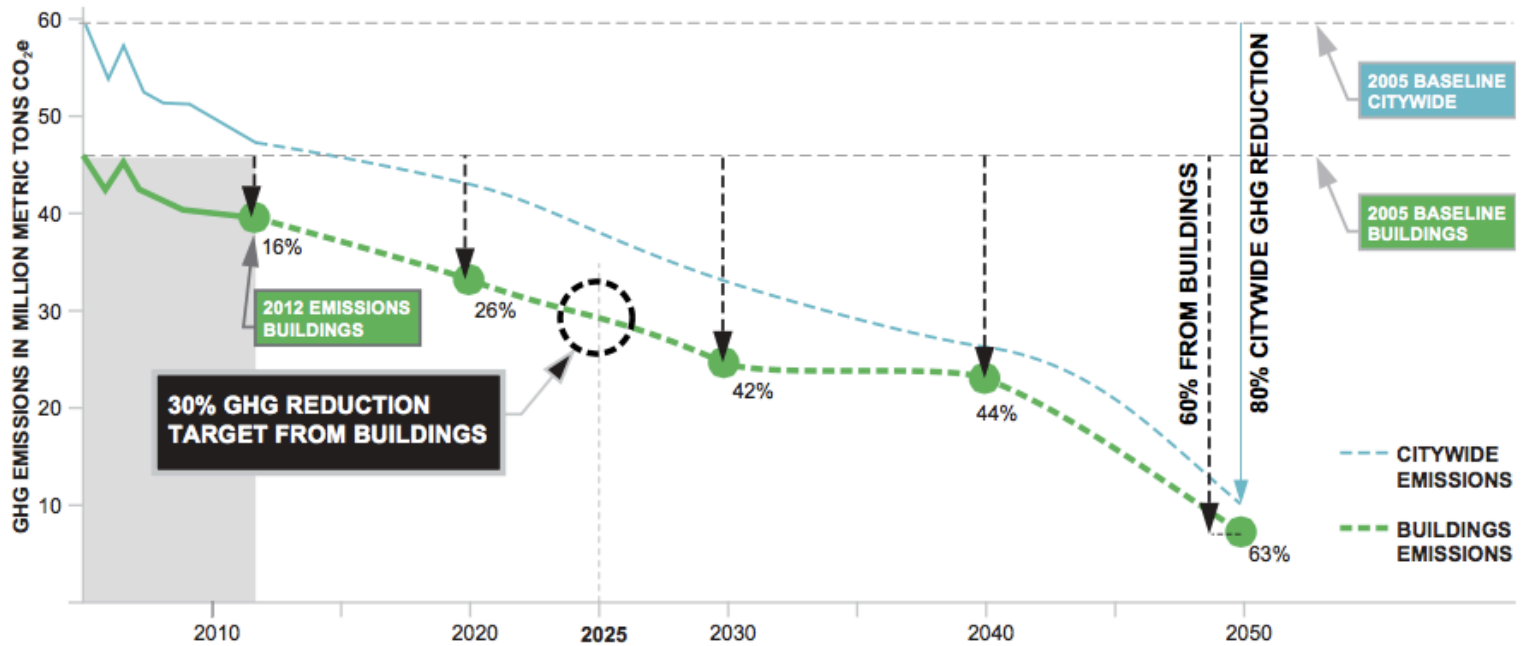
Architect: Curtis + Ginsberg Architects

Owner: The Bluestone Organization, L+M Development, Triangle Equities

Units: 101

# 80 X 50 Roadmap

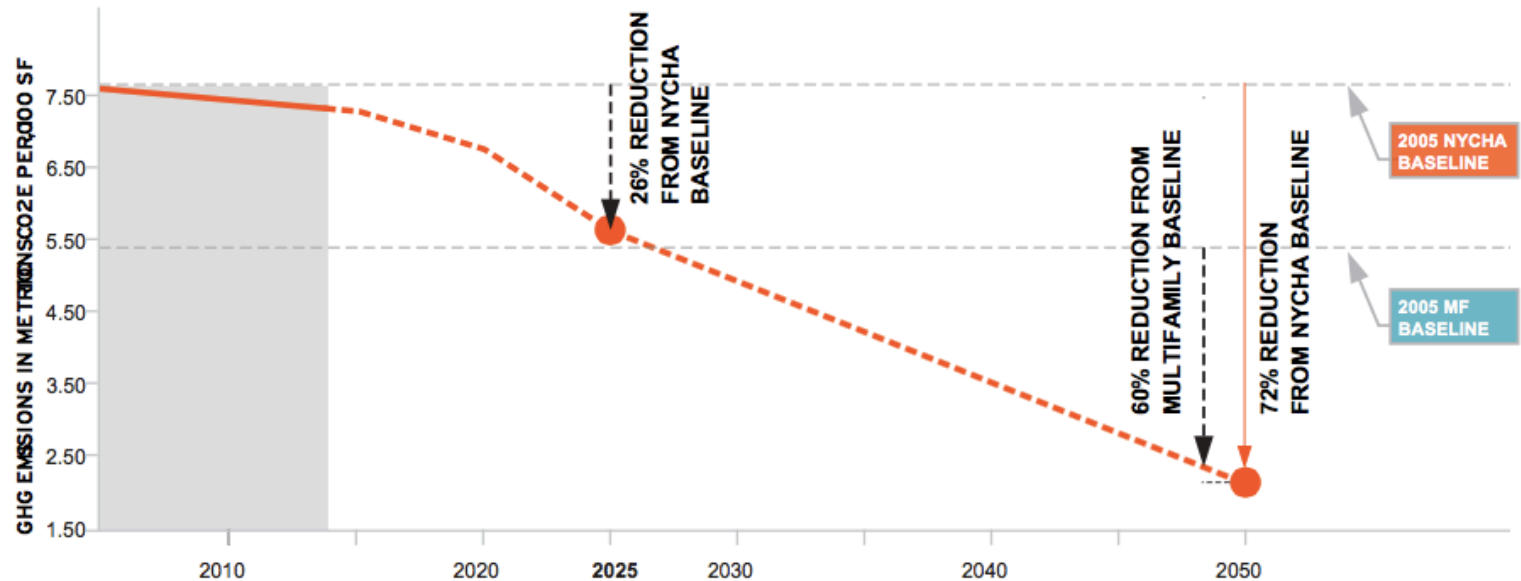
## Pathway for Reductions in Greenhouse Gas Emissions from Buildings



Source: New York City Mayor's Office of Long-Term Planning and Sustainability

# 80 X 50 Roadmap

## Pathway for Reductions in Greenhouse Gas Emissions from NYCHA Portfolio



Source: Mayor's Office of Sustainability and NYCHA Dept. of Energy and Sustainability

# NextGeneration NYCHA

## Sustainability Agenda

<http://j.mp/green-nycha>

Bomee Jung

Vice President, Energy & Sustainability

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# *THE PHFA PROJECT*

*A National  
Net-Zero-Energy-Capable  
Affordable Housing Initiative*

**Tim McDonald**  
**[tim@onionflats.com](mailto:tim@onionflats.com)**  
**215.783.5591**





urban environments emit **75%** of global GHGs

UN Habitat





By 2030,

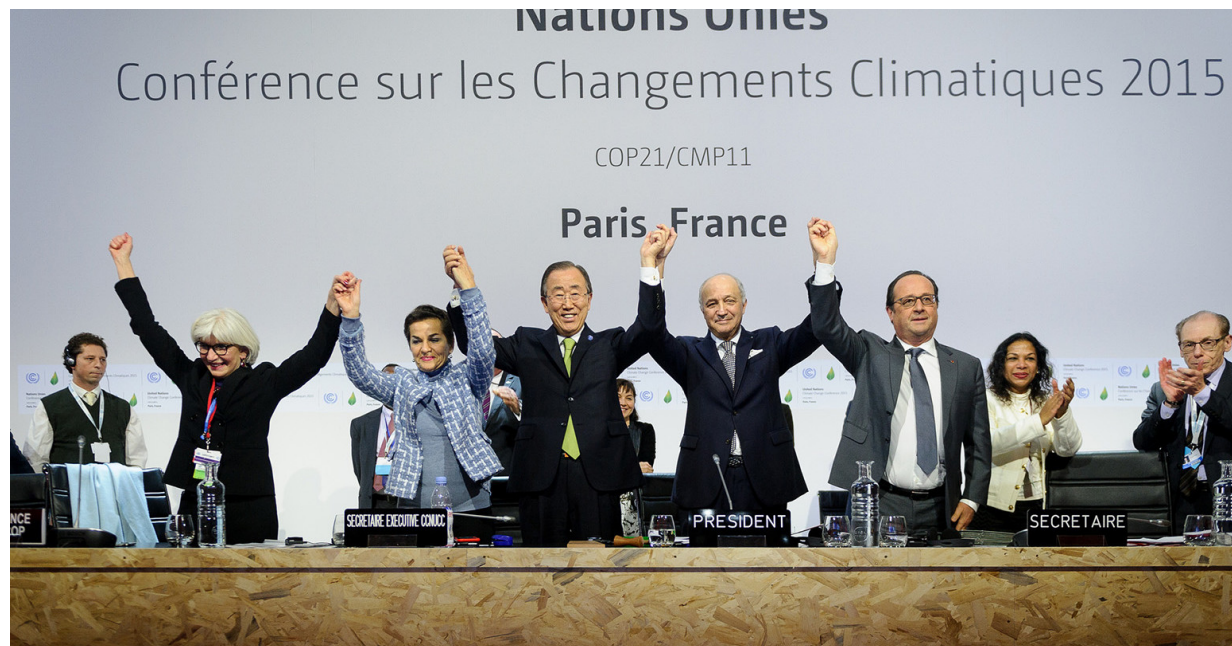
An area equal to 3.5 times the  
entire building stock of U.S.

**900 billion ft<sup>2</sup>** (84 billion m<sup>2</sup>)

of new and rebuilt buildings  
will be constructed in cities worldwide.

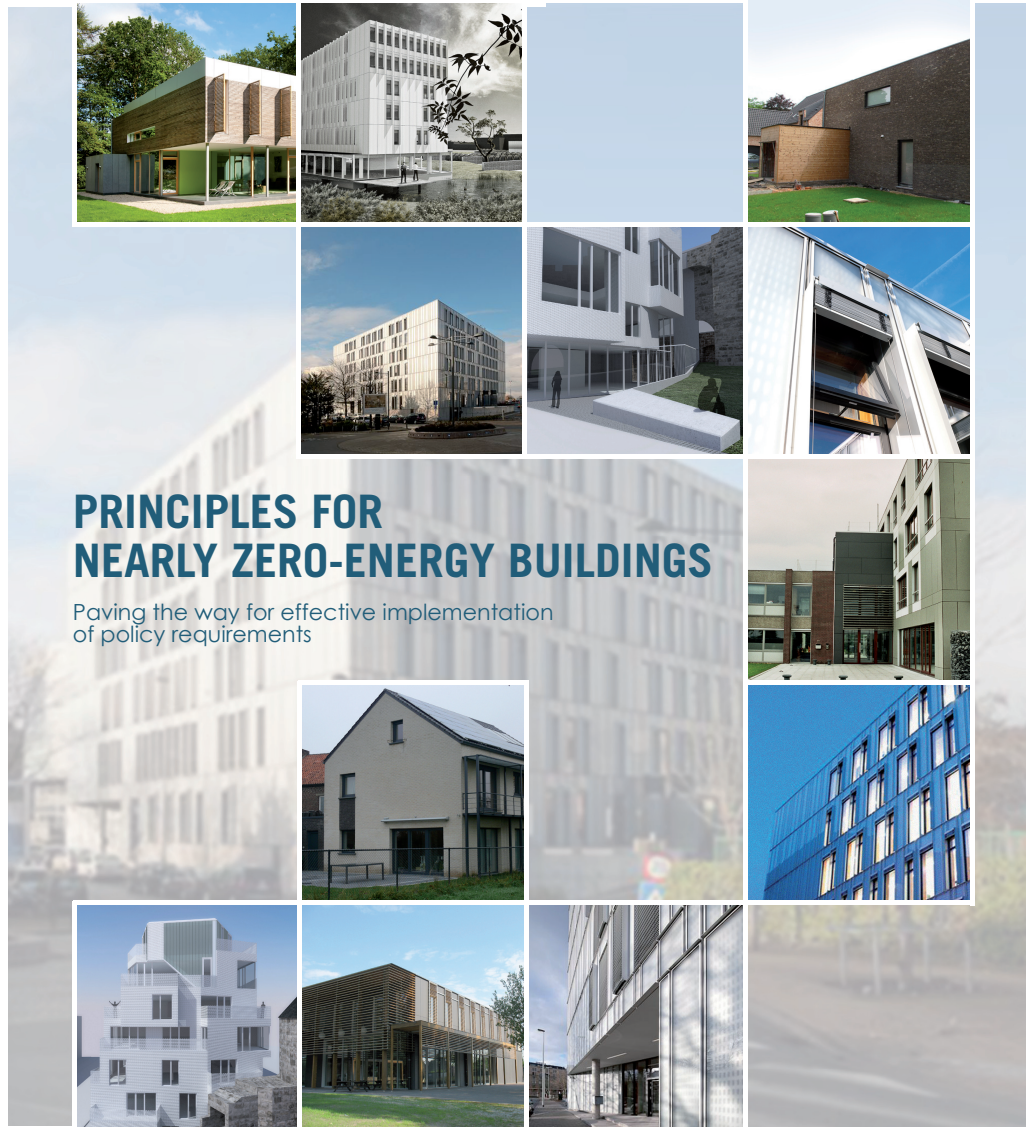
**2015 United Nations Climate Conference, **COP 21****  
**PARIS, France**

*“.....FIRST year that over 200 countries signed the agreement in global solidarity”*



# BRUSSELS 2015

*“...calls for all buildings to be Nearly-Zero Energy Buildings by the end of 2020.... Brussels' new regulation is based on the Passive House Standard, making it mandatory for all new builds as well as all retrofits as of January 2015.” IPHA*



## PRINCIPLES FOR NEARLY ZERO-ENERGY BUILDINGS

Paving the way for effective implementation  
of policy requirements





## Mayor de Blasio Commits to 80 Percent Reduction of Greenhouse Gas Emissions by 2050, Starting with Sweeping Green Buildings Plan

September 21, 2014

# Building Code Revision Launches California Toward Zero Net Energy Buildings



Bill Roth | Monday November 11th, 2013 | [2 Comments](#)



63



7



81



Share

119

Starting in 2014, California is implementing a tsunami of building code revisions called Title 24. These revised building codes will move California's residential and commercial buildings toward Zero Net Energy (ZNE). In a ZNE building, the annual energy consumption is equal to its annual production of renewable energy. Under Title 24, all new residential construction is to be ZNE by 2020 with all new commercial buildings achieving this ZNE goal by 2030.



Title 24 moves building design toward “comprehensive building solutions.” This building design approach first focuses upon reducing energy consumption through the integration of smart and energy efficient technologies. The final design step after reducing the building's energy consumption is to install onsite renewable energy generation like solar panels.

**RADICAL**

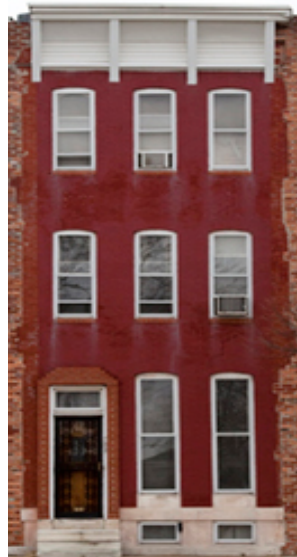
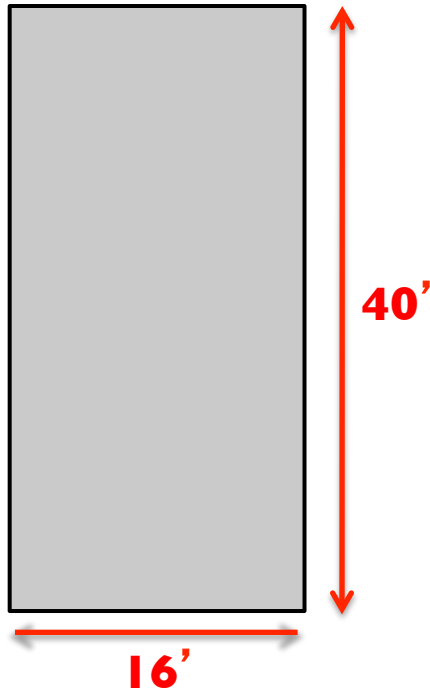
**AFFORDABLE**

**SCALABLE**

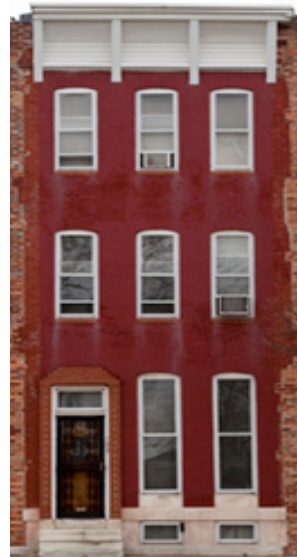
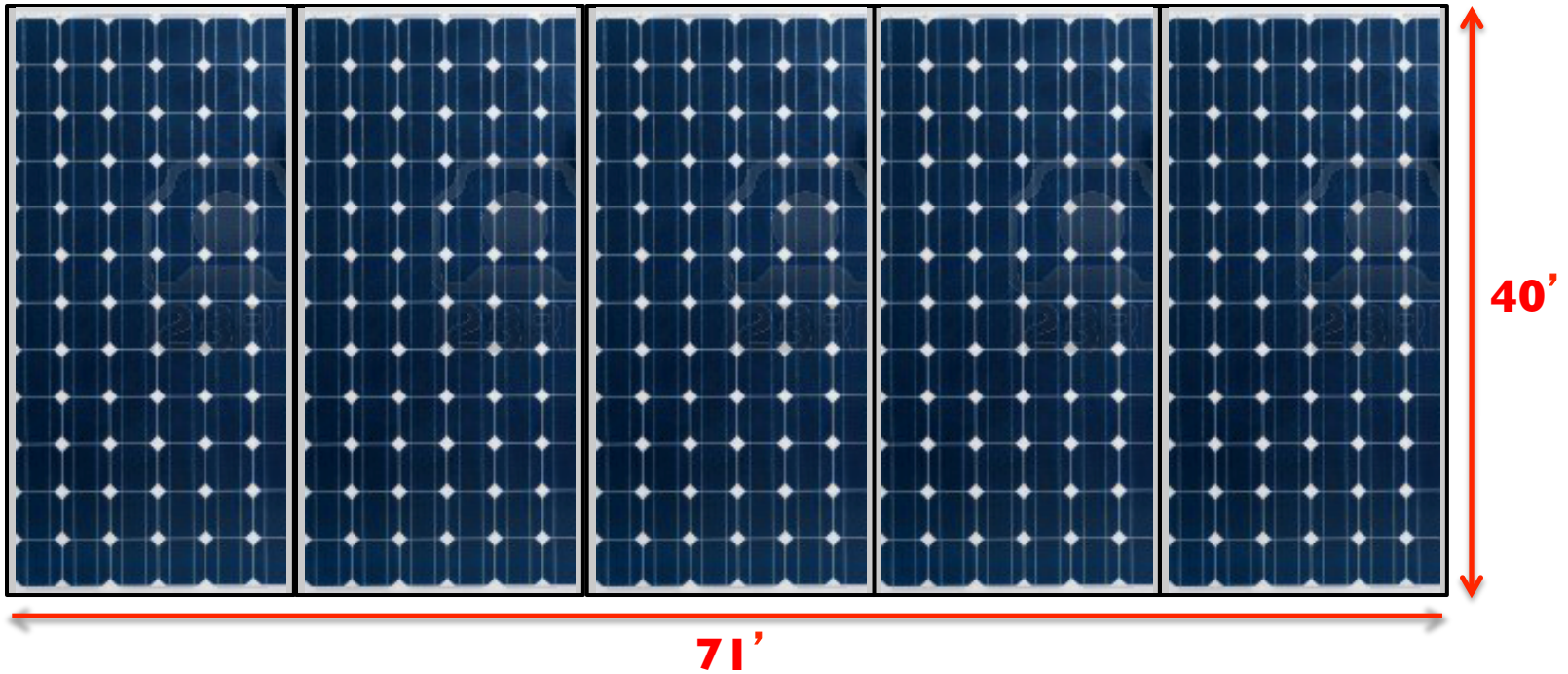
**NET-ZERO-ENERGY-CAPABLE**

**A building must GENERATE**  
**NET-ZERO-ENERGY-CAPABLE**  
**ALL it needs to survive**

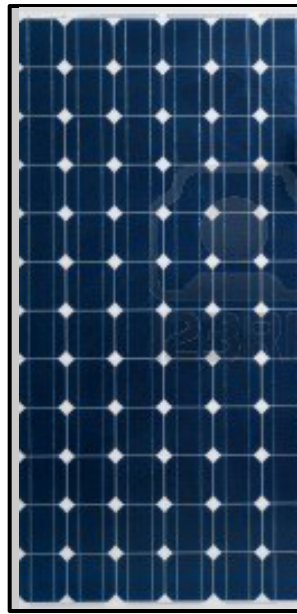




**1900 sf home**  
**39,000 kWh/yr**



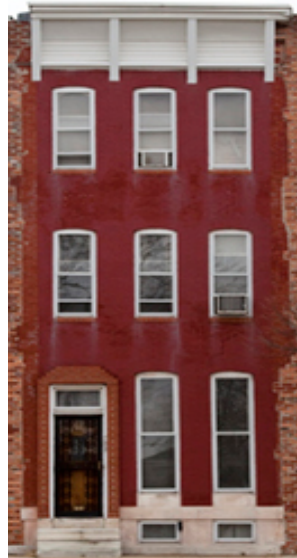
**1900 sf home**  
**39,000 kWh/yr**  
**2832 sf roof**



40'



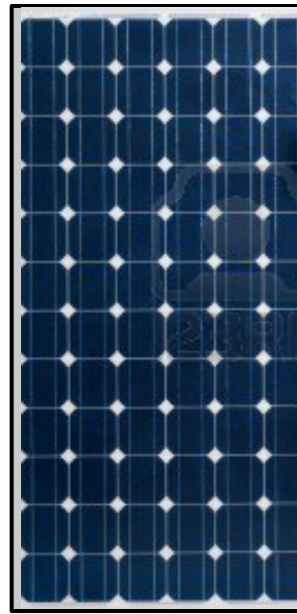
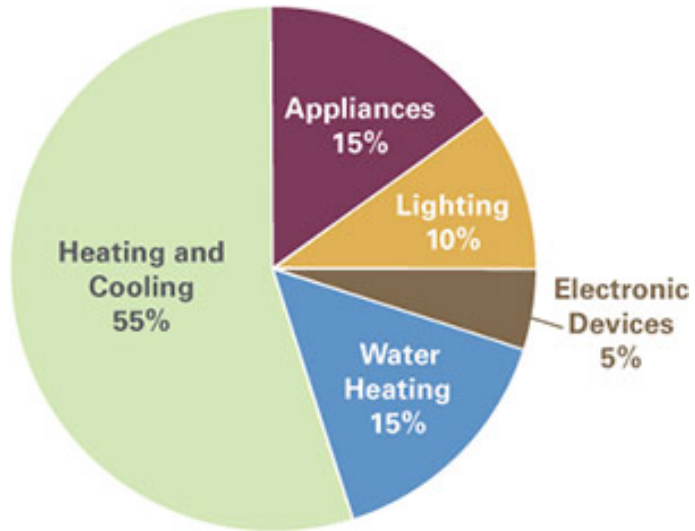
16'



**80% REDUCTION**

**4.5 kWh/sf/yr**

**615 sf roof**



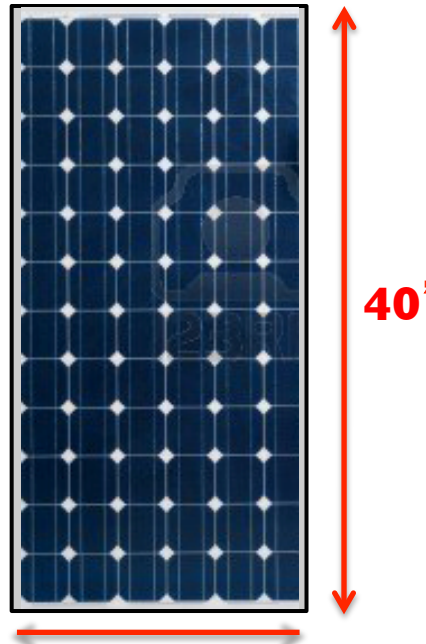
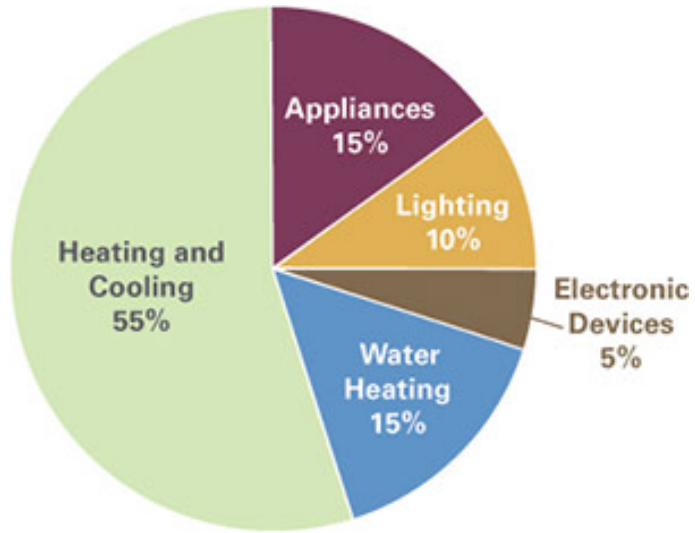
16'

40'



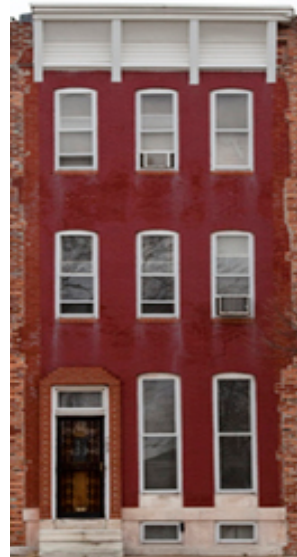
**80% REDUCTION**  
**4.5 kWh/sf/yr**

**615 sf roof**



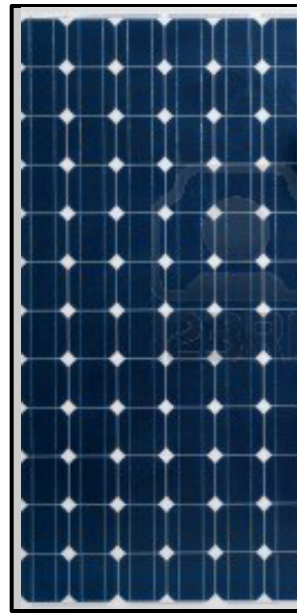
16'

**80% REDUCTION**  
**4.5 kWh/sf/yr**

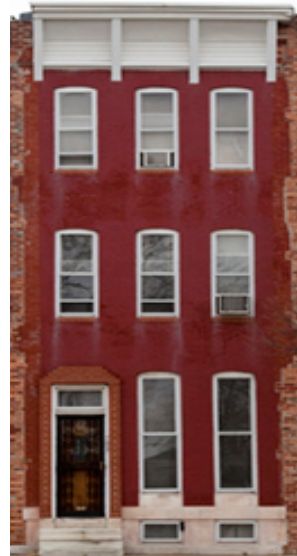




# “Fabric First” approach



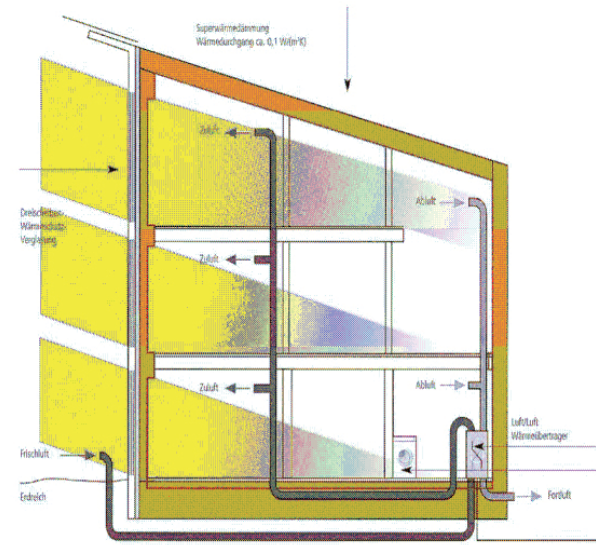
16'



**80% REDUCTION**  
**4.5 kWh/sf/yr**

# Envelope and Thermal Comfort Principles

1. **Continuous Insulation-** creating steady indoor temperatures that won't drop below 50 degrees without heating source
2. **Thermal Bridge Free Construction-** minimizes condensation/ building deterioration
3. **Compact Building Shape-** excellent surface-to-volume ratio (< 1)
4. **Airtightness-** minimizes moisture diffusion into wall assembly
5. **Balanced Ventilation with Heat Recovery with minimal Space Conditioning System -** exceptional efficiency, indoor air-quality and comfort
6. **Optimal Solar Orientation and Shading**  
— maximizing solar gains for winter, minimizing gains for the summer case



7. **Energy Efficient Appliances and Lighting-** highly efficient use of household electricity
8. **User Friendliness -** user manuals are recommended to be given homeowners

# MPG for buildings

## PERFORMANCE

### Requirements



Certified  
Passive House  
Passive House Institute



**1. Specific Space Heating/  
Cooling Demand**

**4.75** kBTU/sf/yr

**2. Air-Tightness**

**.6** ACH50

**3. Specific Primary  
Energy Demand**

**38** kBTU/sf/yr

**SOURCE** factor of 2.5

**15** kBTU/sf/yr

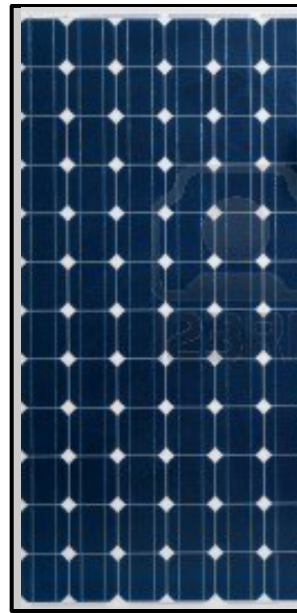
Conversion to kWh of 3.412

**4.5** kWh/sf/yr

**EUI**

**12** kBTU/sf/yr





40'



16'

**Consumption**

**PH METRIC**

**4.5 kWh/sf/yr**

(Site Energy)

**Production**

**ROOF METRIC**

**4.5 kWh/sf/yr**

(Site Energy)



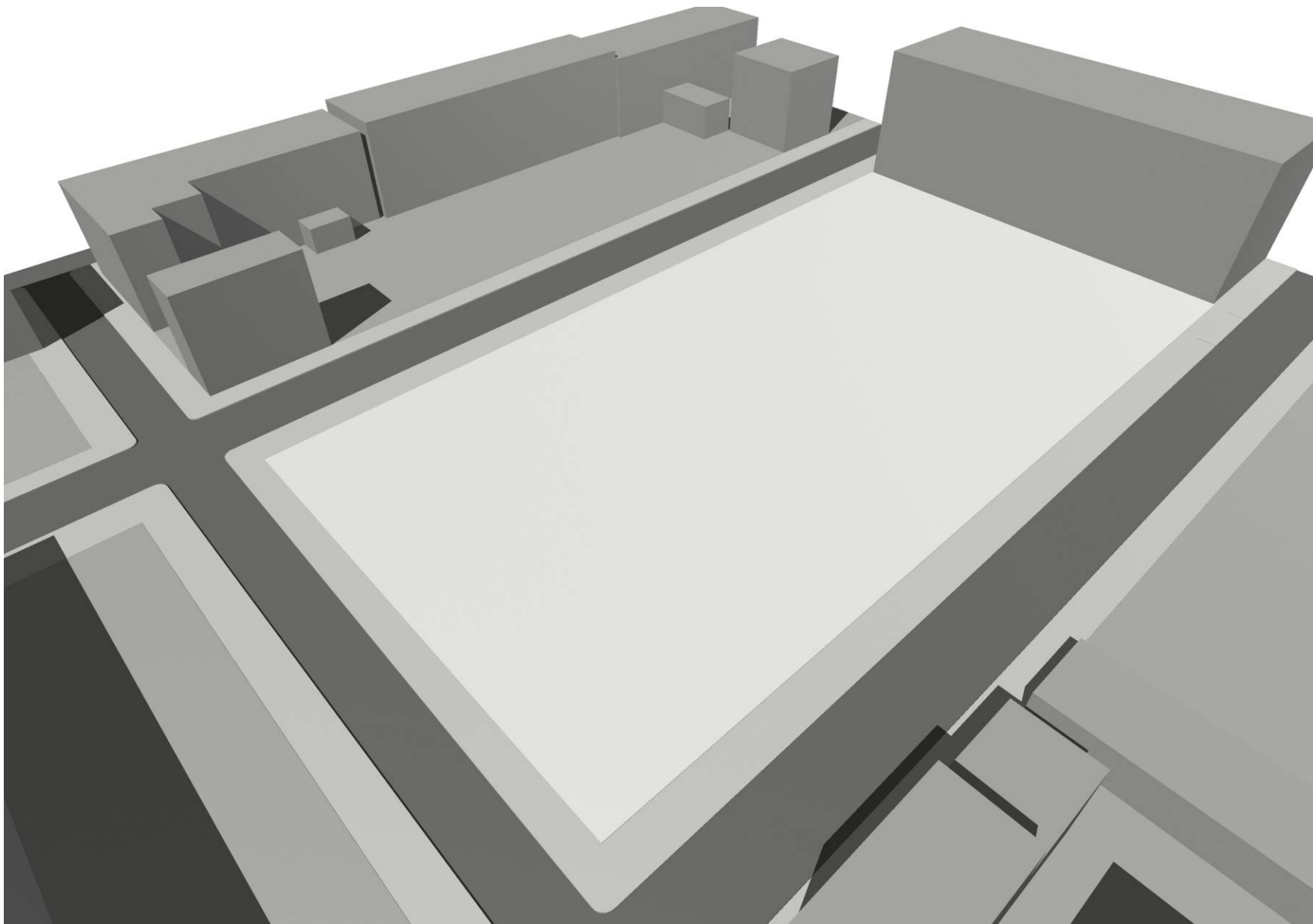


ARCHITECTURE  
RESEARCH  
CENTER  
TEMPLE UNIVERSITY

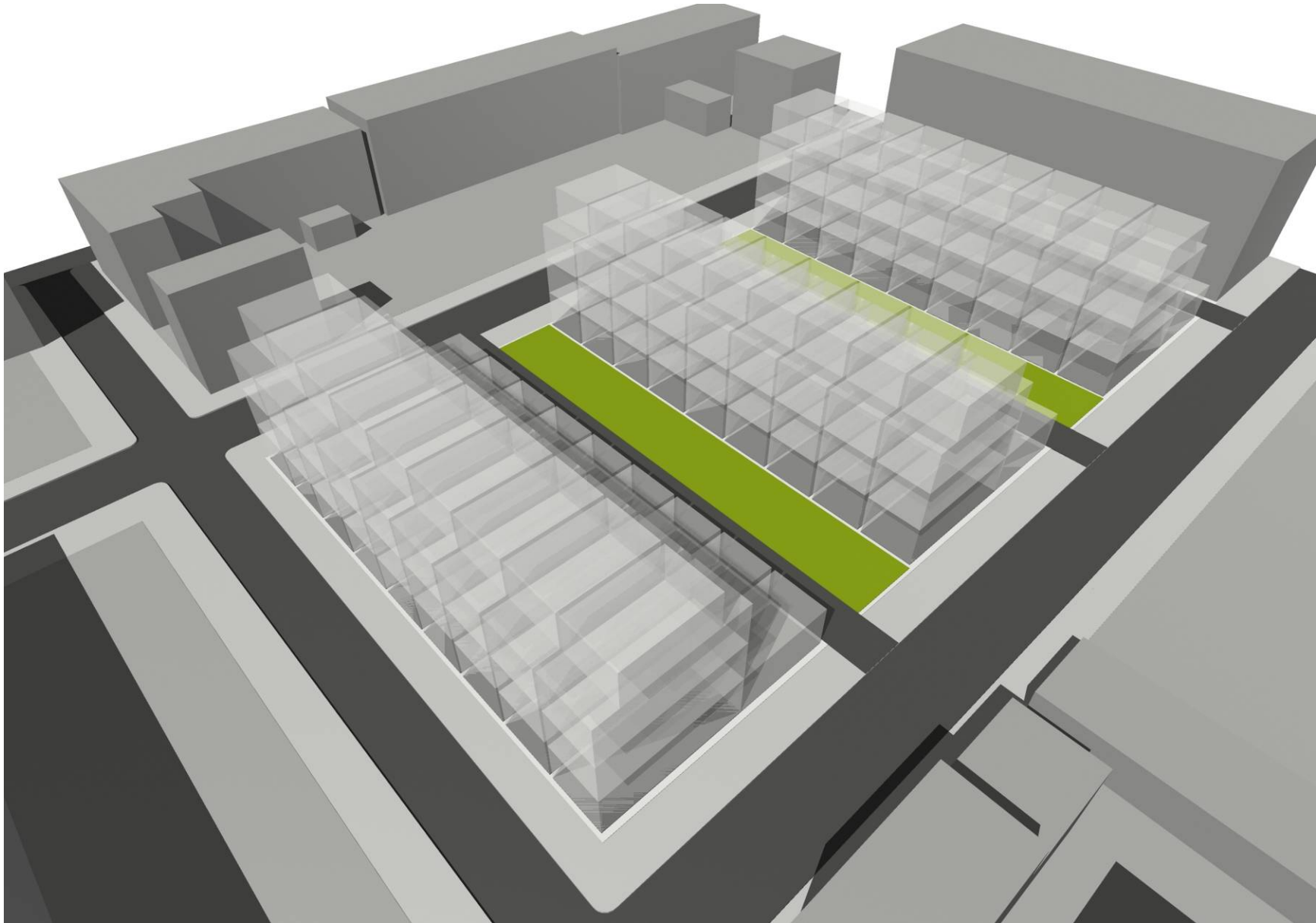




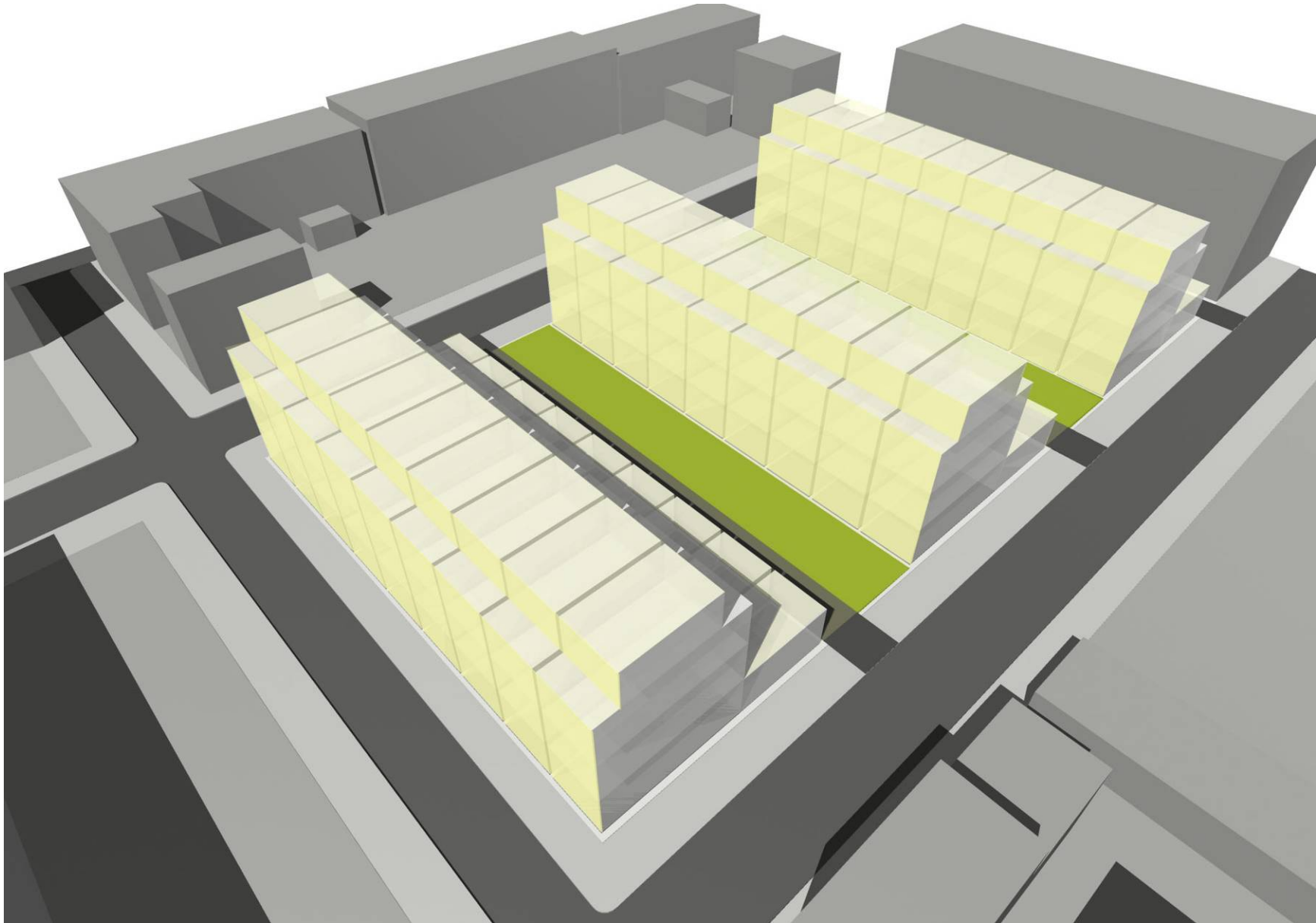
*STABLES 2015: 27 townhomes*

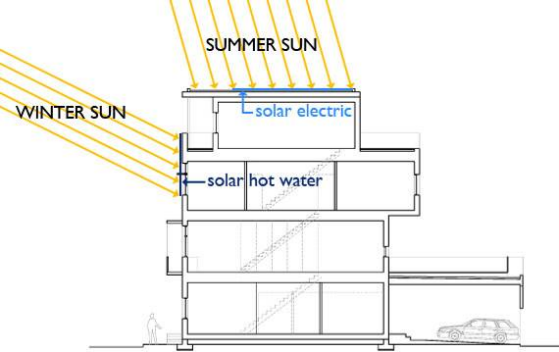


VERNAL EQUINOX: 50°



VERNAL EQUINOX: 50°















ENERGY/BUILDING CONSULTANTS & ENGINEERS

One Crescent Drive • Philadelphia, PA 19112 • 1-888-MAGRANN • www.magrann.com  
New Jersey • Pennsylvania • Kentucky • Ohio

**BUILDING LEAKAGE TEST COMPARISON**

Test #1		Test #2	
Test File:	Depressurization File	Test File:	Pressurization File
Date of Test:	7/5/2012	Date of Test:	7/5/2012
Customer:	Onion Flats, LLC 111 West Norris Street Philadelphia, Pennsylvania 19122	Customer:	Onion Flats
Phone:	215-783-5591		

Test Results	Test #1	Test #2	Change	Percent
1. Airflow at 50 Pascals:	293 CFM <b>0.48 ACH</b>	201 CFM <b>0.33 ACH</b>	-92 CFM -0.15 ACH	-31.4 % -31.4 %

FINAL AIRFLOW

**.49 ACH 50**





***CAPITAL II***

*CAPITAL FLATS 2 2016: 25 units*



## ***CAPITAL II***

*CAPITAL FLATS 2 2016: 25 units*



***CAPITAL II***

*CAPITAL FLATS 2 2016: 25 units*



*BANK FLATS 2016: 31 units and retail*

*NLG 2018: 50 units*



*BANK FLATS 2016: 31 units and retail*



# BELFIELD HOMES

PHILADELPHIA, PENNSYLVANIA 19141



NON-PROFIT  
COMMUNITY  
ORGANIZATION



PHILADELPHIA  
REDEVELOPMENT  
AUTHORITY



# FIRST CERTIFIED PASSIVE HOUSE IN PENNSYLVANIA

START: APRIL 20, 2012

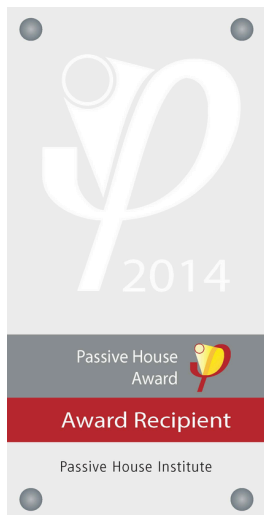
CERTIFICATE OF OCCUPANCY: JULY 20, 2012



RECIPIENT OF THE  
2014 INTERNATIONAL  
PASSIVE HOUSE AWARD



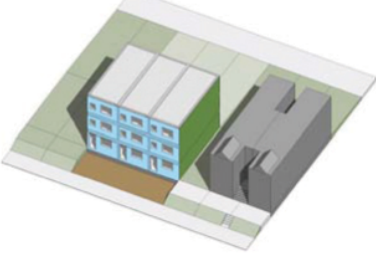
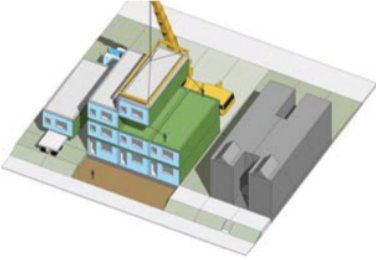
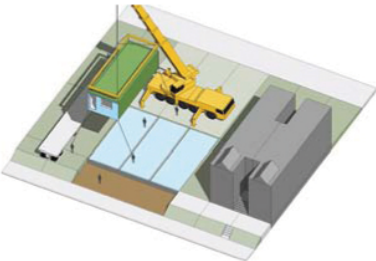
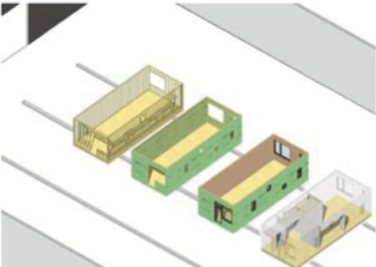
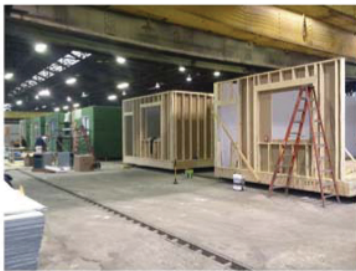
SECOND PLACE WINNER  
2015 PHIUS AWARD  
"AFFORDABLE HOUSING"



ONION  
FLATS

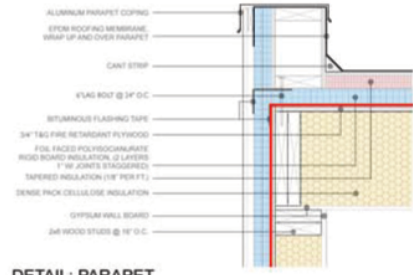




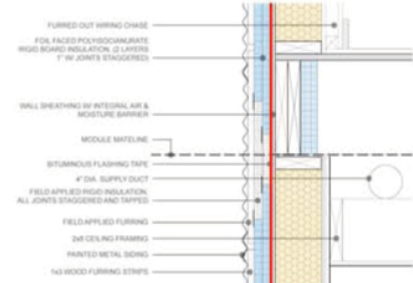


FACTORY BUILD

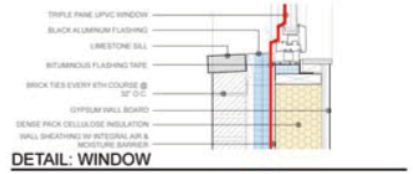
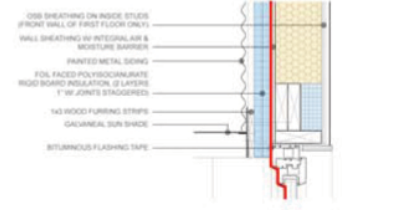
SITE ASSEMBLE



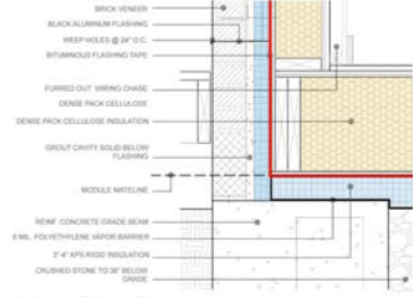
DETAIL: PARAPET



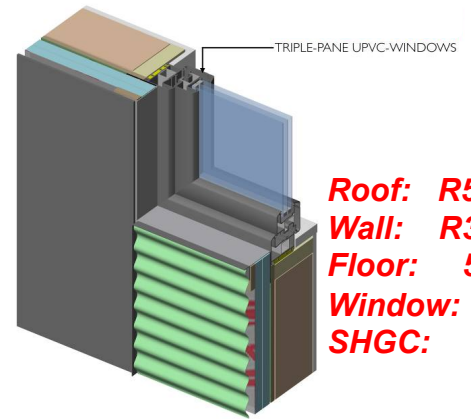
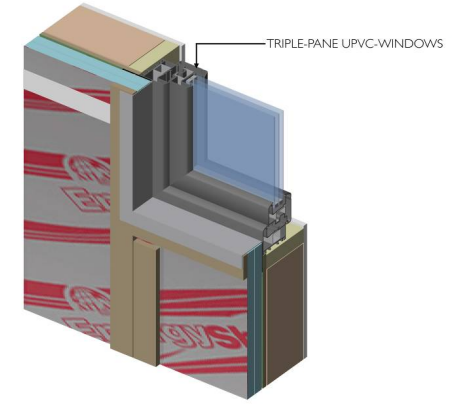
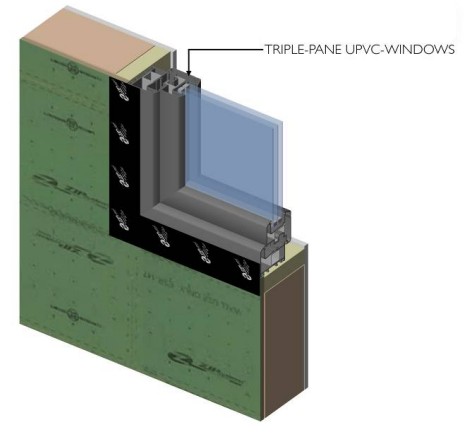
DETAIL: MODULE CONNECTION



DETAIL: WINDOW



DETAIL: FOUNDATION



**Roof: R52.3**  
**Wall: R33.6**  
**Floor: 58.4**  
**Window: .11**  
**SHGC: .63**

### BUILDING LEAKAGE TEST COMPARISON

Test #1	Test #2
Test File: Depressurization File	Test File: Pressurization File
Date of Test: 7/5/2012	Date of Test: 7/5/2012
Customer: Onion Flats, LLC 111 West Norris Street Philadelphia, Pennsylvania 19122	Customer: Onion Flats
Phone: 215-783-5591	

#### Test Results

	Test #1	Test #2	Change	Percent
1. Airflow at 50 Pascals:	293 CFM	201 CFM	-92 CFM	-31.4 %
	<b>0.48 ACH</b>	<b>0.33 ACH</b>	-0.15 ACH	-31.4 %

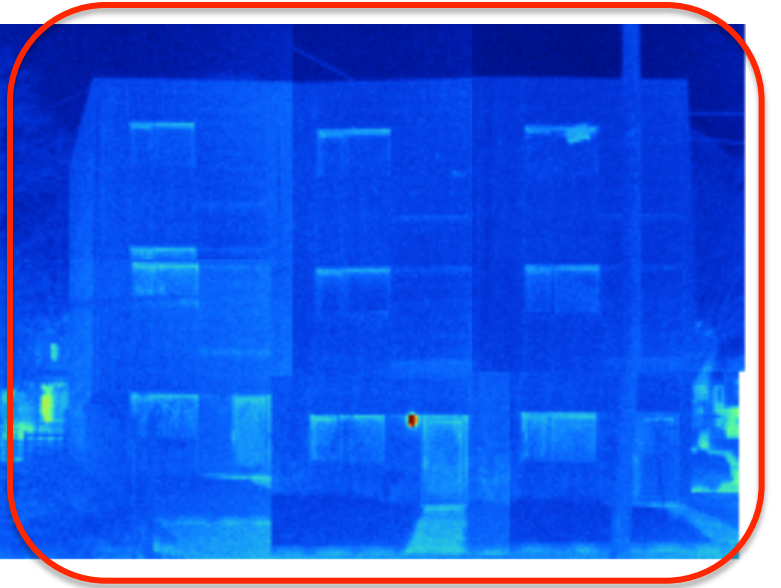
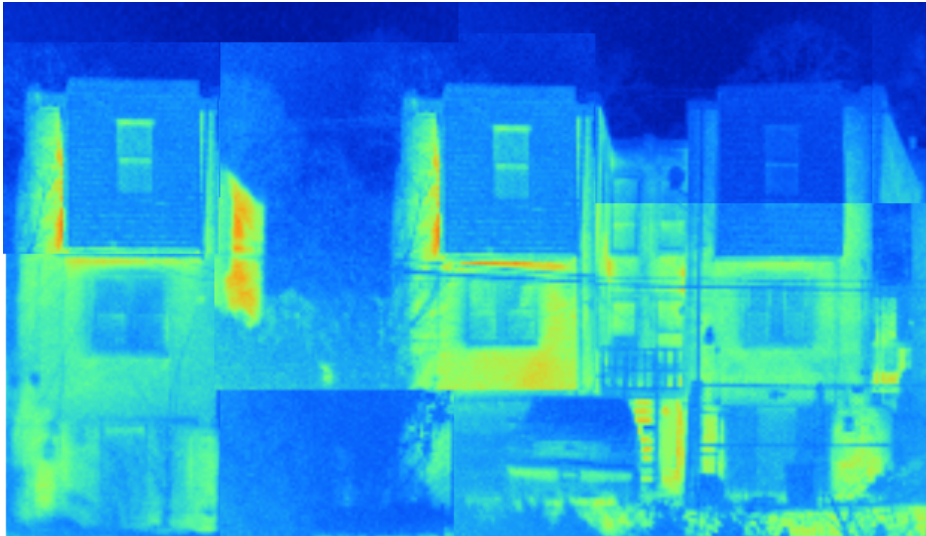
FINAL AIRFLOW:

**0.405 ACH 50**

PASSIVE HOUSE MAX

**0.6 ACH 50**












**\$130/sf**



# PHFA

PENNSYLVANIA HOUSING FINANCE AGENCY

An aerial photograph of a residential neighborhood. In the foreground, a modern, multi-story building with a flat roof is covered in solar panels. The building has large windows and a prominent entrance. The surrounding area consists of older, multi-story residential buildings, some with gabled roofs. The sky is blue with scattered white clouds. The overall scene is bright and clear.

**MAKE ALL AFFORDABLE HOUSING  
NET-ZERO-ENERGY-CAPABLE BY 2030**

An aerial photograph of a modern, multi-story building with a flat roof covered in solar panels. The building has a light-colored facade and large windows. It is situated in a residential neighborhood with various other buildings and trees. The sky is blue with scattered white clouds. The text "USE PASSIVE HOUSE AS THE TOOL" is overlaid in red on the image.

**USE PASSIVE HOUSE AS THE TOOL**

An aerial photograph of a city neighborhood. In the foreground, a modern, multi-story building with a flat roof is covered in solar panels. The building has several windows with green-tinted glass. The surrounding area consists of older, multi-story residential buildings, some with brick facades. In the background, there are trees and a church steeple under a blue sky with white clouds. The word "HOW?" is overlaid in large, bold, orange letters across the center of the image.

**HOW?**

An aerial photograph of a modern, multi-story building with a flat roof covered in solar panels. The building is surrounded by a dense residential neighborhood with various styles of houses and apartment buildings. The sky is blue with scattered white clouds. The text "LIHTC" is overlaid in the center of the image.

**LIHTC**



# QAP

**Qualified Allocation Plan**

## POINTS-BASED SYSTEM

<b>Total points</b>	<b>120</b>
<b>Community and Economic Impact</b>	<b>30</b>
- Underserved Areas	
- Senior Occupancy Developments	
- Preservation	
<b>Development Characteristics</b>	<b>25</b>
- Smart Site Selection	
- Enterprise Green Communities	
<b>Resident Population and Services</b>	<b>50</b>
- Income and Rent Targeting	
- Designated Populations and Supportive Services	
- Accessible Units	
- Large Families	
<b>Development Process</b>	<b>15</b>
- Noncompliance	
- Ability to Proceed	
<b>Development Cost Savings</b>	<b>10</b>



## POINTS-BASED SYSTEM

<b>Total points</b>	<b>130</b>
<b>Community and Economic Impact</b>	<b>30</b>
- Underserved Areas	
- Senior Occupancy Developments	
- Preservation	
<b>Development Characteristics</b>	<b>25</b>
- Smart Site Selection	
- Enterprise Green Communities	
- <b>PASSIVE HOUSE</b>	<b>10</b>
<b>Resident Population and Services</b>	<b>50</b>
- Income and Rent Targeting	
- Designated Populations and Supportive Services	
- Accessible Units	
- Large Families	
<b>Development Process</b>	<b>15</b>
- Noncompliance	
- Ability to Proceed	
<b>Development Cost Savings</b>	<b>10</b>

# *THE PHFA PROJECT*

OCT 2014

**“PASSIVE HOUSE points” introduced to PHFA 2015 QAP**

# THE PHFA PROJECT

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FEB 2015

**85** Multi-family project applications were received

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**\$COST\$** “Negligibly different” from NON-PH projects



## Construction Cost Summary from PHFA Applications

### 2015 Costs

Proj. No.	County	Climate Zone	Units (by BR Qty)					Total Units	Bldg. Area	Constr. \$	\$/Unit	\$/SF
			0	1	2	3	4+					
SF-1	Franklin	5A			33	21		54	70,218	7,051,522	130,584	100
SF-2	Schuykill	5A		3	9		5	17	21,151	2,238,725	131,690	106
SF-3	Philadelphia	4A		5	19	31		55	79,795	9,363,626	166,860	117
SF-4	Allegheny	5A			26	19		45	63,548	8,863,631	196,970	117
SF-5	Lycoming	5A		16	34			50	66,147	8,141,437	162,829	123
SF-6	Bradford	5A		10	24	16		50	62,956	7,964,823	159,296	127
SF-7	Centre	5A			20	20		40	53,652	7,523,233	188,081	140
SF-8	Lebanon	5A			46	16		62	84,168	11,742,459	189,395	140
SF-9	Bradford	5A		2	26	12		40	59,954	8,369,296	209,232	140
SF-10	Butler	5A		3	39	18		60	67,904	9,827,275	163,788	145
SF-11	Erie	5A			9	34		43	53,454	7,870,669	183,039	147
SF-12	Dauphin	5A		3	3	25	4	35	61,504	9,192,750	262,650	149
SF-13	Berks	5A		22	20	16		58	62,097	9,305,340	160,437	150
SF-14	Franklin	5A		7	25	24		56	77,469	11,791,991	210,571	152
SF-15	Luzerne	5A		26	15	15		56	56,250	8,968,491	160,152	159
SF-16	Union	5A		5	12	8	6	31	43,868	7,071,066	228,099	161
SF-17	Chester	4A		48	12			60	58,349	9,809,238	163,487	168
SF-18	Allegheny	5A		4	30	18		52	77,351	12,979,386	249,604	168
SF-19	Berks	5A		10	21	11		42	57,722	9,785,000	232,976	170
SF-20	Montgomery	4A		16	24	15		55	61,480	11,113,700	202,067	181
SF-21	Delaware	4A		8	34	14		56	65,790	12,184,074	217,573	185
SF-22	Philadelphia	4A			17	16	2	35	45,476	8,905,240	254,435	196
SF-23	Allegheny	5A		14	9			23	28,205	5,552,583	241,417	197
SF-24	Westmoreland	5A		28	8			36	43,872	8,331,567	231,432	245
SF-25	Philadelphia	4A		10	19	11		40	46,757	11,453,809	286,345	245

Proj. No.	County	Climate Zone	Units (by BR Qty)					Total Units	Bldg. Area	Constr. \$	\$/Unit	\$/SF
			0	1	2	3	4+					
AR-1	Lehigh	5A		34	4	11		49	65,339	6,392,809	130,465	98
AR-2	Erie	5A		29	16			45	53,021	6,152,972	136,733	116
AR-3	Philadelphia	4A	12	54				66	77,975	9,751,707	147,753	125
AR-4	Allegheny	5A	2	49	4			55	65,577	9,514,764	172,996	145
AR-5	Delaware	4A		53				53	51,690	8,030,480	151,518	155
AR-6	Philadelphia	4A		44				44	49,406	8,361,579	190,036	169
AR-7	Montgomery	4A		33	3	7		43	55,832	9,468,816	220,205	170
AR-8	Philadelphia	4A			28	10		38	53,840	9,515,893	250,418	177
AR-9	Dauphin	5A	5	17	6			28	45,434	8,075,064	288,395	178
AR-10	Allegheny	5A		33	3			36	50,664	9,436,523	262,126	186
AR-11	Philadelphia	4A		46				46	56,478	10,795,027	234,675	191
AR-12	Philadelphia	4A		27	10			37	48,768	9,658,098	261,030	198
AR-13	Philadelphia	4A		30	21			51	62,509	13,609,683	266,857	218
AR-14	Washington	4A		17	7			24	35,299	7,856,113	327,338	223
AR-15	Philadelphia	4A		62				62	70,991	25,995,741	419,286	366

# THE PHFA PROJECT

Proj. No.	County	Climate Zone	Units (by BR Qty)					Total Units	Bldg. Area	Constr. \$	\$/Unit	\$/SF
			0	1	2	3	4+					
MS-1	Northumberland	5A				35		35	40,397	4,276,084	122,174	106
MS-2	Dauphin	5A		22	14		14	50	88,314	10,055,562	201,111	114
MS-3	Dauphin	5A		18	59			77	92,000	10,668,511	138,552	116
MS-4	Lancaster	5A		46	6			52	71,758	8,456,719	162,629	118
MS-5	Blair	5A		33	20			53	82,070	9,727,007	183,528	119
MS-6	Chester	4A		46	15			61	76,340	9,638,964	158,016	128
MS-7	Lancaster	5A		13	39	26		78	88,910	11,681,226	149,759	131
MS-8	Clearfield	6A		24	6			30	42,254	5,551,584	185,053	131
MS-9	Indiana	5A		40				40	36,743	4,898,995	122,475	133
MS-10	Bradford	5A		50	6			56	57,817	7,738,172	138,182	134
MS-11	Cambria	5A		32	11			43	44,887	6,341,616	147,479	141
MS-12	Dauphin	5A		38	16		54	58,335	8,201,250	151,875	141	
MS-13	Mifflin	5A		30	4			34	39,447	5,559,187	163,506	141
MS-14	Fayette	5A		12	12		24	29,586	4,192,325	174,680	142	
MS-15	Allegheny	5A		24	12	13		49	67,340	9,698,634	197,931	144
MS-16	Lackawanna	5A		44	4			48	49,460	7,159,738	149,161	145
MS-17	Lehigh	5A		54	7			61	63,949	9,318,159	152,757	146
MS-18	Centre	5A		37	11			48	57,959	8,490,644	176,888	146
MS-19	Chester	4A		41	3	5		49	54,287	8,007,477	163,418	148
MS-20	Fayette	5A		21	3		24	26,064	5,407,359	225,307	150	
MS-21	Chester	4A		61	3			64	70,083	10,557,500	164,961	151
MS-22	Allegheny	5A		54	12			66	70,689	10,787,052	163,440	153
MS-23	Allegheny	5A		40	6			46	58,617	9,134,790	198,582	156
MS-24	Wayne	6A		36	4		40	40,959	6,460,530	161,513	158	
MS-25	Centre	5A			12		12	12	16,796	2,683,900	223,658	160
MS-26	Beaver	5A		40	12		52	55,361	9,468,440	182,085	171	
MS-27	Lancaster	5A		51			51	51,500	8,871,635	173,954	172	
MS-28	Allegheny	5A		52	8		60	66,733	11,716,729	195,279	176	
MS-29	Montgomery	4A		40	4		44	44,687	8,202,314	186,416	184	
MS-30	Montgomery	4A		50			50	42,265	8,029,015	160,580	190	
MS-31	Crawford	5A		36	4		40	38,953	7,490,675	187,267	192	
MS-32	Philadelphia	4A		9	8	7	24	31,220	6,031,050	251,294	193	
MS-33	Westmoreland	5A		47			47	49,080	9,825,224	209,047	200	
MS-34	Philadelphia	4A		58	4		62	56,120	11,262,762	181,657	201	
MS-35	Philadelphia	4A		60			60	57,672	11,915,227	198,587	207	
MS-36	Philadelphia	4A		20	4		24	26,284	5,523,620	230,151	210	
MS-37	Philadelphia	4A		34	11		45	42,523	8,964,723	199,216	211	
MS-38	Philadelphia	4A		52			52	50,275	10,703,403	205,835	213	
MS-39	Philadelphia	4A		39	11		50	53,416	11,371,112	227,422	213	
MS-40	Philadelphia	4A		45	5		50	55,099	11,747,269	234,945	213	
MS-41	Philadelphia	4A		24			24	24,284	5,194,462	216,436	214	
MS-42	Philadelphia	4A		45			45	46,754	10,118,014	224,845	216	
MS-43	Philadelphia	4A		53			53	50,312	10,900,733	205,674	217	
MS-44	Philadelphia	4A		54			54	48,965	10,664,381	197,489	218	
MS-45	Philadelphia	4A		88			88	79,650	18,005,791	204,611	226	

# \$COST\$

## “Negligibly different” from NON-PH projects

# THE PHFA PROJECT

## Pennsylvania

**85** Projects

**32 PH** projects

**53 NON-PH** projects

Average cost = **\$169/sf**

Average cost = **\$165/sf**  
**< 2%**

**\$COST\$** “Negligibly different” from NON-PH projects

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**\$COST\$** “Negligibly different” from NON-PH projects

**YEAR 1** of *The PHFA Project: A NATIONAL Net-Zero-Energy Initiative* by **2030**

# *THE PHFA PROJECT*

## **8** Passive House Projects awarded funding

# THE PHFA PROJECT



*Wynne Senior Residences    Sacred Heart    Washington Square    Hillcrest Senior Residences*  
*Wynne Senior Residences    Heritage Point    Saint John Neumann    Mann Edge II*

**8** Passive House Projects awarded funding

# THE PHFA PROJECT



ARTIST'S RENDERING

DATE: 29 OCTOBER 2013

K&A #: 12134

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**WYNNE - SENIOR RESIDENCE**  
Philadelphia, Pennsylvania

Wynne Senior Residence  
54th and Arlington Streets  
Philadelphia, PA

51 one and two bedroom senior affordable apartment units with Community Room, Management Suite, and a Retail space.

# THE PHFA PROJECT



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DATE: 23 FEBRUARY 2015

K&A #: 12137.002



**SACRED HEART RESIDENCES**  
Allentown, Pennsylvania

Sacred Heart Residences  
5th and Turner Streets  
Allentown, PA

61 one and two bedroom senior affordable apartment units with Community Room, Management Suite, and two retail spaces.

# THE PHFA PROJECT



Heritage Point  
56 units, 5 buildings



# THE PHFA PROJECT



SEDA - COG  
HOUSING DEVELOPMENT  
CORPORATION  
201 Furnace Road, Lewisburg, PA 17837  
Tel: (570) 524-4491

## MANN EDGE II

100 EAST WATER STREET, LEWISTOWN, PA 17044

02/21/14  
A-0.1



Mann Edge II  
Lewistown, PA  
34 units

# THE PHFA PROJECT



## Exterior View from St. John Neumann Place I

St. John Neumann Place II - New Seniors Housing  
prepared for:  
Archdiocese of Philadelphia



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St. John Newman Place 1  
Philadelphia , PA  
52 units, Senior Housing

# THE PHFA PROJECT



architectural site plan by RDL Architects, LLC

Washington Square Town Homes  
Chambersburg, PA  
54 units, Apartments and town homes

# *THE PHFA PROJECT*



***RDL Architects***

Hillcrest Senior Residences  
Pittsburgh, PA  
65units, Senior Housing

# THE PHFA PROJECT



The Whitehall  
Old Schuylkill Road  
East Vincent Township, PA

49 one and two bedroom senior affordable apartment units with Community Room, Management Suite

# *THE PHFA PROJECT*

**36** **STATE**  
**Housing Finance Agencies**  
**Engaged to replicate PHFA strategy**



United States of America  
***COMMITTED!!***





# COMMITTED!!

**PENNSYLVANIA**

**NEW YORK**

**NEW JERSEY**

**CONNECTICUT**

**RHODE ISLAND**

**MASSACHUSETTS**

**NEW HAMPSHIRE**

**OHIO**

**ILLINOIS**

**SOUTH DAKOTA**

**IDAHO**



# REAL ESTATE COMMITTED!!

## World's Tallest Passive House Breaks Ground on Roosevelt Island

By ALISON GREGOR JUNE 12, 2015

Email

Share

Tweet

Pin

Save

More



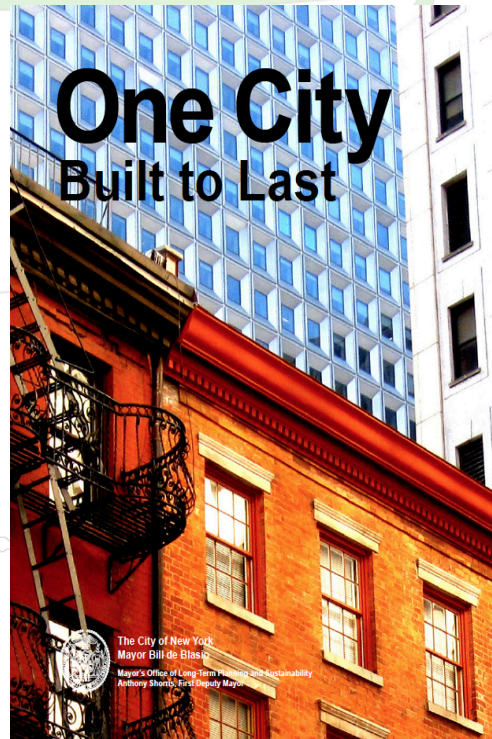
An apartment tower on Roosevelt Island that began construction this month will be the tallest passive-house high-rise in the world when it is completed in 2017, according to the [Passive House Institute](#) in Germany. And at about 270,000 square feet, it will also be the largest, said [David Kramer](#), a principal with Hudson Companies, which is developing the building in partnership with [Cornell Tech](#), the applied sciences campus of [Cornell University](#), and the Related Companies.

The tower will rise 270 feet, contain 350 units and house about 530 graduate students, faculty and staff on a new 12-acre campus for Cornell Tech, which has been operating out of temporary facilities in the Google building in Chelsea since 2012. And because the building



Ground has been broken for a passive-house apartment tower on the Cornell Tech campus on Roosevelt Island. Ruth Fremson/The New York Times

## One City Built to Last



The City of New York  
Mayor Bill de Blasio  
Mayor's Office of Long-Term Planning and Sustainability  
Anthony Sforzo, First Deputy Mayor

### 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. 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 50 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

823 Knickerbocker Avenue, Brooklyn  
Architect: Chris Benedict, R.A.  
Owner: Ridgewood Bushwick Senior Citizen's Council  
General Contractor: Gallery 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.

# COMMITTED!!



**PENNSYLVANIA**

**NEW YORK**

**NEW JERSEY**

**CONNECTICUT**

**RHODE ISLAND**

**MASSACHUSETTS**

**NEW HAMPSHIRE**

**OHIO**

**ILLINOIS**

**SOUTH DAKOTA**

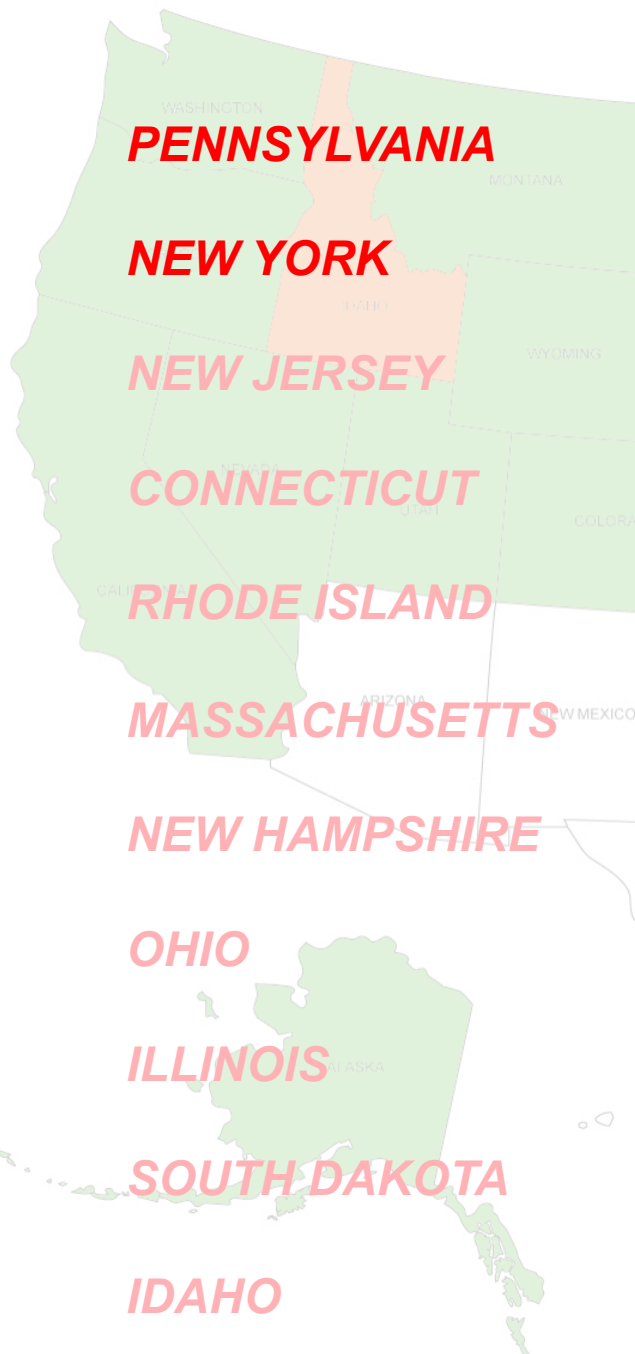
**IDAHO**

The HCR request for proposals can be found [here](#). Passive House is referenced under the section “c. Optional Green Building Program Participation (5points)” starting on page 58, along with Enterprise Green Communities, LEED, and the National Green Building Standard. It states:

#### Passive House Institute Certification:

Projects may qualify in either the Passive House Institute US (PHIUS), or the International Passive House Institute (iPHI) programs. Certification shall be obtained under PHIUS+ 2015 Passive Building Standard – North America, or newer, based on the construction timeframe, or certified under iPHI protocols. The applicant shall submit a form of a receipt from PHIUS or iPHI that the project was accepted into their program, or submit a letter of agreement between the applicant and a PHIUS or iPHI certified Passive House consultant or designer (CPHC or CPHD) that includes oversight of the design and construction as necessary for pre-certification and final certification. The letter of agreement must be fully executed by the applicant and the CPHC or CPHD, and accompanied with the CPHC’s or CPHD’s certification from the US or International Passive House Institute. Final closeout of the project shall be contingent upon final certification from PHIUS or iPHI that their standard was met.

# COMMITTED!!



## White House Announces Passive House Initiative

President Obama has announced a comprehensive plan to bring renewable energy and energy efficiency to households across the U.S. Among the initiatives just announced is the establishment of a Passive House track by New York State Homes and Community Renewal (HCR)...“to encourage a significant increase in the energy efficiency of New York’s affordable housing stock”. The White House [press release](#) goes on to say:

“HCR intends to work closely with NYSERDA to monitor the ongoing energy use intensity of any Passive House projects that may be selected for funding under the RFP, in order to provide valuable data to the market to accelerate the trend toward construction of Passive House certified affordable multifamily buildings.”

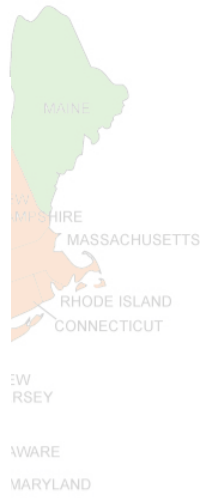
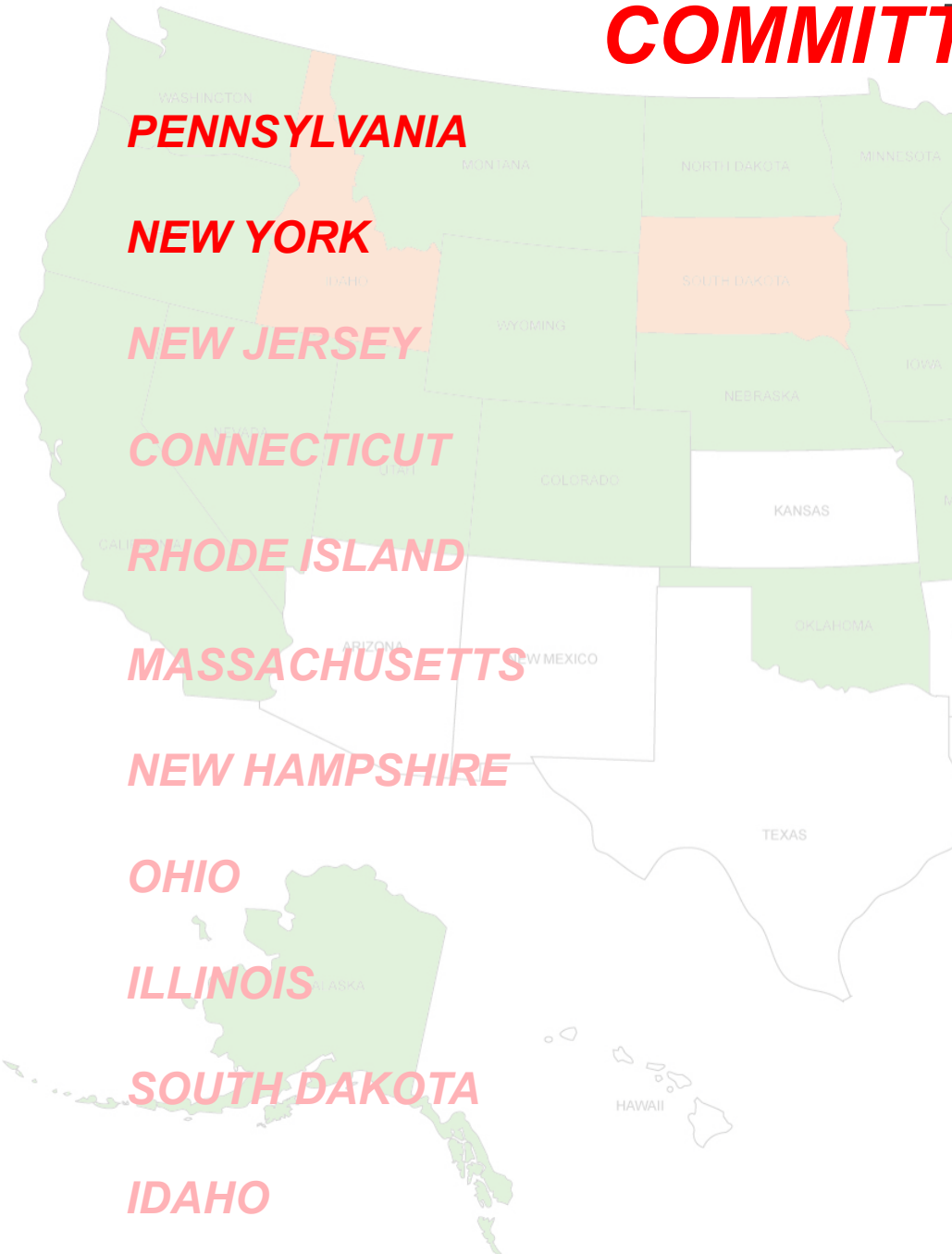


The HCR request for proposals can be found [here](#). Passive House is referenced under the section “c. Optional Green Building Program Participation (5points)” starting on page 58, along with Enterprise Green Communities, LEED, and the National Green Building Standard. It states:

### Passive House Institute Certification:

Projects may qualify in either the Passive House Institute US (PHIUS), or the International Passive House Institute (iPHI) programs. Certification shall be obtained under PHIUS+ 2015 Passive Building Standard – North America, or newer, based on the construction timeframe, or certified under iPHI protocols. The applicant shall submit a form of a receipt from PHIUS or iPHI that the project was accepted into their program, or submit a letter of agreement between the applicant and a PHIUS or iPHI certified Passive House consultant or designer (CPHC or CPHD) that includes oversight of the design and construction as necessary for pre-certification and final certification. The letter of agreement must be fully executed by the applicant and the CPHC or CPHD, and accompanied with the CPHC’s or CPHD’s certification from the US or International Passive House Institute. Final closeout of the project shall be contingent upon final certification from PHIUS or iPHI that their standard was met.

# COMMITTED!!



## New York City Passes Energy Efficiency Laws that Point to Passive House

In March two new Laws were passed by New York City Council (701-A and 721-A) which combine to require a dramatic reduction in carbon emissions from City owned buildings commencing July 1 2017. Three alternative compliance paths for energy use intensity (EUI-Source) are specified, as follows:

- 38kBTU/sf.year for new build and 42kBTU/sf.year for retrofits – **these are the metrics required for Passive House and EnerPHit respectively;**

- 50% lower (better) than the median source EUI for building type and occupancy based on 2015 NYC benchmarking data; or
- 50% lower (better) than the EUI of the subject building if modeled under ASHRAE 90.1-2013.

These laws are yet another example of where Passive House is becoming integrated into NYC energy policy as the city moves to reduce carbon emissions by 80% by 2050.

# COMMITTED!!

**PENNSYLVANIA**

**NEW YORK**

**NEW JERSEY**

**CONNECTICUT**

**RHODE ISLAND**

**MASSACHUSETTS**

**NEW HAMPSHIRE**

**OHIO**

**ILLINOIS**

**SOUTH DAKOTA**

**IDAHO**

## e.2. Passive House Design

Points may be awarded for projects designed to meet Passive House standards. Submit plans and specifications at a level of 40% or higher with detailed wall sections, a detailed scope of Passive House design measures prepared by a Certified Passive House Consultant or Designer in coordination with the Project Architect, and a preliminary modeling analysis/output report through the PHPP (Passive House Planning Package) as developed by the Passive House Institute (PHI) <http://passiv.de> or WUFI Passive as developed by the Passive House Institute United States (PHIUS) [www.phius.org](http://www.phius.org) indicating that preliminary data meets Passive House criteria.

Points

6

# COMMITTED!!

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CONNECTICUT

RHODE ISLAND

MASSACHUSETTS

NEW HAMPSHIRE

OHIO

ILLINOIS

SOUTH DAKOTA

IDAHO



**Rhode Island Housing**  
working together to bring you home

## STATE OF RHODE ISLAND

### 2016 QUALIFIED ALLOCATION PLAN

#### **EFFICIENCY**

Up to 3 points may be awarded to those developments that exceed Energy Star Version 3.1 Version 8 Program Standards or meet Passive House Certification (nationally or internationally) for energy efficiency. See Design and Construction Guidelines and [www.passivehouse.us](http://www.passivehouse.us) or <http://passiv.de/en/> for additional guidance.

# COMMITTED!!

**PENNSYLVANIA**

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**NEW JERSEY**

**CONNECTICUT**

**RHODE ISLAND**

**MASSACHUSETTS**

**NEW HAMPSHIRE**

**OHIO**

**ILLINOIS**

**SOUTH DAKOTA**

**IDAHO**

***“We are creating a pilot program in 2016 in which we will choose 10 PROJECTS that will achieve EGC + Passive House.....we will pick up soft costs and cost increases in order to clearly examine the cost of Net-Zero.....” Mass Housing, 10/7/15***



# COMMITTED!!

PENNSYLVANIA

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NEW JERSEY

CONNECTICUT

RHODE ISLAND

MASSACHUSETTS

NEW HAMPSHIRE

OHIO

ILLINOIS

SOUTH DAKOTA

IDAHO

***“We propose recognizing the Passive Housing model as an option for obtaining points under ‘Exceptional Development: Creative Design’ category.....” OHFA, 9/24/15***

# COMMITTED!!



**PENNSYLVANIA**

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**NEW JERSEY**

**CONNECTICUT**

**RHODE ISLAND**

**MASSACHUSETTS**

**NEW HAMPSHIRE**

**OHIO**

**ILLINOIS**

**SOUTH DAKOTA**

**IDAHO**

2016-2017  
Qualified Allocation Plan

## B) Energy Efficiency and Sustainability

### 1) Green Initiative Standards

Projects whose architectural design and construction meet or exceed green initiative standards, evidenced through submission of the Scoring - Green Initiatives Certification, available on the Website, can earn up to three (3) points as follows:

Points	Green Initiative
1	<ul style="list-style-type: none"> <li>Commit to obtaining EPA Energy Star certification –or-</li> <li>Minimum 10% improvement for new construction (5% for rehab) above ASHRAE 90.1 2010 proven by a completed energy model, -or-</li> <li>HERS rating of 75 or lower</li> </ul>
2	Commit to obtaining a sustainable building certification from one of the following: <ul style="list-style-type: none"> <li>U.S. Green Building Council LEED certification -or-</li> <li>Enterprise Green Communities 2015 certification -or-</li> <li>ICC 700 National Green Building Standard certification -or-</li> <li>Passive House Certification through PHIUS or PHI</li> </ul>
3	Meet minimum standards in the Authority Standards for Architectural Planning and Construction indicated for water conserving fixtures; and Commit to obtaining a sustainable building certification from one of the following: <ul style="list-style-type: none"> <li>Certification through Living Building Challenge –or-</li> <li>Alternative certification for a high performance building achieving 'Net Zero Capable' status as approved by the Authority.</li> </ul>

# COMMITTED!!



**PENNSYLVANIA**

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**IDAHO**



**Idaho Housing  
and Finance  
Association**

Developments which incorporate the following optional “green building” certifiable program standards or items into their design. max 8

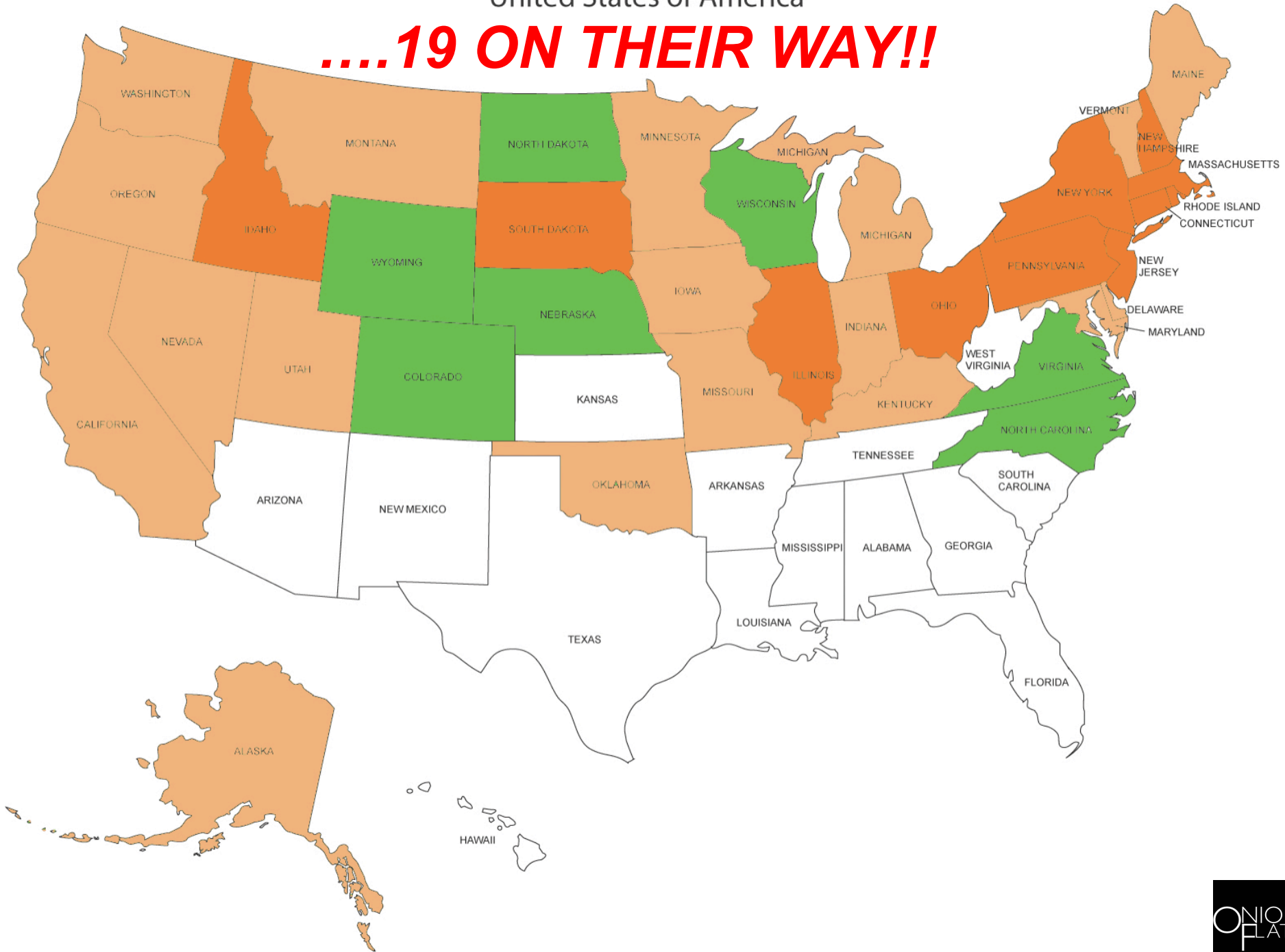
To receive points in this category, a licensed architect’s “preliminary” certification that lists the standards or items to be incorporated must accompany the application (See Exhibit C-2 for required format). At placed in service, an “as built” certification by a licensed architect that lists the incorporated standards or items will be required along with official program certification, if applicable. (See Exhibit D-2 for required format.)

*NOTE: The intent is that all code and standards cited are the most current versions.*

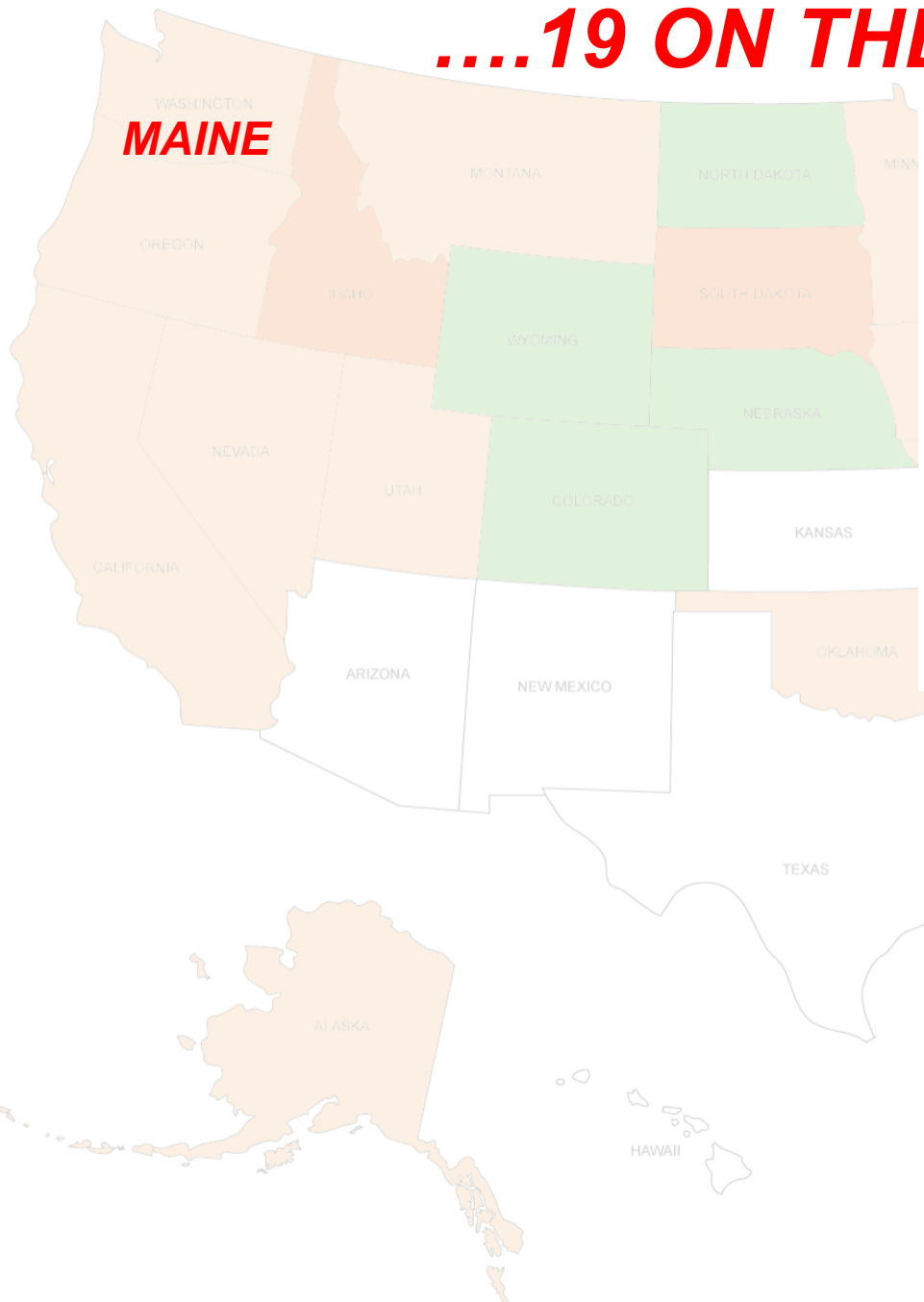
LEED for Homes .....	8
NW Energy Star.....	8
ICC 700 National Green Building Standard.....	8
Enterprise Green Communities.....	8
Indoor Air Plus.....	8
<b>Passive House US (PHIUS) or Passive House Institute (PHI).....</b>	<b>8</b>

United States of America

**....19 ON THEIR WAY!!**



**....19 ON THEIR WAY!!**



## BANGOR DAILY NEWS

Brewer's 'passive housing' project largest of its kind in US



Courtesy of Community Housing of Maine  
A 48-unit passive housing project is in the works at the former State Street School site in Brewer.



KAPLAN THOMPSON ARCHITECTS

# ....19 ON THEIR WAY!!

**MAINE  
VERMONT**

*Groundbreaking for first Multifamily LIHTC Passive House*

**May 2, 2016**

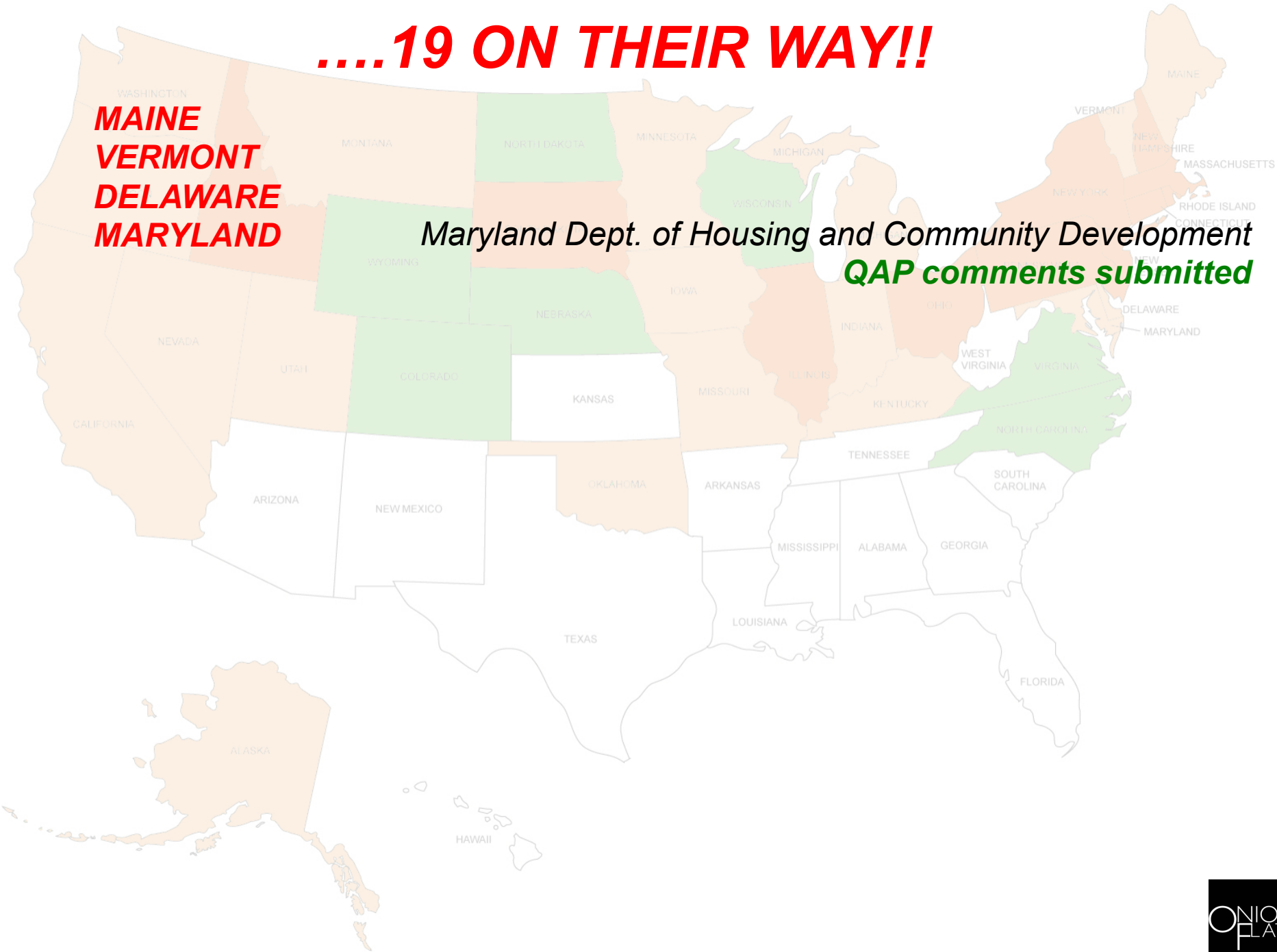




# ....19 ON THEIR WAY!!

**MAINE**  
**VERMONT**  
**DELAWARE**  
**MARYLAND**

*Maryland Dept. of Housing and Community Development*  
**QAP comments submitted**





**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY**

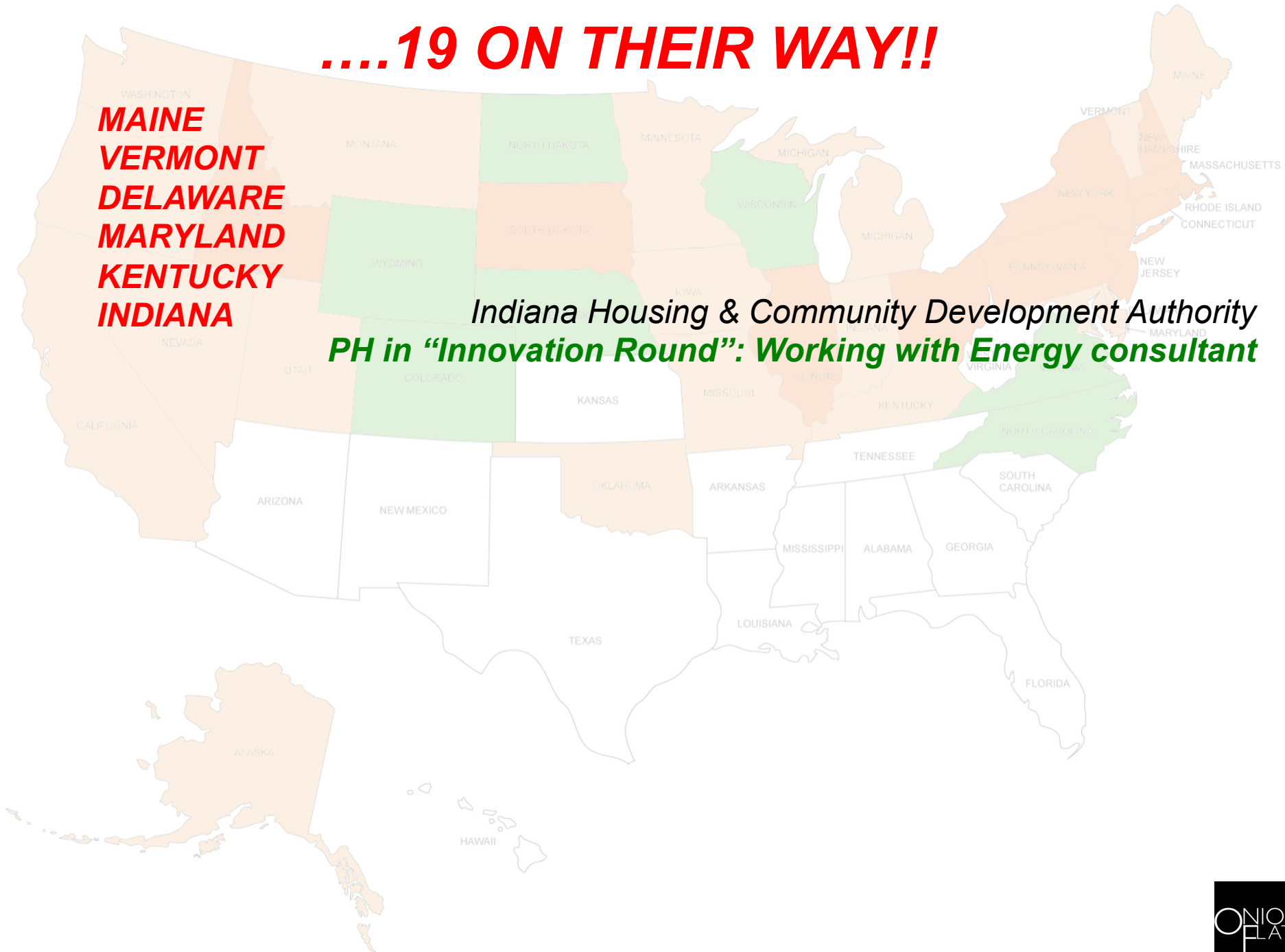
**Kentucky Housing Corporation  
VERY INTERESTED: Webinar November 12**



**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY  
INDIANA**

*Indiana Housing & Community Development Authority  
PH in "Innovation Round": Working with Energy consultant*



**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY  
INDIANA  
MICHIGAN**

*Michigan State Housing Development Authority  
Updating QAP in Spring, PH is "included in discussions"*



# ....19 ON THEIR WAY!!



## Green Building News

Up-to-date reports from GBA's news department



SETTS  
ID  
T

### Passivhaus Apartment Complex Would be a Giant

0 Helpful?

Scheduled to begin construction in October, this 276-unit multifamily project in Kansas City will seek certification from PHIUS

POSTED ON SEP 16 2015 BY SCOTT GIBSON

When ready for occupancy in early 2017, the 276-unit riverfront apartment complex would be the largest Passivhaus-certified building in the country and, according to its developer, help Passivhaus construction shed its "boutique" status and begin to interest big institutional investors.

The "Second and Delaware" project, named for its location in a historic warehouse district just north of downtown Kansas City, will include a range of apartment sizes, from 550-square-foot studios to 1,300-square-foot, two-bedroom models. It also will feature rooftop gardens and an underground 500-vehicle parking garage.

The \$60 million project is the work of the Arnold Development Group, which hopes to show that projects that are good for the environment and for the people who live in them also can have an attractive bottom line. It would dwarf what is now the largest Passivhaus project in North America, the 57-unit Orchards at Orenco project in Hillsboro, Oregon.



Image 1 of 2

This illustration shows a proposed 276-unit apartment complex in Kansas City. Once built and certified, it would become the largest Passivhaus building in the country. Developers hope to open the doors to tenants in 2017.

## Largest PH multi-family housing project in country underway

**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY  
INDIANA  
MICHIGAN  
MISSOURI  
OKLAHOMA**

**Oklahoma Housing Finance Agency  
Gave presentation at 2016 Housing Summit on April 14**

# ....19 ON THEIR WAY!!

**MAINE**  
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**INDIANA**  
**MICHIGAN**  
**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**

## STATISTICS

37,500 GSF  
4 STORIES

60 STUDIO UNITS (325NSF)


- SUPPORTIVE HOUSING SERVING THE FORMERLY HOMELESS OR THOSE AT RISK OF HOMELESSNESS
- SINGLE OCCUPANT UNITS



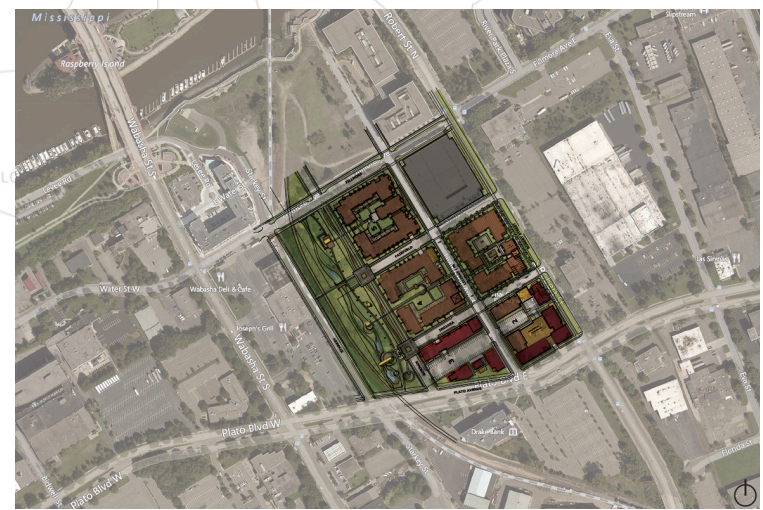

*Wisconsin Housing and Economic Development Authority*  
**New QAP in June 2017, working with team on PH info**

**....19 ON THEIR WAY!!**

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**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**  
**MINNESOTA**



**West Side Flats**  
MASTER PLAN & DEVELOPMENT GUIDELINES  
DRAFT FOR PUBLIC REVIEW  
DECEMBER 5, 2014



*Minnesota Housing Finance Agency  
QAP discussions informed by large PH projects*

**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
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MARYLAND  
KENTUCKY  
INDIANA  
MICHIGAN  
MISSOURI  
OKLAHOMA  
WISCONSIN  
MINNESOTA  
IOWA**

**INTERESTED, PRESENTED AT HOUSING CONFERENCE, Sept 9**

**...Just asked by Iowa Economic Development Authority to present at their conference June 14**

*Iowa Finance Authority*





**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY  
INDIANA  
MICHIGAN  
MISSOURI  
OKLAHOMA  
WISCONSIN  
MINNESOTA  
IOWA  
MONTANA**

*Montana Housing Division  
Presented at QAP discussion January 26, 2016; Asked for  
QAP comments...*

**....19 ON THEIR WAY!!**

**MAINE**  
**VERMONT**  
**DELAWARE**  
**MARYLAND**  
**KENTUCKY**  
**INDIANA**  
**MICHIGAN**  
**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**  
**MINNESOTA**  
**IOWA**  
**MONTANA**  
**UTAH**

**Presentation at Conference Oct 21: invited to QAP discussion**

Utah Housing Corp

# **....19 ON THEIR WAY!!**

**MAINE**  
**VERMONT**  
**DELAWARE**  
**MARYLAND**  
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**INDIANA**  
**MICHIGAN**  
**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**  
**MINNESOTA**  
**IOWA**  
**MONTANA**  
**UTAH**  
**WASHINGTON**

*Washington State Housing Finance Commission  
Presentation June 25, 2015; VERY INTERESTED; 2017 QAP in Spring  
Presenting at Oct 5, 2016 23<sup>rd</sup> Annual Housing Conference in Tacoma*

**....19 ON THEIR WAY!!**



**MAINE**  
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**DELAWARE**  
**MARYLAND**  
**KENTUCKY**  
**INDIANA**  
**MICHIGAN**  
**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**  
**MINNESOTA**  
**IOWA**  
**MONTANA**  
**UTAH**  
**WASHINGTON**  
**OREGON**

## This Is The Largest Passive House Building In The US

November 19th, 2014 by [Steve Hanley](#)



MASSACHUSETTS

LAND  
CUT

**....19 ON THEIR WAY!!**

**MAINE**  
**VERMONT**  
**DELAWARE**  
**MARYLAND**  
**KENTUCKY**  
**INDIANA**  
**MICHIGAN**  
**MISSOURI**  
**OKLAHOMA**  
**WISCONSIN**  
**MINNESOTA**  
**IOWA**  
**MONTANA**  
**UTAH**  
**WASHINGTON**  
**OREGON**  
**NEVADA**





*State of Nevada Housing Division*  
**INTERESTED; Waiting to see costs in PHFA projects**

**....19 ON THEIR WAY!!**

**MAINE  
VERMONT  
DELAWARE  
MARYLAND  
KENTUCKY  
INDIANA  
MICHIGAN  
MISSOURI  
OKLAHOMA  
WISCONSIN  
MINNESOTA  
IOWA  
MONTANA  
UTAH  
WASHINGTON  
OREGON  
NEVADA  
CALIFORNIA**

## Building Code Revision Launches California Toward Zero Net Energy Buildings

 **Bill Roth** | Monday November 11th, 2013 | [2 Comments](#)

 Like 63
 7
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Starting in 2014, California is implementing a tsunami of building code revisions called Title 24. These revised building codes will move California's residential and commercial buildings toward Zero Net Energy (ZNE). In a ZNE building, the annual energy consumption is equal to its annual production of renewable energy. Under Title 24, all new residential construction is to be ZNE by 2020 with all new commercial buildings achieving this ZNE goal by 2030.



Title 24 moves building design toward "comprehensive building solutions." This building design approach first focuses upon reducing energy consumption through the integration of smart and energy efficient technologies. The final design step after reducing the building's energy consumption is to install onsite renewable energy generation like solar panels.

# ....19 ON THEIR WAY!!

MAINE  
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 IOWA  
 MONTANA  
 UTAH  
 WASHINGTON  
 OREGON  
 NEVADA  
 CALIFORNIA  
 ALASKA

## Business

# Developer plans new Anchorage housing that will produce more energy than it uses

Sean Doogan | Alaska Dispatch News | January 11, 2015

Email Print

Like 1k

Tweet 38

+1 2

Text Size

An Alaska design and architectural firm is partnering with a nonprofit housing agency to design and erect a building that gives more than it takes.

The building, planned for 2 acres on Muldoon Road near its intersection with the Glenn Highway, would be home to 20 apartments for low-income families and residents with disabilities. If the architect and designers have their way, the multifamily housing unit will produce more energy than it consumes and use on-site water and sewer reclamation systems.



RurAL CAP plans to expand its Safe Harbor project for low-income housing with apartments at the location of the former How-How restaurant on Muldoon Road.

McCool Carlson Green illustration

### RELATED:

[New 'super-insulated' homes rising across Alaska's North Slope](#)

[Anchorage attracting new retailers despite big downturn in state revenue](#)

Nonprofit RurAL CAP runs a housing program called [Safe Harbor](#),

providing housing to Anchorage residents with very low incomes. The new ultra energy-efficient units are set to be built next door to an existing 50-unit complex inside the old Ramada Inn on Muldoon Road. Managers there say that without the housing they provide to people who are at least 50 percent below the median income level (about \$51,000 per year for a family of four), most of the families would be homeless. Many current Safe Harbor residents were homeless before finding housing with RurAL CAP, according to the agency; dozens more low-income Anchorage families are on a waiting list for affordable housing.

Alaska Corporation for Affordable Housing

**INTERESTED; Waiting to see costs from PHFA Project**



# *THE PHFA PROJECT*

## **AFFORDABLE HOUSING**



# THE PHFA PROJECT

**AFFORDABLE HOUSING**



*Architects, Engineers, Builders*

# THE PHFA PROJECT



# THE PHFA PROJECT

*Catalyst for radical and significant transformation of the  
HOUSING INDUSTRY.....*

**AFFORDABLE HOUSING**

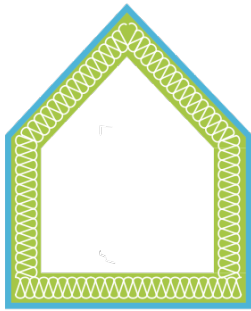
*Architects, Engineers, Builders*

**MARKET-RATE HOUSING**

# THE PHFA PROJECT

*A National Net-Zero-Energy Initiative*

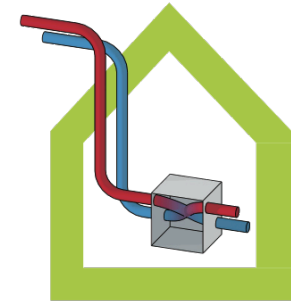
## EDUCATION + TRAINING + INDUSTRY SUPPORT



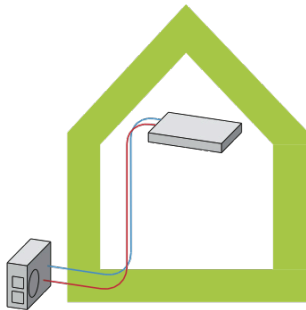
**Insulation + Air-Sealing**



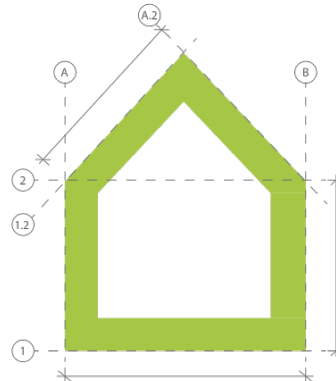
**Windows + Doors**



**Energy Recovery + Ventilation**



**Heating + Cooling**



**Architects + Engineers**



**Consultants + Trainers**

# THE PHFA PROJECT

*A National Net-Zero-Energy Initiative*

## EDUCATION + TRAINING + INDUSTRY SUPPORT



*Insulation + Air-Sealing*



*Windows + Doors*



*Energy Recovery + Ventilation*



*Heating + Cooling*



*Architects + Engineers*



*Consultants + Trainers*

**RADICAL**

**AFFORDABLE**

**SCALABLE**

**NET-ZERO-ENERGY-CAPABLE**

**RADICALLY**



**STANDARD**



**THANK  
YOU**

**Tim McDonald**  
**[tim@onionflats.com](mailto:tim@onionflats.com)**  
**215.783.5591**