

Electric Energy Use



Month: **1667** kWh

THIS MONTH
\$226

1739

BELFIELD AVE
PHILADELPHIA PA 19141

POWER USAGE
2029kWh
THIS MONTH

Solar Energy Production



Month: **362** kWh



MINUTE TODAY WEEK MONTH YEAR

PROJECT DETAILS TEMPERATURE/HUMIDITY/CO2 PHOTOS

Electric Energy Use



Month: **531** kWh

THIS MONTH
\$72

1737

BELFIELD AVE
PHILADELPHIA PA 19141

POWER USAGE
894kWh
THIS MONTH

Solar Energy Production



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Month: **638** kWh

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\$86

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POWER USAGE
1009kWh
THIS MONTH

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Month: **371** kWh



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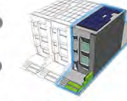


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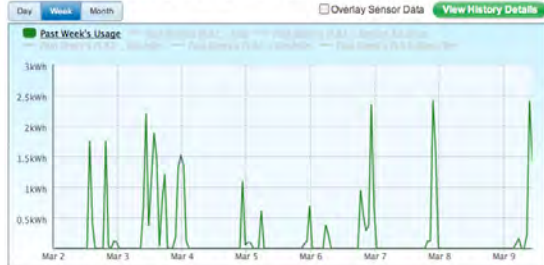
PROJECT DETAILS TEMPERATURE/HUMIDITY/CO2 PHOTOS



Energy Consumption Per Load

	Number of Loads	Avg Cost per Load	Avg Energy per Load (kWh)	Avg Duration per Load (min)
Yesterday	2	0.02	1.88	79
Last 7 Days	25	0.19	1.36	65
Last 30 Days	104	0.18	1.42	68

Washer/Cond. Dryer, Hourly View for the Past Week

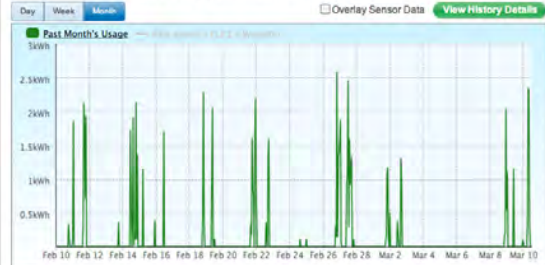


Click and drag in the plot area to zoom in.

Energy Consumption Per Load

	Number of Loads	Avg Cost per Load	Avg Energy per Load (kWh)	Avg Duration per Load (min)
Yesterday	2	0.43	2.75	114
Last 7 Days	6	0.25	1.78	89
Last 30 Days	43	0.22	1.75	86

Washer/condensing dryer, Hourly View for the Past Month

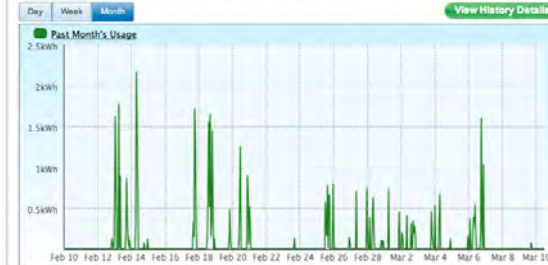


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Energy Consumption Per Load

	Number of Loads	Avg Cost per Load	Avg Energy per Load (kWh)	Avg Duration per Load (min)
Yesterday	1	0	0.06	19
Last 7 Days	13	0.06	0.54	40
Last 30 Days	59	0.11	0.88	64

washer/condensing dryer, Hourly View for the Past Month



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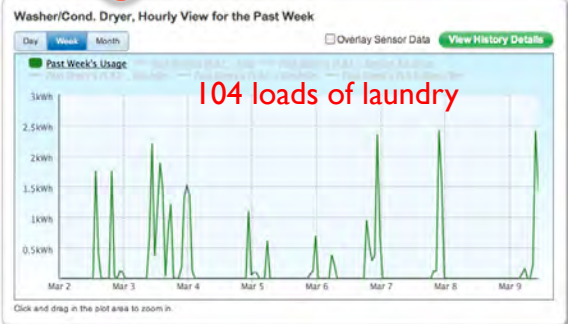
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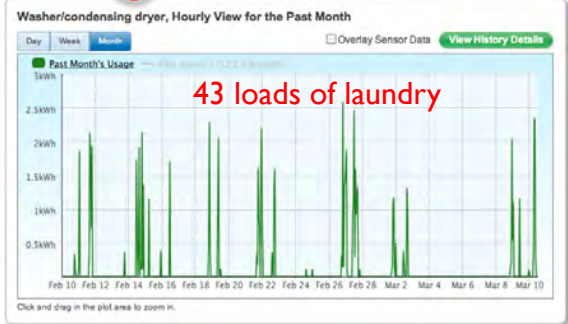
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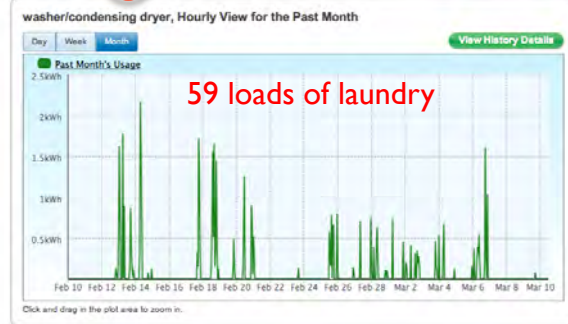
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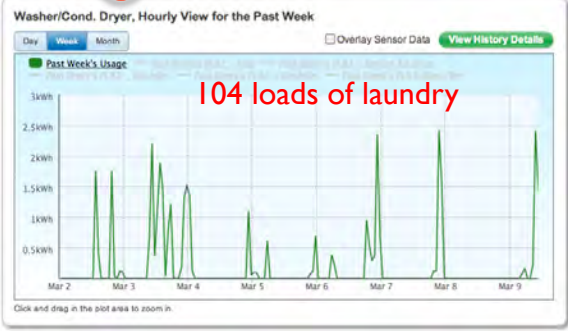
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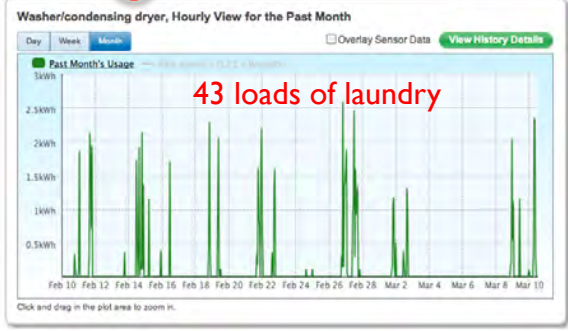
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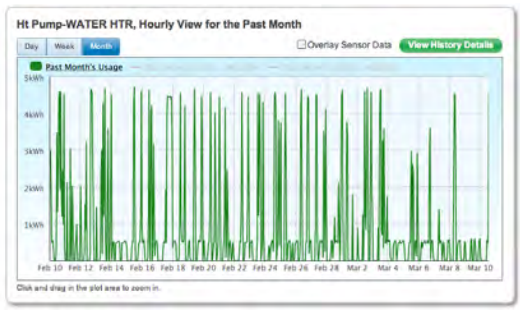
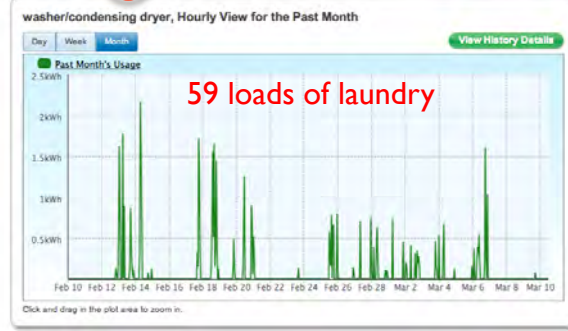
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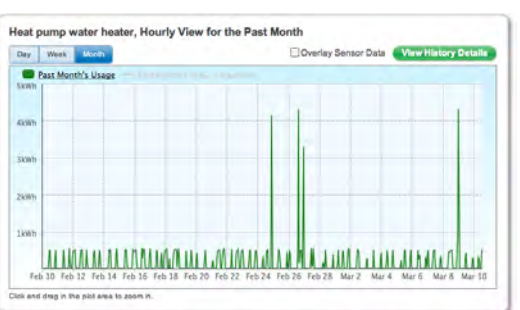


Energy Consumption Per Load

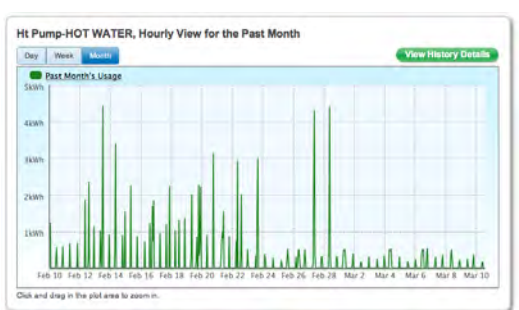
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\$107.00
For hot water and laundry alone



\$21.00









\$22.00





*** 12 Months of Measured Data**

kWh/sf/yr

Address	TFA sf	12 Months kWh Total	PV Production kWh	\$/Yr	SITE (kBTU/TFA) kBTU/sf/yr	
 1739	1480.6	17,466	5710	\$1120	40	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block;">13</div> 4.5 (66%)
				<i>Passive House</i>	15	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; background-color: #f0f0f0;">\$93.00/MONTH</div>
 1737	1480.6	10,809	5631	\$497	25	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block;">7</div> 4.5 (36%)
				<i>Passive House</i>	15	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; background-color: #f0f0f0;">\$41.00/MONTH</div>
 1735	1480.6	9568	5577	\$383	22	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block;">6</div> 4.5 (25%)
				<i>Passive House</i>	15	<div style="border: 1px solid red; border-radius: 10px; padding: 5px; display: inline-block; background-color: #f0f0f0;">\$32.00/MONTH</div>



CONSTRUCTION COSTS

	PER UNIT	PROJECT TOTAL
GENERAL CONDITIONS	\$1,500	\$4,500
EXCAVATION & GRADING	\$3,000	\$9,000
FOUNDATIONS	\$7,000	\$21,000
HELICAL PIERS	\$6,500	\$19,500
SITE UTILITIES (WATER / SEWER / ELECTRIC)	\$10,000	\$30,000
SOLAR PV (5 KW PER HOUSE - 15KW TOTAL)	\$15,000	\$45,000
TOTAL SITE WORK	\$43,000	\$129,000
FRAMING / INSULATION / SHEETROCK / PAINT	\$50,250	\$150,750
EXT.WINDOWS & DOORS	\$9,850	\$29,550
MECHANICAL SYSTEM	\$8,500	\$25,500
PLUMBING & SPRINKLERS	\$9,500	\$28,500
ELECTRICAL	\$5,500	\$16,500
CABINETS / COUNTERTOPS	\$5,500	\$16,500
APPLIANCES	\$6,200	\$18,600
HARDWARE & FINISHES	\$9,300	\$27,900
EXTERIOR CLADDING	\$4,500	\$13,500
E-MONITORING	\$1,900	\$5,700
LABOR / INSPECTIONS / OH-P / DELIVERY / INSTALL	\$95,000	\$285,000
TOTAL MODULAR	\$206,000	\$618,000.00
MODULAR COST PER SQFT		\$107.00 SF
TOTAL HARD COSTS	\$249,000	\$747,000.00
COST PER SQFT (1920 SQFT x 3 HOMES = 5760 SQFT)		\$129.69

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An aerial photograph of a city neighborhood. In the foreground, a modern, multi-story building with a flat roof covered in solar panels is visible. The building has a grey facade and several windows with teal-colored frames. In the background, there is a dense residential area with older, multi-story brick buildings. The sky is blue with scattered white clouds.

**Why isn't ALL
AFFORDABLE HOUSING
Built to the PH standard?**



PHFA

PENNSYLVANIA HOUSING FINANCE AGENCY

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 large windows and a prominent entrance. The surrounding area consists of older, multi-story residential buildings, some with porches. The sky is blue with scattered white clouds. The overall scene is bright and clear.

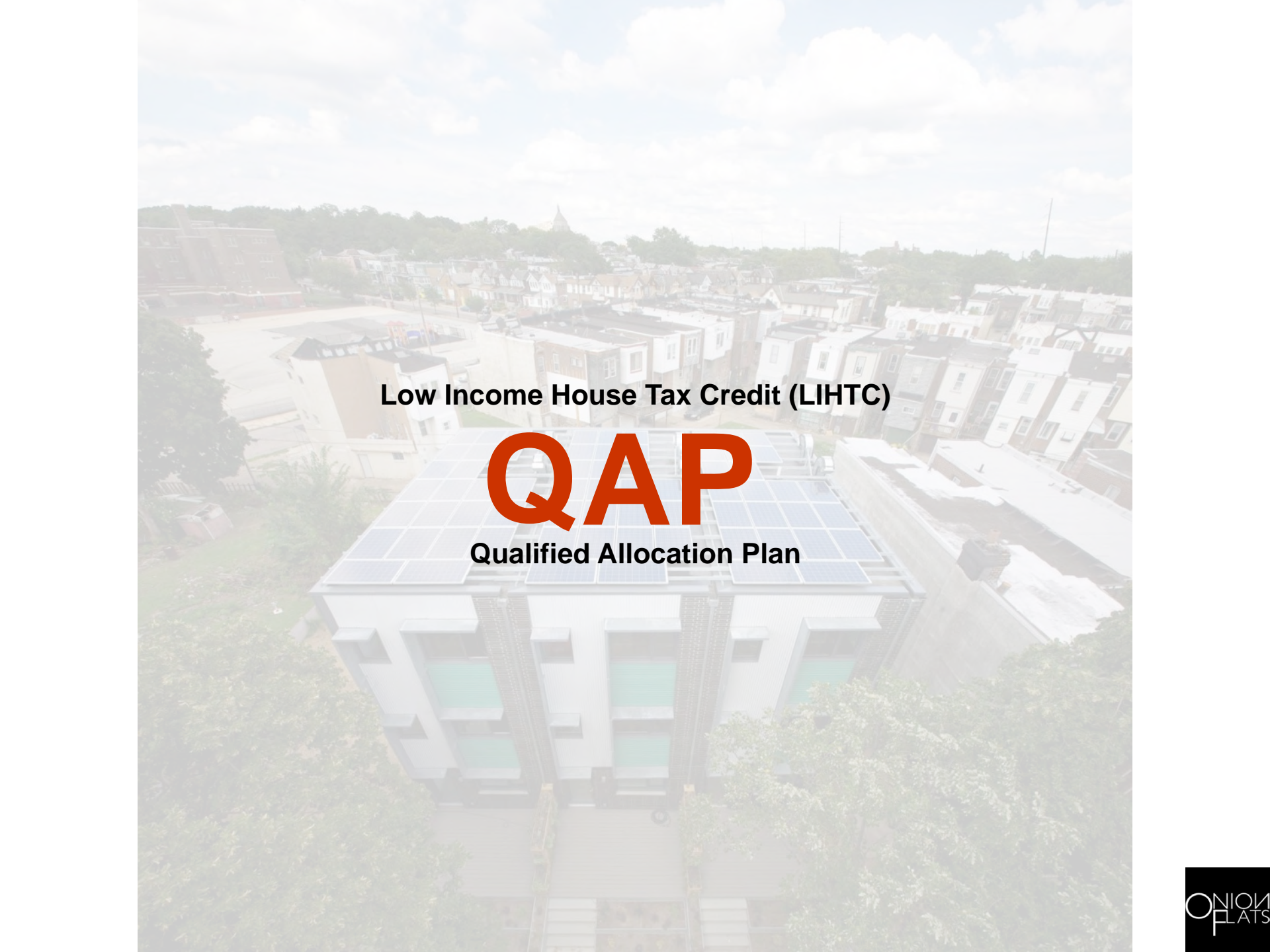
**MAKE ALL AFFORDABLE HOUSING
NET-ZERO-ENERGY-CAPABLE BY 2030**

An aerial photograph of a modern, multi-story building with a flat roof covered in solar panels. The building is light-colored with 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 the center of the image.

USE PASSIVE HOUSE AS THE TOOL

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 word "HOW?" is overlaid in large, bold, orange letters across the center of the image.

HOW?



Low Income House Tax Credit (LIHTC)

QAP

Qualified Allocation Plan

POINTS-BASED SYSTEM

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

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THE NEW GRAVITY PROJECT

OCT 2014

“PASSIVE HOUSE points” introduced to PHFA 2015 QAP

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85 Multi-family project applications were received

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422 new Passive House/Net-Zero-Energy-Capable units in PA

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

THE NEW GRAVITY PROJECT

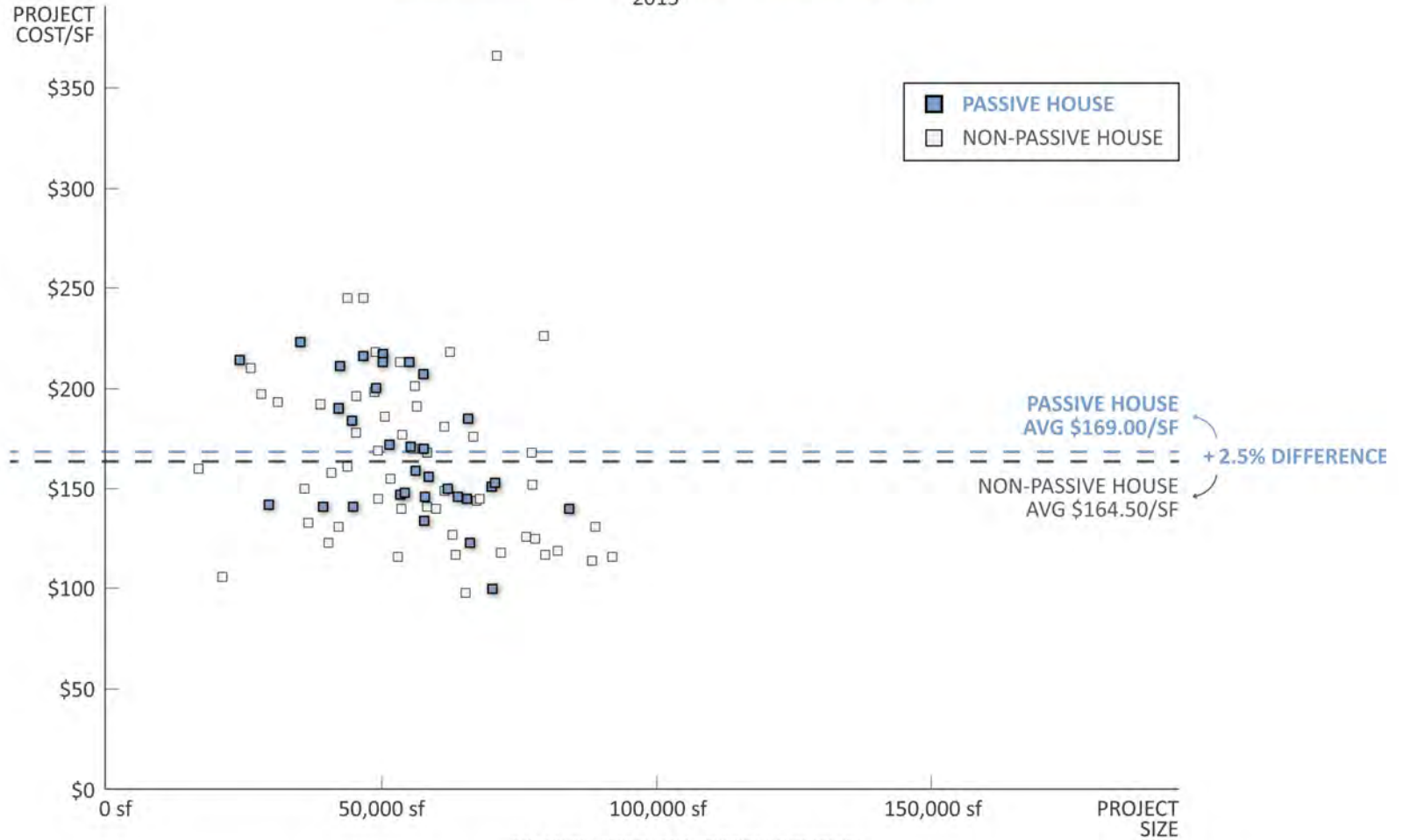
Construction Cost Summary from PHFA Applications

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	5	60	79,795	9,363,626	156,060	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	4A		28	8			36	43,872	8,331,567	231,432	245
SF-25	Philadelphia	5A		10	19	11		40	46,757	11,453,809	286,345	245
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		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

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	36,064	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	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	24,284	5,194,462	216,346	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

THE NEW GRAVITY PROJECT

CONSTRUCTION COST OF PROPOSED PROJECTS TO PHFA
2015



DATA SOURCE: PENNSYLVANIA HOUSING FINANCE AGENCY
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THE NEW GRAVITY PROJECT

8 Passive House Projects awarded funding

THE NEW GRAVITY PROJECT



St. John Nueman
Phila, PA
52 Units



Wynne
Phila, PA
51 Units



Sacred Heart
Allentown, PA
61 Units



WhiteHall
Spring City, PA
49 Units



Hillcrest
Pittsburgh, PA
65 Units



Washington Square
Townhomes
Chambersburg, Pa
54 Units



Mann Edge
Lewistown, Pa
34 Units



7 Passive House Projects **COMPLETED**

THE NEW GRAVITY PROJECT



St. John Nueman
Phila, PA
52 Units



Wynne
Phila, PA
51 Units



Sacred Heart
Allentown, PA
61 Units



WhiteHall
Spring City, PA
49 Units



Hillcrest
Pittsburgh, PA
65 Units



Washington Square
Townhomes
Chambersburg, Pa
54 Units



Mann Edge
Lewistown, Pa
34 Units



7 Passive House Projects **COMPLETED**

THE NEW GRAVITY PROJECT

Construction Cost Summary for PHFA 2016 Applications

Proj. No.	County	Climate Zone	Units by BR Qty					Total Units	Resid. Bldg. Area	Resid. Constr. \$	\$/ Unit	\$/ SF
			0	1	2	3	4+					
SF-01	Dauphin	5A		14	16	15	15	60	99,625	10,419,031	173,651	105
SF-02	Lebanon	5A		9	32	14		55	78,627	8,446,000	153,564	107
SF-03	Lycoming	5A		20	40			60	82,730	9,436,382	157,273	114
SF-04	Columbia	5A			7	17		24	48,499	5,669,777	236,241	117
SF-05	Philadelphia	4A		5	19	31	5	60	79,795	9,739,093	162,318	122
SF-06	Wyoming	5A			30	12		42	72,100	9,168,380	218,295	127
SF-07	Erie	5A		8	20	18		46	85,819	10,964,900	238,367	128
SF-08	Lancaster	5A		6	33	21		60	78,825	10,259,118	170,985	130
SF-09	Cumberland	5A			18	34		52	75,275	9,921,606	190,800	132
SF-10	Centre	5A		6	24	18		48	75,737	10,193,457	212,364	135
SF-11	Lehigh	5A		19	27	16		62	71,254	9,631,860	155,353	135
SF-12	Lancaster	5A		41	79	18		138	154,370	21,137,388	153,169	137
SF-13	Erie	5A		9	31			40	53,454	7,870,669	196,767	147
SF-14	Montgomery	4A			19	29		48	59,976	8,858,000	184,542	148
SF-15	Lebanon	5A			49	13		62	82,974	12,349,192	199,181	149
SF-16	Cumberland	5A			10	30	10	50	72,707	10,865,524	217,310	149
SF-17	Schuylkill	5A		1	11	5		17	21,544	3,225,548	189,738	150
SF-18	Berks	5A		10	21	11		42	57,722	8,755,000	208,452	152
SF-19	Berks	5A		22	20	16		58	62,097	9,440,383	162,765	152
SF-20	Franklin	5A		6	21	21		48	66,583	10,404,256	216,755	156
SF-21	Lehigh	5A		9	15	20	4	48	53,333	8,377,963	174,541	157
SF-22	Chester	4A		19	18	11		48	58,541	9,248,927	192,686	158
SF-23	Cumberland	5A		5	22	8		35	44,186	7,656,200	218,749	173
SF-24	Montgomery	4A		8	21	15	6	50	65,907	11,589,411	231,788	176
SF-25	Allegheny	5A		35	16	14		65	87,255	15,376,648	236,564	176
SF-26	Delaware	4A		8	34	14		56	65,212	11,914,849	212,765	183
SF-27	Philadelphia	4A			17	16	2	35	45,476	9,441,620	269,761	208
SF-28	Armstrong	5A			24			24	28,812	6,017,450	250,727	209
SF-29	Philadelphia	4A			28	14		42	47,964	10,022,268	238,625	209
SF-30	Philadelphia	4A		11	10	11		32	31,619	6,732,433	210,389	213
SF-31	Philadelphia	4A		8	19	24	4	55	66,383	19,011,723	345,668	286
SF-32	Philadelphia	4A		45				45	23,302	7,408,602	164,636	318

Single Family / Townhouse

AR-01	Monroe	5A		36	4			40	54,215	5,753,672	143,842	106
AR-02	Luzerne	5A		6	54	2		62	88,489	9,900,711	159,689	112
AR-03	Philadelphia	4A		12	54			66	77,978	10,123,117	153,381	130
AR-04	Allegheny	5A		33	8			41	70,409	9,181,888	223,948	130
AR-05	Butler	5A		44	18			62	73,114	10,046,992	162,048	137
AR-06	Washington	5A		24				24	41,046	6,169,663	257,069	150
AR-07	Allegheny	5A		2	49	4		55	65,190	10,592,039	192,583	162
AR-08	Delaware	4A		50				50	50,548	8,727,828	174,557	173
AR-09	Philadelphia	4A		60				60	65,041	11,803,992	196,733	181
AR-10	Philadelphia	4A		74				74	93,285	20,223,060	273,285	217
AR-11	Philadelphia	4A		20	37			57	63,960	14,005,881	245,717	219
AR-12	Perry	5A		28	3			31	36,152	8,548,665	275,763	236

Adaptive Reuse Bldgs.

MS-01	Berks	5A		40	20			60	62,149	7,432,636	123,877	120
MS-02	Tioga	6A		34	6			40	48,735	5,999,734	149,993	123
MS-03	Dauphin	5A		35	2			37	43,964	5,421,065	146,515	123
MS-04	Bradford	5A		38	12	6		56	63,768	8,446,000	150,821	132
MS-05	Lancaster	5A		46	6			52	92,370	12,565,629	241,647	136
MS-06	Fayette	5A		12	12			24	28,904	3,942,323	164,263	136
MS-07	Cambria	5A		32	11			43	49,491	6,879,001	159,977	139
MS-08	Clearfield	6A		24	6			30	41,915	5,855,263	195,175	140
MS-09	Chester	4A		56	3			59	64,180	9,033,100	153,103	141
MS-10	Centre	5A		16	34			50	60,912	8,666,968	173,321	142
MS-11	Clinton	5A		28	4			32	37,454	5,333,806	166,681	142
MS-12	Allegheny	5A		24	12	13		49	67,340	9,698,634	197,931	144
MS-13	Luzerne	5A		32	3			35	44,543	6,503,636	185,818	146
MS-14	Dauphin	5A		20				20	19,157	2,803,860	140,193	146
MS-15	Butler	5A		68				68	66,845	9,821,302	144,431	147
MS-16	Westmoreland	5A		15	13	8		36	46,095	6,855,424	190,428	149
MS-17	Lackawanna	5A		12	12	8	4	36	50,019	7,560,000	210,000	151
MS-18	Northumberland	5A		32				32	38,240	5,789,694	180,928	151
MS-19	Centre	5A		37	11			48	57,959	8,781,136	182,940	152
MS-20	Lackawanna	5A		44	4			48	49,460	7,493,999	156,125	152
MS-21	Allegheny	5A		30	34			64	69,605	10,837,117	169,330	156
MS-22	Dauphin	5A		43	11			54	51,319	8,411,465	155,768	164
MS-23	Montgomery	4A		60				60	58,681	9,643,999	160,733	164
MS-24	Adams	5A		39	4			43	50,532	8,515,443	198,034	169
MS-25	Clarion	5A		48				48	53,668	9,090,720	189,390	169
MS-26	Allegheny	5A		40	6			46	56,969	10,124,143	220,090	178
MS-27	Allegheny	5A		28	8			36	42,500	7,582,274	210,619	178
MS-28	Chester	4A		47	13			60	61,551	10,982,435	183,041	178
MS-29	Delaware	4A		38	3			41	47,797	8,539,207	208,273	179
MS-30	Allegheny	5A		52	8			60	63,861	11,647,354	194,123	182
MS-31	Philadelphia	4A		37	44			81	93,000	17,635,125	217,718	190
MS-32	Crawford	5A		36	4			40	38,953	7,552,475	188,812	194
MS-33	Westmoreland	5A		47				47	49,080	9,801,657	208,546	200
MS-34	Bucks	4A		56	10			66	61,576	12,448,922	188,620	202
MS-35	Lycoming	5A		23	11			34	35,437	7,169,151	210,857	202
MS-36	Philadelphia	4A		61				61	60,137	12,416,322	203,546	206
MS-37	Bradford	5A		40	10			50	56,580	11,852,026	237,041	209
MS-38	Philadelphia	4A		58	4			62	57,653	12,079,768	194,835	210
MS-39	Philadelphia	4A		52				52	46,619	9,903,739	190,457	212
MS-40	Philadelphia	4A		60				60	56,672	12,174,301	202,905	215
MS-41	Philadelphia	4A		45				45	48,351	10,464,750	232,550	216
MS-42	Montgomery	5A		50				50	42,265	9,236,729	184,735	219
MS-43	Allegheny	4A		29	4			33	37,592	8,284,054	251,032	220
MS-44	Philadelphia	4A		46	4			50	46,640	10,701,164	214,023	229
MS-45	Philadelphia	4A		53				53	50,312	11,711,200	220,966	233
MS-46	Philadelphia	4A		34	11			45	42,520	10,560,747	234,683	248
MS-47	Philadelphia	4A		24				24	24,284	6,040,593	251,691	249
MS-48	Philadelphia	4A		60				60	65,340	17,249,402	287,490	264
MS-49	Luzerne	5A		36				36	27,296	7,653,000	212,583	280
MS-50	Philadelphia	4A		48				48	46,000	12,915,822	269,080	281

Multi-Story / Elevator Buildings

YEAR 2 of The PHFA Project: A NATIONAL Net-Zero-Energy Initiative by **2030**
2016

THE NEW GRAVITY PROJECT

Pennsylvania

94 Projects applied, **27** as Passive House projects

10 PH projects awarded

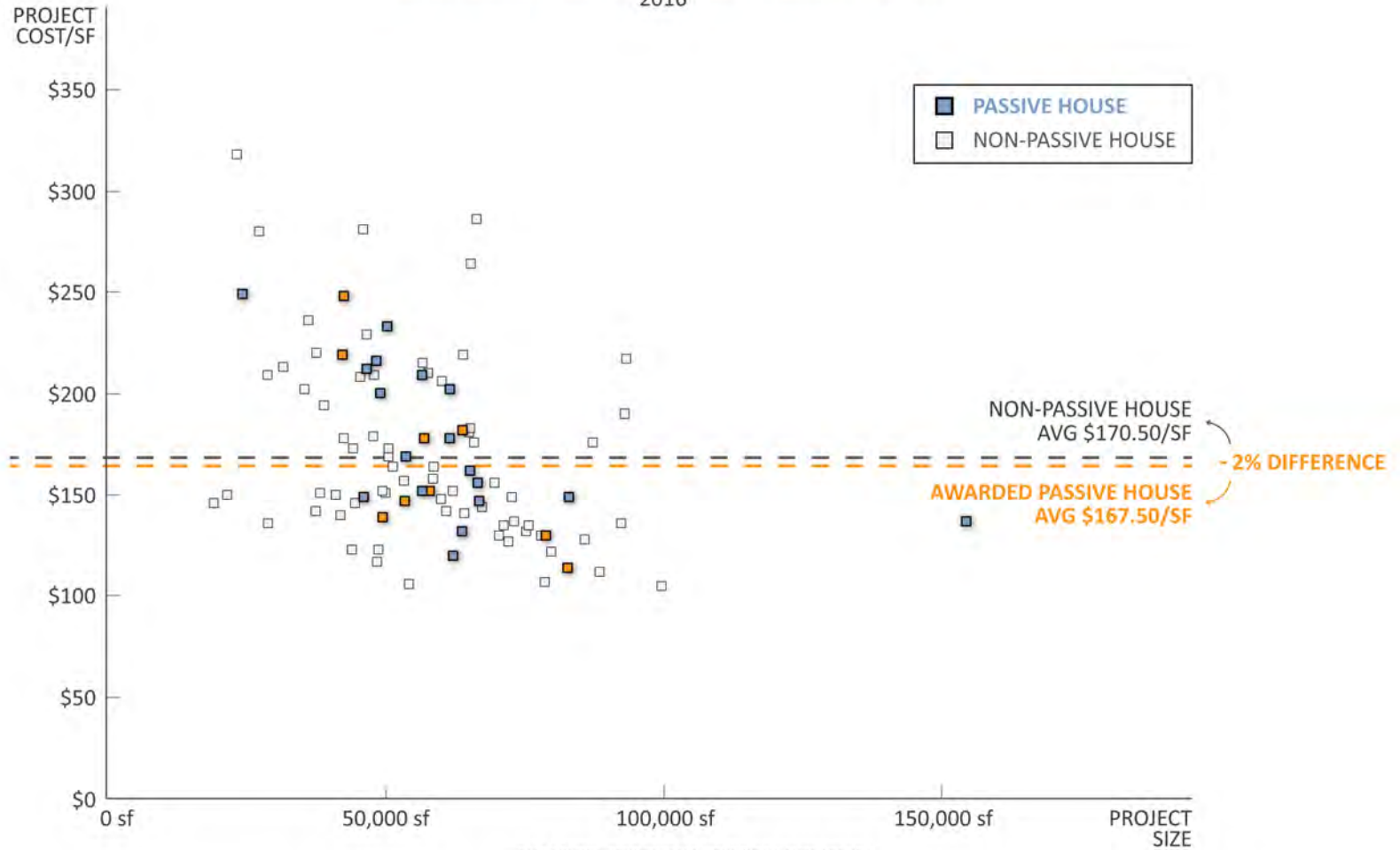
33 NON-PH projects awarded



YEAR 2 of The PHFA Project: A NATIONAL Net-Zero-Energy Initiative by **2030**
2016

THE NEW GRAVITY PROJECT

CONSTRUCTION COST OF PROPOSED PROJECTS TO PHFA
2016



DATA SOURCE: PENNSYLVANIA HOUSING FINANCE AGENCY
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39 State Housing Finance Agencies
Engaged to replicate PHFA strategy

A map of the United States where 39 states are highlighted in green. The highlighted states include Washington, Oregon, California, Nevada, Idaho, Utah, Arizona, New Mexico, Montana, Wyoming, Colorado, Nebraska, Kansas, Oklahoma, Texas, North Dakota, South Dakota, Nebraska, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, Louisiana, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, New York, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Florida, Alaska, and Hawaii. The text '39 State Housing Finance Agencies Engaged to replicate PHFA strategy' is overlaid on the map.

39 State Housing Finance Agencies
Engaged to replicate PHFA strategy

14 COMMITTED!!



PENNSYLVANIA

NEW YORK

NEW JERSEY

D.C.

DELAWARE

CALIFORNIA

CONNECTICUT

RHODE ISLAND

NEW HAMPSHIRE

OHIO

ILLINOIS

MONTANA

SOUTH DAKOTA

IDAHO

14 COMMITTED!!

World's Tallest Passive House Breaks Ground on Roosevelt Island

By ALISON GREGOR | JUNE 12, 2015

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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



Development team picked for largest Passive House project in North America

The 24-story curved building would be 70% more efficient than comparable housing in New York City.

GREEN | MAY 16, 2016 | JOHN CAULFIELD, SENIOR EDITOR



A 24-story building with 241 affordable housing units will include a charter school, medical center, cultural spaces, and a supermarket. Image: Dattner Architects

A 24-story, 300,000-sf building that is being dubbed the largest residential Passive House project in North America will rise on the former site of a public school in the Mott Haven section of The Bronx, New York.

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 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: \$100/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-pane 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.



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2017 New Hampshire Qualified Allocation Plan

- is involved in or has had other tax credit or Authority-financed projects which have non-compliance issues;
- is or has been non-compliant or otherwise in default with this or any other Authority Program (as determined by the Authority) or with another state housing finance agency; and/or
- has been awarded credits in the past that were subsequently returned or otherwise unused (unless for good cause).

Such determination will be made by the Authority at its sole discretion.

0 to -20 points

15. Development Characteristics

The project design provides for a community room with a minimum of 600 square feet.

5 points

16. Energy Efficient Design and Construction

Project achieves **Passive House Certification** or meets NGBS silver or higher designation. If the project fails to achieve certification, the Authority will determine if the Design and Construction team made a good-faith effort to achieve certification. If so, no penalty will be imposed. If not, a five-point penalty will be levied against the next application for 9% LIHTCs submitted by the project sponsor.

5 points

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**Gilford Village Knolls III, 24 units Senior Housing
FIRST Passive House Affordable housing in NH
Breaks ground in Summer of 2017**



Gilford Village Knolls III

Construction on Gilford Village Knolls III will begin in the spring of 2017 and is scheduled to be complete early spring of 2018.

LACLT was hired by the citizens group of Gilford Village Knolls I and II to develop their final phase, an additional 24 units of senior housing in the historic village center of Gilford, NH.

It is widely recognized that the State's population is aging, and that trend will continue for at least the next 20 years as baby boomers age. New Hampshire's senior population nearly doubled between 2010 and 2015, from 178,000 to 323,000 people. As a result, seniors will occupy a growing proportion of the state's housing units, filling one in three units by 2025. Senior housing options in our service area are minimal, and affordable senior housing options are even scarcer. Data shows that Belknap County does not have the housing stock available to accommodate its aging population.

GVK III will be responding to this need adding 24 permanently affordable senior units to the area. Phase I and II of GVK have a waiting list of over 68 households, many of whom will qualify for phase III. **GVK III will also be the first affordable housing project in NH to meet the Passive House standards.** Through intelligent design the 5 Passive House principles (thermal bridge free design, superior windows, ventilation with heat recovery, quality insulation, and airtight construction) will be met. As a nationally certified Green Organization, this project will also exemplify our comprehensive green standards outlined in our Green Asset Management Manual.

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2016 - 2017 QUALIFIED ALLOCATION PLAN

Technical amendments added 09/2016.



CREATIVE DESIGN

Developments in all pools that include exceptional design features may earn three points. Partial points will not be awarded. Exceptional elements must be appropriate to the population served. Proposals will receive weighted consideration for their incorporation of any or all of the following exceptional elements:

WEIGHTED VALUE: 1 EACH	WEIGHTED VALUE: 3 EACH	WEIGHTED VALUE: 5 EACH
<ul style="list-style-type: none"> • Community Garden(s) • Exterior open spaces and paths • Play areas and/or pocket parks • Rain garden or bioswale • Smoke-free campus • Smart thermostats or resident-controlled smart metering • Dual flush toilets throughout • Annual, on-site, free dental and/or vision services • Monthly, staffed Ohio Benefit Bank on-site 	<ul style="list-style-type: none"> • Dedicated fitness center with exercise machines • Dedicated business/work-from-home center • Computer/tablet lending program in lieu of dedicated computer room⁵ • Reuse of NIP-funded site acquired from county land bank • Free resident Wi-Fi • DOE Zero Energy Ready Home⁶ • Free Medicaid/Medicare billing services • Free access to on-site, licensed physician or nurse practitioner at least once per week. 	<ul style="list-style-type: none"> • On-site renewable energy generation • PHIUS+ Project Certification (Passive House) • DOE Zero Energy Ready Home with renewable energy system • Platinum LEED rating; OR Emerald NGBS ICC 700 National Green Building Standard; OR Exceeding minimum Enterprise Green Communities Criteria by 20 or more points. • Gray water system(s) • Dedicated health clinic⁷

14 COMMITTED!!



Harrison Greene
 2017 Low Income Housing Tax Credit Proposal

Photograph or Rendering



Developer: The WODA Group
Project: 56 units Senior housing
Location: Harrison, Ohio
Architect: PCI Group Inc
Square Footage: 44,372sf
Hard Cost (includes Site): \$163/sf

Loveland Family Housing
 2017 Low Income Housing Tax Credit Proposal

Photograph or Rendering



Developer: PIRHL
Project: 36 units workforce housing
Location: Loveland, Ohio
Architect: RDL
Square Footage: 44,820
Hard Cost (includes Site): \$157/sf

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**ILLINOIS HOUSING
DEVELOPMENT AUTHORITY**

2016-2017

LOW INCOME HOUSING TAX CREDIT 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"> Commit to obtaining EPA Energy Star certification –or- Minimum 10% improvement for new construction (5% for rehab) above ASHRAE 90.1 2010 proven by a completed energy model, -or- HERS rating of 75 or lower
2	Commit to obtaining a sustainable building certification from one of the following: <ul style="list-style-type: none"> U.S. Green Building Council LEED certification -or- Enterprise Green Communities 2015 certification -or- ICC 700 National Green Building Standard certification -or- Passive House Certification through PHIUS or PHI
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"> Certification through Living Building Challenge –or- Alternative certification for a high performance building achieving 'Net Zero Capable' status as approved by the Authority.

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MONTANA BOARD OF HOUSING

HOUSING CREDIT PROGRAM

2019~~8~~ QUALIFIED ALLOCATION PLAN (QAP)

G. Energy, Green Building and Other Initiatives, Goals and Requirements

The following items in Subparagraphs A through K specify voluntary initiatives and goals which MBOH encourages Developers to consider in the planning and development of Projects, as well as certain Project requirements. These items are required only where so indicated by the use of mandatory language (e.g., "must"). Such initiatives, goals and requirements are subject to any further applicable provisions of this QAP.

1. Integrated Design Process and Community Connectivity

Project development and design includes a holistic approach. Processes include neighborhood and community involvement to ensure Project acceptance and enhancement. Integrated design processes ensure higher quality finish Project. Existing neighborhood edges, characteristics, fabric are considered in the Project design. Some considerations may include but are not limited to a community design charrette, incorporating Project into neighborhood fabric, energy modeling, commissioning, infrared testing, etc. (see Required Infrared Testing for Projects Awarded Credits, below).

2. Visitability and Universal Design Principles

Applicants should consider inclusion of visitability and universal design principles in development of the Project. MBOH encourages strong advertising of accessible features when advertising new construction through the Multiple listing services or through MontanaHousingSearch.com.

3. Sustainable Site, Location and Design

The building(s) and Project site, including the surrounding area, provide opportunities for education, alternative transportation, services, and community facilities. This is evidenced, for example, by Projects using existing infrastructure, reusing a building or existing housing, redeveloping a greyfield/brownfield, or developing in an existing neighborhood. Design elements use the site's characteristics and reduce impact on the site allowing for open space and other amenities, such as infill projects, rehabilitating existing building(s), rehabilitating existing housing, providing carpooling opportunities, using well water for landscaping, etc.

4. Passive House Standard

Passive House is a voluntary international building standard developed by the Passive House Institute (PHI), located in Darmstadt, Germany (referred to as the "Passive House Standard"). The Passive House Standard is composed of several strict performance requirements for new building construction. For the renovation of existing buildings, PHI developed a similar if slightly more lenient performance standard. The resulting performance represents a roughly 90% reduction in heating and cooling energy usage and up to a 75% reduction in primary energy usage from existing building stock.

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SOUTH DAKOTA HOUSING DEVELOPMENT AUTHORITY

REQUEST FOR PROPOSAL

**RENTAL HOUSING DEVELOPMENT
LOW INCOME HOUSING TAX CREDIT PROGRAM
HOME PROGRAM**

FOR

**THE DESIGN AND CONSTRUCTION OF A MULTIFAMILY
RENTAL HOUSING PROJECT THAT MEETS THE
REQUIREMENTS OF MULTIFAMILY PASSIVE BUILDING
DESIGN STANDARDS**



March 7, 2016

**SDHDA Offering Professional Development
Trainings to Individuals Interested in the
Passive House Standard**

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DEPARTMENT OF ARCHITECTURE

South Dakota Passive House Project



Contact: [605-688-4841](tel:605-688-4841) [Email](#)

SDSU DoArch has been awarded a Future Funds grant by the Governor's Office of Economic Development to integrate curriculum using relevant technologies specified by U.S. Passive House Standards. The initiative is an ongoing, self-

PH01: BRK Opportunities to

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Copper Pass Apartments - a Passive House project

3 Photos · Updated 21 days ago

Copper Pass, a South Dakota Housing Development Authority apartment building in Sioux Falls, has been designed to be Passive House Certified. This will make it only the 16th such apartment building in the whole country! Passive building comprises a set of design principles used to attain a rigorous level of energy efficiency. Passive building principles offer the best path to Net Zero and Net Positive buildings by minimizing the amount of energy consumed by the building.



Van De Walle Architects
Like This Page · September 11 ·

Work continues on the under-slab work at Copper Pass! The goal of Passive House Certification is to reduce the amount of energy consumed by the building. To achieve that, we want to create an airtight, fully insulated building, which starts at the foundation and floor slab.

Like Comment Share

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[Register Now!](#) | [Rates](#) | [Thursday Evening Cocktail Hour](#) | [Hotel Information](#)

Please join us Friday, October 27th in Boise for the second annual PHnw conference east of the Cascades! We're bringing together regional governments, utilities providers, developers, and the design and construction community to discuss high-performance, low-energy passive house buildings - big and small - within the inland region. This exciting one-day conference will focus on strengthening regional expertise and awareness of passive buildings.

Good Morning:

Mr. Scott Yribar has asked us to pass the following invitation along to our participating and interested parties. Passive Housing is one of the programs that is available for green points under 6.4.13 of the Idaho Qualified Allocation Plan. If you are interested in attending this event, please see the information below.

Diana Baker | Multifamily Program Assistant
Idaho Housing and Finance Association
P.O. Box 7899, Boise, ID 83707-1899
Phone 208-331-4769 | DianaB@IHFA.ORG
www.idahohousing.com

HAWAII



....16 ON THEIR WAY!!



