

....16 ON THEIR WAY!!

MAINE

VERMONT
MARYLAND
KENTUCKY

BANGOR DAILY NEWS

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



Village Centre Passive House, Brewer, Maine, 48 units



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.



Bayside Anchor Passive House, Portland, Maine, 45 units



KAPLAN THOMPSON ARCHITECTS

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INDIANA

MICHIGAN

MISSOURI

OKLAHOMA

WISCONSIN

MINNESOTA

IOWA

UTAH

WASHINGTON

OREGON

NEVADA

ALASKA



....17 ON THEIR WAY!!



Kentucky Housing Corporation
Lecture Oct 17, 2016



Building a Stronger Kentucky

2016 KENTUCKY AFFORDABLE HOUSING CONFERENCE

Passive House Works in Kentucky and the QAP

Have you heard about Passive House? If not, you will soon as it will likely factor into KHC's 2019 Qualified Allocation Plan (QAP)! Join us for this session where a panel of experts will present information on the existing Passive House consulting and certification experience available in Kentucky; how the concept has been received and incorporated in other state's QAPs; and the basic Passive House principles, how they work, and why they are affordable.

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Passive House Certified:
Resulting in 80% lower energy consumption.

Concrete Construction:
100+ year structures that can stand up to extreme weather events.

Urban Farming:
Integrated into roof top gardens and pocket parks.

20% Workforce Housing:
80% market rate units.



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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*

....16 ON THEIR WAY!!



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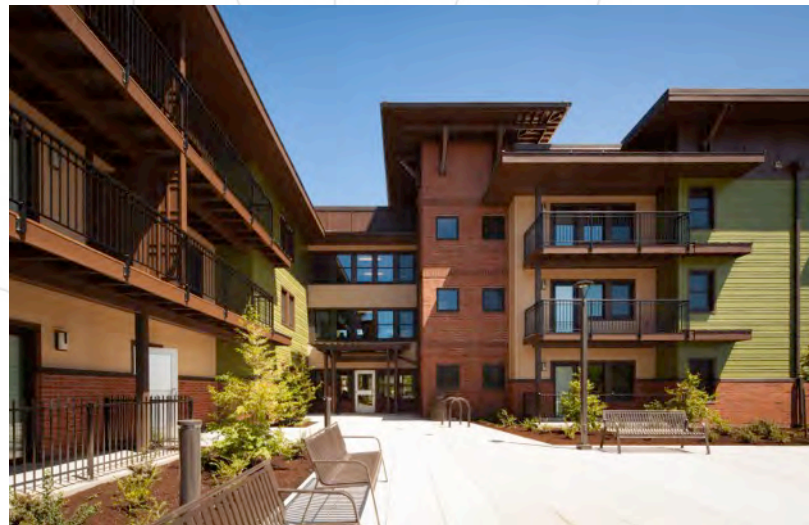
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This Is The Largest Passive House Building In The US

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



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DELAWARE VALLEY GREEN BUILDING COUNCIL
2017 NEW GRAVITY HOUSING CONFERENCE
CLIMATE CHANGE AND THE IMPERATIVE OF HIGH PERFORMANCE AFFORDABLE HOUSING

DVGBC
Delaware Valley Green Building Council

GPPHA
GREATER PHILADELPHIA
GREEN HOME ASSOCIATION



AUGUST 3 & 4, 2017 @ TEMPLE UNIVERSITY

Conference specifically focused on **BUILT Passive House Affordable housing projects in the US** **PRACTICAL, LESSONS LEARNED, COST ANALYSIS INFORMATION SHARING**

| TIME | AUGUST 3rd SCHEDULE | | |
|----------------------------|--|--|--|
| 7:30 - 8:30 | Registration, Breakfast, and Expo | | |
| 8:30 - 9:15 | Welcome: Alex Dews, Tim McDonald, Wade Romberger, Holly Glauser | | |
| | Track 1 | Track 2 | Track 3 |
| Session 1 9:30 - 10:30 | Orchards at Orenco and Beyond: Finding our way to higher levels of efficiency while managing costs Mike Steffen, Walsh Construction | PHFA Passive House Multi-Family Experience: What makes sense, what doesn't, and recommendations for future implementation Jeff Allagretti, Innova Vaugh Piccoli, Innova Adam Blackburn, Innova John Krunic, University of Pennsylvania | Real World Challenges of Passive House in the Mainstream Market Michael Ingui, Baxt Ingui Architects Jordan Deniz, The Levy Partnership David Finisher, Urban Artisan, LLC |
| | Coffee and Expo | | |
| Session 2 11:00 - 11:45 | St. John Neumann Place II: Why, how, and would we do it again Lois Aronst, Steven Winter Associates Robert Wing, Blackney Hayes Architects Scott Pusey, Steven Winter Associates | Affordable Housing: An oxymoron or realistic expectation? Tim Henkel, Formoso Properties Nick Cangelosi, The Michaels Organization Steve Schoch, Kilchen & Associates Brad Molotsky, Duane Morris LLP | Affordable Passive House Multi-Family: A report from two guinea pigs Kevin Dreyluss Weiss, RDL Architects Jim Eby, The Community Builders Phil Ford, Sota Construction Services |
| | How to Deliver Performance and Value: A method for cost effective high performance construction Avram Cohen, Passiv Science | Passive House Inspired Affordable Housing: What does the performance data tell us? Lauren Baumann, New Ecology Hank Keating, Trinity Financial | Two Architects and Their Stunning Successes with Passive House, Affordable, Multi-Family Housing in Cold, Olde New England Michael Wisiewski, Urzican - Wisiewski Architecture |
| Session 3 11:50 - 12:35 | Lunch and Expo | | |
| | Keynote Speaker: Jonathan F.P. Rose (Welcome from Homer Robinson) | | |
| Session 4 2:00 - 2:45 | Path to Net Zero Housing from Policy to Practice: Lessons from the District of Columbia Michael Hindle, Passive Positive Krista Egger, Enterprise Community Partners, Inc. Molly Simpson, DC Department of Energy & Environment | Keeping the Affordability in Affordable Multi-Family Passive House Projects Ray Robilas, Kilchen & Associates Steve Finkelman, Kilchen & Associates Anthony Noga, Kilchen & Associates | Strategies for Ventilating Multi-Family Buildings Seeking Multiple Certifications James Lewis, Heartland Housing Inc. |
| | Using Passive House to Give Old Affordable Housing Retrofits Superior Performance and Increased Occupant Benefits Laura Nettleton, Thoughtful Balance Jim Beschott, JRC Architects Craig Stevenson, Energy Assurance Solutions | Habitat for Humanity: Pushing the envelope Kevin Crowley, Habitat for Humanity John Gibbons, KSK Architects Historians and Planners Neil Goldman, Kilchen & Associates Tya Winn, Habitat for Humanity | Centralized vs. Decentralized Ventilation Throwdown Aubrey Gewish, Venticity Systems John Rockswold, Zephyr America |
| 3:45 - 4:15 | Keynote Speaker: Sebastian Moreno-Vacca | | |
| 4:30 - 6:00 | Happy Hour on Vendor Floor | | |

| TIME | AUGUST 4th SCHEDULE | | |
|----------------------------|---|--|--|
| 7:30 - 8:30 | Breakfast on Vendor Floor | | |
| 8:30 - 9:15 | Keynote Speaker: Lois Arena | | |
| | Track 1 | Track 2 | Track 3 |
| Session 6 9:20 - 10:20 | The PHFA Building Passive House Addition Wade Romberger, PHFA Adam Cohen, Passiv Science Benedict H. Dubbs, Murray Associates Architects, P.C. | Measured vs. Modeled Performance of PHIUS Affordable Multi-Family Projects Lisa White, PHI US Katrin Klingenberg, PHI US | The Distillery Project: A 65-Unit passive house retrofit in Boston Fred Gordon, Second Street Associates, LLC |
| | Outside the (Big) Box: An example of rural, affordable, multi-family, and non-traditionally financed projects Matt O'Malla, CO Logic | Affordable Multi-Family Passive House Design and Construction: 68-unit 8-story senior housing Adam Romano, The Association for Energy Affordability, Inc. Paula Duran, HANAC | Developing a PHFA Funded LIHTC Project: Passive house benefits while minimizing construction costs Jeff Davis, Presbyterian Senior Living David Cross, R.S. Mowery |
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| | The Trim Tab Effect: Six multi-family passive house projects across the country Galen Staerck, Statera Engineering | Whitehall, The PHFA Project, and Prefabrication: One of the magnificent seven ways to elegantly skin a multi-family passive house cat Tim McDonald, Orion Fats Rob Leonard, Built SMART Catherine Parus, Mission First Chip Danfoss, Mission First | Zero Net Energy Possible Affordable Housing on Martha's Vineyard Marc Frensenbaum, South Mountain Company |
| 11:30 - 12:00 | Coffee and Expo | | |
| Session 8 12:00 - 1:00 | Lunch | | |
| | Keynote Speaker: Zack Semke | | |
| 1:00 - 1:30 | Lunch | | |
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| 2:15 - 2:30 | Closing Remarks | | |
| Tour 1 3:00 - 5:00 | Capital II | | |
| | Wynne Theater | | |
| Tour 2 3:00 - 5:00 | Wynne Theater | | |
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A2M

office projects practice



Peterbos



Belgian embassy in Rabat



ONE center - CO2 neutral buildings



Voltaire



2015
Liège - Paradis Express



Belle-Vue 2.0



Evere Zaventem



Belgian Embassy in Kinshasa, DRC



Terre Neuve



the genesis



EKLA



Sebastien Morena-Vacca



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Affordable East Harlem development will have 655 passive house rentals

The nearly block-large project will bring amenities like a supermarket, YMCA, and health care facility to the neighborhood

BY ZOE ROSENBERG | @ZOE_ROSENBERG | FEB 7, 2017, 9:33AM EST



Jonathan Rose



The development will rise on a block bound by Madison and Park avenues and East 111th and 112th streets. | Handel Architects

Over 40 Projects, mostly BUILT, presented!

- Cost data being collected and compared to “typical” costs from multiple regions
 - Performance Data beginning to be collected
- Developing ‘MANUAL’ of cost-effective envelopes/systems/strategies for multi-family PH



HABITAT TOWNHOMES
 NY
 2 units
 Habitat/Jordan Dentz
 #1: \$341,314 per unit
 #2: \$138,819 per unit



1601 BRYN MAWR
 Bryn Mawr, PA
 16 Units
 Renewable Homes/Blue Path
 \$183/sf (\$11M)



2ND AND DELAWARE
 Kansas City, MO
 276 Units
 Arnold Dev/Galen Staengl
 \$140/sf (\$44.9M)



MORNINGSIDE CROSSING
 Pittsburgh, PA
 56 Units
 NK/Thoughtful Balance
 \$167/sf (\$9.8M) 6.5% premium



RETIREMENT RESIDENCE OF GLASSPORT
 Glassport, Pa
 55 Units
 NK/Galen Staengl
 \$183/sf (\$11M)



PAX FUTURA: 3700 HUDSON
 Seattle, WA
 30 Units: 300 sf units
 NK/Galen Staengl



DISTILLERY
 Boston, MA
 55 Units
 2nd St. Ass: Fred Gordon



PHFA ADDITION
 Harrisburg, PA
 Commercial Building
 Murray/Galen Staengl



ELM PLACE
 Burlington, VT
 30 Units
 DWA/Cathedral Square
 \$183/sf (1-2% upcharge)



BAYSIDE ANCHOR
 Portland, Maine
 45 Units
 Kaplan Thompson/Portland Housing Auth
 \$156/sf (\$5.9M)



THE ELMs: RETROFIT
 Pittsburgh, PA
 300 Units
 NK/Thoughtful Balance
 \$15.4 M



NET-ZERO MARTHA'S VINEYARD
 Martha's Vineyard, MA
 55+ Units
 South Mountain Co.



WHITEHALL
 Spring City, PA
 40 Units
 Mission First, AC, Onion Flats
 \$155/sf (\$8.1M)



CAPITAL 2
 Philadelphia
 25 Units
 Onion Flats
 \$159/SF



WYNNE
 Philadelphia
 51 units
 Penrose/Kitchen
 7% over initial costs



ST. JOHN NEUMAN
 Philadelphia
 52 units
 Blackney Hayes/Domus



SACRED HEART
 Philadelphia
 61 Units
 Penrose/Kitchen
 5% over Initial Costs???



DIAMOND PARK: Phase 1
 Philadelphia
 12 Units
 Habitat for Humanity



8 PROJECTS FROM NYC



MULTI-FAMILY: BROOKLYN
 NYC
 20 Units
 6 Units
 Jordan Dentz
 Levey Partnership



CORONA
 NYC
 68 Unit
 HANAC



HILLCREST
 Pittsburgh, PA
 66 Units
 Community Builders/RDL/Sota
 \$150/sf: 2% above code building



WASHINGTON SQUARE
 Chambersburg, PA
 54 Units
 Community Builders/RDL/Sota



WESTMINSTER PLACE: WINDY HILL VILLAGE II
 Phillipsburgh, PA
 48 Units
 Presbyterian Senior Living
 \$175sf



ORCHARDS AT ORENCO: Phase 1
 Hillsboro, Oregon
 57 Units: Phase 1
 Walsh Construction
 .13 ACH20
 Modeled Performance: 22.5 EUI
 Measured Performance: 20.9 EUI
 \$158/sf (\$159k/unit), 11% over typical project



ORCHARDS AT ORENCO: Phase 2
 Hillsboro, Oregon
 58 Units: Phase 2
 Walsh Construction
 .59 ACH20
 Modeled Performance: 22.5 EUI
 Measured Performance: Aug 2017
 \$173sf (\$147k/unit), 8% less than Phase 1, 5% premium over typical



WIENBERG COMMONS: RETROFIT
 Washington, DC
 36 units
 THC, Passive to Positive, ZA+D, Hamel Builders

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2 units
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Kansas City, MO
276 Units
Arnold Dev/Galen Staengl
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RETIREMENT RESIDENCE OF GLASS
Glasport
55 Units
NK/Galen
\$183/sf

DISTILLERY
Boston, MA
55 Units
2nd St. A

ELM PLACE
Burlington
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DWA/Ca
\$183/sf

THE ELMS AT TROFT
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Spring City, PA
40 Units
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66 Units
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\$150/sf: 2% above code building

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CHAMBERSBURG
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Duncan Wisniewski ARCHITECTURE

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Martha's Vineyard, MA
55+ Units
South Mountain Co.

WHITEHALL
Spring City, PA
40 Units
Mission First, AC, Onion Flats
\$155/sf (\$8.1M)

BAYSIDE ANCHOR
Portland, Maine
45 Units
Kaplan Thompson/Portland Housing Auth
\$156/sf (\$5.9M)
On Budget
Initial Costs???

PHIUS
Passive House Institute US

ORCHARDS AT OREWICO: Phase 1
Hillsboro, Oregon
57 Units: Phase 1
Walsh Construction
13 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: 20.9 EUI
\$158/sf (\$159k/unit), 11% over typical project

ORCHARDS AT OREWICO: Phase 2
Hillsboro, Oregon
58 Units: Phase 2
Walsh Construction
.59 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: Aug 2017
\$173/sf (\$147k/unit), 8% less than Phase 1, 5% premium over typical

WIENBERG COMMONS: RSTAGE01
Washington, DC
36 units
THC, Passive to Positive, ZA+D, Hamel Builders

Over 40 Projects, mostly BUILT, presented!

- Cost data being collected and compared to “typical” costs from multiple regions
 - Performance Data beginning to be collected
- Developing ‘MANUAL’ of cost-effective envelopes/systems/strategies for multi-family PH

HABITAT TOWNHOMES
NY
2 units
Habitat/Jordan Dentz
#1: \$341,314 per unit
#2: \$138,819 per unit

2ND AND DELAWARE
Kansas City, MO
276 Units
Arnold Dev/Galen Staengl
\$140/sf (\$44.9M)

RETIREMENT RESIDENCE OF GLASSPORT
Glassport, Pa
55 Units
NK/Galen Staengl
\$183/sf (\$11M)

DISTILLERY
Boston, MA
55 Units
2nd St. Ass: Fred Gordon

ELM PLACE
Burlington, VT
30 Units
DWA/Cathedral Square
\$183/sf (1-2% upcharge)

THE ELMS AT TROOST
Pittsburgh, PA
300 Units
NK/Thoughtful Balance
\$15.4 M

1601 BRYN MAWR
Hillsboro, Oregon
Orchards at Orenco
Photo Credit: Casey Braunger

PHFA ADDITION
Harrisburg, PA

ORCHARDS AT ORENCO Ph. II
Hillsboro
Photo Credit: Saly Painter

WHITEHALL
Spring City, PA
40 Units
Mission First, AC, Onion Flats
\$155/sf (\$8.1M)

ORCHARDS AT ORENCO: Phase 1

Hillsboro, Oregon
57 Units: Phase 1
Walsh Construction
.13 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: 20.9 EUI
\$158/sf (\$159k/unit), 11% over typical project



ORCHARDS AT ORENCO: Phase 2

Hillsboro, Oregon
58 Units: Phase 2
Walsh Construction
.59 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: Aug 2017
\$173sf (\$147k/unit), 8% less than Phase 1, 5% premium over typical



CORONA
NYC
68 Unit
HANAC

WILLCREST
Pittsburgh, PA
66 Units
Community Builders/RDL/Sota
\$150/sf: 2% above code building

WASHINGTON SQUARE
Chambersburg, PA
54 Units
Builders/RDL/Sota

WESTMINSTER PLACE: WINDY HILL VILLAGE II
Phillipsburgh, PA
48 Units
Presbyterian Senior Living
\$175/sf

ORCHARDS AT ORENCO: Phase 1
Hillsboro, Oregon
57 Units: Phase 1
Walsh Construction
.13 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: 20.9 EUI
\$158/sf (\$159k/unit), 11% over typical project

ORCHARDS AT ORENCO: Phase 2
Hillsboro, Oregon
58 Units: Phase 2
Walsh Construction
.59 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: Aug 2017
\$173sf (\$147k/unit), 8% less than Phase 1, 5% premium over typical

WIENBERG COMMONS: RISTROFF
Washington, DC
36 units
THC, Passive to Positive, ZA+D, Hamel Builders

Over 40 Projects, mostly BUILT, presented!

- Cost data being collected and compared to “typical” costs from multiple regions
 - Performance Data beginning to be collected
- Developing ‘MANUAL’ of cost-effective envelopes/systems/strategies for multi-family PH
 - AFFORDABLE + MARKET RATE take aways:

AFFORDABLE

HABITAT TOWNHOMES
NY
2 units
Habitat/Jordan Dentz
#1: \$341,314 per unit
#2: \$138,819 per unit

1601 BRYN MAWR
Bryn Mawr, PA
16 Units
Renewable Homes/Blue Path
\$183/sf (\$11M)

MORNINGSIDE CROSSING
Pittsburgh, PA
56 Units
NK/Thoughtful Balance
\$167/sf (\$9.8M) 6.5% premium

CORONA
NYC
68 Unit
HANAC

2ND AND DELAWARE
Kansas City, MO
276 Units
Arnold Dev/Criss Stoenfel

MORNINGSTAR CROSSING
Pittsburgh, PA
56 Units
NK/Thoughtful Balance
\$167/sf (\$9.8M) 6.5% premium

WILLCREST
Pittsburgh, PA
66 Units
Community Builders/RDL/Sota
\$150/sf: 2% above code building

RETIREMENT RESIDENCE OF GLASSPORT
Glassport, Pa
55 Units
NK/Galen Staengl
\$183/sf (\$11M)

CHAMBERSBURG PLACE
Chambersburg, PA
54 Units
Community Builders/RDL/Sota

DISTILLERY
Boston, MA
55 Units
2nd St. Ass: Fred Gordon

WHITEHALL
Spring City, PA
40 Units
Mission First, AC, Onion Flats
\$155/sf (\$8.1M)
On Budget

ST. JOHN NEUMAN
Philadelphia
52 units
Blackney Hayes/Domus

WESTMINSTER PLACE - WINDY
Phillipsburgh, PA
48 Units
Presbyterian Senior Living
\$175/sf

SACRED HEART
Philadelphia
61 Units
Pennrose/Kitchen
5% over Initial Costs???

DIAMOND PARK - Phase 1
Philadelphia
12 Units
Habitat for Humanity


ORCHARDS AT ORENCO - Phase 1
Hillsboro, Oregon
57 Units: Phase 1
Walsh Construction
13 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: 20.9 EUI
\$158/sf (\$159k/Unit), 11% over typical project

8 PROJECTS FROM NYC

ORCHARDS AT ORENCO - Phase 2
Hillsboro, Oregon
58 Units: Phase 2
Walsh Construction
.59 ACH20
Modeled Performance: 22.5 EUI
Measured Performance: Aug 2017
\$173/sf (\$147k/Unit), 8% less than Phase 1, 5% premium over typical

MULTI-FAMILY - BROOKLYN
NYC
20 Units
6 Units
Jordan Dentz
Levey Partnership

WIENBERG COMMONS - BOSTON
Washington, DC
36 units
THC, Passive to Positive, ZA+D, Hamel Builders



BRINGING VETERANS HOUSING TO CHESTER COUNTY: THE WHITEHALL



Renovation: Existing Whitehall Inn

New Construction: 49 units of affordable housing (39,000 sf)

40 1-bedroom units

3 2-bedroom units

5 3-bedroom "suite" units

1 on-site manager unit

Awarded 35 HUD-VASH Vouchers; preference for Veterans in all units

Building amenities: community room, computer room, laundry room, on-site support service, fitness room and management office



*Catherine Panas:
Project Manager
Mission First*



*Chip Darling: Director of
Real Estate, Phila Region
Mission First*



THE WHITEHALL



*Catherine Panas:
Project Manager
Mission First*



*Chip Darling: Director of
Real Estate, Phila Region
Mission First*



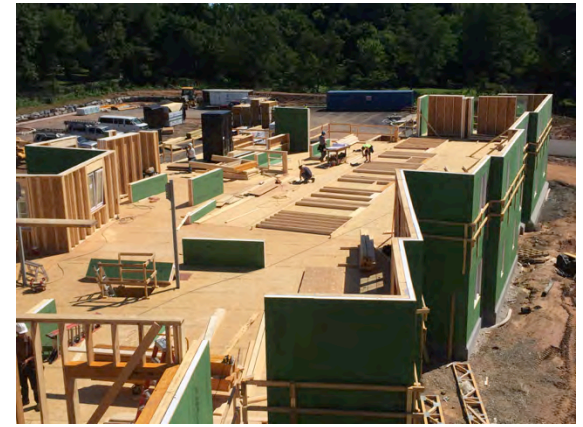
THE WHITEHALL



ACCESSIBLE FOR THE HEARING / VISUALLY IMPAIRED

EXISTING HISTORIC STRUCTURE

First Floor Plan



FINAL BLOWER DOOR TEST
April 17, 2017
.42 ACH50





Passive House Impact on Construction Cost

| | Construction | Contingency | Total |
|-------------|--------------|-------------|------------------|
| Application | \$7,774,250 | \$233,227 | \$8,007,477 |
| | | | <i>52,287 sf</i> |
| Closing | \$7,874,250 | \$236,228 | \$8,110,478 |
| Completion | \$8,110,478 | 0 | \$8,110,478 |

\$155/sf



The Whitehall Utility Cost Comparison

| | 1 BR | 2 BR | 3 BR |
|------------------------------|----------|----------|----------|
| Housing Authority Allowances | \$103.00 | \$138.00 | \$169.00 |
| Calculated Passive House | \$42.37 | \$60.45 | \$80.97 |



Impact of Utility Costs on Borrowing Capacity

| | Housing Authority Allowances | Calculated Passive House |
|------------------------------|------------------------------|--------------------------|
| Net Operating Income | \$99,116 | \$136,292 |
| Debt Coverage Ratio* | 1.8 | 1.8 |
| Payment (NOI/DCR) | \$55,064 | \$75,718 |
| Max Mortgage (30 yrs @ 5.5%) | \$800,000 | \$1,100,000 |
| | | |
| *1.07 in Year 15 | | |



CHIP: “Passive House lets you borrow/leverage more money to build more housing.”

Impact of Utility Costs on Developer Fee

| | Housing Authority Allowances | Calculated Passive House |
|------------------------|------------------------------|--------------------------|
| Total Development Cost | \$12,750,000 | \$12,750,000 |
| LIHTC Equity | \$11,000,000 | \$11,000,000 |
| Soft Debt/Grants | \$450,000 | \$450,000 |
| Mortgage | \$800,000 | \$1,100,000 |
| Total | \$12,250,000 | \$12,550,000 |
| Deferred Fee Required | \$500,000 | \$200,000 |
| Gross Fee | \$1,500,000 | \$1,500,000 |
| Net Fee | \$1,000,000 | \$1,300,000 |



CHIP: “We’re a nonprofit, which means we don’t put the net fee in our pockets. We put that money into new developments. Higher net fees mean we can house more people.”



*Opening Day
June 14, 2017*



“WOULD WE DO IT AGAIN?”



“WOULD WE DO IT AGAIN?”

I. We built it within the budget we proposed



“WOULD WE DO IT AGAIN?”

1. We built it within the budget we proposed

2. Significant savings on utilities allows us to leverage fees to build more housing





“WOULD WE DO IT AGAIN?”

1. We built it within the budget we proposed

2. Significant savings on utilities allows us to leverage fees to build more housing

3. No major screw-ups during construction (related to Passive House)





“WOULD WE DO IT AGAIN?”

1. We built it within the budget we proposed

2. Significant savings on utilities allows us to leverage fees to build more housing

3. No major screw-ups during construction (related to Passive House)

4. Healthier, more comfortable environment for our tenants



GREEN
BUILDING
UNITED

2018 NEW GRAVITY HOUSING CONFERENCE

CLIMATE CHANGE AND THE IMPERATIVE OF HIGH PERFORMANCE AFFORDABLE HOUSING



August 2-3rd @ TEMPLE UNIVERSITY, Phila, PA
Temple University Science Education and Research Center

AFFORDABLE HOUSING

AFFORDABLE HOUSING



Architects, Engineers, Builders



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



RADICAL

AFFORDABLE

SCALABLE

NET-ZERO-ENERGY-CAPABLE

RADICALLY



STANDARD



**THANK
YOU**

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