

DOE Zero Energy Ready Home

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy



Zero Energy Ready Homes Leading Builders

Kiere DeGrandchamp
Head of Construction Operations
High Performance Homes



Leading Builders Series

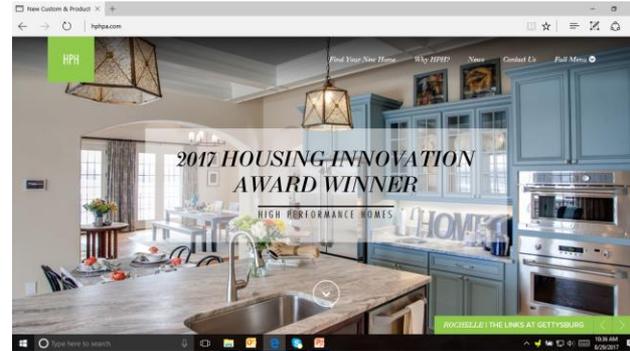
- Established HPH in 2014
- Engineer and Architect
- Over 30 years in the building industry
- Over a decade dedicated to zero energy
- Small custom builder with up to 10 homes/yr
- To change the world!



Marketing Zero Energy Ready Homes

How we market:

- DOE logos/marketing
- Description of energy cost savings
- Customer testimonials
- Classes/Trainings



Why it is successful:

- Third-party verifications and logos/PR opportunities
- Happy customers are the best sales agents
- Educate buyers and educate influencers



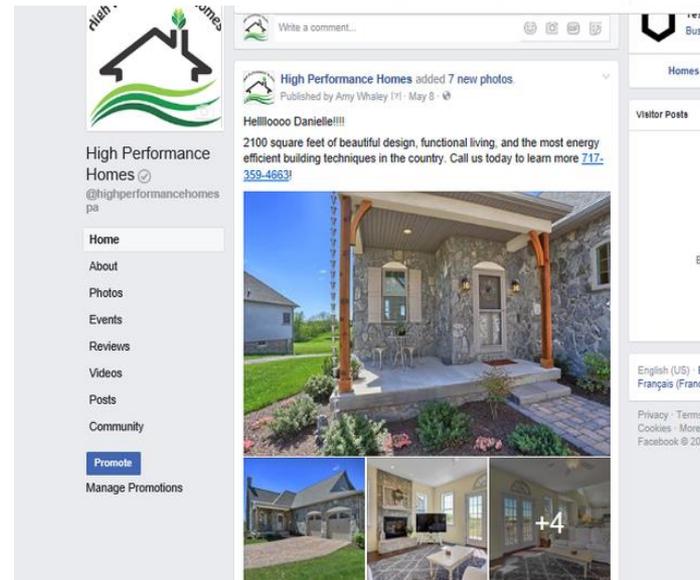
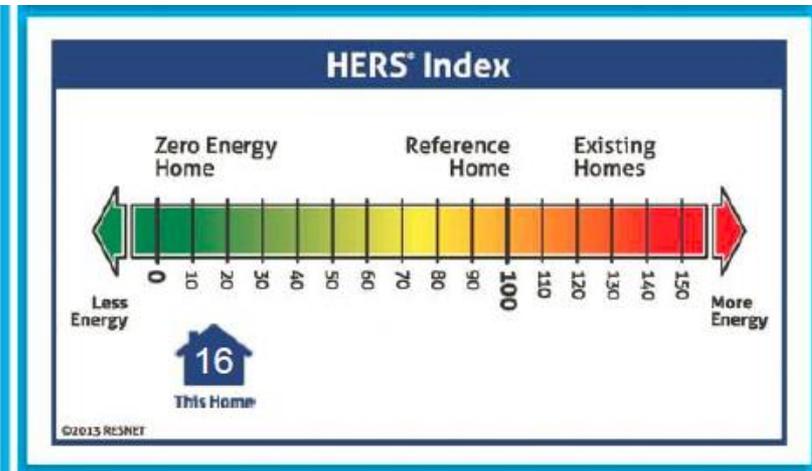
Marketing Zero Energy Ready Homes



HOUSING INNOVATION AWARD
WINNER 2017

BILL DATE	KWH USED	KWH SUPPLIED	KWH BILLED	Energy Supply Cost
9/8/2016	762	-108	654	\$45.85
10/6/2016	581	-166	415	\$29.09
11/8/2016	483	-289	194	\$13.60
12/7/2016	535	-245	290	\$20.33
1/5/2017	1217	-113	1104	\$77.39
2/8/2017	1371	-77	1294	\$90.71
3/8/2017	1098	-171	927	\$64.98
4/6/2017	1079	-271	808	\$56.64
5/4/2017	570	-269	301	\$21.10
6/8/2017	592	-237	355	\$24.89
	828.8	-194.6	634.2	\$44.46

Average Energy Supply Cost



Marketing Zero Energy Ready Homes

Lee Ann & Craig - Their "Happily Ever After" Home



<https://youtu.be/fP1SSZ1IFns>

Video and Written testimonials

Read what our homeowner's think...

Building our zero-energy ready High Performance Home in Gettysburg, with Kiere DeGrandchamp overseeing the construction, could not have gone any smoother. Combining professionalism, expert guidance, attention to detail and excellent personality, Kiere has constructed a home that looks great, runs efficiently, and clearly represents the talent of his builders. From the Superior Foundation Walls and Structurally Insulated Panels, to the Geo Thermal and Solar Panels for power, we have our home of the future. We have lived here for almost a year now, and it's been the most comfortable home we've ever lived in. The Geo-Thermal HVAC is very effective and almost completely silent, the electric bill is unbelievably low, and there is not a draft to be felt on even the windiest Pennsylvania days. Our HPH Sales Manager Amy Whaley provided guidance and advice during the construction, and was very helpful whenever a decision needed to be made. The quality of work stands out, which is a credit to all the trades involved. We are happy clients, living in our "Happily Ever After Home".
-Craig and LeeAnn Walker

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Marketing Zero Energy Ready Homes



Indoor airPLUS Version 1 (Rev. 02) Verification Checklist



Home Address:		City:	State:	Zip:	
Section	Requirements (Refer to full Indoor airPLUS Construction Specifications for details)	Must Correct	Builder Verified	Rater Verified	N/A
<small>Note: The Rev. 02 checklist has been modified to reflect only the additional Indoor airPLUS requirements and their corresponding section numbers that must be met after completing the ENERGY STAR checklists. ENERGY STAR remains a prerequisite for Indoor airPLUS certification.</small>					
ENERGY STAR V2 Checklists	Thermal Enclosure System Rater Checklist completed.	<input type="checkbox"/>		<input type="checkbox"/>	
	Water Management System Builder Checklist completed.	<input type="checkbox"/>		<input type="checkbox"/>	
	HVAC System Quality Installation Contractor Checklist completed.	<input type="checkbox"/>		<input type="checkbox"/>	
	HVAC System Quality Installation Rater Checklist completed.	<input type="checkbox"/>		<input type="checkbox"/>	
Midrange Control	1.1 Drain or sump pump installed in basements and crawlspaces (Exception: free-draining walls). In EPA Radon Zone 1, check valve also installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2 Layer of aggregate or sand (4 in.) with portable matting installed below slabs (Exceptions: see spec.) AND radon techniques used in EPA Radon Zone 1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.4 Basements/crawlspaces insulated, sealed and conditioned (Exceptions: see spec.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.7 Protection from water splash damage if no gutters (Exceptions: see spec.).	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	1.11 Hard surface flooring in kitchens, baths, entry, laundry and utility rooms, AND piping in exterior walls insulated with pipe wrap.	<input type="checkbox"/>		<input type="checkbox"/>	
Basin	2.1 Approved radon-resistant features installed in Radon Zone 1 homes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roofs	3.2 Gasket-proof roof/ceiling screws installed at all openings that cannot be fully sealed (Exception: dryer vents).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HVAC Systems	4.1 Equipment selected to keep relative humidity < 60% in "Warm-Humid" climate (Exception: see spec.).	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	4.2 Duct systems protected from construction debris AND no building cavities used as air supply or returns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	4.3 No air-handling equipment or ductwork installed in garage AND continuous air barrier in adjacent assemblies.	<input type="checkbox"/>		<input type="checkbox"/>	
	4.7 Central forced-air HVAC system(s) have minimum MERV 8 filter AND no ozone generators in homes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Combustion Pollutants	5.1 Emissions standards met for fuel-burning and space-heating appliances (Exception: see spec.).	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	5.2 CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720.	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	5.3 Multifamily buildings: Smoking restrictions implemented AND ETS transfer pathway minimized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Materials	6.1 Attached garages: Door closer installed on all connecting doors AND in homes with exhaust-only whole-house ventilation (EHRV) a 70 cfm exhaust fan installed in garage OR a pressure test conducted to verify the effectiveness of the garage-to-house air barrier. See spec for details.	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	6.2 Certified low-VOC or no-VOC interior paints and finishes used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	6.3 Carpet, carpet adhesives OR Green Label Plus AND carpet cushion OR Green Label.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Final	7.1 HVAC system and ductwork verified to be dry and clean AND new filter installed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	7.2 Home ventilated before occupancy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7.3 Completed checklist and other required documentation provided for buyer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rater Company: _____		Builder Company: _____			
Rater Employee: _____		Builder Employee: _____			
Rater Signature: _____ Date: _____		Builder Signature: _____ Date: _____			

Rev. November 2013

DOE Zero Energy Ready Homes and the Appraisal Process: Be Your Own Advocate

Congratulations on joining the leadership movement to construct DOE Zero Energy Ready Homes (ZERH) and providing your homebuyers some of the highest performing homes in America! During the sales and appraisal process, the following four steps can help you optimize the added value for your high-performance homes.

Step One:

Document each of Your Homes as a Third-Party Certified 'Green Home'
A wide array of programs qualify as 'green', including the DOE Zero Energy Ready Home. Collect independent third-party verification documenting compliance with DOE ZERH requirements. Typically, this comes straight from the Home Energy Rating System (HERS) rating process.

Step Two:

Only Accept a Certified Residential Green Appraiser

If you have documentation that your home is 'green' certified (see Step One), you are eligible in many markets to instruct the lender that you will only accept an appraiser from the 'Certified Green Residential Appraiser' list. These appraisers have been specially trained to recognize the added value of the high-performance home features in your DOE ZERH.

Step Three:

Pre-Fill a Copy of the Residential Green and Energy Efficient Addendum

The Appraisal Institute has developed an official form for documenting high-performance home improvements and their value, Form 820.04: Residential Green and Energy Efficient Addendum. Don't assume the appraiser knows how to complete this form. Although you cannot complete the final form for the appraiser, providing him/her with a copy as guidance is a critical step to ensure they can more effectively account for the added value of your high-performance home features. Download this form from the Appraisal Institute web site:
www.appraisalinstitute.org/education/green_energy_addendum.aspx

Step Four:

Provide Pre-Filled Green and Energy Efficient Addendum to the Appraiser

Find out from the lender the name and contact information for the selected appraiser and send him/her a copy of the pre-filled Addendum form. Now it's in the hands of the appraiser, but you have maximized your opportunity for an appraisal that recognizes the added value of your high-performance features.

Challenges

1. ACH50 and air-sealing
2. Bandboard loss of R-value
3. Thermal envelope

Solutions

1. Adhesives and sealants
2. SIPs band
3. Whole home approach to building with super insulation



Incremental Cost of Construction

- Our standard percentage markup is 7%-10% for the zero energy technology
- The 2017 HIA home's price point was \$500,000 (although less than a year after moving in the home has reappraised for \$550,000), at this purchase price the incremental cost of construction is just under 10%.
- We value the Geothermal upgrade at an additional \$15,000, the SIPs construction at an additional \$5,000, the solar shingle technology at \$23,000, the Superior Walls System at an additional \$5,000 and another \$1,500 in small charges.
- The total incremental cost being \$49,500 or 9.9% of the total purchase price.

Why does incurring this cost make sense for your business?

- It doesn't make sense
- It's the right thing to do
- It makes sense for the consumer

Business Impact of building ZERH

- Finally gaining recognition for building responsibility
- Making a difference and impact
- Code improvements are closing the gap
- Availability is creating demand



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Changing the world!

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cehomespa/](https://www.facebook.com/highperforman
cehomespa/)

<http://www.hphpa.com/press-releases>

Tour of Zero Projects

[https://energy.gov/eere/buildings/doe-tour-zero-
chamberlain-court-75-high-performance-homes](https://energy.gov/eere/buildings/doe-tour-zero-
chamberlain-court-75-high-performance-homes)

[https://energy.gov/eere/buildings/doe-tour-zero-
garrison-falls-high-performance-homes](https://energy.gov/eere/buildings/doe-tour-zero-
garrison-falls-high-performance-homes)

[https://energy.gov/eere/buildings/doe-tour-zero-
courtyards-high-performance-homes](https://energy.gov/eere/buildings/doe-tour-zero-
courtyards-high-performance-homes)

Coming soon! The Danielle

Thank You!



Resources:

www.buildings.energy.gov/zero/

- Take the Tour of Zero
- Become a Partner
- Review ZERH Specs
- Access Tech Training Webinars
- Use the Marketing Toolkit
-

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