

Zero Energy Ready Home Training

May 22, 2019

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Partner Orientation

SAM RASHKIN

DOE Building Technologies Office

James Lyons

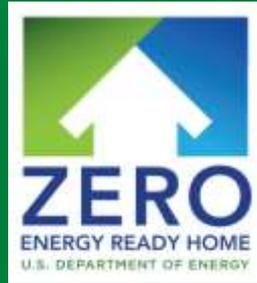
Newport Partners

You are:

- Among a select group of builders
- Providing superior buyer experience
- Differentiated from the competition
- Minimizing Risk

Prepare for Success:

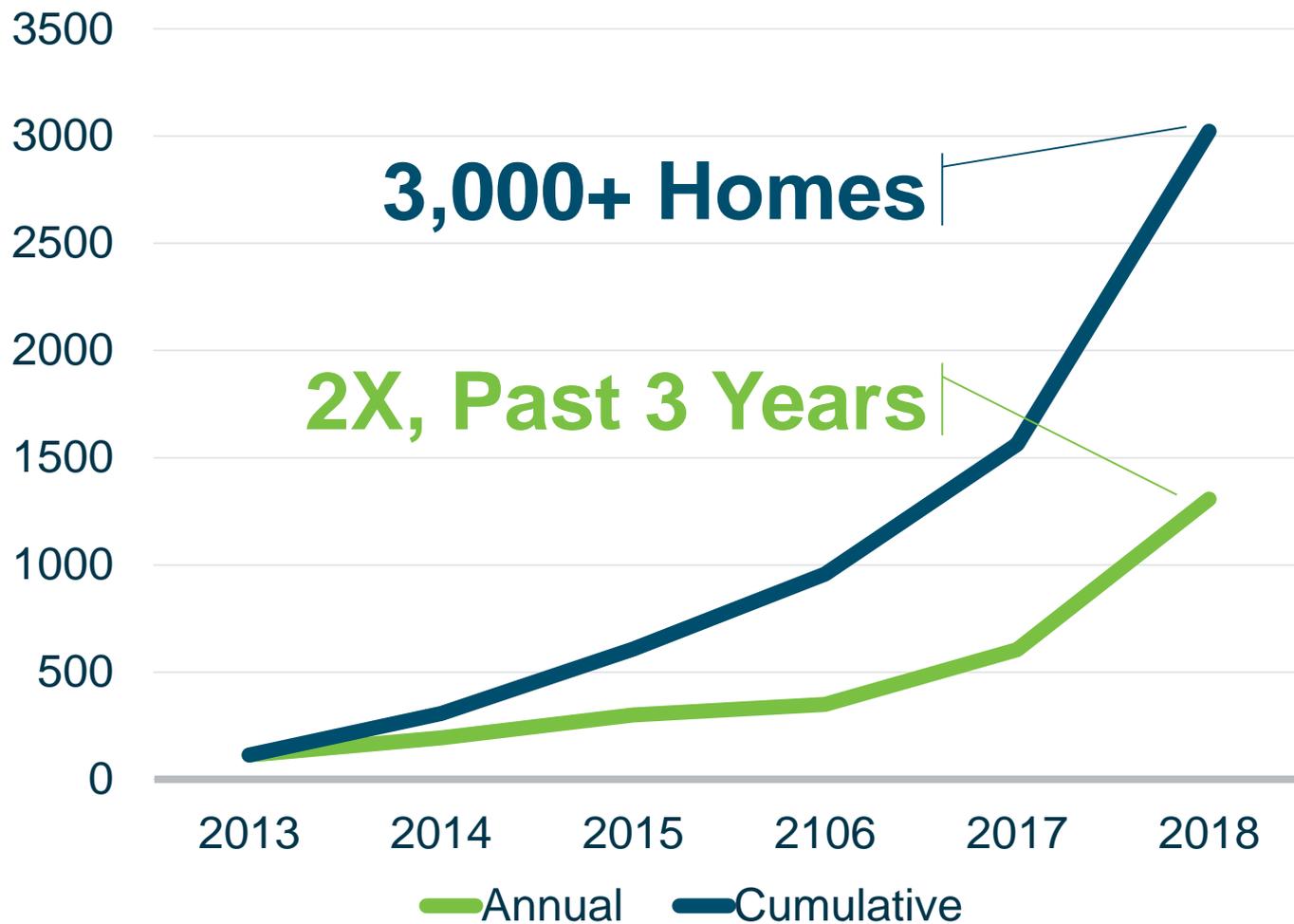
- All Signs Point to Zero
- What is Zero
- Why Zero
- How to Build Zero
- How to be Recognized with Zero



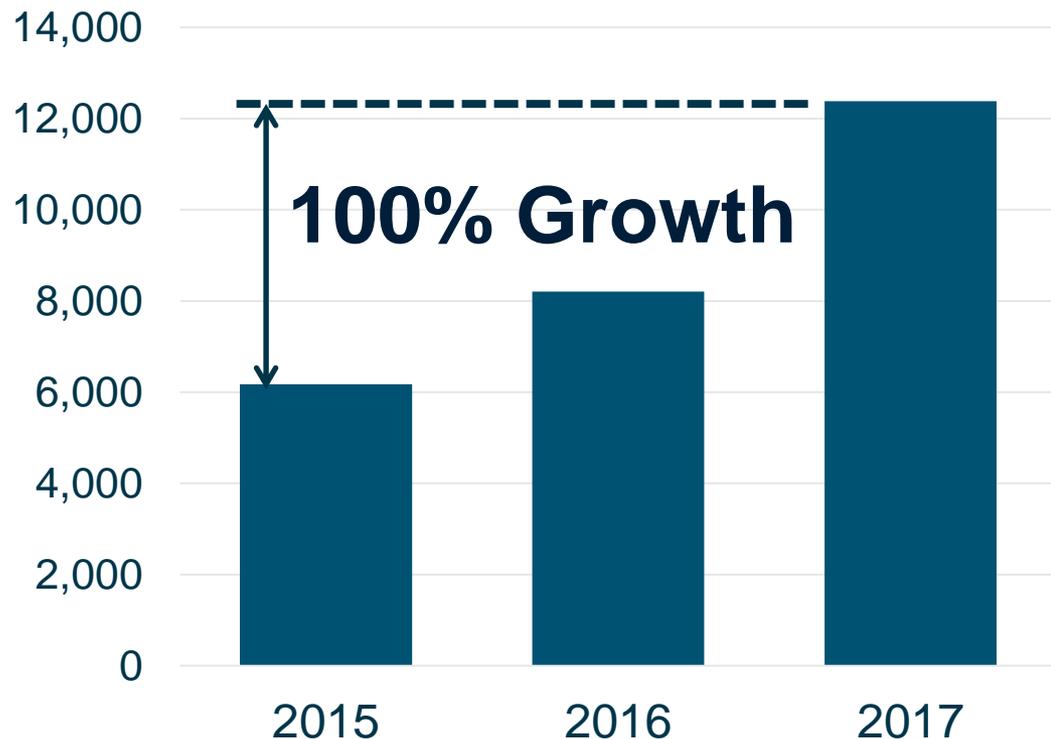
Zero Energy Ready Home Orientation

All Signs Point to Zero

ZERH Certification



Zero Residential Units



Source: "To Zero and Beyond, Zero Energy Residential Buildings Study, 2016 Inventory of residential projects on the path to zero in the U.S. and Canada, Net Zero Energy Coalition, June 2017, call with Shipa Sankaran, February 16, 2018



Built or Plan to Build a Net Zero,
Near Net Zero, or Net Zero Ready Home

Source: Dodge Data & Analytics, October 2017

Energy Efficiency, GHG Emissions, Regulation • August 28, 2018

19 Mayors Sign Net Zero Carbon Pledge

OCTOBER 10, 2017 / Zero Net Energy / Energy Codes



Mayors from 19 cities around the world signed a pledge to enact regulations and/or planning policy to ensure new buildings operate at net zero carbon by 2030 and all buildings by 2050.

Source: Smart Energy Decisions

Cities with Zero Codes:

- Boulder
- Washington D.C.
- Scottsdale

States Implementing/Planning Zero Codes:

- California
- Oregon
- Puerto Rico
- Washington
- New York



A NEW METRIC FOR TRACKING ENERGY CODES DRIVING TOWARD ZERO

OCTOBER 10, 2017 / Zero Net Energy / Energy Codes

ACEEE's 2017 State Energy Efficiency Scorecard was released in late September with Massachusetts leading based on six categories including utility programs, transportation, building energy codes, combined heat and power, state initiative and appliance standards, according to ACEEE. Looking ahead, there are changes afoot for the 2018 Scorecard ranking methodology that will incorporate a new metric: the zEPI Jurisdictional Scores.

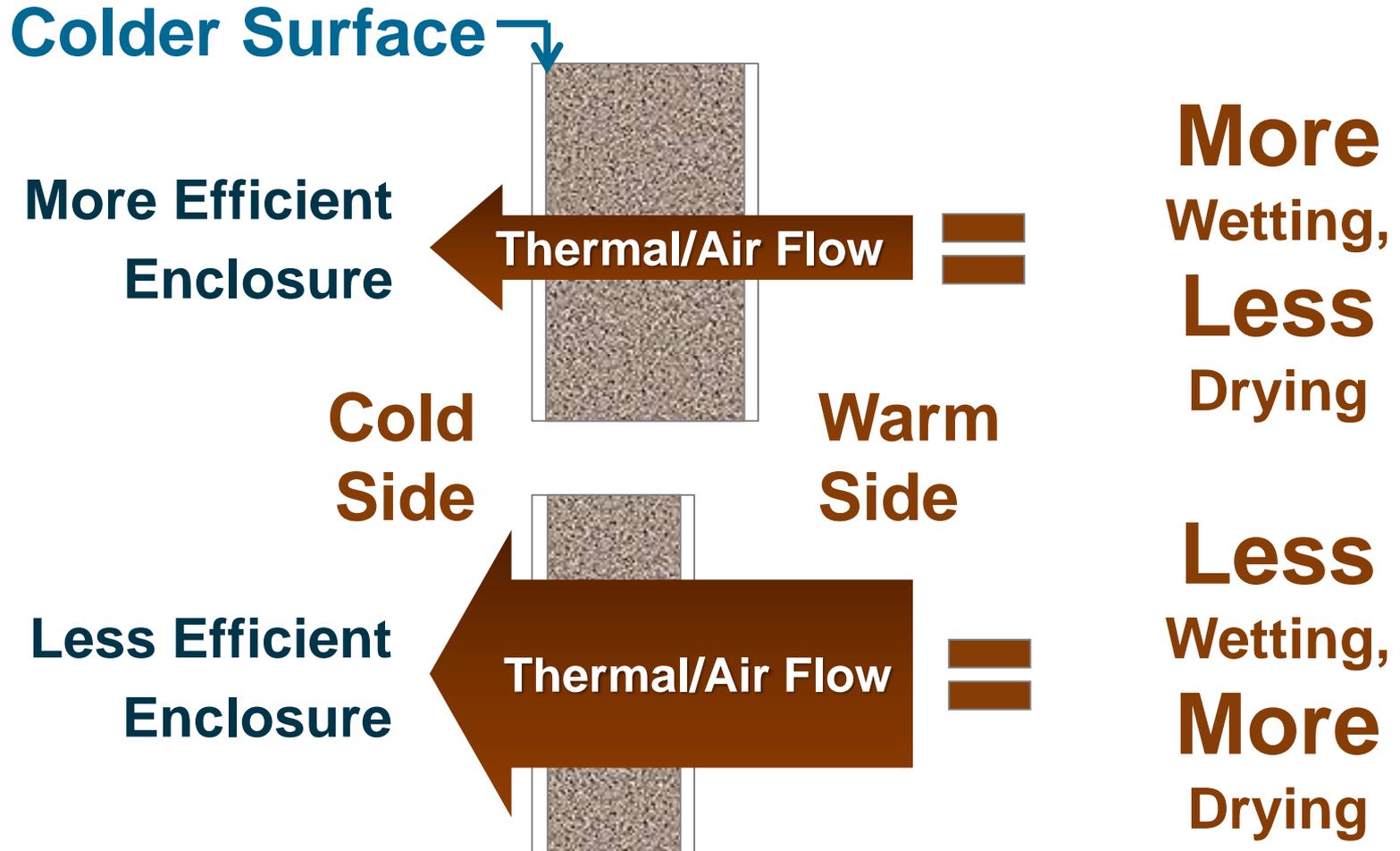




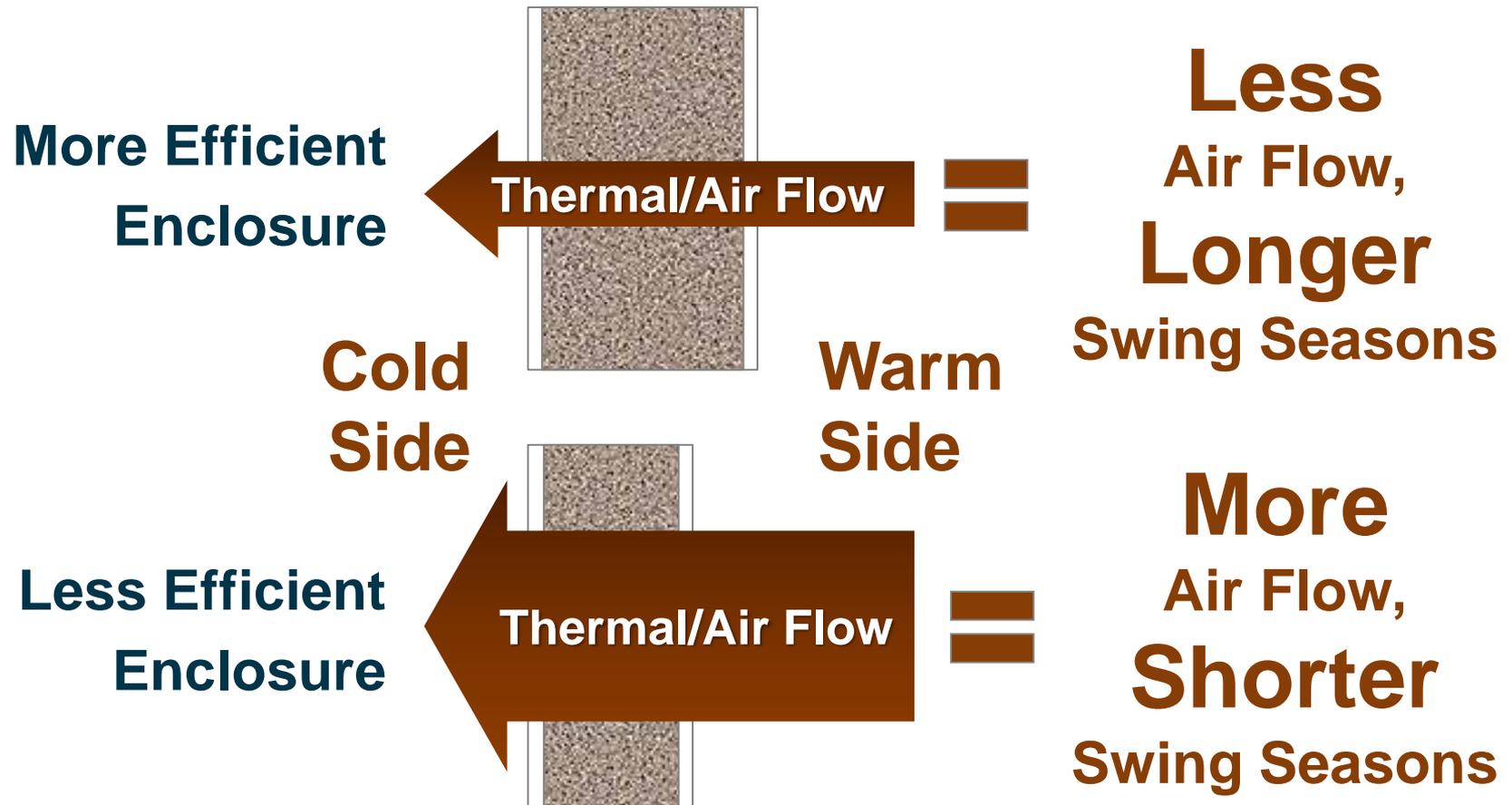
Zero Energy Ready Home Orientation: **What is Zero**

1. Moisture Damage
2. Ensured Comfort
3. Ensured Indoor Air Quality

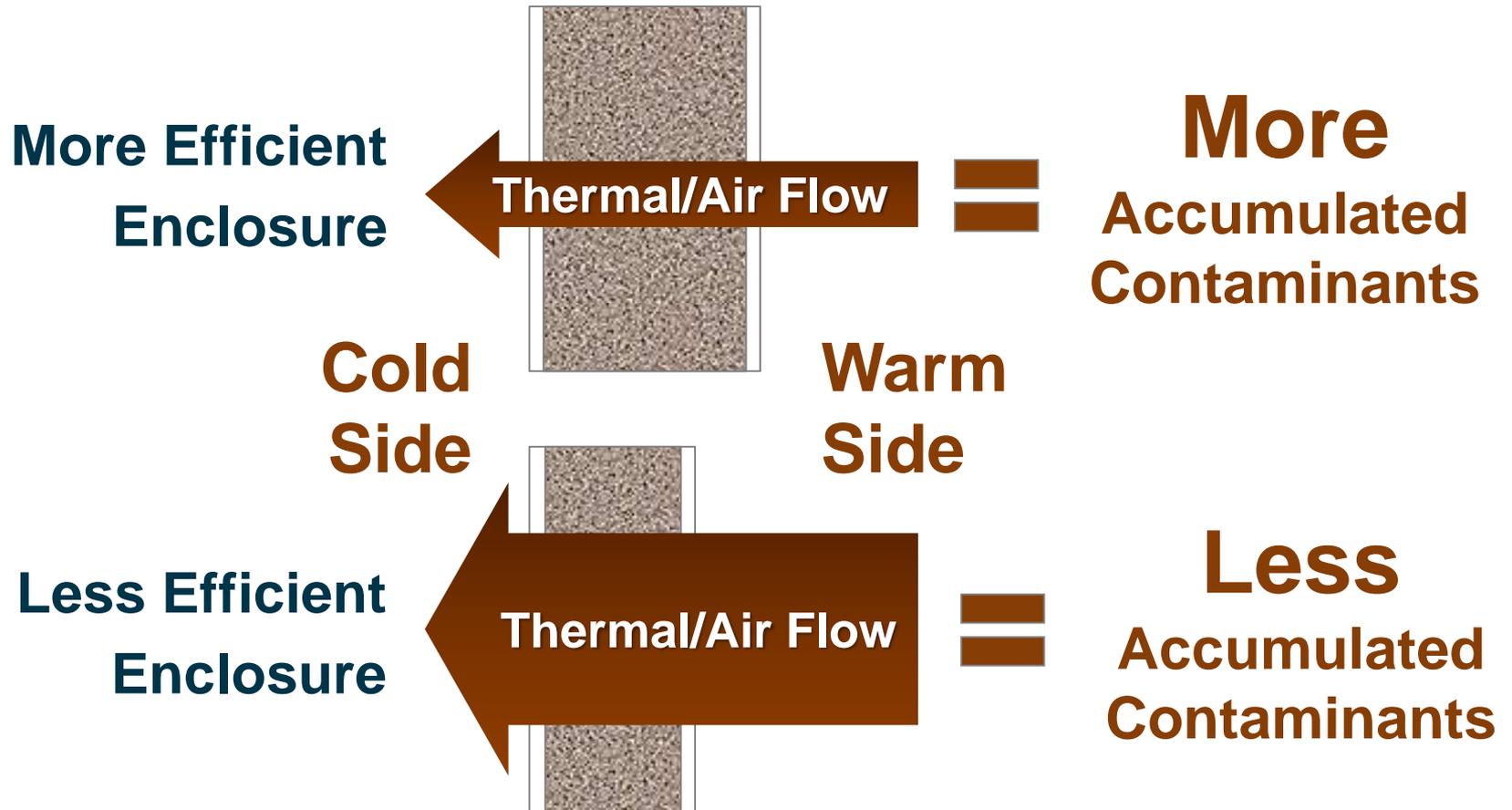
Risk #1: Moisture Damage



Risk #2: Ensured Comfort



Risk #3: Ensured IAQ



Zero = Comprehensive Strategy

Step One: **Optimize Efficiency**

Energy Efficient
Enclosure

Energy Efficient
Components

Step Two: **Do No Harm**

Comprehensive
Water Protection

Ensured
Comfort System

Comprehensive
Indoor Air Quality

Step Three: **Ensure Zero Ready**

Solar Ready
Construction



Sample ZERH Technical Webinars*:

- ***Getting Enclosures Right,***
Joe Lstiburek, Building Science Corp.
- ***Low Load HVAC,***
Greg Cobb, Energy Inspectors
- ***Lazy Air Conditioning: HVAC & Humidity Control,***
Ken Gehring, Therma-Stor
- ***Best Practices for Ventilation,***
Paul Raymer, ICF
- ***Indoor airPLUS Revision 4 Updates,***
Nick Hurst, EPA

<https://www.energy.gov/eere/buildings/doe-zero-energy-ready-home-resources>



Zero Energy Ready Home Orientation: **Why Zero**

Zero Lives Better

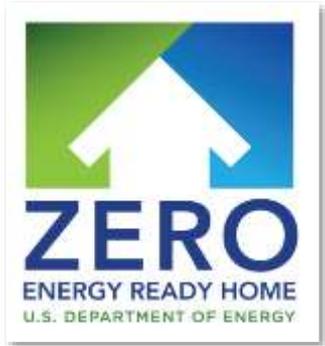


-  \$10,000's Savings
-  Cozy Indoors
-  Total Comfort
-  Healthy Living
-  Peace-of-Mind
-  Quality Assurance
-  Future Ready

Why ZERH: Cost Effective

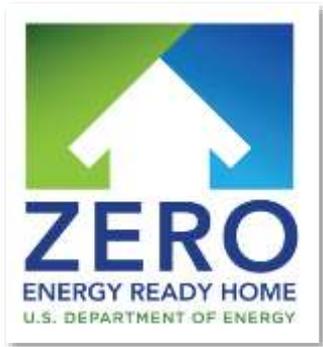
ZER Incremental Cost	Houston (CZ2)	Atlanta (CZ3)	Baltimore (CZ4)	Chicago (CZ5)
	\$2,065	\$6,094	\$5,993	\$5,368
Mortgage Threshold (30 Years) 	\$10,980 ✓	\$15,563 ✓	\$23,305 ✓	\$20,619 ✓
Resale Threshold (12 Years) 	\$5,576 ✓	\$7,903 ✓	\$11,835 ✓	\$10,472 ✓
Consumer WTP (4%) 	\$9,139 ✓	\$9,690 ✓	\$10,130 ✓	\$13,874 ✓
First Cost Threshold (0%) 	\$0 ✗	\$0 ✗	\$0 ✗	\$0 ✗
ZE Incremental Cost	Houston (CZ2)	Atlanta (CZ3)	Baltimore (CZ4)	Chicago (CZ5)
	\$15,488	\$20,069	\$18,674	\$23,125
Mortgage Threshold (30 Years) 	\$26,715 ✓	\$35,927 ✓	\$49,118 ✓	\$45,414 ✓
Resale Threshold (12 Years) 	\$13,567 ✗	\$18,245 ✗	\$24,945 ✓	\$23,063 ✓
Consumer WTP (4%) 	\$9,139 ✗	\$9,690 ✗	\$10,130 ✗	\$13,874 ✗
First Cost Threshold (0%) 	\$0 ✗	\$0 ✗	\$0 ✗	\$0 ✗

Source: 'The Economics of Zero Energy Homes: Single Family Insights,' Rocky Mountain Institute, 10/18



- **Less Liability**
 - Customer Satisfaction
 - Customer Service Costs
 - Risk Management (3rd-party verification)
- **Market Differentiation**
 - Key Competition (Existing, Code, ENERGY STAR)
 - New Sales Force (Homebuyers)

2030 Projected Impacts:^{*}



- **~\$150 Billion** Utility Bill Savings
- **~1 Million** Job-Years of Work
- **~1,100 MMTCe** <Carbon Emissions

* Impacts based on internal DOE analysis assuming 30% high-performance new homes by 2030

Why Zero: Path to Better Future

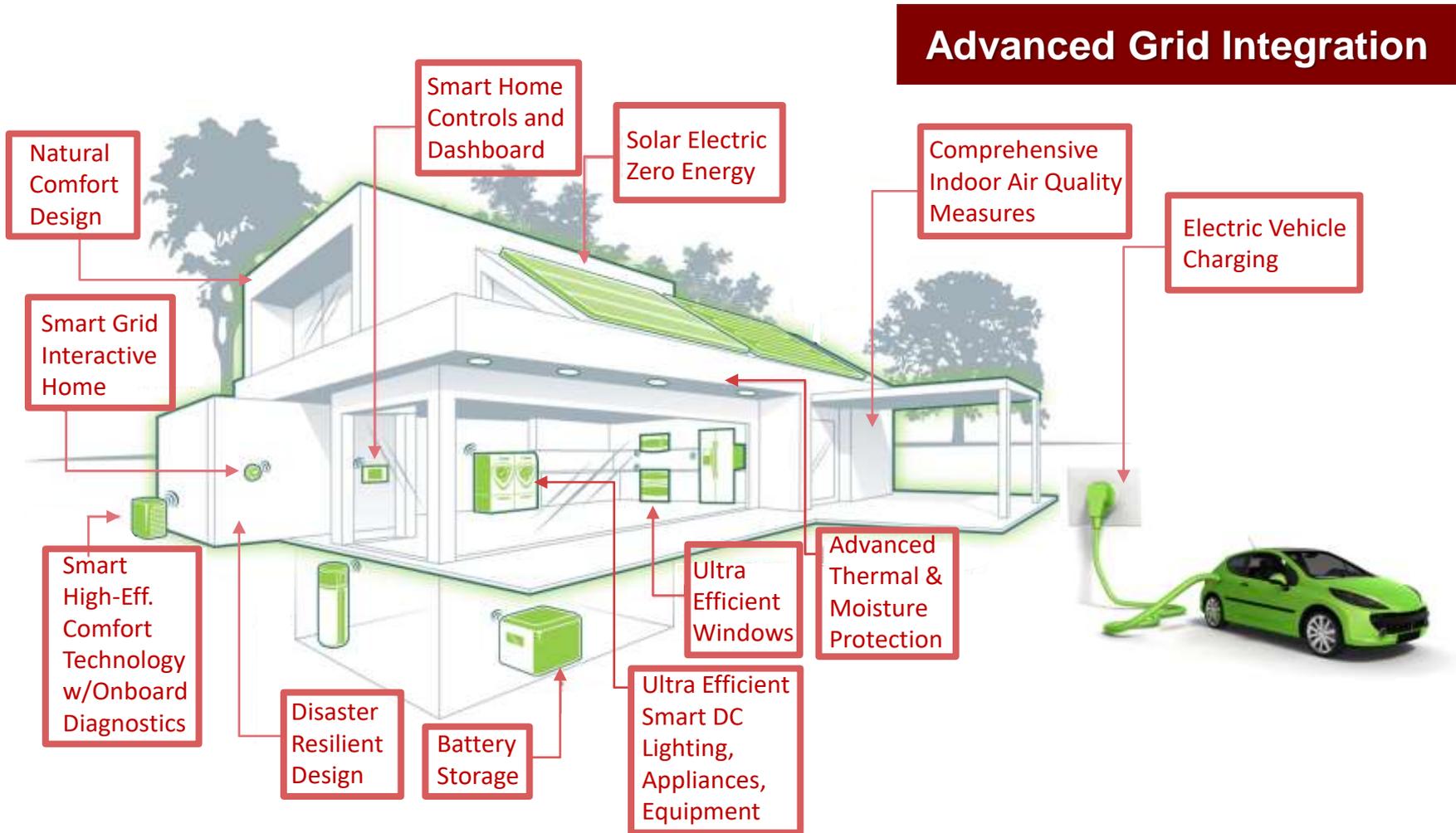
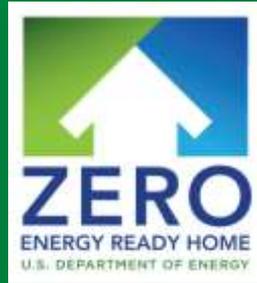


Image Source: <http://www.santamonicapropertyblog.com/more-green-building-codes-in-january/>



Zero Energy Ready Home Orientation

How to Build Zero

The East Lift from ENERGY STAR to Zero

The Easy Lift to ZERH...



			Solar Ready
			Eff. Comps. & H ₂ O Distrib.
			EPA Indoor Air Package
			Optimized Duct Location
	HVAC QI with WHV	HVAC QI with WHV	HVAC QI with WHV
	Water Management	Water Management	Water Management
	Independent Verification	Independent Verification	Independent Verification
IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2015 Enclosure
HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55
IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH



Target Home HERS Threshold

Exhibit 2: DOE Zero Energy Ready Home Target Home ¹⁹

HVAC Equipment ²⁰			
	Hot Climates (2015 IECC Zones 1,2) ²¹	Mixed Climates (2015 IECC Zones 3, 4 except Marine)	Cold Climates (2015 IECC Zones 4 Marine 5,6,7,8)
AFUE	80%	90%	94%
SEER	18	15	13
HSPF	8.2	9	10 ²²
Geothermal Heat Pump	ENERGY STAR EER and COP Criteria		
ASHRAE 62.2 Whole-House Mechanical Ventilation System	2.8 cfm/W no heat exchange	2.8 cfm/W no heat exchange	1.2 cfm/W; heat exchange with 60% SRE
Insulation and Infiltration			
<ul style="list-style-type: none"> Insulation levels shall meet the 2015 IECC and achieve Grade 1 installation, per RESNET standards. Infiltration – Detached Dwellings²³ (ACH50): 3.0 in CZ's 1-2 2.5 in CZ's 3-4 2 in CZ's 5-7 1.5 in CZ 8 Infiltration – Attached Dwellings (ACH50): 3.0 (all Climate Zones) 			
Windows ^{24, 25, 26}			
	Hot Climates (2015 IECC Zones 1,2,)	Mixed Climates (2015 IECC Zones 3, 4 except Marine)	Cold Climates (2015 IECC Zones 4 Marine, 5,6,7,8)
SHGC	0.25	0.25	any
U-Value	0.4	0.3	0.27
Homes qualifying through the Prescriptive Path with a total window-to-floor area greater than 15% shall have adjusted U-values or SHGCs. ²⁷			
Water Heater			
ENERGY STAR levels for the system Energy Factor, as follows:			
- Gas/propane systems of ≤ 55 gallons, EF = 0.67			
- Gas/propane systems of > 55 gallons, EF = 0.77			
- Electric systems in detached dwellings, EF = 2.0			
- Electric systems in attached dwellings, EF = 1.5			
For heating oil water heaters use EF = 0.60			
Thermostat ²⁸			
<ul style="list-style-type: none"> Programmable thermostat (except for zones with radiant heat) 			
Lighting & Appliances			
For purposes of calculating the DOE Zero Energy Ready Home Target Home HERS Index, homes shall be modeled with an ENERGY STAR dishwasher, ENERGY STAR refrigerator, ENERGY STAR ceiling fans, and ENERGY STAR lamps (bulbs) in 80% of sockets or 80% of lighting fixtures are ENERGY STAR Qualified.			

Higher Eff.
HVAC
Equip.

2015 vs.
2012 IECC
Insul. v3.1

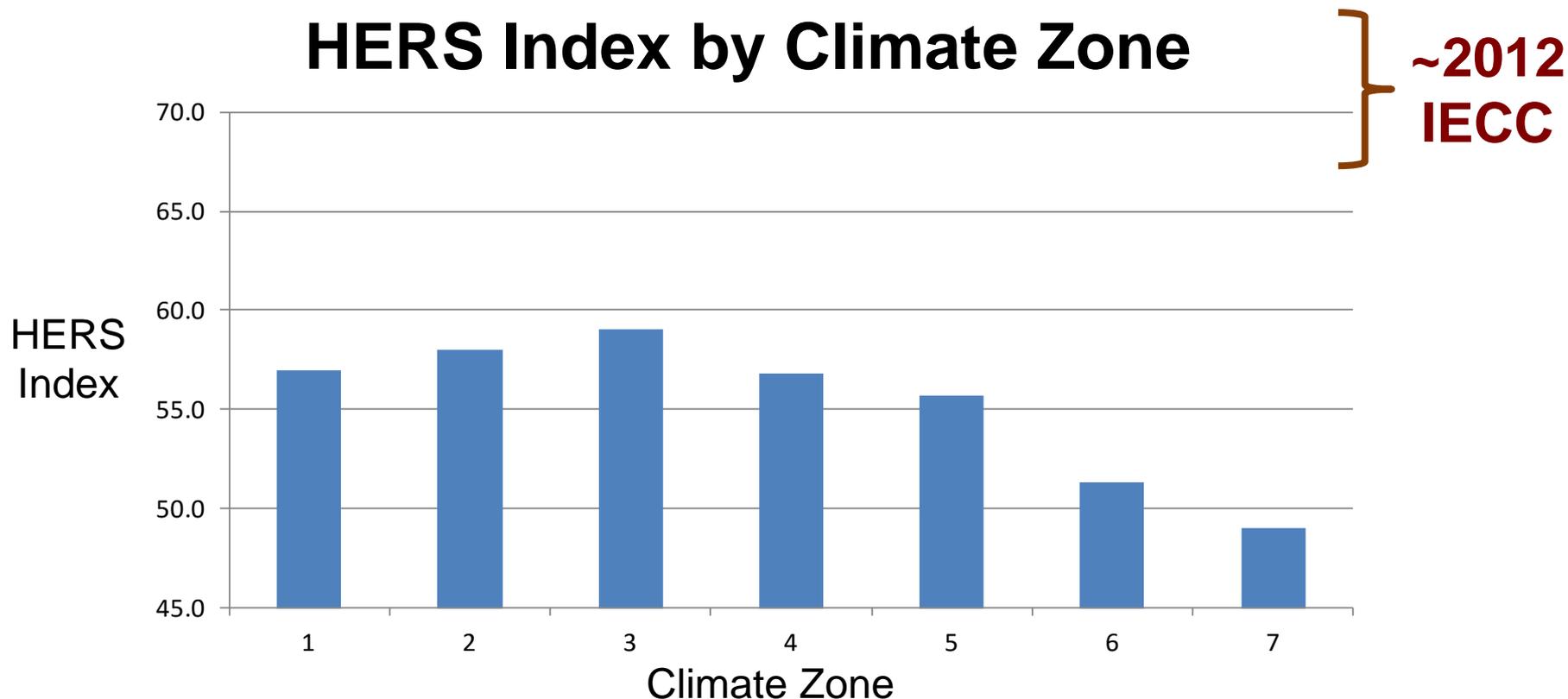
ENERGY
STAR Lgt.
& Appl.

Half ACH50

More Eff.
Windows

ENERGY
STAR vs.
Min. WH

Typical DOE ZERH-Compliant HERS Index by Climate Zone



Based on 1800, 2400, and 3600 ft² prototypes on climate-appropriate foundations.

- **236,000+** HERS Ratings
- **61** Avg. HERS Index
- **~85,000** Homes Ready for ZERH



Source: *“Demand for HERS Continues to Grow: Over 236,000 Homes HERS Rated in 2018,”* RESNET blog, January 17, 2019

The Easy Lift to ZERH...



			Solar Ready
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IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH



2015 IECC Prescriptive Reqts.

Climate Zone	Fenestration		Slab R-Value & Depth	Basemt Wall R-Value	Floor R-Value	Ceiling R-Value	Wood Frame Wall R-Value
	U-factor	SHGC					
1	NR	0.25	0	0	13	30	13
2	0.40						
3	0.35						
4 ex. M	0.32	0.40	10, 2 ft.	10/13	19	49	20 or 13+5
5 & M4							
6	0.32	NR	10, 4 ft.	15/19	30	49	20+5 or 13+10
7 & 8							

Stepping up to ZERH...



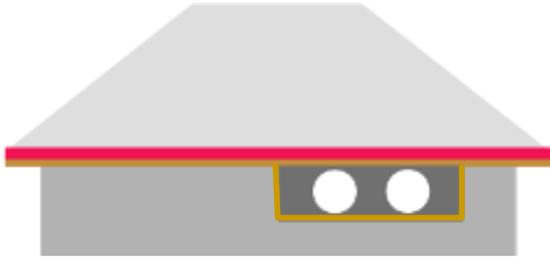
			Solar Ready	
			Eff. Comps. & H ₂ O Distrib.	
			EPA Indoor Air Package	
			Optimized Duct Location	
	HVAC QI with WHV	HVAC QI with WHV	HVAC QI with WHV	←
	Water Management	Water Management	Water Management	←
	Independent Verification	Independent Verification	Independent Verification	←
IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2015 Enclosure	✓
HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55	✓
IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	

Stepping up to ZERH...

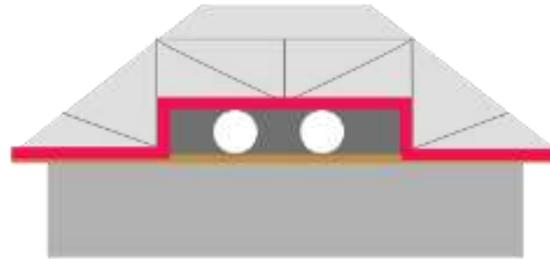


			Solar Ready	
			Eff. Comps. & H ₂ O Distrib.	
			EPA Indoor Air Package	
			Optimized Duct Location	←
	HVAC QI with WHV	HVAC QI with WHV	HVAC QI with WHV	✓
	Water Management	Water Management	Water Management	✓
	Independent Verification	Independent Verification	Independent Verification	✓
IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2015 Enclosure	✓
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IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	

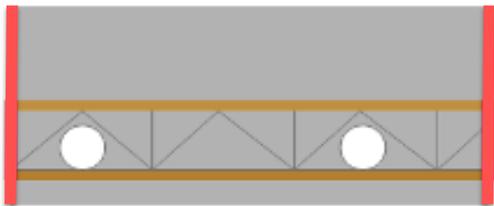
Options for Optimized Duct Location



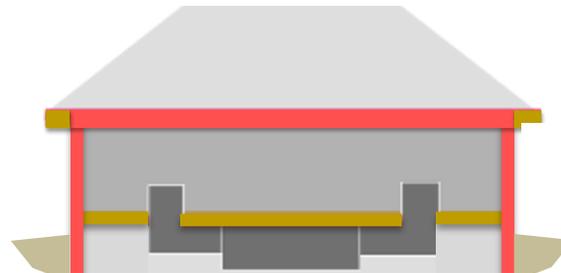
Ducts in Dropped Ceiling



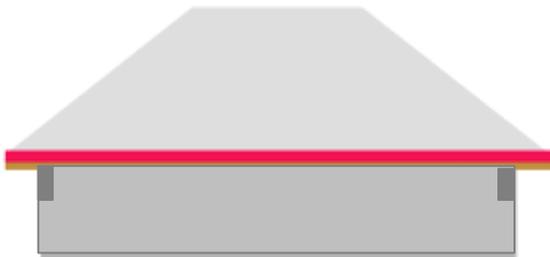
Ducts in Modified Attic Truss



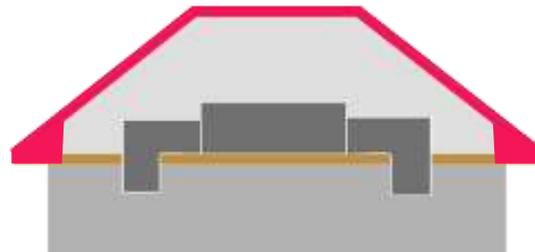
Ducts Between Floors



Ducts in Unvented
Crawl Space/Basement



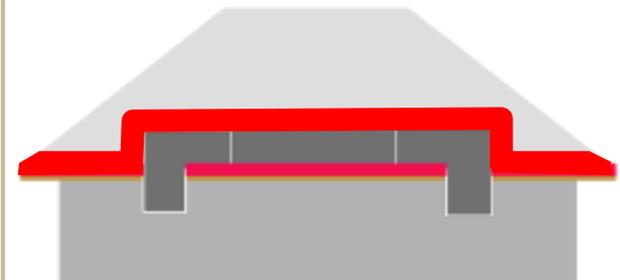
Ductless Systems



Ducts in Unvented Attic

Ducts in Conditioned Space

Buried Ducts



Ducts in *Vented* Attic

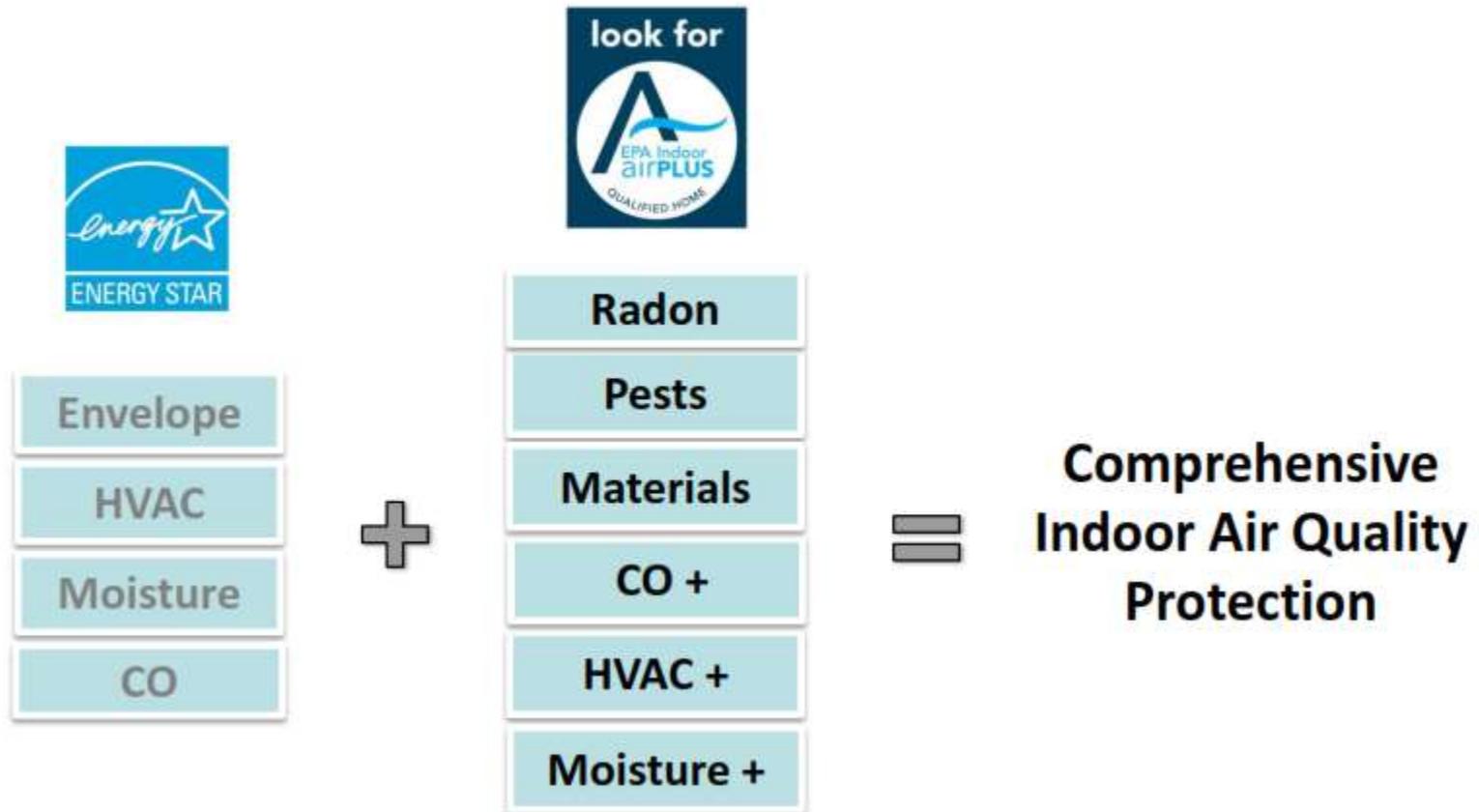
- Buried & SPF encapsulated (Humid Climates)
- Buried (Dry Climates)
- Buried (2018 IECC)

Stepping up to ZERH...



			Solar Ready	
			Eff. Comps. & H ₂ O Distrib.	
			EPA Indoor Air Package	←
			Optimized Duct Location	✓
	HVAC QI with WHV	HVAC QI with WHV	HVAC QI with WHV	✓
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IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	

ENERGY STAR + Indoor airPLUS



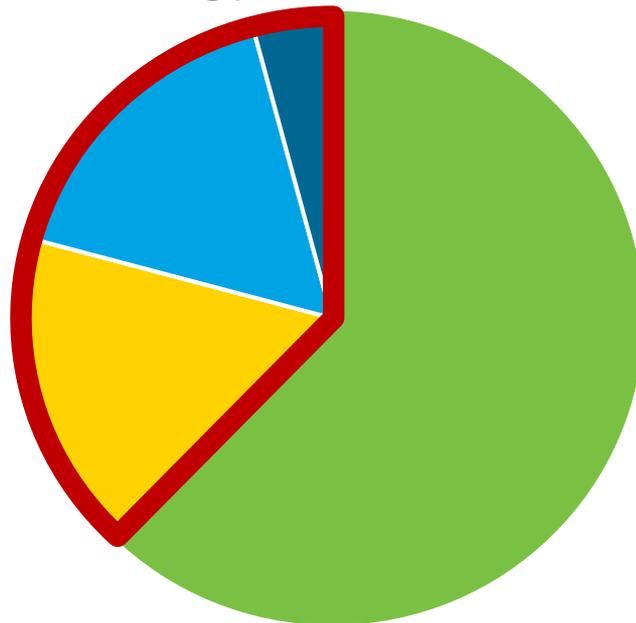
Stepping up to ZERH...



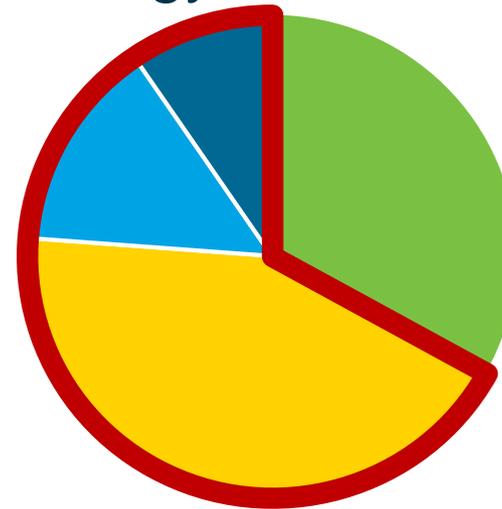
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IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	

Components and MEL's are increasingly larger part of total energy use in low-load homes (~50%).

Energy Use - Then



Energy Use - Now



Key:



MEL's



Lighting & Appliances



Heating & Cooling



Hot Water

Stepping up to ZERH...



			Solar Ready	←
			Eff. Comps. & H ₂ O Distrib.	✓
			EPA Indoor Air Package	✓
			Optimized Duct Location	✓
	HVAC QI with WHV	HVAC QI with WHV	HVAC QI with WHV	✓
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IECC 2012	ENERGY STAR v3	ENERGY STAR v3.1	ZERH	

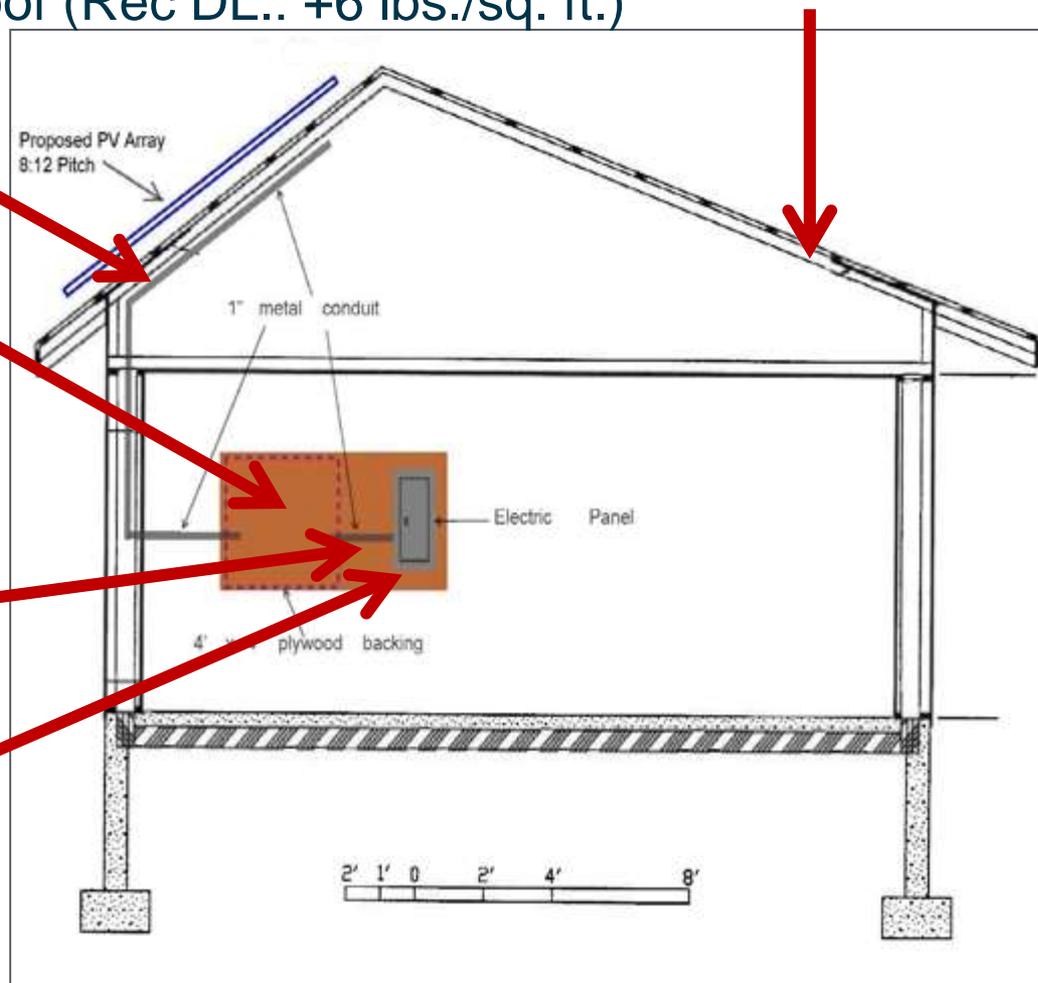
Documentation of the maximum allowable dead load and live load ratings of the existing roof (Rec DL.: +6 lbs./sq. ft.)

Conduit to run DC wire from roof to inverter

Dedicated Area for installing inverter and balance of system

Conduit to run AC wire from inverter location to electric panel

Circuit Breaker designated and/or installed for use by the PV system in the electric panel





Zero Energy Ready Home Orientation

How to be Recognized with Zero

- Zero Energy Ready Home Logo
- Customizable Resources
 - Dare to Compare Brochure
 - Dare to Compare Fact Sheet
 - Superior Experience Fact Sheets
 - Homeowner Manual
 - Drop-in Messaging
 - Drop-in Homebuyer Testimonials
- Housing Innovation Awards
- Tour of Zero
- Partner Locator

Recognition: Zero Energy Ready Home Logo

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



Recognition: Zero Energy Ready Home Logo

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Recognition: Comparison Bars



Key:

- DOE Zero Energy Ready Home
- ENERGY STAR Certified Home
- Existing Home

Recognition: Dare to Compare ZERH Brochure



Front Cover

Lives Better

HEALTHFUL ENVIRONMENT

Every DOE Zero Energy Ready Home has a comprehensive package of measures to minimize dangerous pollutants, provide continuous fresh air, and effectively filter the air you breathe.

COMFORT PLUS

Superior insulation, windows, air sealing and space conditioning systems included in every DOE Zero Energy Ready Home surround you with even temperatures, low-humidity, and quiet in every room on every floor.

KEY

- DOE Zero Energy Ready Home
- ENERGY STAR Certified Home
- Existing Home

Works Better

ADVANCED TECHNOLOGY

Every DOE Zero Energy Ready Home begins with solid building science specified by ENERGY STAR for Homes, and then adds advanced technologies and practices from DOE's world-class research program, Building America.

ULTRA EFFICIENT

Compared to a typical home, an ultra-efficient Zero Energy Ready Home is inexpensive to own. In fact, every DOE Zero Energy Ready Home is so energy efficient, a small solar electric system can easily offset most, or all, of your annual energy consumption. We call this Zero Net-Energy Ready.

Lasts Better

QUALITY BUILT

Advanced construction practices and technologies are specified for every DOE Zero Energy Ready Home. Then they are enforced by independent verifiers with detailed checklists and prescribed diagnostics.

DURABILITY

The advanced levels of energy savings, comfort, health, durability, quality and future performance in every DOE Zero Energy Ready Home provide value that will stand the test of time, and will meet and exceed forthcoming code requirements.

LEARN MORE AT: buildings.energy.gov/zero

Inside Spread

The Future of Housing—Today

Only a select group of the top builders in the country meet the extraordinary levels of excellence and quality specified by U.S. Department of Energy guidelines.

LEARN MORE AT:
buildings.energy.gov/zero

A Symbol of Excellence

HEALTHFUL ENVIRONMENT

COMFORT PLUS

ADVANCED TECHNOLOGY

ULTRA EFFICIENT

QUALITY BUILT

DURABILITY

KEY

- DOE Zero Energy Ready Home
- ENERGY STAR Certified Home
- Existing Home

This table indicates relative performance of this DOE Zero Energy Ready Home to existing homes (built between 1990 and 2000) and ENERGY STAR Certified Homes. Actual performance may vary.

Flap

Back Cover

Recognition: Dare to Compare ZERH Fact Sheet

Homes to the Power of **ZERO**



What is the DOE Zero Energy Ready Home™ Label?

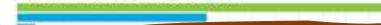
It is a Symbol of Excellence for energy savings, comfort, health, quality, and durability met by a select group of leading builders meeting U.S. Department of Energy Guidelines.

What is a Zero Energy Ready Home?

It is a high-performance home so energy efficient, all or most annual energy consumption can be offset with renewable energy. In other words, it is the Home of the Future.

A Symbol of Excellence

HEALTHFUL ENVIRONMENT



COMFORT PLUS



ADVANCED TECHNOLOGY



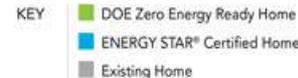
ULTRA EFFICIENT



QUALITY BUILT



DURABILITY



This graphic comparison chart demonstrates relative performance of this DOE Zero Energy Ready Home to existing homes (built between 1990 and 2010) and ENERGY STAR Certified Homes. Actual performance may vary.



303-231-4567
Thrive@net.com
123 Main St., Denver, CO 34567

Recognition: Superior Experience Fact Sheet

- The New Imperative: Healthy Homes
- Taking Comfort to a Whole New Level
- Advanced Technology Homes Work Better
- Taking Control of Your Utility Bills
- Building it Right the First Time
- Homes that Will Stand the Test of Time



The New Imperative: Healthy Homes

The average person spends over 60% of their time inside their home each day. That's why every Zero Energy Ready Home meets the federal government's most rigorous guidelines for indoor air quality. This means you can look forward to a wide array of health benefits such as less allergies, odors, mold, reliance on inhalers, and doctor visits. You deserve to breathe better.

Compare the Difference



KEY: ■ DOE Zero Energy ReadyHome ■ ENERGY STAR Certified Home ■ Existing Home

"We have always suffered from allergies... I can come back home and my odorless, fresh space speaks for itself. No mold, no breathing problems, no fumes and no itchy eyes. We are definitely happy."
- Homeowner



Zero Energy Ready Home Health Package:

Contaminant Source Control
Air sealing and screening block outdoor dust, pollen, and pests from getting in. Materials are specified with no or low chemical content. Water protection from roof to foundation minimizes moisture related problems. Furnaces and water heaters cannot back-draft exhaust fumes. Radon resistant construction provided in high risk zones vents dangerous soil gases. It's like an organic home that keeps the bad stuff out.

Fresh Air System
Since homes are built much more air-tight today, a fresh air system is provided to eliminate residual contaminants and moisture by replacing all the air in your home over three times each day. In addition, kitchen and bathrooms exhaust fans remove moisture, odors, and contaminants from cooking and bathing. A home just lives better with fresh air.

High-Capture Filtration
All homes with ducted heating and cooling also include advanced technology filtration that exceeds minimum industry standards for removing air-borne particles associated with common respiratory problems. If you notice a lot less dust and breathe better, this can be a big reason why.

Brought to you by: 


LEARN MORE AT: buildings.energy.gov/zero

Recognition: ZERH Drop-in Homeowner Quotes

- Healthful Environment
- Comfort Plus
- Advanced Technology
- Ultra-Efficient
- Quality Built
- Durability

Healthful Environment	
Drop-in DOE Message	According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home has a comprehensive package of measures to help minimize dangerous pollutants, provide continuous fresh air, and effectively filter the air you breathe.
ZERH Homeowner Messages	<p>"Our home includes a superior envelope and ventilation system that continuously distributes fresh air throughout the house while pulling stale air from the bathrooms, kitchen, and laundry room. The continuous circulation of fresh air has not only enhanced our own physical well-being, but also the life of our many indoor plants."</p> <p>"I have always suffered from allergies...I can come back home and my odorless fresh space speaks by itself, no mold, no breathing problems, no fumes and no itchy eyes. I'm definitely happy."</p> <p>"There is a noticeable difference in air-quality inside our home, especially during allergy season. For a family of allergy sufferers this is invaluable."</p> <p>"Since moving into the Zero Energy Ready Home, we have found a vast improvement in indoor air quality. One of the occupants suffers from asthma. Since moving into the home, the asthma symptoms have been dramatically reduced; enough that daily medication has been eliminated."</p> <p>"To ensure the air quality is safe for our family, (the builder) went the extra mile to find materials that would provide a healthy environment."</p> <p>"Air quality was immediately apparent in the dramatic reduction in my son's asthma symptoms. He went from daily inhaler use and frequent upper respiratory infections to only occasional/seasonal inhaler use and the use of antibiotics in our house fell by 80%."</p> <p>"We are susceptible to allergies that cause sinus problems for both of us. The special air filters seem to remove allergens as we have had no problems with allergies since we moved into the house."</p> <p>"It is great peace of mind to know that the air quality is good and I don't have to worry about my children's health."</p> <p>"Living in a certified Zero Energy Ready Home has exceeded our expectations... Our children haven't had to take breathing treatments since we moved into our new house last year...the air quality in our home is excellent."</p> <p>"On a scale of 10 my health went from a 3 to an 8. When I returned to my doctor, they were in awe with the health changes that saw. We purchased our home for health reasons and are enjoying the energy savings reward as well."</p> <p>"Not once in my home have I had to use my inhaler in the last year and 9 months. I have had to use it outside of my home, but in my home I have not had to use it once. Which is quite awesome."</p> <p>"After living here for six months, I will say that I have been very pleased in the air system. I have terrible allergies and I have been breathing better recently than I can remember in years!"</p> <p>"Our lives are healthier because of the great effort from the builders to eliminate or minimize harmful materials during construction."</p> <p>"The air quality is fantastic in the house. Regardless of how much pollen is being sent into the air by the local trees, inside the house is always free from pollen. For those in the family with seasonal allergies, this is excellent news!"</p> <p>"Clean air, better air quality, light, it's very bright...the sound is amazing. We live on an auxiliary road and we hardly hear any cars...being able to produce enough energy to power our car, and the house at the same time is fantastic."</p>

Recognition: ZERH Drop-in Messaging



Drop-In Messaging

As a registered DOE Zero Energy Ready Home partner, enjoy access to the following pre-approved messages for insertion into your promotional materials. Simply insert your company name and use the message as it appears below.

- According to the U.S. Department of Energy, **<Partner Name>** is in a select group of top builders in the nation who have certified one or more homes that meet or exceed Zero Energy Ready Home guidelines for excellence in performance and energy efficiency.
- As a committed DOE partner who provides certified Zero Energy Ready Homes, **<Partner name>** is in the top one percent of builders in the country meeting the extraordinary levels of excellence in energy and performance specified in the national program requirements.
- As a Zero Energy Ready Home Partner, **<Partner Name>** offers high performance homes that are so energy efficient, all or most of their annual energy consumption can be offset with renewable energy.
- **<Partner name>** builds homes certified to rigorous DOE Zero Energy Ready Home National Guidelines that are at least 40%-50% more energy efficient than a typical new home.
- **Healthful environment:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home has a comprehensive package of measures to help minimize dangerous pollutants, provide continuous fresh air, and effectively filter the air you breathe.
- **Comfort Plus:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home features high-efficiency insulation, windows, air sealing and space conditioning systems that help surround you with even temperatures, low-humidity, and quiet in every room on every floor.
- **Advanced Technology:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home features advanced technologies and practices recommended by leading housing experts from DOE's world-class research program, Building America.

- **Ultra efficient:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home is so energy efficient a small solar electric system can easily offset most, or all, of its annual energy consumption. This is why it is called as Zero Energy Ready Home.
- **Quality Built:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home features high-efficiency appliances and equipment that are often associated with better quality construction. In addition, overall quality is enhanced with rigorous inspections, diagnostics, and checklists enforced by independent verifiers.
- **Durability:**
According to the U.S. Department of Energy (DOE), every certified Zero Energy Ready Home features advanced levels of energy savings, comfort, health, durability, quality and future performance that can be expected to stand the test of time and help enhance future value.
- Samuel Rashkin, Chief Architect for DOE Building Technologies Office, said "Zero Energy Ready Homes like those constructed by **<Partner Name>** are the home of the future because they live, work, and last better with incredibly low or no energy costs. And what's exciting for American homebuyers, they are available today thanks to leading builders across the country."
- "Housing Innovation Award winners such as **<Partner Name who has won HIA>** are leading a major housing industry transformation to zero energy ready homes. This level of performance is the home of the future because it improves the way Americans live by substantially reducing or eliminating utility bills, ensuring engineered comfort way beyond traditional homes, protecting health with a comprehensive package of indoor air quality measures, and helping maximize the largest investment of a lifetime," said Sam Rashkin, Chief Architect at the U.S. Department of Energy's Building Technologies Office.

Recognition: ZERH Drop-in Messaging

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Homes that do more.

Sign In

Register

Find Your
New Home

Energy
Efficient
Living

Colorado's
Builder

Design
Studio

Customer
Care &
Warranty

Contact Us

"Zero Energy Ready Homes are the future of U.S. housing, and innovators like Thrive Home Builders are leading the way for the entire industry. Zero Energy Ready Homes can provide a vastly superior homeowner experience at a lower ownership cost – an experience all Americans should want in their next home."

Sam Rashkin, Chief Architect for U.S. Department of Energy Building Technologies Office

Recognition: ZERH Homeowner Manual

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Your Zero Energy Ready Home Story



— BROUGHT TO YOU BY —

Thrive Home Builders

303-231-4567

ThriveHomeBuilders@net.com

123 Main Street, Denver, CO 34567



Welcome to Your Zero Energy Ready Home

THIS IS YOUR STORY.

The story of your Zero Energy Ready Home and how it leverages advanced technology for a better homeowner experience.

IN THIS BROCHURE

you will learn about the following seven complete systems and why they make your home so special.



High-Performance Thermal Enclosure



Whole-House Water Protection



High-Performance Comfort System



High-Efficiency Components



Whole-House Health Protection



Solar-Ready Construction



Enhanced Quality Assurance

High-Performance Thermal Enclosure



The roof, walls, windows, doors, and foundation combine to form your home's enclosure. You've got one chance to get it right during construction before it's locked in for the next few hundred years. That's why your home includes the leading expert recommendations for advanced thermal protection that provide significant utility bill savings along with enhanced comfort and durability.



High-Performance Windows

use advanced technology to keep heat in during the winter and out during the summer while brightening your living space all year long.



High-Performance Insulation

provides a complete thermal blanket that snugly surrounds your home in comfort and quiet.



Comprehensive Draft Protection

is like wrapping your house in money with much lower heating and cooling bills while also blocking annoying dust, pollen, pests, noise, and moisture.

TIP

Any time work is being done on your home that involves wall penetrations or workers in your attic, make sure the contractor is required to maintain the insulation levels and air-tight construction.



Housing Innovation Awards Feeds 'Tour of Zero'



Recognition: Tour of Zero

[Home](#) » [Residential Buildings](#) » [Zero Energy Ready Home](#) » [DOE Tour of Zero](#)

Are you ready for a home that lives, works, and lasts better? The home of the future - [a better home](#) - is available today. Take a virtual tour of homes that are so energy efficient a renewable energy system can offset all or most of their annual energy consumption. These award-winning homes are independently certified to meet DOE Zero Energy Ready Home [guidelines](#) and constructed by a select group of [top builders](#). Zero Energy Ready Home is part of the U.S. Department of Energy's Better Buildings initiative. Better Buildings aims to make commercial, industrial, public, and residential buildings 20 percent more energy efficient over the next decade.



Click on a climate zone to see homes in that region.

Search:

SEARCH

RESET

Showing 1 to 25 of 123 entries

Show

25



entries



[The Home of the Future Today Video \(Text Version\)](#)

Recognition: Tour of Zero

Search:

Showing 1 to 25 of 31 entries (filtered from 196 total entries)

Show entries

TOUR THESE HOMES	BUILDER	LOCATION	HIA WINNER	CLIMATE ZONE
Air Park Drive	Addison Homes	Greer, SC	2016 HM	MIXED-HUMID
Cobbler Lane	Addison Homes	Greer, SC	2015	MIXED-HUMID
Invision Zero Home	Addison Homes	Greer, SC	2016	MIXED-HUMID
Jocassee Plan	Addison Homes	Greer, SC	2017	MIXED-HUMID
The Emory	Addison Homes	Greer, SC	2016	MIXED-HUMID
Trailside 7	Addison Homes	Greenville, SC	2018	MIXED-HUMID
Eco-Friendly Home	Ferguson Design & Construction Inc.	Sagaponack, NY	2013	MIXED-HUMID
Coastal ZERH	Garden State Modular Homes, LLC	Lavallette, NJ	2017	MIXED-HUMID
Julia II	Habitat for Humanity of Catawba Valley	Hickory, NC	2018	MIXED-HUMID
Northstone Bungalow	Habitat for Humanity of Catawba Valley	Hickory, NC	2017	MIXED-HUMID
The Julia Plan	Habitat for Humanity of Catawba Valley	Hickory, NC	2016	MIXED-HUMID
Jefferson Green	Health-E Community Enterprises of Virginia	Richmond, VA	2018	MIXED-HUMID
The Annabel Model	Health-E Community Enterprises of Virginia	Richmond, VA	2017	MIXED-HUMID
The Villas at Rocketts Landing	Health-E Community Enterprises of Virginia	Toano, VA	2016	MIXED-HUMID
Euclyd Avenue	Hexloom Design Build	Atlanta, GA	2015	MIXED-HUMID
Rose Acres	High Performance Homes	Westminster, MD	2016	MIXED-HUMID
Contemporary Performance	Imery Group	Chamblee, GA	2017	MIXED-HUMID
High-Performance Bungalow	Imery Group	Roswell, GA	2016	MIXED-HUMID
Proud Green Home	Imery Group	Serenbe, GA	2014	MIXED-HUMID
Green Shortz Green House	Imery Group	Lilburn, GA	2018	MIXED-HUMID
Whitley	Insight Homes	Millsboro, DE	2016	MIXED-HUMID
Cottage Plantation Lane	Insulsteel Building Enclosures	Charleston, SC	2017 HM	MIXED-HUMID



DOE Tour of Zero: Whatley by Insight Homes

[Home](#) » DOE Tour of Zero: Whatley by Insight Homes



**Consumer
Experience**

“No more trips to the hospital!!!”

Homeowner

DOE Tour of Zero: Whatley by Insight Homes

[Home](#) » DOE Tour of Zero: Whatley by Insight Homes



“No more trips to the hospital!!!”

Homeowner

DOE Tour of Zero: Whatley by Insight Homes

[Home](#) » DOE Tour of Zero: Whatley by Insight Homes



“No more trips to the hospital!!!”

Homeowner

Recognition: Tour of Zero



**Contact
Info**

ENERGY READY
U.S. DEPARTMENT OF ENERGY

Insight Homes

Bridgeville, DE
itsjustabetterhouse.com
Project: Whatley
Millsboro, DE



3,320 ft² 5 bedrooms, 3
4A mixed-hum

HERS 52 This home's score
▲ avg. existing home

\$220 Average Monthly En
Calculated

\$3,250 Annual Savings
Calculated versus typical new h

\$158,600 Saved in the F
Includes fuel escalation rat

DOE Zero Energy Ready Home: Partner Profile

Insight Homes

Partner ID:	1305
Organization Type:	Builder
Main Contact:	Craig Elliott
Address:	1055 SUSSEX HIGHWAY BRIDGEVILLE, DE 19833 (302) 357-0400
Primary Phone Number:	302
2012 - Present:	
Certified DOE Zero Energy Ready Homes	30
Certified Builders Challenge Homes	0
(2008 - 2012):	
Website:	itsjustabetterhouse.com

All Places of Business:

DE, MD, NJ

Commitments:

**30-Year
Savings**

Recognition: Tour of Zero



and comfort
Technology for energy and

**Innovations
(Power Words)**

Performance



Video



Floor Plan

Recognition: ZERH Partner Locator

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

EERE Home | Programs & Offices | Consumer Information

Building Technologies Office

Home > Residential Buildings > DOE Zero Energy Ready Home

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- Residential Buildings
 - Solar Decathlon
 - Building America
 - Home Energy Score
 - Home Performance with ENERGY STAR
 - Better Buildings Neighborhood Program
 - Zero Energy Ready Home
 - Partner Log In
 - Become a Partner
 - Program Requirements
 - Partner Locator
 - Zero Energy Home Tour
 - Student Competition
 - Housing Innovation Awards
 - Resources
 - Events

DOE Zero Energy Ready Home Partner Locator

Builders across the United States have become DOE Zero Energy Ready Home partners. The interactive map below allows you to view the number of partners by state and organizational type. Search for partners by typing into the text box below. You may also find partners by state, organization type, or commitments.

Ready to Take the Zero Energy Ready Challenge?

Builders interested in learning more about DOE Zero Energy Ready Home can [view the requirements](#) or start the [sign up process](#).

Search Partners:

Or Filter By:

State:

Partner Type:

Legend:

- 40+ partners
- 25-39 partners
- < 25 partners

Map showing partner density by state. A large brown arrow points to the map.

Unbiased list of leading builders

Recognition: ZERH Partner Locator

Building Technologies Office

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[Home Improvement](#)

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[Zero Energy Ready Home](#)

DOE Zero Energy Ready Home: Results

[Back to Map](#)

Name	Type	HIA Winner	City	State	DOE ZERH Projects	Builders Challenge Homes
100% Partners						
Mandalay Homes	Builder	2013, 2014, 2015, 2016, 2017	Prescott	AZ	581	0
Palo Duro Homes, Inc.	Builder	2013, 2014, 2015	Farmington	NM	227	235
C & B Custom Homes, Inc.	Builder		Cottonwood	AZ	21	0
Urban Fabric Builders, LLC	Builder		Phoenix	AZ	4	0
E3 Energy LLC	Verifier		FLAGSTAFF	AZ	748	241
DuctTesters, Inc.	Verifier		Ripon	CA	132	0

Unbiased list of leading builders

Buyers Linked to Leading Edge Builders:

- Contact Information
- Website link
- HIA Awards
- # Labeled Homes

For All Active Partners

- Builders
- Verifiers
- Architect/Designers

DOE Zero Energy Ready Home

DOE Zero Energy Ready Home: Partner Profile

Mandalay Homes



Partner ID:	620
Organization Type:	Builder
Main Contact:	Dave Everson
Address:	2320 E. BASELINE RD #148 605 PHOENIX, AZ 85042
Primary Phone Number:	(602) 854-3800
Certified DOE Zero Energy Ready Homes (2012 - Present):	161
Certified Builders Challenge Homes (2008 - 2012):	0
Website:	http://www.mandalayhomes.com



All Places of Business



AZ

- Leverage **Trust**
with DOE Voice-of-Authority/Messaging
- Leverage **Differentiation**
with Logo, Awards, Locator, Tour of Zero
- Leverage **Clarity**
with Contrast Based Fact Sheets
- Leverage **Superior Buyer Experiences**
with Housing Innovation Award Quotes
- Leverage **Partner Recognition**
with Customizable Resources

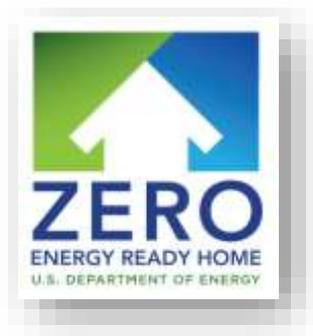
- **Marketing and Sales Solutions for ZERH
Marketing and Sales Resources**
Sam Bowles, Chrissi Antonopolous (2017)
- **High-Performance Homes Sales Training,
Parts I & II**
Sam Rashkin (2015)
- **Building America Solution Center**
Chrissi Antonopolous (2018)
- **Selling ZERH Made Easy**
Sam Rashkin (2015)
- **Voice of the Builder Series**
by Climate Zone and Affordable (2017-2018)



- **Take Orientation Training**
after registering and renew training every year
- **Provide Certificate**
for DOE Zero Energy Ready Home to each home owner
- **Adhere to Brand Identity Guidelines**
for proper use of the DOE Zero Energy Ready Home name and logo
- **Build/Verify at Least One Home/18 mo.**
to maintain active partnership

To view the full Agreement terms and disclaimers, visit:
<http://www1.eere.energy.gov/buildings/zero/>

- Update Company Information;
- Add, Delete, and Edit Contacts;
- Add/Update Your Logo;
- Add Commitments; and
- Access Key Tools and Resources
- Compare Annual Certifications to DOE Reported Number



Web Site:

www.buildings.energy.gov/zero/

e-mail Contact:

zero@newportpartnersllc.com