

# DOE Zero Energy Ready Home

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



# Why Zero

**SAM RASHKIN**

Chief Architect

Building Technologies Office



## **Web Site:**

[www.buildings.energy.gov/zero/](http://www.buildings.energy.gov/zero/)

## **e-mail Contact:**

[zero@newportpartnersllc.com](mailto:zero@newportpartnersllc.com)

- New Market Reality
- New Construction Reality
- Zero Manages Risk
- Zero Differentiates
- Zero Value Translates
- Zero Recognition





# Zero Energy Ready Home

## **Prologue:**

## **You Are Here**



# Housing is a System

## Effective Sales

Message [3]

Process [3]

Service [3]

## Quality Construction

Lean Construction [6]

Quality Management [7]

Innovation [3]



## High-Performance

Building Science [4]

Water Efficient [3]

Efficient Components [5]

Disaster Resistant [3]

Indoor Air Quality [3]

## Sustainable Development

Community Spaces [3]

Quality Features [3]

Enduring Value [3]

## Good Design

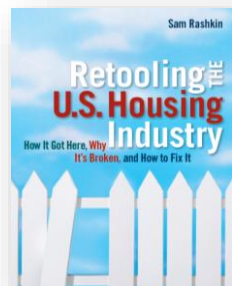
Fit to Site [4]

Natural Comfort [5]

Right-Size/Right-Way [10]

Architectural Integrity [3]

Integrated Systems [10]





# Zero Energy Ready Home **New Market Reality**

- Next Generation of Buyers
- The Competition
- The Interest in Health
- Interest in Zero
- More Informed Homebuyers



## 78 Million Gen-Y'ers

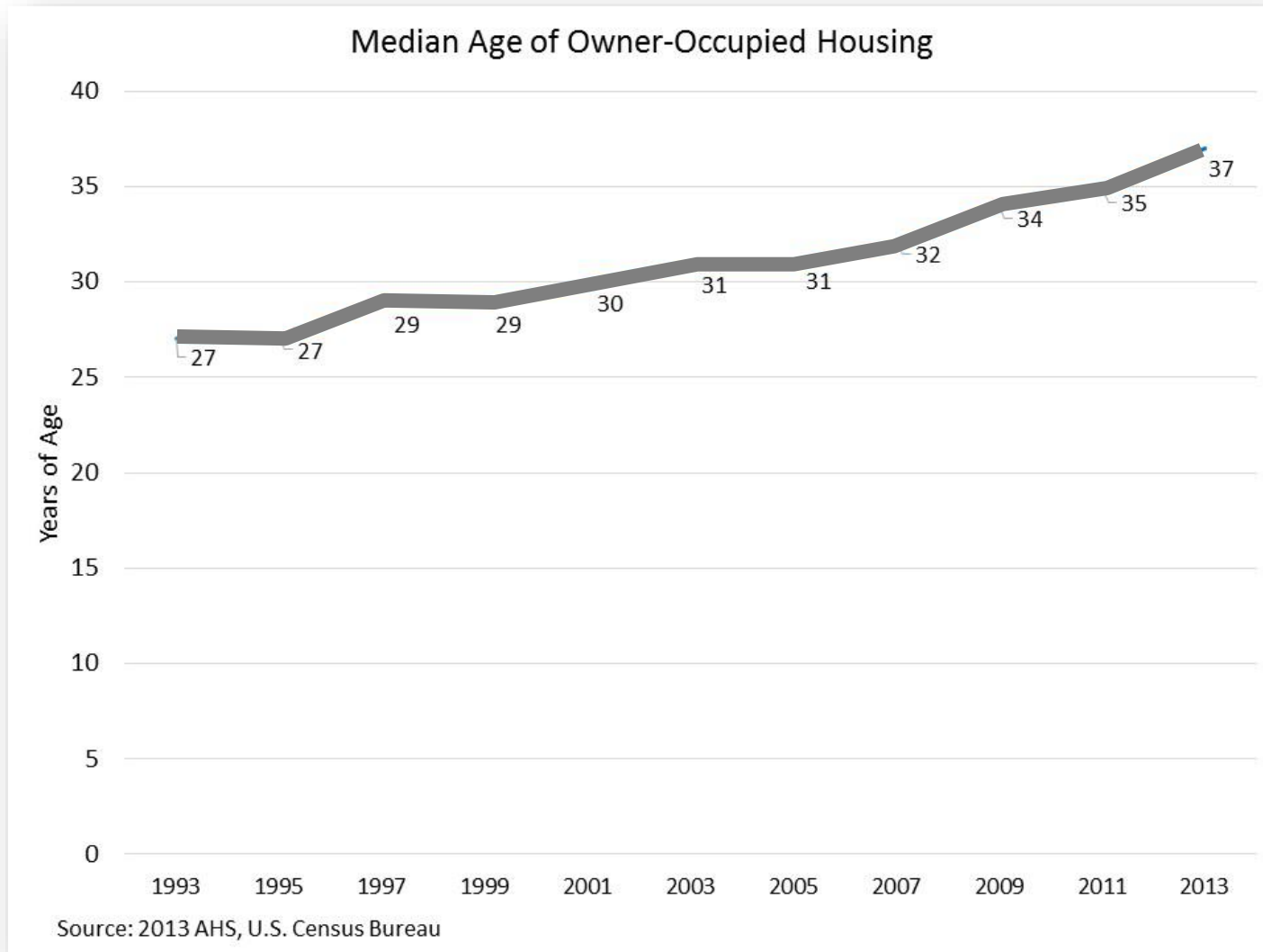
- Debt
- Sharing Economy
- Delayed Commitment
- Crash Experience
- Innovation Junkies  
(Willing to  
Pay More for a  
Better Experience)





# Gen-Y Opportunity

# The Competition



## **Aging Housing Stock with:**

- High Utility Bills
- Poor Comfort
- Health Risks
- Moisture Problem Risks
- Excessive Bugs/Pests
- Durability Issues
- Obsolete Technology



**Meet  
85%  
of Your  
Competition**

# Increasing Health Concerns



**\$40 Billion**



**\$20 Billion**

## Indoor vs. Outdoor Air Pollutants:

On average **2-5 times greater**

Up to **100 times greater**

While Americans Spend

**90% of time indoors**

Source: EPA

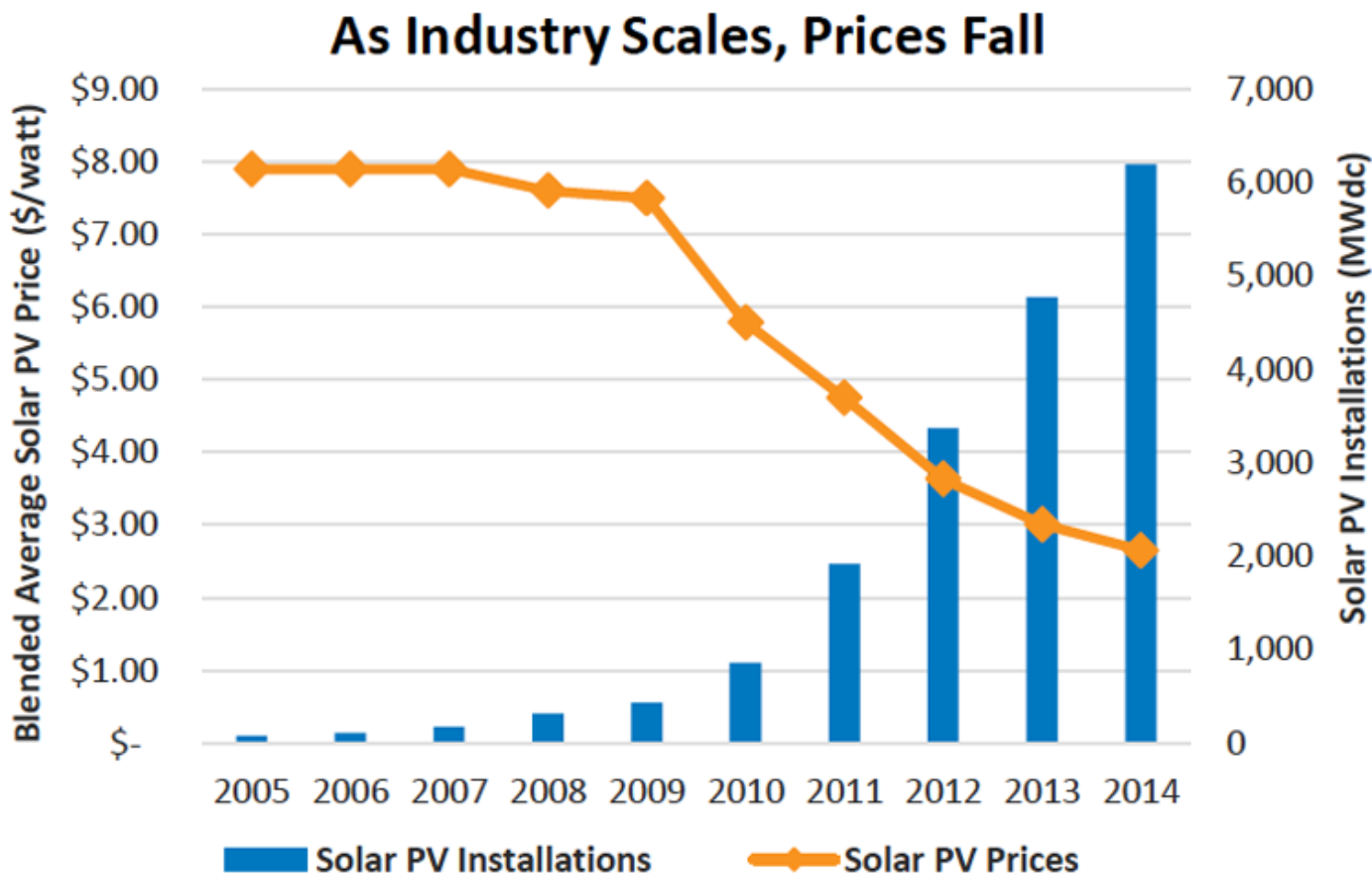


“If your child doesn’t use an inhaler,  
consider yourself a lucky parent because,

**1 in 10 children in the U.S.  
suffers from asthma.”**

Source: Remarks for Administrator McCarthy, Announcement of Clean Power Plan,  
Washington, DC, June 2, 2014





Source: SEIA / GTM Research

BY JANN SWANSON

## Real Estate Web Searches Climb 253% in Four Years as 90% of Homebuyers Use Internet as Primary Research

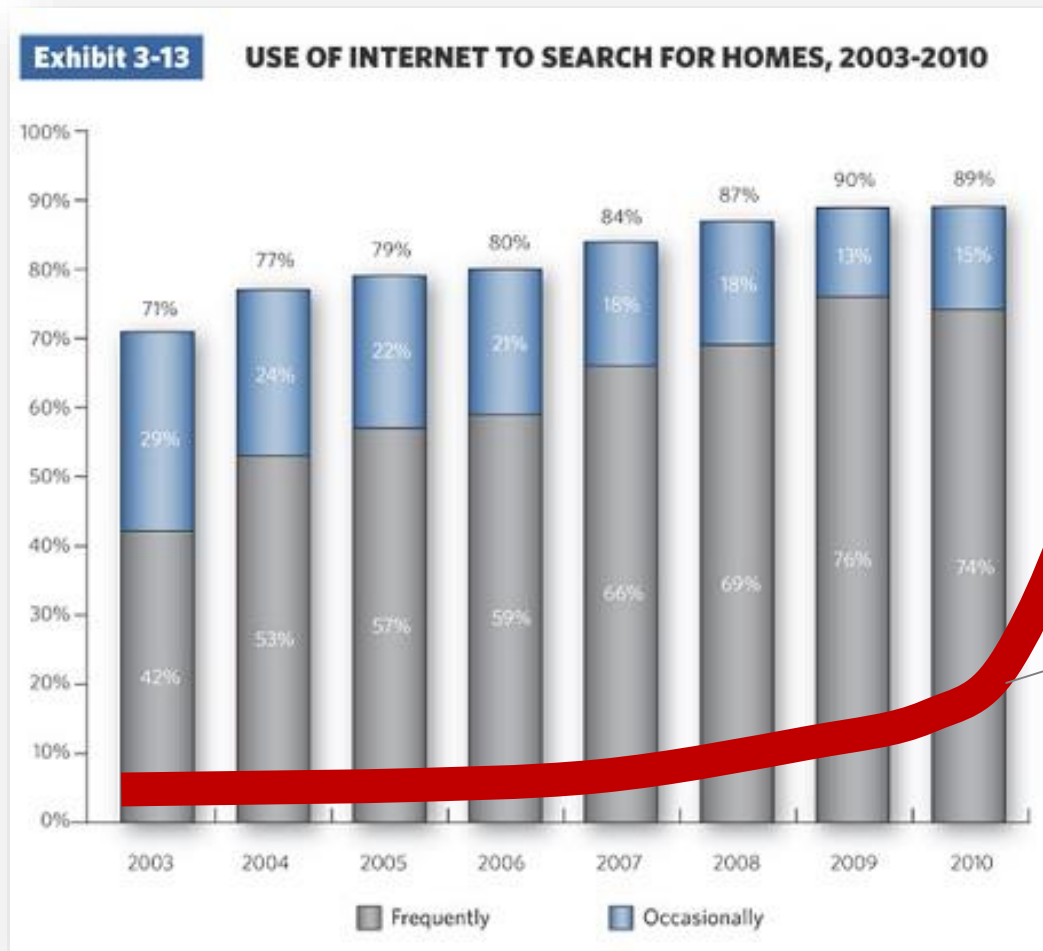
Jan 7 2013, 3:50PM

Text 

Home-shopping consumers are not only exponentially increasing their **reliance on the Internet** but are also developing distinct patterns for using it in their housing searches. **Google** and the **National Association of**

**Real Estate Brokers** released a report today that shows that

# More Informed Consumers

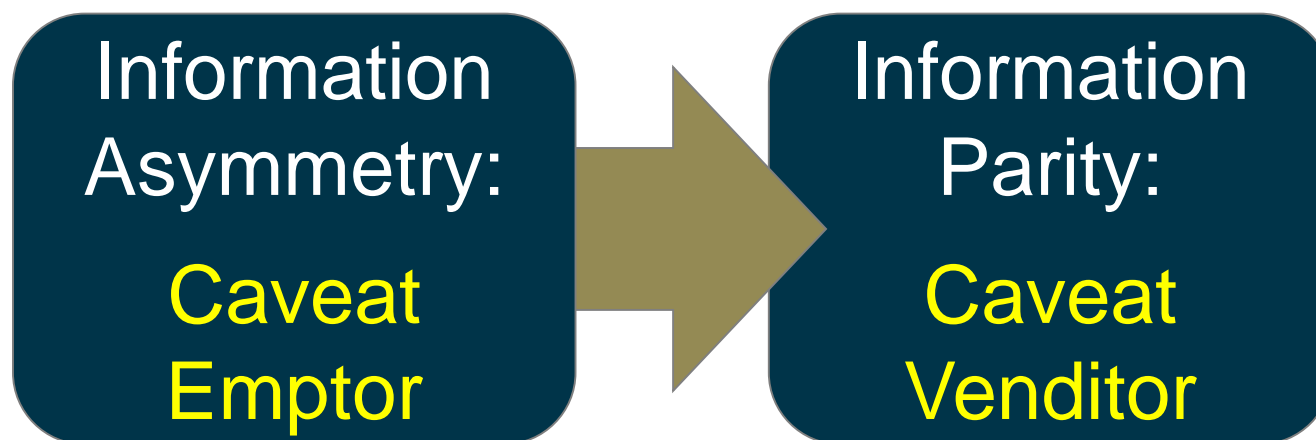


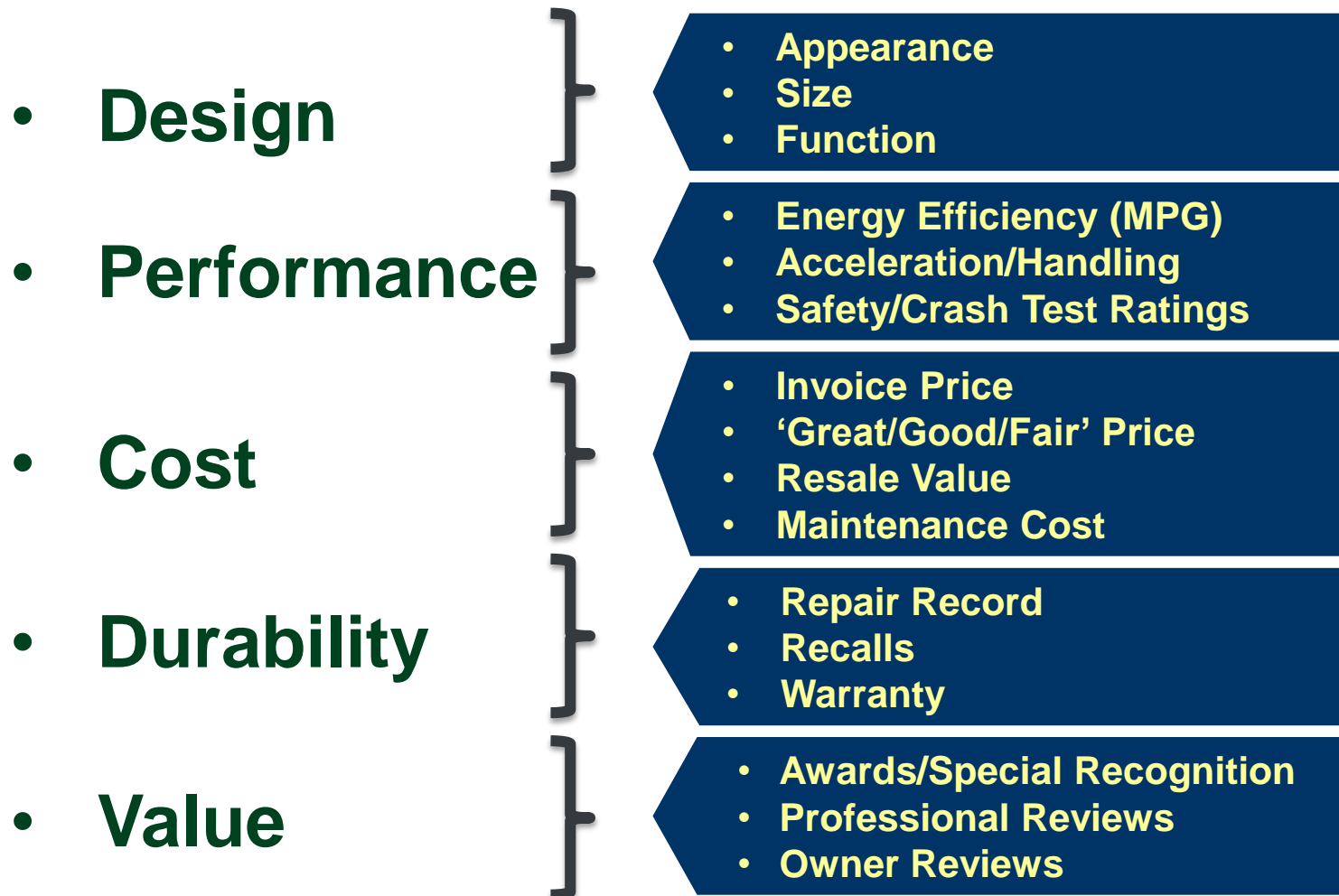
Internet  
Content  
Available

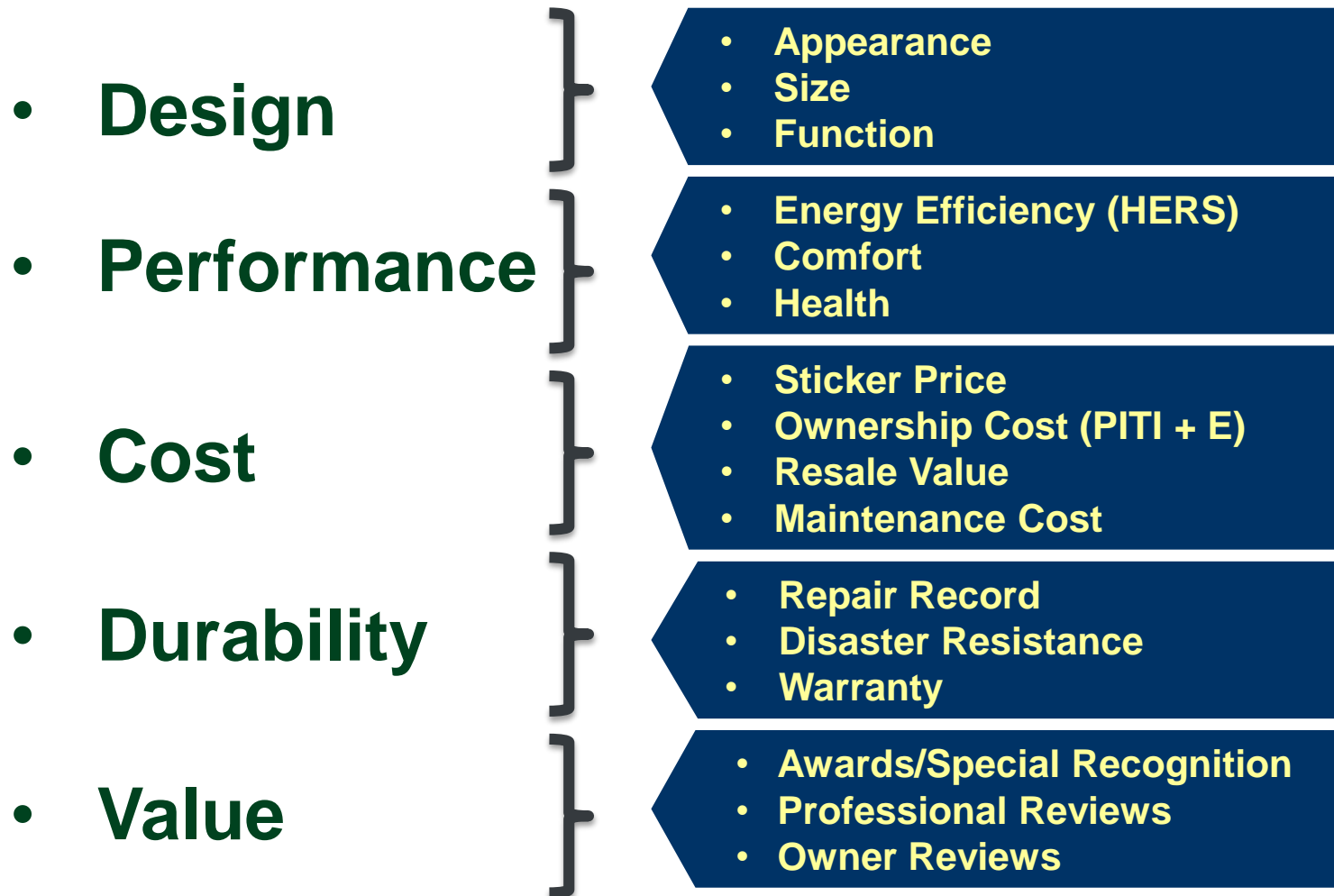
Transition  
to Truly  
Informed  
Buyers

SOURCE: National Association of Realtors® - Profile of Home Buyers and sellers 2010









## With more informed buyers...

### Rules\*:

1. If it can be done, it ***will*** be done.
2. If you don't do it,  
***someone else*** will.

\* Daniel Burrus, “*Flash Foresight*”

## **Disruption Ignoring New Business Model:**

- Kodak
- Polaroid
- Motorola
- Palm
- Circuit City (and a host of other retailers)
- American Car Manufacturers
- TWA and other Legacy Airlines
- Converse Sneakers
- and the list goes on...



An air conditioner  
that anticipates  
your needs  
**PAGE 59**

Solar panels that  
eliminate your  
energy bills  
**PAGE 76**

A door that can  
sense your approach  
**PAGE 59**

A sprinkler that  
tracks the weather  
**PAGE 80**



Walls that  
can weather a  
hurricane  
**PAGE 66**

A car that can  
power your house  
**PAGE 79**

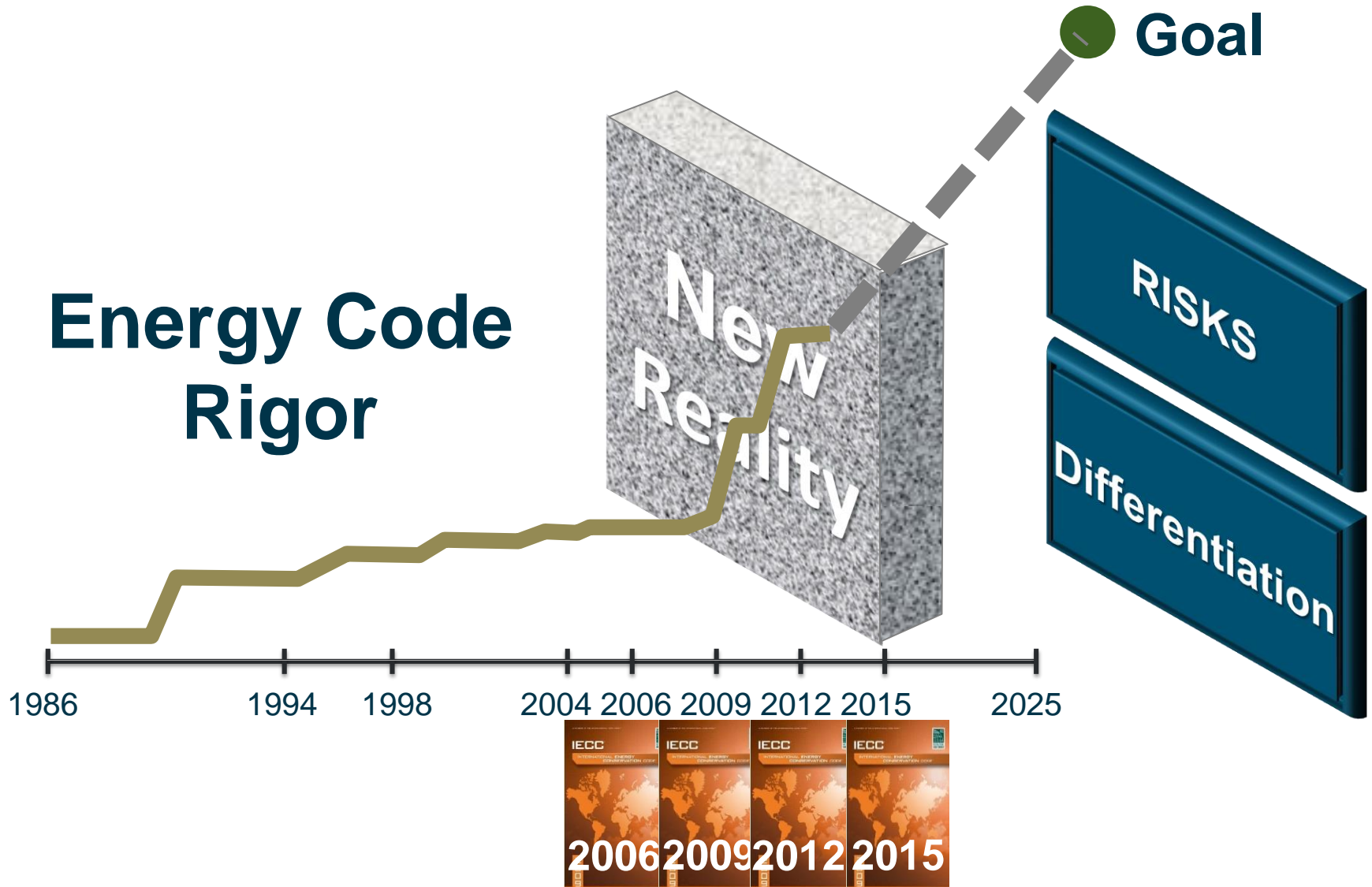
A garden that  
filters your air  
**PAGE 87**



# Zero Energy Ready Home

# **New Construction Reality**

# New Reality





# The Business Case for Zero **Zero Manages Risks**



More Rigorous  
Codes/HERS

Advanced  
Enclosure

+ Insulation  
+ Windows  
+ Air Sealing

# Risk #1: Moisture



**New Reality:**  
Advanced  
Enclosure

**Outcome:**  
Colder Surfaces  
Less Drying

**Risk:**  
More Wetting  
Potential

# Risk #1 Management: Comprehensive Water Protection

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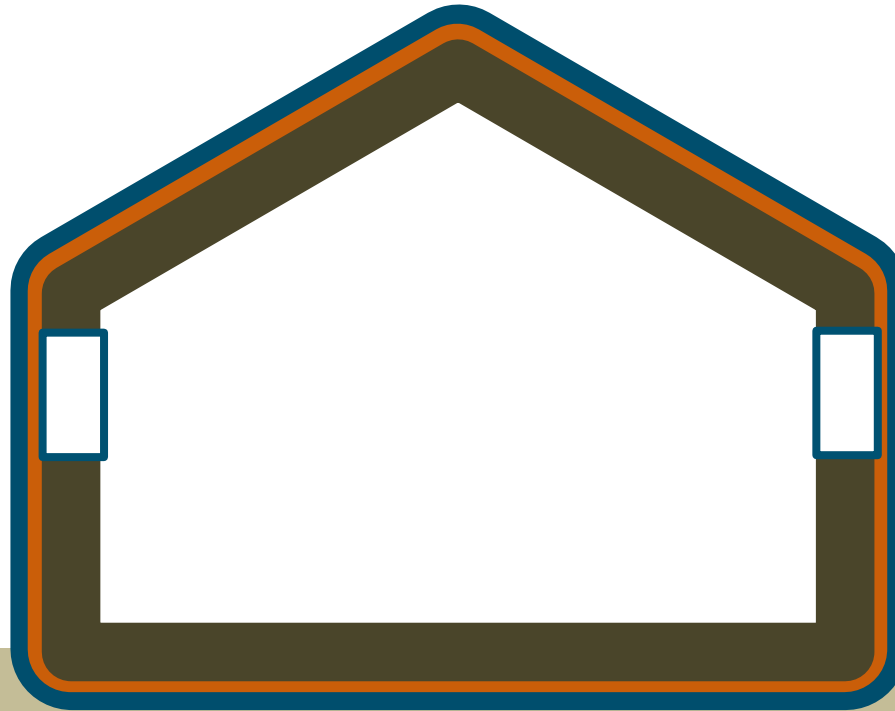
Roofs

Walls/  
Openings

Site/  
Foundation

Materials

## Risk #2: Ensured Comfort



**New Reality:**  
Advanced  
Enclosure

**Outcome:**  
Ultra-Low  
Loads

< Air Flow  
> Swing  
Seasons

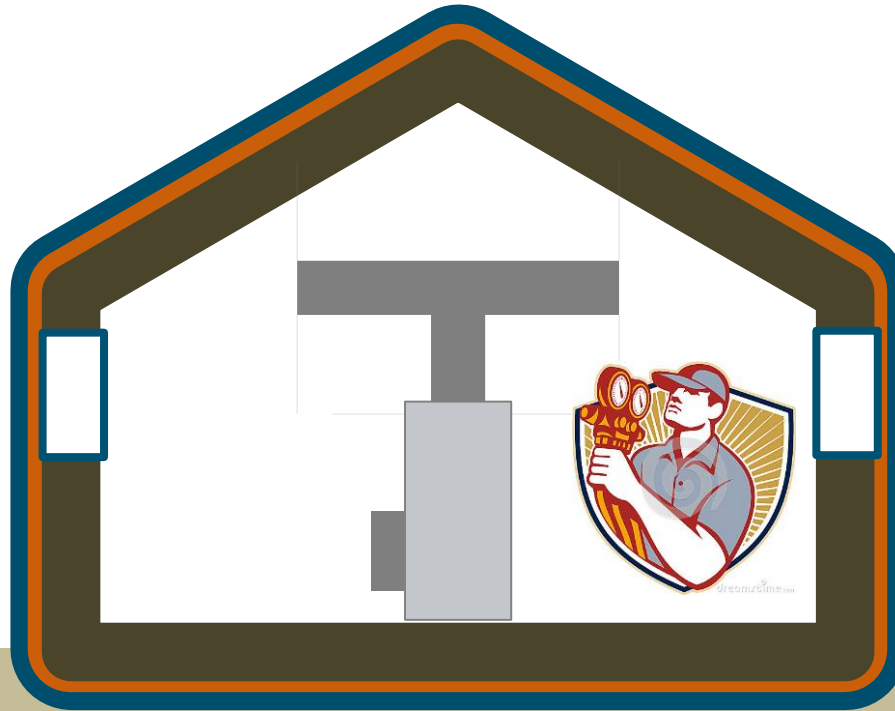
**Risks:**  
< Mixing  
< RH Control



# Risk #2 Management: Optimized Comfort System

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Renewable Energy

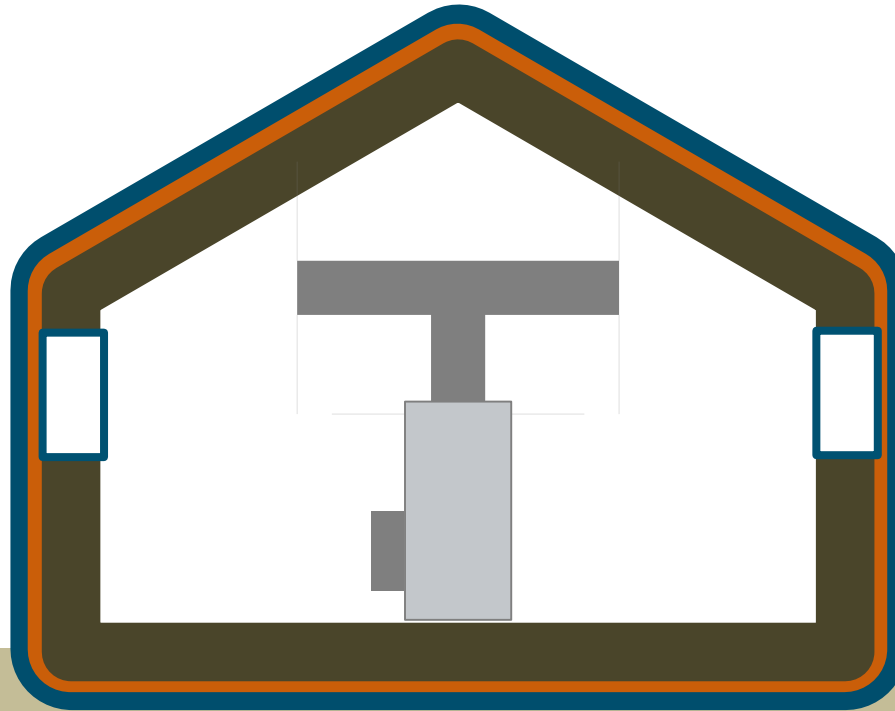


Right Sizing/  
Variable Speed

Ducts in  
Conditioned Sp.

Proper  
Installation

# Risk #3: Ensured IAQ

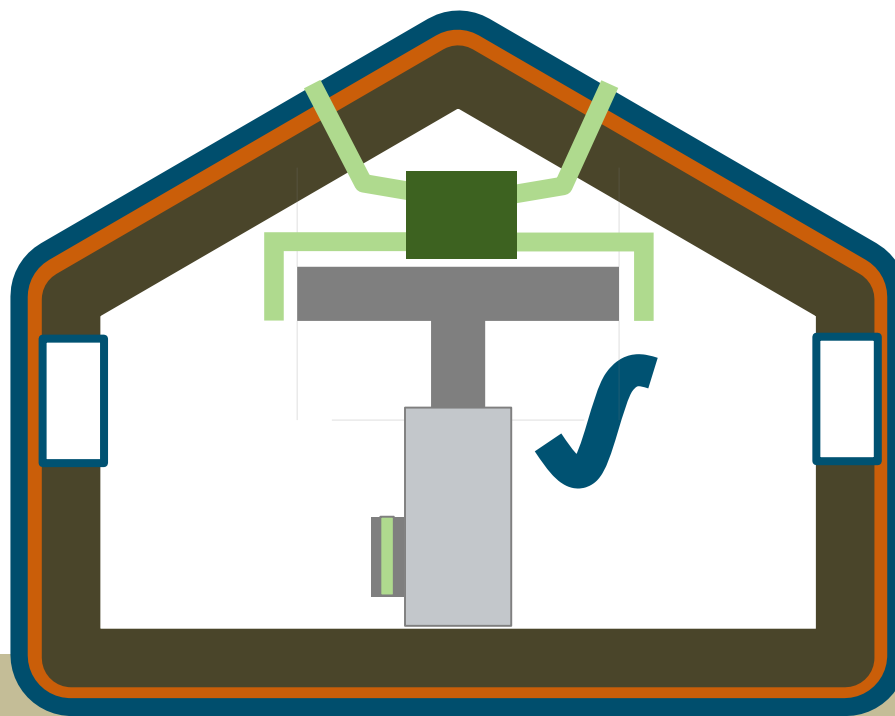


New Reality:  
Advanced  
Enclosure

Outcome:  
Less Air  
Exchange

Risk  
More  
Contaminants

# Risk #3 Management: Complete IAQ System



Source  
Control

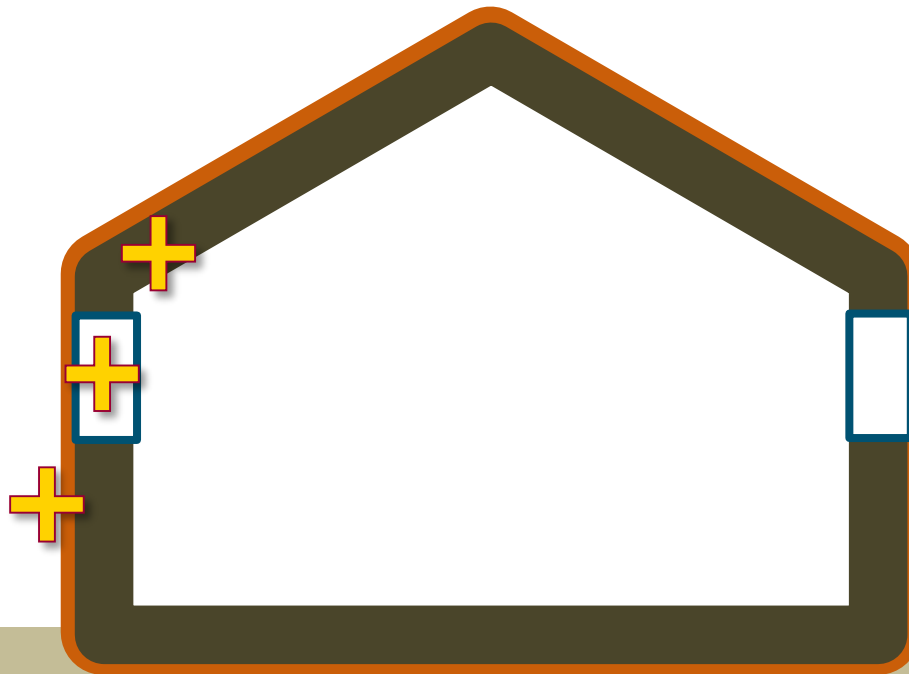
Fresh Air  
System

High-Capture  
Filtration



# The Business Case for Zero **Zero Differentiates**

# Differentiation Opportunity 1: Future Ready



Advanced  
Enclosure

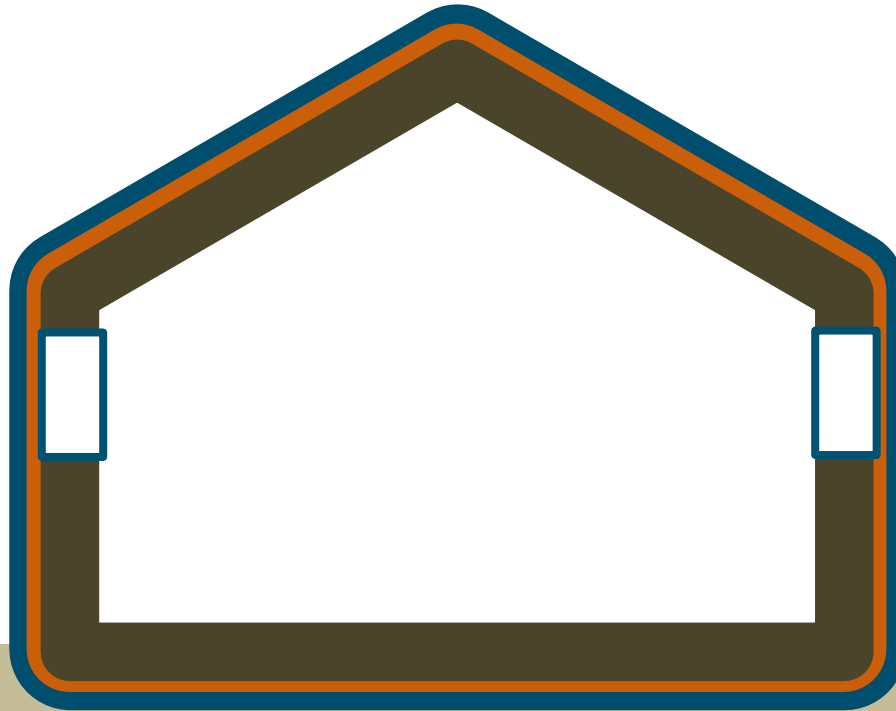
Optimized  
Enclosure

<Obsolescence  
<Energy Costs

# Differentiation Opportunity #2: Assured Water Protection

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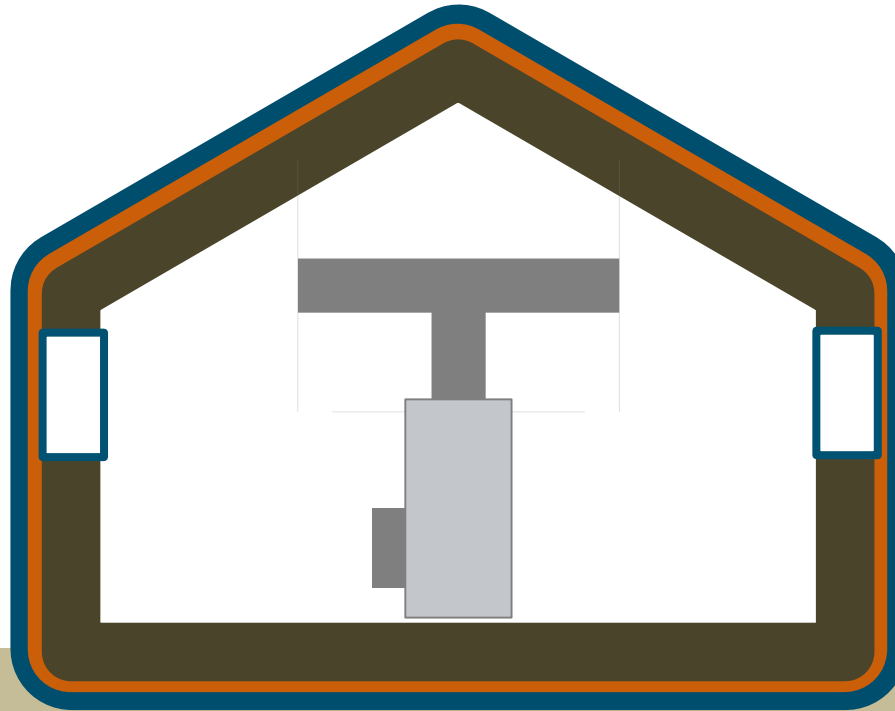


Optimized  
Enclosure

Comprehensive  
Water  
Protection

Peace-of-Mind

# Differentiation Opportunity #3: Ultimate Comfort



Optimized  
Enclosure

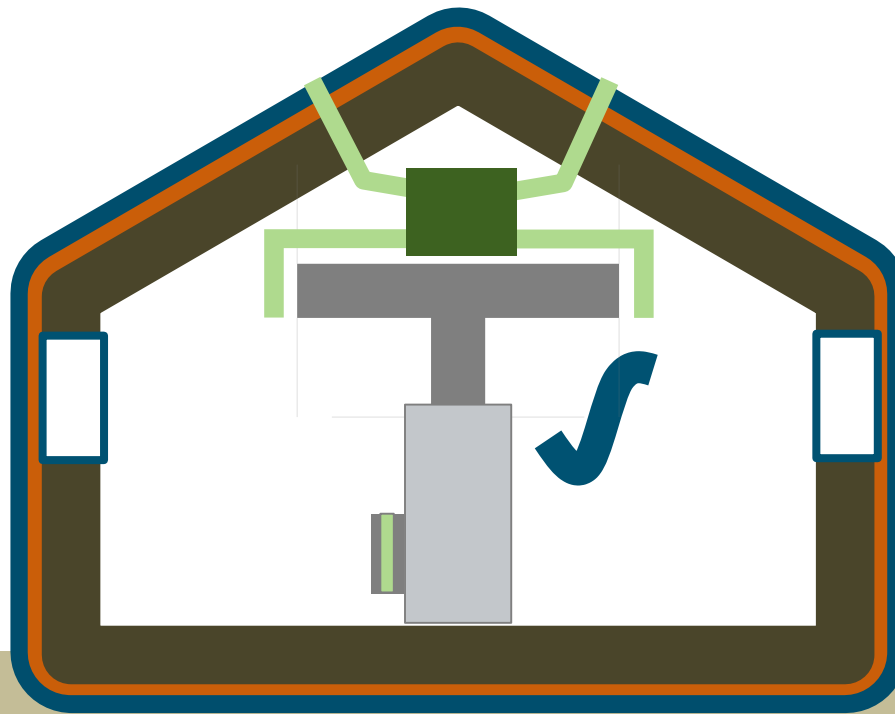
Optimized  
Low-Load  
Comfort System

MRT  
Air Flow  
Humidity

# Differentiation Opportunity #4: Comprehensive Indoor Air Quality

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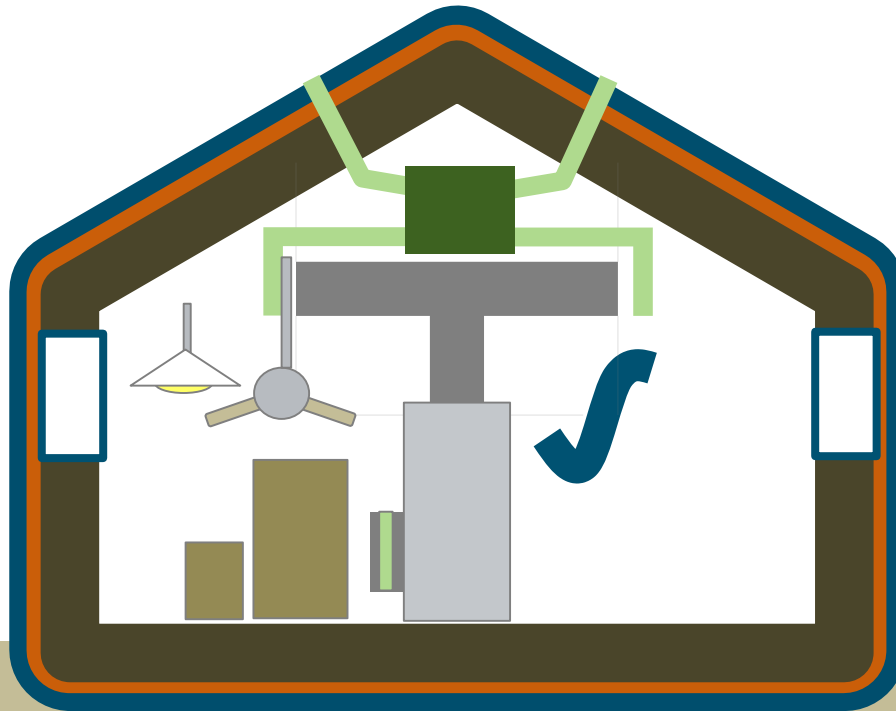
Optimized  
Enclosure

Comprehensive  
IAQ System

Health Ready



# Differentiation Opportunity #5: Advanced Technology



Optimized  
Enclosure

Ultra-Low  
HVAC  
Loads

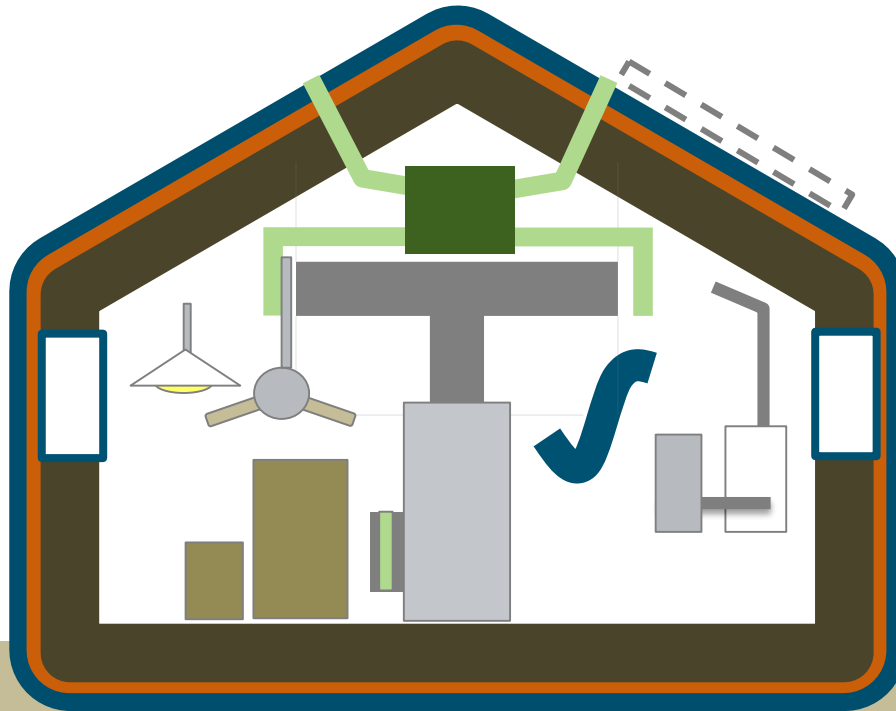
Energy  
Efficient  
Components

Quality+  
Perform+  
Controls+

# Differentiation Opportunity #6: Zero Ready

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Optimized  
Enclosure

Ultra-Low  
HVAC  
Loads

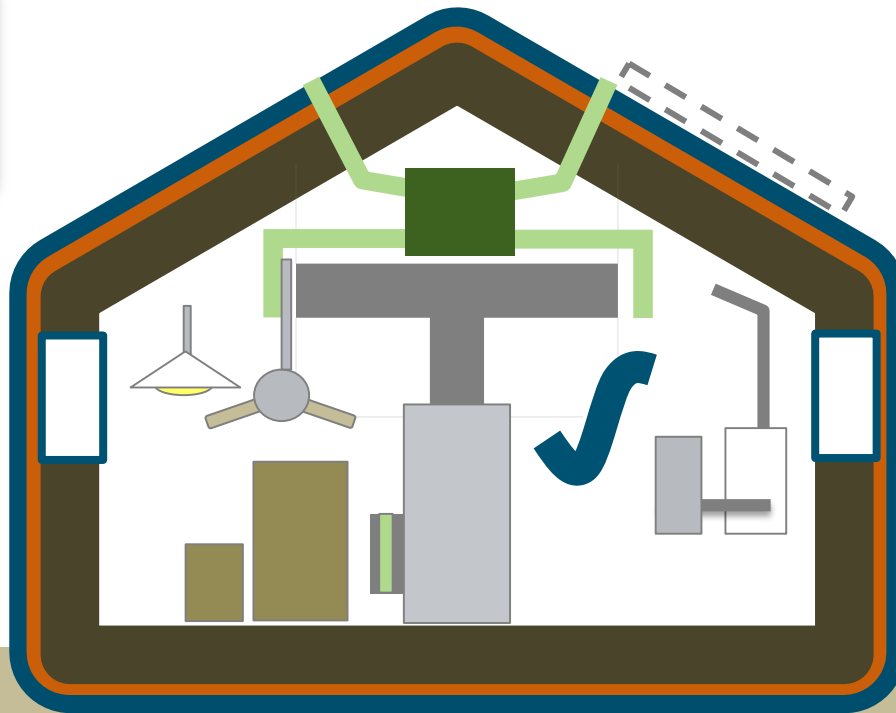
Energy  
Efficient  
Components

Solar  
Ready

# Risk + Differentiation = ZERH Spec

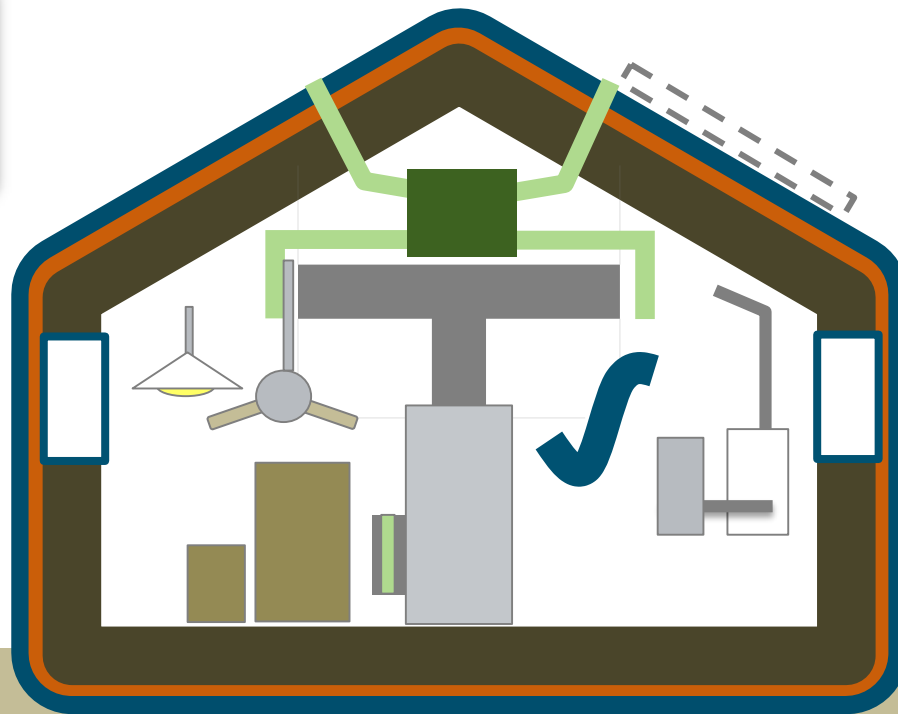
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Optimized Enclosure System	Water Protection System	Optimized Comfort System	Complete IAQ System	Efficient Comps System	Solar Ready System
----------------------------------	-------------------------------	--------------------------------	---------------------------	------------------------------	--------------------------

# ZERH Spec = Clear Definition



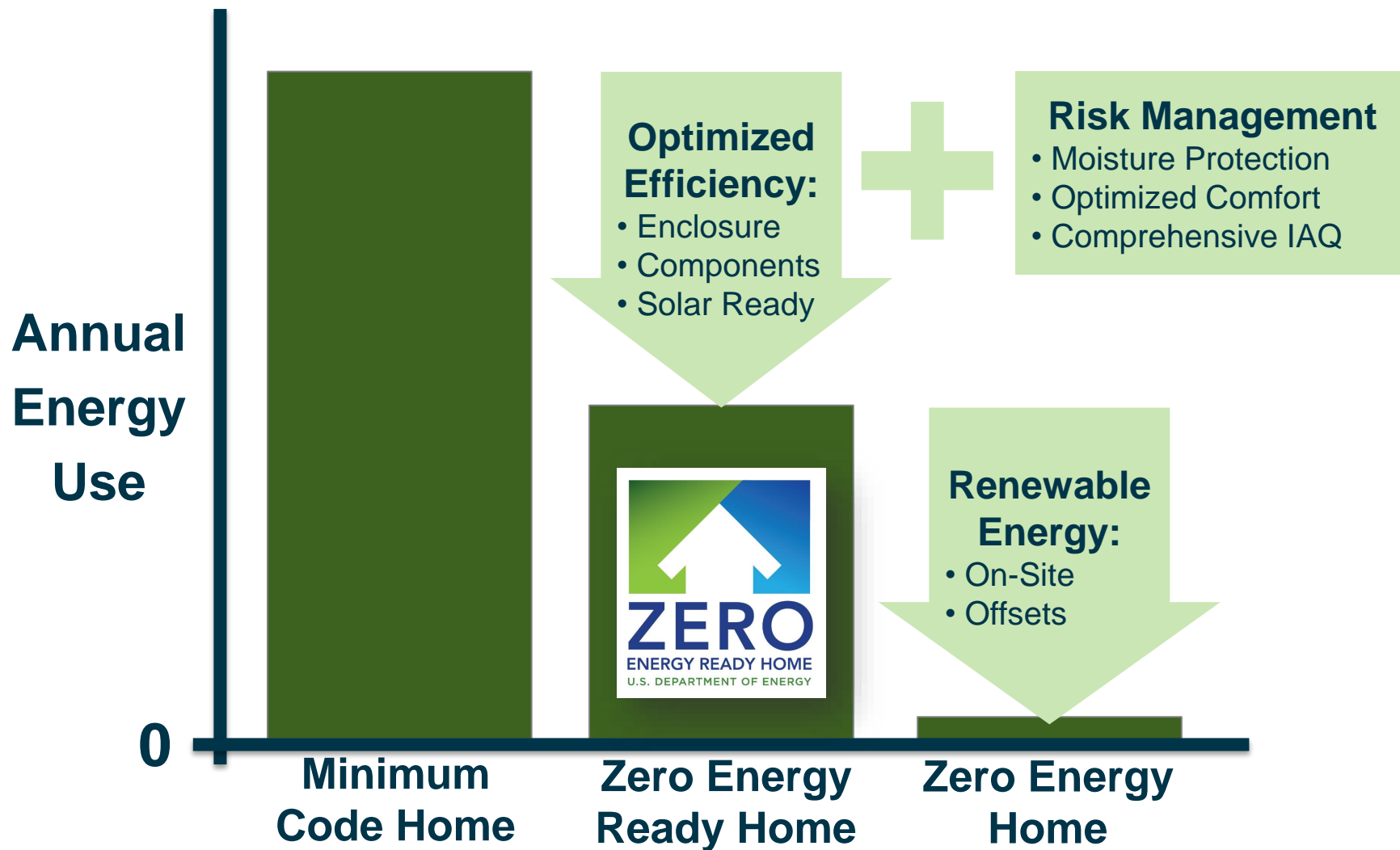
**High-performance home, so energy efficient,**  
all or most annual energy consumption  
can be offset by renewable energy.



## Zero Energy Ready Home

# Zero Value Translates

# How Do You Sell This





# Zero Energy Ready Home: **The Experts' Choice**

Making the Largest Purchase of a Lifetime  
Just Got Easier



# You Have One Opportunity

## During Construction to Get Your Home Right

Your enjoyment living in a new home will depend on a wide array of technologies and construction methods that are out-of-sight and often cost-prohibitive to add after the fact.







# Zero Energy Ready Home

is the Choice of Experts

Leading experts polled would overwhelmingly choose a Zero Energy Ready Home knowing they include seven must-have systems that help ensure a better living experience.





# Seven Must-Have Systems

## Are Included in Every Zero Energy Ready Home



System #1:

# Optimized Thermal Protection

## Helps Ensure Your Home is Future Ready



**Leading experts** know minimum code roofs, walls, windows, doors, and foundations quickly become outdated missing opportunities for superior savings, comfort and durability.



System #2:

# Whole-House Water Protection

Helps Ensure Your Home is Moisture Ready



**Leading experts** know comprehensive water protection details inside and outside a home help eliminate moisture related risks.



System #3:

# High-Performance Heating & Cooling

Helps Ensure Your Home is Comfort Ready



**Leading experts** know true comfort goes well beyond a basic heating and cooling system in order to enjoy the entire home year-round.



System #4:

# High-Efficiency Components

Help Ensure Your Home is Tech Ready



**Leading experts** know advanced technology components are essential for significant energy savings and better performance.



System #5:

# Comprehensive Indoor Air Quality

Helps Ensure Your Home is Health Ready



**Leading experts** recommend a comprehensive package of air quality features knowing on average *indoor* air contains 2 to 5 times more contaminants than *outdoor* air.



System #6:

## Solar Ready Construction

Helps Ensure Your Home is Zero Ready



**Leading Experts** recommend a package of simple, low-cost details in homes without a solar power system so one can easily be added in the future to offset most or all annual energy use.





System #7:

## Enhanced Quality Assurance

Helps Ensure Your Home is Performance Ready



**Leading Experts** know that the largest investment of a lifetime should be held accountable to industry-leading standards for excellence.

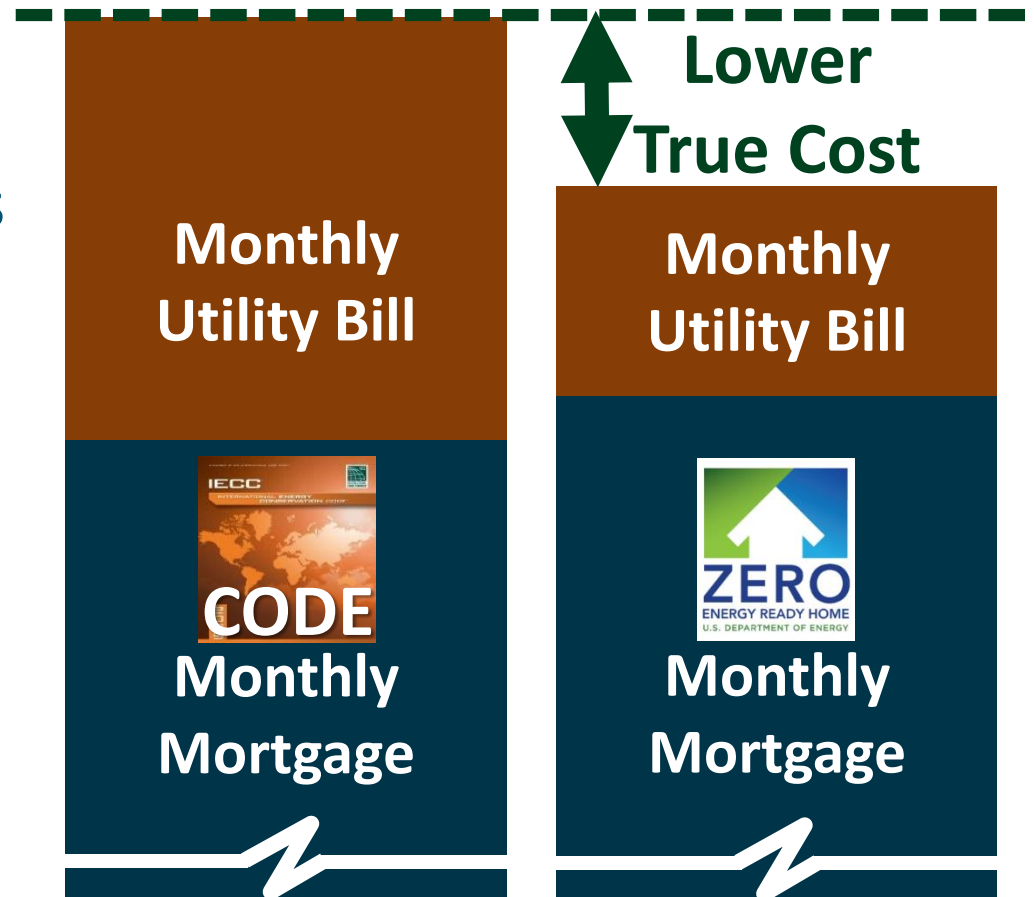


# Lowest True Cost

Helps Ensure Your Home is a Great Investment

**Leading Experts**  
know that 'True Cost'  
of ownership includes  
both the monthly  
mortgage and utility  
expenses.

**Example:**





# Zero Energy Ready Home

## Helps Ensure it's Easy to Buy Smart

**Leading Experts** know superior performance from seven must-have systems can be locked in by simply looking for the Zero Energy Ready Home logo.

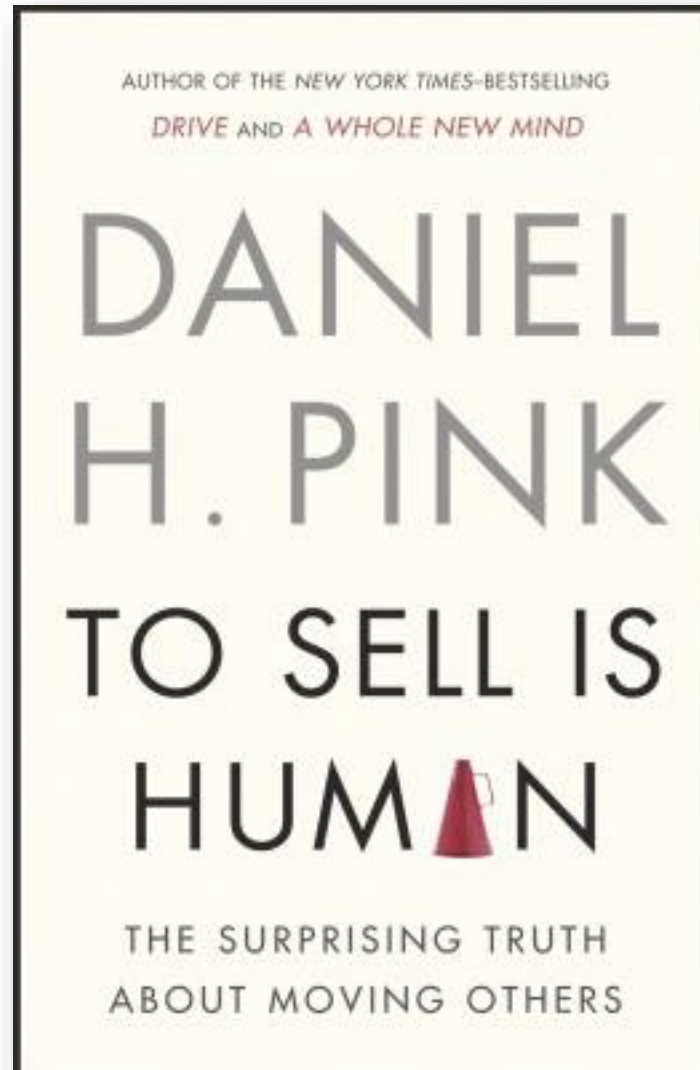




# Zero Energy Ready Home:

**For More Information:**

[www.buildings.energy.gov/zero/](http://www.buildings.energy.gov/zero/)



## Clarity depends on contrast.

We often understand something better  
when we see it in comparison  
with something else  
than when we see it in isolation.

## Homes to the Power of **ZERO**



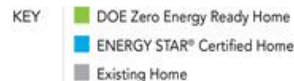
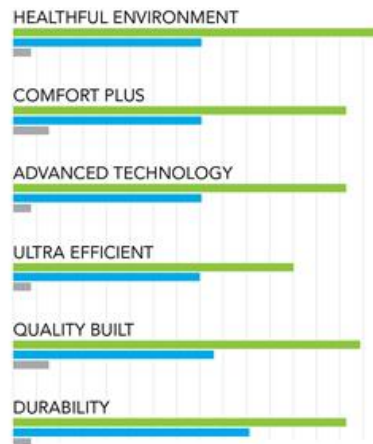
### What is the DOE Zero Energy Ready Home™ Label?

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



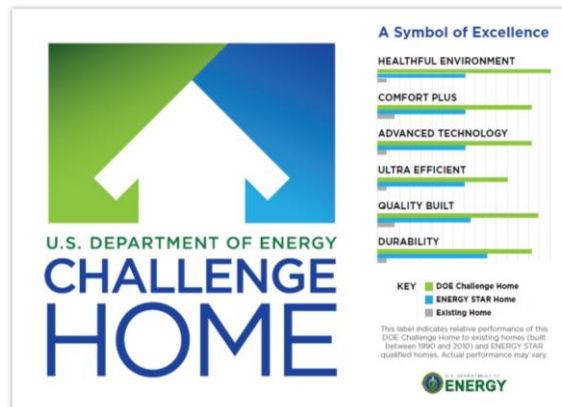
This graphic comparison chart demonstrates relative performance of this DOE Zero Energy Ready Home to existing homes (built between 1990 and 2010) and ENERGY STAR Certified Homes. Actual performance may vary.



303-231-4567  
NewTown@net.com  
123 Main Street, Denver, CO 34567

## DOE Challenge Home Label Methodology

October 2012





## 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.

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### A Symbol of Excellence

#### HEALTHFUL ENVIRONMENT



#### COMFORT PLUS



#### ADVANCED TECHNOLOGY



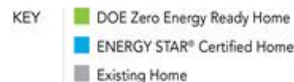
#### ULTRA EFFICIENT



#### QUALITY BUILT



#### DURABILITY

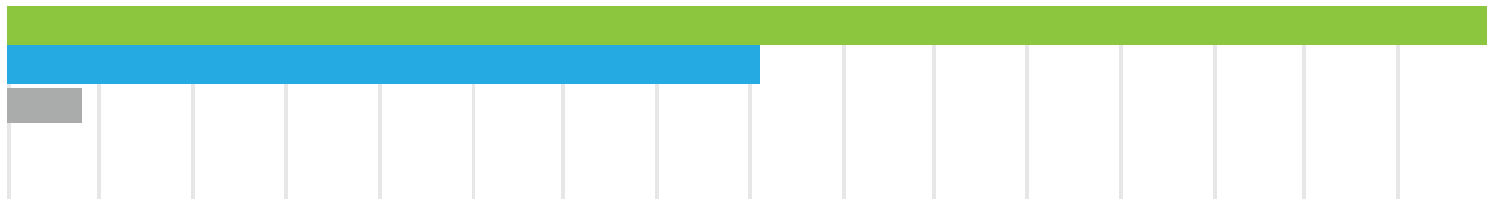


This graphic comparison chart demonstrates relative performance of this DOE Zero Energy Ready Home to existing homes (built between 1990 and 2010) and ENERGY STAR Certified Homes. Actual performance may vary.



303-231-4567  
NewTown@net.com  
123 Main Street, Denver, CO 34567

## HEALTHFUL ENVIRONMENT



- KEY**
- DOE Zero Energy Ready Home
  - ENERGY STAR Home
  - Existing Home

This label indicates relative performance of this DOE Zero Energy Ready Home to existing homes (built between 1990 and 2010) and ENERGY STAR qualified homes. Actual performance may vary.



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# Translating ZERH Value with Clarity

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### A Symbol of Excellence

Every Zero Energy Ready Home offers a cost-effective, high performance package of energy savings, comfort, health, and durability unparalleled in today's marketplace.



### 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](http://buildings.energy.gov/zero)

### 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](http://buildings.energy.gov/zero)

### A Symbol of Excellence



Category	DOE Zero Energy Ready Home	ENERGY STAR Certified Home	Existing Home
HEALTHFUL ENVIRONMENT	100%	80%	60%
COMFORT PLUS	100%	80%	60%
ADVANCED TECHNOLOGY	100%	80%	60%
ULTRA EFFICIENT	100%	80%	60%
QUALITY BUILT	100%	80%	60%
DURABILITY	100%	80%	60%

KEY

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

This label indicates 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.

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Front Cover

Inside Spread

Flap

Back Cover

# Translating ZERH Value Proposition

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## VIVID LIVING HEALTHFUL ENVIRONMENT



### Fresh Air

- Supply Fresh Air System
- Odor and Moisture Control Fans
- High-Capture Filtration Technology

### Quiet

- Quiet Window Technology
- Quiet Wall Technology

### Moisture Control

- Dry-by-Design Construction
- Moisture Control System – Whole House
- Moisture Controlled Comfort System
- Moisture Controlled Windows
- Moisture Controlled Lower Level

### Pest Control

- Bug Control Barrier
- Pest Screened Home

### Outdoor Contaminant Control

- Contaminant Sealed Construction
- Contaminant Sealed Comfort Delivery
- Dust and Pollen Barrier
- Radon Controlled Home

### Chemical Control

- Formaldehyde Controlled Home
- VOC Controlled Home

### Fume Control

- Carbon Monoxide Controlled Equipment
- Carbon Monoxide Controlled Fireplace
- Fume Controlled Garage

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# Translating ZERH Value with Clarity

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



Front Cover



Inside Spread



Flap

Back Cover





**My power bill is \$5.  
What's yours?**

- Heather Robbins, Garbett Homeowner

**garbettHOMES.com**  
Now you're living.

**ZERO**  
ENERGY READY HOME  
U.S. DEPARTMENT OF ENERGY



# Contrast Matters

U.S. DEPARTMENT OF  
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Energy Efficiency &  
Renewable Energy

de young properties®

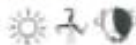


“My Cool Mom’s August Electric Bill Was **\$-57.97!**  
**What Was Yours?”**

- **Ali Domino**  
Resident of a De Young  
Net Zero **EnergySmart™** Home



PACIFIC GAS AND ELECTRIC COMPANY  
NET ENERGY METERING ELECTRIC STATEMENT  
Service Period: July 14, 2013 to August 13, 2013  
\*Usage period: June 2013 to May 2014



Ali and her mother Leah are enjoying the savings and comfort of their De Young Net Zero **EnergySmart™** home. De Young homes,



“Our daughter couldn’t breathe  
without discomfort for years.  
Within two months of moving into  
our new Cobblestone home

**we threw away  
the inhaler.**

**That was  
priceless!”**

Charly and Mary Jones,  
Cobblestone Homeowner





**“You feel like you’re wrapped in a 100 wool blankets.  
It’s so warm, you would never know  
it was below zero degrees the last two weeks here.”**

de young properties®

YOU DON'T NEED TO

*Imagine*

A HOME IN THE YEAR 2020...

IT'S ALREADY HERE!







## Technology Displays

## Deconstructed Homes



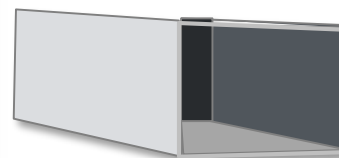
# Contrast Matters





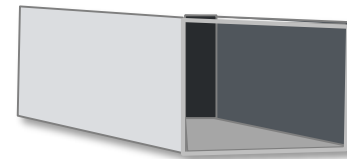


**Smart  
vs.  
Dumb  
Cooling**





**Smart  
vs.  
Dumb  
Heating**





# Zero Energy Ready Home

# **Zero Recognition**



# Lots of Recognition Choices...



Nearly 1 in 3 consumers indicated they  
**do not trust**  
home building and real estate companies.

Source: The business of Trust – The Most Trusted Builders in America,  
Lifestory Research, January 2013



Independent Voice of Authority vs. “Trust me.”

# Recognition with 'Brand'

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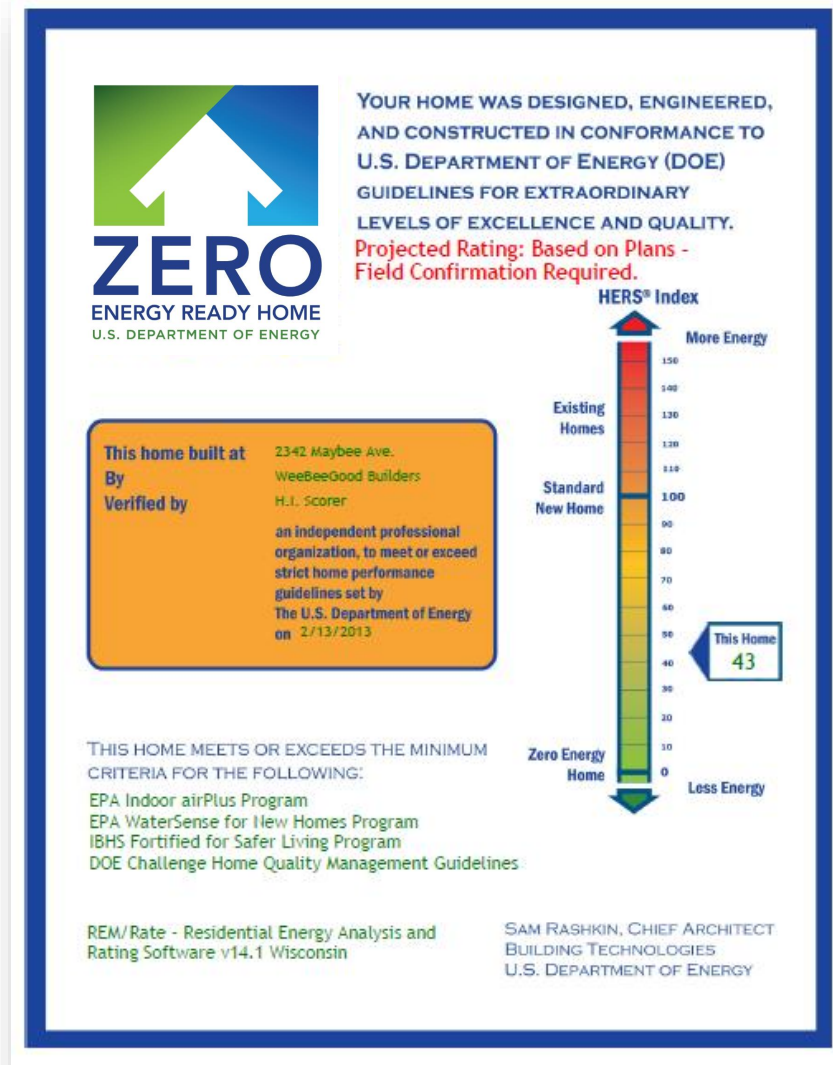
# Recognition with 'Brands'

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Energy Efficiency &  
Renewable Energy



- **Rater Prints Certificate**  
directly from rating software
- **Certificate Includes:**
  - Rating Details
  - Graphic HERS Index
  - Optional Programs



## Links Buyers to Leading Edge Builders:

- Contact Information
- Optional Commitments



- # Labeled Homes
- Website link

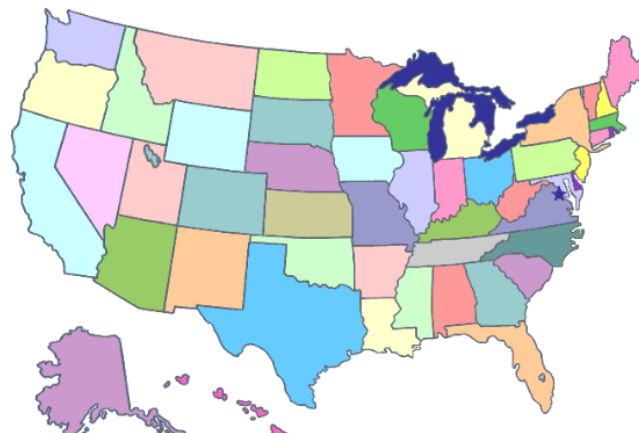
For All Active Partners

### DOE Challenge Home Partner Locator

Find out who is taking the challenge. Locate [DOE Challenge Home](#) partners near you! First choose a partner type and select a state. You can also enter a company name and find DOE Challenge Home partners that match your search.

*Please note: Partners began registering for the new DOE CHALLENGE HOME on April 2, 2012. The locator will not produce large results of partners in the program for several weeks. Please check back to watch our progress.*




















































Organization Type:  Choose a State:  [See Results](#)



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## DOE Zero Energy Ready Home: Results

Name	Type	Commitments	City	State	# of DOE Zero Energy Ready Home Projects	# of Builders Challenge Homes
<b>100% Partners</b>						
<a href="#">Boulder ZED Design Build</a>	Builder	  	Boulder	CO	1	0
<a href="#">Eco Smart Building LLC</a>	Builder	    	CHICAGO	IL	0	0
<a href="#">Edwards Design Group, Inc.</a>	Builder	    	SCOTTSDALE	AZ	0	0
<a href="#">Elecyr Corporation</a>	Builder		Dover	NH	0	0
<a href="#">Energy Tech</a>	Builder	  	CARBONDALE	CO	0	0
<a href="#">Energy Tech Ltd</a>	Builder	   	CARBONDALE	CO	0	0
<a href="#">GEOS Neighborhood Developer LLC</a>	Builder	   	BOULDER	CO	0	0
<a href="#">Green Team Real Estate</a>	Builder	    	FORT COLLINS	CO	0	0
<a href="#">Harrington Construction LLC</a>	Builder	   	Fort Collins	CO	0	0
<a href="#">Majestic Estate Developers, Inc.</a>	Builder	     	Wauconda	IL	0	0
<a href="#">Michael Hoggard LLC</a>	Builder	     	Chesterfield	MO	0	0
<a href="#">Palo Duro Homes, Inc.</a>	Builder	 	ALBUQUERQUE	NM	152	235
<a href="#">Zero-Energy Plans LLC</a>	Builder	  	Coupeville	WA	0	1
<a href="#">AquaZephyr, LLC</a>	Builder		Ithaca	NY	11	0
<a href="#">Bensonwood Homes</a>	Builder		Walpole	NH	0	0
<a href="#">Chandler Design-Build</a>	Builder		MEBANE	NC	0	1



## Homes to the Power of **ZERO**



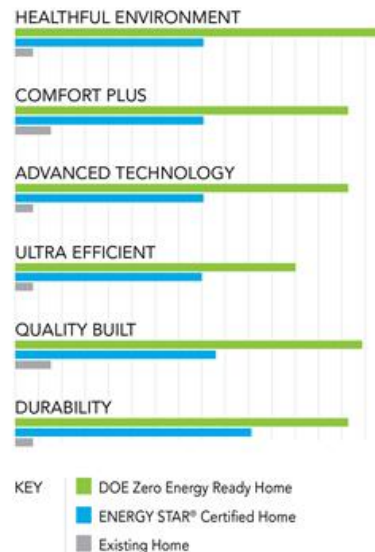
### What is the DOE Zero Energy Ready Home™ Label?

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



KEY

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

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.



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123 Main Street, Denver, CO 34567

# Recognition with Value Message

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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](http://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.



**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 label indicates 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.

LEARN MORE AT: [buildings.energy.gov/zero](http://buildings.energy.gov/zero)

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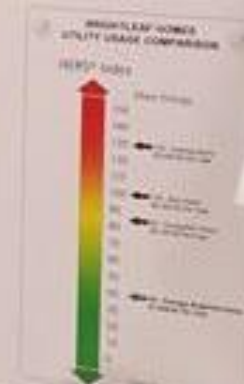


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*Our Green Built,  
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- Less expensive to own and maintain
- More comfortable
- Healthier to live in
- Constructed with the environment in mind
- Built to last



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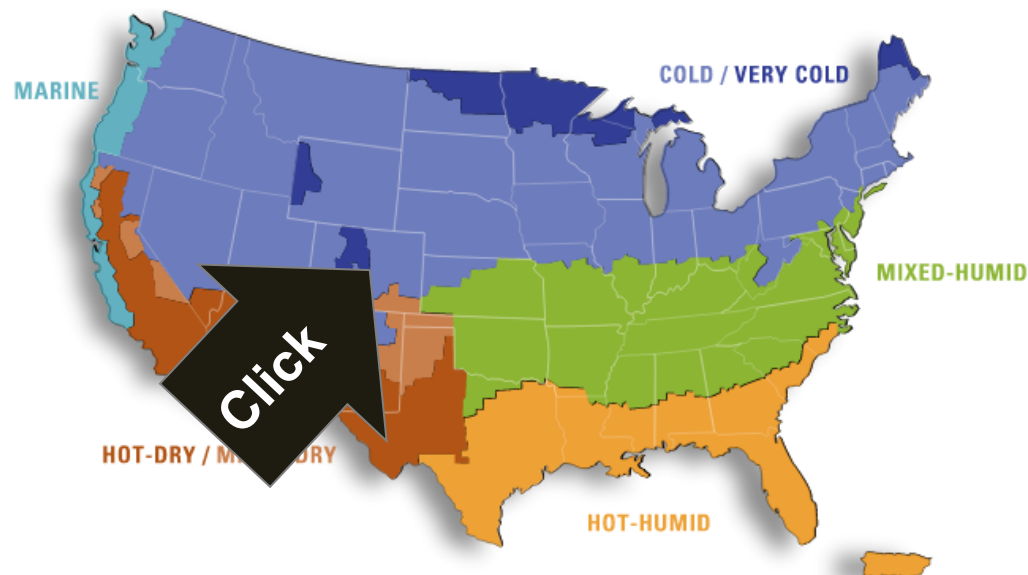
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Are you ready for a home that lives, works, and lasts better? The home of the future - [a better home](#) - is available today. Take a virtual tour of homes that are so energy efficient a renewable energy system can offset all or most of their annual 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.



## Cold/Very Cold Zero Energy Ready Homes:

- **AquaZerphyr, LLC** – Jones Residence – Ithaca, NY
- **BPC Green Builders** – Zero Village – Wilton, CT
- **Brookside Development, LLC** – Storybrook Village – Woodbridge, CT
- **Caldwell & Johnson, Inc.** – Main Street – North Kingstown, RI
- **Cobblestone Homes, LLC** – Greenway – Saginaw, MI
- **Greenhill Contracting, Inc.** – Oakview – Esopus, NY
- **New Town Builders** – ArtiZEN Plan – Stapleton, CO
- **New Town Builders** – ZEN Plan – Stapleton, CO
- **Shelby, LLC** – School Street – Libertyville, IL
- **Weiss Building & Development, LLC** – Oak Plan – Westbrook, MA
- **Transformation, Inc.** – Smith House – Boston, MA



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POWER OF ZERO HOME TOUR





New Town Builders

The ArtZEN Plan  
Denver, CO  
303-707-4400  
newtownbuilders.com



U.S. DEPARTMENT OF ENERGY  
KEY FEATURES

- High-performance insulation system for enhanced quiet and comfort
- Comprehensive draft protection
- Fresh air system for cleaner, healthier indoor air
- High-efficiency HVAC, appliances, and lighting to save energy and water

Read more.



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I want one!



2,115 ft<sup>2</sup>  
3 bedroom, 3 bath  
3 Rivers cold climate

HERS -3  
(100 = typical new code home  
130 = average existing home)



-\$0  
avg. monthly energy bill

\$1,902  
savings per year

\$58,772  
savings over 30-yr mortgage



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## POWER OF ZERO HOME TOUR



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## New Town Builders

The ArtiZEN Plan  
Denver, CO  
303-707-4400  
Newtownbuilders.com



### KEY FEATURES

- High-performance insulation system
- Comprehensive draft protection
- Energy-efficient HVAC, appliances, and lighting

Consumer  
Experience

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DOE ZERO ENERGY READY HOME™

**2014 WINNER**  
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**New Town Builders**

The ArtiZEN Plan  
Denver, CO

**BUILDER PROFILE**

New Town Builders, Denver, CO  
Bill Rectanus  
brectanus@newtownbuilders.com  
303-707-4400  
Newtownbuilders.com  
Rater: EnergyLogic, Inc., Peter Oberhammer  
www.nrglogic.com

**FEATURED HOME/DEVELOPMENT:**

**Project Data:**

- Name: The ArtiZEN Plan
- Location: Denver, CO
- Layout: 3 bedrooms, 2.5 baths, 2 floors
- Conditioned Space: 2,815 ft<sup>2</sup>
- Climate Zone: IECC SBL cold
- Completion: September 2013
- Category: Production

**Modeled Performance Data:**

- HERS Index: without PV 38, with PV -3
- Projected Annual Utility Costs: without PV \$1,414, with PV \$5
- Projected Annual Energy Cost Savings (compared to a home built to the 2009 IECC): without PV \$483, with PV \$1,902
- Builder's Added Cost Over 2009 IECC: without PV \$22,000, with PV \$5,000
- Annual Energy Savings: without PV 48.5 MMBtu/yr, 2,588 kWh, 203 therms; with PV 8 MMBtu/yr, 14,476 kWh, 203 therms

New Town Builders has committed to a new way of building. The Denver area production builder hopes to convert all of its product lines to zero energy-ready construction by the end of next year.

"Our goal is to be 100% U.S. Department of Energy (DOE) Zero Energy Ready certified on all of our single-family homes," said Bill Rectanus, vice president of New Town Builders, which plans to build 150 single-family homes in the Denver metro area next year.

The builder constructed its first home to DOE's Zero Energy Ready Home program criteria in 2013 and has been gradually moving toward certification across the board since then. New Town was in the process of building 29 homes in its Solaris community when it learned about the DOE program. Most of the 29 homes in the first phase of Solaris are certified and all 34 homes in the next phase of Solaris will be certified. All of the homes come with at least a 2.75-kW photovoltaic system on the roof. In phase 2 the goal is to install 5-kW systems and homebuyers will have the option to add more PV to achieve a true net zero energy home, a home that produces as much power as it uses in a year.

In New Town's Z.E.N. (Zero Energy Now) community, which has 30 homes at or near completion and 33 more homes scheduled for a second phase, all of the homes are true zero energy. New Town is in the planning stages on two additional projects—Hyland Village, a development of 75 single-family detached homes, and Perrin's Row, a development of 26 attached homes. Both communities will be 100% DOE Zero Energy Ready.

**Key Stats**

The U.S. Department of Energy invites homebuyers to experience the extraordinary levels of excellence and quality specified in DOE's Zero Energy Ready Home program (formerly known as Challenge Home). Every DOE Zero Energy Ready Home is built to the standards of the DOE Zero Energy Ready Homes Version 3.0 for an energy-efficient home built on a solid foundation of advanced technologies designed to give you superior construction, superior indoor air quality, healthy indoor air; high-performance HVAC, lighting, and appliances; and solar-ready construction. You'll receive no or utility bills in a quality home that will last for generations to come.



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POWER OF ZERO HOME TOUR -- NEW TOWN BUILDERS FLOORPLANS

Upper Level

Optional Finished Basement

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t one!

**2,115 ft<sup>2</sup>**

3 bedroom, 2 bath  
2 floors  
cold climate

**HERS -3**

This home's score

(100 = typical new code home  
130 = average existing home)

**~\$0**

avg. monthly energy bill

**\$1,902**

saved per year

**\$98,772**

saved over 30-yr mortgage

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## Building Technologies Office

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### DOE Zero Energy Ready Home: Partner Profile

#### New Town Builders



Partner ID: 619

Organization Type: Builder

Main Contact: Bill Rectanus



Address: 1553 PLATTE STREET  
DENVER, CO 80202

Primary Phone Number: (303) 707-4400

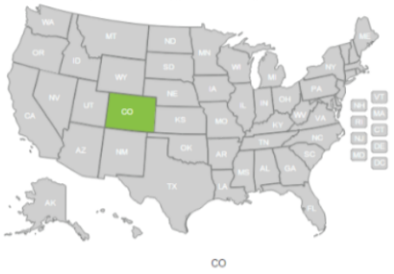
Certified DOE Zero Energy Ready Homes (2012 - Present): 41

Certified Builders Challenge Homes (2008 - 2012): 0

Website: [www.newtownbuilders.com](http://www.newtownbuilders.com)





#### All Places of Business



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#### Commitments



DOE Zero Energy Ready Home Version 4.5.1

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Content Last Updated: 1-07-2014



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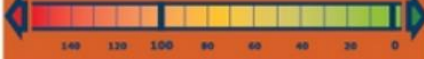
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(100 = typical new code home  
130 = average existing home)



**~\$0**

avg. monthly energy bill

**\$1,902**

saved per year

**\$98,772**

saved over 30-yr mortgage

## National Campaign:

### Call to Action:

Inspire American homebuyers and home owners to visit the future of housing available today with DOE Zero Energy Ready Certified Homes.

### Campaign Partners:

- Manufacturers
- Associations
- NGO's
- Financial Institutions



is partnering with the  
U.S. Department of Energy  
to bring homes of the future  
to families today.

[energy.gov/zero-energy-home-tour](http://energy.gov/zero-energy-home-tour)

Take the zero  
energy ready  
home tour.





## 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 with 'Voice of Authority'



Energy Efficiency &  
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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.

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.

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# Recognition with 'Voice of Authority'

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## Garbett Homes Partnership with Energy Department Brings Zero Energy Ready Homes Within Reach

PRWeb

Thursday, June 18th 2015



*Community of Homes Designed,  
Engineered and Constructed for  
Extraordinary Levels of Excellence;  
Ranks in Top 1 Percent of Homes in the  
Nation for Quality and Energy Efficiency  
Specified by U.S. Department of Energy  
Guidelines*

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According to DOE, Zero Energy Ready Homes are the homes of the future because they meet or exceed next generation energy codes and include substantial innovations and best practices recommended by leading housing experts working with the DOE Building America program. Homebuyers can buy these visionary homes today, including Treseder, which is available for sale now with the model home opening on August 1, 2015. By meeting or exceeding DOE requirements, these

Enter Symbol levels of energy savings, comfort, health and durability.

Quotes delayed 20 min.

# Recognition with 'Voice of Authority'

U.S. DEPARTMENT OF  
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Energy Efficiency &  
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## Beyond Energy Star - Zero Energy Ready Certified Homes



A symbol of  
excellence

*"Zero Energy Ready homes are the future of US housing, and innovators like New Town Builders are leading the way for the entire industry. Zero Energy Ready homes provide a vastly superior homeowner experience at a lower ownership cost - and an experience that all Americans should want in their next home."*

- Sam Rashkin, Chief Architect for the US Department of Energy Building Technologies Office



### ENERGY STAR IS JUST A STARTING POINT.

All New Town homes receive the Energy Star Efficiency rating, but, New Town Builders homes are up to 70% more energy efficient than Energy Star Certified homes and up to 100% more energy efficient than other 'code-built' new homes which typically receive an index score of 100 if in compliance with HERS Reference Home standards.

The HERS Index is an independent scoring system established by the Residential Energy Services Network (RESNET). It's a measurement taken by independent energy raters. The HERS Score is kind of like a golf score— where lower is better. New Town homes average a HERS score of 0 for our Zero



## Your Zero Energy Ready Home Story



— BROUGHT TO YOU BY —

**New Town Builders**

303-231-4567 • [NewTown@net.com](mailto:NewTown@net.com)



## 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.



# Recognition with Trade Partners

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DOE ZERO ENERGY READY HOME™

8943 Northfield  
Denver, CO 80238

Built by:  
NewTown Builders



## BUILDER PROFILE

New Town Builders, Denver, CO  
Bill Rectanus  
brectanus@newtownbuilders.com  
303-707-4400  
Newtownbuilders.com  
Rater: EnergyLogic, Inc., Peter Oberhammer;  
www.nrglogic.com

## Your home summary

### Project Data:

- Name: The ArtZEN Plan
- Location: Denver, CO
- Layout: 3 bedrooms, 2.5 baths, 2 floors
- Conditioned Space: 2,115 ft<sup>2</sup>
- Climate Zone: IECC 5B, cold
- Completion: September 2013
- Category: Production

### Modeled Performance Data:

- HERS Index: without PV 38, with PV -3
- Projected Annual Utility Costs: without PV \$1,414, with PV \$5
- Projected Annual Energy Cost Savings (compared to a home built to the 2009 IECC): without PV \$493, with PV \$1,902
- Builder's Added Cost Over 2009 IECC: without PV \$22,000, with PV \$5,000
- Annual Energy Savings: without PV 48.5 MMBtu/yr, 2,588 kWh, 203 therms; with PV 8 MMBtu/yr, 14,476 kWh, 203 therms

Your home cannot be built without the hard-work, skill, and commitment to excellence by over XX tradespeople working together. We are proud of the homes we build and stand by each house like it was our own. The people below each play an integral role in delivering your zero energy ready home.

**Framing:**  
John Smith, with Paul, Ben, Diego, Megan and Phil.

**Electrical:**  
Marc Normal, with Frank, Sam, Steve, and Sarah.

**Foundations:**  
Manuel Doe, with Alex and Ben.

**Insulation:**  
John Smith, with Paul, Ben, Diego, Megan and Phil.

**Roofing:**  
Juan Thomas, with Tim, Tom, Todd, Toby, and Troy

**Interior finishes and painting:**  
John Smith, with Paul, Ben, Diego, Megan and Phil.

**Mechanical:**  
John Smith, with Paul, Ben, Diego, Megan and Phil.

**Landscaping:**  
John Smith, with Paul, Ben, Diego, Megan and Phil.

*[Signatures]*

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DOE ZERO ENERGY READY HOME™

Stapleton North  
Denver, CO 80238

Built by:  
NewTown Builders



## BUILDER PROFILE

New Town Builders, Denver, CO  
Bill Rectanus  
brectanus@newtownbuilders.com  
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The U.S. Department of Energy invites home builders across the country to meet the extraordinary levels of excellence and quality specified in DOE's Zero Energy Ready Home program (formerly known as Challenge Home). Every DOE Zero Energy Ready Home starts with ENERGY STAR Certified Homes Version 3.0 for an energy-efficient home built on a solid foundation of building science research. Advanced technologies are designed in to give you superior construction, durability, and comfort; healthy indoor air; high-performance HVAC, lighting, and appliances; and solar-ready components for low or no utility bills in a quality home that will last for generations to come.



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- **Review**

- Technical Guidelines
- Partnership Agreement Terms

- **Register**

- Electronically Sign Agreement

- **Builder Optional Commitments:**



100% of homes meet DOE Zero Energy Ready Home Guidelines



Homes meet EPA's WaterSense Guidelines



Homes meet IBHS's Fortified Home Guidelines



Meet DOE ZERH Home Quality Management Program

***“The earth is not inherited from our fathers  
but borrowed from our children.”***

Native Proverb

# Thank You



## For More Information:

[www.buildings.energy.gov/zero/](http://www.buildings.energy.gov/zero/)

## Email Contact:

[zero@newportpartnersllc.com](mailto:zero@newportpartnersllc.com)