Z.E.N. Zero Energy Now

Our Journey to Production-built Zero Energy Homes

Getting to Zero National Forum
October 13, 2016
Gene Myers, CEO

Thrive Home Builders

Founded 1992
Denver Based Niche Home Builder
- 200 closings in 2016
- National builder dominated market
- Efficient, Healthy and Local
Thrive Home Builders

National Leadership:
• New Urbanist Builder
• “For Sale” Affordable Housing
• Green Home of the Year: Green Builder Magazine
• Best in Green, International Builders Show
• Pioneering efforts on Sales and Marketing of Very Efficient Homes
• Grand Winner 2013, 2014, 2015 and 2016: Housing Innovation Award, Department of Energy

Current Product Lines

Single Family
• Solaris III
• Vita
• Z.E.N. 2.0
• Panacea

3-Story Townhomes
• Conservatory Green
• RidgeGate

2-Story Townhomes
• RidgeGate
Single Family—Solaris and Z.E.N.

Two Stories of Innovation
- Combined sales of 187 homes
- About 50 are Zero Energy

Single Family Solaris

Our third generation of Solaris
- Originally introduced in 2009
- Standard HERS 40-48 with 2.5 kW PV
- Zero Energy Option HERS <10 with about 10kW PV
- 4 two-story single family floor plans with basements
- 1,837 sf to 2,241 sf
- Base prices $419,900 to $464,900
- DOE Grand Winner Innovation 2013
Solaris Innovations

Market firsts:

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it

First as a concession. Then as the solar “hook.”
Solaris Innovations

Market firsts:

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it

- Cost was about $35,000
- Or about $100/month
- HERS savings $300/month

Solaris Innovations

Market firsts:

- Double 2x4 Wall
- Tankless hot water
- Higher eff. conventional HVAC
- Better windows
- Thicker attic insulation
- Energy Star appliances

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it
Solaris Innovations

Market firsts:

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it

Outside, in between models.
Solaris Innovations

Market firsts:

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it

Collateral material.
Solaris Innovations

Market firsts:

• Standard solar 2009
• Build with local beetle-kill lumber 2011
• First to offer Zero Energy Option 2011
• DOE Grand Winner Innovation 2013
• Selling it

Building Science Center.

Solaris Innovations

Market firsts:

• Standard solar 2009
• Build with local beetle-kill lumber 2011
• First to offer Zero Energy Option 2011
• DOE Grand Winner Innovation 2013
• Selling it

Building Science Center.
Solaris Innovations

Market firsts:

- Standard solar 2009
- Build with local beetle-kill lumber 2011
- First to offer Zero Energy Option 2011
- DOE Grand Winner Innovation 2013
- Selling it

Building Science Center.

Single Family Z.E.N.

Zero Energy from a clean sheet of paper

- Introduced in 2013
- Developed with software from ORNL, Passive House, NREL, HERS
- HERS <10 with 7-8kW PV
- Three two-story single family floor plans with basements
- 1,878 sf to 2,115 sf
- Base prices $472,900 to $491,900
- DOE Grand Winner Innovation 2014
Z.E.N. Innovations

Market firsts:
• HERS 40 without Solar
  • Rising cost of Solar
  • Declining rebates
  • 2016 declining RETC
• Our partnership with Owens Corning
• Zero Energy as a standard feature
• DOE Zero Energy Ready Home
• DOE Grand Winner Innovation 2014
• Selling it
  • Building Science Center
  • Messaging

Z.E.N. Innovations

Market firsts:
• HERS 40 without Solar
• Our partnership with Owens Corning
• Zero Energy as a standard feature
• DOE Zero Energy Ready Home
• DOE Grand Winner Innovation 2014
• Selling it
  • Building Science Center
  • Messaging
Z.E.N. Innovations

Initial goal: HERS 40 without PV solar.
Our Agreement:

1. We use Owens Corning products.
2. How do we navigate the path to zero? We get help from Owens Corning Building Science Group.
3. How do we sell energy efficiency? We get marketing support for Madison Avenue caliber marketing.

Market firsts:

- HERS 40 without Solar
- Our partnership with Owens Corning
- Zero Energy as a standard feature
- DOE Zero Energy Ready Home
- DOE Grand Winner Innovation 2014
- Selling it
  - Building Science Center
  - Messaging

---

Z.E.N. Innovations

- Remember the solar “hook”?
- All we had to do was add PV
- Cut costs to $15,000 from $35,000

Market firsts:

- HERS 40 without Solar
- Our partnership with Owens Corning
- Zero Energy as a standard feature
- DOE Zero Energy Ready Home
- DOE Grand Winner Innovation 2014
- Selling it
  - Building Science Center
  - Messaging
Z.E.N. Innovations

Product differentiation
- Crowded market
- Not just what makes us different, but what makes us better

Third party verification
- We build above Energy Version 3.0 standards
- Third party credibility is important to our customers

Getting ahead of the Code “Curve”
- With rapid code evolution, we would rather learn how to comply on our timeline and terms, not theirs

Market firsts:
- HERS 40 without Solar
- Our partnership with Owens Corning
- Zero Energy as a standard feature
- DOE Zero Energy Ready Home
- DOE Grand Winner Innovation 2014
- Selling it
  - Building Science Center
  - Messaging

Z.E.N. Innovations

Market firsts:
- HERS 40 without Solar
- Our partnership with Owens Corning
- Zero Energy as a standard feature
- DOE Zero Energy Ready Home
- DOE Grand Winner Innovation 2014
- Selling it
  - Building Science Center
  - Messaging
Z.E.N. Innovations

Market firsts:
- HERS 40 without Solar
- Our partnership with Owens Corning
- Zero Energy as a standard feature
- DOE Grand Winner Innovation 2014
- Selling it
  - Building Science Center
  - Messaging

This...

Compared to this.
If I told you that if you gave me $100 I would give you $300 back, would you take it?
Every month?
For 30 years?
That is a lot of money…maybe your child’s college education.
ZERH—Selling It

Or buy more home with the savings.

Z.E.N. Innovations
Z.E.N. –How we do it.

The Building Envelope

Air Tightness

Z.E.N. –How we do it.
Z.E.N. –How we do it.

HVAC

Z.E.N. –How we do it.

EPA Indoor Air Plus
Z.E.N. – How we do it.

### Business Metrics—Sale Pricing

![Graph showing sale pricing of various homes, with ZEN and Solaris highlighted.](image)
What about the intangibles?

- Better land opportunities with better terms.
- The Cities like us. Easier entitlement and project opportunities.
- The reputation of being the “Expert.”
  - Credibility
  - Earned media.
  - The possible reduction of the RETC.
  - The “Halo” effect.

What’s Next?

- 100% DOE Zero Energy Ready program across all product lines
- Zero Energy Townhomes
- Building America research on advanced HVAC systems
- Zero Energy Proof of Concept. Taking it to the suburbs