

DOE Challenge Home: Leveraging Our Nation's Investment in High-Performance Home Innovations

DOE Challenge Home

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Problem Statement:

The U.S. Housing industry is extremely slow to adopt **proven innovations** from DOE's Building America program that provide compelling **benefits to homeowners, builders, and our nation.**

- **Advanced Technologies & Practices**
 - Building Science Solutions
 - Energy Efficient Components
 - Assured Health and Safety
- **House-as-a-System Performance**
 - Whole-House Technical Solutions
 - Whole-House Business Solutions

...that result in

Zero Net-Energy Ready Homes (ZNERHs)

- **Investment**

- Energy Savings
- Lower Maintenance
- Future Value

- **Performance**

- Comfort
- Health and Safety
- Durability
- Solar Readiness
- Water Conservation
- Disaster Resistance/Resilience

- **Risk Reduction**
 - Call-Backs
 - Homebuyer Satisfaction
 - Litigation
- **Differentiation**
 - Minimum Code Homes
 - Existing Homes

~\$250 Billion utility bill savings

~2.3 Million job years created

~2,000 MMTOE carbon savings

~80 Million barrels imported oil saved/yr.

* Internal DOE study of Challenge Home Market Transformation over 30 years

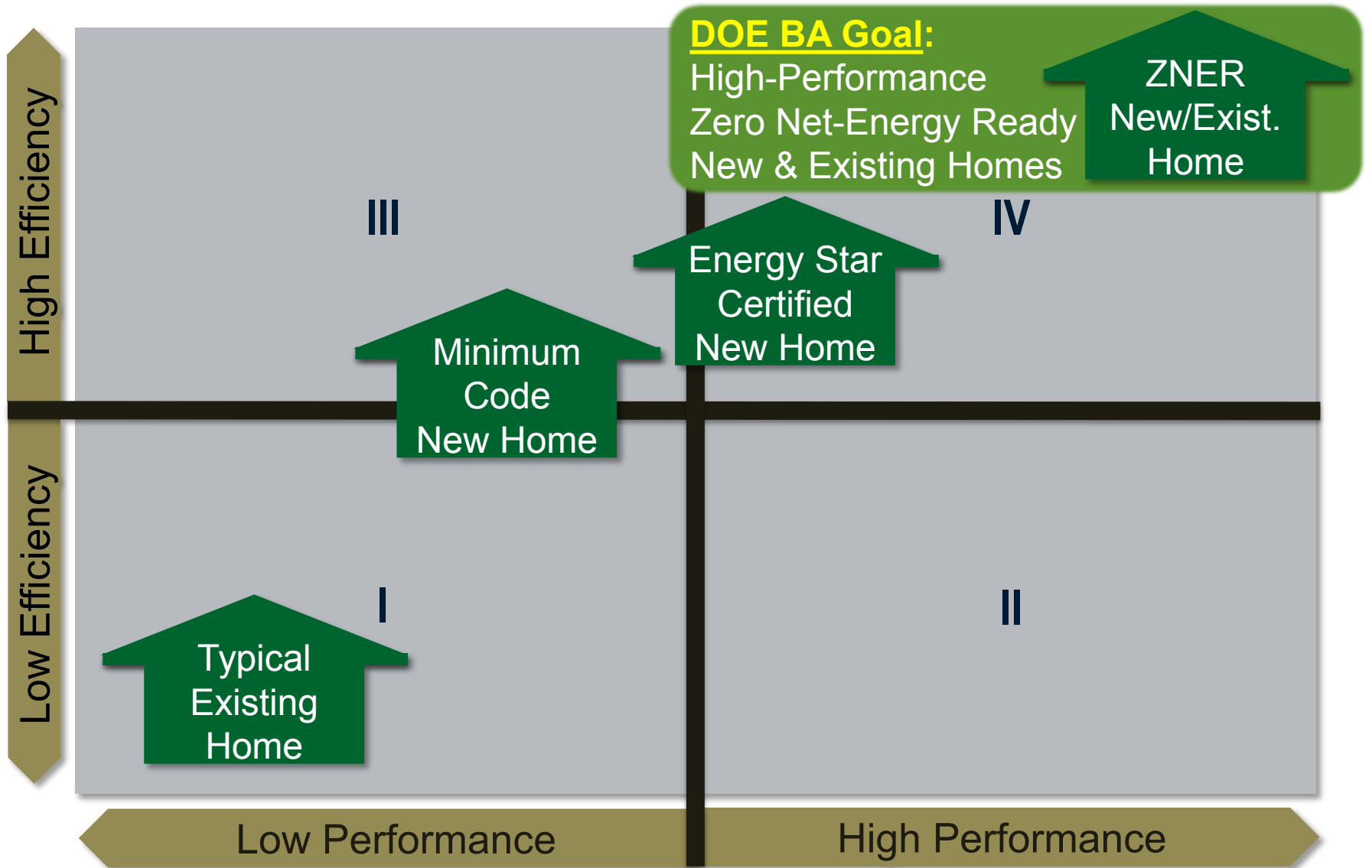
Impact of Project:
Housing industry transformation
to zero net-energy ready homes with
substantial spill-over impacts on
existing homes that aspire to achieve
the same affordability, comfort,
health, and durability.

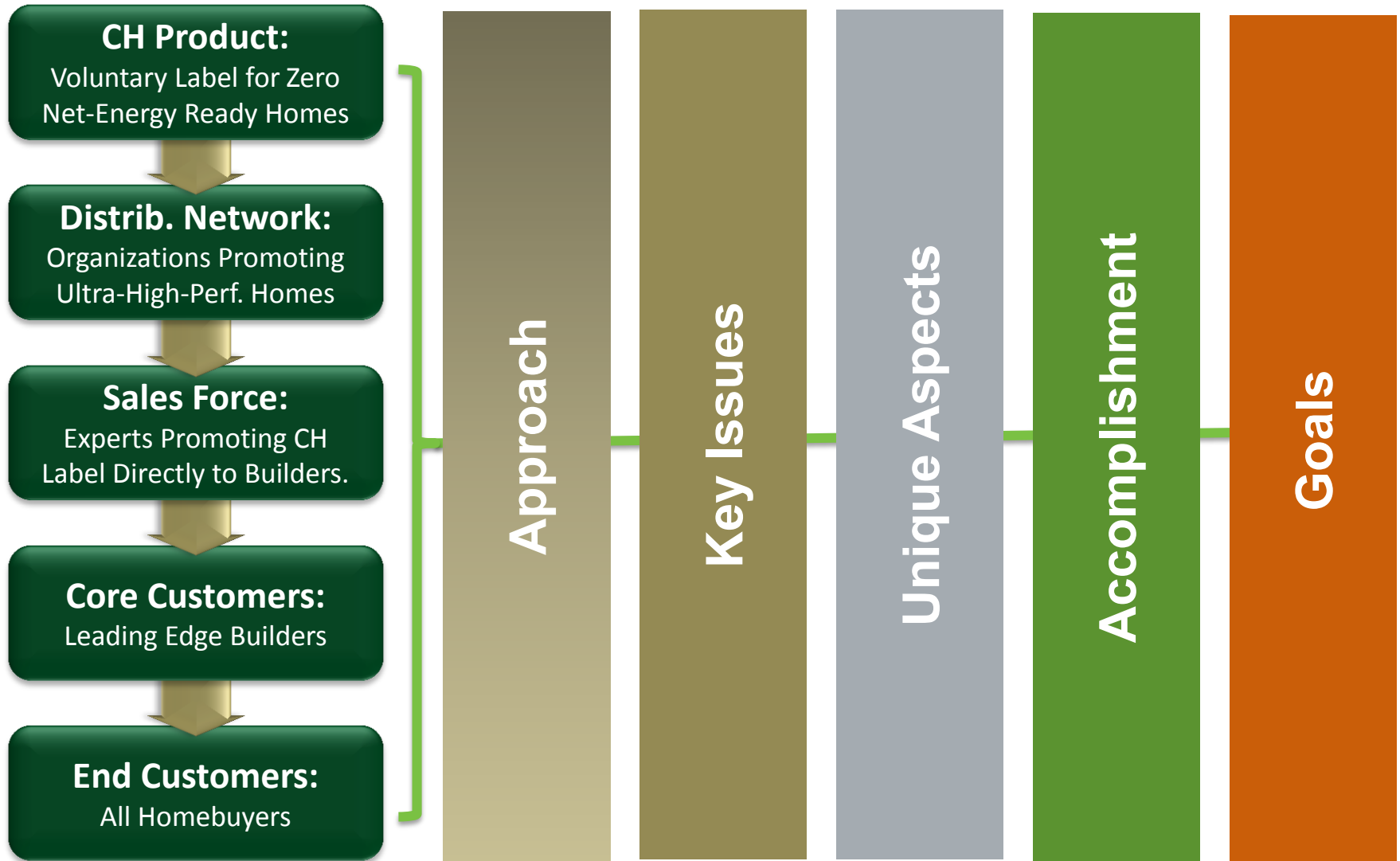


Project Focus:

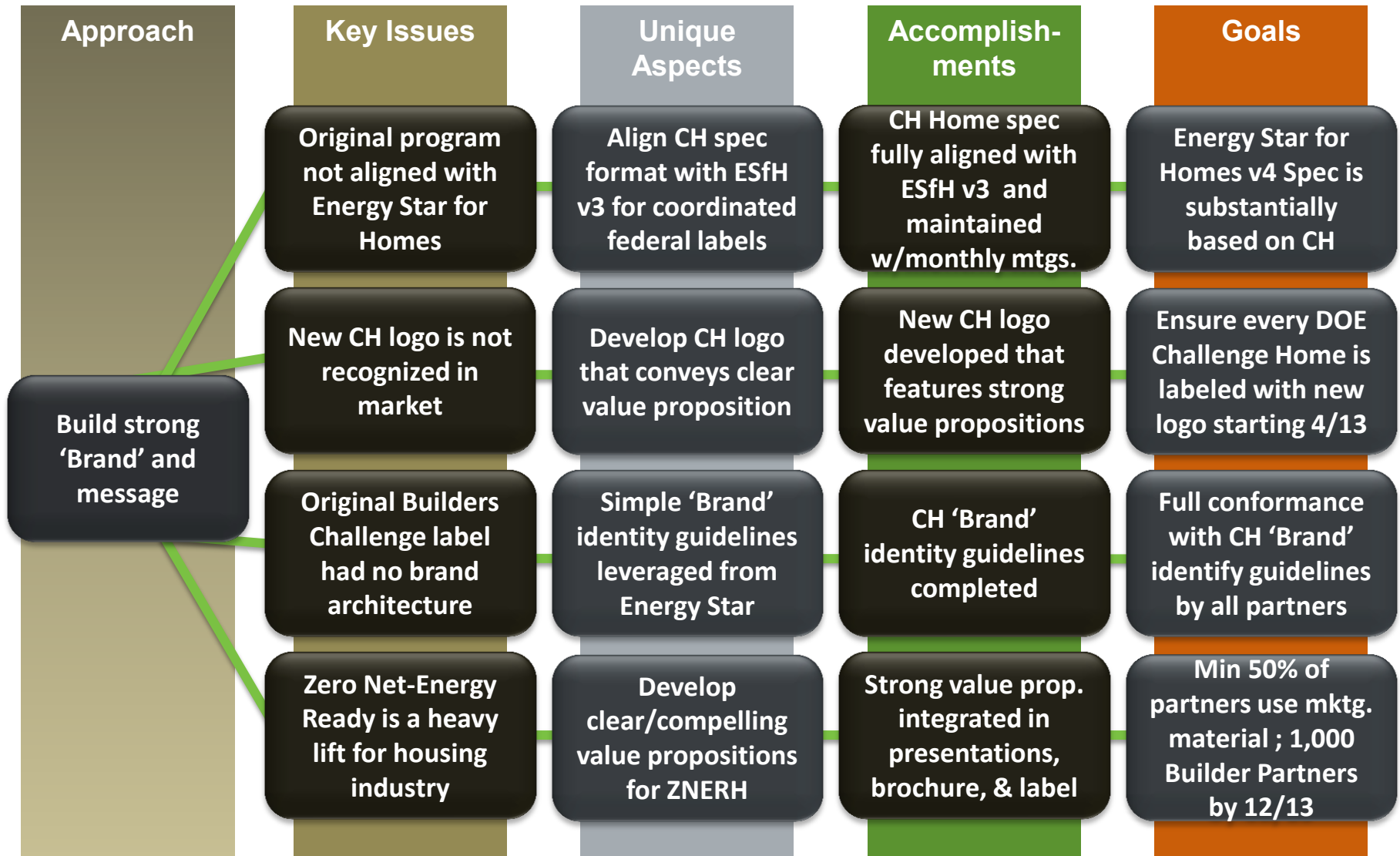
DOE Challenge Home will maximize DOE's investment in high-performance new home innovations by delivering market solutions achieving **Building America's Goal** for 50% savings.

Building America Goal





Challenge Home Supply Chain Strategy Product



Challenge Home Supply Chain Strategy Distribution Network

Approach	Key Issues	Unique Aspects	Accomplishments	Goals
Leverage utility support	Utilities M&E limit incentives for performance	Target progressive utilities to demonstrate business-case	Arizona Public Service, CL&P, and NYSERDA Hosting CH Training	10 More utilities in 2013 become CH Training Partners
Leverage high-perf. product manufacturers support	Many programs already soliciting sponsorships from manufacturers	Earn confidence of by not asking for money, but to host ZNERH training	10 manufacturers have joined as Challenge Home Training Partners	20 More manufacturers join as Challenge Home Training Partners
Align Challenge Home with Related Programs	There was no coordination with ultra-high -perf. home programs	Partner with Passive House and Net-Zero Energy Home Coalition (NZEHC)	MOU with Passive House signed; MOU with NZEHC being finalized	Passive House and NZEHC promote CH by 4/13
Establish strong presence at key conference venues	Challenge Home not recognized by critical stakeholders	Secure Challenge Home 'tracks' at RESNET and EEBA	Strong Challenge Home Presence at 2012 EEBA and 2013 RESNET Conferences	CH Tracks at 2013 EEBA and 2014 RESNET Confs. and sessions at 4 other conferences

Challenge Home Supply Chain Strategy Sales Force

Approach	Key Issues	Unique Aspects	Accomplishments	Goals
Leverage Building America teams to sell DOE CH	Building America Teams not familiar with CH business case	Invite BA Teams to all DOE CH Training sessions	Webinar and 2013 BA Tech Update Conf. have secured BA team Support	BA Teams Deliver 50 Challenge Home Builder Partners by 12/13
Leverage HERS industry to sell DOE CH	HERS raters resistant to upsell from ENERGY STAR for Home v3	Engage HERS rater participation at all CH training sessions	10 Leading HERS Providers recruited directly to upsell CH	HERS raters: 50 promoting CH; 200 attend CH Training by 12/13
Implement a National DOE CH Training Program	Very little DOE resources available for national training	Leverage manufacturers, utilities to host training	12 Challenge Home training classes scheduled; 3 delivered	100 CH training classes reach 5,000+ Builders and 200 HERS Raters by 3/14
Automate Challenge Home HERS ratings	Manual rating of CH will discourage HERS rater support	Leverage software companies based on Energy Star for Homes experience	Top HERS software now automated for Challenge Home	2 nd leading HERS software automates CH HERS ratings by 4/13

Challenge Home Supply Chain Strategy

Core Customers: Builders

Approach	Key Issues	Unique Aspects	Accomplishments	Goals
Engage builders looking for differentiation from ESfH v3	Many builders need time to assimilate CH best practices	Promote 'test drive' for production builders	300 Challenge Home Builder Partners with 1,000+ Homes in the pipeline	1,000 CH Builder Partners with 5,000+ homes in pipeline by 12/13
Ensure strong value proposition message at point-of-sale	Most home builder sales agents are not skilled at selling high-performance	Unique ZNERH value propositions on both label and brochure	CH Home label and brochure completed with very positive feedback	70% of CH Builder Partners use logo and brochure at point-of-sale
Provide builders customizable messaging option	Builders are reluctant to use generic material not about them	Develop customizable brochure based on consistent value message	Concept for customizable Challenge Home brochure	Customizable brochure by 7/13 used by >50% of Builder Partners by 12/13
Enlist existing ZNERH builders under CH umbrella	ZNERH builders are widely dispersed	Leverage HERS raters to find and recruit leading builders	Initial outreach has secured interest by ~25% of leading ZNERH builders	70% of existing ZNERH builders in U.S. partner with CH by 12/13

Challenge Home Supply Chain Strategy

End Customers: Homebuyers

Approach	Key Issues	Unique Aspects	Accomplishments	Goals
Make it easy for homebuyers to find CH Builders	Homebuyers are exposed to a wide array of ZNEH claims	DOE CH Locator is a unique tool to identify truly ZNERH builders	Challenge Home Locator Tool up and running on CH web site	20,000 visitors to CH Locator Tool by 12/13
Facilitate a consistent ZNERH consumer message	Many organizations educating consumers independently	Work directly with EEBA Exec. Dir. & NZEH Coalition	MOU's with NZEH Coalition and Passive House; Board of Dir. Role with NZEHC	Consensus definition, terms, and message established for ZNERH by 12/13
Leverage CH media content to educate homebuyers	Limited DOE resources for communication	Generate media content with builder awards, case studies, and articles	CH featured at key conferences, web site, and journals	DOE widely recognized for high value ZNERH label and content by 12/13
Train builder partners how to sell ZNERH to buyers	Virtually no sales infrastructure skills for selling ZNERHs	Develop and disseminate CH sales training to builder partners	Initial content for CH sales training developed	2 Webinars and 6 classes for CH Sales Training Provided by 12/13

Consistent Definition of NZERH:

Efficiency and Performance Before Renewables!





U.S. DEPARTMENT OF ENERGY
**CHALLENGE
HOME**

A Symbol of Excellence

HEALTHFUL ENVIRONMENT



COMFORT PLUS



ADVANCED TECHNOLOGY



ULTRA EFFICIENT



QUALITY BUILT



DURABILITY



KEY

- DOE Challenge Home
- ENERGY STAR Home
- Existing Home

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



Translating Value Proposition



Front Cover



An Incredibly comfortable and healthful home.

HEALTHFUL ENVIRONMENT

Every DOE Challenge 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 Challenge Home surround you with even temperatures, low-humidity, and quiet in every room on every floor.



Ultra high tech and energy efficient.

ADVANCED TECHNOLOGY

Every DOE Challenge 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 Challenge Home is inexpensive to own. In fact, every DOE Challenge Home is so energy efficient, a small solar electric system can easily offset most, or all, of your utility bills. We call this Zero Net-Energy Ready.



The highest quality construction—built to last.

QUALITY BUILT

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

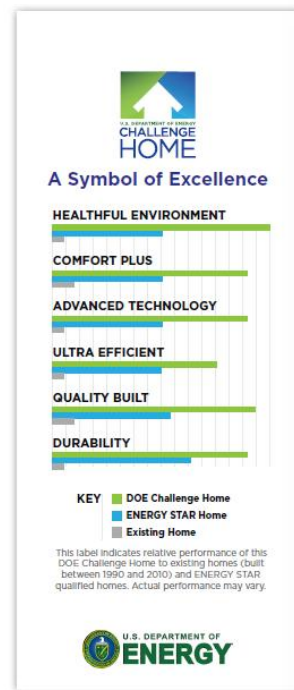
DURABILITY

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

KEY ■ DOE Challenge Home ■ ENERGY STAR Home ■ Existing Home

LEARN MORE AT: buildings.energy.gov/challenge

Inside Spread



Back Cover



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.



Look for the label

LEARN MORE AT:
buildings.energy.gov/challenge

Flap

Zero Net-Energy Ready Homes:

- Why Now
- Home of the Future
- Builders in Action
- Made Simple
- Business Case
- Value Proposition
- **Specifications**
- Recognition
- Local Solution

16 Month Goals:

40 Training Partners

4 Classes/Partner

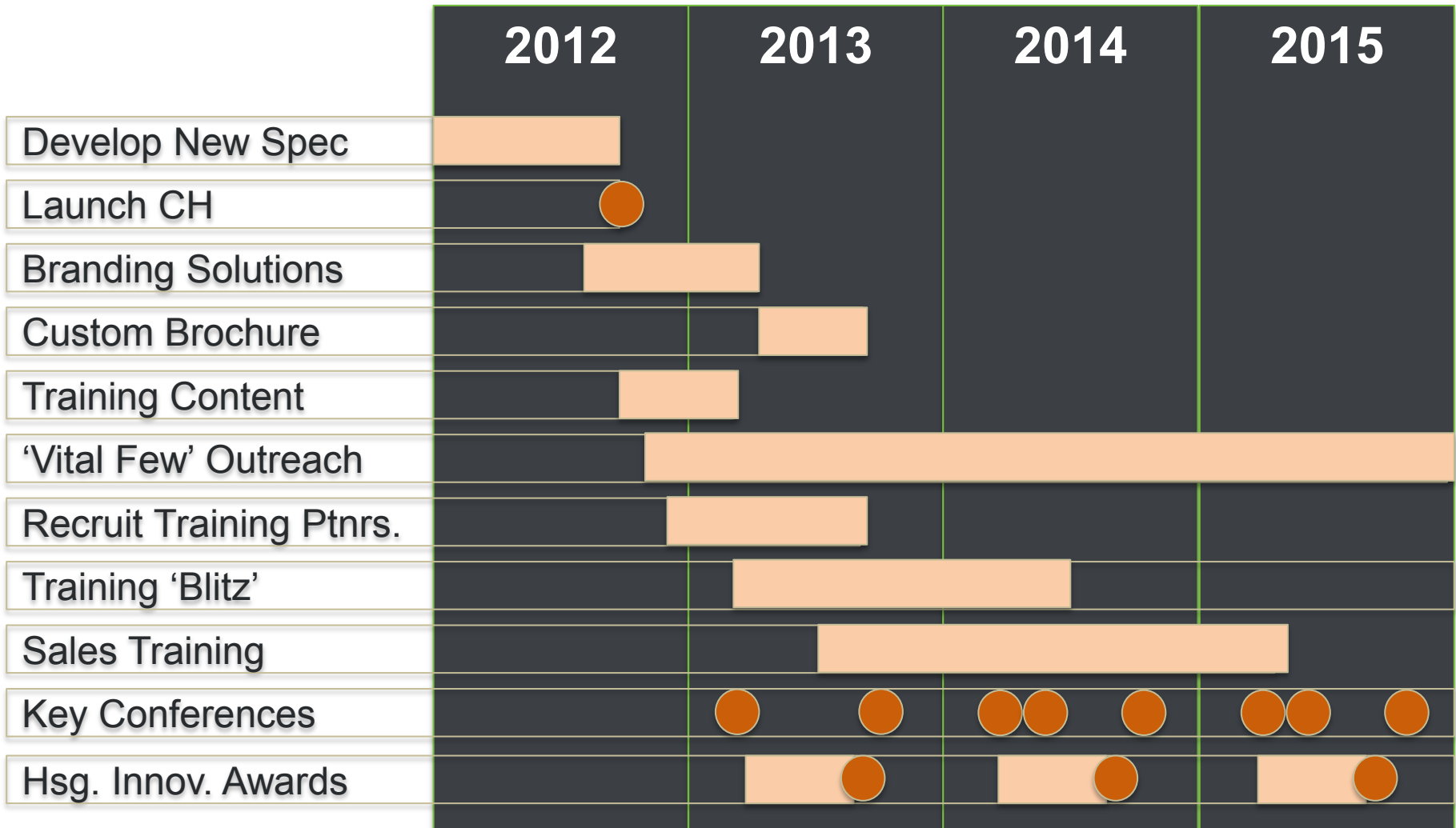
~40 Builders/Class

~3 Raters/Class

~5,000 Builders

~200 Raters

Project Plan & Schedule



Variations: Reduced From Prior Years

Cost to Date: ~4 Million since inception in 2006

Additional Funding: Leveraged In-Kind Support from Stakeholders/Partners (Training, Outreach)

Summary: Very low cost for national labeling program

Budget History

FY2010		FY2011		FY2012	
DOE	Cost-share	DOE	Cost-share	DOE	Cost-share
\$690K	none	\$475K	none	\$522K	none

Partners, Subcontractors, and Collaborators:

- Home Builders
- Home Energy Rating System (HERS) Raters
- High-Performance Product Manufacturers
- Utilities
- Building America Teams
- National Laboratories
- Solar Decathlon [leveraged for promoting Challenge Home Awards]
- Passive House [Change Home mandatory prerequisite]
- Net-Zero Energy Home Coalition [participant on Board of Directors]

Technology Transfer, Deployment, Market Impact:

- HERS Industry Leveraged to Promote BA Innovations
- High-Performance Product Manufacturers Leveraged to Train Builders
- Builders Leveraged to Educate Consumers on Benefits of ZNERHs
- Existing Homeowners Inspired to Seek Deep-Energy Retrofits

DOE Challenge Home Communications:

Conference Presentations and Keynote Addresses:

- RESNET 2013 Annual Conference [Track w/5 Sessions] 2/13
- Keynote/Session 1st Res. Design & Construction Conf. 2/13
- NAHB International Builder Show w/DOW [3 Sessions] 1/13
- EEBA 2012 Annual Conference [2 Sessions] 10/12
- Keynote on Challenge Home at NIBS E3 Conference 10/12
- Keynote at Passive House Annual Conference 10/11
- Affordable Comfort Inc. 2012 Annual Conference 5/12
- Keynote BEST3 Conference Keynote 4/12

Webinars:

- 3 DOE CH Webinars [700 attendees] 10-12/12
- 3 CH Orientation webinars [400 attendees] 11-12/12
- RESNET Webinar [350 attendees] 8/12
- Net-Zero Energy Home Coalition webinar [200 attendees] 7/12

Publications:

- Energy Design Update feature article Fall 2012
- Green Builder Vision 2020 article 11/2012

Next Steps and Future Plans

Future Activities	Impacts	Tasks
Customizable CH Brochure	Increase builder partner dissemination of message	Develop web-based tool
Develop CH Sales Training	Improve effectiveness of builder partner messaging to homebuyers	Develop course and work with Training Partners
Shift CH Tracking to RESNET Registry	Critical opportunity to reduce cost of CH program implementation by leveraging new RESNET data base to track CH Home certifications	Coordinate with RESNET
Housing Innovation Awards	Create media articles and public interest regarding DOE Challenge Home and Home Perf. w/Energy Star	Coordinate with Solar Decathlon
Feature CH in National Home Design Comp.	Engage nation's upcoming architects and designers to integrate DOE Building America innovations	BA Project and Participate in Steering Committee