

# **Transforming the Residential Buildings Market through High-Performance Homes and a National Home Performance Label: The DOE Builders Challenge**

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## **ABSTRACT**

Market transformation of the residential building market requires a program which complements existing efficiency efforts, equipping consumers with the tools to make informed decisions on energy, and incentives for home builders to drive participation.

The DOE Builders Challenge (the Challenge) is an inclusive program designed to push high performance homes into the mainstream by building on and partnering with existing efficiency programs, while reaching out to stakeholders with technical information, program resources, and marketing tools. The Challenge establishes a minimum energy performance level that surpasses many existing programs, offering market differentiation to builders and enhanced performance to homeowners. Technical resources will include prescriptive, climate-based packages of building specifications to meet the minimum performance requirements. The technical foundation for the Challenge is based largely on DOE Building America research.

The Challenge uses a nationally recognized rating system to “score” homes. The Challenge’s EnergySmart Home Scale (E-Scale) is a standardized home energy performance label analogous to an MPG sticker on cars. The E-Scale allows comparison of homes throughout the nation in a way that is credible, reliable, understandable, and easy to communicate upon resale. Home buyers benefit from energy savings plus improved IEQ, durability, and comfort. Besides meeting a minimum E-Scale score of 70, homes may also qualify for the Challenge through a partner program or by following a prescriptive pathway.

This paper will describe the Challenge program, plans for partnering with existing programs, and its goals for facilitating the construction of 220,000 high performance homes by 2012.

## **Introduction**

The residential building sector is at a unique point where building efficiency programs have made inroads in encouraging better performing homes, home buyers are actively seeking credible information on energy performance, and many builders are seeking ways to differentiate their product and add value. The convergence of these factors, coupled with the U.S. DOE’s progress in developing cost-effective systems solutions through its Building America program, set the stage for the Builders Challenge. The Builders Challenge is designed to facilitate the introduction of hundreds of thousands of high-performance homes into the marketplace by providing an easy to understand home energy label, leveraging and complimenting established programs, and incentivizing builders to participate in a leading-edge efficiency initiative which will progress all the way to Net Zero Energy Homes.

An emerging infrastructure to support the delivery of high performance homes has been forming in the United States through national, regional, and local programs focused on building efficiency and sustainability. DOE’s Building America program, for example, has worked hard

to raise awareness in the marketplace, educate builders and contractors, and develop cost-effective technological solutions for high-performance homes. ENERGY STAR® has brought more efficient homes into the mainstream, while emerging programs like LEED for Homes and the National Green Building Standard™ encourage energy efficiency as part of a sustainable approach to home building. Local and regional programs have also facilitated the creation of more efficient homes in specific markets.

Taken as a whole, these programs have established market presence, builder networks, and communication systems. The Builders Challenge, as a national, DOE-led program with very aggressive goals for high-performance homes, will develop partnerships with such programs to effectively leverage this infrastructure while adding value to the programs and ultimately to home buyers.

At the consumer level, energy is looming larger and larger in the American consciousness. Headlines remind consumers almost daily of energy's important role in their lives with stories on prices at the pump, climate change, and energy security. This message is further driven home every month by increasingly costly utility bills in many areas of the country.

In market research conducted as part of the Builders Challenge development (unpublished), consumers overwhelmingly identified lower utility bills as the most important benefit that energy efficiency brings to their family. In the same research, consumers rated energy efficiency as very important in considering the features in a new home purchase. Conversely, builders placed a relatively low rating on energy efficiency as a feature in new home construction, demonstrating the continued disconnect between buyers and builders on efficiency. Consumer demand for efficiency is there, for the builders that recognize it. The Builders Challenge seeks to bridge this divide by creating a simple label for home buyers to understand a home's energy use and costs, while also giving builders incentives for meeting the Challenge.

The need to bridge this divide is a defining characteristic in today's housing market, while the future may hold additional challenges including carbon emissions regulations and the associated impacts on energy prices. Such developments will provide even further need for a consistent energy label for U.S. homes, along with data on carbon emissions. The Builders Challenge, which is described in the sections below, is designed to respond to these current and future needs and help drive a significant increase in the construction of high-performance homes.

## **The DOE Builders Challenge**

The Builders Challenge, based on over a decade of Building America research, challenges America's builders to reach further while supporting them in their efforts to design, build, and sell high performance homes. The Challenge is a public-private initiative, spearheaded by DOE's Building America Program, to galvanize the housing industry to move 220,000 high performance homes into the marketplace by 2012, while spurring strong consumer demand for these homes. An ultimate goal of the Challenge is that, by 2030, a new home buyer will have the opportunity to purchase a Net-Zero Energy Home (NZEH) anywhere in the United States.

The key elements of the Builders Challenge program are:

- An aggressive energy efficiency threshold which will become more efficient over time, coupled with Quality Criteria for durability, comfort, and IAQ
- The EnergySmart Home Scale to clearly communicate a home's energy performance

- A program design which facilitates partnerships with other green building and efficiency programs
- Multiple compliance pathways to provide builders with flexibility
- Market drivers such as ad campaigns and educational sessions to encourage participation and the construction of high-performance homes

### **The Threshold for Meeting the Builder Challenge**

Meeting the Builder Challenge requires constructing houses that rate 70 or lower on the E-Scale, as well as meeting the program's Quality Criteria checklist for comfort, quality, durability, and a healthy indoor environment. The E-Scale is based on the well established Home Energy Rating System (HERS) Index, developed by RESNET, the Residential Energy Services Network. An E-Scale of 100 represents the current "code compliant" home, which is a reference home incorporating the requirements of the 2004 International Energy Conservation Code (IECC) as well as other baseline building requirements such as federal minimum HVAC equipment efficiencies. Each point lower than 100 on the E-Scale represents a 1% efficiency improvement over the code compliant home. Thus, a home meeting the Challenge, with an E-Scale of 70, is 30% more energy efficient than a minimum code house (2004 IECC) of the same size and design.

**Why 70?** Pegging the Challenge to this minimum E-Scale score offers both technical and marketing benefits for the program. On the technical side, a required E-Scale of 70 sets the bar at a level where homes meeting the Challenge will be among the best energy performers in the market. Yet the bar is not so high that builder participation will be too low. A builder will not be able to reach the target doing business as usual, yet many builders today are already building to this level – including some national production builders. In several U.S. markets (e.g., Las Vegas) the majority of new homes built comply with ENERGY STAR® (an E-Scale of 85 in most of the U.S.). Builders in these markets are actively seeking market differentiation because they can effectively surpass the ENERGY STAR® threshold. The Builders Challenge seeks to complement existing programs while recognizing the highest performing homes available in the market. Setting the Challenge at 70 gives these builders a nationally recognized program and marketing tools they need.

Establishing the threshold E-Scale at 70 will also land most builders in the range of qualifying for the federal energy tax credit for new homes, which can be worth \$2,000 per qualifying house to a builder (while the credit is still in effect). The federal credit is based on a home's energy performance for heating and cooling energy use, whereas the Challenge energy rating also includes hot water, lighting, appliances, and miscellaneous electrical loads (MELs). To reconcile this difference, the prescriptive pathway to meeting the Challenge, Builder Option Packages (BOPs), which involves following prescribed measures for the major building systems, will include at least one package in each climate zone that has been modeled to meet the federal tax credit. Thus, builders will be able to leverage their participation in one program to gain the benefits of both the tax credit and the Challenge.

In formulating the Challenge's minimum efficiency, a "cost-neutral" efficiency package was also considered. "Cost-neutral" means that the added first costs of system enhancements (when amortized over a 30 year period) are equal to the monthly energy cost savings which result from these enhancements. In other words, when rolling the incremental system upgrade

costs into a mortgage, the savings resulting from these enhancements equal the added costs. Under this framework, efficiency packages were modeled using an optimization routine, in which additional measures were continually added to the house on a marginal basis (e.g., greater attic insulation levels or windows with a lower U-factor). Each additional measure added additional first cost, but also produced monthly energy cost savings. At the cost-neutral point, the added costs equal the resulting energy cost savings over the 30-year period. This “point” actually results in a very efficient home based on the modeling – beyond an E-Scale of 70. Setting the Challenge’s threshold level short of the levels that resulted from the cost-neutral analysis will drive significant improvements in efficiency – because 70 is still ambitious – but also recognizes that builders face a learning curve and ramp-up costs before reaching the cost-neutral point.

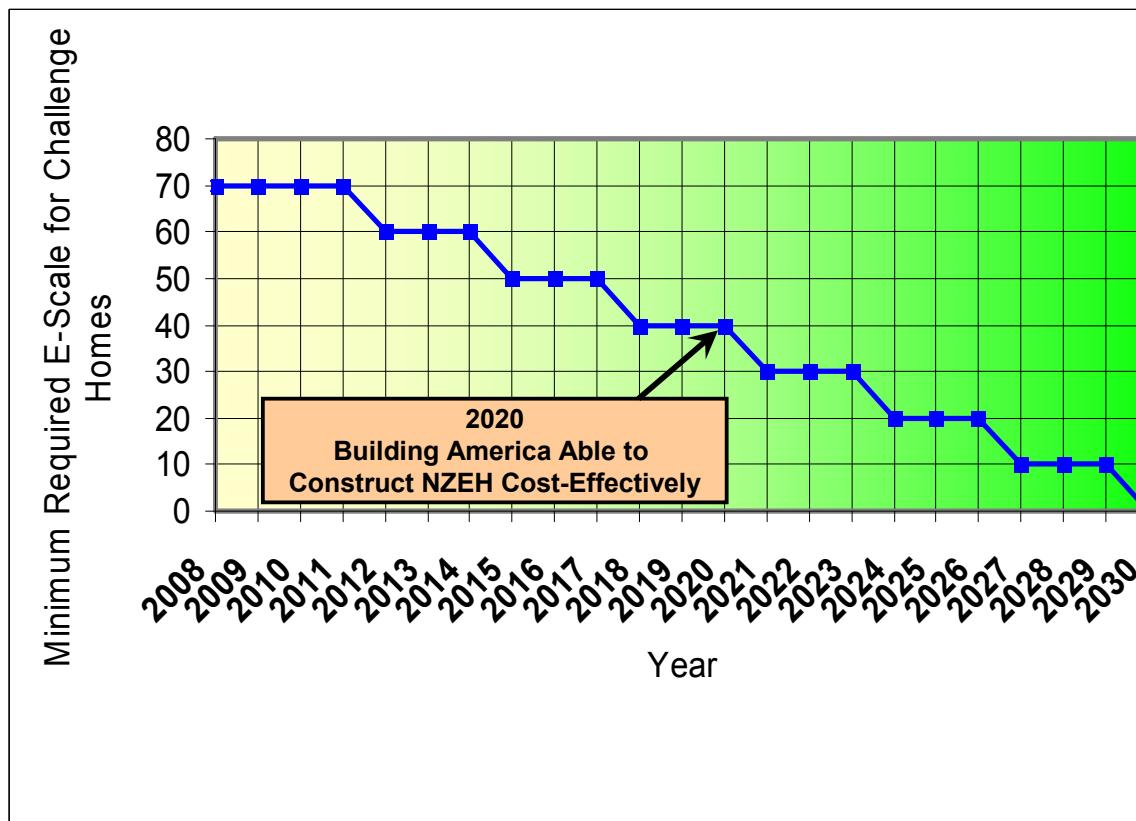
In terms of market appeal, the Challenge goes beyond ENERGY STAR® (85 to 70) by the same margin that ENERGY STAR® goes beyond the average new home (100 to 85). This framework will appeal to builders and buyers, especially in those markets where ENERGY STAR® has become quite common. In states like Oregon, where ENERGY STAR® levels of performance will soon become required by building code, the Challenge will provide a critical method for builders to differentiate their products.

**Raising the bar over time.** Raising the bar for the Challenge means lowering the required E-Scale score over time. The ultimate goal of the Challenge is cost-effective Net Zero Energy Homes by 2030, which means a transition from E-Scale 70 to 0 over the next 22 years.

In terms of the minimum program requirements, the Builders Challenge will follow a step behind the Building America program, which is expected to achieve cost-neutral prototype Net-Zero Energy Homes (NZEH) by 2020. The Building America program expects full market acceptance about 10 years after achieving a cost effective prototype. While Building America develops and field tests the technologies needed to cost-effectively move to higher levels of efficiency, the Builders Challenge will promote the implementation of proven strategies that builders can implement in any climate region.

The Builders Challenge threshold begins at 70 on the E-Scale and will stay at this level until 2012, as shown in the figure below. As Building America strategies that achieve greater efficiency levels become available, the Challenge threshold will move steadily closer to NZEH. By 2030, builders will have the methods and technologies to cost-effectively construct Net-Zero Energy Homes anywhere in the United States, according to Builders Challenge goals, based on Building America timelines. This timeframe for the Challenge to reach NZEH lags behind the Building America program so it can leverage the proven R&D results.

**Figure 1. Builders Challenge Performance Requirements**

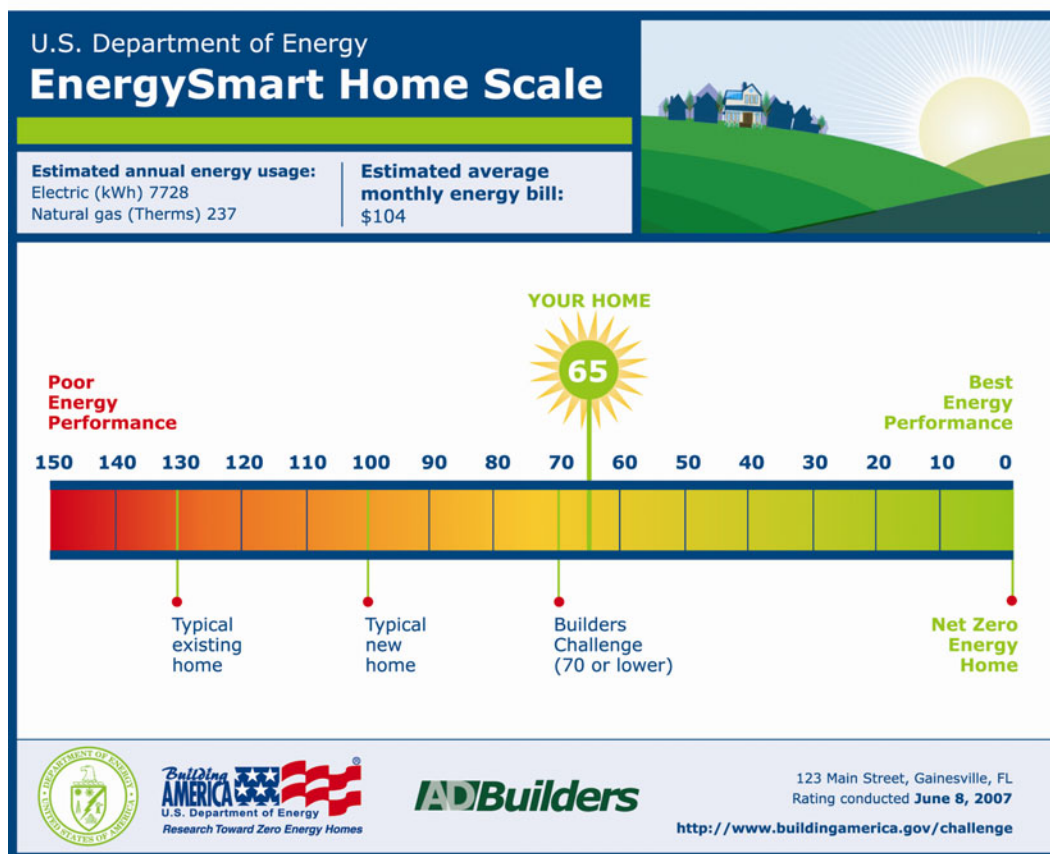


### EnergySmart Home Scale

The E-Scale (Figure 2) is an easy-to-understand tool that helps homebuyers and homeowners make smart energy decisions when purchasing, renting, or updating a home. DOE’s development of the E-Scale label was shaped by reviews conducted in builder and home buyer market research (unpublished), as well as insights from energy efficiency programs and organizations. Essentially the E-Scale will help to create a “MPG sticker for homes,” so that houses can be easily compared based on energy in the same way that cars are today. The E-Scale is designed to provide clear, objective answers to basic questions:

- Will this home help me save money on energy bills?
- How many “miles per gallon” does this home get?
- How does it compare to a typical new home?
- How close is it to the “ultimate” – a net-zero energy home?

**Figure 2. Example of an EnergySmart Home Scale (E-Scale)**



The following components are included in the E-Scale:

- *Estimated annual energy usage* is the projected amount of natural gas and electricity used annually by a home.
- *Typical existing home* shows the average energy performance of the existing housing stock.
- *Typical new home* shows the energy performance of a home built to code (2004 IECC).
- *Estimated average monthly energy bill* is the estimated annual energy bill divided by 12 months. (Utility costs are based on local utilities and entered by the HERS rater)
- *Builders Challenge (70 or lower)* represents the threshold at which a home must be built to comply with the Builders Challenge.
- *Your Home* represents the modeled annual energy performance estimate for a specific home. In this example, a home achieving a 65 on the E-Scale will use only 65 percent as much energy as a typical new home – 100 on the scale – saving about 35 percent in energy use on utility bills.
- *Net Zero Energy Home* A net-zero energy home annually produces with on-site renewable sources as much energy as it consumes. On-site renewable sources include energy collected on the site and used in the home (e.g., solar, wind). The site includes the home's footprint and the home site plan. The home should also provide an expected level of service and comfort.

The E-Scale is based on existing standards and procedures for home energy ratings that include verification and quality control of both the tools used to develop a rating and the professionals who conduct ratings.

The E-Scale will be posted on the electrical power panel of every home which meets the Builder Challenge, giving a clear indicator of the home's energy efficiency level. Participating builders and partner organizations can also:

- Add their logos or program names to the E-Scale label
- Augment the rating with estimates of annual energy cost savings – which may help homebuyers get better mortgage terms
- Include estimates of the carbon footprint associated with the home's estimated energy consumption

Beyond new single-family construction projects, the E-Scale can also be applied to retrofits of existing homes. A typical existing home would be roughly 130 on the E-Scale. To qualify for the Challenge, the pre- and post-retrofit energy performance of a particular home would be modeled. Because the Challenge is based on the home's performance and not the occupants, metered data will not be used. To qualify, the post-retrofit energy performance would have to be at least 30% more efficient than the pre-retrofit condition of the home.

### **Program Partnerships with Other Green Building and Efficiency Programs**

Rather than create another completely independent efficiency program, the Challenge is designed to complement existing efficiency programs and systems. The partnership component is specifically intended to catalyze faster adoption of new technologies and move high performance homes into the marketplace. By working with other building efficiency programs, the Challenge can create more awareness of energy efficiency and more incentives for builders to participate, ultimately resulting in greater numbers of high-performance homes. Specific ways in which the Builders Challenge is designed to integrate with other programs are discussed below.

- A Scoring System based on a Broad Industry Standard: The E-Scale uses the well established HERS Index rating and procedures as its basis. By adopting this system as the standard for rating houses (in the performance pathway), the Challenge establishes a common framework with several other national and regional building efficiency programs that use the same system, making the comparison of houses easier.
- A Process for Establishing Equivalency with Other Programs: DOE is actively seeking partnerships with other building programs that aspire to similar levels of efficiency. In exploring such partnerships, DOE will assess the efficiency levels associated with a partner program, possibly looking at the efficiency tied to different tiers of a partner program (e.g., Silver, Gold). The requirements of potential partner programs are also checked against the Challenge's Quality Criteria and quality assurance requirements.
- Co-Labeling of Homes with Partner Programs: Once equivalency terms are established with a partner and an agreement is in place, the partner program can be added to the E-Scale label for the home. The certification process for such homes will be routed through the partner program, so that a partner program can offer their builders the added marketing advantages which come with the Challenge and the E-Scale, simply by

complying with the partner's normal program. A builder working with an existing program would only have to go through one process to gain the marketing advantage of both that program and the Builders Challenge.

- **Joint Marketing:** DOE will develop marketing materials and publicize both the Challenge and its connection to partner programs. DOE will also provide program partners with marketing materials such as the E-Scale to help them promote their partnership with the Challenge

Builders will be able to qualify for the Builders Challenge independent of a partner program, but DOE fully expects that a large portion of E-Scale-labeled homes will enter the program through its program partners.

### **Multiple Compliance Pathways to Provide Builders with Flexibility**

There are three different ways to meet the Builders Challenge: 1) through a partner program; 2) with a prescriptive Builder Option Package (BOP) that calls out specific system requirements (e.g. a 93 AFUE furnace), or 3) by taking the performance pathway.

**Partner program path.** When qualifying through a partner program, a home must achieve the minimum level of certification in the partner program deemed to be equivalent with the Challenge. In addition to this, the house must meet the Challenge Quality Criteria, which is essentially a checklist of best practices to help enhance the home's durability, comfort, and IAQ. These criteria had not been finalized when this paper was written, but when finished will be posted at [www.buildingamerica.gov/builderschallenge](http://www.buildingamerica.gov/builderschallenge).

**Prescriptive path.** When qualifying using a BOP, the builder must comply with one of the option packages for the climate where a home is located. BOPs specify minimum requirements for the building envelope (walls, floors, attics), HVAC and water heating equipment, appliances, and lighting. The Challenge will feature multiple BOPs for each climate zone to provide builders with flexibility in the systems and strategies that they chose to employ. Also, one BOP in each climate zone is formulated to meet the heating/cooling energy requirements of the Federal Tax Credit. BOPs are formulated to create a home which is roughly 30% better than a code-compliant new home (2004 IECC), consistent with the E-Scale rating of 70 required for the Challenge. Homes meeting the Challenge through the BOP pathway must also meet the Challenge Quality Criteria.

**Performance path.** When qualifying using the performance pathway, the home's energy performance is modeled using RESNET-accredited software to generate the E-Scale rating. An E-Scale of 70 or better is the current threshold. The performance path offers the most flexibility, as builders can take advantage of trade-offs in the overall energy package for the house. For example, a builder might opt to use very high efficiency HVAC equipment instead of enhancing the building envelope. Under the performance path, the modeled energy performance of the house would capture this trade-off. Homes meeting the Challenge through the performance pathway must also meet the Challenge Quality Criteria.

Both the partner program path and the prescriptive path will be adjusted over time as the required E-Scale rating is lowered in the performance path.



## Market Drivers – Getting High Performance Homes into the Marketplace

In market research conducted for the development of the Builders Challenge, over 50% of homeowners surveyed believed energy efficiency was an important home feature. The most important benefit was lower utility bills (76%). Only 28% of builders surveyed thought that energy efficiency was an important feature. Yet, 45% of builders said they built energy efficient homes to differentiate themselves and 37% of builders said it was to save their customers money on their utility bills.

It is fair to argue that consumer demand for energy efficiency exists and is likely to rise as utility bills increase in many parts of the country. The real challenge is to transform the market by promoting the supply of cost-effective high performance homes to the mainstream while maintaining the integrity of the brand. The E-Scale achieves this by providing an easy to understand metric balanced by quality control and performance verification.

In developing the Builders Challenge, DOE first asked why this supply does not exist if there is indeed home buyer demand. Table 1 shows builders' concerns, discovered through the market research, and how the Challenge will work to solve those concerns.

**Table 1. Builders' Concerns and Challenge Solutions**

<b>Top 5 Reasons Builders Are Not Doing This...</b>	<b>What can the Builders Challenge do about it...</b>
<b>1. Market Demand</b> People would still rather have granite counter tops	Drive demand through education around the home energy use metric.
<b>2. Cost</b> <ul style="list-style-type: none"><li>• Don't believe cost neutral</li><li>• Economies of scale</li><li>• Learning curve</li></ul>	Provide proven cost-effective strategies, prescriptive option packages and training
<b>3. Proof/Guarantees</b> <ul style="list-style-type: none"><li>• Want data on products/processes</li><li>• Want to limit liability</li></ul>	Provide case studies, work with manufacturers
<b>4. Unaware of resources</b> Awareness of ENERGY STAR®, HERS Index and Building America is minimal	Market availability of resources through industry and consumer media
<b>5. Just don't buy it</b> Some still think it is a fad	Recent market research demonstrates over and over again that homeowners are interested in reducing their energy bills. Given current trends, this is not likely to change.

In response, DOE has shaped the marketing of the Builders Challenge to overcome these barriers largely through collaboration with partner programs and industry groups. A strong infrastructure to support the delivery of high performance homes has been built in the United States already through a wide variety of organizations and programs. DOE will continue to develop partnerships with organizations involved in building or promoting high performance homes to effectively leverage this existing infrastructure and augment the existing activities.

**Raising industry awareness.** The design of the Challenge recognizes that for broad industry participation to occur, builders must know the Challenge exists and there must be clear incentives. DOE will use partnerships to promote the Challenge. Registered builders will

receive value from participating in the program through several mechanisms, including the following:

- Market recognition through the E-Scale and the Challenge website linking consumers and builders
- Streamlined compliance with partnering programs, so meeting one program provides the benefits of multiple programs
- Financial incentives such as qualifying for tax credits and bank loan options
- Technical support such as online resources, marketing toolboxes, and hands-on training
- Related performance benefits, including reduced construction waste (and costs), increased customer satisfaction, and reduced warranty and callback costs ([www.buildingamerica.gov](http://www.buildingamerica.gov))
- Higher quality through verification process
- Education of industry through partnerships with universities, colleges, extension programs and other training programs.

**Raising homebuyer awareness.** Using credible and compelling marketing messages focused around the E-Scale and disseminated through national and regional media, DOE and its partners will raise awareness of the benefits of high performance homes among homebuyers. This includes:

- Website — An informative website listing builders, partner programs, technical and marketing information, help for consumers, and links.
- Media — In addition to a “press area,” consumer media relations and outreach efforts will focus on newspapers, shelter magazines, consumer magazines, and popular websites.
- New Media — DOE will use videos and other innovative methods for targeted marketing
- Other Partnerships – DOE will use partnerships with industry groups such as eco-brokers and finance companies, realtors, utilities, and other local energy efficiency programs to push the market.

## **Program Impact**

The real value of the Builders Challenge will be moving the housing market as a whole towards increased recognition and acceptance of new energy savings products and techniques. Experience from the Building America program has shown that after the first adopters have demonstrated that a product can be used safely and effectively, the market penetration of the product increases rapidly. For example, Building America has worked with production builders to develop systems and strategies to the point where they are predictable, cost-effective, and are adopted as an energy-saving standard practice (e.g. advanced framing with added insulation).

The current market share of homes at 70 on the E-Scale is estimated to be just over 1.5% of annual new home production. Through Builders Challenge outreach and support to builders, partnerships, and by driving consumer demand through education around the E-Scale, the market share is expected to double by 2011. This market penetration estimate is based on an analysis of current high performance home production through programs like ENERGY STAR® and Environments for Living® with a secondary analysis of the portion of homes within such programs which would meet an E-Scale of 70. Every time the energy level moves closer to zero,

we anticipate the market share to drop initially until the learning curve and comfort levels are achieved among builders and contractors. This is a relatively small market share compared to ENERGY STAR®, but it allows for market differentiation as well as higher levels of energy, cost savings, and carbon reductions.

**Table 2. Builders Challenge Goals**

<b>Initiative Goals</b>	<b>2012</b>	<b>2030</b>
Builders Challenge HERS Threshold	70	0
Cumulative # of Homes from 2008	220K	1.3M
Cumulative Energy Savings (Quads, Primary)	0.015	0.178
Cumulative Energy Cost Savings	\$143M	\$1.7B
Cumulative Carbon Savings (Million Metric Tons)	0.231	2.799

Ultimately, the payback is huge. By constructing 220,000 homes to 70 on the E-Scale by 2012, the resulting carbon emission reductions are the equivalent of taking 50,000 passenger cars off the road for an entire year (just based on the energy savings between now and 2012). These same homes will save \$143 million in energy costs. These projections assume continued growth of other efficiency programs (which will supply some Challenge homes) as well as the emergence of homes labeled just under the Builders Challenge. By 2030, the target is 1.3 million high performance homes (cumulative) at gradually more stringent E-Scale ratings. At that point, the efficiency of the qualifying homes will have saved \$1.7 billion in energy costs (cumulative to 2030) and will represent the equivalent of removing 606,000 cars from the road for one year. Again, the cars-off-the-road figure only accounts for the cumulative energy/carbon savings to 2030, and in reality the energy and carbon saving benefits will continue through the life cycle of the homes. By making cost-effective NZEH available anywhere in the country, participating builders will provide an invaluable service to homebuyers and to the nation.

## **Next Steps**

After launching in February 2008, the Builders Challenge will work to grow awareness and market penetration of the program. Next steps include beginning to qualify homes, strengthening technical resources, implementing ways of recognizing builder success, and developing partnerships.

## **Technical Resources**

The Challenge is developing a metric to rate the carbon footprint of homes so that this data can be included in the E-Scale label. Not only will owners be able to gauge the energy performance of their home, but also the home's environmental impact through its greenhouse gas

emissions. As carbon emissions grows to be an increasingly critical issue, this will add to the marketability and relevance of the program in terms of both awareness and impact.

The Challenge will also continue to develop BOPs for the prescriptive compliance path. Eventually the Challenge program will offer multiple BOPs within each climate zone so that a builder has a choice of several prescriptive paths to meet the required performance level to meet the Challenge. Flexibility within the BOPs is key to allowing builders to qualify houses in ways that align with the systems and building approaches that they use.

The Quality Criteria for comfort, durability, and IAQ will also be finalized in spring of 2008 along with the verification requirements for ensuring the implementation of these measures. A technical resource guide, drawn from the Building America Best Practice guides, will also be developed to provide technical background for the Quality Criteria.

A major barrier to achieving the Challenge goals is the lack of mainstream design plans oriented toward energy efficiency. Many high-performance homes are built from custom designs developed by architects to meet the tastes of individual homeowners, while most typical new homes are highly replicated designs with little focus on energy performance. As the initiative progresses, a Builders Challenge Design Challenge will be developed to recognize high-performance home designs, and showcase strategies and features which can be used to bring high-performance designs to the mainstream. Ultimately, DOE would like to make these plans available to builders at little to no cost.

## **Recognition**

Recognizing achievements in high performance homes is central to the Challenge. The E-Scale recognizes these achievements at the individual home level. However, the Challenge would like to be able to recognize and award builder achievements on a broader level to demonstrate continued commitments to efficiency. Several different award scenarios are currently being considered including a high-level, lifetime achievement type award and regional awards.

## **Partnerships**

Successful partnerships will deliver broader and more effective messages, increased technical resources to support efficient housing construction, and ultimately more high-performance homes in the market. DOE recognizes the value of teaming with organizations and programs with similar goals, and will reach out to such groups to partner with the Challenge.

Beyond partnerships with other building efficiency programs (as described above), the Challenge program is also seeking to partner with: builders and developers; states; utilities and energy efficiency program sponsors; national associations; professional organizations and NGOs; scientific agencies; academic institutions; other federal agencies; public and private finance groups, lenders, insurance companies; product manufacturers; building code organizations; and media. Successful partnerships may result in a variety of outcomes such as new financial products (e.g., high performance home mortgages), increased availability of innovative and advanced products and materials at a lower cost, renewed Federal Tax Credits, homebuyers asking about the E-Scale, and of course a large number of homes built to the Challenge guidelines. Partnerships with organizations in these categories are currently being explored.