

Home Energy Score: 3-D Simulation Training and Testing for Assessor Candidates

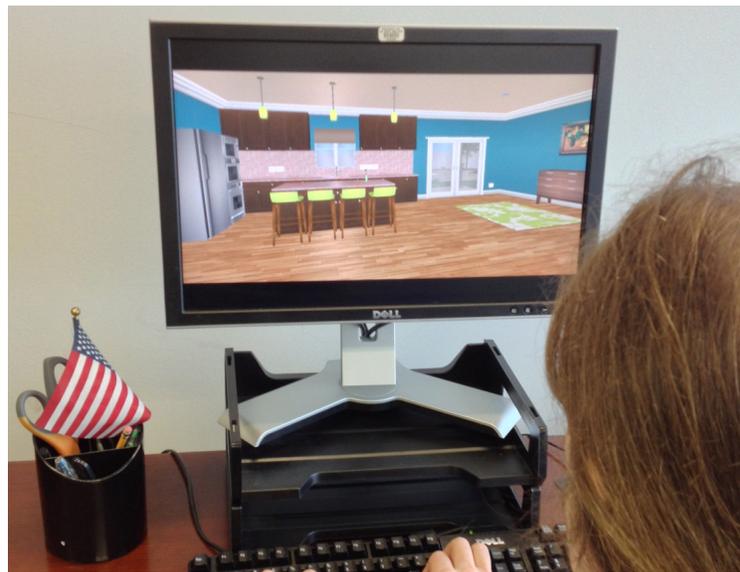
The U.S. Department of Energy (DOE) Building Technologies Office (BTO) is developing a 3-D immersive simulation training and testing (3-DISTT) software program for Home Energy Score assessor candidates. 3-DISTT uses computer-based simulations to recreate a range of jobsite scenarios, enabling individuals to identify situation-specific solutions. This learning approach has been utilized in the defense and health care industries as an efficient and cost-effective way to develop and assess competency in performing complex tasks.

The Home Energy Score 3-DISTT project will build upon DOE's broader efforts to support 3-DISTT activities through the National Training and Education Resource (NTER) platform, and will advance DOE's goal to make advanced workforce development tools more affordable and more accessible nationwide.

Background

The Home Energy Score, developed and managed by DOE, allows consumers to quickly understand and compare the energy performance of their homes to others nationwide. Home Energy Score Qualified Assessors (Qualified Assessors) collect information during a brief home walk-through and then use a standardized software tool to score homes on a 10-point scale, with a score of 10 indicating that the home exhibits excellent energy performance. To ensure that scores are calculated consistently, DOE maintains quality assurance requirements for the Home Energy Score program as well as qualification criteria for the individual assessors.

DOE currently relies on third-party professional certifications as a prerequisite for individuals interested in becoming Qualified Assessors. These certifications are the leading market options for gauging an individual's ability to conduct an in-depth home energy assessment. However, they are not specifically designed to validate an individual's ability to accurately generate a Home Energy Score. Thus, to supplement these professional certification requirements, DOE provides free online training and requires assessor candidates to pass its Home Energy Score online test before approving them as Qualified Assessors.



3-D immersive simulation can be an efficient and cost-effective way to develop and assess competency in performing complex tasks. *Photo courtesy of U.S. Department of Energy*

Improving Training and Testing Options for Assessor Candidates

DOE has acknowledged that the advanced nature and extra cost of the third-party professional certifications may discourage potential candidates from becoming Qualified Assessors. Additionally, DOE has identified an opportunity to make improvements to both the Home Energy Score online training and the online test by utilizing 3-D immersive simulation software to ascertain whether assessor candidates possess the specific knowledge needed to score homes effectively.

Advantages of 3-D Simulation

3-D simulation works best when the nature of the work is diagnostic and procedural, the content is cognitive, variability is prevalent, and live training or testing would be expensive or impractical—all characteristics demonstrated by the Home Energy Score program.

The Home Energy Score training and testing simulation will focus on a single, targeted learning objective—for candidates to effectively and accurately deliver a Home Energy Score. The simulation will include the following key parameters:

- Offer 3-D, Point of View (POV) immersive, scenario-based simulation.
- Feature three or more distinct types of homes, representing a national cross section of homes and home energy features.
- Provide approximately 20-40 variables for each home that align with inputs from the Home Energy Score.

Validation

DOE will validate this innovative 3-D simulation approach to training and testing through a comprehensive, psychometrically-supported study. The study will ascertain whether simulation can deliver effective training and whether simulation testing can provide an accurate assessment of competency to deliver the Home Energy Score. If successful, this study will expand the prospects for more widespread applications of simulation programs for other building performance workforce training and testing activities.

In the validation study, DOE will also compare how the scoring accuracy of candidates who have gone through the simulation training and testing compares to individuals with the current qualification requirements (third-party professional certification plus passing the Home Energy Score online test). Candidates for the simulation training and testing will be drawn from other housing-related professions, such as home inspectors, architects, contractors, and real estate agents. If both groups perform comparably, DOE may change its current requirements for assessors to only require the simulation training and testing. With a broader pool of individuals effectively scoring homes, the Home Energy Score can be provided more widely and help more consumers make smart energy-related decisions.

Project Timeline

The 3-D simulation project launched in April 2013 and a final version of the software is scheduled for release by March 2014. Along the way, DOE will announce opportunities to participate in pilot tests and to partner with DOE to evaluate the potential of a diverse pool of candidates to score homes as part of the Home Energy Score program.



Graphic courtesy of Interplay Energy



3-D immersive simulation uses computer-based simulations to recreate a range of jobsite scenarios, enabling individuals to identify situation-specific solutions. *Graphic courtesy of Interplay Energy*

Project Performers

Efficiency.org

Efficiency.org works with government and private sector clients to close the gap between public policy and private investment in order to deliver energy efficiency in the built environment to market as a resource.

Interplay Energy

Interplay Energy develops award-winning, 3-D interactive simulation training and testing applications for the professional trade industries. Based upon key principles of instructional design and pedagogy, Interplay's products are immersive and life-like, promoting knowledge retention, improved performance, and decreased time to competency.

Contacts

Benjamin Goldstein
U.S. Department of Energy
benjamin.goldstein@ee.doe.gov

Matt Golden
Efficiency.org
matt@efficiency.org

Doug Donovan
Interplay Energy
ddonovan@interplayenergy.com

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

For more information, visit:
building.energy.gov

DOE/EE-0901 • April 2013

Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 10% post consumer waste.