

**U.S. Department of Energy Comments on
California Whole-House Home Energy Rating System
July 17, 2015**

California Energy Commission

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The U.S. Department of Energy (DOE) welcomes the opportunity to work with the State of California in its design and implementation of a whole-house rating system. With that in mind, the following comments are intended to be high-level rather than comprehensive.

DOE encourages the State to adopt a scoring system that meets the following criteria:

- Sustainable (i.e., not resource intensive to administer, maintain, etc.);
- Easy to understand by a wide range of stakeholders (e.g., homeowners, homebuyers, realtors, appraisers);
- Based on one or more metrics calculated by one credible software tool; and
- Subject to objective analysis and evaluation to ensure an effective system and continuous improvement.

To that end, we urge the State to design a rating system that is in alignment with the DOE Home Energy Score – a national home energy rating that fulfills the above criteria. A number of states have already adopted and customized the Home Energy Score for use across their states.

The following recommendations suggest ways in which California might customize the Score to meet local objectives as well as an opportunity for establishing a separate common metric for both new and existing homes.

(1) Work with DOE to Customize the Home Energy Score for Statewide Use on Existing Homes in California

We strongly encourage the State to adopt the Home Energy Score as the primary rating system for existing homes. In order to generate a Home Energy Score, qualified users must use the underlying calculation tool known as the Home Energy Scoring Tool. This tool applies standard operational assumptions and relies on weather data from approximately 1,000 TMY3 weather stations across the United States to adjust the energy values underlying the 10-point scales and thereby account for climate variations. The Home Energy Scoring Tool is transparent, well documented, thoroughly tested and free to use.

A number of states are using the Home Energy Score and displaying the Score along with other metrics or information of interest to their local population. Therefore, if California chooses to create a state-specific home energy label, it could easily display the Home Energy Score alongside other metrics or other information through use of the Home Energy

Scoring Tool Application Programming Interface (API)¹. If California chooses to adopt the Home Energy Score, DOE will work closely with the State to ensure that both local and national objectives are met.

It is important to note that the Home Energy Scoring Tool generates a number of different metrics in addition to the Score. The Home Energy Scoring Tool calculates an estimate of the home's annual energy consumption in MBtu and also provides a break-down of the home's estimated energy use by fuel type. Depending on what information the State wants to convey, California can readily apply locally agreed upon utility rates to generate costs and locally agreed upon energy conversion numbers to generate carbon-related information from the energy estimates provided by the Home Energy Scoring Tool. By using the Home Energy Scoring Tool to generate energy-related metrics of interest, the State can build a rating system that is affordable, internally consistent (across metrics), consistent across homes (since all would use the same underlying calculation method) and transparent.

(2) Use the Home Energy Scoring Tool as the Exclusive Calculation Engine for All Energy-Related Metrics for Existing Homes

The calculated energy used to generate the rating and related energy metrics should be the same for all existing homes. Using one calculation tool ensures consistency while providing an API allows the market to create many different platforms and applications for linking to the calculation tool. The Home Energy Scoring Tool API allows approved software tools to generate a Home Energy Score based on the inputs provided by a qualified assessor. Regardless of which software interface is used, the data requirements are the same and the calculations are generated using the underlying Home Energy Scoring Tool. This ensures consistent scoring while opening the market to additional software providers, at a lower cost of entry.

Private sector software tools can be used to generate recommendations, scopes of work, and other related information, but should not be used for the basis of generating the home's rating or energy-related metrics. Using one publicly provided transparent tool to generate all energy-related metrics will enhance credibility and customer understanding.²

(3) Work with DOE to develop an agreed-upon "translator" to calculate one or more standard metrics for both existing and new homes

¹ The Home Energy Scoring Tool API allows users to rely on their own software tools to carry out energy audits, home inspections, or other services while linking to the Home Energy Scoring Tool on the back-end to generate the Score and other energy-related metrics.

² Using Home Energy Score means that the state would not need to establish software minimum performance criteria. Since all Scores would be created using the same calculation engine, the only requirement is that the data be properly translated/transferred. That testing is done by DOE as part of the API approval process.

The HERS Index is widely used to rate new homes and provides a number of benefits when applied to new homes, including the ability to compare the home to energy code. While using a code-based reference may be appropriate for new homes, the use of a reference home to score a house does not on its own communicate information regarding a home's likely energy use or energy bills.³ Furthermore, when rating existing homes, it is very difficult if not impossible to confirm building component characteristics to the same level as code (e.g., wall insulation levels cannot be determined without expensive equipment or destroying walls).

In the interest of bridging the gap between ratings of new and existing homes, we urge the State to work with DOE to develop an agreed upon "translator" that would generate one or more agreed upon common metrics (e.g., estimated energy use, cost) for all single family homes. This type of translator would allow existing homes to be rated using the simpler, and more applicable, Home Energy Score, while new homes could continue to be rated using HERS (either national or CA-based system). In both cases, any home rated using either of these systems would ALSO receive a common metric or metrics – calculated by the "translator" using an agreed upon calculation method. Through this type of approach, either rating system could be applied based on the preference of the user or purpose of the rating; at the same time, all homes – whether they receive a HERS rating or Home Energy Score – would also receive one or more agreed upon common metrics that would allow comparison across all homes.

In addition to providing this common metric, this approach would help overcome some of the difficulties posed by a code-based approach (e.g., a rating system or prior rating becomes outdated as code changes⁴). An absolute energy metric provides the ability to easily compare the likely energy use of two homes without having to understand the details of other scales and any changes that may be made to these scales over time.

³ For example, depending on climate and a range of other factors, a 4,000 sq. ft. house with a HERS index of 60, likely has a higher energy use and thus higher bills than a 2,000 sq. ft. house with a HERS index of 80, even though a rating of 60 is "better" than a rating of 80 on that scale. While the HERS rating indicates the degree to which the home is more or less efficient than the same home built to code, the rating in and of itself does not indicate to the consumer whether their utility costs will be higher or lower when comparing different homes.

⁴ Any home scored using the Home Energy Scoring Tool can be automatically rescored (without additional data inputs) at a future date using the most recent version of the Scoring Tool (DOE releases updates to the tool – generally minor changes – on an annual basis). The "assessment date" of the Score still reflects the date the home was originally scored unless a qualified assessor returns to the home to collect the required data points to generate a new Score with a new assessment date.