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Building Science Institute's comments on Whole-House Home Energy Rating and Labeling Pre-Rulemaking

Additional submitted attachment is included below.

BUILDING SCIENCE INSTITUTE

830-308-8505
info@buildingscienceinstitute.com
www.buildingscienceinstitute.com

531 W. Court 406G
Geronimo, TX 78115

May 15, 2024

California Energy Commission
Docket Unit, MS-4
Docket No. 23-HERS-02
715 P Street
Sacramento, California 95814

To Whom It May Concern,

Building Science Institute, Ltd. Co. (BSI) submits the following comments on the California Home Energy Rating and Labeling Program.

BSI is the second US EPA- and US DOE-recognized national Home Certification Organization (HCO). We launched in 2022 to provide exceptional services to verification organizations.

It's important to note the many third party rating and labeling programs. Some are more for "green construction". This includes, but is not limited to, the following:

- ANSI 301 Energy Rating Index (ERI)
- Building Science Institute's EPA- and DOE-recognized home energy rating system
- ENERGY STAR® Single-Family New Homes (SFNH) Program
- ENERGY STAR Multifamily New Construction (MFNC) Program
- Department of Energy's Zero Energy Ready Home Single Family (DOEZERH-SF) Program
- Department of Energy's Zero Energy Ready Home Multifamily (DOZERH-MF) Program
- Department of Energy's Home Energy Score (HES)
- United States Green Building Coalition (USGBC)'s LEED for Homes
- National Green Building Standard (NGBS) ICC-700
- GreenHome Institute's GreenStar Certification Program
- Enterprise Green Communities

This list covers a variety of nationally-recognized programs and home energy rating systems. Each have existed for several years at this point. All include energy efficiency aspects within their respective programs. Others, like LEED for Homes and NGBS, include green building practices in the system.

Due to our unique perspective, we will focus most of our comments on the ENERGY STAR and ANSI 301 certifications.

ENERGY STAR is one of the most well-known programs nationally. Brand recognition of ENERGY STAR indicates an 80% market awareness. ENERGY STAR is considered an "above-code" program. The latest national Version 3.2 maintains at least a 10% improvement over the 2021 IECC.

Certified ENERGY STAR labels can only be generated through EPA-recognized entities.

Currently there are two national HCOs (BSI, RESNET®) and two state HCOs (CHEERS, CalCERTS). Each entity meets the EPA's requirements for HCOs. Each maintains a QA/QC program. Each have approved software tools. Each has a training & credentialing system within their home energy rating system. The two state HCOs meet additional requirements from the California Energy Commission.

In the national ENERGY STAR program versions, all residential dwelling units can be certified. The dwelling unit type will determine whether the SFNH or MFNC program will be used. Depending on the program and/or compliance path, the dwelling unit(s) will be assessed with an approved software tool.

If the dwelling unit follows the SFNH or MFNC ERI path, it will be modeled individually. The software will assess compliance with the ENERGY STAR Energy Rating Index Target procedure[1]. If pursuing MFNC ASHRAE or Prescriptive paths, compliance is tied to ASHRAE 90.1 modeling and workbook verification.

For SFNH or MFNC ERI path, the software tools must take data inputs specified by ANSI/RESNET/ICC 301. ANSI 301 is an all-encompassing standard. It covers the calculations, inspection requirements, and insulation grading. The standard requires inspections to follow Appendix B - Inspection Procedures for Minimum Rated Features. Insulation installation is to be graded with Appendix A. The main body of the standard covers all the calculations.

Of course, the most important aspect to third-party labels is the quality oversight.

[1] See Attachment 1. For direct link: https://www.energystar.gov/sites/default/files/asset/document/National%20ERI%20Target%20Procedure%20Version%203.2_Rev%2013.pdf

We can make all the promises in the world. Without proof of our claims, builders, contractors, and more have a certain amount of risk. If an organization has consistently shown itself to be untrustworthy, inclusion of their home energy rating system threatens the integrity of California's home energy rating system.

If California accepts third-party rating systems, it should only accept those that care about reducing risk to the public. Sometimes, we have to save people from themselves.

To reduce the risk to the public, we recommend only approving third-party home energy rating systems if it meets one of these two options. First option: it relies on an ANSI 301 Energy Rating Index generated by EnergyPlus OS-ERI via API. Second option: it generates a US DOE Home Energy Score calculated via API. Either option should be accepted alongside the current Title 24 system.

There are several reasons to adopt this rule.

Home energy ratings that use proprietary variants create an insurmountable risk. This is due to concerns of inaccurate, conflicting calculations. According to Neal Kruis, RESNET's Energy Modeling Director, "Someone with three rating tools is never sure what the HERS Index is."[2]

As such, outputs should only be accepted if generated via API from the NREL or PNNL calculation engines. This reduces risk to the public by avoiding conflicting outputs of the same metric from several calculation engines.

We can actually see what happens when the most prevalent national home energy rating system has approved several calculation engines. The tool with the lowest number tends to be the "winner" and earns a higher market share. This causes software vendors to chase lower numbers, rather than accurate calculations.

Further, there are many worried about the integrity of quality oversight in the national home energy rating market. For context, the most prevalent national home energy rating system delegates majority of the oversight to others.

Reports of "drive-by ratings" are frequent in the national market. These sorts of complaints have led to concerns of federal intervention. There was a settlement between the U.S. Department of Justice and SMC Systems (owners of Ducttesters,

[2] See Attachment 2, Slide 11. For direct link: https://web.archive.org/web/20230612145313/https://conference.resnet.us/data/energymeetings/presentations/Progress%20towards%20HERS%20Index%20calculation%20consistency.pdf

Quality Built, and SkyeTec) last year[3]. This shows federal concern with proprietary systems that rely on delegates to perform QA. Systems such as those allow rating companies to perform their own QA. It leads to "fox guarding the henhouse" situations, and potentially fraudulent activity follows.

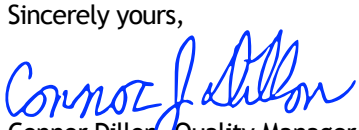
Of course, these labels need trained professionals to generate them. These professionals should carry a license with the State of California. They should have a CEC-recognized certification through an approved oversight entity. An ideal entity would be an EPA-recognized Home Certification Organization. The certifications should also be task-oriented. For example: Field Verifier, Software Analyst, or a Verifier capable of all roles and responsibilities. This enables a natural career progression path to a higher earning potential.

These licensed professionals would need to enroll in an EPA-recognized QA/QC program. This would be in addition to any further oversight requirements from the CEC.

To that end, let me provide an example from BSI's quality management system. Energy model conformity assessments under BSI are performed at a rate to meet a 95% confidence level, with a 5% margin of error. That means 80 models in a population of 100 are reviewed by our third party oversight. For context, the most prevalent national home energy rating systems has a minimum of 10%. In a population of 100 projects, only 10 must be reviewed - at a 95% confidence level, this yields a margin of error of 29.55%.

We leverage our technology partner, HouseRater, for more than energy model reviews. The HouseRater platform allows oversight to occur throughout the lifecycle of a project. How? All the completed inspections (photos, supporting documentation, etc) go into the platform. On any given day, our third-party oversight team can review all the data for a project in the system. Further, we can provide authorities, such as the CEC, read-only access on all our projects. This level of transparency is not yet the industry standard - but it should be.

Sincerely yours,



Connor Dillon, Quality Manager

[3] See Attachment 3. For direct link: https://www.justice.gov/usao-mdfl/pr/smc-systems-inc-pay-235-million-resolve-allegations-false-statements-relating-energy