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Update of the Home Energy Rating System Regulations

Additional submitted attachment is included below.

From: Beto Farelle
To: Energy - Docket Optical System
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It seems to me that there is a disconnect between the performance compliance option (or perhaps even logic) and the HERS testing of indoor air quality fans.

My current understanding is that the HERS testing for indoor air quality simply checks if the total airflow meets or exceeds the airflow listed on the certificate of compliance:

> **RA3.7.4.1 Mechanical Ventilation Airflow Rate Measurement - Continuous Operation**
> If multiple fans are specified to operate simultaneously to provide the total required ventilation airflow, the measurements shall be made with all applicable fans operating simultaneously.
> RA3.7.4.1.1 Supply and Exhaust Ventilation Systems
> a) A flow measuring device that meets the applicable instrumentation requirements given in Section RA3.7.2, and RA3.7.3 shall be used to measure the ventilation airflow(s).
> b) Measure and record the ventilation airflow(s).
> c) If the measured total airflow is greater than or equal to the ventilation airflow rate required by the Standards or the Certificate of Compliance, the mechanical ventilation system complies. Otherwise the mechanical ventilation system does not comply, and corrective action shall be taken.

However, when attempting to show compliance through the performance approach, there comes a point in which increasing the ventilation airflow can be of detriment to the compliance results.

This seems logical to me, as the more air is exhausted from a dwelling, the more outside unconditioned air will infiltrate into the house. Therefore, more energy will be consumed in conditioning the incoming unconditioned air.

If there is nothing in place in either the HERS testing procedures, or the HERS registries to more logically consider what was installed versus what was modeled, then oversized fans that exhaust far more air than necessary, or fans that expend far too much energy can and will be installed without regard to the energy consumption of homes. I have personally seen projects in which contractors show on their plans that the required indoor air quality for ADU projects to be about 30 CFM, but they chose a fan with a CFM between 100 to 130.

Another item that I have frequently seen slip through the cracks is fenestration. Far too often, I specify certain values for the windows and glass doors, only to later discover that what was installed is far from that. For example in climate zone 3, which is a cool climate, I may specify higher solar heat gain coefficient (SHGC) values for the purpose of passive heating, but the installed items often have a much lower SHGC better suited for a warmer climate.

As much as I try to instill into my clients that they need to pay attention to fenestration values, and that a set of values will not suit all climate zones, they fail to pay attention, and/or trust in their supplier to provide products "better than" or equal to what is on the report. However, the suppliers simply provide products under the impression that they "work" for all climate zones. I had this happen just this week, and the window supplier openly admitted to having this mistaken belief.

If window values were a HERS verified item, the number of project failures would skyrocket. If the purpose of the Title 24 Section 6 code is to result in the construction of energy efficient buildings, and HERS raters to verify that they are in compliance with the energy code, then fenestration should be HERS verified. I believe it is already well-known that building officials rarely check anything energy-related, and only spot check when they do, oftentimes missing errors such as:

- Attached garage(s) omitted from the energy report.
- An entirely new detached structure being treated as an addition, instead of new construction, not triggering the requirements for new construction, such as PV.
- 2x6 walls in entire subdivisions with only R-19 insulation, failing to meet either the mandatory minimum cavity insulation (R-20) or maximum U-factor of 0.071
- Mismatch between mechanical plans showing much lower efficiency values than the energy reports for an entire subdivision.
- Mismatch between mechanical plans showing cooling, while the energy reports for the subdivision show no cooling.
- A mismatch between the exterior wall finish on the energy report and what ends up being built.
- Approx. 60 houses being built without a whole house fan or roof deck insulation, as shown in the energy report.
- Exterior doors being installed that do not meet the possibly unachievable 0.10 U-factor entered in the energy report.
- Slab perimeter for 20' x 20' garages being entered as only 0.2'

All of the above items are real incidents.

So building officials cannot be relied on to check the values of installed windows and glass doors. Most "errors" plan checkers find in my energy reports end up being due to their lack of understanding of the code, and I have to point them to specific section(s) of the code showing why they are mistaken.

While there is not much that can be done about most errors or flat-out lies in energy reports, I believe measures could be taken to reduce the incidents of homes being built with less than the mandatory wall insulation, whether it be a registry checking if a "new" 2x6 wall meets at least one of the mandatory requirements, or at least a warning in the compliance software. It already warns when entering A/C specs lower than the mandatory minimum (annoyingly even when the entered HVAC system is set to existing).