

OPTIMAL BUILDING SYSTEMS

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HERS Index vs. REM/Rate Energy Consumption Model

Anyone who uses REM/Rate for modeling energy savings for competing improvement measures should understand that the HERS Index is not an appropriate metric for this purpose. The HERS Index is an asset rating and as such, must make assumptions for certain operational parameters.

For those who care about such things, I put together the following list of settings within REM/Rate that will affect the energy consumption model but not the HERS Index:

1. Infiltration – Index will not reflect an infiltration rate lower than the reference home default value unless a qualifying mechanical ventilation system is present.
2. Infiltration – Index is based on Shelter Class 4 for infiltration pressure conversions.
3. Mechanical – Index is based on 68F/78F thermostat setting. (Note: Design loads are based on 70F/75F.)
4. Windows – Index is based on 0.85/0.70 interior shading coefficients.
5. Lights & Appliances – The Lights & Appliances Audit section is ignored by the Index (replaces baseline appliance loads in the consumption model).
6. Fluorescent lighting – Index assumes a minimum of 10% fluorescent lights
7. Utility Bill Calibration – For existing homes, this allows the consumption model to be calibrated based on historical energy usage (ignored by the Index).

This list is not exhaustive. If you know of others, let me know and I'll add to the list.

To be sure, most raters don't tweak most of these parameters. But if the objective is to compare energy savings for various performance enhancements, we should use every facility the program provides. In particular, thermostat setpoints (item 3) is perhaps the largest disconnect between the HERS Index and the consumption model.

REM/Rate now provides the ability to calibrate the energy consumption model based on historical energy bills (item 7). This is a powerful feature when evaluating potential performance enhancements for existing homes.