

AEP Subcommittee Meeting

NFRC Spring Meeting

Tucson, AZ

March 4, 2009

NFRC 901

“Guidelines to Estimate the Effects of Fenestration on Heating and Cooling Energy Consumption in Single Family Residences”

Where are we at?

- Document approved and published last year for the *specific house*.
 - Estimate heating and cooling energy performance for a single specific house.
 - Several variables must be specified by the user besides just window properties (e.g. temperature setpoints, how blinds are used, ...).
- Ready for use once there is software or webtool to do it.

NFRC 901 - where are we at?

- *Reference house* not yet completed.
 - Estimate heating and cooling energy performance in a reference house with a set of operational conditions that represent a broad average of lifestyles.
 - Only required inputs are the window properties.
- Not everybody is happy on specific items, but we have resolved perhaps 90% of the issues through previous ballots.
- New draft sent to *old* email list combining:
 - a) Approved specific house language
 - b) Last version of reference house language with changes through Jan 2008.

Can download draft at <http://www.nfrc.org/scaepc.aspx>

NFRC 901 - where are we at?

- One key remaining issue on the how to account for variable operational parameters for the reference house.
 - Temperature setpoints
 - Interior shading
 - Dynamic windows
- Since July 2005, we have been working on a “range” concept.
 - Account for operational parameters as a range resulting in lower to higher heating and cooling energy use.
 - For example, cooling setpoint: 72 – 78 F
and heating setpoint: 68 – 75 F

NFRC 901 - where are we at?

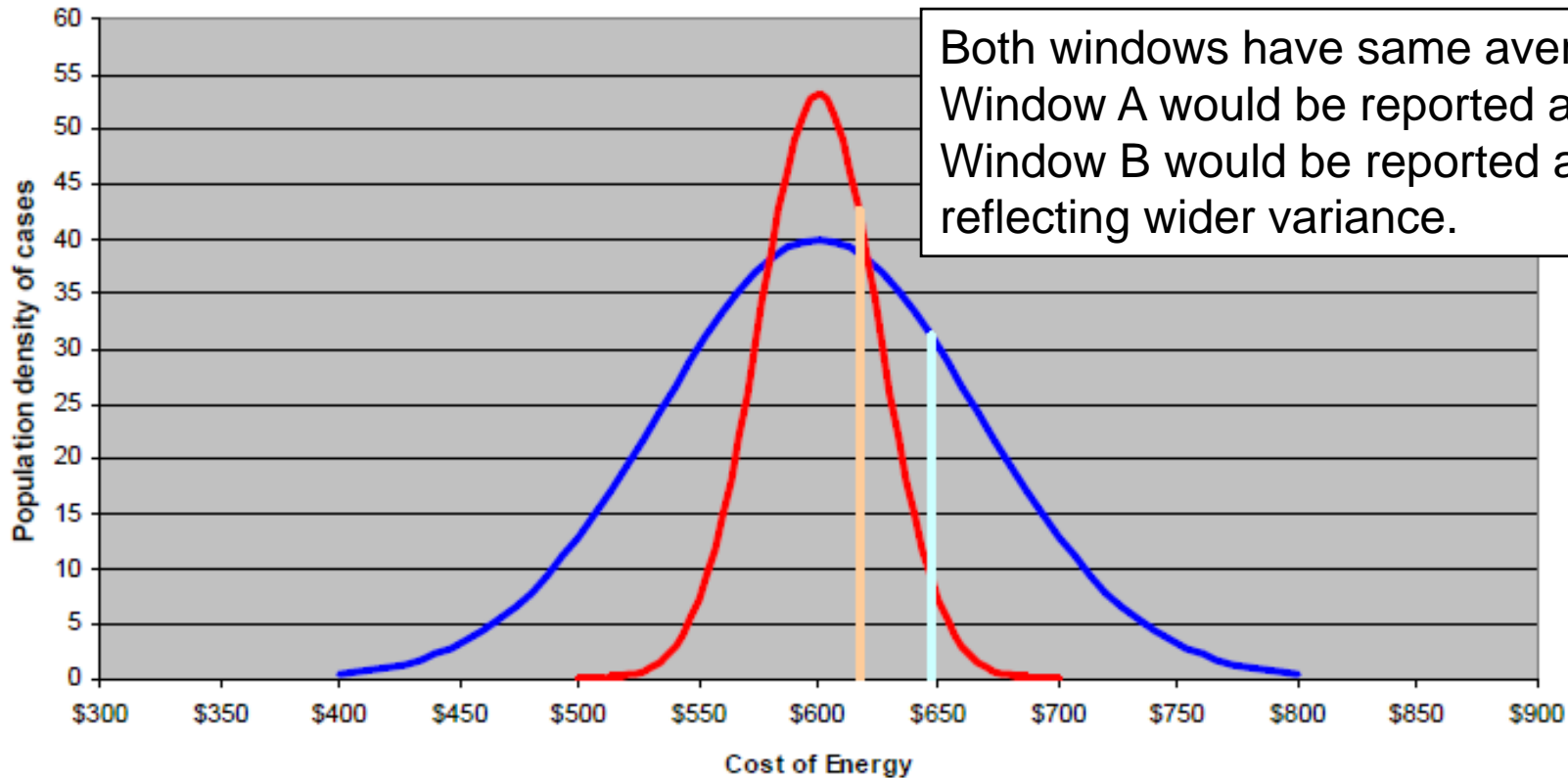
- LBNL studied the impact of these modeling assumptions.
- Concluded that the range of the results range was too broad, and “not useful as a simple metric of relative window energy performance.”
- Subcommittee found this persuasive and wanted to explore if there are other useful ways to include variability.
- LBNL proposed some alternatives to high/low range concept.
- Goal: capture variability while still providing useful information for decision making.

Options for including variability

- Behind scenes, have software run a multitude of simulations using all different combinations of variable parameters – not just the extreme end points.
- Different ways to report final results ...
 - Heating and cooling energy use reported separately
 - Just single average or median result (e.g. \$600)
 - Average value with error bar (e.g. \$600 +/- \$50 vs. \$600 +/- \$100)
 - Report single number where window beats a threshold level of conditions. (e.g. \$625 vs. \$650)

Options for including variability

Example of 75% threshold for a distribution of window energy costs



- This just reports a single value while still rewarding windows which perform more consistently over a range of conditions.

Where do we want to go?