DEER Window Measure Impact Development for Double-Wide Mobile Home
California Public Utilities Commission, Energy Division
October 18, 2017

Attachment
Revised DEER2017 + DEER2018 and DEER2019 Update Summary

1   Summary

CPUC staff have used the MASControl2 toolset to develop measure impacts for a high performance window unit as applied to the double-wide mobile home prototype. This effort involved several updates to MASControl2, including the addition of a new window measure, addition of a new window technology, and changes to the prototype to improve the frame area representation.

2   Window Performance Data

The measure is based on a specific window made by a specific manufacturer. The window selected for the program is the MI 5800 vinyl slider Lo E3-366 with the Intercept Ultra spacer. The properties for this window as published by the manufacturer are unit U-value of 0.32 Btu/hr-ft^2-F and unit solar heat gain coefficient (SHGC) of 0.23.

Modeling was accomplished in MASControl2 by selecting a glass type from the standard glass type library that gave reasonable values for center-of-glass (COG) U-value and glass SHGC. The frame factor (frame-to-total unit area ratio) was assumed to be 17% for the model. The selected glass type was library #2668, which has a COG U-value of 0.231 Btu/hr-ft^2-F and a glass SHGC of 0.28. With a frame U-value of 0.82 Btu/hr-ft^2-F, glass type 2668 gives a unit U-value of 0.320 Btu/hr-ft^2-F and a unit SHGC of 0.232.

3   Measure Implementation

In order to model this window measure in MASContol2, a revised version of the MASControl2 database was created. This database includes the following changes:

- Added new parameter to the ResWin Tech Type to improve frame factor modeling
- Added new Technology for the new window type with glass type 2668 and frame U-value of 0.82 Btu/hr-ft^2-F.
- Set Frame Factor to 17% for all residential window technologies
- Added new measure to the measure tables in the database for the new window type
- Added data to the prototype initialization tables to indicate the vintage-dependent pre-existing baseline and code baseline glass types for the measures.

In addition, a change was needed in the double-wide mobile home prototype to handle the frame factor. Expressions were added to the prototype file to calculate adjusted window and frame dimensions based on the value of the frame factor.

4   Results

The attached workbook includes the MASControl2 simulation results along with results formatted for the ex ante database and a data review graphic. The results were produced using

the updated MASControl2 rules database file and were processed using SQL functions and queries. The process for updating the MASControl2 database as well as for manipulating the technology results into the weighted measure savings values is described in the attach document. The additional tables, queries and functions used in this processing are included in the attached archive file. An example of the graphic review is shown below for an older vintage mobile home type with central cooling and a gas furnace. Note that the results are presented as "per building", whereas the ex ante formatted data is per square foot of window.