

Attachment 1:

Proposed Revisions to the Technical Resource Manual and Deemed Savings Table

This Attachment describes proposed revisions to the Technical Resource Manual (TRM) and Deemed Savings Table. These documents were submitted as part of the Ameren Missouri 2019-2021 MEEIA Cycle, as Appendix F (Deemed Savings Table) and Appendix G,H,I (TRM Volumes 1-3), on October 25th 2018 in EO-2018-0211 and approved on December 5, 2018. Ameren Missouri previously requested a TRM revision on December 31, 2018, which was approved by the Commission on February 27, 2019.

The primary purpose of this update is to incorporate Evaluation Measurement & Verification (EM&V) results from the 2018 program year. In addition, this revision also includes updates to HVAC measures and multifamily measures, based on feedback from the evaluation contractor, Opinion Dynamics Consulting (ODC), and the program implementation teams. Formatting and editing updates are also included for consistency. A description of these changes is provided below. The measure changes have been analyzed for cost effectiveness and the goals of the portfolio will not be adjusted.

To aid in stakeholder review, all updates are included in the TRM and Deemed Savings table in track changes with redlines. Within the Microsoft Excel workbook that serves as the basis for the Deemed Savings tables, this includes:

- New changes included in red text;
- Modifications to existing text in red and strikethrough (~~change~~);
- A revision change log included in columns "V" through "YY" denoted input values by applicable revision date;
- The ability to "group" rows and columns, to collapse deemed savings tables by inputs to see final values; and
- TRC cost effectiveness test results, by measure, in columns "BB" (Residential) and "DB" (Business).

Revisions:

PY2018 Results:

- Updated to reflect plan year 2018 evaluations results, as provided by the evaluation contractors (Cadmus and ADM). Applicable input values have been updated within the MEEIA 2019-21 Deemed Savings Table.

HVAC Measure Modifications:

- Effective Full Load Hours: ODC provided recommendations on Effective Full Load Hours (EFLH) for certain HVAC measures, primarily reducing EFLH for Ductless units and Geothermal heat pumps. This change was necessary to create more consistent definitions and methodologies for EFLH values used across measures. Additional documentation is provided in the attached memo from ODC. Note that the PY2020 evaluation plan includes a separate metering study for HVAC measures.
- Incremental cost inputs: Central Air Conditioners and Air Source Heat Pumps incremental cost equations incorrectly referenced input data. In addition, incremental cost inputs were also updated to reflect publicly available data sources, including values from the Illinois TRM. These costs are expressed as a per-unit cost. In contrast, earlier equations incorrectly treated these inputs as a per-ton cost. The equations have been updated to reflect the appropriate \$/unit cost structure.

Multifamily Low Income Measure Modifications:

- Comprehensive Envelope: Based on early reviews of multifamily low income projects, ODC recommended that the TRM be updated with separate (and lower) EFLH values for certain multifamily low income projects. This change in the TRM is associated with the current program delivery approach, and is consistent with the IL TRM, and these lower EFLH account for interactive effects resulting from the installation of comprehensive envelope or building shell measures. This change adds 69 additional measures, which are a duplication of existing measures but for the change in EFLH.

Clean-up items

- Based on the recommendation of the implementation teams, 35 additional measures have been added to reflect savings consistent with the current program delivery approach. These measures reflect new combinations of existing inputs, and importantly, all necessary inputs were available in the Deemed tables or Volume 3 of the TRM to calculate energy savings. For example, this includes a multifamily variation of the existing Learning Thermostats that was added in the Efficient Products Deemed tables. This measure addition is used to supplement the existing Single Family Measures.
- 3 air source heat pump (Replace on Fail) measures were identified in the HVAC Deemed Savings Table that erroneously used an early replacement baseline (8.33 SEER) and were updated with a corrected Replace on Fail (13 SEER) baseline. This change resulted in a lower savings for those measures for both Single Family & Multifamily combinations (6 measures total).
- Current revisions include additional Measure Reference ID's. This is intended to simplify measure identification within the MEEIA 2019-21 Deemed Savings Table.

- Some units of measure were adjusted to simplify for Implementation (e.g., Insulation values included a specific square footage for an average home which is now scaled to depict a per-square foot value rather than a whole home square footage input & Incremental cost.)
- The Business deemed tables include a change to one measure name to match the description in Volume 2 of the TRM. This name now includes both Split and Packaged HVAC units in the measure name.
- A "custom" measure was added to bottom of the Business Deemed Savings tables, primarily to depict a reference ID for custom measures with no deemed savings or input parameters.
- For ease of Implementation and Reporting, formulas have been added to round all final kWh values to 2 decimal places and associated kW values to 6 decimal places. The primary benefit is to retain consistency in the reported values across various reports and data tracking systems.
- Formatting and terminology was corrected in a manner that does not impact associated measure savings/cost values.