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**TO:** Katie Rich and Therese Harris, Public Utility Commission of Texas, and Texas Electric Utilities

**FROM:** Lark Lee, Bob Ramirez, and Bryan Ward, Evaluation Measurement & Verification (EM&V) team

**SUBJECT:** Texas Technical Reference Manual (TRM) Version 2.1 updates

**DATE:** January 30, 2015

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The Texas Technical Reference Manual version 2.0 (TRM 2.0) for Program Year 2015 was finalized in April 2014. An updated version, TRM 2.1, provides minor clarifications and corrections identified since the filing of TRM 2.0 as well as ENERGY STAR<sup>®</sup> updates and new measures for which the Commission approved deemed savings since TRM 2.0 was filed.

## Review Process Overview

The initial draft version of the Program Year 2015 TRM, 2.0, was distributed January 27, 2014, to the Energy Efficiency Implementation Project (EEIP). Review comments from stakeholders were received by February 17, 2014. Incorporating EEIP review comments and additional issues identified by the EM&V team, a revised draft of TRM 2.0 was distributed on March 17, 2014, for EEIP review. Review comments on the second draft were due March 31, 2014, and incorporated into the final version of TRM 2.0. The final version of TRM 2.0 was filed on April 17, 2014.

TRM 2.1 was distributed to the Electric Utility Marketing Managers of Texas (EUMMOT) for review December 12, 2014, and review comments were received by January 9, 2015. The final version of TRM 2.1 is filed with the Commission January 30, 2015. The updates incorporated by the EM&V team for TRM version 2.1 are summarized below.<sup>1</sup>

## TRM 2.1 Update Summary

The TRM is divided into three separate documents for ease of use:

- **Volume 1: TRM Overview and User Guide** covers the process for TRM updates and version roll-outs, weather zones, TRM structure and the format of the TRM measure overviews.
- **Volume 2: Residential Measures** contains the measure descriptions and deemed savings estimates for measures installed in residential dwellings.
- **Volume 3: Nonresidential Measures** contains the measure descriptions and deemed savings estimates for measures installed in nonresidential businesses.

Volume 1 changes consist only of minor updates in the language. The updates made in Volume 2 and Volume 3 are summarized below by measure.

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<sup>1</sup> The updates for TRM 2.0 from TRM 1.0 were filed in a separate memorandum, *Texas Technical Reference Manual Version 2.0 Updates*, to Katie Rich and Therese Harris, Public Utility Commission of Texas, and Texas Electric Utilities, from the Evaluation, Measurement and Verification team, April 17, 2014.

**Table 1. Residential Volume 2 Updates by Measure**

Measure Category	Measure Description	2.1 Update
HVAC	Duct Efficiency Improvement	Addition of language referring contractors to program manuals for information regarding health and safety precautions.
	Central Air Conditioner	Reversion to TRM v1.0 savings tables to reflect deferred enforcement of new regional standards. A court-ordered settlement allows SEER 13 split-system units to be sold without penalty until July 1, 2016.
Building Envelope	Air Infiltration	Addition of language referring contractors to program manuals for information regarding health and safety precautions.
	Water Heater Installation – Electric Tankless and Fuel Substitution	New construction permitted to claim savings subject to documentation requirements. Gas-fueled tankless water heaters made eligible for installation.
	ENERGY STAR® Clothes Washer	New ENERGY STAR® standards incorporated.
	ENERGY STAR® Refrigerator	New ENERGY STAR® standards incorporated.
Appliance Recycling	Refrigerator/ Freezer Recycling	New measure added to TRM v2.1.

**Table 2. Nonresidential Volume 3 Updates by Measure**

Measure Category	Measure Description	2.1 Update
Lighting	Lighting Controls	Corrections to <b>Error! Reference source not found.</b> through <b>Error! Reference source not found.</b> to accurately reflect the energy and power adjustment factors and to reflect savings based on connected load rather than a delta load. Consolidation of algorithms for Retrofit and New Construction projects.
HVAC (Cooling)	Package and Split-System (AC and Heat Pumps)	Minor text updates and clarification of early retirement requirements.
HVAC (Cooling)	Chillers	Minor text updates and clarification of early retirement requirements.
HVAC (Cooling)	Package Terminal Units and Room Air Conditioners (AC and Heat Pumps)	Corrections to energy and demand coefficients for heat pumps in Climate Zone 3 (Houston); <b>Error! Reference source not found.</b>
Food Service	ENERGY STAR® Commercial Dishwashers	Corrections to Water Use per Rack in <b>Error! Reference source not found.</b>
Refrigeration	Door Heater Controls	Correction to state that savings are on a per-linear foot of display case.
Miscellaneous	Pump-Off Controller	New measure added to TRM v2.1