

# MEMD Existing Measure Review & Calibration Research Prioritization

Presentation to Energy Waste Reduction (EWR)  
Collaborative

*Cherish Smith, Navigant*

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# Agenda

1	Existing Measure Review & Calibration Research
2	Measure Prioritization Process
3	Calibration Research History
4	Proposed Calibration Priorities
5	Next Steps

The Existing Measure Review and Calibration Research Process is used by utilities, third-party evaluators, and the MEMD Developer to support updates and improvements to MEMD savings estimates.

- The MEMD specifies per-unit gross energy (kWh, MCF) and demand (kW) savings estimates for each measure in the database. The per-unit impacts of MEMD measures are deemed until there is sufficient evidence to suggest a revision to the MEMD is warranted. This evidence can include:
  1. Codes and/or standards which change existing measure baselines;
  2. A body of credible evidence that supports a different known value; or
  3. A body of credible evidence that challenges the existing MEMD value but does not suggest a definitive new value applicable to Michigan.
- The first two scenarios above are covered by the existing measure review process. The third scenario above triggers a review to assess the need for a more rigorous study (i.e., MEMD calibration research).

#### Existing Measure Review

*Existing Measure Review* refers to the process through which the MEMD Developer or third-party evaluators **review existing MEMD measures to determine if savings values, calculations, baselines, and key assumptions remain accurate** or need updating based upon new developments. This review relies upon research from **secondary sources**.

#### Measure Calibration Research

*Measure Calibration* refers to the process through which **third-party evaluators conduct Michigan-specific research** which **analyzes the per-unit savings impacts** for current MEMD measures.

- This process produces research and workpaper revisions which become the basis for Modified Measure submissions to the MEMD.

MEMD Measures are prioritized for existing measure review and calibration research, based upon four key criteria.

- Existing measure reviews and calibration research will be clustered by end use or category (e.g., cooling) and prioritized based upon:
  1. Expected contribution to stakeholder portfolio savings estimates (i.e., a large share of current or future planned savings);
  2. Savings calculation uncertainty;
  3. Expected data availability and timing (from updated codes, ongoing studies, etc.); and
  4. Length of time since the last modification, review, or calibration activity for a given measure.

Several MEMD calibration studies have been conducted since 2012. The Tier 3 Thermostat and Housing Baseline calibration studies are currently ongoing. In addition, to these Calibration efforts, there is also an ongoing statewide LED Net-to-Gross Study.



### Residential

- Lighting Hours-of-Use (2012)
- Appliance Recycling Metering (2012)
- Domestic Water Heating Metering (2012)
- Upstream Lighting Impact Attribution (2014)
- Behavior Modification Report Model Review (2015)
- Appliance Recycling Savings Update (2015)
- Tier 3 Thermostat Study (Ongoing)
- Housing Baseline Study (Ongoing)



### Commercial & Industrial

- Lighting Controls Reduction Factor (2012)
- Lighting Hours-of-Use (2014)
- Programmable Thermostat Billing Analysis (2015)

The results of the completed studies have been incorporated into the MEMD.

The Technical Subcommittee has identified the following Existing Measure Review and Calibration Research Process.



 Collaborative Decision Points

Source: MEMD Overview Maintenance Process Manual, March 2018

DTE Energy and Consumer Energy identified Tier 1 Thermostats, LED Lighting, Appliance Recycling, and Furnaces as priorities for residential existing measure review and/or calibration research.

PRIORITY RANK	STUDY TYPE	PRIMARY FUEL	MEASURE CATEGORY	% OF SECTOR AND FUEL TYPE SAVINGS (DTE/CMS) <sup>1</sup>	UNCERTAINTY IN ESTIMATED SAVINGS	ESTIMATED COST OF MEMD CALIBRATION
1	Existing Measure Review/Calibration Research	Gas	Thermostats	22%/14%	High	High
2	Existing Measure Review	Electric	LED Lighting	50%/54%	Moderate	Low
3	Existing Measure Review	Electric	Appliance Recycling	9%/11%	Moderate	Low
4	Calibration Research	Gas	Furnaces	23%/29%	High	High

<sup>1</sup> Measure Category percent contribution of sector and fuel type savings is based on the DTE Energy 2017 Final Energy Waste Reduction Reconciliation Report, April 2018, and Consumers Energy 2017 Residential Energy Waste Reduction Certification Evaluation Report, May 2018.

DTE Energy and Consumer Energy identified Tier 1 Thermostats, LED Lighting, Appliance Recycling, and Furnaces as priorities for residential existing measure review and/or calibration research.

MEASURE CATEGORY	STUDY TYPE	OBJECTIVE	KEY CONSIDERATIONS
<b>Tier 1 Thermostats</b>	Existing Measure Review/Calibration Research	<ul style="list-style-type: none"> <li>Review Tier 1 Thermostat (setback/setup) measure savings values, calculations, baselines, and key assumptions (near-term)</li> <li>Conduct measure calibration research using DTE/CMS AMI data (long-term)</li> </ul>	<ul style="list-style-type: none"> <li>Tier 1 Thermostats remain in EWR programs due to system compatibility challenges associated with Tier 3 Thermostats</li> </ul>
<b>LED Lighting</b>	Existing Measure Review	<ul style="list-style-type: none"> <li>Review LED lighting savings values, calculations, baselines, and key assumptions</li> </ul>	<ul style="list-style-type: none"> <li>Uncertainty in lighting standards and future in EWR programs</li> <li>Significant savings contribution remains for at least 2 years</li> </ul>
<b>Appliance Recycling</b>	Existing Measure Review	<ul style="list-style-type: none"> <li>Update baseline for recycled appliances based on DTE and CMS program tracking data</li> </ul>	<ul style="list-style-type: none"> <li>Last update occurred in 2015</li> <li>Agreed to revisit baseline on a 2-year basis</li> </ul>
<b>Furnaces</b>	Calibration Research	<ul style="list-style-type: none"> <li>Conduct measure calibration research using MI-specific field data; collect efficiency data and meter</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing Housing Baseline Study will also inform savings</li> <li>Large contribution to portfolio gas savings and no calibration history</li> </ul>



DTE Energy and Consumer Energy identified LED Lighting, weather-sensitive building simulation models, Boiler Tune-Up, HVAC Controls and Lighting Controls for commercial measure calibration research.

PRIORITY RANK	STUDY TYPE	PRIMARY FUEL	MEASURE CATEGORY	% OF SECTOR AND FUEL TYPE SAVINGS (DTE/CMS) <sup>1</sup>	UNCERTAINTY IN ESTIMATED SAVINGS	ESTIMATED COST OF MEMD CALIBRATION
1	Calibration Research	Electric	LED Lighting	74%/56%	High	Moderate
2	Calibration Research	Gas	Building Baseline Study	75%/42%	Moderate	High
3	Existing Measure Review/Calibration Research	Gas	Boiler Tune-Up	29%/7%	High	Moderate
4	Calibration Research	Gas	HVAC Controls	20%/21%	High	Moderate/High
5	Calibration Research	Electric	Lighting Controls	4%/2%	High	Moderate/High

<sup>1</sup> Measure Category percent contribution of sector and fuel type savings is based on the DTE Energy 2017 Final Energy Waste Reduction Reconciliation Report, April 2018, and Consumers Energy Final 2017 Reconciliation Report data

DTE Energy and Consumer Energy identified LED Lighting, weather-sensitive building simulation models, Boiler Tune-Up, HVAC Controls and Lighting Controls for commercial measure calibration research.

MEASURE CATEGORY	STUDY TYPE	OBJECTIVE	KEY CONSIDERATIONS
<b>LED Lighting</b>	Calibration Research	<ul style="list-style-type: none"> <li>Update 2014 C&amp;I Hours-Of-Use Study focusing on additional building types and high bay lighting</li> </ul>	<ul style="list-style-type: none"> <li>Lighting potential remains large in the coming years</li> </ul>
<b>Building Baseline Study</b>	Calibration Research	<ul style="list-style-type: none"> <li>Conduct measure calibration research using MI-specific field data similar to the residential Housing Baseline Study to update MEMD weather-sensitive building simulation models</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing Housing Baseline Study may lead to significant changes to weather-sensitive measures</li> <li>Evaluation results have identified large discrepancies in savings values when compared to actual projects</li> </ul>
<b>Boiler Tune-Up</b>	Existing Measure Review/Calibration Research	<ul style="list-style-type: none"> <li>Complete initial review of Boiler Tune-Up values, calculations, baselines, and key assumptions, including DTE/CMS EWR program project-files (Phase 1)</li> <li>Conduct measure calibration using MI-specific field data and efficiency testing (possible Phase 2)</li> </ul>	<ul style="list-style-type: none"> <li>Historical evaluation results suggest little efficiency improvements based on review of pre/post-combustion analysis results provided in the customer application</li> </ul>
<b>HVAC Controls</b>	Calibration Research	<ul style="list-style-type: none"> <li>Conduct measure calibration research using MI-specific field data focusing on Energy Management Systems</li> </ul>	<ul style="list-style-type: none"> <li>Potential increased focus on Energy Management Systems</li> <li>High uncertainty due to lack of primary data in MI</li> </ul>
<b>Lighting Controls</b>	Calibration Research	<ul style="list-style-type: none"> <li>Conduct measure calibration research using MI-specific field data, including HOU reductions and various control strategies</li> </ul>	<ul style="list-style-type: none"> <li>Potential increased focus on advanced lighting controls</li> <li>NRDC recommended a prescriptive advanced lighting controls measure</li> </ul>

Given ongoing calibration research and LED Net-to-Gross research, DTE Energy and Consumers Energy recommend taking on additional calibration research once ongoing studies are complete.

STEP	DESCRIPTION	DUE DATE
1	<b>Third-party evaluators</b> identify prospective review and calibration measures, using the Measure Review Matrix as a resource. Evaluators discuss and coordinate proposed review and calibration measures with stakeholder utilities.	June - July
2	<b>Third-party evaluators</b> present proposed measures for existing measure review and calibration to the MEMD Technical Subcommittee and EWR Collaborative for feedback and prioritization.	September EWR Collaborative
3	<b>Third-party evaluators</b> develop measure-specific calibration research plans and present to the EWR Collaborative. Measure review research generally does not require a formal research plan.	TBD
4	<b>EWR Collaborative members</b> provide feedback on research plans to third-party evaluators.	TBD
5	<b>Third-party evaluators</b> incorporate EWR Collaborative feedback and begin execution of existing measure review and measure calibration research.	TBD
6	<b>Third-party evaluators</b> provide high-level updates on calibration studies (as requested by EWR Collaborative). Some studies may need additional time to be completed; therefore, this timeframe should be used as a guide with actual research time to be indicated and approved in research plan.	TBD
7	<b>Third-party evaluators</b> present measure calibration study results.	TBD
8	<b>Third-party evaluators</b> follow the steps outlined for Modified Measures, and submit workpapers for measure review and calibration research findings which update <del>current</del> MEMD measure parameters.	TBD