



MICHIGAN ENERGY MEASURE DATABASE (MEMD) OVERVIEW & MAINTENANCE PROCESS MANUAL

Michigan Energy Waste Reduction (EWR)
Collaborative

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1. Michigan Energy Measures Database (MEMD) Introduction

The MEMD is a collection of spreadsheets and supporting documentation that presents approved electric and natural gas energy and electric peak demand savings values for energy waste reduction (EWR) measures in the state of Michigan.

This manual is intended to accompany the Michigan Energy Measures Database (MEMD) and provide an overview of the MEMD purpose, structure and supporting documentation, key concepts, the maintenance and update process, and communication protocol used to manage and maintain the MEMD.

The MEMD is published by a third-party firm¹ (or MEMD Developer) which is sponsored by the Michigan Utilities. Natural Gas and Electric providers in Michigan support the generation of the MEMD, and participate along with others in the EWR Technical Subcommittee in the creation and maintenance process throughout its lifecycle.²

Updated MEMD documents are published on an annual basis. Interested parties and individuals can sponsor the addition of new measures or updates to existing MEMD measures annually. These requests are reviewed by the EWR Technical Subcommittee and are included in the updated MEMD, if approved. All existing MEMD measures are reviewed on a regular basis, typically once every three years.

1.1 Purpose

The MEMD is sponsored by gas and electric providers in Michigan and overseen by the Michigan Public Service Commission and the EWR Technical Subcommittee (or a multi-stakeholder group). The measures and values within the MEMD are incorporated into the development of provider-specific Energy Waste Reduction (EWR) plans, formerly referred to as Energy Optimization (EO) plans. The primary users of the MEMD are program planners, regulatory reviewers and planners, utility and regulatory forecasters, and consultants supporting utility and regulatory research and evaluation efforts.

The purpose of the MEMD is to:

- Provide a common and consistent source of information for energy waste reduction measures
- Facilitate demand and energy savings calculations for stakeholders
- Support standardization across Michigan, expedite evaluation measurement and verification (EM&V), and increase transparency in reporting, calibration, and reconciliation
- Provide accurate information on energy waste reduction measures and technologies that could be used Integrated Resource Planning (IRP) and EWR program planning teams

¹ Morgan Marketing Partners

² Section 71 of [PA 342 of 2016](#), which amended [2008 Public Act 295](#) describes the required components of Energy Waste Reduction Plans, which are created by natural gas and electric providers in Michigan and which leverage the MEMD.

- Document assumptions and Michigan-specific parameters (weather, load profiles, etc.) for measure savings calculations

1.2 Structure

The MEMD is comprised of two databases (1) Weather Sensitive Database and (2) Non-Weather Sensitive Database, and several types of supporting documents:

- **Weather Sensitive Database:** Presents energy and demand savings values and other measure characteristics (i.e., baseline condition, hours of use, measure life, etc.) for EWR measures where savings values vary based on weather. The database contains measures in four primary sectors: (1) Single Family Residential, (2) Manufactured Homes, (3) Multifamily Residential, and (4) Commercial. Savings in the Weather Sensitive Database are calculated from multiple inputs: weather zone, vintage, system type, and building type (Commercial and Multifamily Residential measures only).
- **Non-Weather Sensitive Database:** Presents energy and demand savings values and other measure characteristics (i.e., baseline condition, hours of use, measure life, etc.) for EWR measures not directly impacted by weather. The database contains measures in three primary sectors: (1) Residential, (2) Multifamily, and (3) Commercial.
- **Workpaper Template:** Presents key details for a potential EWR measure, including but not limited to: measure description, savings summary, methodology, assumptions, and measure life. Measure Sponsors submitting a New or Modified Measure for inclusion in the MEMD must complete this template.
- **Draft Workpapers:** These documents are completed Workpaper Templates, developed by Measure Sponsors, and to be reviewed for potential inclusion in the MEMD.
- **Approved Workpapers:** Once New or Modified Measures Draft Workpapers are submitted and approved, they are republished and revised by the MEMD Developer with any MEMD-specific specifications and reclassified as Approved Workpapers.
- **New and Modified Measure Summary List:** Summary of New Measure and Modified Measure (Draft Workpaper) submissions for potential inclusion in the MEMD. Once all measure submissions are received by the EWR Technical Subcommittee Chair, EWR Technical Subcommittee Chair combines all the key measure characteristics in a list which is then distributed to the EWR Technical Subcommittee for reference during the MEMD update process.

2. Key Concepts

The following key concepts are referenced in this document and in other MEMD documents, and are defined here for clarity and consistency of interpretation. These concepts are outlined in four categories: (1) Stakeholders, (2) Terminology, (3) Measure Types, and (4) Measure Classifications.

2.1 MEMD Stakeholders

Multiple stakeholders are involved in the MEMD maintenance and update process. Key stakeholders are described below (Table 1), with an overview of their responsibilities as they relate to the MEMD. Additional details on Stakeholder responsibilities are outlined in the Maintenance & Update Process section.

Table 1. MEMD Stakeholders

| MEMD STAKEHOLDER | DEFINITION |
|--|---|
| Michigan Public Service Commission (MPSC) | <p>Composed of three members appointed by the Governor of Michigan with the advice and consent of the state Senate. Commissioners are appointed to serve staggered six-year terms. No more than two Commissioners may represent the same political party. One commissioner is designated as chairman by the Governor.</p> <p>The mission of the Michigan Public Service Commission is to protect the public by ensuring safe, reliable, and accessible energy and telecommunications services at reasonable rates for Michigan's residents.</p> |
| Michigan Public Service Commission (MPSC) Staff | Staff hired by Commissioners to carry out the mission of the MPSC. Commission Staff serve as the chair of the EWR Collaborative and Technical Subcommittee, and oversee the decision-making process of the groups. |
| Natural Gas and Electric Service Providers <i>(Also known as "Utilities")</i> | Providers are entities which deliver energy to customers. This group can also include third-parties which perform planning and implementation for EWR programs on behalf of the utilities. Providers support the maintenance and updates of the MEMD as members of the EWR Technical Subcommittee. |
| Third-Party Evaluators | Independent third-party contractors that perform evaluation, measurement and verification (EM&V) services for Provider EWR programs. Evaluators also support the maintenance and updates of the MEMD as members of the EWR Technical Subcommittee. |

| MEMD STAKEHOLDER | DEFINITION |
|---|---|
| <p>Energy Waste Reduction (EWR) Collaborative</p> <p><i>(Formerly “Energy Optimization (EO) Collaborative”)</i></p> | <p>In October 2008, the Governor signed 2008 PA 295 into law, requiring providers of electric or natural gas service to establish the Energy Optimization (EO) Collaborative to³:</p> <p><i>“include all electric and gas providers subject to the Commission’s jurisdiction under Act 295. In addition, energy efficiency experts, equipment installers, and other interested stakeholders should be encouraged to participate in the collaborative.”</i></p> <p>The goals of the Collaborative include the following:</p> <ul style="list-style-type: none"> • Make recommendations for improving EO (now EWR) programs for all providers. • Provide program evaluation support and develop any needed re-design and improvements to energy efficiency programs. • Update and refine the MEMD. • Promote economic development and job creation in Michigan by providing a forum to connect Michigan manufacturers, suppliers and vendors with utility EO (now EWR) programs. |
| <p>Energy Waste Reduction (EWR) Technical Subcommittee</p> | <p>A selection of EWR Collaborative members focused on the review and approval of New and Modified measures for inclusion in the MEMD. This group supports the general oversight and maintenance of the MEMD. Like the EWR Collaborative, technical subcommittee members are comprised of Commission Staff, Utilities, Implementation Contractors, Third-Party Evaluators, energy efficiency experts, and other interested stakeholders.</p> |
| <p>Energy Waste Reduction (EWR) Technical Subcommittee Chair</p> | <p>A single member of Commission Staff serves as the EWR Technical Subcommittee Chair who oversees the decision-making process of the group and MEMD update process.</p> |
| <p>MEMD Developer</p> | <p>A third-party firm contracted by the utilities to assist with review and approval of MEMD Whitepapers, update of the database with New and Modified Measures, and development of Workpapers. The MEMD Developer is responsible for the overall maintenance of the MEMD, including annual measure baseline updates.⁴</p> |
| <p>Measure Sponsor</p> | <p>Individual or entity who submits a New Measure or Modified Measure for inclusion in the MEMD. Measure sponsors may include utility staff, implementation contractors, third-party evaluators, measure manufacturer/vendors or others.</p> |

³ On December 12, 2016, Governor Rick Snyder signed into law Public Act 342 of 2016 (Act 342), the “Clean and Renewable Energy and Energy Waste Reduction Act”, which amended Act 295 in several ways, most significantly “Energy Optimization” is changed to “energy waste reduction” (EWR) throughout. Act 342 had an effective date of April 20, 2017.

⁴ Morgan Marketing Partners

| MEMD STAKEHOLDER | DEFINITION |
|--|--|
| Energy Efficiency Contractors, Builders, Intervenors and other Interested Stakeholders | Other interested stakeholders from the public can be measure sponsors, EWR Collaborative or Technical Subcommittee members or participants in the MEMD update process. |

2.2 Measure Types

Energy Waste Reduction measures are considered specific, defined actions that are intended to reduce electric demand, electric energy consumption, and/or natural gas energy consumption. EWR programs are comprised of four key measure types: (1) prescriptive, (2) hybrid, (3) custom measures, and (4) Behavioral. Each of these measure types are defined in Table 2.

Table 2. EWR Measure Types

| MEASURE TYPE | DEFINITION |
|----------------------|---|
| Prescriptive Measure | Measure whose unitized savings (e.g., savings per lamp) is stable over time and can be reasonably estimated across multiple sites in Michigan. Prescriptive measures are typically included in the MEMD. |
| Hybrid Measure | Measure type which features a standard algorithm for calculating energy and demand savings, but which uses variable (custom) site-specific inputs for that algorithm. Most commonly used for measures in individual provider (utility) programs and are typically <u>not</u> included in the MEMD. |
| Custom Measure | Measure type featuring site-specific savings values which vary by project. Most commonly used for complex, multi-faceted measures or projects (e.g., industrial processes, whole home, whole building) in individual provider (utility) programs and are typically <u>not</u> included in the MEMD. |
| Behavioral Measure | Measures (including tools or programs) aimed at achieving energy savings by helping customers understand their energy use and motivating them to adopt energy efficient behavior changes (e.g., turning off lights or turning back thermostats). |

2.3 MEMD Terminology

Key terms used in the MEMD and supporting documentation are defined in Table 3.

Table 3. MEMD Terminology

| TERM | DEFINITION |
|---------------------------------------|--|
| Deemed Savings | Specific and fixed per-unit energy savings or demand reduction values which have been accepted in the MEMD by stakeholders. These values are accepted because: measure definitions and technology applications are consistent over time, locale, program, and/or customer type; and sound engineering practices and research support the savings calculation. |
| Weather Sensitive Measures | Measures for which savings are affected directly by weather and which need to be quantified based on a simulation of that weather. |
| Non-Weather Sensitive Measures | Measures for which savings are not impacted directly by weather. |
| Workpaper Template | This document presents key details for an EWR measure, including but not limited to: measure description, savings summary, methodology, assumptions, and measure life. Measure Sponsors submitting a New or Modified Measure for inclusion in the MEMD must complete this template. This template ensures essential measure information is captured and consistently presented to the EWR Technical Subcommittee for review. |
| Draft Workpapers | These documents are completed Workpaper Templates, developed by Measure Sponsors, and to be reviewed for potential inclusion in the MEMD. |
| Approved Workpapers | Once New or Modified Measures Draft Workpapers are submitted and approved, they are republished and revised by the MEMD Developer with any MEMD-specific specifications and reclassified as Approved Workpapers. Approved Workpapers are classified as Weather Sensitive or Non-Weather Sensitive. |
| New and Modified Measure Summary List | Summary of New Measure and Modified Measure (Draft Workpaper) submissions for potential inclusion in the MEMD. Once all measure submissions are received by the EWR Technical Subcommittee Chair, EWR Technical Subcommittee Chair combines all the key measures characteristics in a list which is then distributed to the EWR Technical Subcommittee for reference during the MEMD update process. |

2.4 MEMD Measure Classifications

Measures submitted to the EWR Technical Subcommittee for potential inclusion in the MEMD may be classified as (1) New Measures, (2) Modified Measures, or (3) Calibration Measures. These measure classifications are defined in Table 4. Additional detail on measure requirements, review processes and timelines can be found in the Maintenance & Update Process section.

Table 4. MEMD Measure Update Classification

| TERM | DEFINITION |
|---------------------|---|
| New Measure | <p>Measure which:</p> <ul style="list-style-type: none"> • Is proposed for review and addition to the database, and • Does <u>not</u> share the same principal technology or demand/energy savings mechanism as an existing measure in the MEMD. <p>New Measures may be based on engineering algorithms, secondary research applicable to Michigan, or pilots conducted by Michigan natural gas and electric providers.</p> |
| Modified Measure | <p>Measure which:</p> <ul style="list-style-type: none"> • Is proposed for review and/or addition to the database, and • Shares the same principal technology or demand/energy savings mechanism as an existing measure in the MEMD. <p>Measures may be modified for the following reasons:</p> <ul style="list-style-type: none"> • New application of an existing measure (i.e., adding a new participant population, adding a new building type, adding a new baseline condition); results in a new measure in the MEMD. • Revision of an existing measure (i.e., updating parameters based upon new research, standard or code changes, correcting an error from a previous MEMD version, measure removal). |
| Calibration Measure | <p>Measure which:</p> <ul style="list-style-type: none"> • Currently exists in the MEMD, and • Will be updated with new <i>primary Michigan-specific</i> research data <p>A Calibration Measure undergoes Calibration Research, the process through which the third-party evaluation teams analyze the per-unit impacts of select MEMD measures. Thus, MEMD savings values are “calibrated” with current data and relevant research on measures installed in services areas of Michigan EWR Program administrators.</p> <p>Calibration measures are selected as part of the statewide Calibration Prioritization Framework (see section XX for additional detail), when a body of credible evidence challenges the existing MEMD value but does not suggest a definitive new value applicable to Michigan.</p> |