

MEMORANDUM

To: MPSC Evaluation Working Group
From: William Ware, Director of Research and Evaluation, Consumers Energy
William Newbold, Manager EM&V, Energy Optimization, DTE Energy
Jennifer Holmes, Commercial Sector Evaluation Project Director, EMI;
Steve Cofer, Residential Sector Evaluation Project Director, Cadmus;
Lisa Gartland, Director of Engineering, Opinion Dynamics Corporation
Date: November 22, 2011
RE: Process for Identifying MEMD Measures for Calibration

This memorandum presents a proposal for the methods and process by which the independent evaluation teams will identify measures specified in the Michigan Energy Measures Database (MEMD) for more rigorous study, and how the results of such measure studies will be incorporated into the existing MEMD update process. The MEMD was developed by Morgan Marketing Partners (MMP) as the basis of the initial energy efficiency potential estimates for Michigan's Energy Optimization (EO) Plan.¹ Michigan's EO Program administrators now use the MEMD for the development and update of their EO program plans. Among other things, the MEMD specifies the per-unit gross energy (kWh, MCF) and demand (MW) impact estimates of each measure in the database. The per-unit impacts of MEMD measures are stipulated, or "deemed" until there is consensus among *parties*² that a revision to the MEMD is warranted. Such a consensus may arise due to:

1. Code and/or standards changes revising baselines.
2. A body of credible evidence that results in a different known value.
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 situations are covered in the existing MEMD update process as described in the attached document (MEMD Update Process). This document focuses on the third outcome and outlines the method the evaluation teams have developed to identify specific measures of the MEMD that warrant more rigorous study.

¹ 2008 PA 295.

² In the context of the MEMD Measure Calibration, "*parties*" refers to the collective membership of either the Program Design and Implementation Collaborative or the Evaluation Collaborative, under the auspices of the Michigan Public Service Commission.

1. Objectives of MEMD Measure Calibration

Measure calibration refers to the process through which the independent evaluation teams³ conduct studies and utilize data collected through annual EO program evaluations to review the per-unit impacts (including calculations and inputs) of select MEMD measures. As a result of this process, the stipulated MEMD measure impacts are “calibrated” with current data and relevant research on measures installed in service areas of Michigan EO Program administrators. The ultimate objective is to ensure MEMD savings values, within an acceptable level of precision, represent the actual energy savings being realized through measure installation. As discussed below, measure calibration conducted by the independent evaluation teams is a distinctly separate process that supports the overall *MEMD update* process facilitated primarily by the Program Design Collaborative and the Technical Sub-committee. Recognizing this the measure calibration timeline synchronizes with the MEMD update process to ensure all proposed revisions are included in the distribution of MEMD revision proposals circulated to the MPSC Collaboratives and ultimately submitted to MMP to be enacted.

2. Overview of the Overall MEMD Update Process

The overarching process through which all proposals for additions to the MEMD is referred to herein as the “overall *MEMD update process*.” is depicted as the top portion of Figure 1, and detailed in the Attachment. In particular, Figure 1 illustrates the process through which new measure additions are submitted to and vetted through the EO Collaboratives. This general process, developed through the EO Collaboratives, is not the focus of this document. Rather, the MEMD calibration process outlined herein is intended to result in measure proposals that become inputs into the overall update process.

As detailed in the Attachment, the drivers for MEMD additions are either EO Program providers, third-party vendors, or both. Proposals for the addition of *new* MEMD measures are developed by EO Program providers or third-party vendors. New measure proposals must be sponsored by an EO Program provider and then submitted to the Collaborative Technical Sub-committee for review. The Technical Sub-committee will review each proposal and submit recommendations to Collaborative Co-chairs to approve or reject each new measure; approved measure proposals will then be incorporated into the Evaluation Collaborative review process (Step 2 of attachment).

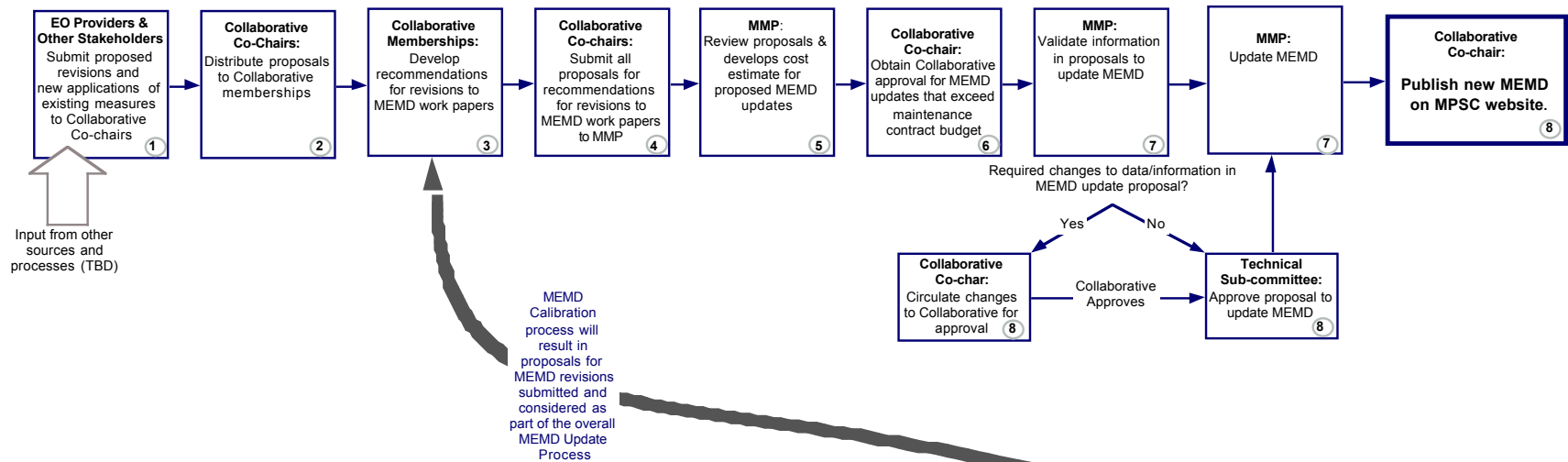
3. Overview of the Measure Calibration Process

The measure calibration process is intended to precede the MEMD update process summarized above and outlined in the attachment. Figure 1 illustrates how the measure calibration process, the focus of this document, feeds into the broader MEMD update process.

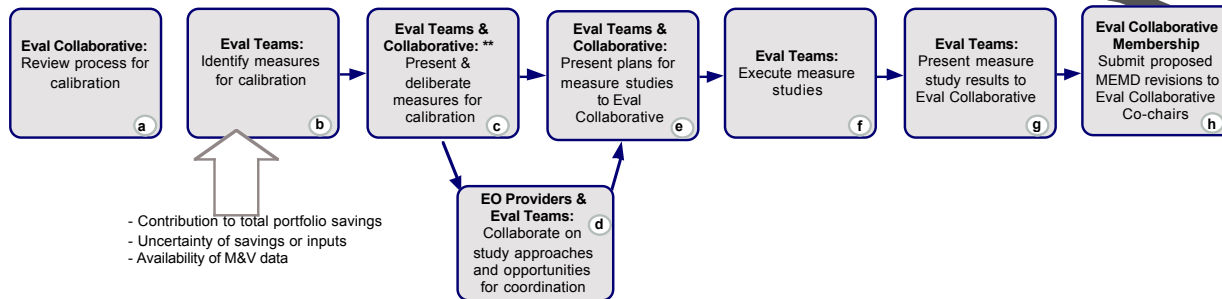
³ The independent evaluation teams are third-party evaluation contractors hired by EO Providers. Currently, the independent evaluation contractors include Energy Market Innovations, Cadmus, Opinion Dynamics, and KEMA.

Process for Identifying MEMD Measures for Calibration

Figure 1: Overview of the Overall MEMD Update and Measure Calibration Processes



Measure Calibration Process



** Note: The deliberations in Step C begin with the EO Provider/ Evaluation Team recommendations. Suggestions from other Collaborative members for additional measures needing calibration would be included in the discussion at this point.

Process for Identifying MEMD Measures for Calibration

Table 1 details the process for measure calibration, including the timeline for synchronizing with the MEMD update process.

Step (a) of Table 1 ensures that the process through which the evaluation teams identify priority measures for more rigorous study and the process ensuring results are included in the MEMD update process through the Collaboratives is transparent and reasonable. The evaluation teams will present the identified priority measures at the October Evaluation Collaborative meeting. During the November Collaborative meeting, the evaluation teams will provide an overview of specific measure studies that could commence as early as possible in January 2012. Results will be shared and vetted through the Evaluation Collaborative in June 2012 to allow the Collaborative to develop and submit recommendations for MEMD revisions (if warranted) in time to be included in the review of proposals by the Evaluation Collaborative in July 2012.

Table 1: Measure Calibration Tasks and Timeline

Step	Responsible	Task	Date
a	Establish calibration process		
	Eval Teams	Present measure prioritization methods & MEMD measure calibration process	9/20/11 Collaborative Meeting
	Collaborative Members	Submit comments to MPSC Co-chairs on the measure prioritization & MEMD calibration process	10/7/11
	Eval Teams	Finalize measure prioritization & calibration process submitted to Evaluation Collaborative Co-chairs	10/14/11
b	Eval Teams	Identify measures for calibration	10/14/11
c	Eval Teams	Present final measures for calibration Additional discussion of measure calibration process (If necessary)	10/18/11 Collaborative meeting
d	Eval Teams & Respective EO Providers	Deliberate methods and data collection approaches to study measures Develop draft, high-level research plans	11/4/11
e	Eval Teams	Present measure study concepts	11/15/11 Collaborative Meeting
f	Eval Teams	Execute measure studies	1/1/12
g	Eval Teams	Present available measure study results	June 2012 Collaborative Meeting
h	Collaborative Members	Submit proposed MEMD revisions to Evaluation Collaborative Co-chairs	7/1/12
2 (of MEMD Update process)	EM&V Collaborative Co-chairs	Aggregate MEMD revision proposals and send out to Evaluation Collaborative members	7/15/12
<i>Continue steps 3-8 in process outlined in overall MEMD Update Process</i>			

4. Methodology to Identify Measures for Calibration

As noted, the primary objective of this document is to outline the methodology for identifying measures for measure calibration. The current version of the MEMD (2011) includes over 150 residential and 500 commercial measures. A large number of the MEMD measures have not been utilized by EO Program providers or represent a small percent of the total reported gross portfolio savings. Due to the sheer number of measures, and that there is a high degree of variability of the risk each measure poses to the total portfolio-level savings, the evaluation teams developed a method for prioritizing measures that should be reviewed or measured more rigorously starting in 2012.

The evaluation teams defined three primary criteria for identifying measures for calibration:

1. The expected contribution to portfolio savings,
2. The level of uncertainty of the per-unit savings, the calculation method, and/or calculation inputs, and
3. The availability of recent M&V results or that M&V is planned or in progress.

It is important to note that the expected contribution to portfolio savings is a threshold requirement to select a measure for MEMD calibration. That is, a measure must be a significant contributor to total kWh or MCF savings to warrant additional research. Uncertainty is a necessary but not sufficient criterion for calibration. If there is a high level of uncertainty associated with the measure savings, but the measure accounts for a relatively small portion of expected portfolio savings, it will not be selected for additional study.

Each criterion is summarized below.

Expected Contribution to Total Portfolio Savings: Because changes to the MEMD values will occur on a forward looking basis, the estimated level of expected energy savings associated with each measure is important; measures that are expected to account for a significant portion of total portfolio savings are considered a high priority for measure calibration. To determine the expected contribution to total portfolio savings, the evaluation teams will analyze data EO Program providers developed to construct the most current EO Plan. Program tracking data for the most recent program year may also serve as a proxy or supplement program planning data for determining expected contribution to portfolio savings, since the distribution of savings across measures in one year is typically highly correlated to the subsequent year. Additional supplementary information might also be solicited from EO provider staff, if necessary.

The evaluation teams will conduct the following analyses to identify measures that pass this threshold criterion:

1. Group measures by end use or end use category. This is necessary to ensure that measures with identical algorithms are considered as a single unit for calibration, and also helps to reduce the number of measures in the analysis.
2. Sort and rank measure groupings by total expected savings (in descending order).
3. The top ranked measures groupings that collectively account for 75% of the expected portfolio savings will be flagged as candidates for calibration.

The above ranking will be conducted separately for electric and gas measures.

Uncertainty of Savings or Calculation Inputs: Measures for which there is a high degree of uncertainty in the per-unit savings or calculation inputs are considered high priorities for more rigorous study. As noted above, this is a necessary but not sufficient criterion for calibration. A measure must first be identified as a major contributor to expected portfolio savings to be included in the assessment of uncertainty.

Examples of factors the evaluators will consider to assess uncertainty will include, but are not limited to the following:

- *EO Program evaluation results.* EO Program evaluations estimate the extent to which the *ex ante* savings are realized (*ex post*). The degree to which *ex ante* estimates differ from *ex post* verified savings is often represented by a gross adjustment factor, or the ratio of *ex ante* reported savings to *ex post* verified savings. Measures for which gross adjustment factors are notably greater than or less than 1.0 could indicate uncertainty with the MEMD savings value or calculation inputs, particularly if evaluation results are consistent across multiple years.
- *Degree of technological change or controversy in other states.* Significant technology change or significant challenges to deemed values developed elsewhere may be a trigger that a measure warrants more rigorous study for the Michigan market.
- *Uncertainty of baseline assumptions and/or high variance of baseline conditions across like participants.* Measures for which there is high variability in baseline assumptions across participants/programs are considered a higher priority for more rigorous study. Low uncertainty means there is sufficient secondary literature to support the baseline, and the degree to which it changes from one participant to the next is minimal. A high variation ranking signifies there is limited secondary or primary research and baselines are expected to be highly variable by participant and program.
 - An example of a condition that would contribute to uncertainty of baseline assumptions is nonlinear savings. Non-linear savings occur when additional installations of the same measure have different savings values than for the first installation. For instance, the savings from each incremental CFL installation might decline if the additional lamps are installed in lower-use sockets, such as closets or basements.

Availability of Recent M&V Results or M&V is Planned or In Progress: To avoid duplication of effort, measures for which M&V applicable to the State of Michigan has recently been completed or is planned/in progress will be considered by the evaluators to determine if additional M&V is warranted.

5. Development of Studies for Measure Calibration

The primary objective of this memorandum is to summarize the process to be undertaken by the independent evaluation teams to identify measures for calibration. This is the first step of a lengthy process to develop research plans and execute studies that will ultimately inform possible revisions to the MEMD. Upon completion of the above processes, the evaluation teams will present the priority residential and nonresidential measures to each utility for review as measures that warrant further consideration; the final set of measures for calibration will be presented to the Evaluation Collaborative in October 2011 (shown as Step c in Table 1).

The most appropriate research and data collection approach (i.e., M&V, other primary data collection, analysis of secondary data) will be deliberated among the utilities and their respective evaluation teams later this fall, and study concepts will be presented to the Evaluation Collaborative during the November meeting (shown as Steps (d) and (e) in Table 1). Considerations for the development of measure study plans include (but not limited to): budget, timing of results, and the extent to which economies can be gained by executing a study that covers the service area of multiple EO Program providers. The MEMD work papers for measures selected for calibration will be made available to the Evaluation Collaborative (pending adherence to any existing confidentiality agreements). Collaborative members will have an opportunity to suggest amendments to the measures and/or methods proposed by Evaluation Teams prior to commencing studies.

6. Presentation of Results to Evaluation Collaborative

While not the focus of this memorandum, Steps *h* and *i* in Table 1 indicate that all available measure study results will be presented to the Evaluation Collaborative during the June 2012 meeting. If the Evaluation Collaborative determines that a measure value should be adjusted, the Collaborative will develop and submit a proposal for revising the current measure work paper(s). All such proposals will be submitted to the Evaluation Collaborative co-chairs no later than July 1, 2012 to ensure they are included in the broader MEMD Update process.

7. Measure Calibration Timeline for Future MEMD Updates

Measure calibration process to begin in calendar year 2012 is outlined in Table 2. Future measure calibration cycles follow the same process, but are expected to begin earlier in the year and will therefore allow for more time for measure studies execution and review.

Table 2: Future Measure Calibration Tasks and Timeline

Step	Responsible	Task	Date
a	Collaborative	Review calibration process and schedule	August 2012
b	Eval Teams	Identify measures for calibration	September 2012
c	Eval Teams	Present final measures for calibration Additional discussion of measure calibration process (If necessary)	September 2012 Collaborative meeting
d	Eval Teams & Respective EO Providers	Deliberate methods and data collection approaches to study measures Develop draft, high-level research plans	October 2012
e	Eval Teams	Present measure study concepts	October 2012 Collaborative Meeting
f	Eval Teams	Execute measure studies	November 2012
g	Eval Teams	Present available measure study results	May 2013 Collaborative Meeting
h	Collaborative Members	Submit proposed MEMD revisions to Evaluation Collaborative Co-chairs	July 1, 2013
2 (of MEMD Update Process)	EM&V Collaborative Co-chairs	Aggregate MEMD revision proposals and send out to Evaluation Collaborative members	July 15, 2013
<i>Continue steps 3-8 in process outlined in overall MEMD Update process</i>			

Attachment: Overall MEMD Update Process

Attachment: Overall MEMD Update Process

Attachment: Overall MEMD Update Process

Proposed Process for making additions to the MEMD

In order to facilitate the timely addition of new measures into the MEMD¹, proposed additions must be approved and forwarded to Morgan Marketing Partners (MMP) by July 27, 2011. This will allow inclusion in the MEMD for the 2012 and beyond calendar years.

Step	Who	What	When (Current Year)
1a	Vendors	Submit proposed changes or additions to the MEMD to Provider for potential pilot or program offering.	On-going
1b		If unable to obtain provider support, submit proposal to Program Design Collaborative Staff Co-Chair (Dave Walker), in writing, for consideration at the May Program Design Collaborative.	May 13 th for next MEMD update On-going
2	Electric and Natural Gas Providers	The May Program Design Collaborative meeting should include a review of the vendor submittals not being sponsored by a provider. Any measures the Committee recommends will be forwarded by the MPSC Staff Program Design Co-Chair, Dave Walker, to the Technical Sub-committee for a more thorough review.	May 17 th
3	Electric and Natural Gas Providers	Submit proposed additions to the MEMD to Technical Sub-committee with the information below. Information to be submitted with additions: <ul style="list-style-type: none"> • Measure recommended for inclusion or change • Market specific customer class and any particular segmentation within that class for which the programs are designed. Note specific information concerning which customers are eligible for participation. • Baseline: What is the technology that this measure will replace? • Proposed incentive level, if known (not needed for the MEMD but should be discussed) 	June 1st
4	Technical Sub-Committee (see detail on next page)	Evaluate proposed changes and additions using standardized criteria. Forward recommendations to the MPSC Staff Program Design Co-Chair, Dave Walker for aggregation with recommended revisions and new application of existing measures being reviewed by the EM&V Collaborative	July 8 th
<i>This process is then merged with the revision and new application process at step 2 of that process</i>			

¹The MEMD is solely a measures database. It does not apply program adjustments such as Freeridership, spillover or install rates. These adjustments are reflective of the program delivery and market application, not the measures themselves.

Attachment: Overall MEMD Update Process

Proposed Process for making revisions and proposing new application of existing measures to the MEMD

In order to facilitate timely revision of existing measures that are in the MEMD¹ as well as facilitate the timely addition of new applications of existing measures that are in the MEMD, proposals for both must be approved and forwarded to Morgan Marketing Partners (MMP) by July 27, 2011.

Step	Who	What	Due By: (Current Year)
1	Electric and Natural Gas Providers	<p>Submit <i>proposed revisions and new applications of</i> existing measures in the MEMD to the EM&V Collaborative Chair with the information below.</p> <p>-----</p> <p>For proposed new applications of existing measures:</p> <ul style="list-style-type: none"> • Existing measure that is the basis for the new application recommended for inclusion or change • Market specific customer class and any particular segmentation within that class for which the programs are designed. Note specific information concerning which customers are eligible for participation. • Baseline: What is the technology that this measure will replace? • Proposed incentive level, if known (not needed for the MEMD but should be discussed) <p>-----</p> <p>For revisions of existing measures:</p> <ul style="list-style-type: none"> • Reason for revisions • Supporting Documentation for revisions: information gathered through the EM&V process or engineering studies 	July 1st
2	Staff EM&V and Program Design Co-chairs (Karen Gould and Dave Walker)	Aggregate Submittals and send out for pre-read	July 15 th
3	Joint EM&V and Program Design Collaborative	Review proposed revisions and new applications. Also review the proposed new measures submitted by the Technical Sub-Committee. Make recommendation for official MEMD changes and additions to MMP	July 19th Collaborative meeting
4	MPSC Staff EM&V Collaborative Co-chair (D. Walker)	Submit a composite list of the Collaborative approved proposed revisions, new applications of existing measures and any new measures to MMP along with all the supporting documentation.	July 27 th
5	MMP (R. Morgan)	Determine if the costs for the revisions, new applications of existing measures, and any proposed new measures, are covered under the currently contracted price. If not, provide a cost estimate to the MPSC Staff EM&V Collaborative Co-chair before moving forward.	August 5 th

For EO Collaborative Meeting review on 4/19/10

Attachment: Overall MEMD Update Process

Step	Who	What	Date of Completion (Current Year)
6	MPSC Staff Program Design Collaborative Co-chair (D. Walker)	If costs beyond those covered under the current MEMD maintenance contract would be incurred for the proposed MEMD modifications, then the Program Design Co-chair must gain collaborative approval (email with quick turn around request ²) for prorata sharing of the costs. If an agreement to share the costs is not obtained, then the co-chair will ask the recommending provider(s) if they are willing to pay for the inclusion of the measure in the MEMD on their own and in total. MMP is notified of how to proceed.	August 12 th
7	MMP (R. Morgan)	Once any additional costs are approved, review the proposed revisions, new applications, and new measures in detail and validate the accompanying information. Work with the provider(s) that proposed the revision or measure to clarify any information needed for the validation. If no changes need to be made to the data submitted, then the measure will be entered into the MEMD. If MMP recommends changes to the measure data as received, then the Technical Sub-committee must approve the recommended changes prior to inclusion in the MEMD. This will have to occur via email with a quick turn-around in order to stay on schedule.	On-going through September 23 rd
8	MPSC Staff Program Design Collaborative Co-chair (D. Walker)	If changes to the recommended revisions, new applications, or new measures are recommended by MMP then the Program Design Co-chair must circulate the recommended changes to the collaborative members for approval and provide feedback to MMP. ----- Once the Technical Sub-committee approves any changes and MMP updates the MEMD for 2012, the Staff Co-Chair will facilitate the posting of the new MEMD on the Commission's website.	September 2 nd ----- September 30 th

¹The MEMD is solely a measures database. It does not apply program adjustments such as Freeridership, spillover or install rates. These adjustments are reflective of the program delivery and market application, not the measures themselves.

² Each Company or Collaborative participant needs to designate a point person to be contacted and a back-up as this is heavy vacation season.