MEMD Calibration Research

EWR Collaborative
9.21.2021

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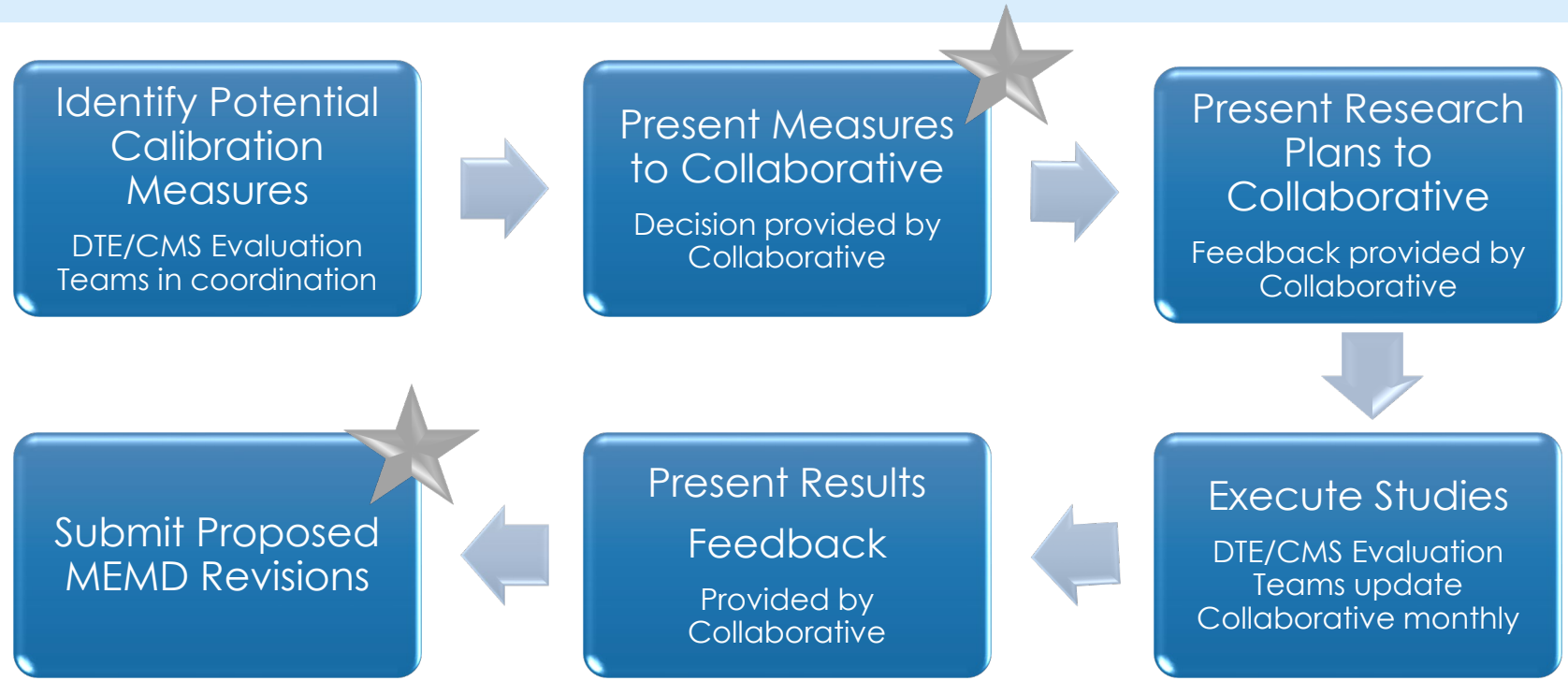
Agenda

Calibration Research Update

- Calibration research process
- 2020-2021 calibration research highlights
- Future calibration research

Calibration Research Process



Collaborative Decision Points

Source: MEMD Overview Maintenance Process Manual, March 2018

2020-2021 Calibration Research Highlights

- **Baseline Housing Study:** Updated savings values for residential HVAC, envelope, and thermostats
- **LED Lighting Study:** Updated standard and specialty EULs
- **C&I Boiler Tune-up:** Updated savings values based on efficiency gains
- **C&I HVAC Controls:** Updated gas savings for web-enabled EMS measures
- **HER/BRM Review:** Updated BRM savings values for HERs
- **Load Shape Research (ongoing):** Calibrating coincidence factors to end-use load shapes, updating utility-specific cost effectiveness inputs
  - Residential: Developed 50 load shapes representing 13 end-use categories
  - Commercial: Begin on-site submetering in Q4 2021 (retail up first)
  - Industrial: Analyzing AMI data to develop industry-level load shapes

Finalize furnace metering study

- Calibrating savings values for furnaces
- Updates planned for 2023 MEMD

10/2021	11/ 2021	Spring 2022
Collect remaining furnace meters by early October	Analyze meter data	Modeling/simulations (by MMP) from furnace metering results (to correspond with MEMD update process)

Planned 2022 Calibration Research

Commercial Load Shapes

- Review data for several technologies
- Analyze NREL Data
- Continue on-site submetering in various segments

Industrial Load Shapes

- Continue to analyze AMI data to develop industry-level load shapes

Planned 2022 Calibration Research

Residential Tier 3 Thermostat Study

- Initial research plan contingent upon research protocols being published in Uniform Methods Project
- Given continued UMP delays, evaluators and utilities to discuss possible pathways forward next month

Home Energy Report

- Plan to calibrate HER and share results in June 2022 to update the 2023 Behavior Resource Manual

Thank You

Appendix

Calibration Research History since 2012

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 Thermostats (2017-2019)
- Housing Baseline Study & Furnace Metering (2018-2021)

Commercial & Industrial

- Lighting Controls Reduction Factor (2012)
- Lighting Hours-of-Use (2014)
- Programmable Thermostat Billing Analysis (2015)
- Boiler Tune-Up (2021)
- HVAC Controls (2021)

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

Existing Measure Review and Calibration

Background

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

MEMD Details

- Specifies deemed per-unit gross energy (kWh, MCF) and demand (kW) savings by measure
- Deemed values are updated when there is sufficient evidence to suggest a revision is warranted

Covered by Existing Measure Review Process	Triggers review to assess the need for calibration research
• New code/standard changes the measure baseline • Credible evidence supports a different value	Credible evidence challenges the existing value but does not suggest a definitive new value applicable to Michigan.

Existing Measure Review and Calibration

Existing Measure Review

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

Third-party evaluators conduct Michigan-specific research to analyze 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.

Measure Prioritization Process

MEMD Measures are clustered by end use or category (e.g., cooling) and prioritized for measure review and calibration research, based on four key criteria:

Expected contribution to stakeholder portfolio savings estimates (i.e., a large share of current or future planned savings)

Savings calculation uncertainty

Expected data availability and timing (from updated codes, ongoing studies, etc.)

Length of time since the last modification, review, or calibration activity for a given measure