

Memorandum

To: Dave Walker (Michigan Public Service Commission), Rick Morgan (Morgan Marketing Partners), and the Michigan Energy Optimization Collaborative Members

From: Beth Davis (Navigant), Joe Forcillo (Consumers Energy), and Bill Newbold (DTE Energy)

Date: June 11, 2013

Re: Adoption of a Unique Identifier in the MEMD

This memo presents a proposal to request that Morgan Marketing Partners assign a unique identifier to all lines in the Michigan Energy Measures Database (MEMD). The statement of the problem and the summary of the proposed approach is described in detail below.

Statement of the Problem

While providing evaluation support to Consumers Energy and working closely with the MEMD, Consumers Energy and Navigant have identified the need for a unique identifier in the MEMD in order to more easily use the MEMD for Consumers Energy programs and to map savings values in the MEMD to Consumers Energy measure codes. The mapping between Consumers Energy codes and the MEMD could stay consistent if there was a unique identifier in the MEMD that was consistent from year to year. Discussions with staff at DTE Energy also reveal that having a unique identifier for each measure in the MEMD would be helpful and would greatly simplify the update processes as well as the annual program certification process required by the Michigan Public Service Commission (MPSC).

Summary of the Proposed Approach

Navigant suggests proposing this task – adding a unique identifier to the MEMD– at the next Michigan Evaluation Collaborative Meeting. The team has compiled the known requirements of a unique identifier, based on discussions with Consumers Energy and DTE Energy staff, and has proposed a structure for the unique identifier.

The approach includes the following:

- Every row/measure in the MEMD will be assigned a unique identifier.
- Only the “measure version” portion of the unique identifier (the minor code) will be changed if a change is made to the measure (e.g., savings, units). The major code never changes.

- The “measure version” portion of the unique identifier (the minor code) does not change with new MEMD versions (e.g., 2013 to 2014). The “measure version” only changes if the measure details have changed.
- All measures (active or inactive) will be included in the MEMD and each measure will have an effective start date and an effective expiration date, if applicable. The effective start date and effective expiration date will be located in separate fields in the MEMD. If the measure is currently active, it will only have an effective start date. The version number will also be included in the unique identifier for each measure (active or inactive).
- A weather sensitive measure will have one parent portion of the major code; however, each row will have a unique identifier because the child portion of the code will be unique. For example, “boiler tuneup” would have one parent portion of the major code (e.g., W-CO-HV-000001-G), but the child portion of the major code would vary for each line in the MEMD:
 - W-CO-HV-000001-G-AL-LO-EA-XX-01 would indicate the boiler tuneup measure in the Alpena County Regional weather zone, the large office building type, and the CV reheat econ with Air Cooled Chiller system type, version 01
 - W-CO-HV-000001-G-DE-LO-EA-XX-01 would indicate the boiler tuneup measure in the Detroit City Airport weather zone, the large office building type, and the CV reheat econ with Air Cooled Chiller system type, version 01
 - W-CO-HV-000001-G-WR-WR-WR-XX-01 would indicate the boiler tuneup measure on the “weighted results” tab, version 01. The unique identifier for the measures on the weighted results tab will be unique for the measure/row, but will not carry a unique savings value. The savings value can change based on the weighting applied in the tab.

Requirements of a Unique Identifier

The requirements of a unique identifier in the MEMD are discussed below.

1. **All measure lines in both MEMD files should receive a unique identifier.** Consumers Energy and DTE Energy currently use the weather weighting MEMD in different manners. Consumers Energy uses the weighting tool and the “Weighted Results” tab, while DTE Energy uses the background sheets for each sector. Therefore, the unique identifier should be applicable to all uses of the MEMD. A unique identifier should be assigned to all measures in the following locations:
 - a. Master Measure Database Michigan
 - i. All measures on the “Commercial” tab
 - ii. All measures on the “Residential” tab
 - b. MI Database Master with weighting tool
 - i. All measures on the “Weighted Results” tab
 - ii. All measures on the “Manufactured Homes” tab
 - iii. All measures on the “Commercial” tab
 - iv. All measures on the “SF Residential” tab
 - v. All measures on the “MF Residential” tab
2. **All new measures in the MEMD should receive a unique identifier.** When new measures are added to the MEMD, they should be assigned a unique identifier in the format proposed below.
3. **If any components of a measure changes (e.g., savings values, unit), it should receive a new unique identifier.** For tracking purposes, a new unique identifier will indicate measure changes.

Proposed Structure of a Unique Identifier

The proposed structure of the unique identifier is discussed below. Navigant reviewed secondary literature on creation of unique identifiers for other industries.¹ The structure of the unique identifier in the MEMD should address the contents of the MEMD and the requirements in the previous section. The length of the unique identifier number string has also been considered to incorporate MEMD measure growth. The proposed identifier will allow 999,999 measures. Currently, there are 24,403 measure lines in the MEMD (Table 1).

Table 1. Measure lines in the 2012 MEMD

MEMD Location	Number of Measure Lines (2012 MEMD)
Master Measure Database Michigan	
"Commercial" tab	379
"Residential" tab	100
MI Database Master with weighting tool	
"Weighted Results" tab	437
"Manufactured Homes" tab	3,969
"Commercial" tab	6,259
"SF Residential" tab	6,413
"MF Residential" tab	6,846
Total	24,403

The versions of the 2012 MEMD used for this table are Master Measure Database Michigan (031912) and MI Database Master with weighting tool (rev 3-13-12).

The items proposed to be included in the unique identifier and their corresponding abbreviation in the identifier is shown in Table 2 below. The proposed code is alphanumeric. The team proposes a unique identifier that consists of a major code and a minor code. The major code will remain constant for a measure over the years, while the minor code will change whenever a change is made to the measure components (e.g., energy savings, unit). The major code will also contain details for the weather sensitive measures that identify a "parent-child" relationship. The details of the proposed unique identifier are shown in Figure 1. An example of commercial and residential codes are shown in Figure 2 and Figure 3.

¹ Kanakia, H., et.al., "A UID Numbering Scheme," May 2010; Other sources were specific to database applications such as SQL.

Figure 1. The major and minor codes in the proposed structure, along with the parent-child relationship

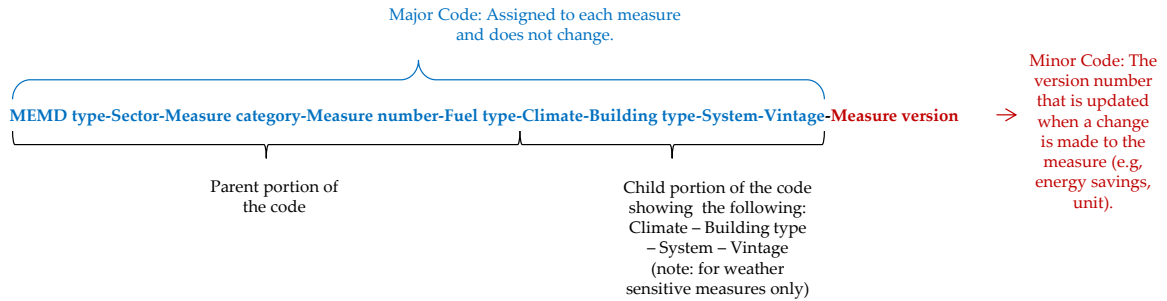
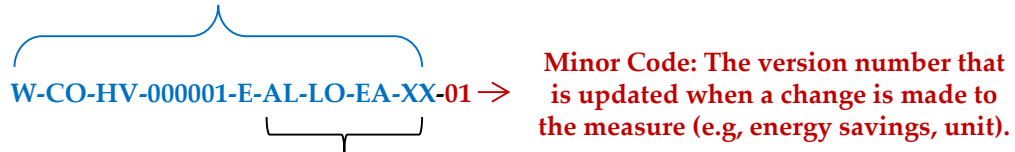


Figure 2. Examples of the proposed commercial unique identifier

Commercial Weather Sensitive: Example

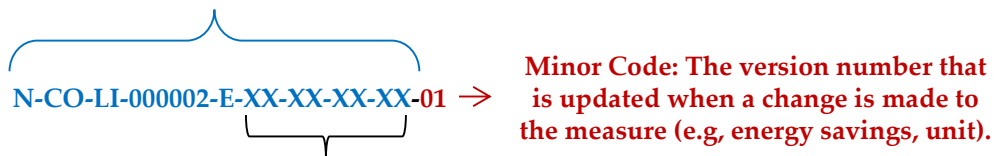
Major Code: Assigned to each measure and does not change.



Child portion of the code showing the following: Climate – Building type – System - Vintage

Commercial Non-Weather Sensitive: Example

Major Code: Assigned to each measure and does not change.

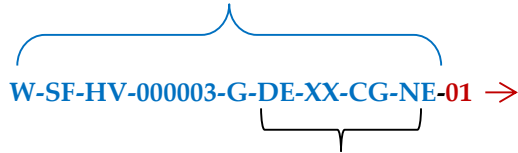


Child portion of the code not applicable because non-weather sensitive

Figure 3. Examples of the proposed residential unique identifier

Residential Weather Sensitive: Example

Major Code: Assigned to each measure and does not change.

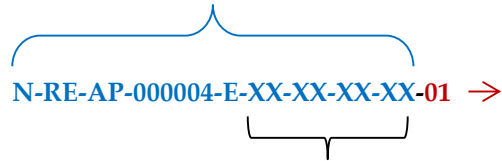


Minor Code: The version number that is updated when a change is made to the measure (e.g, energy savings, unit).

Child portion of the code showing the following: Climate – Building type – System – Vintage

Residential Non-Weather Sensitive: Example

Major Code: Assigned to each measure and does not change.



Minor Code: The version number that is updated when a change is made to the measure (e.g, energy savings, unit).

Child portion of the code not applicable because non-weather sensitive

Table 2. Proposed unique identifier structure

Items included in the unique identifier	Abbreviation in the identifier	Notes
MEMD type: The first letter indicates the MEMD type.		
Master Measure Database Michigan	N	N indicates non-weather sensitive
MI Database Master with weighting tool	W	W indicates weather sensitive
Sector: The second letter group indicates the sector.		Corresponds to the tab names in the MEMD.
Commercial	CO	
Residential	RE	
Single Family Residential	SF	
Multi Family Residential	MF	
Manufactured Homes	MH	
Weighted Results	WR	
Measure category: The third letter group indicates the measure category.		
Appliances	AP	
Building Envelope	BE	
Commercial Kitchen and Refrigeration	KR	
Consumer Electronics	CE	
Controls	CL	
HVAC	HV	
Lighting	LI	
Miscellaneous	MS	
Motors, Pumps, and Drives	MP	
Water Heating	WH	
Measure number: The six digit number will be unique to every measure in the MEMD.		Measures to be assigned a number in ascending order as they are added to the MEMD.
Fuel type: The next letter indicates the fuel savings from the measure.		
Electric	E	
Gas	G	
Combination	C	Both electric and gas savings
Climate (for weather sensitive measures, residential and commercial)		To show "parent-child" relationship. Corresponds to climate in the MEMD.

Items included in the unique identifier	Abbreviation in the identifier	Notes
Alpena County Regional	AL	
Detroit City Airport	DE	
Lansing Capital City A	LA	
Muskegon County Arpt	MU	
Saginaw Tri City Intl	SA	
Sault Ste Marie Sander	SS	
Traverse City Cherry C	TR	
Weighted Results	WR	For measures on the “weighted results” tab
Building type (for weather sensitive measures, commercial)		To show “parent-child” relationship. Corresponds to building type in the MEMD.
Assembly	AS	
Big Box Retail	BB	
Biotech	BI	
Fast Food Restaurant	FF	
Full Service Restaurant	FS	
Grocery	GR	
High School	HS	
Large Office	LO	
Light Industrial	LN	
Primary School	PS	
Small Office	SO	
Small Retail	SR	
Weighted Results	WR	For measures on the “weighted results” tab
Large Office, High School and Biotech system (for weather sensitive measures, commercial)		To show “parent-child” relationship. Corresponds to commercial system type in the MEMD.
CV reheat econ with Air Cooled Chiller	EA	
CV reheat econ with Gas Engine Chiller	EG	
CV reheat econ with Water Cooled Chiller	EW	
CV reheat no econ with Air Cooled Chiller	NA	
CV reheat no econ with Gas Engine Chiller	NG	
CV reheat no econ with Water Cooled Chiller	NW	
VAV reheat econ with Air Cooled Chiller	VA	
VAV reheat econ with Gas Engine Chiller	VG	

Items included in the unique identifier	Abbreviation in the identifier	Notes
VAV reheat econ with Water Cooled Chiller	VW	
Weighted Results	WR	For measures on the “weighted results” tab
Building type (for weather sensitive measures, multifamily residential only)		
MF HR	HR	
MF LR 5+	LR	
Weighted Results	WR	For measures on the “weighted results” tab
System (for weather sensitive measures, all residential)		To show “parent-child” relationship. Corresponds to system in the MEMD.
Central AC with elec furnace	CF	
Central AC with gas furnace	CG	
Central air source heat pump	CH	
Central dual fuel heat pump	CD	
Elec furnace no AC	EF	
Gas boiler no AC	GB	
Gas furnace no AC	GF	
PTAC	PA	
PTHP	PH	
Weighted Results	WR	For measures on the “weighted results” tab
Vintage (for weather sensitive measures, all residential)		To show “parent-child” relationship. Corresponds to vintage in the MEMD.
Old	OL	
Average	AV	
New	NE	
78-94	MI	“Mid”
95-05	HI	“High”
Pre78	PR	“Pre”
Weighted Results	WR	For measures on the “weighted results” tab
Measure version: This two digit number indicates the measure version. All measures start with version “01.”	01	This value would be changed if the measure savings or units change.

Each item in the table above is being proposed for inclusion in the unique identifier because it will add value to the MEMD and the use of the MEMD. The explanation for including the items in the unique identifier is outlined below:

MEMD type: Noting the MEMD type in the unique identifier allows a user of the database and the ID to quickly know where the measure is located, on the Master Measure Database Michigan or the MI Database Master with weighting tool.

Sector: Noting the sector in the unique identifier allows a user of the database and the ID to quickly know on which tab of the database the measure is located.

Measure category: The measure category (e.g., lighting, building envelope) does require all existing and new measures to be assigned to a measure category. However, this will assist the utilities and the implementation contractors when looking for a measure of a specific category in the MEMD. Measures that do not fall under a specific measure category could be assigned the “Miscellaneous” category.

Measure number: The measure number provides a unique digit to be assigned to all measures in the MEMD.

Fuel type: Noting the fuel type in the unique identifier allows a user of the database and the ID to quickly know the type of savings (e.g., electric, gas, combination) attributed to the measure.

Climate, Building type, System, Vintage: These attributes have been included as part of the code to show the details in the weather sensitive MEMD. An “XX” is used if these are not applicable. This information will indicate the “parent-child” relationship of measures. For example, the measure “AC<65,000 1 Ph” would be a “parent” with 56 “children” in the 2012 MEMD. The children have different savings based on different combinations of attributes including climate, building type, and system.

Measure version: Including the measure version accomplishes the goal of tracking changes to a measure’s components (e.g., savings value, unit). If a measure’s value changes, the measure would be assigned a new unique identifier, with the only change being a new measure version number, or the minor code. A two digit value allows for up to 99 revisions.

Memo Reviewers

The team requested a review of the memo and the proposed unique identifier structure from multiple parties. The reviewers are listed below (in alphabetical order by company name):

- CGI (Bob Yarin)
- Consumers Energy (Joe Forcillo, Carl Vandomelen)
- DTE Energy (Bill Newbold, Alison Jaworowski, Brandi Whack, Olga Podolyako)
- Energy Market Innovations, Inc. (Todd Malinick)
- Michigan Energy Cooperative Association (Art Thayer)

Additional Suggestions for the MEMD

During the review process, the reviewers noted additional items that would improve clarity in the MEMD. These items are listed below.

1. Suggest adding a column (field) that references the work paper related to each measure. Currently, the MEMD has a variable named “File Code” (e.g. “FESL1”), and an unnamed field to the right of the “File Code” with a version number (for the above example: “v02”). However, the Word (and supporting Excel) versions of the work papers are not typically

named in accordance with file/version numbers as delineated in the MEMD. For example, the work paper associated with the example above is named: "FES-L1d T8 Low Watt Lamps Mich 0902011.doc." The work paper name does not include a version number, but does include a date. As such, it is difficult to determine the work paper versions and to ensure the correct work paper is being referenced.

2. Suggest adding two columns (fields) to the database showing the effective dates (effective start date and effective expiration date) of the measure. Each unique identifier discussed above would have an effective start date and would be given an effective expiration date when the measure and unique identifier is updated.
3. Suggest adding a column (field) that details the source of the savings (e.g., OH TRM, Michigan based research).
4. Suggest adding a column (field) that details the basis for the change when a measure's savings value changes (e.g., if a change is because of a baseline assumption change, the field would detail the baseline assumption change and the reason for the baseline assumption change).
5. Suggest adding a footnote to detail the unique identifier on the "weighted results" tab. This identifier is for the measure/row only and is not connected to a single savings value.