
MEMORANDUM

TO: STAKEHOLDER ADVISORY GROUP

FROM: SHAWN ENTERLINE, PROJECT MANAGER - VEIC

SUBJECT: COMPARATIVE ANALYSIS OF THE AMEREN & COMED TRM'S

DATE: 11/18/11

Cc: ERIN CARROLL, ANNETTE BEITEL

The VEIC Team has completed its initial review of the measures that were included in Attachment A in the Request for Proposals. The following memo includes:

- Summary of the commonalities & differences on the structure of the measures
- Recommendations for beginning the standardization process for the structures

Your review is requested to start thinking about how you would like to see the structure moving forward. In the tables that follow, we have made some structural recommendations but want to ensure that the collaboratively developed TRM meets the needs of the whole group. The structure of the measures is a key step in achieving that commonality, and we feel that the template structure for the measures that will be used by each utility is an important item to discuss with you on the 29th.

We look forward to discussing this with you on the 29th of November. Best wishes for a wonderful Thanksgiving holiday.

Sincerely,

Shawn Enterline

Shawn Enterline, Project Manager
Vermont Energy Investment Corporation

Measure Technologies

We began by taking a look at the various measures to determine how they are grouped. While the observations below are evident from the various TRM table of contents, presenting this grouping helps to frame the discussion on the measure structure. The common technologies are as follows:

Common Technologies

1. Lighting (High Impact)
2. Motors (High Impact)
3. Refrigeration
4. HVAC
5. Food Service

The different technologies are as follows:

Different Technologies

1. Lodging (Ameren)
2. Water Heaters (Ameren)
3. Agricultural Equipment (Ameren)
4. On-line Store (Ameren)
5. Network PC Management Software (ComEd)

Within each group of technologies, we began to note what commonalities and differences exist between the Ameren and ComEd the measure structures. Although the two documents share a great deal of common process and structure, the details of the measure structures and organization engendered a large variety of questions from the analytical team. A few examples of the kinds of questions that arose are:

- Ameren Measure 9.1.13 - Controls for T5 and High Performance T8 Systems
 - Comment: These may be fixture only controls. Or are they referring to bi-level and daylight controls?
- Ameren Measure 9.1.15 - Lighting Occupancy Sensors
 - Comment: Does this include switch plate controls only? How does a switch plate differ from a wall control?

These kinds of questions are easily answered by the technical personnel who are involved. However, the textual description of measures was frequently ambiguous enough to the analytical team that they were unable to proceed any deeper into the comparison with the confidence we would like to have. As a result, we have focused on framing the structure for a measure so that we can have consensus-building discussions going forward, and conduct an apples-to-apples comparative analysis.

Measure Characterization Structure

The following tables represent a draft structure for how the measures can be compared and eventually combined. Once we have discussed it and incorporated your input, it can become a template for creating most new measures.

Organization of Measure Characterization Elements

#	Measure Characterization Element	Ameren	ComEd	Notes & Questions
1	Measure Description	Included	Included	Measure descriptions need to be clarified with technical personnel. After this is complete, the next step is to map the descriptions from each measure to its corresponding measure in the other TRM. Then eligibility criteria can be compared and evaluated.
2	Market	Implied	Implied	ie. Residential, C&I, new construction, retrofit, low income, etc.
3	Technology Type	Included	Included	ie. Lighting, Motors, Refrigeration, etc
4	Measure Eligibility Criteria	Included	Included	After the measure description is clarified, these criteria will to be put into a common bulleted or tabular format. Then the differences can be discussed and agreed upon with technical personnel.
5	Algorithm Specification	Included	Included	These equations flow directly out of the measure description and eligibility criteria and will be straightforward to compare once these items in the measure characterizations are mapped out.
6	Delta kW equation	Included	Included	See Algorithm Specification.
7	Delta kWh equation	Included	Included	See Algorithm Specification.
8	Delta therms equation	Included	Included	See Algorithm Specification.
9	Delta gallons equation	N/A	N/A	This algorithm is appropriate for measures that reduce water and energy consumption.
10	Baseline Criteria & Definition	Included. Change by measure size.	Included. Change by measure size.	The choice of an appropriate baseline is critical and often comes down to a choice between using a variable baseline or an averaged one. We recommend variable baselines for high impact measures, and may recommend average baselines for most other measures.
11	Measure Life	Included	Included	Usually set equal to the expected operating life of the equipment, but can be more nuanced in retrofit situations where the baseline changes part way through a measure's life.
12	Operating Hours	Included	Included	Operating hours and load shapes can be a straightforward item to agree upon once the above items are resolved.
13	Loadshape(s)	Included	Not included (Coincidence)	Operating hours and load shapes can be a straightforward item to agree upon once the above items are resolved.
14	Persistence	Included	Not included.	A measure of the number of measures that remain installed throughout their measure life.
15	Net to Gross Ratio	Included	Not included.	For example, $netkWh_i = \Delta kWh \times (1+LLF_i) \times (1-FR+SPL) \times RPF_i$
16	Documentation	Included	Included	The format for documenting the sources of inputs can be standardized and put into a tabular format for revision tracking once the above items start to resolve.

Organization of Measure Characterization Elements Continued

#	Measure Characterization Element	Ameren	ComEd	Notes & Questions
17	Cost Characterization			
18	Incremental Cost	Included	Included	Incremental costs are appropriate for time of replacement and new construction measures.
19	Full Cost	Not included	Included	Full costs are appropriately used for many retrofit measures.
20	O&M Cost	Not included.	Not included.	Average operating and maintenance costs are often a substantial part of the benefits of implementing and efficiency measure and will be characterized in some detail for the appropriate high impact measures.
21	Incentive	Mixed #'s & Applicability	Applicability Only	The choice of incentive or the range of incentives can be documented in a tabular format once the above items are resolved.
22	Adjustments¹ and/or Additional Inputs for Retrofit Measures (Where baselines change part way through the measure life.)			
23	Remaining years of existing equipment	Not yet reviewed.	Not yet reviewed.	
24	Cost of replacing equipment w/ baseline unit	Not yet reviewed.	Not yet reviewed.	
25	Adjustment to the savings estimate.	Not yet reviewed.	Not yet reviewed.	

1. VEIC recommends making adjustments to many measures (primarily lighting and retrofit measures) whose baselines may change part way through the measure life.

Specification of Inputs for the Measure Algorithm

Algorithm Specification	Rx or Custom	Variable Value	Variable Unit	Source
Equation kW				
Equation kWh				
Equation therms				
Equation Gallons				
Variable 1				
Variable 2				
Variable 3				
Variable N				

Summary of Measure Characterization Outputs

Output	Output Value	Variable Unit	Notes
Delta kwh			
Delta kw			
Delta therms			
Delta non-energy benefits			