ACT 129 STAKEHOLDER MEETING

Technical Reference Manual Residential Updates

July 11, 2014

Presented by the Statewide Evaluation Team:
CROSS-CUTTING AGENDA

- TRM Formatting Changes
- Interim Measure Protocols
- Updating Standards – Federal and EPA
RESIDENTIAL AGENDA

- Updating Coincidence Factors and Load Shape Data
- Revising Existing Measures
- Adding New Measures
- Removing Some Measures
CROSS CUTTING UPDATES
• Measure Template
  – Submit IMPs using this format
  – All measures will be updated to match this template
• Measure Template
  – Summary Table at beginning of each measure
  – Eligibility
  – Algorithms (more uniformity)
  – Definitions (tables)
  – Default Values
  – Evaluation Protocols
  – Sources (moved to end of measure, effort to provide more URLs)
Algorithm Guide

- Follow conventions for all IMPs and redline suggestions for TRM updates
- Provides consistency for common variable names and subscripts
TRM Measure Organization

- New Measure Order
  - Restructured TRM to group measures by end-use
  - Based on working group input and industry trends
  - New measures will be added to corresponding sections
<table>
<thead>
<tr>
<th>Residential</th>
<th>C&amp;I</th>
<th>Agricultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>Lighting</td>
<td>Agricultural</td>
</tr>
<tr>
<td>HVAC</td>
<td>HVAC</td>
<td></td>
</tr>
<tr>
<td>Domestic Hot Water</td>
<td>Motors &amp; Drives</td>
<td></td>
</tr>
<tr>
<td>Appliances</td>
<td>Domestic Hot Water</td>
<td></td>
</tr>
<tr>
<td>Electronics</td>
<td>Refrigeration</td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td>Appliances</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Food Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shell</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compressed Air</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miscellaneous</td>
<td></td>
</tr>
</tbody>
</table>
TRM Measure Organization

• New numbering system
  – Header 1: Sector
  – Header 2: End-use Category
  – Header 3: Measure

• 2.0 Residential
  – 2.1 Lighting
    • 2.1.1 ENERGY STAR Lighting
    • 2.1.2 Residential Occupancy Sensors
    • 2.1.3 Electroluminescent Nightlight
INTERIM MEASURE PROTOCOLS

• Projected Timeline
  — 5/30 — EDC Submission to SWE for Review
  — 6/13 — SWE Review Comments
  — 6/17 — SWE & EDC Discussion
  — 6/27 — Distribute to TRM TWG for Review
  — 7/9 — Discuss at TRM TWG
  — 7/18 — Finalize IMPs & SWE Approval
INTERIM MEASURE PROTOCOLS

• Currently undergoing review with submitting EDCs
<table>
<thead>
<tr>
<th>ID</th>
<th>Measure End Use Category</th>
<th>New Measure Name</th>
<th>Original Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>RES-04</td>
<td>Fuel Switching</td>
<td>Fuel Switch: Electric Clothes Dryer to Gas Clothes Dryer</td>
<td>PECO</td>
</tr>
<tr>
<td>RES-05</td>
<td>Shell</td>
<td>Home Air Sealing Electric Space Heating</td>
<td>PECO</td>
</tr>
<tr>
<td>RES-06</td>
<td>Whole building</td>
<td>Manufactured Homes</td>
<td>PPL</td>
</tr>
<tr>
<td>RES-07</td>
<td>Water heating</td>
<td>Showerstart</td>
<td>PPL</td>
</tr>
</tbody>
</table>
Section 2.3.6.1.1 of the Evaluation Framework:

- New Measure Interim Protocols
  
  “This category of interim protocols refers to completely new measures or additions that expand the applicability of an existing protocol, provided that the additions do not change the existing TRM algorithms, assumptions, and deemed savings values. For new measures, an approved IMP will apply for the entire program year in which it was approved. This IMP will be included in the next TRM update for PUC approval. The PUC-approved TRM protocol, whether changed or unchanged, will apply prospectively; a PUC-approved TRM protocol will not apply retrospectively, unless the PUC formally approves a request by an EDC to do so.”

- All approved IMPs will be:
  
  - Included in the 2015 TRM, subject to public comment and Commission approval
  - Available for use during the 2014 Program Year
STANDARD ADOPTION

• New guidelines established for adopting federal and ENERGY STAR standards updates into future TRMs
• This procedure for adopting new Federal and Energy Star standards will be incorporated into 2015 TRM
COINCIDENCE FACTORS

• Definition
  – CF is defined, for a statistically significant sample of electric equipment units, as:
    • the ratio of the (1) sum of every unit’s average kW load during the 260-hour PJM peak load period (June through August, non-holiday weekdays, 2 pm to 6 pm) to the (2) sum of the non-coincident maximum peak kW demand for every unit.

• Review of all residential measure CF’s and sources
  – Comparison to other TRM’s (Mid-Atlantic, Illinois, Conn.)
  – Not much Pennsylvania-specific data
COINCIDENCE FACTORS

• Updated End-Use CF’s:
  – Central AC
  – Water Heaters
  – Clothes Washers
  – Clothes Dryers
  – Room AC
  – Refrigerators & Freezers
  – Dehumidifiers
  – Dishwashers
  – Televisions
  – Smart Strips
  – Pool Pumps
REVISED MEASURES

• Update on 2014 TRM Navigant comments
  – High priority complete, medium measures almost complete, 80% of comments addressed
  – Large portion were Coincidence Factor update requests
• To date, 10 measures have changes to either the kWh or kW savings algorithms
• EPA and Federal strawman proposal
  – Language would update the TRM in the program year following an EPA or Federal standard update
STANDARDS UPDATES

• Federal Standards
  – Room AC
  – Refrigerators and Freezers
  – Central AC & Heat Pumps
  – Clothes Dryers

• ENERGY STAR Requirements
  – Room AC
  – Refrigerators and Freezers
  – Central AC & Heat Pumps
  – Clothes Dryers
NEW MEASURES

• Considered and not final:
  - ShowerStart
  - ENERGY STAR Dryer
  - Residential Air Sealing
  - ENERGY STAR Ceiling Fans
  - Fuel Switching (Elec. to Gas) Clothes Dryer
  - ENERGY STAR Manufactured Homes
**Removed Measures**

- Considered for removal:
  - ENERGY STAR Audit (proposed by Navigant)
  - Electric Clothes Dryer with Moisture Sensor (replaced by ENERGY STAR Dryer)
QUESTIONS?