



TRM Advisory Committee
Meeting
June 10, 2014

Agenda

- Recap of Last Meeting
 - Summary of Work to Date
 - TRM Regular Update Schedule
 - Code and Standards Impacts
 - Updated Measure Technical Work Plan
 - Measure Approval and Lifecycle
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Recap of Last Meeting

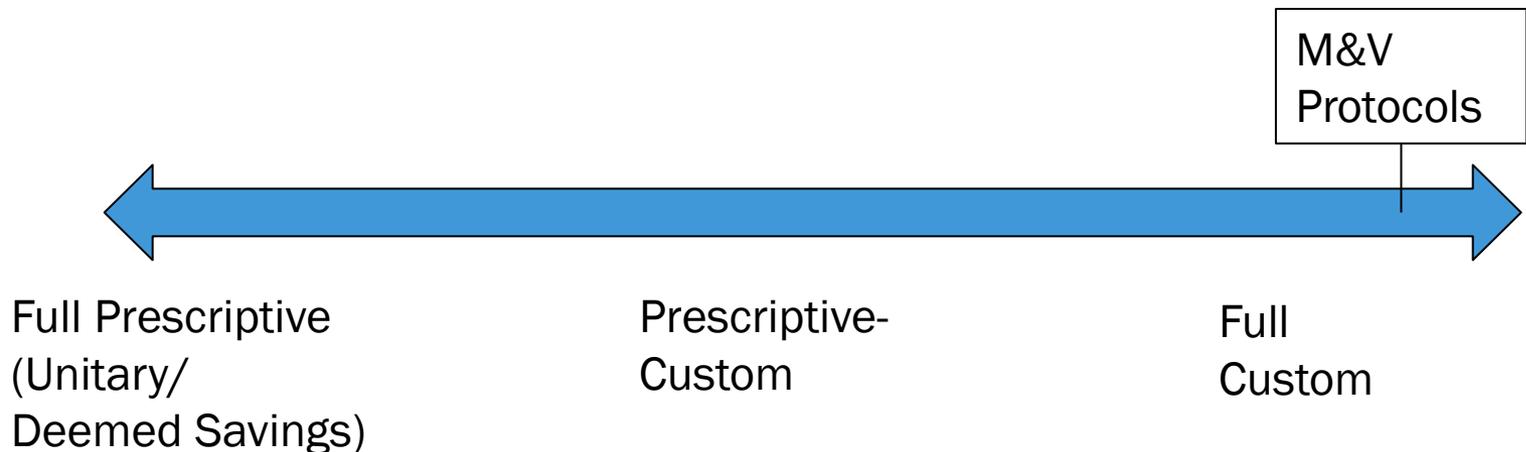
- Discussion of Mission Statement
 - Advisory body to Commerce
 - Forum for utilities and others to provide feedback and recommendations re: TRM and Smart Measure library
 - Forum to share information and learn about new technologies and programs
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Recap of Last Meeting

- TRMAC to provide input on policies, protocols, and guidelines
 - Adoption of new measures
 - Use of non-TRM measures
 - EM&V
 - TRMAC will not:
 - Debate technical details of measures
 - Endorse specific products or vendors
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Recap of Last Meeting

- Vision for TRM
 - Expand from demand-side measures to include EUI and protocols/guidelines for EM&V



Recap of Last Meeting

- Overarching purpose of TRM
 - Define standards for measuring, evaluating, and reporting energy savings and cost-effectiveness
 - Allow utilities to leverage 3rd party engineering expertise
 - Provide a guidebook and “menu” of savings opportunities
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Recap of Last Meeting

- TRMAC membership
 - Applications were solicited following meeting and members chosen
 - Two-year term originally, changed to one-year
 - Moderator
 - General support for Jessica to serve as moderator rather than hire an independent 3rd party
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Recap of Last Meeting

- Logistics
 - Meet quarterly (2-3 hours)
 - Commerce to set agenda, record minutes, post materials on website
 - Form technical working groups around specific topics (open to all)
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Summary of Work to Date

- Smart Measure Library
 - Input collected on priority measures
 - Smart Measure team developed and tested measures Dec-Apr
 - Library released May 8 (see next slide)
 - Additional Smart Measure development prioritized according to requests from ESP users
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Smart Measure Library

C/I Hot Water	Residential Appliances
Faucet Aerator, 1.5 gpm (Electric)	ENERGY STAR Clothes Washers
Faucet Aerator, 1.5 gpm (Gas)	ENERGY STAR Dishwashers
Pre-Rinse Sprayers (Electric)	ENERGY STAR Refrig. and Freezers
Pre-Rinse Sprayers (Gas)	Secondary Refrig./Freezer Removal
Water Heater (Electric)	Residential Hot Water
Water Heater (Gas)	Faucet Aerator, 1.5 gpm (Electric)
C/I HVAC	Faucet Aerator, 1.5 gpm (Gas)
Unitary and Split Systems	Low Flow Showerheads, 1.5 gpm (Electric)
Variable Speed Drives	Low Flow Showerheads, 1.5 gpm (Gas)
Boiler Modifications, Space Heating Only	Water Heater Setback (Electric)
Boilers, Space Heating Only*	Water Heater Setback (Gas)
C/I Lighting	Water Heater (Electric)
CFL Standard to Low Wattage Retrofit	Water Heater (Gas)
Controls	Residential HVAC
Exit Sign Retrofit with LED/LEP	Central AC/ASHP
Exterior Canopy/Soffit Retrofit with LED	ECM Blower Motors
Exterior Wall Pack Retrofit with LED	Furnaces and Boilers
High Pressure Sodium Retrofit	Furnaces Tune-Up
Incandescent Over 100W Retrofit	Programmable Thermostats (electric)
Incandescent Up to 100W Retrofit	Programmable Thermostats (gas)
Mercury Vapor Retrofit	Residential Insulation and Air Sealing
Metal Halide Retrofit	Residential Lighting
New Construction	CFLs and ENERGY STAR Torchieres
Pulse Start Metal Halide Retrofit	ENERGY STAR CFL Fixtures
Refrigerator Freezer Case LEDs	ENERGY STAR LED Lamps and Fixtures
Stairwell Fixtures with Integral Occupancy Sensor	Residential Load Management*
C/I Motors*	
C/I Refrigeration	* To be released soon
Anti-Sweat Heat Control	
Beverage Machine Controls	
ENERGY STAR Refrigerator and Freezer	
Evaporator Fan Motor Retrofit	

Summary of Work to Date

- TRM v1.1 (2014)
 - Documentation corrections
 - Savings impacts
 - Baseline increase for residential lighting
 - Higher CF for grocery store lighting
 - Algorithm change for Comm Water Heaters
 - New measures
 - Residential LEDs
 - C/I Stairwell Fixtures
 - Programmable Thermostats
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Summary of Work to Date

- Lighting workgroup
 - Collected input on Residential LED design
 - Reviewed C/I coincidence factors
 - Grocery stores raise to 0.9
 - Collected input on design changes for residential lighting
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TRM Update Schedule

- Need to establish regular, predictable schedule for TRM updates
 - Seek feedback on following two options...
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TRM Schedule 1

		2014	2015	2016	2017	2018	2019	2020
Combined and Gas IOUs (CPE, GMG, GP, IPL, MERC, Xcel)	File		1-Jun			1-Jun		
	TRM Version (Plan)		2.0			3.0		
	Plan in Effect	2013-2015		2016-2018			2019-2021	
IOUs (MP, OTP)	File			1-Jun			1-Jun	
	TRM Version (Plan)			2.1			3.1	
	Plan in Effect	2014-2016			2017-2019			2020-2022
COUs	File	5-Sep	1-Jun	1-Jun	1-Jun	1-Jun	1-Jun	1-Jun
	TRM Version (Plan)	1.1	2.0	2.1	2.2	3.0	3.1	3.2
	Plan in Effect	2014	2015	2016	2017	2018	2019	2020
TRM	Version	2.0	2.1	2.2	3.0	3.1	3.2	4.0
	Release Date	31-Dec						
	Years	2016-2018	2016-2019	2016-2019	2019-2021	2019-2022	2019-2022	2022-2024

TRM Schedule 2

		2014	2015	2016	2017	2018	2019	2020
Combined and Gas IOUs (CPE, GMG, GP, IPL, MERC, Xcel)	File		1-Jun	1-Jun			1-Jun	
	TRM Version (Plan)		2.0	3.0			4.0	
	Plan in Effect	2013-2015		1 yr. ext.	2017-2019			2020-2022
Electric IOUs (MP, OTP)	File			1-Jun			1-Jun	
	TRM Version (Plan)			3.0			4.0	
	Plan in Effect	2014-2016			2017-2019			2020-2022
COUs	File	5-Sep	1-Jun	1-Jun	1-Jun	1-Jun	1-Jun	1-Jun
	TRM Version (Plan)	1.1	2.0	3.0	3.1	3.2	4.0	4.1
	Plan in Effect	2014	2015	2016	2017	2018	2019	2020
TRM	Version	2.0	3.0	3.1	3.2	4.0	4.1	4.2
	Release Date	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec
	Years	2016	2017-2019	2017-2019	2017-2019	2020-2022	2020-2022	2020-2022

TRM Schedule Options

- Comprehensive updates every 3 years
 - Schedule 1: 2014, 2017, 2020
 - Schedule 2: 2015, 2018, 2021
 - Will include known, likely C&S changes
 - Will incorporate market transformation effects
 - Reasonable grace period following C&S changes to account for market lag
 - Annual updates to add/drop measures, incorporate new C&S changes
 - Additional updates as needed for C&S changes (e.g. MN energy code updates)
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TRM Schedule Options

- C&S changes (IOUs)
 - TRM will describe expected C&S changes in next three years
 - For unaccounted C&S changes, IOUs to submit compliance filing describing impact on tech assumptions, modification request if necessary
 - Discussion
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C&S Impacts

- Residential code adopted May 2014
 - Old: 2006 IRC
 - New: 2012 IECC (with amendments)
 - Take effect in November 2014
 - Commercial code public comment opened May 2014
 - Old: ASHRAE 90.1-2004
 - New: ASHRAE 90.1-2010, 2012 IECC
 - Adoption as soon as October 2014, take effect in April 2015
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C&S Impacts

Measure	New Code or Standard (Date)	Summary of Changes
All C/I Interior and Exterior Lighting	ASHRAE 90.1-2010 (Nov 2014)	Traditionally 90.1 only covered new construction and major renovations which meant code officials mostly ignored retrofits. In 90.1-2010, if 10% or more of connected lighting load in an area is retrofitted, owner must comply with standard's light power density and automatic shut-off requirements.
C/I Lighting Controls	ASHRAE 90.1-2010 (Nov 2014)	Variety of automatic shut-off/multi-level requirements, credit in lighting power allowances for advanced controls, functional testing requirements
Commercial and Residential Faucet Aerators	Federal standard (2013)	Max flow may have changed from 2.2 gpm to 1.5 gpm
Commercial Chillers	ASHRAE 90.1-2010 (Nov 2014)	Higher minimum efficiencies, Path A (traditional applications and significant hours at full load), Path B (demand limiting controls)
Commercial Combination Ovens	ENERGY STAR (7.31.13)	New 2014 requirements for electric and gas
Commercial Demand Control Ventilation	ASHRAE 90.1-2010 (Nov 2014)	Required when space > 500 ft ² and occupancy > 25/1000 ft ²

C&S Impacts

Measure	New Code or Standard (Date)	Summary of Changes
Commercial Economizer	ASHRAE 90.1-2010 (Nov 14)	Currently required for fan system capacity $\geq 3,000$ cfm, in new code will be required for $\geq 54,000$ Btu/h
Commercial Energy Recovery	ASHRAE 90.1-2010 (Nov 14)	New energy recovery requirements based on % outside air
Commercial HVAC VSD	ASHRAE 90.1-2010 (Nov 14)	Required on laboratory/kitchen exhausts, fan motors, A/C handlers, and pumps above certain sizes
Commercial Pre-rinse Sprayers	Federal standard (2013)	Max flow may have gone from 1.6 gpm to 1.25 gpm
Commercial Unitary and Split Systems	ASHRAE 90.1-2010 (Nov 14)	Higher minimum efficiency for DX condensing units > 11.3 tons and DX units > 63.3 tons

C&S Impacts

Measure	New Code or Standard (Date)	Summary of Changes
ENERGY STAR Clothes Washer	Federal standard (3.7.15)	New standard by 3/7/2015
ENERGY STAR Dishwasher	Federal standard (1.1.18)	New standard by 1/1/2018
ENERGY STAR Refrigerator, Freezer	ENERGY STAR	Version 5.0 in development in 2012
ENERGY STAR Room AC	Federal standard (4.21.14), ENERGY STAR (9.30.13)	New minimum efficiencies and ENERGY STAR standards
Residential Air Source Heat Pump	Federal standard (1.1.15)	Minimum SEER raised from 13 to 14
Residential Furnace ECM Motors	Federal standard (TBD)	EISA instructed DOE to set standards for furnace fans; could require use of ECM.

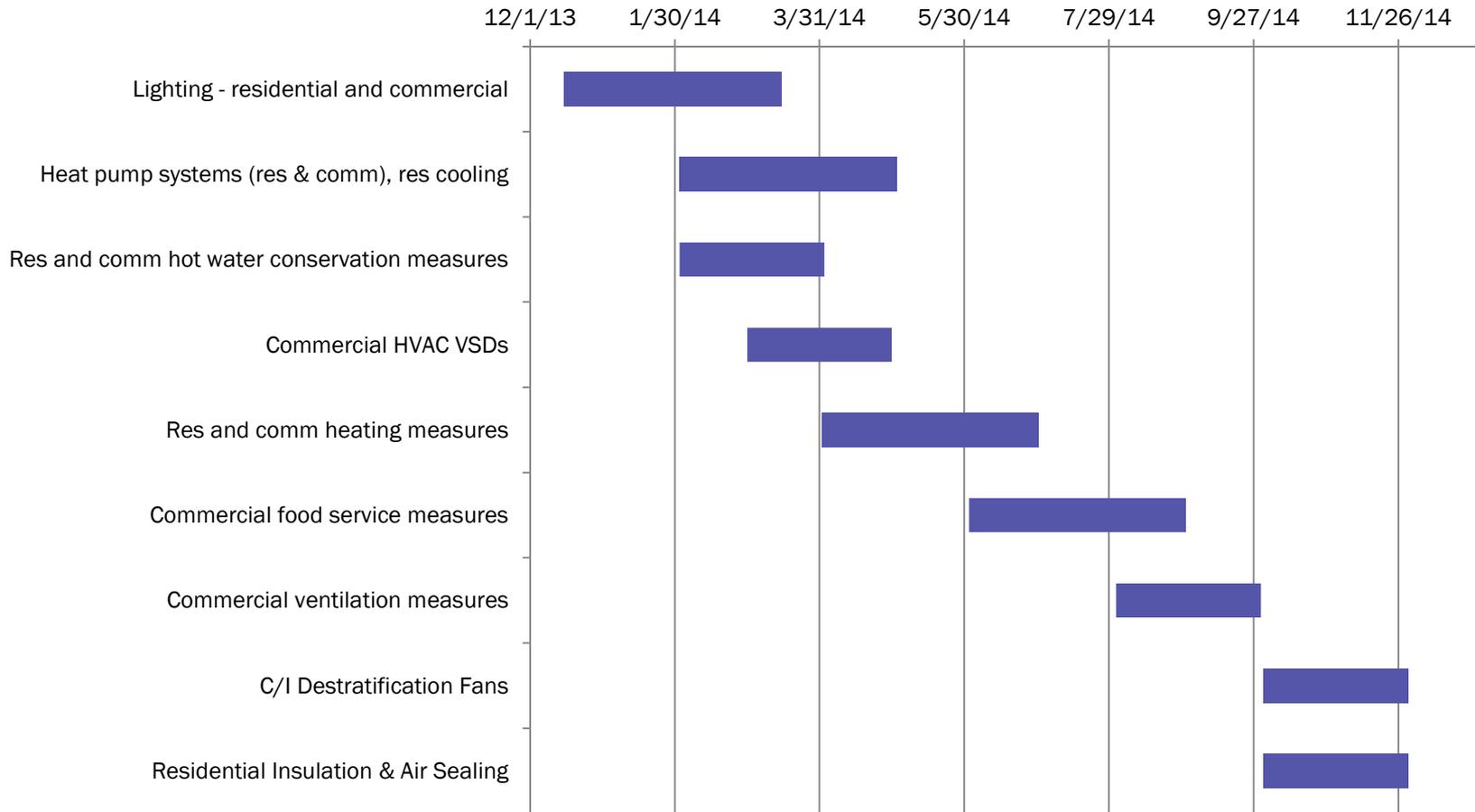
C&S Impacts

Measure	New Code or Standard (Date)	Summary of Changes
Residential Air Source Heat Pump	Federal standard (1.1.15)	Minimum SEER raised from 13 to 14
Residential Furnace ECM Motors	Federal standard (TBD)	EISA instructed DOE to set standards for furnace fans; could require use of ECM.
Residential Lighting	Federal standard	EISA phase-outs were completed in 2014 with 60W, 40W
Residential Showerheads	Federal standard (2013)	Max 2.5 gpm replaced by 1.8 gpm assuming standard 30% reduction for plumbing products
Residential Thermostats	IECC 2012	Programmable thermostats required
Residential Water Heaters	Federal standard (4.16.15)	Higher minimum efficiencies, electric resistance for > 55 gallons will effectively be phased out in favor of heat pump water heaters

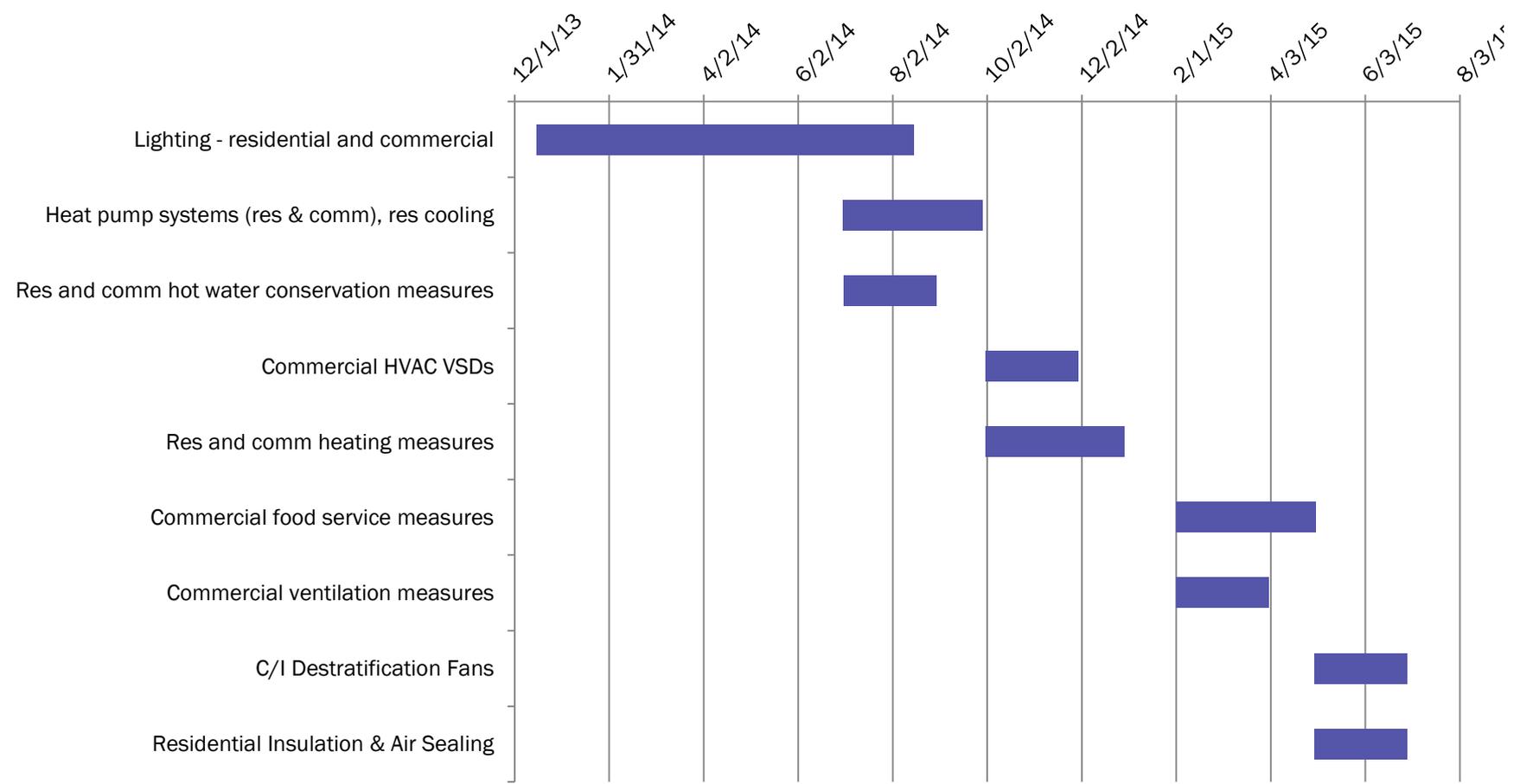
C&S Impacts

- TRM v1.2 released by Aug 1, 2014 for PY2015
 - New residential energy code (in effect Nov 2014)
 - New ENERGY STAR standards
 - New federal min efficiencies
 - TRM v1.3 released by ~May 2015 for remainder of PY2015
 - New commercial energy code (in effect May 2015 or later)
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Original Technical Work Plan



Updated Technical Work Plan



Measure Lifecycle

- TRM is a set of standards
 - Reasons for proposing non-TRM “standard offer” measure
 1. Program design doesn’t fit
 2. Use of information unique to service area
 3. More accurate savings calculation
 4. Measure not in TRM
 - Commerce to define process and documentation requirements for each reason with TRMAC input
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Measure Lifecycle

- Possible measure status/lifecycle
 1. Draft
 2. Pilot approval
 3. Full approval
 4. TRM adoption
 5. Retirement
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Measure Lifecycle

1. Draft

- Treated as custom

2. Pilot Approval

- Utility has provided necessary documentation
 - Commerce has reviewed and approved use on a limited basis
 - Some EM&V may be required to move to full approval
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Measure Lifecycle

3. Full Approval

- Utility submits EM&V results (if applicable), other information to demonstrate accuracy
- Unrestricted use by utility is approved for defined time period

4. TRM Adoption

- If general applicability demonstrated, measure is adopted in TRM for general use

5. Retirement

- C&S changes or market transformation
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Measure Lifecycle

