PUBLIC UTILITY COMMISSION OF TEXAS

Evaluation, Monitoring & Verification (EM&V) Contractor for the Texas Utilities' Energy Efficiency Portfolios

Energy Efficiency Implementation Project

October 3, 2018

TETRA TECH

TEXAS ENERGY ENGINEERING SERVICES, INC. (www.teesi.com)

AGENDA

PY2017 Key Findings and Recommendations

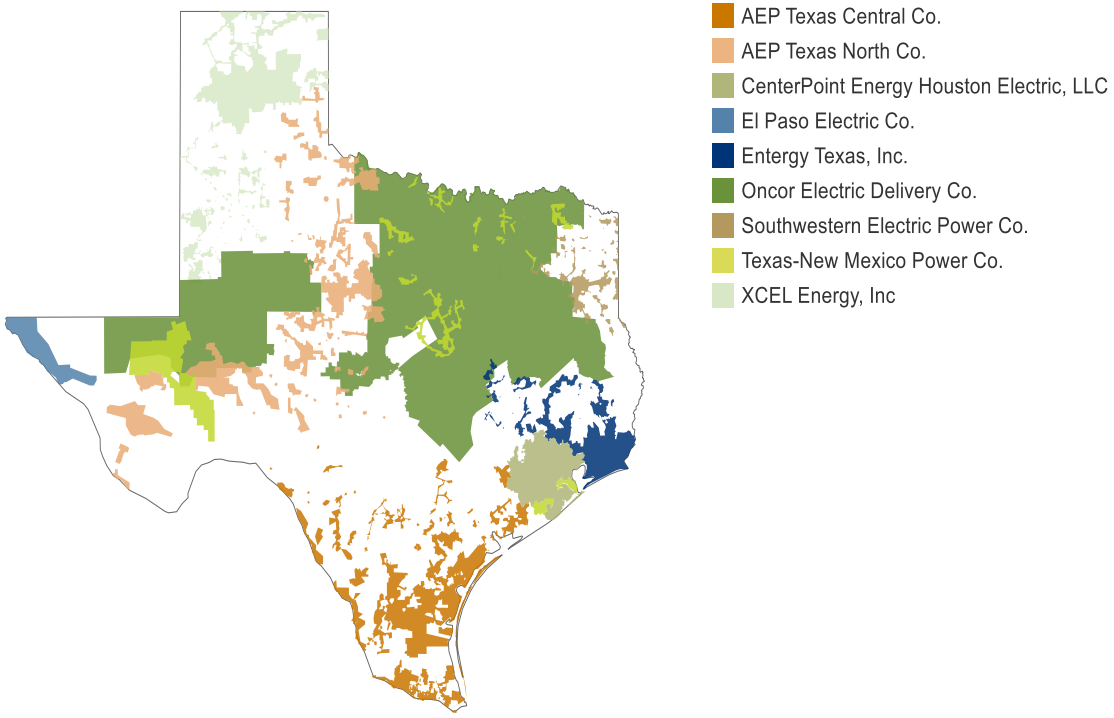
PY2018 EM&V Overview

Technical Reference Manual (TRM) Update Process

PY2017 ENERGY EFFICIENCY PROGRAMS

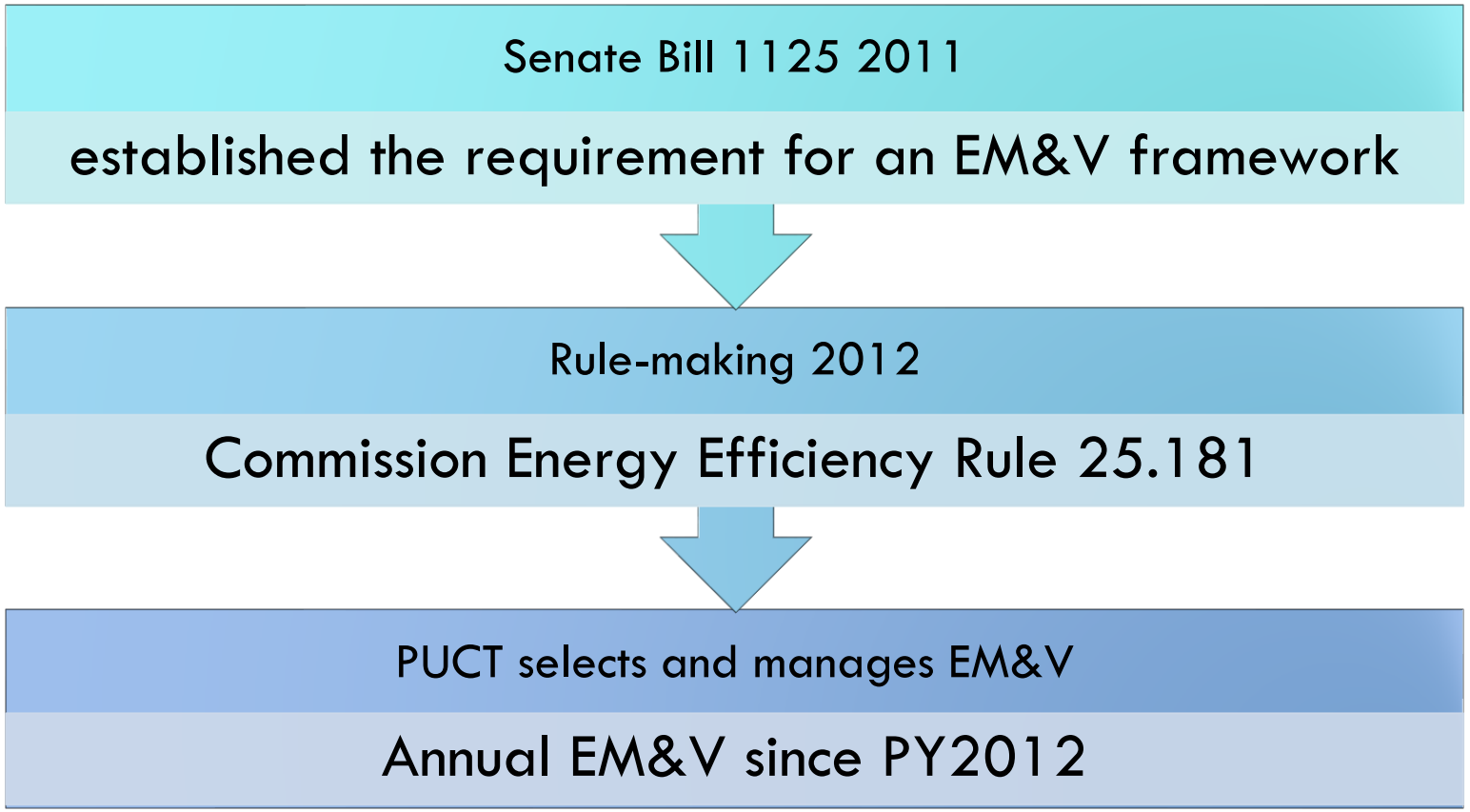
EM&V Key Findings & Recommendations

Saved
561,606,260 kWh
Reduced demand by
465,874 kW



LIFETIME SAVINGS COST OF $0.009 KWH AND $20.05 PER KW.

EM&V INFRASTRUCTURE



EM&V SCOPE

Census tracking system savings verification with additional activities prioritized by program

- Verify gross energy and demand savings for all energy efficiency and load management programs
- Estimate net savings
- Determine program and portfolio cost-effectiveness
- Prepare and maintain a statewide Technical Reference Manual (TRM)
- Provide information to improve program performance
- Provide ongoing support for M&V plans, savings calculation tools, deemed savings petitions, and implementation guidance

Engineering desk reviews, on-site M&V, interval meter data analysis, participant surveys

POSITIVE EVALUATION RESULTS

Close agreement between reported and evaluated savings

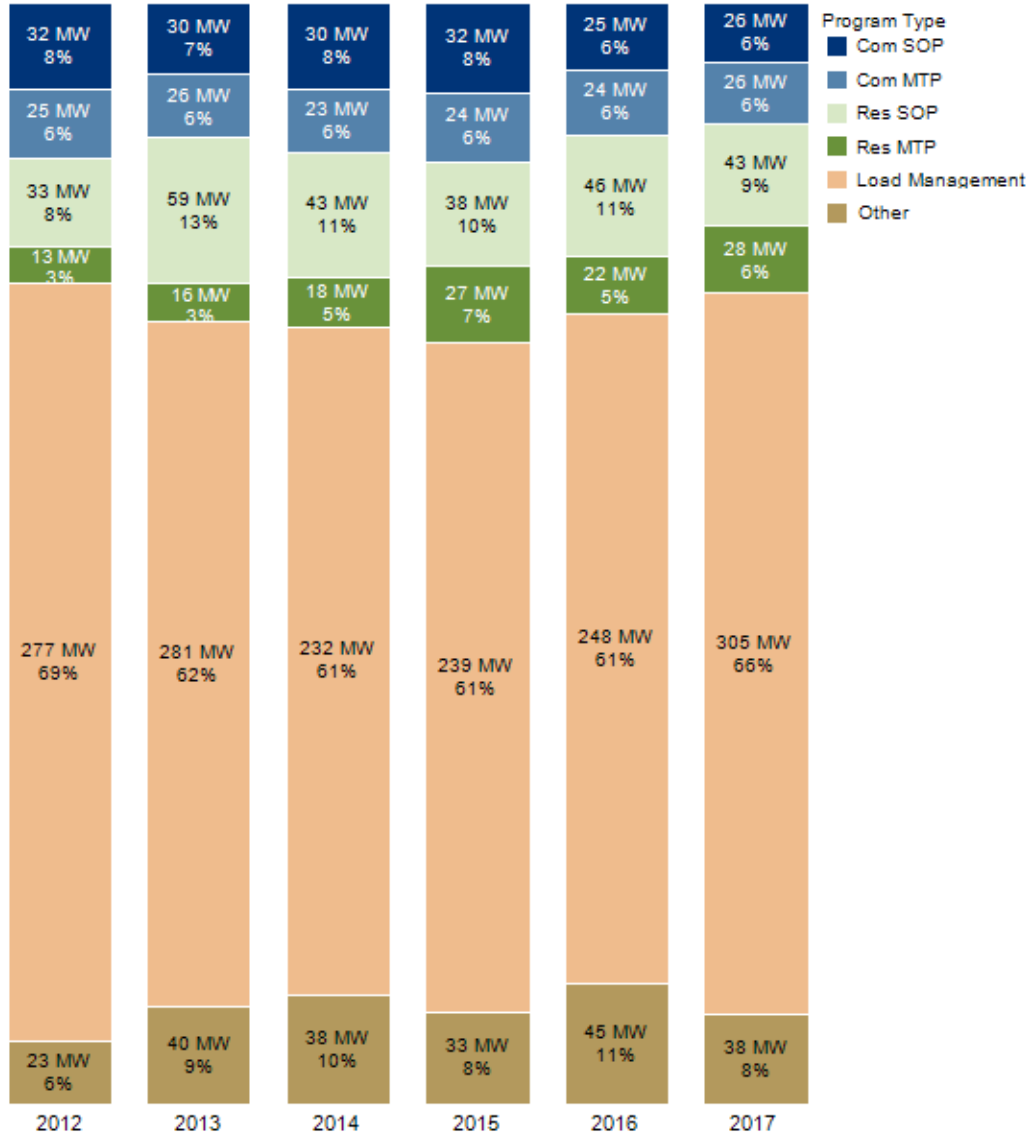
- Proactive engagement of the EM&V team upfront
- Responsiveness to the EM&V team's recommended savings adjustments

Continued cost-effectiveness of the programs

High customer satisfaction

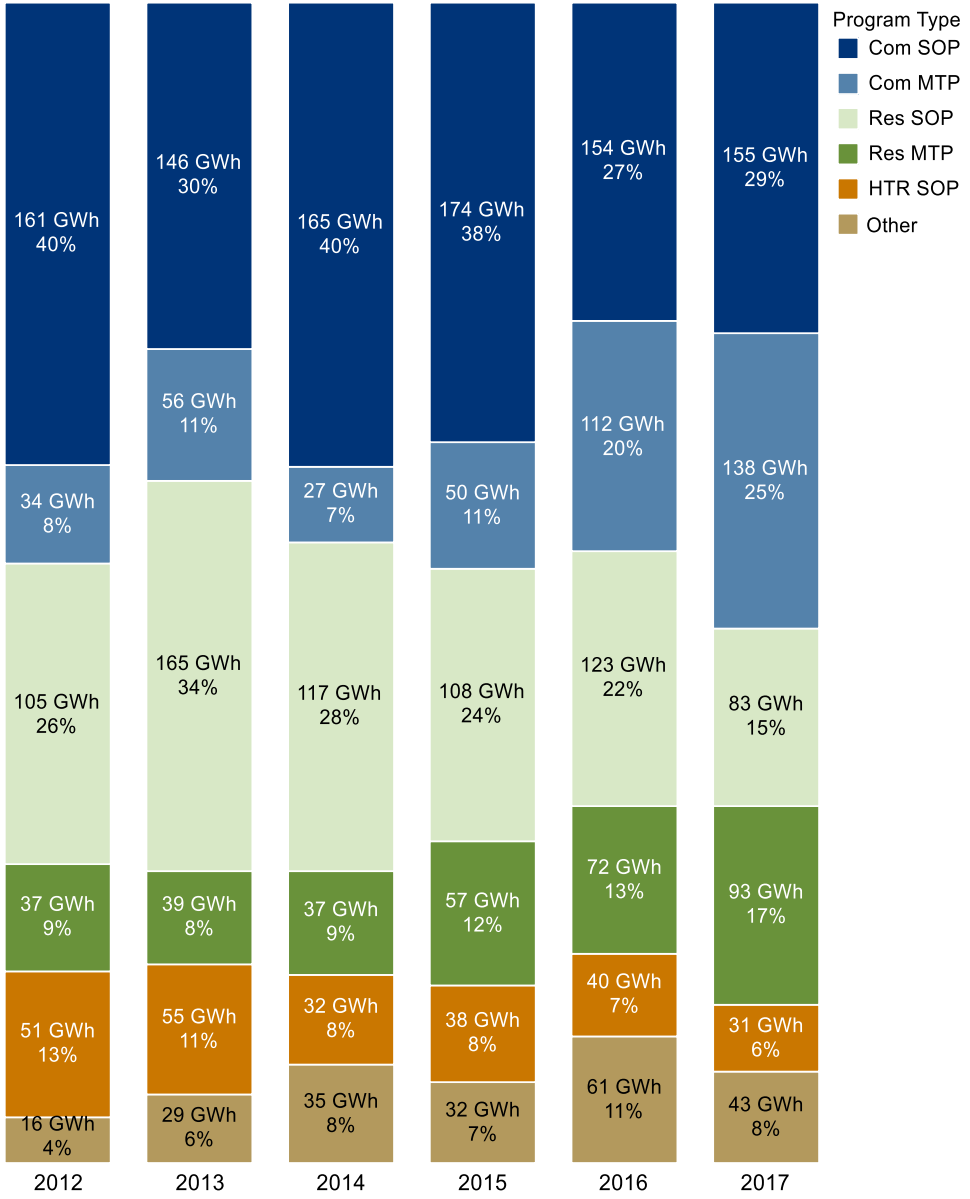
The programs are significantly influencing energy efficiency decisions, with the majority of researched program savings directly attributable to program offerings

EVALUATED DEMAND REDUCTIONS BY PROGRAM TYPE

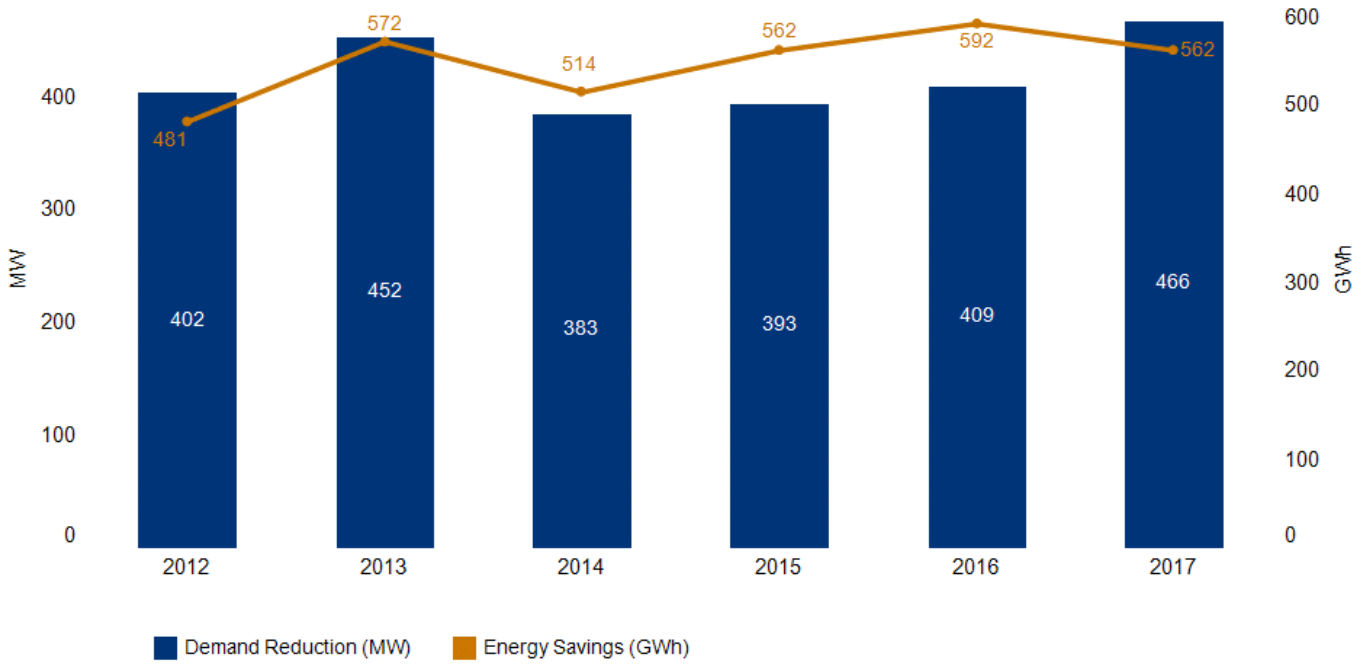


Other: HTR MTP, HTR SOP, LI, Midstream and PV/Solar.

EVALUATED ENERGY SAVINGS BY PROGRAM TYPE



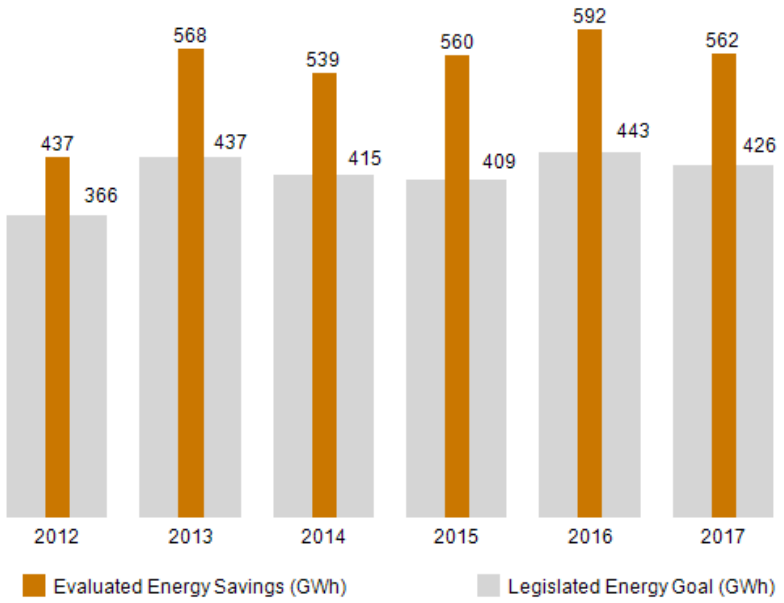
Other: HTR MTP, LI, Load Management, Midstream and PV/Solar.

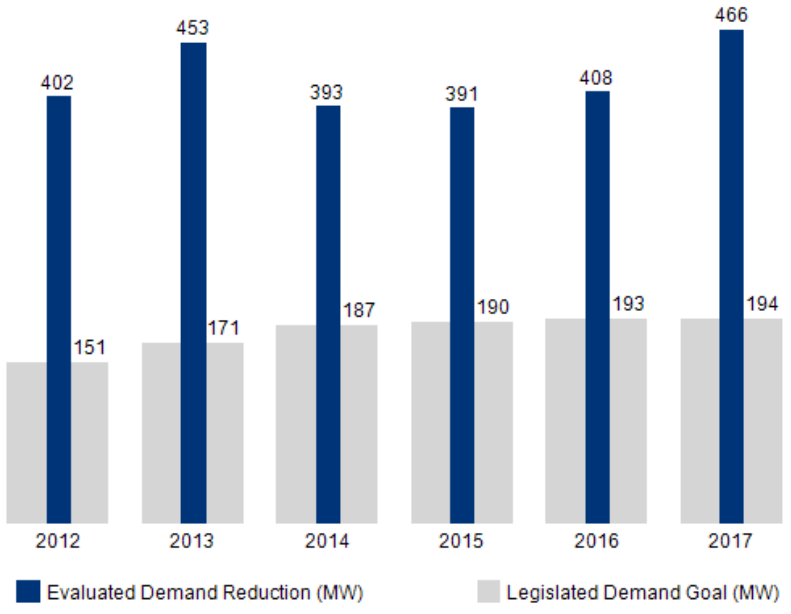


EVALUATED SAVINGS 2012 – 2017

THE DEMAND REDUCTION IS AN INCREASE FROM PRIOR YEARS.

PY2017 SAW A SLIGHT DECREASE IN ENERGY SAVINGS FROM PY2016 BUT WAS THE SAME AS PY2015.

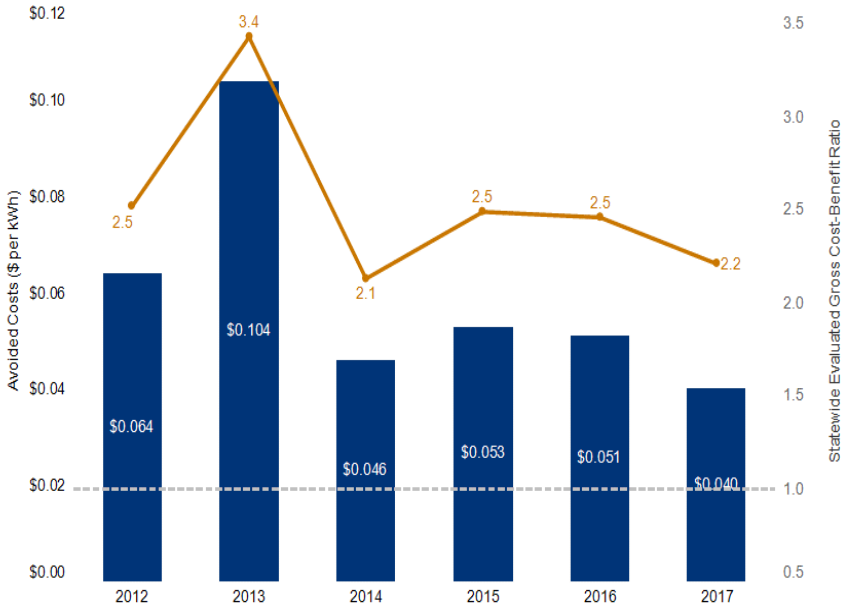




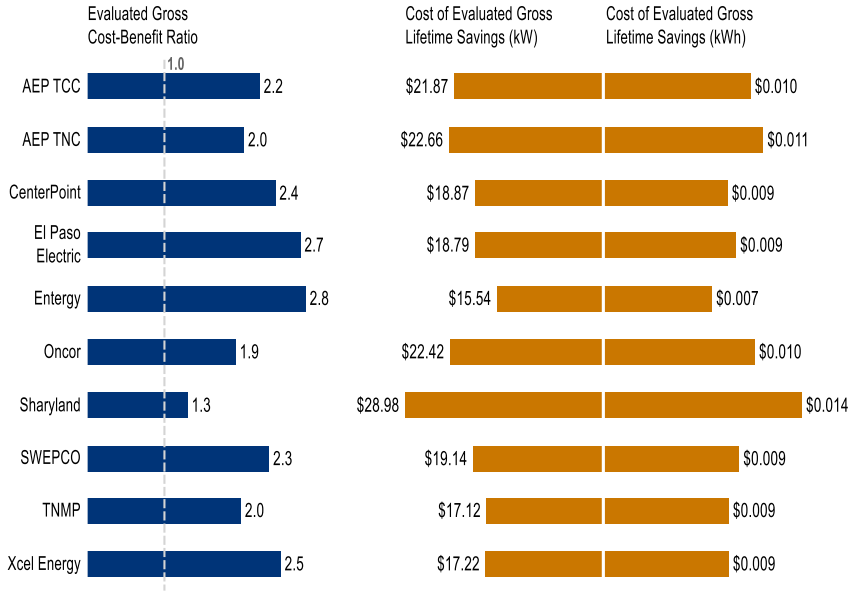
UTILITIES CONSISTENTLY EXCEED LEGISLATED GOALS

EVALUATED SAVINGS AND GOALS
2012 – 2017

Cost-Benefit Ratio and Avoided Costs 2012-17

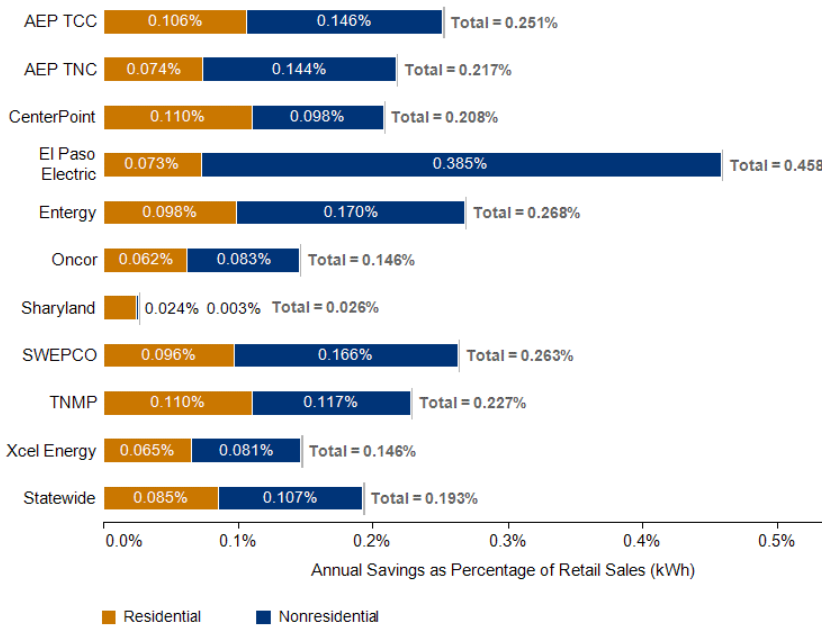


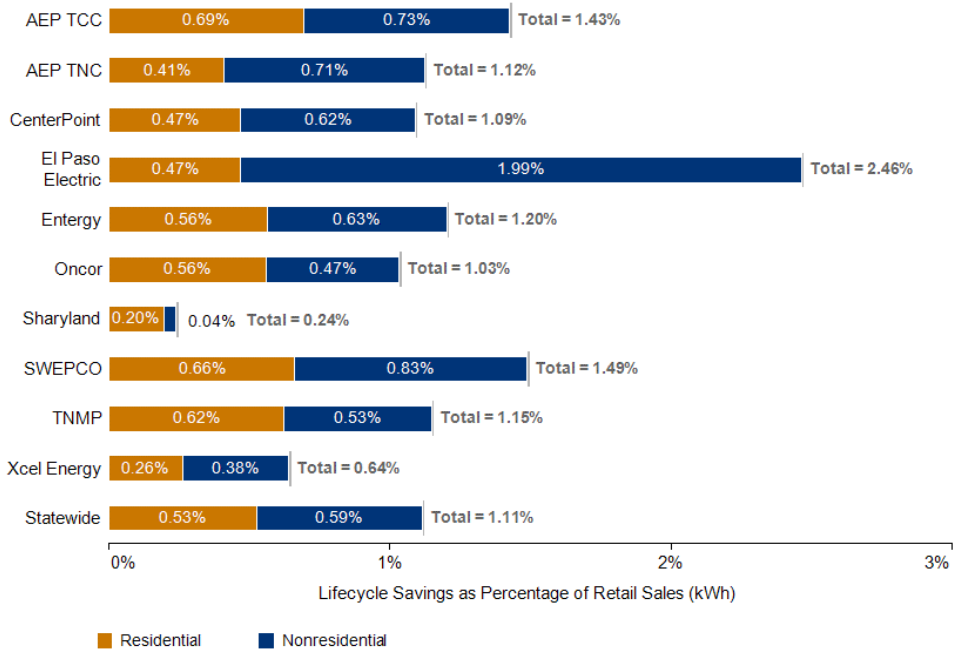
2017 Cost-Benefit Ratio & Cost of Lifetime Savings



STATEWIDE COST-EFFECTIVENESS REMAINS OVER 2.0 WITH LOW AVOIDED COSTS CHALLENGES

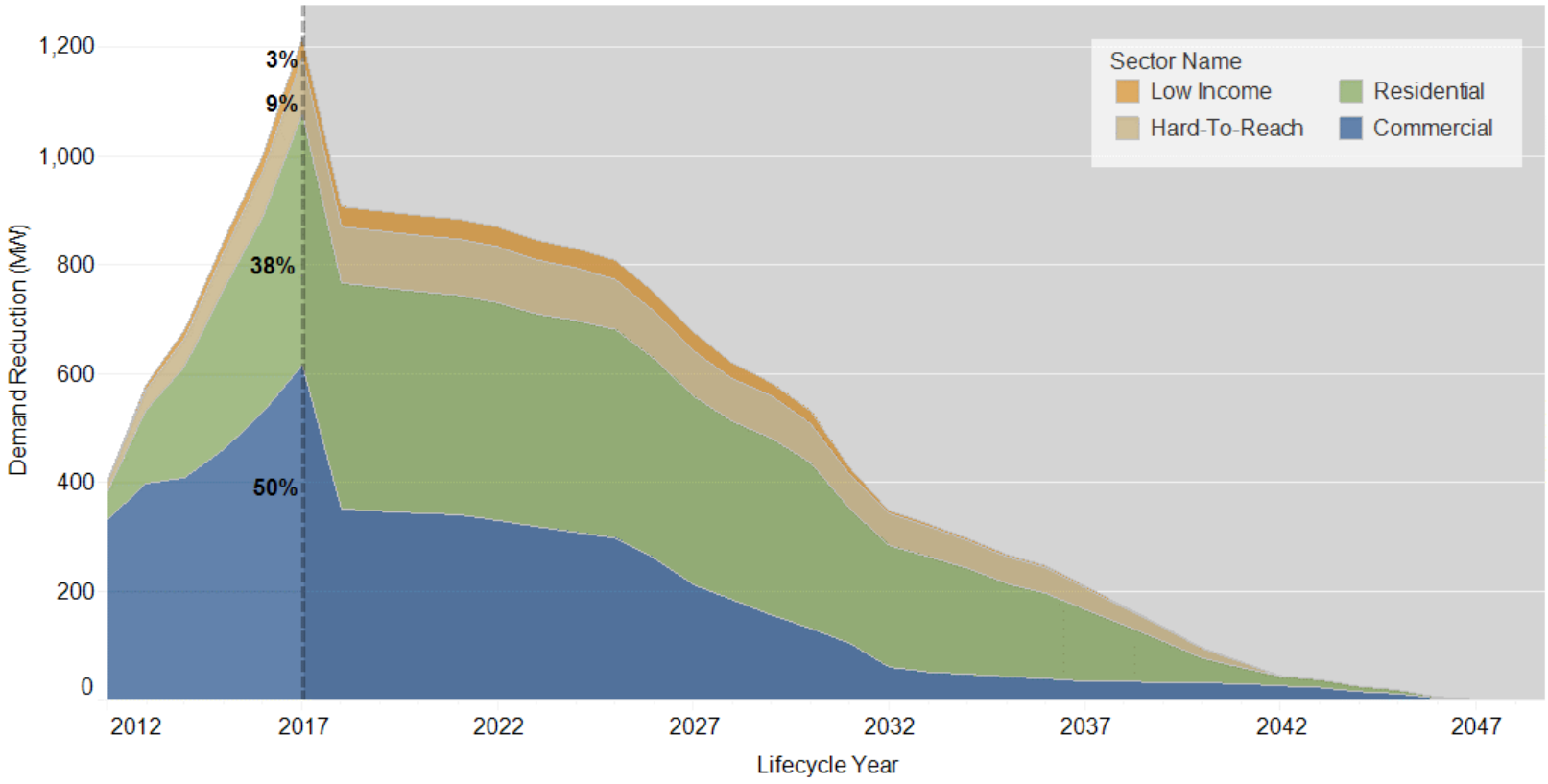
EVALUATED COST-EFFECTIVENESS





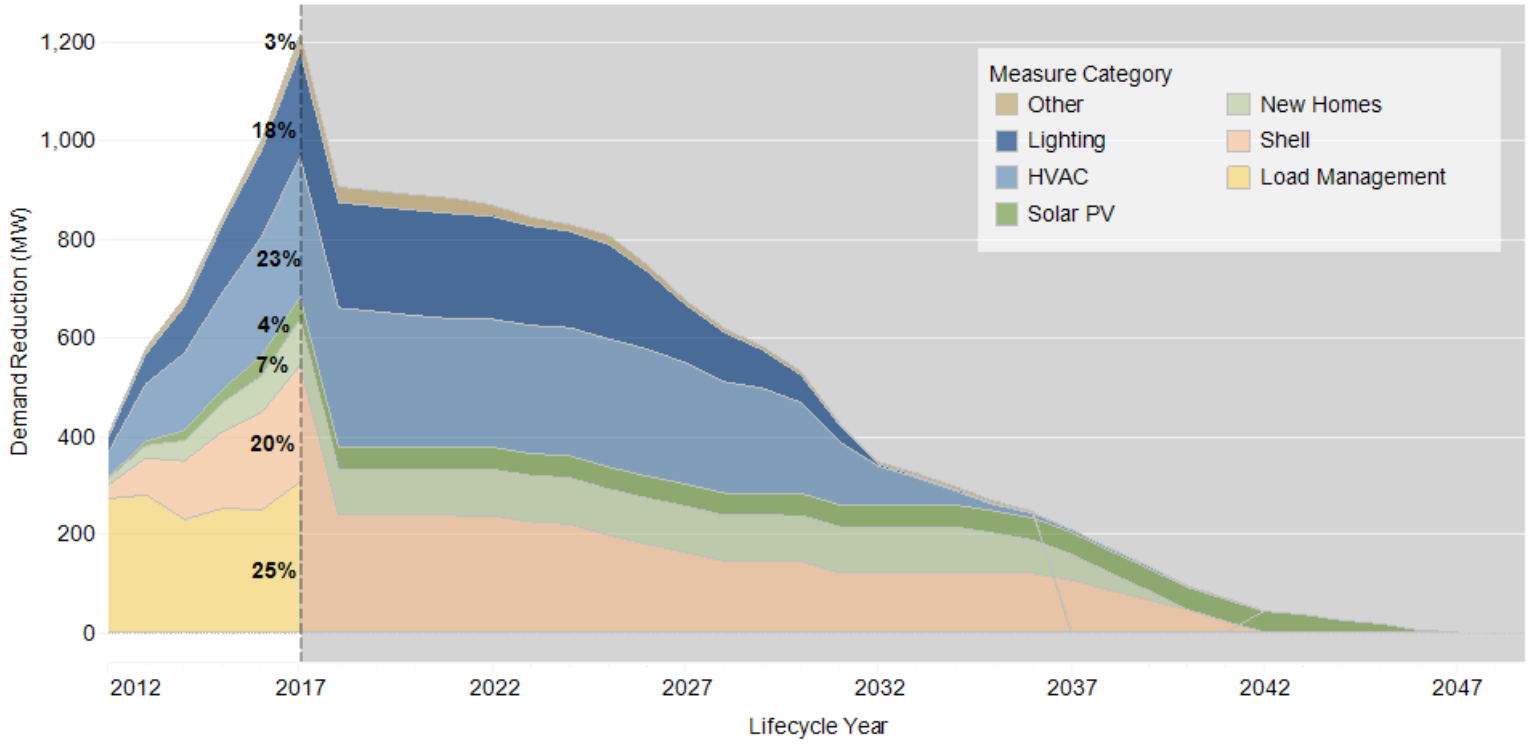
SAVINGS AS A PERCENT OF 2017 TOTAL RETAIL SALES

ANNUAL AVERAGE IS .19%, CUMULATIVE AVERAGE IS 1.11%



HALF OF CUMULATIVE DEMAND SAVINGS ACCRUE TO COMMERCIAL CUSTOMERS AND THE OTHER HALF TO RESIDENTIAL SEGMENTS

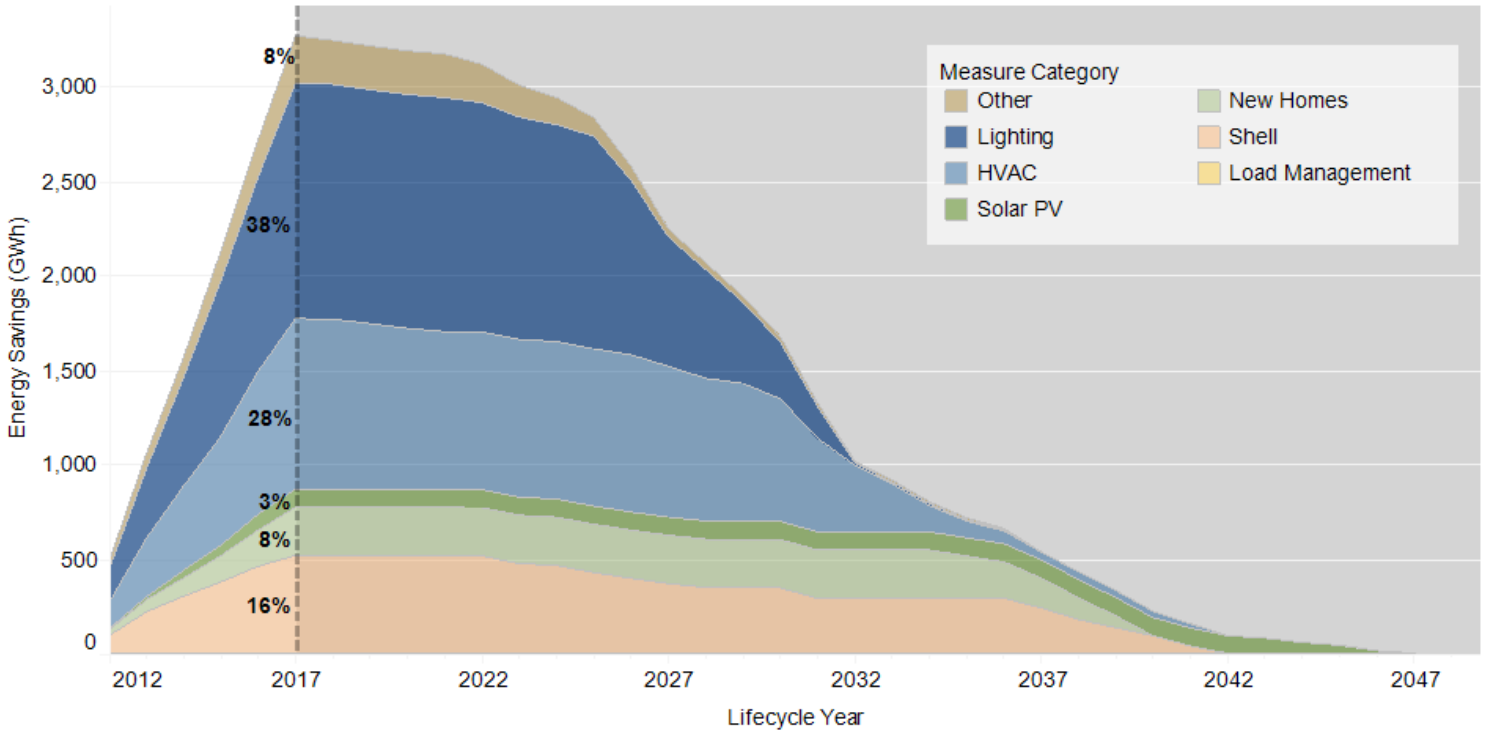
PY2012—PY2046 Lifecycle Demand Reduction by Sector (MW)



Other: AC/HP Tune Up, Appliance, Behavior, Custom M&V, Food Service, Motors, Refrigeration, Roofing, Water Heat, Whole Building, Windows.

HVAC AND SHELL MEASURES ACCOUNT FOR ALMOST HALF OF THE CUMULATIVE DEMAND REDUCTIONS

PY2012—PY2046 Lifecycle Demand Reduction by End Use (MW)



Other: AC/HP Tune Up, Appliance, Behavior, Custom M&V, Food Service, Motors, Refrigeration, Roofing, Water Heat, Whole Building, Windows.

LIGHTING IS OVER A THIRD OF CUMULATIVE SAVINGS AND HVAC OVER A QUARTER

PY2012—PY2046 Lifecycle Energy Savings by End Use (GWh)

Statewide Recommendations

- Facilitate more accurate, transparent, and consistent savings calculations and program reporting
- Provide feedback that can lead to improved program design and delivery
- Defined in § 25.181 (q) (9)
- EM&V recommendations for implementation in subsequent program year
  - PY2017 recommendations for PY2019 implementation

PY2018 EM&V

EM&V OVERVIEW

Verification across all programs	• Program tracking data verification of claimed savings across all programs • Census review of residential deemed savings calculations and other high priority programs/measures
Increased rigor for medium and high priority programs	• Desk reviews, on-site M&V and participating customer and energy efficiency service provider (EESP) surveys

HIGH PRIORITY

Load Management programs	• largest percentage of statewide demand reductions • New residential offerings • Process evaluation in addition to impact evaluation
Residential new construction programs	• Substantial savings for some utility portfolios, though not statewide • responding to baseline changes in the TRM in response to new statewide energy code • Process evaluation as well as impact evaluation

MEDIUM PRIORITY

Commercial SOP and MTPs

- largest percentage of statewide savings
- Consistent EM&V findings similar to claimed savings, but with identified adjustments and improvements
- Small business also included in 2018 as has not been since 2015

Residential retrofit and tune-ups

- Substantial savings
- Still responding to changes in the TRM that first came into effect in 2017

TECHNICAL ASSISTANCE

Scope continues to include technical guidance/M&V discussions and review upon utility request

Steady flow of reviews for unique situations, new technologies and new customer types

- Custom projects
- Thermal Energy Storage
- Various project situations where the project eligibility/baseline is unclear or M&V method is unclear, typically large/complex type projects

TRM UPDATES

TEXAS TRM OVERVIEW

Texas' first TRM was developed in 2013 for Program Year (PY) 2014	•Updated annually for each program year prospectively
Transparency in energy efficiency measure savings	•Measure description, baseline & efficient condition •Eligibility and effective useful lives •Program tracking and documentation needs
Consistency in savings calculations	•Summer and winter peak demand definitions •Clearly defined calculations and values •Updated baselines
Improved savings estimates	•Residential shell measures •Commercial HVAC •Solar PV
Supports expansion of savings opportunities	•New deemed savings measures •M&V protocols

TRM FORMAT

Volume 1: TRM Overview and User Guide covers the process for TRM updates and version rollouts, weather zones, peak demand definitions, TRM structure and the format of the TRM measures

Volume 2: Residential Deemed Measures contains the measure descriptions and deemed savings estimates and algorithms for measures installed in residential dwellings.

Volume 3: Nonresidential Deemed Measures contains the measure descriptions and deemed savings estimates and algorithms for measures installed in nonresidential businesses.

Volume 4: M&V Protocols contains protocols to estimate claimed savings for measures that are not good candidates for deemed savings across both sectors

Volume 5: Implementation Guidance contains the PUCT's EM&V team recommendations regarding program implementation that may affect claimed savings

COLLABORATIVE UPDATE APPROACH

The Commission's EM&V contractor reviews TRM for needed updates at least annually (16 TAC §25.181(q) (6) (B)).

Additional updates

- Utility collaborative group, Electric Utilities Marketing Managers of Texas (EUMMOT)
- Individual utility (ies)
- Energy Efficiency Implementation Project (EEIP)

PUCT staff, PUCT's EM&V team and EUMMOT agree on prioritization and updates

DEEMED MEASURE UPDATES

Utilities are the primary party responsible for drafting deemed savings updates

- Facilitates the EM&V contractor's role to provide third-party, objective reviews
- Exception is when the recommended change to the deemed savings value is a direct result of EM&V contractor's evaluation research (i.e., desk reviews, on-site M&V, modeling).

Utilities draft petitions for new deemed savings measures to be filed with the Commission

(16 TAC §25.181(l) (4)).

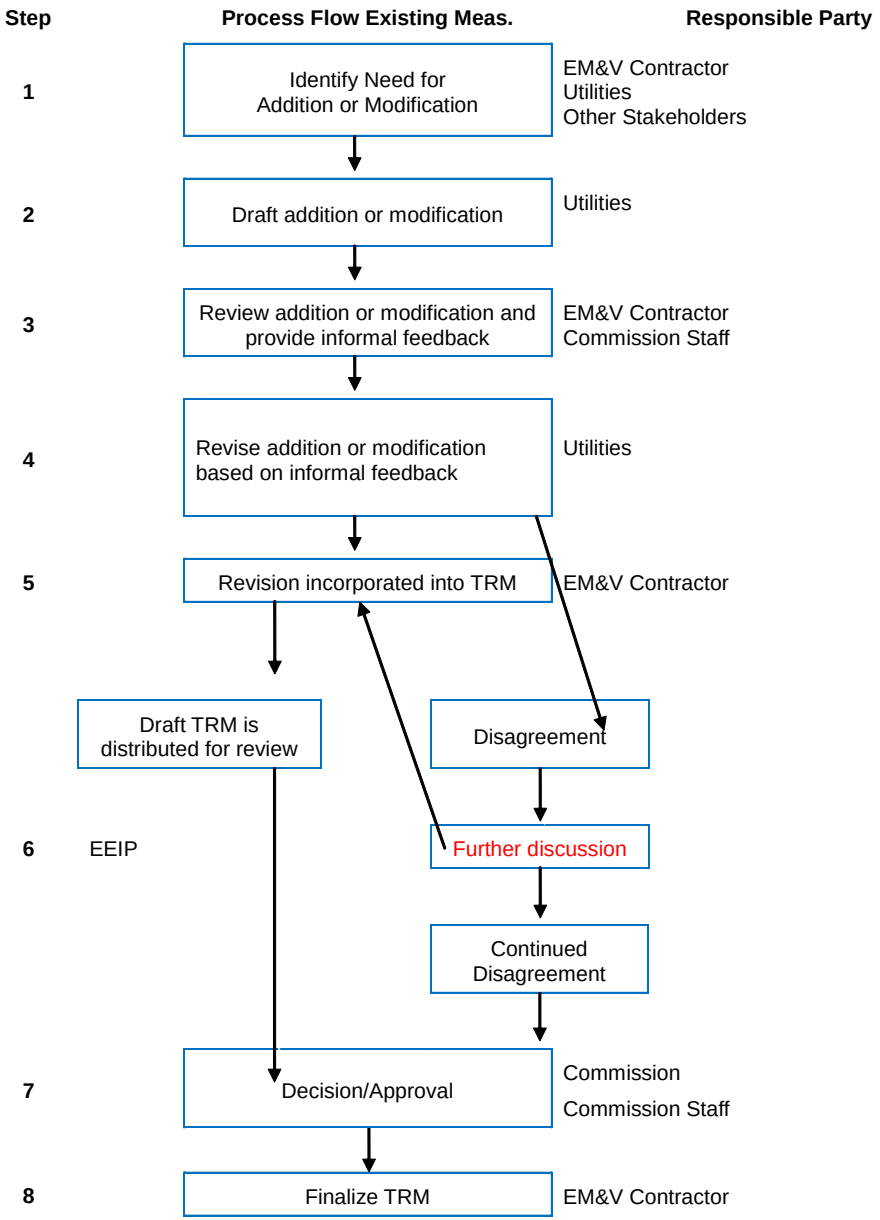
The Commission EM&V contractor reviews prior to filing and integrates into the TRM after filing

NEW DEEMED MEASURES

M&V PROTOCOLS

Utilities or their contractors initiate M&V Protocols	EM&V team integrates M&V Protocol into TRM
new program or technology they plan to offer.	after it has been reviewed and agreed upon collaborative process

TRM Update Process Flow Chart



TRM UPDATE DOCUMENTATION

The Commission's EM&V contractor works with the utilities (EUMMOT) to develop and maintain a "TRM Update Tracker"

- serves as the foundation for TRM revisions.
- Available for view on the EM&V SharePoint site, Technical Reference Manual/TRM Updates

The overall prioritization of updates (high, medium, low) informed by

- improvement of accuracy and consistency of savings estimates
- cost associated with the update

Do you have any additional questions for us?

Lark Lee,
Lark.Lee@tetratech.com

Therese Harris,
Therese.Harris@puc.texas.gov

Thank you for your time today