Iowa's Technical Reference Manual

111(d) Stakeholder Meeting

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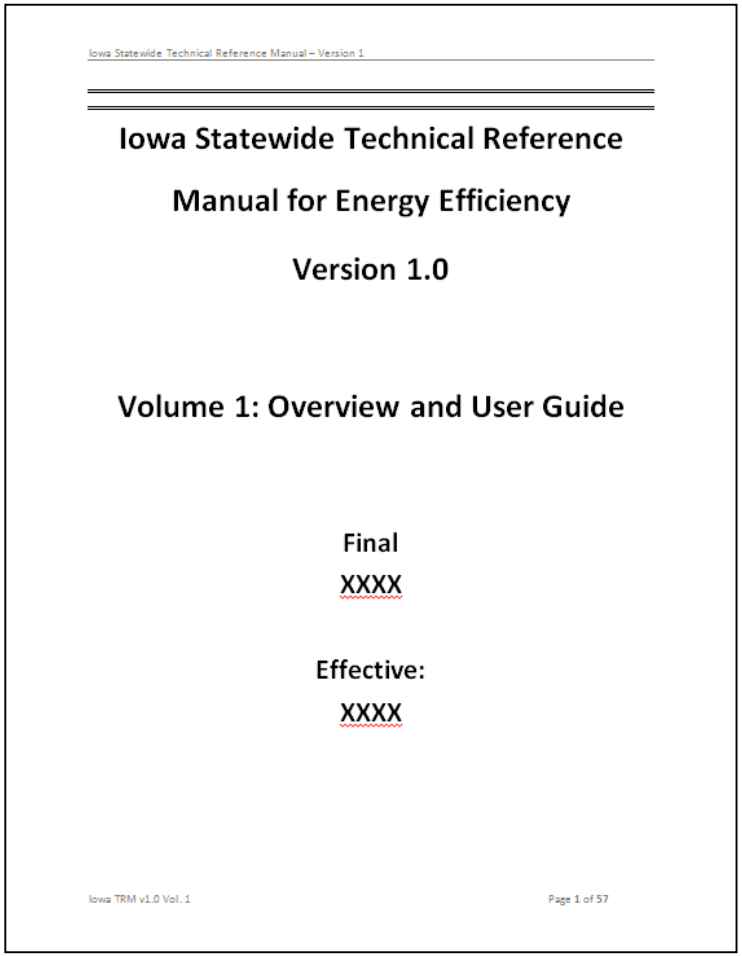
Topics

- Overview of the Iowa Technical Reference Manual (TRM)
- Process for developing the Iowa TRM
- The TRM as a tool for 111(d) compliance

What is a TRM?

A manual with a standard methodology for estimating savings for many common EE measures

- Provides a full narrative of the measures and how calculations should be applied
- Documents all details of the calculations and assumptions
- Provides a high level of transparency to make accounting and tracking easier
- Helps streamline annual evaluation and verification
- Brings consistency and predictability to the EM&V process


Iowa Statewide Technical Reference Manual – Version 1

Iowa Statewide Technical Reference

Manual for Energy Efficiency

Version 1.0

Volume 1: Overview and User Guide

Final

XXXX

Effective:

XXXX

Iowa TRM v1.0 Vol. 1

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The Iowa TRM Project

- The Iowa Utilities Board (Board), in orders approving the 2014-2018 electric and gas energy efficiency plans for investor-owned utilities, agreed that a statewide TRM would be beneficial to the Board, the utilities, and stakeholders by ensuring a consistent process for determining energy savings for individual measures.
- The TRM Oversight Committee was established as a collaboration among stakeholders and utilities. It is responsible for overseeing and managing the project, providing information to the TRM Consultant, commenting on the consultant's work products, and ensuring that the TRM meets the needs of Iowa stakeholders.

Iowa TRM Oversight Committee

Utilities	Advocates
• Black Hills Energy • Cedar Falls Utilities • Iowa Association of Municipal Utilities • Interstate Power and Light Company • MidAmerican Energy Company • Iowa Association of Electric Cooperatives	• Iowa Office of Consumer Advocate • Environmental Law and Policy Center • Iowa Environmental Council • Winneshiek Energy District

Iowa Utility Association

The Iowa TRM - Objectives

- Provide a transparent and consistent basis for calculating gross energy (electric kilowatt-hours (kWh) and natural gas therms) and capacity (electric kilowatts (kW)) savings, as well as documenting the underlying sources of those assumptions and calculations, including interactivity between efficiency measures.
- Support the calculation of the Iowa societal cost test and other cost-benefit tests in support of program design, evaluation, and regulatory compliance.
- Identify gaps in robust, primary data for Iowa that can be addressed through future evaluation efforts and/or other targeted end-use studies.

The Iowa TRM - Objectives

- Provide a process for periodically updating and maintaining TRM records, and preserve a clear record of what deemed parameters are/were in effect at what times to facilitate evaluation and data accuracy reviews.
- Support coincident peak capacity (for electric) savings estimates and calculations for electric utilities in a manner consistent with the methodologies employed by the utility's Regional Transmission Organization (RTO), as well as those necessary for statewide tracking of coincident peak capacity impacts.
- Support the use of energy efficiency savings as appropriate for environmental compliance requirements.

The Iowa TRM - Use

- Once finalized and approved by the Board, the TRM is expected to be the document of record for use in:
  - Savings calculations and reporting, and assessing performance against goals
  - Cost-effectiveness screening
  - Portfolio evaluation
  - Portfolio planning and goal setting
  - Meeting environmental (or other) compliance requirements

TRM Measure Characterizations Components

Description of Measure

- Name and Description
- Eligibility Criteria
- Definition of Baseline Case
- Definition of Efficient Case
- Measure ID
- Effective Dates

TRM Measure Characterizations Components

Savings Calculations

Electric Savings: kW, kWh	Gas Savings: Therms, peak therms
Algorithms	Assumptions
Examples / Supporting Documentation	Net to Gross Adjustment

TRM Measure Characterizations Components

Additional Inputs for Cost-Effectiveness

Measure Life	Persistence	Loadshape
Measure cost	Coincidence Factor	Interactive Effects
O&M Cost and Schedule	Water and Other Non-Energy Benefits	Retrofit Baseline Adjustment

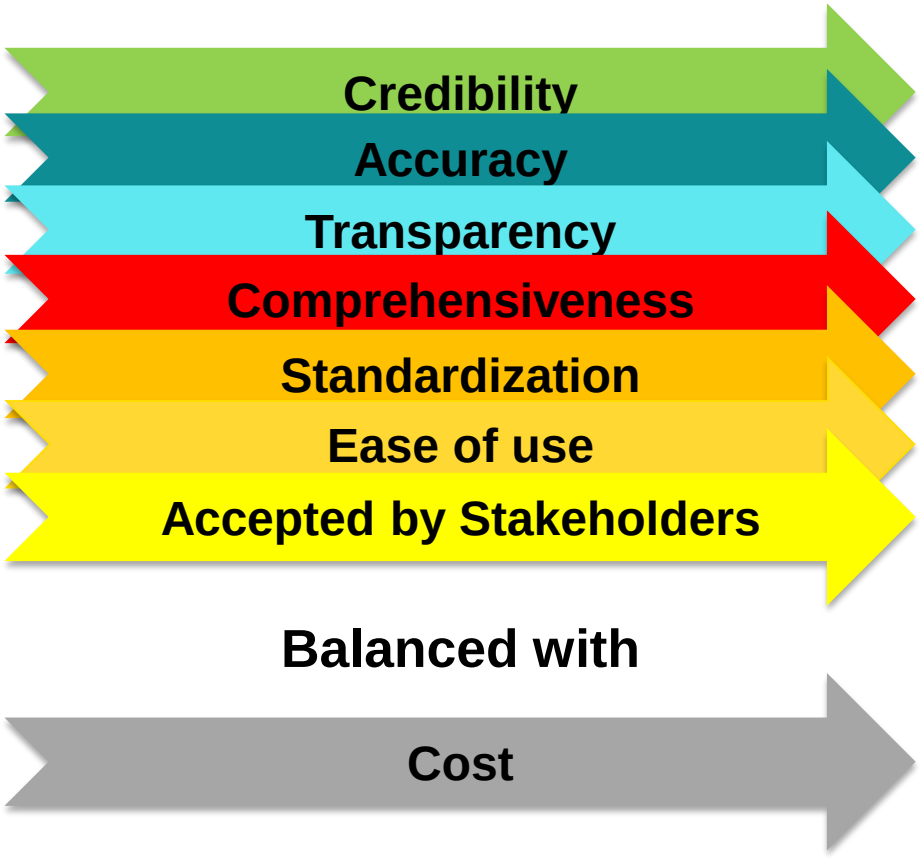
TRM Development

Vermont Energy Investment Corporation was chosen as the TRM Consultant

Development approach:

- Identify full set of measures for which a deemed or deemed calculation approach is appropriate
- Develop savings algorithms
- Start with best available Iowa-specific data and program information
- Augment with best supported data from other studies when needed
- Review with stakeholders; collect feedback; adjust
- Repeat until consensus reached

Guidelines for TRM Development Match 111(d) Guidance



Achieving Success Requires

- ✓ Using Best Data
- ✓ Following Best Practices
- ✓ Engaging Stakeholders Early and Often

Prioritization

111(d) Guidance: Strike a reasonable balance between EM&V rigor and accuracy vs. costs and effort

TRM Structured for Clarity and Transparency

Standard format for each measure characterization, including:

- Narrative explanation of measure
- Base and efficient-measure case technical specifications
- Energy and demand savings algorithms
- Other key parameters (measure life, costs, etc.)
- Pertinent implementation details (e.g., exclusions)

All measure parameters clearly linked to measure

Measures are well-documented; values are reproducible

- Citations are to primary sources, not other TRMs
- Primary sources maintained and readily available

TRM Uses Well-regarded Data

Sources of information for measure development include:

- The ideal: recent, well-vetted Iowa program-specific data and evaluation results
- Evaluations from similar jurisdictions/programs, Federal Standard technical documents, ENERGY STAR®, ACEEE, CEE, CALMAC, etc.
- Evaluation study design, size, age, program specifics, geography, and demographic information for inputs – all of these are used to assess the value and appropriateness of the information

TRM Uses Best-practice Approaches

- Algorithms are also based on the best available information, including:
  - Engineering principles
  - Uniform Methods Project and other standard protocols
  - Modeling when appropriate

  and then refined to match data availability and application.
- When applicable, sensitivity analysis on key inputs is used to assess the impact on the algorithm and potential variance to aid in final decisions

Approach to Measure Characterizations

- The TRM includes deemed values and also “deemed calculations” – calculations that deem values for some components of an algorithm but require site-specific inputs when available
- This approach balances the “accuracy” of more-custom calculations with the additional costs to develop and to provide more-complex implementation

Addressing Major Themes from EPA Guidelines*

- Accurate baselines are critical and receive focus
  - The TRM specifies baseline for every measure situation – based on best local market conditions or relevant standards
- Best-practice protocols and guidelines used
  - And base assumptions on previous evaluations and studies that involved actual measurements and analyses
- Deemed values used when appropriate – “deemed calculations” provide better results when input information is available
  - Conditions for use of each are identified
- Calculations adjust for weather, occupancy, and other factors when appropriate

*Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency – U.S. EPA Draft Aug. 2015

Addressing Major Themes from EPA Guidelines*

- Assumptions are neither always conservative or aggressive – strive for best-supported answer
- Double-counting of savings should be avoided
  - Standardization across the state and collaborative input minimizes this risk
- Baseline determinations and net-to-gross adjustments are coordinated to avoid double counting of market effects
- Interactive factors are accounted for
  - Included in the TRM whenever there is well-supported evidence for the effect

*Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency – U.S. EPA Draft Aug. 2015

Addressing Major Themes from EPA Guidelines*

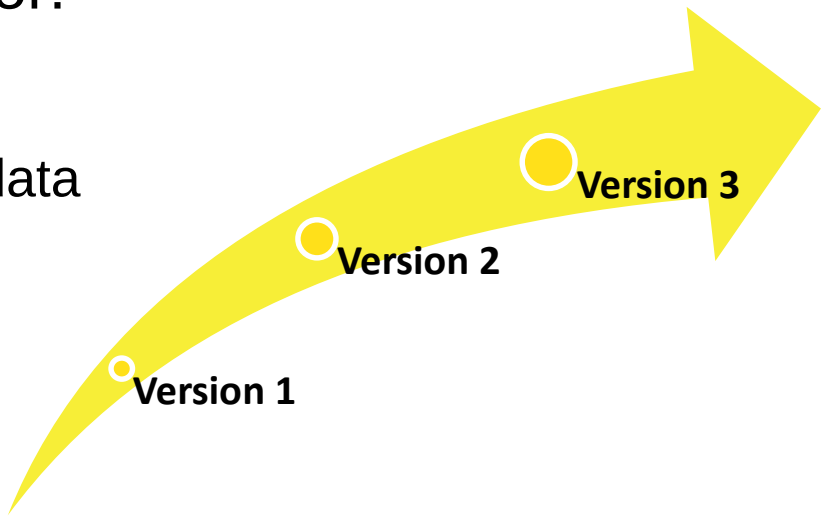
- Savings persistence/ measure life is included, as determined from best available studies
  - Future mid-life adjustments to savings are presented when appropriate
- Information in the TRM is transparent, well-documented, and reproducible
  - Full citations included; reference and analysis documents provided
- Development is highly collaborative
- The TRM uses the same approach as TRMs that have been accepted by ISO-NE as qualified to verify EE resources in the Forward Capacity Market

*Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency – U.S. EPA Draft Aug. 2015

Regular TRM Update Is Critical

Ongoing updates will account for:

- New measures
- Existing measure updates – new data
- Retiring measures
- Correction of errors
- Policy changes



Will develop a process and timelines to meet the varied needs of stakeholders:

- Planning
- Screening
- Tracking
- Reporting
- Review
- Evaluation
- Potential studies
- Compliance

111(d) Compliance for Energy Efficiency

- The TRM represents a major tool in support of energy efficiency as a compliance option for the Clean Power Plan
- EPA EM&V guidelines should also be followed for:
  - Evaluation activities
  - Protocols for project-specific custom measures
  - Protocols for programs assessed by comparison-group EM&V methods
  - Verification of measure installations