
NH Energy Efficiency Resource Standard

Three-Year Program Plan





VEIC Review of
EM&V for Vermont's Energy Efficiency Utilities

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Vermont Energy Efficiency Utilities

- Vermont Energy Investment Corporation operates Efficiency Vermont as a state wide Energy Efficiency Utility (EEU) under an Order of Appointment from the Vermont Public Service Board.
 - Efficiency Vermont provides services and initiatives that address cost-effective opportunities associated with electric and thermal energy and process fuels (TEPF) efficiency
 - Two other EEU Programs
 - Burlington Electric Department
 - Vermont Gas Systems
 - Efficiency Vermont Funding Sources
 - Electric efficiency services funded via ratepayer Energy Efficiency Charge
 - Thermal efficiency and process fuels services funded from net revenues associated with the ISO-NE Forward Capacity Market (FCM) and the Regional Greenhouse Gas Initiative (RGGI)
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Regulatory Oversight and Evaluation

■ Regulatory Oversight

- ❑ Vermont Public Service Board (Board) – EEU oversight per Vermont Statute
- ❑ The Vermont Department of Public Service (Department) – serves as the state's energy office and as the public advocate in proceedings before the Board.

■ Independent Third-Party Evaluators

- ❑ The Board requires verification by an independent evaluator of the reported energy and capacity savings and cost-effectiveness of programs delivered by EEU implementers
 - ❑ Third-party evaluators serve as consultants to the Department
 - ❑ Approach has evolved in recent years – from a single third-party evaluator providing review of all EEU activities to separate evaluators focused on specific scopes of work – e.g., Annual Savings Verification, TRM Measure Development, etc.
 - ❑ The Department works with an EEU to attempt resolution of any issues resulting from evaluation activities that may lead to adjustments to an EEU's annual savings claim or other performance metrics
 - ❑ The process results in the Department providing a recommendation to the Board for any adjustments to be made to an EEU's annual savings claims.
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Evaluation Metrics

- Efficiency Vermont operates on a three-year performance period
 - Currently 2015-2017
 - Quantifiable Performance Indicators (QPIs)
 - Scaled performance indicators - e.g., MWh, MW, BTU, Total Resource Benefits
 - Minimum performance requirements - e.g., portfolio cost-effectiveness, yield, equity indicators
 - Other indicators - e.g., operational, administrative, or service quality indicators
 - Demand Resource Plan Proceeding - sets Efficiency Vermont budgets and QPIs set in advance of each three-year performance period
 - Year-by-year EEU budgets
 - EEU Expected Savings
 - QPIs for electricity and TEPF resource-acquisition services
 - Year-by-year budgets for Development and Support Services activities – includes funding for Efficiency Vermont’s self-directed evaluation activities
 - Budgets necessary for the Department’s evaluation of EEU services
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Overview of Evaluation Activities

- Ex-Ante Activities (Pre Savings Claim)
 - Technical Reference Manual
 - Technical Advisory Group
 - Data Collection and Tracking
 - Ex-Post Activities (After Savings Claim Submitted)
 - Annual Savings Verification
 - Forward Capacity Market Impact Evaluation
 - Ongoing Evaluation Activities
 - Market Assessments
 - Program/Project Impact Evaluation - Emerging Technologies
 - Process Evaluations
 - Benchmarking
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Technical Reference Manual

- EEU's shall establish and maintain current documentation on all measure and program assumptions and algorithms used to calculate savings for prescriptive energy-saving measures in a Technical Reference Manual (TRM)
 - Prescriptive Programs and measures are defined as measures for which EEU's offer and publish a set incentive amount per measure and do not rely on site-specific analyses (custom measures) to develop incentive offers, estimated savings, or cost-effectiveness.
 - TRM Process – managed via Technical Advisory Group (TAG)
 - Measure characterizations drafted by Efficiency Vermont EM&V Group
 - Assumptions, Analysis, and References reviewed by Vermont Department of Public Service and Evaluation Contractor
 - Finalized measure characterizations used for savings claimed by all three EEU's.
 - Measure savings and impacts
 - Deemed
 - Stipulated algorithms
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Technical Advisory Group

- The Technical Advisory Group (TAG) is a stakeholder driven process to review technical issues related to Energy Efficiency Utility savings claims, including TRM development and review
 - Participants include members of Vermont's Energy Efficiency Utilities, Department of Public Service, and third-party evaluation contractor
 - Issues addressed via TAG:
 - TRM Measure Characterizations
 - Savings Verification Recommendations
 - Program Implementation Procedures
 - General Technical Topics
 - TAG has proved to be a very effective method of making improvements that increase the reliability of Energy Efficiency Utility savings claims
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Data Collection and Tracking

- EEU's required to maintain data collection and reporting systems
 - Facilitate EEU planning and reporting requirements – serve as basis of annual savings claims
 - KITT (Knowledge-based Information Technology Tool) + database
 - Project, Site, and company/participant
 - Players – building owner, consulting engineer, facilities staff, etc.
 - Measures costs, incentives, savings, and other impacts
 - Utility AMI Data where available
 - Analysis and Data Upload Tools
 - Prescriptive Tool
 - CAT (Custom Analysis Tool)
 - Energy Analysis Tools
 - State Screening Tool
 - TRM+ Electronic TRM Application
 - Reference – active measures including referenced documents and analysis
 - Administration – management of development, review, and release functionality
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Annual Savings Verification

- Savings Verification includes analysis of measure and project data from EEU tracking systems, review of project files, and any field verification visits that are deemed to be appropriate.
- Evaluation Approach
 - Custom Projects – weighted sample and desk review
 - Prescriptive Measures – database validation of TRM assumptions
- Evaluation Categories

C&I and Multifamily	Residential
Custom Retrofit	Efficient Products
Custom NC/MOP	Residential Retrofit
Prescriptive Lighting	Low Income Single Family
Prescriptive Non-Lighting	Home Performance with ENERGY STAR
C&I Upstream Lighting	Residential New Construction
C&I Upstream HVAC	Residential Upstream Lighting
	Residential Upstream HVAC and DHW

Annual Savings Verification (cont'd)

- Variances identified and reviewed in consultation with the EEU
 - Evaluation results presented to the Board by the Department as recommended adjustments
 - In addition the Department will annually certify to the Board:
 - Whether an EEU has succeeded or made appropriate interim progress toward achieving QPIs
 - Whether an EEU is satisfactorily executing those of its responsibilities that are not directly measured by QPIs
 - Whether an EEU's performance relative to its QPIs is consistent with the portion of the three-year budget that has been expended
 - Realization Rates (% of savings claim achieved) applied for each evaluation category and savings data adjusted
 - Recommendations channeled to the TAG Process for tracking and implementation
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Forward Capacity Market

- M&V for ISO-NE FCM Demand Savings evaluated through an M&V plan following the ISO-NE Manual for Measurement and Verification of Demand Reduction Value from Demand Resources (**M-MVDR**)
 - M&V Requirements
 - Stipulated Loadshape: Prescriptive and less complex custom measures
 - Site Metering: more complex custom projects
 - Demand Reduction Value calculations must achieve at least a 10% relative precision and an 80% confidence interval.
 - Evaluation efforts run on one year delay
 - Allows for site level M&V to take place
 - Currently evaluating Program Year 2015 demand savings
 - Efficiency Vermont conducts In-Program Metering
 - Retrofit: > 50 kW
 - Market Opportunity and New Construction: > 75 kW
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Additional Evaluation Activities

- Overall Performance Assessment (OPA) – 6 year minimum
 - Program cost-effectiveness of the EEU's, including EVT's and BED's programs;
 - Reported energy and capacity savings
 - KITT+ Database
 - TRM and associated processes
 - Savings claim verification process
 - Market Characterization and Baseline Studies - 3 year basis
 - C&I and Residential
 - Existing and New Construction
 - Benchmarking Evaluation – 3 year basis
 - Performance relative to other EE programs
 - Normalized for program maturity, funding, demographics, etc.
 - Emerging Technologies – as needed
 - Behavior – Home Energy Reports and Continuous Energy Improvement
 - Cold Climate Heat Pumps
 - Program Specific Impact and Process Evaluations – as needed
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Resources

- Vermont EEU Process and Administration Document
 - http://psb.vermont.gov/sites/psbnew/files/doc_library/process-and-administration-document-current.pdf
 - Vermont TRM
 - http://psb.vermont.gov/sites/psbnew/files/doc_library/ev-technical-reference-manual.pdf
 - ISO-NE M-MVDR
 - https://www.iso-ne.com/static-assets/documents/2017/02/mmvdr_measurement-and-verification-demand-reduction_rev6_20140601.pdf
 - SEE Action Energy Efficiency Program Impact Evaluation Guide
 - https://www4.eere.energy.gov/seeaction/sites/default/files/pdfs/emv_ee_program_impact_guide_1.pdf
 - DOE's Uniform Methods Project
 - <https://energy.gov/eere/about-us/ump-home>
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