

**Vermont Public Service Department
Energy Efficiency Evaluation Plan
2018-2020**

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Introduction

Vermont law, 30 V.S.A. §209 requires that the Public Utility Commission (PUC or Commission) “[p]rovide for the independent evaluation of programs delivered” by an Energy Efficiency Utility (EEU) funded through an Energy Efficiency Charge (EEC). The Public Service Department (Department or PSD) has been identified as the entity who would carry out this role since the EEU’s inception, first in Docket 5980,¹ and more recently in the “Process and Administration of an Order of Appointment” approved by the Commission 2/16/2016. This Evaluation Plan (Plan), provided in the context of the Demand Resources Plan (DRP) Proceeding, outlines the Department’s plans to evaluate the EEU’s and Vermont’s efficiency markets for the 2018-2020 three-year performance cycle.

This evaluation plan is applicable to Vermont’s EEU’s - Efficiency Vermont (EVT), Burlington Electric Department (BED) and Vermont Gas Systems (VGS). This Plan focuses on measurement, verification and evaluation activities of EEU programs intended to acquire both electric energy efficiency funded by the Energy Efficiency Charge (EEC) on electric ratepayer bills and thermal savings from the Thermal Energy and Process Fuel (TEPF) efficiency fund (funded by the revenues from the Regional Greenhouse Gas Initiative and participation in the Forward Capacity Market) and from VGS programs (funded by the EEC on VGS ratepayers bills). In addition, this Evaluation Plan describes the Department’s evaluation activities associated with participation in the ISO-New England Forward Capacity Market (FCM). The Plan also describes other evaluation activities undertaken by the Department but not specifically funded by the EEC, TEPF or VGS funds. These other activities are important in that energy efficiency evaluation work does not happen in isolation, rather in the multitude of activities undertaken by the Department in this area leverage and inform one another.

Evaluation necessitates cooperation from other entities however; the primary responsibility for the evaluation described herein remains with the PSD. For the 2018-2020 performance cycle, the Department proposes an electric and natural gas EEC-funded evaluation budget of \$3,784,200, a TEPF-funded evaluation budget of \$454,300, and a FCM-funded evaluation budget of \$1,820,700. The process and specific program and evaluation budgets are discussed in more detail below, and detailed description of the assumptions used to develop the budgets are available upon request.

¹ In its Order of 9/30/99 in Docket 5980, the Commission approved a Memorandum of Understanding between parties that identified the Department of Public Service (PSD or Department) as the entity to “provide for formal evaluation of the Core Programs and any other System-wide programs approved by the Commission for EEU implementation.”

2018-2020 Period	Summary of Budget			
PSD Evaluation Category	2018	2019	2020	Total 2018-20
Ratepayer Funded through the Energy Efficiency Charge				
Electric EEC	\$795,600	\$972,000	\$1,343,000	\$3,110,600
Natural Gas EEC	\$212,500	\$209,300	\$251,800	\$673,600
Total Ratepayer Funding				\$3,784,200
TEPF Funded through State Participation in ISO-NE FCM and RGGI Markets				
Forward Capacity Market (FCM)	\$608,200	\$605,500	\$607,000	\$1,820,700
Regional Greenhouse Gas Initiative (RGGI)	\$31,500	\$175,500	\$247,300	\$454,300
Total TEPF Funding				\$2,275,000

The Department has developed a framework detailing required structural modification to its energy efficiency evaluation program. These changes leverage the evaluation and verification work conducted in the context of the Forward Capacity Market as well as that associated with the annual savings claim verification. . The Department is interested in the potential for increased confidence in savings claims, increased administrative efficiency, and reduced total costs that may be realized by this change. However, differences in evaluation purpose, timing, and impact requirements make a merging of the Forward Capacity Market and annual savings verification process complex. Currently the Department is developing a timeline for developing a transition plan which envisions the use of rolling impact evaluations carried out to ISO-NE required standards as laid out in the latest version of the Manual: Measurement and Verification of Demand Reduction Value from Demand Resources (MMVDR).

However it is necessary to proceed with caution to ensure that there are no unintended consequences from such a change in evaluation structure. This evaluation plan continues to consider the annual savings verification process and the FCM evaluation as independent efforts. However the Department feels that when the evaluation framework is completed and implemented no budget changes would be required for the period.

Evaluation Goals and Objectives

The goal of the proposed evaluation under this plan is to provide ratepayers and the Commission with an independent evaluation of EEU programs, pursuant to statutory obligations under § 209(f)(10) and under the Commission’s direction under the Order of Appointment. In addition to the key task of verifying the direct impacts of the EEU’s activities², the implementation of this plan should enable the Department, the Commission, and various stakeholders to improve and update their understanding of

² It should be noted that evaluation activities to verify EVT and BED savings are independent but often evaluation efforts overlap. The Plan and budget do not separate EVT and BED evaluation activities.

Vermont's dynamic energy efficiency markets, and continue to advance Vermont's ability to capture energy efficiency savings. Toward those ends, this plan has the following overall objectives:

1. Verify the annual savings claims made by EEUs relative to performance targets, including but not limited to annual energy and coincident peak capacity savings, and total resource benefit (TRB), MMBtu;
2. Provide evaluation activities necessary to meet the requirements of participation in the FCM;
3. Perform evaluation of select "Non-Resource Acquisition" activities as needed
4. Conduct market studies to characterize and assess current conditions in discrete energy efficiency markets identified in prior evaluation studies and reports, and in any new markets as may be identified by stakeholders;
5. Benchmark the scope and results of Vermont energy efficiency portfolios and initiatives relative to other programs in the nation;
6. Support the development and understanding of changing baselines and measure characterizations through participation in the Technical Advisory Group, including measures or initiatives where significant uncertainty exists and/or where the potential savings contribution is large, such as behavioral modification and Smart Grid R&D initiatives;
7. Maximize the value of evaluation expenditures by retaining in-house resources and partnering with other New England evaluation efforts where possible and appropriate.

This plan considers PSD energy efficiency evaluation in the context of the EEU's DRP³, incorporates a variety of funding sources⁴ and includes diverse mix of evaluation activities. The plan's goals will be met through a variety of evaluation techniques, including impact assessments, market characterizations and assessments, process evaluations, and research. Some activities will be carried out via independent contractors⁵ and others will be performed by in-house staff in order to reduce the proportion of contracted efforts relative to past evaluation cycles and continue to build the Departments expertise and in house evaluation management systems.

Budget

³ Required as part of a longer term EEU Order of Appointment, the Demand Resources Plan (DRP) will be a statewide plan that identifies short- and long-term energy efficiency budgets and savings goals, as well as other compensation matters related to the delivery of energy efficiency services by Vermont's EEU's.

⁴ Evaluation plan funding sources include but are not limited to the Energy Efficiency Charge (EEC), Forward Capacity Market (FCM) and Regional Greenhouse Gas Initiative (RGGI).

⁵ Competitive bids for specific identified objectives will be sought through the state approved request for proposals (RFP) process.

For the 2018-2020 cycle the Department has built the evaluation budget from the ground up, effectively enabling the Department to plan both in-house and contracted evaluation activities, as well as categorize evaluation activities by funding source with appropriate cost-shares. This process provides a holistic view of all energy efficiency evaluation activities and the most accurate allocation of costs to date. Finally, this plan reflects activities the Department believes it needs in order to provide comprehensive evaluation of EEU programs. This is a significant accomplishment, given the scope and complexity of the State's energy efficiency programs. The Department views this approach as advantageous and the preferred model for this and future planning efforts.

The Department views the three-year evaluation cycle holistically – costs and staff time for the activities described herein may not be equal in each year within the three-year cycle. For example, certain studies may require a large portion of the allocated evaluation budget but only occur once within a cycle. Consistent with EEC collections in the past, the Department proposes that collections for these evaluation efforts be made gradually, so as to mitigate any volatile rate impacts due to evaluation activities.

For the 2018-2020 performance cycle, the Department proposes an electric and natural gas EEC-funded evaluation budget of \$3,784,200, a TEPF-funded evaluation budget of \$454,300, and a FCM-funded evaluation budget of \$1,820,700. In-house resources allow the Department to conduct additional evaluation activities in a timely and cost-effective manner. Where reasonable, the Department will utilize in-house resources to conduct certain evaluation activities.

The following sections describe core evaluation activities specifically plus evaluation support activities related to planning, management, professional development, expert services, regional evaluation coordination and other evaluation activities.

Evaluation Activities

Accurate and reliable savings estimates are a vital component of the statewide energy efficiency programs operated within Vermont. Impact evaluation is an industry standard that determines program-specific induced benefits which include reductions in energy and demand usage (such as kWh, kW & MCF) and the other Total Resource Benefits⁶ that can be directly attributed to energy efficiency.

The narrative below specifies the primary evaluation type; it should be noted that impact evaluation is typically associated with *programs* and measurement and verification with *projects*. In addition, it is not uncommon to mix these and other evaluation types in order to maximize results.

⁶ Total Resource Benefit includes gross electric benefits, fossil fuel savings, and water savings.

The Department proposes that it should retain the ability to prioritize any of the below assessments, or other as yet unidentified assessments to focus on what is most beneficial to Vermont's energy efficiency initiatives and assessment relative to performance targets. Further, costs associated with any one of the assessments in this plan are the Department's best estimate, and may be subject to change.

Core Energy Efficiency Charge Evaluation Activities

The following activities are central to the Department's effort to assess the impacts of Vermont's energy efficiency programs.

Annual Savings Verification

Pursuant to the statutory requirements identified above and the VEIC, BED, and VGS Order of Appointments, the PSD is responsible for the annual verification of energy and capacity savings and total resource benefits claims relative to performance targets. To carry out these responsibilities, the Department will conduct an intensive review of the overall EVT, BED and VGS savings and TRB claim. A comprehensive review of the database of prescriptive measures will be undertaken to ensure agreed upon values are applied correctly. The high cost of individual project verification usually necessitates the design and implementation of a random sample of business custom projects for review. For selected projects, the Department will complete a comprehensive review, examining all files associated with these custom projects, including billing history, savings analysis tools, and measure level savings claims. Once savings adjustments are finalized for sampled projects, a realization rate is applied to adjust the remainder of custom projects. The above activities will be summarized in a report and recommendations as to energy efficiency savings claims and TRB will be made to the Public Utilities Commission in accordance with the schedule outlined in each EEU's Order of Appointment.

Evaluation Budget: \$773,500

Evaluation Type: *Measurement & Verification*

Source: *Electric EEC (\$565,100) Natural Gas EEC (\$208,400)*

Technical Advisory Group and Technical Reference Manual Review

An ongoing Technical Advisory Group ("TAG") reviews EVT's Technical Reference Manual ("TRM") additions and revisions, follows up on Department findings in its verification processes, and provides a valuable forum for other issues related to EVT's savings estimate procedures, this TRM is created and used by both electric EEUs. For VGS this process will begin the creation of "thermal" TRM for use where high volume and low variability of savings on average. In the past the Department has relied on outside contractors; in the 2018-2020 evaluation cycle the Department's TAG participation will continue to use contractor support to provide advice and recommendations to the Department throughout the process. This will especially be so in regards to the thermal TRM as this will require research that neither VGS nor the

Department is staffed to be able to carry out in a timely manner. However, internal staff resources lead these efforts.

The activities associated with these evaluation activities continue to increase in workload over the 2015-2017 time period. Stakeholders continue to systematically update every TRM measure characterization, which continues to require the Department's review of an increased amount of characterizations. However, overall costs associated with this activity have been maintained relative to previous years. Additional costs for the creation and maintenance of a VGS specific TRM and TAG proceedings have been added to this task and it is intended where possible to combine review and creation efforts to gain efficiencies in the creation of measure characterizations.

Evaluation Budget: \$286,100

Evaluation Type: *Supports Impact Evaluation and Measurement & Verification*

Source: *Electric EEC (\$194,000) Natural Gas EEC (\$92,100)*

Market Characterizations & Assessments

Market studies document saturation of efficient buildings, equipment, lighting, and other appliances and can identify areas with remaining energy efficiency potential. Market studies establish the most current energy efficiency market "baselines" which can identify market segments with remaining opportunities and be useful in program design. Further, after more than a decade of program implementation experience in Vermont, these assessments conducted at standard intervals provide an assessment of market transformation in certain areas. As in past performance cycles, the Department intends to conduct market assessment and baseline studies. For this cycle, the Department will place increased emphasis on collecting reliable market share data, as well as electric and natural gas measure saturation data. In addition, the scope will assess adherence to building codes, building shell characteristics, natural gas and heating and cooling fuel type distributions⁷.

A series of four studies will be conducted as described below:

- *Residential Existing Facilities.* Conduct a large scale on-site assessment of existing single family homes and multifamily homes less than three stories to:
 - Document lighting and appliance saturation
 - Document home overall efficiency levels
- *Residential New Construction.* Conduct an on-site assessment of newly constructed single family and multifamily homes less than three stories homes to:
 - Determine saturation of efficient homes and appliances in those homes
 - Document compliance with Residential Building Energy Standards
- *Business Existing Facilities.* Conduct a large scale on-site assessment of existing commercial and industrial facilities, as well as multifamily buildings 3 stories or more to:

⁷ Additional funding sources may be available to assist with some or all of these portions of the scope.

- Document building, lighting and equipment status and efficient equipment saturations
- Document building overall efficiency levels
- *Business New Construction.* Conduct an on-site assessment of newly constructed buildings and multifamily buildings three stories or more to:
 - Document compliance with Commercial Building Energy Standards
 - Determine saturation of above code buildings and efficient equipment

The Department will primarily use contractors to conduct market characterization studies. However, in-house evaluation staff will assist with the modification of existing evaluation instruments and overall management, including increased data collection quality control. The studies will frame market characterization data so it can be analyzed for trends from one three year cycle to the next.

PSD anticipates a completed residential market assessment by late-2017 and has a completed commercial market assessment finished in mid-2017. As a result of the timing the PSD anticipates issuing a competitive RFP late 2019 for these studies with work not being completed until early the following period of 2021-2023. As a result the PSD has only included a portion of the overall estimated costs for this work in the 2018-2020 period.

Evaluation Budget: \$817,100

Evaluation Type: *Market Characterization and Baseline Creation*

Source: *Electric EEC (\$657,400) Natural Gas EEC (\$35,100) TEPF (\$134,600)*

Benchmarking of Vermont Energy Efficiency Efforts

In 2010, the Department conducted a benchmarking study that sought to determine Vermont's standing relative to its peers regarding overall energy efficiency investment portfolio and program results for program year 2008. In 2014, the Department completed a second benchmarking study for programs years 2011 and 2012. This benchmarking compared Vermont's energy efficiency programs with other jurisdictions, maintaining attention to differences in program maturity, state demographics, economic conditions, and energy rates (electric, natural gas and heating & process fuels), as well as the above mentioned reporting distinctions. Benchmarking may also consider how other states are supplementing core programs with pilot projects and innovative financing mechanisms. The Department is currently conducting a third benchmarking effort looking at EEU comparative performance to their peers for 2014 and 2015. The Department continues to identify this as an important study to ensure continued performance of the EEUs and as a result propose to completed a fourth study in the 2018-2020 period.

Evaluation Budget: \$112,600

Evaluation Type: *Regional and National Program Comparison*

Source: *Electric EEC (\$93,600) Natural Gas EEC (\$19,000)*

Supporting Energy Efficiency Charge Evaluation Activities

This section describes activities that are related to the Core Activities outlined above that support and further enhance understanding of Vermont's energy efficiency markets and reliability of savings claims. It includes the evaluation of particular markets or initiatives that have been identified in need of further information or assessment, support of regional initiatives, and the allocation of funds to address unpredictable circumstances where additional information is needed to properly verify savings claims.

Non-Resource Acquisition Initiatives

As part of the Order of Appointment Structure, EEU's have "Development and Support Services" ("DSS") initiatives. These initiatives are those that do not directly contribute to resource acquisition, but are nonetheless important to be undertaken by an EEU, such as supporting the advancement of building codes or energy education programs. This evaluation is expected to be conducted with primarily with internal resources however some independent third party contractors' resources have been allocated to supplement these efforts.

Evaluation Budget: \$66,100

Evaluation Type: *Process Evaluation*

Source: *Electric EEC (\$43,900) Natural Gas EEC (\$13,200) TEPF (\$9,000)*

Administrative Efficiency

The Department is responsible for evaluating performance relative to the EEU's quantitative administrative efficiency metrics. At the time of the writing of this plan, the Commission has recently approved an Administrative Efficiency minimum performance requirement (MPR) for the EEU's (EEU 2016-03 order entered July 7, 2017). The Department anticipates this administrative efficiency evaluation will support the goal of this MPR to develop a set of administrative efficiency metrics to be applied to the performance period starting in 2021.

Evaluation Budget: \$115,000

Evaluation Type: *Management Audit/ Process Evaluation*

Source: *Electric EEC (\$76,400) Natural Gas EEC (\$23,000) TEPF (\$15,600)*

Home Performance with Energy Star & Building Performance Evaluation

The Home Performance with Energy Star (HPwES) program focuses on providing residential energy efficiency retrofits in single-family homes. The program is also being leveraged to provide energy efficiency retrofit services to small businesses through the Building Performance program. While some of the measures implemented under this program acquire electric efficiency, the bulk of the measures are directed toward acquisition of thermal and process fuel efficiency savings.

The Department completed one review of this program in 2012 and there is currently an evaluation underway looking at program years 2014 and 2015. The primary purpose of the evaluation is to evaluate and verify the impact of the HPwES and Building Performance programs, as well as the electric energy savings attributable to these programs. The goal of the impact evaluation is to develop independent estimates of program savings and to compare those evaluation results with internal program savings

projections, as well as to provide suggested mechanisms for adjusting future savings projections as necessary. The goal of the process evaluation is to identify recommendations for increasing participation rates and average savings per participant.

This evaluation will be completed mostly by outside contractors, with internal resources providing oversight and contributing to the evaluation where possible.

Evaluation Budget: \$125,900 (*Electric only portion*)
Evaluation Type: *Impact and Process Evaluation*
Source: *Electric EEC*

Energy Savings Accounts & Customer Credit Program

Large business customers expressed a desire to implement electrical energy efficiency measures independently from their EEU. For these customers the Vermont General Assembly passed legislation requiring the Department to develop an Energy Savings Account (“ESA”) option that would allow customers that have both the interest and capability to self-administer their own energy efficiency efforts to do so. Customers who choose to self-administer using the ESA option will be subject to the same savings verification oversight as an EEU.

The Customer Credit Program (“CCP”), created as part of the Memorandum of Understanding between parties in Docket 5980, and later approved by the Commission, allows commercial and industrial customers who meet eligibility criteria to use a portion of the funds they have paid to the EEC to invest in energy efficiency projects independent of EVT. Currently there is only one customer in the program that enrolled in the CCP program during the 2015-2017 evaluation cycle. The Department’s internal evaluation staff will continue to be the primary evaluators of the CCP. Similar to the ESA evaluations, a small role for contractor assistance with metering of larger CCP projects is planned if needed.

Due to the requirements laid out in Act 77 the Department has included funds to support the potential redesign of these programs in order to increase participation

Evaluation Budget: \$52,500
Evaluation Type: *Impact Evaluation and Measurement & Verification*
Source: *Electric EEC*

Regional Evaluation Coordination

Vermont’s relatively small evaluation budget creates challenges for effectively monitoring and verifying energy efficiency programs. Impact and Market assessments can become expensive activities. The underlying goal of this PSD evaluation plan is to accomplish sound and reliable estimates of energy efficiency impacts at a reasonable cost. To maximize available funds, the PSD plans, where appropriate, to partner with other New England and Northeastern jurisdictions for evaluation studies.

Northeast Energy Efficiency Partnerships has created the Northeast Evaluation, Measurement and Verification Forum the Public Service Department, along with EVT

and the Public Utilities Commission, has participated previously in the Forum. The Department continued participation in this forum is under review. Examples of the studies conducted by the forum include research regarding load shapes for particular measures, estimating the potential for claiming savings from codes and standards, and other work that may be cost prohibitive to perform in isolation.⁸ Until resolution of this issue is reached the Department will include anticipated participation costs in this periods budget.

The Department has partnered with the Connecticut Department of Energy and Environmental Protection and Lawrence Berkley National Labs to gain a DOE grant to fund a study of the developing field of M&V 2.0 which used automation and AMI data to produce a faster and reliable evaluation of programs. The study will look at these tools and develop a best practice guide of implementation and determine their utility to regulators as a tool to demonstrate reliable program results.

In addition, the Department is a member of the Consortium for Energy Efficiency, an association of energy efficiency program administrators who work together on common approaches to advancing energy efficiency. A small amount of budget is allocated to membership dues and cost sharing for specific studies that are relevant to Vermont energy efficiency programs.

Evaluation Budget: \$246,300

Source: *Electric EEC (\$166,300) Natural Gas EEC (\$24,600) FCM (\$55,400)*

Behavioral and Smart Grid R&D Evaluation Activities

The Department evaluated behavior-change focused initiatives aimed at reducing energy use in both the residential and commercial sectors during the 2015-2017 performance cycle and proposed to continue to do so in the 2018-2020 period. The evaluations will be completed by outside contractors, with in-house resources contributing significantly to evaluation design and management of the studies. Focus of the studies relate to the reliability, cost-effectiveness, impact and persistence of behavioral programs.

Evaluation Budget: \$569,600

Evaluation Type: *Impact Evaluation*

Source: *Electric EEC*

Contingency Evaluation Funds

Other currently unforeseeable evaluation needs may develop as this performance cycle progresses. For example, new technologies such as Cold Climate Heat Pumps which have gained market penetration in Vermont during the 2015-2017 period and required to be closely evaluated for both their potential to save energy as well as the potential for load building, as this technology can be used for both heating and cooling, the latter of which has the potential to increase summer peak load.

⁸ More information on the Forum can be found at <http://neep.org/emv-forum>

Further, all evaluation costs are the Department's best estimates, with various cost and resource allocation assumptions that could easily vary depending on any number of circumstances. Thus, the Department finds it appropriate to allocate some contingency funds to directly supplement appropriate evaluations as needed. These funds amount to 5% of the total EEC funded evaluation budget.

Evaluation Budget: \$127,200
Evaluation Type: *Contingency*
Source: *Electric EEC*

Thermal Energy and Process Fuels Initiatives Evaluation Activities

The Department has, in the context of the DRP, submitted proposals for budgets and services to be delivered for Thermal Energy and Process Fuel ("TEPF") efficiency initiatives by EVT and BED. These programs leverage the programs already in place to deliver electric efficiency to the greatest extent possible. As a result, programs overlap significantly. As illustrated above EEC/TEPF cost-share has been applied to some specific evaluation activities (conducting TEPF specific evaluations such as market and building type assessments would be duplicative and thus are not necessary). TAG issues, including TRM development, are likely to be minimal in comparison to the electric sector. An annual review of all prescriptive TEPF measures will be conducted in conjunction with the annual review for the electric sector.

The Department will continue to monitor the cost-share practice and propose any changes to this methodology in its annual plans if costs associated with TEPF activities begin to take a larger share of activities.

Other EEU TEPF services, however, do require some dedicated evaluation. Those are described in more detail below.

Home Performance with Energy Star & Building Performance Evaluation

A significant portion of the funding associated with TEPF programs is allocated to funding the Home Performance with Energy Star (HPwES) program for residential energy efficiency retrofits in single-family homes, this program also receives funding from the Natural Gas EEC This program is also being leveraged to provide services to small businesses through the Building Performance program. While the bulk of the measures are directed toward acquisition of thermal energy efficiency savings, some of the measures implemented under this program acquire electric efficiency.

The Department completed one review of this program in 2012 and there is currently an evaluation underway looking at program years 2014 and 2015. The Department proposes to continue to conduct impact and process evaluations of the HPwES program in the 2018-2020 period looking at program years 2017 and 2018. The primary purpose of the evaluation is to evaluate and verify the impact of the HPwES and the electric energy savings attributable to this programs. The goal of the impact evaluation is to develop independent estimates of program savings and to compare those evaluation results with

internal program savings projections, as well as to provide suggested mechanisms for adjusting future savings projections as necessary. The goal of the process evaluation is to identify recommendations for increasing participation rates and average savings per participant.

This evaluation will be completed mostly by outside contractors, with internal resources contributing to evaluation instruments.

Evaluation Budget: \$123,500
Evaluation Type: *Impact and Process Evaluation*
Source: *TEPF* (\$78,700) Natural Gas EEC (\$44,800)

TEPF (Deliverable Fuels) Potential Study

The Department plans a potential study to assess the full array of technologies that may be deemed technically achievable, including measures that aren't available currently but are expected to be on the market within the study timeline, and measures that may not be cost-effective now but are expected to be within the foreseeable future. Additionally identification of the estimated potential related to fuel switching, such as through measures such as air source heat pumps and/or solar hot water would also be included in the scope.

Evaluation Budget: \$110,600
Evaluation Type: *Potential Study*
Source: *TEPF*

TEPF Contingency

Similar to the EEC funded evaluation activities, the Department proposes that some funding be allocated for unforeseen *TEPF* evaluation needs, and potential variation in actual costs from those estimated here.

Evaluation Budget: \$34,900
Evaluation Type: *Contingency*
Source: *TEPF*

Natural Gas EEC Contingency

Similar to the EEC funded evaluation activities, the Department proposes that some funding be allocated for unforeseen Natural Gas EEC evaluation needs, and potential variation in actual costs from those estimated here.

Evaluation Budget: \$57,000
Evaluation Type: *Contingency*
Source: *Natural Gas EEC*

Forward Capacity Market Evaluation

Forward Capacity Market Evaluation

The Independent System Operator of the New England electric grid (ISO-NE) created a Forward Capacity Market to ensure that the region has sufficient capacity to meet its peak demand needs. This market-based initiative allows for demand resources, including energy efficiency, to compete directly with generation resources to provide capacity. In order to participate in the market, providers of energy efficiency resources must demonstrate that their efficiency savings are verified in compliance with the ISO-NE standards established for this purpose. EVT and BED have bid their respective efficiency program portfolios into the FCM, and submitted detailed measurement and verification (M&V) plans that delineated how the evaluation process in Vermont will comply with ISO-NE standards. The original M&V Plans identified the Public Service Department as the entity who would conduct the independent evaluation required. Subsequent plans filed have not explicitly identified the Department as fulfilling this role. This plan proposes that the Department remains best suited to conduct and manage such evaluation.

The budget below includes the estimated costs associated with both contractor and in-house resources to conduct the Forward Capacity Market evaluation. This includes the development of a sample and sampling plan the development of metering plans for all selected projects, the metering (including purchase or lease of meter equipment) of small and medium sized projects (under the current process, EEUs meters large projects and provides unanalyzed meter data to the PSD for review), the analysis of all sized projects, reporting and costs associated with planning and management.

The Department is working with EVT to move the overall evaluation structure to a more industry standard format using rolling impact evaluations of sectors and applying these results prospectively for multiple years. This way the Department anticipates providing more granular results to better guide the continuation and development of energy efficiency programs in the future.

Evaluation Budget: \$1,765,300
Evaluation Type: *Impact Assessment*
Source: *FCM Revenues*

Planning and Management

This section describes activities related to the planning and management of evaluation activities. Budgeted costs are mostly shared between EEC and TEPF at an 83% - 17% ratio. FCM Planning and Management are included in the FCM budget above. This category includes general evaluation planning, technical assistance, professional development, and other direct costs associated with implementation of this plan. The Department notes that not all costs associated with planning are funded via the energy efficiency fund – other funding sources such as federal grants are leveraged where possible. Those costs are not included here.

Evaluation Planning & Administration

The Department has estimated general costs associated with development of its evaluation plan, reporting of results, and its three year plan. These costs include staff time for preparing and issuance of legal and administrative filings, co-ordination of filings, appearance at workshops and hearings as well as general administrative and reporting tasks carried out by the PSD as required by the PUC. These costs are included for tasks that are not particular to any one set of evaluations. Planning costs associated with the Forward Capacity Market evaluations are included as a part of those total costs as described in the above FCM budget.

Evaluation Budget: \$203,400

Source: *Electric EEC (\$112,500) TEPF (\$23,100) Natural Gas EEC (\$67,800)*

Expert Technical Assistance

The Department proposes that further evaluation support will continue through the 2018-20120 period through a contract for expert energy program evaluation services, including evaluation design and technical quality control. These services provide a regional and national perspective on Vermont's activities, help the Department reduce costs and obtain the highest possible value from evaluation contractors, and provide a breadth of policy and evaluation design experience to the Department. As this technical assistance is relevant to electrical and TEPF energy efficiency programs, this budget is proposed to be cost-shared.

Evaluation Budget: \$119,600

Source: *Electric EEC (\$84,400) Natural Gas EEC (\$17,900) TEPF (\$17,300)*

PSD Demand Resources Plan Related Costs

These costs will consist of the time spent by PSD staff on DRP associated activities, including coordination between the PSD and the EEU's.

Evaluation Budget: \$121,900

Source: *Electric EEC (\$85,500) Natural Gas EEC (\$18,900) TEPF (\$17,500)*

PSD Staff Evaluation Training

Consistent with past evaluation plans and performance cycles, the PSD has allocated funds to support staff training, including attendance and participation at various industry conferences.

Training costs associated with the Forward Capacity Market are included as a part of those total costs as described in the above FCM budget.

Evaluation Budget: \$102,600

Source: *Electric EEC (\$56,800) Natural Gas EEC (\$34,200) TEPF (\$11,600)*

Other Direct Costs

Other Direct Costs ("ODCs") consist of travel, equipment, and other expenses incurred by in-house resources that are associated with the above mentioned evaluation activities. Historically, ODCs have occasionally been funded via the energy efficiency charge. This

plan proposes to improve tracking of such costs, and allocate them to the appropriate funding source. ODCs do not include travel or expenses associated with the Staff evaluation training described above.

Other direct costs associated with the Forward Capacity Market evaluations are included as a part of those total costs as described in the above FCM budget.

Evaluation Budget: *\$12,600*

Source: *Electric EEC (\$7,000) Natural Gas EEC (\$4,200) TEPF (\$1,400)*

Other Budgeted Costs

To ensure funding is collected for the Tri-annual audit of the energy efficiency utility fund the PUC requested that the funds be included as part of the PSD evaluation budget.

Evaluation Budget: *\$100,000*

Source: *Electric EEC (\$90,000) Natural Gas EEC (\$10,000)*

Other Evaluation Activities

This section briefly describes some other known evaluation activities that will be undertaken by the Department during the 2018-2020 timeframe. The Department endeavors to find synergies and leverage all evaluation activities to reduce total costs associated with our activities, while maintaining appropriate levels of oversight across activities. These evaluation categories have their own budget and are not included in the total evaluation budgets provided in this Plan.

Self-Managed Energy Efficiency Program – SMEEP Participants

The Vermont General Assembly, in Act 45 of 2009, mandated that the Department propose a 3-year pilot program called the Self-Managed Energy Efficiency Program (SMEEP). The Commission's 8/10/2011 Order modified the SMEEP program to bring it into compliance with Section 4 of the Vermont Energy Act of 2011, which established the SMEEP program as permanent program. The program calls for PSD savings verification, which will be funded directly by SMEEP participants. Internal staff will be the primary evaluators that verify the savings from SMEEP and on a three yearly basis a comprehensive review of the program and savings shall take place.

Energy Efficiency Potential Study

The Department anticipates it will require additional planning and management services in the fall of 2019 and in 2020 to prepare a PSD report identifying remaining technical, economic, and maximum achievable energy efficiency potential, and costs to achieve such potential. This study will inform a recommendation to the Commission concerning the 2021-2022 EEU Budget. Under the MOU associated with Docket 5980, costs for preparation of such potential studies may be allocated directly to the State's distribution utilities. These costs are recoverable in accordance with traditional cost recovery

mechanisms.⁹ Separate potential studies shall take place for the different EEU territories to better reflect the different markets involved. These studies will be synchronized so that a state wide potential can be created from the individual results.

⁹ Docket 5980, Paragraph 11 of the Memorandum of Understanding approved by the Board 9/30/99.