STATE OF VERMONT

PUBLIC SERVICE BOARD

EEU-2016-03

2016-2017 Demand Resources Plan Proceeding

2018-2020 BUDGET RECCOMENDATION FOR EFFICIENCY VERMONT BY THE DEPARTMENT OF PUBLIC SERVICE

The Public Service Board (Board) in its March 24, 2017 Order established May 5, 2017 as the deadline for stakeholders in EEU 2016-03, the Demand Resource Plan (DRP) proceeding, to file EEU final resource-acquisition scenario model recommendations, including resource-acquisition budget proposals, modeling assumptions, and quantifiable performance indicator (QPI) and minimum performance requirement (MPR) weighting. The Public Service Department (Department or PSD) hereby presents its analysis and budget recommendations for Efficiency Vermont (EVT), Vermont's Statewide Energy Efficiency Utility (EEU) as operated by Vermont Energy Investment Corporation (VEIC) for the three-year performance period of 2018-2020. [1]

The Department's recommendation includes the following elements:

1. 3- and 20-year resource acquisition budgets associated with the electric EEC;
2. 3- and 10-year resource acquisition budget forecasts for TEPF efficiency programs;
3. A characterization of the final model and modeling assumptions;
4. Quantifiable performance indicators (QPIs) with weighting and Minimum performance requirements (MPRs); and
5. An explanation of the statutory justification, relevant considerations, and impacts on customer's rates and bills.

1. Electric Resource Acquisition Budgets

The Department recommends reductions in the Efficiency Vermont budgets over the coming three-year performance period. All future budgets years from 2021 through 2037 are proposed to be flat nominal relative to the 2020 budget ($46.4 million without adjustment for inflation). These recommendations are based on an analysis of current conditions in relation to the statutory criteria set forth in 30 V.S.A. § 209(b)(3)(B). The Department recommendations pertain solely to the resource acquisition portion of the budget, and we request that the Board limit its determination at this time to only that portion of the budget.

[1] Detailed information on the recommended budgets is included in two Excel Spreadsheet exhibits: titled EEU 2016-03 2018-2020 PSD DRP Recommendation Exh. 1 and EEU 2016-03 2018-2027 TEPF Revenue Analysis Exh. 2.

Table A-1 – PSD Proposed EEC Funded Budget for EVT

Funded via EEC

	2018	2019	2020	3 Yr. Total
Efficiency Vermont				
Resource Acquisition	$42,822,098	$41,687,435	$40,556,686	$125,066,218
Dev. & Support	$3,853,989	$3,738,369	$3,663,602	$11,255,960
Compensation	$2,118,953	$2,056,310	$2,015,940	$6,191,203
EVT Total	**$48,795,039**	**$47,332,114**	**$46,386,228**	**$142,513,381**

The Department's recommendations are based, in large part, on the PSD Potential Study conducted by our consultants which examined the energy efficiency potential in Vermont. An initial draft and a revised draft of the study were filed in this proceeding on 1/20/17 and 3/6/17 respectively. This modeling effort provided predictions for three different levels of energy efficiency potential labeled as "maximum achievable", "economically achievable," and "realistically achievable." The Department's recommendations are linked to estimates of the "realistically achievable" potential. Our recommended budgets reflect findings in the study which demonstrate likely reductions in the available potential from prior studies as informed by applicable statutory criteria.

One of those statutory criteria, rate impacts, was of significant importance to the Department's judgment regarding the current budget recommendations. The success of the energy efficiency and net metering programs has created an unprecedented period of declining loads in Vermont. Decreases in load create a concomitant reduction in retail sales, which in turn means that fixed utility costs must be spread over a smaller number of MWh, thereby exerting upward pressure on rates, even as total bills for customers are declining. Over the last decade and a half, Efficiency Vermont's budgets and the corresponding energy efficiency charge (EEC) have grown considerably, representing an ever-increasing share of the customer bill. The most recent increase to the EEC was approximately 10%, due in substantial part to declining loads. Such increases raise fundamental concerns of affordability, fairness to customers that do not or unable to participate and may also have deleterious impacts on customer acceptance.

Other significant factors that must be considered include: (1) the contribution of the electric sector toward greenhouse gas and other air emissions are at historic lows as the amount of renewable electricity increases and oil and coal-fired generation units are retiring; (2) declining loads due to energy efficiency and net metering have reduced the need for transmission and distribution infrastructure upgrades (although changes to federal reliability standards have led to increased transmission infrastructure with accompanying significant cost increases in that component of utility rates); and (3) the wholesale costs of electricity over the last seven years are declining in real terms. In effect, both system benefits and societal benefits of energy efficiency investments are substantially lower than in prior DRP periods.

Nevertheless, the Department's proposed electric energy efficiency budget levels, while reduced from 2017, still ensure that Efficiency Vermont's investments in energy efficiency remain an integral part of Vermont's energy mix and will also likely remain among the most ambitious plans for energy

efficiency among the states (on an investment per-capita basis). The budget levels for Efficiency Vermont's programs will continue to provide the opportunity for all Vermonters to participate in programs through relevant and carefully crafted minimum performance indicators that focus on low-income consumers and also target customer and geographic diversity. Geographic targeting of efficiency programs is not a significant concern at this juncture as, due to declining loads across the state, there are no location-specific transmission or distribution constraints that could be alleviated by targeted efficiency measures.

2. Thermal Energy and Process Fuel Budgets

Pursuant to 30 V.S.A. §§ 209(e)(1)(A) and 255(d), revenues from the ISO New England (ISO-NE) Forward Capacity Market (FCM) and Regional Greenhouse Gas Initiative (RGGI) auctions are used to provide thermal energy and process fuel (TEPF) efficiency services. Section 209(g)(1) requires that thermal energy and process fuel services be provided to Vermont consumers of such fuel "on a whole-building basis to help meet the State's building efficiency goals established by 10 V.S.A. § 581." In addition to providing incentives for TEPF efficiency programs, Sections 209(e)(1)(a) require that FCM and RGGI auction proceeds be used to provide incentives for the installation of biomass heating systems.

Since the RGGI and FCM proceeds can vary significantly from auction to auction, any TEPF budget will necessarily involve uncertainty. In addition, both RGGI and the FCM are administered by regional entities. Accordingly, policy changes that happen at the regional level over which Vermont has limited control, can impact the proceeds from these two sources. For these reasons, any TEPF budget level established by the Board must, of necessity, be an estimate.

For the purposes of modeling TEPF programs and expected savings in the next phase of this proceeding the Department proposes the Board approve the following TEPF program budget for EVT.

Table A-2 – PSD Proposed TEPF Funded Budget for EVT

Funded via TEPF

	2018	2019	2020	3 Yr. Total
Efficiency Vermont				
Resource Acquisition	$0	$0	$0	$0
Dev. & Support	$0	$0	$0	$0
Compensation	$0	$0	$0	$0
EVT Total	**$11,770,079**	**$11,280,856**	**$7,751,907**	**$30,802,842**

At this time, the Department understands EVT is developing a budget proposal that would smooth out the funds over the three-year performance period and their intention would be to use this smoothed budget for modeling TEPF resource acquisition in the next phase of the proceeding. However, TEPF funds resource acquisition, development and support services, and compensation should not exceed EVT's allocation of the three-year total shown below. Given the forward nature of the capacity market, Efficiency Vermont has had to rely on projected electric energy efficiency budgets to estimate capacity savings and determine the appropriate amount to bid into the market. The Department reviewed the potential impact of decreasing electric energy efficiency budgets for 2018-2020 on the capacity commitment Efficiency Vermont has made to the FCM for these years. Based upon this review, the Department believes that a decrease in Efficiency Vermont's budgets would not have an appreciable impact in its ability to meet current commitments.

3. Characterization of the Final Model and Modeling Assumptions

Electric Model

An upcoming phase of this proceeding will require EVT to model expected "super-stretch" savings goals for the resource acquisition portfolio. The Department proposes EVT's final electric model be comprised of a generally balanced portfolio with a slight emphasis on optimizing savings for Lifetime MWh as well as Summer (Lifetime) Peak Demand Reduction. The Department's Quantifiable Performance Indicator (QPI) weighting, described below, reflects this preference by placing additional weight on these QPIs. The modeling demonstrated that the Lifetime maximization scenario performed best at maximizing net societal benefits and longer lasting, more durable measures. The Peak Demand Reduction performed best at producing FCM resources.

The Department recommends applying the following parameters to EVT's final model. First, the Department recommends allocating between 90% - 93% of the resource acquisition budget to what EVT has referred to in its scenario modeling as the balanced portfolio (Base Case[2]). With the remaining 7% - 10% of the resource acquisition budget the Department recommends optimizing for Lifetime MWh[3] and Lifetime Summer Peak kW[4] performance. Of these two energy benefits the Department recommends EVT apply no less than 5% of the resource acquisition budget to Lifetime MWh.

The Department recommends EVT aspire to achieve a first-year cost of energy saved[5] of no more than $385/MWh on average in the 2018-2020 performance period. The Department believes this goal is achievable based on results from the potential study, the EVT scenario modeling, and EVT's past performance.

[2] EVT's Base Case scenario produced electricity savings at a cost of $397/MWh.
[3] EVT's Lifetime MWh maximization scenario produced savings at a cost of $371/MWh.
[4] EVT's Peak kW maximization scenario produced savings at a cost of $401/MWh.
[5] These savings continue over a period of approximately 11 years.

For the electric and TEPF modeling the Department recommends EVT apply no changes to the modeling assumptions filed jointly by the Department and the EEUs in this proceeding on September 16, 2016. These assumptions, for example include electric and natural gas policy assumptions such as minimum investments to ensure sector equity (residential/commercial, low-income, and small business). In addition, the technical modeling assumptions related to building energy codes and standards, use of the most recent avoided cost values, treatment of loads and costs related to self-managed customers, equipment efficiency levels, free-rider and spillover rates, and measure life should remain unchanged.

4. Quantifiable Performance Indicators and Minimum Performance Requirements

Pursuant to its Order of Appointment, EVT is required to have Quantifiable Performance Indicators (QPIs) and Minimum Performance Requirements (MPRs). The Department proposes the following electric QPIs and MPRs to address total resource benefits (TRB)/ Lifetime MWh; annual incremental MWh savings; cumulative summer and winter peak demand savings; business comprehensiveness, residential and business market transformation; equity for all electric customers, residential customers, low-income customers, and small business customers; geographic equity; administrative efficiency; service quality; and performance period spending. The performance metrics consist of the following:

Electric Efficiency Services

Quantifiable Performance Indicators:

1. Total Resource Benefits
2. Annual Incremental Electricity Savings (MWh)
3. Summer Peak Demand Savings (MWs)
4. Winter Peak Demand Savings (MWs)
5. Business Comprehensiveness
6. Residential New Construction Market Transformation
7. Business Market Transformation

Minimum Performance Requirements:

8. Electric Ratepayer Equity
9. Residential Customer Equity
10. Low-Income Customer Equity
11. Small Business Customer Equity
12. Geographic Equity
13. Administrative Efficiency
14. Service Quality
15. 2018-2020 Spending

Thermal Efficiency Services

Quantifiable Performance Indicators:

1. Annual incremental net MMBTU savings
2. Residential Single family comprehensiveness

Minimum Performance Requirement:

3. Equity for Residential customers
4. Equity for Low-income customers

The above four energy QPIs (TRB/ Lifetime MWh; annual incremental MWh savings; cumulative summer and winter peak demand savings) are specific to resource acquisition savings goals. The super-stretch targets for each QPI will be established in the next phase of the proceeding using the results of the final scenario model described in Section 3 above.

These QPIs are, for the most part, similar to the QPIs currently in place. The exceptions include a proposed change to the electric TRB QPI to include a component that specifies a defined amount of Lifetime MWh savings be included in TRB. In addition, the Department proposes that the title of Residential Market Transformation QPI be renamed to Residential New Construction Market Transformation. The Department also proposes replacing the current MPR "Program Implementation Efficiency" with a different Administrative Efficiency MPR. The Department requests additional time to revisit and potentially propose revised definitions for measuring the electric QPIs for Residential New Construction Market Transformation, Business Market Transformation, and Business Comprehensiveness.

To assess goals for thermal efficiency, the Department proposes the TEPF QPIs and MPRs that are in effect for the current 2015-2017 performance period. These include Thermal Energy and Mechanical Energy Efficiency Savings, Residential Single Family Comprehensiveness, Threshold (or minimum acceptable) Level of Residential Participation and Threshold (or minimum acceptable) Level of Participation by Low Income Customers. The Department requests additional time to revisit and potentially propose a revised definition for measuring the Residential Single Family Comprehensiveness QPI.

For the electric and TEPF QPI definitions that the Department suggests need revision, we propose that such revisions be completed during the next phase of this proceeding and be filed with the Board prior to the start of final modeling (per the current DRP schedule this would be after the Board makes an order on target date June 16, 2017).

Electric Efficiency Quantifiable Performance Indicators (QPIs):
QPIs 1-7 will have a performance incentive associated with them and will include 100% target levels and "super-stretch" targets.

Table A-3
Electric QPIs

PI#	Title	Performance Indicator	Target	Incentive Weight	Incentive Amount (100%)
1	Total Resource Benefits	a. Present worth of lifetime electric, fossil, and water benefits	TBD	33%	TBD
		b. Lifetime electric MWH savings	TBD		TBD
2	Electricity Savings	Annual incremental net MWh savings	TBD	25%	TBD
3	Summer Peak Demand Savings	Cumulative net summer peak demand savings	TBD	17%	TBD
4	Winter Peak Demand Savings	Cumulative net winter peak demand savings	TBD	14%	TBD
5	Business Comprehensiveness	TBD	TBD	5%	TBD
6	Residential New Construction Market Transformation	TBD	TBD	3%	TBD
7	Business Market Transformation	TBD	TBD	3%	TBD

QPI 1: Total Resource Benefits
The QPI for TRB is intended to encourage EVT to design and implement efficiency initiatives that will maximize the lifetime electric, fossil-fuel, and water benefits. The Department is also proposing to add a Lifetime MWh component to TRB to ensure a defined amount of lifetime electric savings is included in TRB. (According to information provided to the Department by EVT the lifetime electric savings component of TRB has fluctuated from a low of 74% in 2003 to a high of 90% in 2016.) As discussed previously in Section 3 of this filing, the Department is interested in applying a portion of the resource acquisition budget to optimize for Lifetime MWh savings in the next performance period. This metric will also measure the cumulative three-year total resource benefits achieved in a performance period. The Department is proposing a weighting of 33% on TRB.

QPI 2: Annual Incremental MWh Savings
The Department is proposing a weighting of 25% for Annual Incremental MWh savings. This is slightly lower than prior periods due to the increasing emphasis on lifetime savings captured in the TRB QPI.

QPI 3: Cumulative Summer Peak Demand Savings
This QPI is intended to encourage an EEU to focus on measures with net summer peak demand savings. The Department is proposing a weighting of 17% for summer peak savings. This recommendation is consistent with the Department's recommendation for the final model to also optimize Peak Demand reductions with a focus on Lifetime Summer kW reduction, which helps optimize FCM revenues.

QPI 4: Cumulative Winter Peak Demand Savings
This QPI is intended to encourage an EEU to focus on measures with net winter peak demand savings. The Department is proposing a weighting of 14% for winter peak savings.

QPI 5: Business Comprehensiveness of Savings
The Department recommends the Business Comprehensiveness QPI focus on achieving depth of savings for businesses who complete projects in the performance period. The detailed definition for how this QPI is measured is proposed to be filed with the Board prior to the start of final modeling. The Department is proposing a weighting of 5% on Business Comprehensiveness.

QPI 6 Residential New Construction Market Transformation
This QPI is intended to encourage an EEU to design and implement programs to maximize long-term efficiency savings for building and equipment stock in Vermont.

The Vermont Comprehensive Energy Plan calls for 60% of homes to be built to above residential building code by 2020, and promotes net zero energy goals for new residential construction by 2030. While many market and government actors will have a role to play in reaching this target, EVT is expected to have a significant influence in this market through its Residential New Construction ("RNC") program.

The detailed definition for how this QPI is measured is proposed to be filed with the Board prior to the start of final modeling, but the PSD has a preference for this QPI to continue to focus on Residential new construction project completions with substantial energy savings. The Department is proposing a weighting of 3% on Residential New Construction Market Transformation.

QPI 7: Business Market Transformation
This QPI is intended to encourage an EEU to design and implement programs to maximize long-term efficiency savings for building and equipment stock in Vermont.

The detailed definition for how this QPI is measured is proposed to be filed with the Board prior to the start of final modeling. The Department is proposing a weighting of 3% on Business Market Transformation.

Electric Efficiency Minimum Performance Requirements (MPRs):
MPRs 8-14 are minimum performance requirements where the penalty for failure to meet the proposed target is the forfeiture of a portion of the performance award.

Table A-4
Electric MPRs

MPR#	Title	Minimum Requirement	Policy Goal Advanced	Performance Incentive Award Reduction %
8	Minimum Electric Benefits	Total electric benefits divided by total costs is greater than 1.2	Equity for all Vermont electric customers as a group by assuring that the overall electric benefits are greater than the costs incurred to implement and evaluate the *EEU* and the *EEC*	Eliminates 100% of performance incentive award
9	Threshold (or minimum acceptable) Level of Participation by Residential Customers	Total residential sector spending is greater than $XXX	Equity for residential customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to residential customers	Reduces total performance incentive award at 100% Target Level by 18%
10	Threshold (or minimum acceptable) Level of Participation by Low-Income Households	Total low-income services spending is greater than $xxx	Equity for low-income customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to low-income households	Reduces total performance incentive award at 100% Target Level by 18%
11	Threshold (or minimum acceptable) Level of Participation by Small Business Customers	Total non-residential premises with annual electric use of 40,000 kWh/yr or less that acquire kWh savings is greater than 2,000	Equity for small business customers by assuring that a minimum level of overall efficiency efforts, as reflected in participation, will be dedicated to small business accounts	Reduces total performance incentive award at 100% Target Level by 18%
12	Geographic Equity	TRB for each geographic area is greater than values shown on Table A-5 (values for table A-5 TBD)	Geographic equity for all Vermont electric customers by assuring that energy efficiency benefits are geographically distributed on an equitable basis	Reduces total performance incentive award at 100% Target Level by 6%
13	Administrative Efficiency	Meet determined milestones on schedule	This indicator is intended to define and track administrative costs and ultimately require the program administrator to assess operations to ensure delivery of services in a cost effective manner that maximizes ratepayer value	Reduces total performance incentive award at 100% Target Level by 2%
14	Service Quality	Achieve 92 or more metric points in the Service Quality and Reliability Plan over the course of the Performance Period	To establish Quality Performance Standards and associated reporting requirements for energy efficiency services provided by Efficiency Vermont	Reduces total performance incentive award by $1,630 per point lost (beyond 16) with a potential total reduction at 100% Target Level by 4.4%
15	2018-2020 Spending	Minimum Penalty: If Spending Threshold is Exceeded, $20K. Additional Spending Increment depending on magnitude of over-budgeted amount: $50K	Encourage VEIC to minimize total spending variances above Board approved 2018-2020 budgets.	Threshold Rate = 3% Initial Penalty Rate = 2.0% Penalty Increase Rate = 0.5%

MPR 8: Electric Ratepayer Equity

The performance metric is structured to achieve equity for all Vermont electric customers by assuring that the overall electric benefits are greater than the sum of the costs incurred to implement and evaluate the EEU. Total electric benefits divided by total costs must equal a ratio greater than 1.2.

Consistent with past performance cycles, the Department recommends that the impact for failure to meet this minimum performance requirement is the forfeiture of 100% of the target level performance award.

MPR 9: Residential Customer Equity
The performance metric is structured to ensure equity for residential customers by requiring a minimum level of resource acquisition spending to be dedicated to the residential sector. A residential spending minimum ensures that a guaranteed level of residential spending occurs. The Department proposes that the minimum performance requirement for residential customer equity should be that 70 % of the 2018-2020 residential resource acquisition. This minimum requirement is set in accordance with the residential/commercial sector shares established as modeling assumptions in the Board's October 27, 2016 Order in this proceeding which were based on a joint PSD and EEU recommendation filed on September 16, 2016.

Consistent with past performance cycles the Department recommends that the impact for failure to meet this minimum performance requirement is the forfeiture of the opportunity to earn 18% percent of the 100% target level performance award.

MPR 10: Low-Income Customer Equity
The performance metric is structured to ensure equity for low-income customers by requiring a minimum level of spending on low-income services. The Department proposes that the minimum performance requirement for low-income sector customer equity should be that 70 % of the 2018-2020 low-income resource acquisition budget. This minimum requirement is set in accordance with the estimated low-income sector share established as modeling assumptions in the Board's October 27, 2016 Order in this proceeding which were based on a joint PSD and EEU recommendation filed on September 16, 2016.

Consistent with past performance cycles the Department recommends that the impact for failure to meet this minimum performance requirement is the forfeiture of the opportunity to earn 18% percent of the 100% target level performance award.

MPR 11: Small Business Customer Equity
The performance metric is structured to ensure equity for smaller non-residential customers whose efficiency projects may result in smaller overall savings than those achieved for large customers. The metric requires a minimum level of participation from customers whose annual energy usage is under 40,000 kWh/year. The Department proposes that the minimum performance requirement be set to ensure participation of at least 2,000 of such customers.

Consistent with past performance cycles the Department recommends that the impact for failure to meet this minimum performance requirement is the forfeiture of the opportunity to earn 18% percent of the 100% target level performance award.

MPR 12: Geographic Equity
The performance metric is structured to ensure equity for all Vermont electric customers by requiring that energy efficiency benefits are geographically distributed across the state. The Department proposes that the minimum performance requirement for geographic equity be

assessed by the establishment of a minimum TRB by county. Minimum targets are based on an overall minimum Economic Benefit value developed by multiplying the Board-approved 2018-2020 electric budgets by a factor of 1.1. Weighting by county is established by using actual county usage.

Consistent with past performance cycles the Department recommends that the impact for failure to meet this minimum performance requirement is the forfeiture of the opportunity to earn 6% percent of the 100% target level performance award.

MPR 13 Administrative Efficiency

An "Administrative Efficiency" Quantifiable Performance Indicator (QPI), to assess the effectiveness of energy efficiency service delivery, was initially established in the first Demand Resource Plan Proceeding EEU 2010-06 which governed the 2012-2014 performance period for Efficiency Vermont. Two Administrative Efficiency QPIs were jointly recommended by the Department of Public Service and VEIC, and implemented by the Board in its Order of 12/27/11. In the second DRP proceeding, EEU 2013-01, governing the 2015-2017 performance period, a decision was made to change the assessment metric to a Minimum Performance Requirement (MPR) instead of a QPI and the name was changed to "Program Implementation Efficiency – Key Process Improvements" and the MPR was implemented in the Board's Order of 10/10/14. This decision reflected an effort to identify and quantify certain aspects of administrative efficiency.

The results of these two different approaches to Administrative Efficiency have now been reviewed by the Department. This review, along with certain key findings and recommendations related to measuring administrative efficiency from the last Benchmarking Study conducted by our consultant Navigant, leads us to conclude that it is necessary to develop even more specific tailored metrics to appropriately define and measure administrative efficiency. The key findings from the Benchmarking Study include:

- Defining administrative costs to clearly differentiate them from incentive costs, program delivery costs and Evaluation, Measurement and Verification (EM&V) costs in a manner that is aligned to EEU delivery models.
- Tracking the costs associated with each significant driver (e.g. administrative costs, incentive costs, program delivery costs, etc.) to facilitate future benchmarking, identifying performance improvement or trends, and ensuring administrative cost effectiveness.
- Adopting an overall results-oriented metric to measure administrative efficiency that is aligned with the Department's goal of achieving energy efficiency savings at minimal administrative costs.

Therefore, the Department recommends an Administrative Efficiency Minimum Performance Requirement be imposed for the next Performance Period to generate the data needed to develop

and define the specific metrics for evaluation. The milestones for this MPR (for each EEU) should include:

- In consultation with the Department, an EEU should identify and define all Administrative costs, and provide what the costs were for the period of 2015-2017.
- By July 31, 2018, in consultation with the Department, an EEU should submit a recommendation to the Public Service Board identifying and defining Administrative Costs, along with a proposal on how these costs would be tracked and reported for the 2018-2020 performance period.
- The proposal should include a metric which shows the ratio of incentive costs (potentially including Technical Assistance) to non-incentive costs.
- The proposal should include a metric which shows the total administrative costs as a percent of total budget for the performance period.

The Department proposes that this Administrative MPR replace the current MPR for Program Implementation Efficiency – Key Process Improvements. The ultimate goal, over the course of the 2018-2020 performance period, is to develop a set of Administrative Efficiency metrics to be applied during the 2021-2023 performance period that would enable program administrators and regulators to assess EEU operations and ensure that they are operating as efficiently as possible. The Department believes this MPR will establish a baseline in order to track and assess administrative efficiency and aid in the development of a metric to maximize administrative efficiency and optimize ratepayer value.

The Department recommends that the impact for failure to meet this minimum performance indicator is the forfeiture of the opportunity to earn 2% percent of the 100% target level performance award.

MPR 14: Service Quality

This performance metric has been developed to promote the quality of service provided by EVT in fulfilling its Energy Efficiency Utility functions. The mechanism incentivizes excellent service quality and provides financial disincentives for failure to meet service quality metrics. The Department recommends the following performance indicator for measuring, evaluating and monitoring customer service quality of EVT:

The Amended Service Quality and Reliability Plan (SQRP) as approved by the Board on July 29, 2014 sets a minimum performance target of 92 performance points over the length of the performance period. Points are accumulated for achieving success on individual metrics including call responsiveness, customer feedback, complaint rates and complaint resolution. Results of different metrics are reported at varying time intervals. Certain results are measured and reported quarterly, others annually, and some only once during each three-year performance period.

The Department recommends, as in the past, that the impact for failure to meet this minimum performance is the forfeiture of the opportunity to earn $150,000 or 4.4% percent of the 100% target level performance award.

MPR 15: 2018-2020 Spending

The policy objective for this minimum performance requirement is to minimize three-year total EVT spending variances above Board approved budgets. EVT expenditures above a Board established spending threshold of a total three-year performance period budget (not including the maximum performance award) would result in a financial penalty. The financial penalty will depend upon the size of the variance. That is, initially a minimum penalty is triggered and any subsequent variance would warrant imposition of an additional penalty based on the size of the variance.

All spending above an approved budget and any associated energy savings and other quantifiable performance indicator benefits would be recorded and reported in the following year. This would result in a reduction in the following performance period budget to maintain the integrity of the Board's performance period budgets and the associated performance goals.

The Performance Period Spending performance metric applies to electric and thermal energy and process fuels resource acquisition budgets for the three-year performance period. A spending threshold is defined as the incremental amount above a Board approved three-year performance period budget that EVT can spend without financial penalty.

The spending thresholds are determined as a percent of the Board approved third year performance period budgets and applicable operations fees (but not performance incentives); excluding any non-EEC or non-TEPF funding that is not included in the establishment of Board approved EVT budgets or performance indicators. Performance period spending threshold allowances for are 103% of electric third year budgets and TEPF third year budgets.

Budget variances above a spending threshold result in a reduction in the potential performance award available at the 100% level. The size of a reduction varies depending upon the size of the variance.

The framework proposed for the 2018-2020 period essentially mirrors the Performance Period Spending metric utilized in the 2015-2017 period.

Proposed Thermal Energy and Process Fuel (TEPF) Performance Indicators and Requirements for Efficiency Vermont

The Department recommends the following TEPF QPIs and MPRs for EVT that addresses annual incremental MMBtu savings, Residential Single Family Comprehensiveness, and minimum spending requirements for the Residential Sector and Low Income customers.

TEPF QPIs:
The Department proposes to have a positive performance award associated with QPIs #1 and #2 that will include 100% target levels and "super-stretch" targets.

Table A-5
TEPF QPIs

PI#	Title	Performance Indicator	Target*	Incentive Weight	Incentive Amount (100%)
1	Thermal & Mechanical Energy Efficiency Savings	Annual incremental net MMBTU savings	TBD	75%	TBD
2	Residential Single Family Comprehensiveness	TBD	TBD	25%	TBD

QPI 1: Annual Incremental MMBtu Savings
The Department is proposing a weighting of 75% on Annual Incremental MMBtu savings. The 2018-2020 QPI 100% target level for annual incremental MMBtu savings will be determined during the final modeling stage.

QPI 2: Residential Single Family Comprehensiveness
The goal of the Residential Single Family Comprehensiveness QPI is to encourage EVT to prioritize comprehensive thermal retrofits consistent with the Vermont Comprehensive Energy Plan and Building Efficiency Goals.

The detailed definition for how this QPI is measured is proposed to be filed with the Board prior to the start of final modeling. The Department anticipates a structure similar to the QPI in the 2015-2017 performance period. The Department is proposing a weighting of 25% on Residential Single Family Comprehensiveness.

TEPF Minimum Performance Requirements (MPRs)
MPRs #3 and #4 are minimum performance requirements where the impact for failure to meet the proposed QPI target is the forfeiture of the opportunity to earn a portion of the performance award.

Table A-6
TEPF MPRs

MPR#	Title	Minimum Requirement*	Policy Goal Advanced	Impact on Performance Incentive(s)
3	Threshold (or minimum acceptable) Level of Participation by Residential Customers	Total residential sector spending is greater than XX% of the total Thermal Energy and Process Fuel Fund expenditures	Equity for residential customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to residential customers	Reduces total performance incentive award at *100% Target Level* by 10%
4	Threshold (or minimum acceptable) Level of Participation by Low Income Customers	Total low-income spending is greater than XX% of the total Thermal Energy and Process Fuel Fund expenditures	Equity for low-income customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to low-income customers	Reduces total performance incentive award at *100% Target Level* by 10%

MPR 3: Minimum Level of Residential Sector Spending
This performance metric is structured to ensure equity for residential customers by requiring a minimum level of resource acquisition spending be dedicated to the residential sector. The Department recommends this minimum requirement be set in accordance with the residential sector share established as modeling assumptions in the Board's October 27, 2016 Order in this proceeding which were based on a joint PSD and EEU recommendation filed on September 16, 2016.

Consistent with the past performance cycle the Department recommends the impact for failure to meet this minimum performance indicator is the forfeiture of the opportunity to earn 10% percent of the 100% target level performance award.

MPR 4: Minimum Level of Low-Income Spending
This performance metric equity is structured to ensure equity for low-income customers by requiring a minimum level of spending on low-income services. The Department recommends this minimum requirement be set in accordance with the low-income sector equity methodology established as modeling assumptions in the Board's October 27, 2016 Order in this proceeding which were based on a joint PSD and EEU recommendation filed on September 16, 2016.

Consistent with the past performance cycle the Department recommends the impact for failure to meet this minimum performance requirement is the forfeiture of the opportunity to earn 10% percent of the 100% target level performance award.

5. Statutory Criteria, Including Impact on Customers' Rates and Bills

Section 209(d)(3)(B) establishes the specific criteria the Board must consider in setting the energy efficiency charge (EEC):

> *As circumstances and programs evolve, the amount of the charge shall be reviewed for unrealized energy efficiency potential and shall be adjusted as necessary in order to realize all reasonably available, cost-effective energy efficiency savings. In setting the amount of the charge and its allocation, the*

Board shall determine an appropriate balance among the following objectives; provided, however, that particular emphasis shall be accorded to the first four of these objectives:

- *reducing the size of future power purchases;*
- *reducing the generation of greenhouse gases;*
- *limiting the need to upgrade the State's transmission and distribution infrastructure;*
- *minimizing the costs of electricity;*
- *reducing Vermont's total energy demand, consumption and expenditures;*
- *providing efficiency and conservation as a part of a comprehensive resource supply strategy;*
- *providing the opportunity for all Vermonters to participate in efficiency and conservation programs; and*
- *targeting efficiency and conservation efforts to locations, markets, or customers where they may provide the greatest value.*

In addition, Section 209(f)(14) requires the Board to "*Consider the impact on retail electric rates and bills of programs delivered under subsection (d) of this section and the impact on fuel prices and bills.*"

Reducing the size of future power purchases

The Department's recommendations for Efficiency Vermont's budget are in large part based on an assessment performed by outside experts as part of the analysis of Vermont's energy efficiency potential. That study modeled both the traditional reference point of "maximum achievable potential" as well as one for the "realistically achievable potential" or (RAP). The Department believes that the realistically achievable potential provides a sound reference point for our recommendations.

The Department relied on the RAP modeling results to provide a relatively smooth budget trajectory as the RAP declines over time as the available efficiency resources diminish. The RAP represents a snapshot in time and does not account for the emergence of new technologies that could lead to increased potential efficiency savings. However, previous experience has demonstrated that with the lengthy development time necessary for energy efficiency innovation, the RAP provides a reliable assessment of the available potential efficiency savings for the three-year period addressed in the DRP.

Also relevant to the discussion of meeting future needs through efficiency are the patterns of change in electricity demand. Vermont utilities have seen a substantial shift in the patterns of growth since the inception of the Energy Efficiency Utilities. Prior to the formation of the

Energy Efficiency Utility, loads in Vermont increased at a steep pace. Between 2001 and 2005, Vermont increased sales of electricity at a rate of 1.7 percent annually, a rate roughly consistent with the prior decade.[6] In 2006, once the cap on the EEU budget was removed,[7] Vermont began to pursue investment in energy efficiency at a heightened pace. Between 2005 and 2015, Vermont's sales of retail electricity declined at a pace of 0.6 percent annually.[8] Retail sales have continued to decline through today and are forecasted to continue at an even steeper rate of decline into the future. Efficiency programs, combined with national improvements in energy efficiency standards, have substantially decreased the need for future power purchases. The addition of aggressive net metering policies heightens the impact of declining loads in Vermont and in the New England region.

Reducing greenhouse gas emissions

Vermont relies substantially on renewable resources; both imports from HydroQuebec and also utility-owned or contracted-for renewable power from within Vermont and New England. Over the course of the past several decades, this renewable resource mix has transitioned from hydroelectric to biomass, to solar. From a regional perspective, New England has increased its reliance on relatively clean natural gas generation, which has reduced the marginal emissions rate for New England system power.

A large portion of Vermont's distribution utilities' load requirements are met through long-term contracts and through ownership of renewable resources. This approach is consistent with Vermont's renewable energy policy that encourages utilities to enter into "affordable, long-term, stably priced renewable energy contracts that mitigate market price fluctuation for Vermonters."[9] Additionally, the4 Vermont Renewable Energy Standard requires that 55% of Vermont's electric load come from renewable sources in 2017, increasing to 75% in 2032. Vermont utilities are now on a steady path toward increasing shares of energy from clean, low-carbon, renewable resources. In addition, in the shorter term, the state relies on wholesale market resources in New England. In 2016, 90% of the generation in New England was from natural gas, nuclear, and clean renewable energy resources.[10] ISO-NE reports that marginal emissions of CO2 in 2015 was 747 lbs./MWh, down from 899 lbs./MWh, just 3 years prior in 2012.[11] The average carbon contribution from the Vermont generation resource mix is a fraction of the New England mix, due largely to Vermont's heavy reliance on clean energy resources listed above. However, the closed nature of the Regional Greenhouse Gas Initiative, which all of the New England states participate in, provides an overall limit on GHG emissions from the electric sector.

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[6] EIA at https://www.eia.gov/electricity/data/browser. In 2001, sales were 5.585 TWhs. By 2005, sales increased to 5.88 TWhs.
[7] 2005 Vt. Acts & Resolves 385
[8] In 2005, EIA reports statewide sales of 5.88 TWhs. By 2015, these figures were down to 5.52 TWhs.
[9] 30 V.S.A. § 8001(a)(3).
[10] https://www.iso-ne.com/isoexpress/web/reports/operations/-/tree/daily-gen-fuel-type
[11] ISO-NE, 2015 Electric Generation Air Emissions Report, https://www.iso-ne.com/system-planning/system-plans-studies/emissions

Limiting the need to upgrade transmission and distribution

Flat to declining loads in Vermont and New England have fundamentally shifted the planning paradigm for transmission and distribution (T&D) resources. Historically, load growth was the primary driver of new T&D facilities. New transmission projects are now predominantly driven by national reliability standards rather than load growth. ISO-NE and VELCO, together with the Vermont System Planning Committee, are shifting their focus away from planning for growth. In the past few years, solar PV has significantly reduced peak load levels and has altered the Vermont load shape, which has further limited T&D needs associated with load growth.

Minimizing costs of electricity

The cost of electricity in the state appears poised for some increases in the near future. Yet in the last several years, the cost of delivering electricity in Vermont has been on the decline. Between 2012 and 2016, average rates declined by 0.4% annually from 14.61 to 14.41 cents per kWh. This occurred during a period in which rates increased in New England as well as nationally.[12] The combination of lower rates and lower sales has resulted in lower utility revenues. Efficiency Vermont's budget increases in this environment have become more pronounced. The $53.3 million EEU budget for 2017 equates to an additional approximately 8% of the utility revenue requirement of roughly $745 million (excluding BED). In periods of high wholesale energy and capacity costs, such budgets could reasonably be considered necessary to reduce the costs of electricity to Vermont ratepayers. However, New England is currently experiencing historically low energy prices, and with the emerging excess capacity in the region, due in part to regional programs and net metering, capacity prices are expected to decline. Forecasts suggest that these prices could remain low for the foreseeable future, due in large part to the reliance on natural gas in the New England region, low natural gas prices, and relatively flat capacity requirements.[13] Consequently, a reduction in the EVT budget and the EEC charge for the upcoming three-year performance period are appropriate.

Reducing Vermont's total energy demand, consumption, and expenditures

There are a number of strategies that Vermont can use to reduce demand, consumption, and expenditures. The net metering program has proved to be an extremely effective in reducing demand and the Vermont System Planning Committee has examined the use of targeted energy efficiency and distributed resources in minimizing transmission and distribution upgrades. Energy efficiency, especially when employed in a targeted manner, has proven to be an effective mechanism to reduce overall demand, consumption, and utility expenditures. At this point in time it is unclear that consistently increasing budgets for Efficiency Vermont will most cost-effectively achieve these goals compared to integrating demand-side measures and effective use of storage with other clean energy policies, while recognizing circumstances that have changed largely due to these policies.

[12] https://www.eia.gov/electricity/data/browser
[13] https://www.iso-ne.com/system-planning/system-plans-studies/celt

Providing efficiency as part of a comprehensive strategy
Investments in energy efficiency continue to represent a substantial portion of a comprehensive resource mix. Embedded in the current resource mix, energy efficiency delivered from our efficiency utilities represents approximately 15% of our electricity energy needs. A comprehensive strategy should incorporate changing circumstances; the proposed decline in the Efficiency Vermont budgets recommended by the Department reflects that the energy landscape of 2017 is considerably different than it was even a few years ago. There are currently thousands of net metered solar generation systems on line in Vermont. The capacity contribution from behind-the-meter generation is approximately 20% of Vermont's peak load capacity requirement. These significant changes in the energy landscape have impacts on the economics of energy efficiency and must be incorporated into a robust comprehensive strategy.

Enabling widespread participation
Ensuring that there is an opportunity for all Vermonters to participate in efficiency programs is tied more to program development and appropriate setting of Quantitative Performance Indicators and Minimum Performance Requirements than the overall budget. The Department's proposal helps to ensure that participation is widespread across several economic, customer class and geographic metrics through these mechanisms.

Targeted programs
Given the significant load and demand reductions that have occurred as a result of energy efficiency and net metering investments, the value of energy efficiency in reducing transmission and distribution investments has declined. Currently, there are no recognized areas for which geotargeting of energy resources would provide additional value. To the extent that energy efficiency could be a least-cost approach in reducing transmission and distribution investments, the Vermont System Planning Committee is able to identify and recommend investments in specific areas.

Impact on electric rates and bills
As noted above, the Department's recommendations are based in large part on concerns associated with the rate and bill impacts of existing budgets in light of current circumstances. In recent years, both total kWh sales and electric revenues collected by utilities have been declining. Between 2009 and 2014 EVT has achieved reductions of between 80-110 GWhs annually, or roughly 2% of load per year. Also, contributing to declining electricity sales is the significant growth in net metering. By the end of 2017, Vermont is expected to have installed approximately 200 MW of net metering; assuming a 14% capacity factor, this amount of net metering will produce approximately 245 GWh per year. A significant result of net metering is the need to cover stable fixed costs over a declining number of kWh and the impact this has on electric rates.

The Department's rate and bill analysis calculates the impact of rate-payer funded energy efficiency on retail rates by estimating: 1) the changes in distribution utility revenue requirements associated with each of the following components of the cost of service; power supply (energy, capacity and bulk transmission costs) and local transmission and distribution capital expenditures; and 2) the pressures caused by decreases in the volume of unit sales of electricity (i.e. kWh) over which the distribution utility collects its revenue requirement.

The installation of efficiency measures avoids a significant amount of variable wholesale power supply costs and, though more difficult to quantify, also yields cost savings in various categories of fixed "poles and wires" types of costs. These cost savings cause significant downward pressure on rates. However, upward pressure ultimately prevails due to the need to recover those fixed costs which cannot be avoided by investment in efficiency over a lesser volume of unit sales.

It is important to view this dynamic in the context of significant customer bill savings. In the Department's analysis bill impacts are calculated by taking the percentage delta between what each customer class will owe to the utility in two different scenarios: 1) a baseline scenario where no new rate-payer energy efficiency investments are made, and 2) a policy scenario where ratepayer funding of energy efficiency continues into the future. In general, over the long term, this analysis supports findings that both residential and business customers are financially better off consuming less electricity at a higher unit price than consuming more electricity at a lower unit price. It is also important to emphasize that these savings accrue to all ratepayers, not just those participating in energy efficiency programs. Energy and capacity purchases represent a significant component of a distribution utility's costs. Thus to the extent that a utility avoids purchasing power, its total costs, and therefore its charges to customers, are reduced.

That said, there is an inevitable incremental cost shift between customers associated with ratepayer-funded efficiency programs. Customers who do not, or cannot, participate in energy efficiency programs will be left paying a higher share of the utility's revenue requirement (due to the upward pressure on rates caused by reduced unit sales) and energy efficiency charges. In order to help address the potential adverse impacts on non-participants, it is important to ensure both a manageable pace of efficiency investment and to encourage widespread program participation for all customers. The Department's proposed budget for EVT is responsive to these goals and, if managed appropriately, should result in widespread customer benefits without an inordinate cost shift between customers. Table A-7 below summarizes the Department's estimates of the rate and bill impacts associated with the recommended EVT budgets.

A declining EVT budget will still naturally result in upward long-term rate pressures, when all else is held constant. This underscores that it is the indirect effects of investing in energy efficiency—namely the decline in the volume of unit sales over which the cost of service must be distributed that are primarily responsible for upward rate impacts — and not the direct ratepayer costs of funding EEU programs. If investment in energy efficiency were to cease today, future

growth in customer loads would be higher and upward pressure on retail rates would diminish over time. The less obvious truth of this counterfactual scenario is that, over the long term, customers would end up paying higher bills if investment in energy efficiency were discontinued. Energy efficiency investments reduce the overall cost-of-service (that is to say: the collective ratepayer bill) by avoiding both short-term energy and operating costs, along with the need to commit fresh capital to serve otherwise growing loads. These capital investments ultimately are depreciated and recovered as increases to customer bills over time.

It is important to emphasize that the metrics in Table A-7 represent the impacts of continuing to fund energy efficiency on an ongoing basis. Investments in energy efficiency yield cost-savings that recur for several years after the original expense is incurred. These recurring cost-savings are purposefully not fully captured in the table below.[14]

Table A-7
Rate and Bill Impacts 20-Year Average Percentage Change:
PSD Budget Recommendation Scenario Compared to "No New EE" Baseline Scenario

Impacts of PSD Recommended Long-Term Budget Path for years 2018-2037		
All Customers	Rates	Bills
EVT	+7.7%	-4.4%
Residential	Rates	Bills
EVT	+7.5%	-1.4%
Business	Rates	Bills
EVT	+7.1%	-7.0%

Notes to Table A-7: These impacts assume that a certain amount of future capital expenditures on fixed transmission and distribution costs are avoided by efficiency investments, including bulk transmission costs allocated to distribution utilities by the ISO-NE through the Regional Network Service Tariff as well as local "poles and wires" type distribution plant. If it is instead assumed

[14] For example, by the last year of the 20-year projection period (2037), customer loads in EVT service territories are around 970,000 MWh lower than baseline because of the EEU investments made up to that point. If all efficiency efforts ceased in 2037, a gradually declining portion of these energy savings will recur in later years as the efficiency measures installed before 2037 gradually approach the end of their useful lives. The recurring cost savings associated with these continued energy savings are not accounted for in our analysis however because our methodology is intended to take stock of the impacts of different scales of ongoing investment activity.

that such costs are strictly unavoidable, the magnitude of the rate and bill impacts would be close to 2 percentage points greater than shown above (though directionally, no different).

The Department's EVT budget recommendation results in an upward rate impact of 7% on average over the 20 year projection period and a decrease in bills of 4% on average over the 20 year projection period.[15] These results assume that EVT achieves roughly the same yields as contained in the DRP scenarios filed on February 24, 2017 in this proceeding, and that EVT structures its measure portfolio to prioritize reductions in customer demand over reductions in total usage, as in its DRP scenarios 3 and 4 (named respectively, Maximize Lifetime MWh Savings and Maximize Summer and Winter Peak kW Savings). Compared to the scale of efficiency investment contemplated in EVT's February 24, 2017 filing, the rate and bill impacts associated with our budget recommendation are roughly half as large in magnitude (however, directionally they are the same).

EVT specific EEC rate impacts are a subset of the overall 20-year rate and bill impacts discussed above. Exhibit A4 below summarizes the EVT budget in a manner which differs from that indicated in Exhibit A1 above in that all the other costs required to calculate the EEC are included. The inclusion of all component costs is necessary to calculate the estimated EVT EEC (Customer Credit program and EVT's share of other cost categories). The Department used the same methodology employed for calculating EEC rates to estimate the average EEC rate per kWh as it related to its budget recommendation as well as the percent change from the previous year.

Table A-8 - EVT 2018-2020 EEC Budget and EEC Rate Impact

Efficiency Vermont	**2017**	**2018**	**2019**	**2020**
EVT Budget*	$55,599,010	$50,829,611	$49,534,097	$48,305,973
Budget* % Change From Previous Yr.		-8.58%	-2.55%	-2.48%
Estimated Average EEC $/kWh	$ 0.01153	$ 0.01069	$ 0.01065	$ 0.01061
EEC % Change From Previous Yr.		-7.22%	-0.45%	-0.29%

*Includes collections for Customer Credit, DPS EM&V, and Fiscal Agent costs.

In summary, the Department of Public Service recommends the budgets and goals as set forth herein and looks forward to discussing these recommendations at the Workshop in EEU 2016-03 scheduled for May 16, 2017.

[15] In other words, the average of the differences between retail rates in each year of the "No New EE" baseline scenario and our recommended budget scenario for all 20 years in the projection period is 7 percent. The average of the differences between a representative customer bill in each year of the two scenarios is 4 per cent.