

STATE OF VERMONT  
PUBLIC SERVICE BOARD

EEU-2015-04

Updated avoided costs for use by the        )  
Energy Efficiency Utilities                    )

Order entered: 12/22/2015

**ORDER RE: EEU AVOIDED COSTS FOR 2016-2017 TIME PERIOD**

**I. INTRODUCTION**

In this Order, the Vermont Public Service Board ("Board") approves updated avoided costs,<sup>1</sup> externality adjustments, and other screening components for use by the Energy Efficiency Utilities ("EEUs")<sup>2</sup> when they perform cost-effectiveness screening of energy efficiency measures. The newly established values are to be implemented by the EEUs for the 2016-2017 time period.

**II. BACKGROUND**

Section V.14 of the document titled "Process and Administration of an Energy Efficiency Utility Order of Appointment" (the "P&A Document")<sup>3</sup> calls on the Vermont Department of Public Service ("Department") to biennially propose updates to avoided costs and externality

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1. Avoided costs are estimates of what it would cost a utility to purchase and deliver electricity or natural gas in the future, and the future cost of heating or process fuels. The avoided costs established in this Order are used by the EEUs in determining whether it is less expensive to invest in an energy efficiency measure that avoids the purchase of electricity, gas, or heating or process fuels.

2. The EEUs are entities that have been appointed by the Board pursuant to 30 V.S.A. § 209(d)(2) to provide energy efficiency programs and conservation measures in place of utility-specific programs developed pursuant to Sections 209 and 218c of Title 30. The Board has appointed the City of Burlington Electric Department to provide EEU services within its service territory and Vermont Energy Investment Corporation to provide EEU services in the rest of the state. The Board has appointed Vermont Gas Systems, Inc. to provide natural gas EEU services within its service territory.

3. The P&A Document was most recently updated in Docket 7676, *Investigation into the appointment of an entity to provide natural gas efficiency services*, Order of 4/17/15. The P&A Document can be accessed at the following website: <http://psb.vermont.gov/utilityindustries/eeu/generalinfo/creationandstructure>

adjustments for use by the EEUs. Under the process set forth in the P&A Document, the Board would then provide an opportunity for other interested persons to file comments and request a technical workshop before ruling on the Department's proposed changes.<sup>4</sup>

On August 5, 2015, the Department filed a letter requesting that the Board initiate a proceeding and schedule a workshop concerning new avoided costs. The Department indicated that new avoided costs are presented in the recently completed *Avoided Energy Supply Costs in New England* ("AESC Report").<sup>5</sup>

On September 1, 2015, Board staff conducted a workshop to discuss the recommended avoided costs, externality adjustments, and other screening components. Based on workshop discussions, an additional workshop was scheduled for October 6, 2015. Workshop participants were provided with an opportunity to file comments in advance of the October 6<sup>th</sup> workshop and reply comments following the workshop.

On October 1, 2015, the Department, Green Mountain Power Corporation ("GMP"), Vermont Energy Investment Corporation ("VEIC"), and Vermont Public Power Supply Authority ("VPPSA") separately filed comments.

On October 6, 2015, Board staff conducted a workshop that included a discussion of participants' October 1<sup>st</sup> filings.

On October 23, 2015, the Department, the City of Burlington Electric Department ("BED"), GMP, VEIC, and VPPSA separately filed reply comments.

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4. The Board has long required energy efficiency providers over which it has jurisdiction to make decisions regarding which energy efficiency programs and measures to implement based on the societal cost-effectiveness test. *See* Docket 5270, Orders of 4/16/90 and 6/6/90; Docket 5980, Order of 9/30/99 at 58. The Department developed a cost-effectiveness screening tool based on decisions made by the Board in the context of electric and natural gas energy efficiency programs. The Board has required EEUs to use this screening tool since the EEU program's inception.

5. *Avoided Energy Supply Costs in New England: 2015 Report*; Tabors, Caramanis, Rudkevich, Inc., April 3, 2015. The report can be found on the Board's website: <http://psb.vermont.gov/docketsandprojects/eeu/avoidedcosts/2015>.

### **III. DISCUSSION - AVOIDED COST VALUES IN AESC REPORT**

The recently completed AESC Report includes avoided costs for wholesale electric energy and capacity, natural gas, fossil fuels, and other fuels.<sup>6</sup> The methodology used to calculate these avoided costs includes certain assumptions regarding the wholesale risk premium, transmission losses, the discount rate, and the percent of capacity bid into the ISO-New England, Inc. Forward Capacity Market ("FCM"). The electronic workbook for the AESC Report is designed such that one or more of these assumptions can be changed and the avoided costs will automatically be recalculated.

The AESC Report also includes an analysis of the demand reduction induced price effect ("DRIPE").<sup>7</sup>

In addition, the AESC Report includes environmental externality adjustments for energy, natural gas, and fuel oil.<sup>8</sup> The externality adjustments are based on the estimated marginal cost of carbon emissions abatement. The AESC Report estimates this value at \$100 per ton of CO<sub>2</sub>. The recommended adjustments account for the portion of abatement costs embedded in avoided energy supply costs associated with the Regional Greenhouse Gas Initiative ("RGGI").

The AESC Report employs a market simulation that is intended to estimate the costs for energy and capacity in the absence of any future regional energy efficiency programs (referred to as the "counterfactual" model). While this counterfactual scenario is not likely to occur, it estimates the true avoided costs of efficiency investments and is more appropriate for determining the avoided costs of energy from efficiency investments than the future prices that include assumed effects of future efficiency investments.

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6. The avoided wholesale energy and capacity costs are located in Appendix B: VT of the AESC Report. The avoided costs for natural gas are located in Appendix C: VT of the AESC Report, and the avoided costs for fossil and other fuels are located in Appendix D: VT of the AESC Report.

7. DRIPE is a measure of the impact of reduced electricity consumption due to energy efficiency investments on regional energy and capacity market clearing prices. DRIPE values are additive to avoided energy and capacity costs.

8. The externality adjustments are located in Appendix B: VT (Columns t through w), Exhibit 4-14 (values reported under "CO<sub>2</sub> at \$100/ton", pages 4-37), and Exhibit D-3 (values reported under "CO<sub>2</sub> at \$100/ton") of the AESC Report.

## **A. Avoided Costs for Energy, Capacity, and Other Fuels**

### Participants' Positions

The Department recommends that the Board adopt avoided costs based on those presented in the AESC Report for all fuels contained in the Report, but with certain modifications to the assumptions for percentage of energy efficiency resources bid into the FCM, the wholesale risk premium, and the discount rate. The AESC Report assumes that 50% of energy efficiency resources are bid into the FCM, while the Department recommends that, consistent with previous calculations of avoided costs, the Board assume that 100% of energy efficiency resources are bid into the FCM. The Department's recommendations regarding the wholesale risk premium and the discount rate are discussed in separate sections, below.

The Department also recommends that the avoided energy costs be further modified to reflect Vermont's newly enacted Renewable Energy Standard ("RES").<sup>9</sup> The Vermont avoided energy costs in the AESC Report did not include an avoided renewable portfolio standard compliance cost because the RES program had not been enacted at the time the study was completed. In the AESC Report, the renewable portfolio compliance costs that other states' retail customers avoid through reductions in energy usage are equal to the product of renewable energy certificate ("REC") prices and the percentage of retail load that a supplier must meet using renewable energy under the renewable portfolio regulations.

The Department proposes to adjust the avoided energy costs based on the Class 1 and Class 2 REC prices used in the AESC Report to determine Connecticut's avoided renewable portfolio standard compliance costs. Under the Department's proposal, the percentage of load required to meet the RES requirements would be multiplied by the projected REC price in each year. For the RES Tier 1 requirements,<sup>10</sup> load required to meet the RES requirement would be multiplied by a REC price held constant at \$2.50 per MWh through 2032. For the RES Tier 2

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9. 30 V.S.A. §§ 8004 and 8005. Under the RES program, Vermont distribution utilities are required to own sufficient energy produced by renewable energy plants or sufficient tradeable renewable energy credits from plants whose energy is capable of delivery in New England that reflect the required amounts of renewable energy that is specified in Sections 8005(a)(1)(B) ("Tier 1" requirements) and 8005(a)(2)(C) ("Tier 2" requirements).

10. 30 V.S.A. § 8005(a)(1)(B) requires that a distribution utility obtain 55% of annual retail electric sales from renewable energy beginning on January 1, 2017, increasing by an additional 4% each third year, until reaching 75% on and after January 1, 2032.

requirements,<sup>11</sup> load required to meet the RES requirement would be multiplied by a REC price starting at \$50 per MWh in 2017 and declining linearly to \$30 MWh by 2032.

The Department's recommendations for natural gas avoided costs include further modifications from the AESC Report by including in the screening tool the use of the avoided cost of increasing the transmission capacity of VGS's system, consistent with the methodology used for the avoided costs approved by the Board in 2013.<sup>12</sup>

GMP and VPPSA contend that the avoided costs in use for energy efficiency screening are unique because they rely on the use of a counterfactual model. GMP and VPPSA maintain that because of their unique development circumstances the avoided costs in the AESC Report should apply only to the evaluation of energy efficiency resources and not to other resource decisions made by utilities.

### Discussion

We accept the Department's recommendations described above and adopt its proposed avoided energy and capacity costs, as well as the end-use avoided costs for natural gas and other fuels, for screening programs and measures by the EEU's. The avoided costs we hereby adopt include the capacity and energy prices identified in Appendices B, C, and D of the AESC Report, with the modifications recommended by the Department described above. The Attachment to this Order contains the avoided costs that we approve today.

We recognize that Vermont distribution utilities, when planning for future power supplies, may rely on avoided power costs that differ from those contained in the AESC Report. The difference in costs is due to the AESC Report employing a market simulation that is intended to estimate the cost for power in the absence of any future energy efficiency programs.

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11. 30 V.S.A. § 8005(a)(2)(C) requires that a distribution utility obtain 1% of annual retail electric sales from new distributed renewable generation beginning on January 1, 2017, increasing by an additional three-fifths of a percent each year, until reaching 10% on and after January 1, 2032.

12. *Order Re: EEU 2013 Avoided Costs*, EEU-2013-07, Order of 12/20/13.

It is appropriate to use different avoided cost values for energy efficiency decisions than for electric power supply resource acquisition decisions.<sup>13</sup>

## **B. Environmental Externality Adjustments**

### Participants' Positions

The Department recommends that modifications be made to the environmental externality adjustments for energy, natural gas, and fuel oil contained in the AESC Report.

The Department recommends that the environmental externality values for energy be adjusted to reflect the requirements of the RES program. The Department contends that under the RES requirements a certain percentage of Vermont's future load will be renewable and therefore there will be no external costs that efficiency will avoid for those specific delivered kilowatts. Under the Department's proposal, the externality values would be multiplied by the percentage of future load that is not obligated to be served with renewable generation, starting at 45% in 2017 and declining to 25% in 2032.

With respect to fuel oils, the Department recommends that only 98% of the externality value (i.e., \$98 per ton CO<sub>2</sub>) be applied to fuel oil to account for the blending of fuel oil with biofuels.

GMP also recommends that the environmental externality values for energy be further adjusted to reflect the requirements of the RES program. With regard to RES Tier 2 requirements, GMP agrees with the Department that there will be no externality costs that efficiency will avoid for those specific delivered kilowatts. However, GMP states that it is less certain that RES Tier 1 requirements will yield the same one-for-one reduction in avoided externality costs. GMP recommends that to account for this reduction the externality values be multiplied by the percentage of future load that is not obligated to be served with renewable generation by the Tier 2 requirement and a portion of the Tier 1 requirement, starting at 72% in 2017 and declining to 57.5% in 2032.

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13. Pursuant to 30 V.S.A. § 218c, least-cost integrated planning includes the consideration of energy efficiency resources and supply-side resources.

VEIC maintains that the renewable energy generated as a result of the RES program will result in a cleaner baseload generation mix that will reduce the total production of carbon. However, VEIC argues that the Department's proposal to adjust the externality values for the RES requirements is not consistent with the methodology in the AESC Report. VEIC maintains that energy efficiency does not reduce the power output from renewable energy; instead, energy efficiency reduces the need for power generation from the generator with the highest marginal cost, which the AESC Report identifies as natural gas or oil generation.

### Discussion

We accept the Department's recommendations for its proposed environmental externality adjustments for natural gas and fuel oil for screening programs and measures by the EEU's. However, with regard to environmental externality adjustments for electric energy, we accept in part the Department's recommendation. The Attachment to this Order contains the externality adjustments that we approve today.

We recognize that the issues surrounding externality adjustments are closely linked with our evolving understanding of the cost associated with reducing greenhouse gas emissions, particularly carbon. The determination of the cost of reducing carbon emissions is linked to renewable portfolio standards, and federal and regional (RGGI) efforts to reduce carbon emissions.

We are persuaded that under the RES requirements a certain percentage of Vermont's future load will be renewable and therefore there will be no external costs that efficiency will avoid for those specific delivered kilowatts. However, we are not persuaded that the Department's or GMP's proposed methodology appropriately adjusts the environmental externality values to reflect the requirements of the RES program. The RES Tier 2 requirements will require new renewable generation, and there will be no environmental external costs that efficiency will avoid for those specific delivered kilowatts. However, it is uncertain how much the RES Tier 1 requirements will affect the externality values given that a significant portion of Vermont's existing power supply portfolio is provided by renewable generation capable of meeting the Tier 1 requirements. Further complicating the matter is that some Vermont utilities

have historically elected to retain RECs and other environmental attributes associated with their power supply, whereas others have elected to sell their RECs in the New England market. Finally, the composition of utilities' RES Tier 1 compliance portfolios, and any associated CO2 avoidance, is unknown. Accordingly, while GMP's proposed methodology attempts to account for Vermont's existing generation, we are concerned that its methodology does not fully reflect the degree of uncertainty regarding the effect of the Tier 1 requirements. Because of the difficulty of capturing the impacts that the RES Tier 1 requirements may have on the environmental externality values, we are adjusting the values only for RES Tier 2 requirements. Accordingly, the environmental externality adjustments for energy contained in the AESC Report will be multiplied by the percentage of future load that is not obligated to be served with renewable generation by the RES Tier 2 requirement, starting at 99% in 2017 and declining to 90% in 2032.

We further recognize that the next biennial update of avoided costs and externality adjustments will reflect the RES requirements and any associated reduction in externality values.

### **C. Demand Reduction Induced Price Effect**

#### Participants' Positions

The Department recommends no changes to the current methodology used to incorporate DRIPE that was used during the 2014-2015 time period. No other participant filed comments on this issue.

#### Discussion

We accept the Department's recommendation with regard to DRIPE. Our conclusion with regard to these values remains unchanged from our previous determinations concerning modifications to the state cost-effectiveness screening tool.<sup>14</sup>

Accordingly, we approve the continued use of rest-of-pool DRIPE with a 47% downward adjustment for use by the EEU's when they perform cost-effectiveness screening of energy

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14. *Order Re: Demand Reduction Induced Price Effect and Distribution Line Loss Values*, EEU-2013-07, Order of 10/24/14.

efficiency measures. The 47% downward adjustment reflects that portion of DRIPE that is a transfer payment between market actors (45%) and a reduction of producer profit (2%). The rest-of-pool DRIPE values we are approving are contained in the Attachment to this Order.

#### **D. Discount Rate**

##### Participants' Positions

The Department provided no recommendation with regard to the use of the 3% discount rate currently used in the cost-effectiveness screening tool. No other participant filed comments on this issue.

##### Discussion

Our conclusion with regard to the discount rate remains unchanged from our previous determinations concerning modifications to the state cost-effectiveness screening tool.<sup>15</sup> Accordingly, a 3% discount rate shall be used in the cost-effectiveness screening tool.

#### **E. Risk Adjustment and Wholesale Risk Premium**

##### Participants' Positions

The Department recommends no change to the risk adjustment currently implemented as a 10% reduction in the cost of efficiency measures applied in the state screening tool. The Department's recommendation for avoided energy and capacity costs includes modifications from the AESC Report to reflect a wholesale risk premium of zero (rather than the 9% used in the Report).

The Department contends that the current risk adjustment is intended to account for risks associated with investments in supply-side resources that are avoided by investing in demand-side management. The Department also contends that the risk adjustment is related to but distinct from the wholesale risk premium that is applied in the AESC Report to avoided energy and capacity costs. The Department maintains that the wholesale risk premium captures the risks associated with utilities supplying their load exclusively with market transactions, such as in

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15. EEU-2013-07, Order of 12/20/13.

restructured states, and while Vermont utilities face some of these risks for the unhedged portion of their portfolios, the risks are not of the same magnitude as in other states.

VEIC argues that the wholesale risk premium is distinct from the current risk adjustment and recommends that a 3% wholesale risk premium be applied to the avoided energy and capacity costs in the AESC Report. VEIC maintains that Vermont utilities face some risks from the unhedged portion of their portfolios and that a 3% premium reflects that risk.

GMP does not recommend the application of a wholesale risk premium to avoided energy and capacity costs. GMP contends that the wholesale risk premium is distinct from the risk adjustment currently employed and captures the risk incurred by utilities that procure wholesale power in a competitive market. GMP argues that Vermont utilities do not procure power in this manner and instead use a mix of owned generating plants, long-term power purchase agreements, and shorter-term market purchases.

VPPSA recommends no changes to the current risk adjustment and argues that the current risk adjustment is not distinct from the wholesale risk premium contained in the AESC Report. VPPSA contends that the current risk adjustment is intended to account for some of the risks associated with the procurement of supply resources that are addressed by the wholesale risk premium.

BED agrees with the Department, GMP, and VPPSA that the application of a wholesale risk premium to avoided energy and capacity costs is not needed. BED recommends that the current 10% risk adjustment be reviewed in the next biennial update of avoided costs given that recent technological advances in the energy industry (e.g., battery storage, advanced building controls, and electric vehicles) have introduced new risks that may not be reflected in the current adjustment.

### Discussion

We accept the Department's recommendation that a risk adjustment of 10% be applied to the cost of efficiency measures in the screening tool. We also accept the Department's recommendation that avoided energy and capacity costs from the AESC Report reflect a wholesale risk premium of zero.

However, we do not accept the Department's, GMP's, and VEIC's contention that the risk adjustment is distinct from the wholesale risk premium applied to the energy and capacity costs in the AESC Report. The current risk adjustment was intended to address system-wide risks associated with the procurement of supply resources.<sup>16</sup> As such, the current risk adjustment applied in the screening tool includes the risks reflected by the wholesale risk premium in the AESC Report that may apply to Vermont utilities (i.e., the unhedged portion of the Vermont portfolio). Accordingly, the risk adjustment should be applied only once in the screening tool.

BED recommends that the current 10% risk adjustment be reviewed, given that recent technological advances in the energy industry have introduced new risks that may not be reflected in the current adjustment. We request that participants in the next biennial update of avoided costs and externality adjustments address whether the current 10% risk adjustment remains reasonable given recent advances in the energy industry.

#### **IV. DISCUSSION - OTHER SCREENING COMPONENTS**

##### **A. Transmission and Distribution ("T&D") Component of Avoided Costs**

###### **Participants' Positions**

GMP and VPPSA recommend that the current T&D component of avoided costs used in energy efficiency screening be reduced by 50%. GMP and VPPSA argue that the current T&D values should be revised for the following reasons: (1) The current values were developed using a methodology that used data from 1986 to 1995, a period of significant load growth; (2) statewide, load has been growing slowly, if at all, and GMP's system peak load forecast for the next ten years is flat to declining; (3) only a small fraction of GMP's current T&D capital plans are aimed at addressing the deficiencies caused by load growth; (4) with a 50% reduction, Vermont avoided T&D values would be within the range used by other utilities in New England; and (5) the appropriate value for avoided T&D costs should be greater than zero because energy efficiency contributes to flat and declining peak load forecasts.

GMP and VPPSA acknowledge that a 50% adjustment is not based on a rigorous analytical methodology, but argue that it represents a reasonable adjustment given the factors that

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16. EEU-2013-07, Order of 12/20/2013.

drive T&D investments. GMP further argues that an in-depth analysis to determine new avoided T&D values would be resource- and data-intensive and not in the best interest of ratepayers. GMP states that an in-depth evaluation would rely on a host of judgments and assumptions about the future and could result in uncertain outcomes.

The Department agrees that the current T&D values are out-of-date and likely overstated, but contends that it is inappropriate to modify the current values without analysis that is backed by transparent methodologies. The Department contends that the intensifying deployment of distributed generation and other distributed energy resources complicates the determination of avoided T&D costs. The Department maintains that a reasonable updated estimate of T&D avoided costs could be determined, without inordinate burden, by looking back at historical deferrals of T&D costs. The Department represents that it is currently undertaking this effort.

VEIC contends that a change in T&D values could have a significant impact on the programs delivered by Efficiency Vermont and may also affect the previously established performance targets for the 2015-2017 performance period. VEIC estimates that a 50% reduction in the value for T&D avoided costs would result in a 10% reduction (\$29 million) in net societal benefits of the Efficiency Vermont portfolio over the 2015-2017 performance period.

BED states that the current avoided T&D value for screening of efficiency measures in BED's service territory was developed based on internal analyses conducted as part of BED's 2012 Integrated Resource Plan. BED contends that the increased use of cold-climate heat pumps and electric vehicles has the potential to increase future demand for power, putting stress on the T&D system. BED argues that the current avoided T&D value provides BED with the flexibility to provide cost-effective energy efficiency programs that offset the anticipated increase in energy use.

### Discussion

We accept the Department's recommendation that it is inappropriate to modify the current avoided cost T&D values without a transparent analysis. We agree that the current T&D values need updating, but are concerned that the updating methodology recommended by GMP and

VPPSA does not fully address the concerns raised by the Department and BED concerning the increased deployment of distributed generation, cold climate heat pumps, and electric vehicles.

Further, the Department has agreed to lead an effort to develop an updated estimate of T&D avoided costs by looking back at historical deferrals of T&D costs. We request that the Department complete this process in time for the next biennial update of avoided costs and externality adjustments for use by the EEUs in the 2018-2019 time period. We request that the Department file, by August 1, 2016, a status report on its efforts to develop an updated estimate of T&D avoided costs.

The T&D components of avoided costs we hereby adopt include: (1) \$157/kW-year in 2016, gradually declining through 2040, for use by Efficiency Vermont for all measures and programs and by BED for prescriptive measures; and (2) \$48/kW-year in 2016, continuing unchanged through 2040, for use by BED for custom efficiency programs.<sup>17</sup> The T&D components of avoided costs that we are approving are contained in the Attachment to this Order.

## **B. Non-Energy Benefits Adjustment**

The non-energy benefits adjustment in the state screening tool applies to both electric and thermal energy and process fuels ("TEPF") measures. The non-energy benefits adjustment is intended to capture the perceived, financial, or intangible benefits accrued by energy efficiency measures including, from a customer's perspective, increased comfort, convenience, and health and, from a utility perspective, reduced utility shut-offs and bill complaints.<sup>18</sup>

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17. The Board has previously concluded that the T&D value for custom efficiency programs delivered in BED's territory should be based upon the statewide avoided transmission value because minimal investments in BED's distribution system are needed over the next 20 years. Given that prescriptive measures are delivered in parallel with Efficiency Vermont programs and are for the same products and measures across the state, the same statewide T&D value should be applied to all prescriptive measures. EEU-2011-07, Order of 12/13/12.

18. *Order Re: Cost-Effectiveness Screening of Heating and Process-Fuel Efficiency Measures and Modifications to State Cost-Effectiveness Screening Tool*, Order of 2/7/12 at 24.

### Participants' Positions

VEIC recommends that the non-energy benefits adjustment currently used in the cost-effectiveness screening tool be changed from 15% to 30%. VEIC contends that a 30% value better captures the benefits of avoided safety, comfort, health, community stability, job creation, and economic benefits. VEIC cites to multiple studies in support of its assertion that the current 15% adjustment does not capture all the non-energy benefits of efficiency measures. VEIC estimates that the use of a 30% value for the non-energy benefits adjustment would result in a 14% increase (\$40 million) in net societal benefits of the Efficiency Vermont portfolio over the 2015-2017 performance period.

GMP agrees with VEIC that the current 15% value is likely not capturing all non-energy benefits and that a 30% adjustment is an appropriate non-energy benefit value.

The Department opposes changing the current non-energy benefits adjustment. The Department contends that the methodologies and assumptions used in the studies cited by VEIC are difficult to evaluate to support a change in value at this time.

VPPSA argues that the study information provided by VEIC is not sufficient to make a determination on the appropriate value of the non-energy benefits adjustment because it is difficult to understand how much, if any, of the study values provided by VEIC include benefits already quantified by Vermont's screening methodology, such as water savings or environmental benefits.

BED opposes changing the current non-energy benefits adjustment. BED states that VEIC's reliance on national studies has the effect of over-valuing the benefits of locally provided energy efficiency, because Vermont's and New England's generation mix differs from the rest of the country. BED states that because the New England region relies less on coal-fired generation, the avoided health-related costs would be less in Vermont than the national average in the studies cited by VEIC.

GMP and VEIC recommend that the Board consider in the next biennial update of avoided costs and externality adjustments whether the non-energy benefits adjustment should be differentiated based on the type of energy consumption being reduced (e.g., electricity savings vs. thermal savings).

## Discussion

VEIC recommends a non-energy benefits adjustment of 30%, and the Department recommends 15%, the value of the current adjustment. We accept the Department's recommendation that we continue to use a non-energy benefits adjustment of 15%. Accordingly, a 15% adjustment for non-energy benefits will be used in the cost-effectiveness screening tool.

We recognize that there is a high degree of uncertainty surrounding the magnitude of non-energy benefits, especially those benefits associated with TEPF efficiency measures. We are persuaded by BED's and VPPSA's arguments that the study information provided by VEIC is not sufficient to make a determination on whether to change the value of the non-energy benefits adjustment. Therefore, we conclude that 15% remains a reasonable value that applies across all efficiency measures. We request that participants in the next biennial update of avoided costs and externality adjustments consider whether the non-energy benefits adjustment should be differentiated based on the type of energy consumption being reduced (e.g., electricity savings vs. thermal savings).

## **C. Low-Income Adjustment**

### Participants' Positions

The Department recommends no update to the low-income adjustment (at 15%) currently used in the cost-effectiveness screening tool. No other participant filed comments on this issue.

### Discussion

We accept the Department's recommendation with regard to the low-income adjustment of 15%. Our conclusion with regard to this value remains unchanged from our previous determinations concerning modifications to the state cost-effectiveness screening tool.<sup>19</sup> Accordingly, a 15% adjustment for low-income customers will be used in the cost-effectiveness screening tool.

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19. *Order Re: EEU 2013 Avoided Costs*, EEU-2013-07, Order of 12/20/13.

## **D. Distribution Line Loss**

### Participants' Positions

The Department recommends no updates to the current distribution line loss values used for screening programs and measures by the EEUs. VPPSA supports the Department's recommendation. No other participant filed comments on this issue.

### Discussion

We accept the Department's recommendation with regard to distribution line loss values used for screening programs and measures by the EEUs. Our conclusion with regard to these values remains unchanged from our previous determinations concerning modifications to the state cost-effectiveness screening tool.<sup>20</sup>

The statewide values for distribution line loss will be used by Efficiency Vermont and by BED to screen for prescriptive measures offered jointly with Efficiency Vermont. The BED-specific values for distribution line loss will be used by BED to screen for custom efficiency measures. The distribution line loss values we are approving are provided in the Attachment to this Order.

## **V. CONCLUSION**

In this Order, we approve for use by the EEUs when they perform cost-effectiveness screening of energy efficiency measures the following updates: updated avoided costs for energy, capacity, and other fuels; externality adjustments; and other screening components. The newly established values are to be implemented by the EEUs for the 2016-2017 time period.

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20. EEU-2013-07, Order of 10/24/14.

## **VI. ORDER**

IT IS HEREBY ORDERED, ADJUDGED, AND DECREED by the Public Service Board ("Board") of the State of Vermont that:

1. The avoided energy and capacity costs and the end-use costs for natural gas and other fuels for screening programs and measures by the Energy Efficiency Utilities ("EEUs") shall be those contained in the Attachment to this Order.

2. The environmental externality adjustments for screening programs and measures by the EEUs shall be those contained in the Attachment to this Order.

3. The demand reduction induced price effect values for screening programs and measures by the EEUs shall be those contained in the Attachment to this Order.

4. The transmission and distribution component of avoided costs for screening programs and measures for use by Efficiency Vermont for all measures and programs and by the City of Burlington Electric Department for prescriptive measures shall be those contained in the Attachment to this Order.

5. The transmission and distribution component of avoided costs for screening programs and measures for use by the City of Burlington Electric Department for custom efficiency programs shall be \$48/kW-year in 2016, and shall continue unchanged through 2040.

6. When performing energy efficiency screening, regardless of fuel type, EEUs shall use: (a) a discount rate of 3%; (b) a risk adjustment consisting of 10% discount to the price of demand-side options; (c) a non-energy benefits adjustment consisting of a 15% adder to energy benefits; and (d) a low-income adjustment consisting of an additional 15% adder to the energy benefits of projects in the low-income sector.

7. The distribution line loss values for screening programs and measures by EEUs shall be those contained in the Attachment to this Order.

8. The Vermont Department of Public Service ("Department") is requested to file a status update by August 1, 2016, on the progress made by the Department to develop an updated estimate of the transmission and distribution component of avoided costs.

Dated at Montpelier, Vermont, this 22nd day of December, 2015.

<u>s/ James Volz</u>	)	
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<u>s/ Margaret Cheney</u>	)	PUBLIC SERVICE
	)	
	)	BOARD
	)	
	)	OF VERMONT
<u>s/ Sarah Hofmann</u>	)	

OFFICE OF THE CLERK

FILED: December 22, 2015

ATTEST: s/ Susan M. Hudson  
Clerk of the Board

*NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@vermont.gov)*

*Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and Order.*