State of Vermont
Public Service Board

MEMORANDUM

To: EEU E-mail Service List

From: Riley Allen, Utilities Analyst

Re: Status Memorandum Consideration of Issues Associated with Cost-Effectiveness Screening of Heating and Process-Fuel Efficiency Measures - Revised

Date: October 30, 2009

At the July 24, 2009 workshop, I committed to characterizing the areas of "high level" agreement among the participants to date. This memo represents a belated attempt to: (i) identify areas of apparent agreement together with steps toward resolving them (or at least providing preliminary recommendations); and (ii) focus issues that require further consideration at this time.

Five categories of issues were identified by Board staff and other issues have been raised over the course of this workshop process. I have attempted to address in one form or another all the major issues that have been raised, although some of the recommendations relate to future processes. I also recommend that certain issues not be addressed at this time and be deferred for future proceedings.

My intention here was to expedite the resolution of issues in light of what I perceived to be considerable agreement among the participants or a clear path forward. It is my hope that the recommendations contained here are sufficiently sound and/or enjoy broad agreement that they may be viewed as a proposal for decision or draft report.

I expect that there will be some disagreement in at least two areas that I discuss below. These areas include the treatment of energy affordability as a design parameter and the treatment of and proposals for research for "other non-energy benefits" as a design parameter in screening.[1] Nevertheless, I have included preliminary recommendations in those areas to help focus the discussion and debate going forward among the participants.

I recommend that the participants use the next filing as an opportunity for further comments on

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[1]These are addressed in more detailed discussion in Section III.B. and III.C.

the recommendations contained in this memorandum, before finalizing this stage of the investigation. Comments are due in approximately three weeks on November 24, 2009. We can use the meeting scheduled for November 3, 2009, as an opportunity to discuss the process issues going forward or schedule a separate status conference workshop.

Background

On April 16, 2009, the Board established this workshop process to "to begin the consideration of issues associated with the cost-effectiveness screening of heating and process-fuel efficiency measures." Other issues also have been raised over the course of this workshop process.

Efficiency Vermont/Vermont Energy Investment Corporation ("EVT/VEIC")[2] added three overlapping issues as distinct topics for consideration by the working group. The Vermont Fuel Dealers Association ("VFDA") raised technical issues related to the screening tools used. The Vermont Housing & Conservation Board ("VH&CB") raised issues related to the adequacy of the existing application of the societal test for screening and the risk adjustments associated with the use of the societal test.

Also, in the course of our review, we considered the various screening tools used by both regulated entities, including the City of Burlington Electric Department ("BED"), EVT/VEIC, and Vermong Gas Systems Inc., ("VGS"), and the tools used by members of the VFDA, and the various entities responsible for administering weatherization funds and programs.

In a later memo of May 14, 2009, Board staff organized the comments into three categories, (I) technical, (II) policy, and (III) overall framework. I am following this organization for purposes of the discussion below, augmented to include the topics suggested by EVT/VEIC. In summary the topics covered are as follows:

I. Technical
   A. Avoided Costs
   B. Costing Periods
   C. Reliance on AFUE
   D. Assumptions Regarding the Characteristics of Liquid Fuels
   E. Screening Tools and Consistent Application of the Tools
II. Policy
   A. Risk Adjustment
   B. Environmental Externalities
III. Overall Framework
   A. Relationship between Screening of Electric and Gas Measures
   B. Energy Affordability as a Design Parameter
   C. Other Non-Energy Benefits
   D. Relationsihip between Screening and Recent Changes to Vermont Goals for Energy Efficiency

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[2] VEIC is the entity that is under contract with the Board to serve as Efficiency Vermont. VEIC staff have participated in this workshop process alternately as VEIC and EVT. At an earlier stage in this investigation, we concluded that EVT could participate without restriction. In order to help minimize confusion, I refer to filings by either organization in the body of the document as EVT/VEIC. Nevertheless, I have attempted to cite the organization that filed the comments for clarity and ease of reference.

E. Project Versus Measure Screening

I. Technical

Technical questions related to cost-effectiveness screening of heating and process-fuel efficiency measures discussed by Board staff and the participants in the proceeding included the following issues: (A) avoided costs; (B) costing periods; (C) reliance on Annual Fuel Utilization Efficiency ("AFUE"); (D) assumptions regarding the characteristics of liquid fuels; and (E) screening tools and consistent application of the tools.

A. Avoided Costs –

Board staff noted that it may be helpful at the present time to identify areas of concern related to the determination of avoided costs for unregulated fuels so that the Vermont Department of Public Service ("DPS" or "Department"), in its work on the Avoided Energy Supply Component ("AESC") process, can consider whether the regional study will address those issues or whether additional Vermont-specific work would be appropriate to address them.

Comments:

On May 7, the DPS notified the Board that it was working on an update to the avoided costs through the regional AESC process. At that time, the updated version was under review, but was expected to contain some improved detail in the non-electric fuels area, such as prices for wood pellets and wood chips, as well as state-specific prices for all fuels. Additionally, the DPS expected there to be some differentiation among the various oil products commonly used in Vermont to aid, potentially, with the screening process in Vermont.

EVT/VEIC recommended a "finer breakdown of long-range prices for a wider range of petroleum-based products such as propane, #2, #4, and #6 fuel oil, diesel, etc., for different levels of annual usage." EVT/VEIC notes that such estimates would better reflect Vermont's true distribution and delivery economics, compared to the regional perspective of previous avoided-cost studies in which Vermont has participated.[3] EVT/VEIC also recommends differentiating wood pellets and wood chips, possibly also including the variation in cost by volume.

[3] VEIC Comments, May 7, 2009.

Discussion and Recommendations:

At this stage, it is difficult to discern any disagreement. As noted in the memorandum initiating this proceeding, the timeframe for this proceeding has been contemporaneous with the regional AESC process that the Department has participated in. As such, this process has served to facilitate communication with the Department regarding issues to be incorporated or at least consciously considered in the AESC study. In any event, the AESC process is now complete and suggestions from this process, to the extent that they have not already been received and considered by the DPS, will best be addressed through future iterations of the AESC study. Any additional suggestions or recommended changes in the DPS estimates of avoided costs should be addressed through comments received on the DPS proposal under review. A workshop in the proceeding used to update the avoided costs will be held on November 3, 2009.

B. Costing Periods —

In earlier communications from Board staff, we indicated that costing periods for electric efficiency measures are linked to the costing periods used in the regional wholesale power market. What, if any, costing periods should be used for heating and process-fuel efficiency measures?

Comments Received:

Consistent with DPS comments, EVT/VEIC notes that the seasonality of unregulated fossil fuel pricing in Vermont is worth exploring in the regional analysis, as well as in any Vermont-specific analysis of avoided costs.

Discussion and Recommendations:

There is little if any disagreement here. There appears to be agreement that seasonal price differences may be appropriate to consider when in developing future avoided costs. However, I am not convinced that seasonal differences in prices are meaningful and justify the extra effort to differentiate seasonal prices. A review of DOE/EIA data on regional fuel oil and propane prices over many years reveals no obvious seasonal differential for unregulated fossil fuels. This contrasts sharply with the clear seasonality of regulated fuels, primarily natural gas and electricity. Nevertheless, these may be topics worth further discussion and investigation.

Given the limited commentary on this issue, I conclude that there is little value in establishing costing periods that are either seasonal or that vary with the costing periods of regulated fuels at

this time and recommend that we defer the issue at this time. For now, I recommend only one costing period undifferentiated by season or time-of-day. I recommend that the issue be addressed in the future in the context of the biennial cycle of avoided costs updates.

C. Reliance on AFUE –

Comments Received:

The Vermont Fuel Dealers Association raises concerns with over-reliance by existing screening tools on the Annual Fuel Utilization Efficiency ("AFUE") rating. The AFUE rating fails to take into consideration certain aspects of efficiency that other tools pick up, including the "Fuel Savings Analysis Calculator" available through the National Oilheat Research Alliance. Further discussion of this topic occurred at the July 24, 2009 Workshop.

Discussion and Recommendations:

As discussed at the July 24, 2009 Workshop, detailed technical concerns with the application of the AFUE are likely best addressed by the Technical Advisory Group that addresses updates to detailed technical assumptions in the Technical Resource Manual used for cost-effectiveness screening. Currently, Technical Advisory Group meetings include representatives of the EEU (both Efficiency Vermont and BED), the Department, and the Contract Administrator. I recommend that the Technical Advisory Group invite representatives of the Vermont Fuel Dealers Association and VGS to meetings at which they plan to review assumptions used in the cost-effectiveness screening of efficiency measures for unregulated fuels. The Board need not address this issue further unless disputes arise that require Board attention.

D. Assumptions Regarding the Characteristics of Liquid Fuels –

Comments Received:

The Vermont Fuel Dealers Association indicates that the liquid fuels its members provide rely upon are likely to change in their renewable characteristics over time. "Thanks to the advances in algae biodiesel production, we expect oilheat to become 20% renewable within ten years. Current research shows that BioHeat® at a B-20 blend will work in existing oilheat burners."[4]

[4] Letter from the VFDA to Riley Allen, July 21, 2009.

Discussion and Recommendations:

The composition of the liquid fuels used in home heating is an issue that affects both the assumptions used in developing future projections of liquid fuel prices and the associated externalities associated with the liquid fuels used in home heating. These are detailed technical assumptions that should inform future iterations of the Department's recommendations for developing avoided costs. With respect to externalities, the factors developed or revisited in the context of any externalities for future screening should be designed in a way that allows for the emissions characteristics of liquid fuels to vary depending on the composition of the heating and process fuel used. These issues may also better be addressed through detailed determinations by the Department of Public Service.

I recommend that issues relating to the emissions characteristics of liquid fuels be addressed, in the first instance by the Department of Public Service, provided it is willing to do so. Potential controversies that arise can then raised by participants and addressed by the Board in the context of the Board's biennial review of avoided costs and related determinations.

E. Screening Tools and Consistent Application of the Tools –

Comments Received

EVT/VEIC raises the issue of consistency. EVT/VEIC asks to what extent can the Board, through this process, contribute to a consistent assessment of cost effectiveness? What would be the applicability of any findings or Board Orders that might result from this process? Could the results apply to, advise, or inform other heating and process-fuel programs (a) delivered by regulated utilities, (b) delivered by programs where the Board has some level of approval or oversight, and / or (c) programs funded in whole or in part by the State?

EVT/VEIC notes that it is important that cost-effectiveness analysis of efficiency measures that save unregulated fuels be integrated and be consistent with analysis of electricity and natural gas savings.[5] EVT/ VEIC asserts that the policy framework the Board established in 1990 with the Order in Docket 5270 remains sound. Separate procedures would not only pose problems of inconsistent regulatory policy treatment, but likely be administratively and operationally inefficient.

On a similar note, the DPS noted that Docket 5270 laid the appropriate foundation for the

[5] VEIC Comments, May 7, 2009; *see also,* EVT comments June 8, 2009

screening of DSM measures when it prescribed the societal test as the appropriate yardstick and that this yardstick remains the most appropriate for non-regulated fuels. [6] While the DPS notes that the use of the societal test should be the same, the use of the same adjustments for externalities and risks would likely be different, to account for the differential character of those concerns.

VGS notes that "underlying wholesale avoided costs should be consistent across programs for comparable markets." As such, it maintains that fuel oil costs should be comparable, but the same may not necessarily apply for natural gas and electricity. Natural gas used for heating in Vermont should be developed based on Canadian supply to match VGS avoided costs. However, for purposes of estimating the costs of electricity, the natural gas prices should be based on New England regional costs.[7]

The Department of Public Service and EVT/VEIC support continued reliance on existing screening tools and consistent screening between regulated fuels as well as non-regulated fuels, while recognizing their inherent differences.[8] EVT/VEIC, VGS, CVOEO, BED, CVCAC, and the VFDA all filed either their screening tools, a spreadsheet version of the screening tools, or a description of their screening process.

Discussion and Recommendations:

There appears to be agreement between at least the Department and EVT/VEIC that the current screening standard (i.e., the Vermont societal test) along with many of the other elements of the existing tools should remain and apply to cost-effectiveness screening of process and heating measures.[9]

There also appears to be agreement that consistency is desirable. As noted in EVT/VEIC's comments the issue of consistency can apply to several groupings of programs in relation to Board and state agency oversight. I address each in turn below.

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[6] DPS Comments, June 8, 2009.

[7] VGS Comments, June 18, 2009.

[8] See, for example, DPS Comments, May 7, 2009 and EVT Comments, June 8, 2009.

[9] See, DPS Comments, June 8, 2009, supporting continued reliance on the societal test. EVT/VEIC proposes that the pre-existing Board Orders and framework continue to provide the foundation for programs and measures. It proposes that these principles, methods and practices continue but be refined to better distinguish between the energy and non-energy-related costs and benefits when screening heating fuels. In its June 18, 2009 comments, the DPS expressed support for this latter point as a general matter.

a. Consistent Screening Among Programs and Program Providers in Regulated Industries

Among at least the utilities and regulated or contracted entities screening for cost-effectiveness, consistency is not only desirable but should be expected, at least to the extent reasonably practicable. VGS, BED, and EVT/VEIC should work collaboratively with the Department to ensure that the measure and program screens are applied in a consistent fashion, including the process and heating fuels. VGS avoided costs should, for purposes of screening energy efficiency measures and programs, be consistent with the avoided costs used by the EEU and subject to periodic updates that are subject to formal public scrutiny. As part of the next filing by the various regulated entities, the Board should seek an update on the state of any efforts to resolve material inconsistencies in the screening process and guidance on the appropriate role for Board staff to play in facilitating cooperation toward that end.

b. *Consistent Screening between Program Providers in Regulated Industries and Programs over which the Board has Approval or Oversight Authority*

We agree that consistent screening practices should extend at least to programs where this Board has responsibility for approval or some oversight authority. I recommend that the Board should apply consistent standards between the screening of programs and measures between program providers in the regulated industries and extend those same standards programs for which the Board has program oversight authority, but are in industries for which the Board does not have direct regulatory oversight.

The Board should signal its expectations and lend assistance, as appropriate, to help facilitate closer coordination and collaboration between service providers delivering programs in regulated industries and the delivery of programs for which the Board has oversight authority, but are not in regulated industries. Participants should be encouraged to involve the Board or Board staff to assist in this effort where it may be useful to facilitate collaboration and coordination. Comments are welcome on how to address this procedurally.

c. *Programs Funded in Whole or Part by the State*

Different state-sponsored initiatives and programs that enjoy any public or ratepayer funding sources should ideally apply consistent standards to screening programs and measures that are eligible for publicly funded incentives.

Here again, the Board should support consistent standards for screening programs and measures from programs and measures that do not fall under Board oversight. The Board can signal its

recommendations, and facilitate consistency by encouraging more transparency in the screening process by the entities and programs for which we have oversight authority. It can do so by publicly displaying methods, assumptions, and through frequent updates to the avoided costs developed through open processes.

The Board can also encourage the Department to work with other state agencies to apply consistent standards in screening programs and measures. Given the Department's role in planning and coordination of energy policy within the state and among the state agencies, it would seem appropriate for the Department to foster greater consistency.

Customer Screening Tools

In the course of these proceedings there was also some discussion of screening tools to help end users (retail customers) see and better understand the inputs and assumptions that underlie estimates of customer savings (generally consumer empowerment). I believe that different end use customers have widely different interests and inclinations to pursuing details. Nevertheless, especially when customers are being asked to contribute funds to measures, the tools and assumptions behind programs should be made accessible to consumers through detailed audit reports (in instances where an audit is required) or other online interactive tools. The paper copy of an audit for a VGS customers appeared to provide an impressive array of information that provides one example of how to communication effectively to end users. At this stage, I have encourage comments on this issue and whether there is a role for the Board and/or other state agencies in helping to encourage the development of such reports and tools.

II. Policy

A. Risk Adjustment —

Is the risk adjustment that the Board approved in Docket 5270 (a 10 percent discount to the price of demand-side options) appropriate to use when screening heating and process-fuel efficiency measures? What options deserve a risk-premium adjustment, if any, in the context of programs that promote heating and process-fuel efficiency?

<u>Comments Received:</u>

The Department indicates that some of the rationale for a risk adjustment may transfer over to the

unregulated fuels.[10] Vermont Housing and the Vermont Housing and Conservation Board highlight the risk-mitigation value of energy efficiency measures as it applies to residential housing and their clients.[11] The Vermont Housing & Conservation Board stresses concern over the threat of high fuel prices and views forecasts of future prices built from EIA forecasts as inadequate. The Vermont Housing & Conservation Board and Housing Vermont highlight a special risk to households from the high prices that exceed current projections.[12] Indeed, as Housing Vermont indicated, last year, energy costs jumped from 10% to 20% of total operating costs.[13]

EVT/VEIC notes that the risk-mitigating advantages of reducing Vermont's and the nation's dependency on imported oil are well known. VFDA disagrees with EVT/VEIC's assertions regarding the riskiness associated with using heating oil. VFDA distinguishes between the international petroleum industry and the New England heating oil industry, stating that less than two percent of crude oil turns into heating oil, and 95 percent of Vermont's heating oil comes from U.S. refineries.[14]

Further, the "rebuttable presumption" approach that the Board adopted in Docket 5270 for establishing the risk-mitigation adjustment for electric efficiency savings might be the most tractable means of addressing this issue[15] EVT/VEIC, however, does not offer a specific recommendation other than its believe that it is appropriate to account for the risks in the cost-effectiveness screening.[16]

VGS notes that difficult-to-quantify costs could simply be addressed through a generic risk adjustment.[17]

Discussion and Recommendations:

While the risks may be analogous, they are also very different. The risk adjustment developed for regulated utilities in the screening of energy efficiency programs and measures was intended

[10] DPS Comments, May 7, 2009.
[11] Vermont Housing, June 7, 2009; VH&CB Comments, June 8, 2009.
[12] Vermont Housing & Conservation Board, June 17, 2009; Housing Vermont, June 7, 2009.
[13] Housing Vermont, June 7, 2009.
[14] Tr. 7/13/09 at 78-83 (Heddon and Cota).
[15] VEIC Comments, May 7, 2009.
[16] EVT, Comments, June 19, 2009.
[17] VGS, June 18, 2009.

to address system-wide risks associated with investment in supply-side resources, such as the risk to ratepayers and/or utility investors that bear the risk of supply-side investments that may be unneeded or unavailable after the investments have occurred.[18] For unregulated industries[19] there are parallel risks associated with short-term shortage events or over the longer term, declining reserves.[20]

There appears to be general agreement that a risk factor, analogous to that which applies in the regulated sector, should apply to unregulated fuels. Based on the comments received and the workshop discussions, it seems reasonable to conclude that the magnitude of the risk is likely reasonably comparable for both regulated and unregulated fuels. I recommend that the Board extend application of the 10 % risk adjustment to the screening unregulated fuels as a stop-gap and rebuttable presumption and encourage the parties to comment on this issue on November 24, 2009. I do not recommend, however, that this adjuster be relied upon to address the difficult-to-quantify or other non-energy related benefits or costs. This latter category of benefits and costs is distinct and should not be confused with the risk related adjustments.

The risks may also be greater among certain customer groupings. This issue is discussed further in Section III.B. below.

B. Environmental Externalities —

In earlier communications, Board staff asked whether the environmental externality values currently used by Efficiency Vermont for fuel-consuming end-use efficiency measures appropriate to use when screening heating and process-fuel efficiency measures?

Comments Received:

As the DPS noted in its May 7, 2009 filing, "the impacts of emissions from fossil fuels burned in generators or in residential or industrial boilers should be factored into the measure screening." Consistent treatment of externality values between fuels is also important. Further, the implications of potential cap-and-trade structures, such as RGGI, and pending legislative

[18] See, for example, Docket 5270, 4/16/90 Volume III, page 163-164, and Volume IV, pages 7-17.

[19] The term "unregulated industries" is used here and throughout this report to refer only to the fact that they are not traditional cost-of-service industries regulated as public utilities by the Public Service Board. It is generally recognized, however, that even these fuels face myriad forms of regulation, including environmental, safety, and financial regulations.

[20] DPS Comments, June 19, 2009; EVT Comments, June 19, 2009.

initiatives may also be needed.[21]

Consistent with the DPS comments, EVT/VEIC notes that central to any reconsideration of environmental externalities will be the extent to which environmental costs of fossil-fuel consumption are likely to be internalized or monetized in future fossil-fuel pricing, through such means as carbon-trading schemes. VGS indicates that externalities should be included and reasonably reflect the externalities that can be monitized.[22]

Further EVT/VEIC notes that externality values in Vermont may deserve fresh examination and differentiation may for different fuels in different contexts. EVT/VEIC believes that the existing values established in Docket 5980 for purposes of screening underestimate the costs to society and deserve reconsideration.[23] The Department also believes that the externality values may deserve reconsideration in light of the regulatory reforms that are leading to the inclusion of carbon emissions in the price of the commodities (i.e., internalizes the former externality). VGS recognizes the value of establishing externality values for screening, but only to the extent that they are fuel-specific and reflect the externality values that can be reasonably monitized. Further VGS recommends that these values be periodically updated to reflect the character of current regulations and that costs not be double counted.[24]

Discussion and Recommendations:

In the short term, I conclude that EVT/VEIC, BED, VGS, and the VFDA should work with the Department of Public Service to try and properly extend the values agreed to in Docket 5980 to extend consistent application to the screening of process and heating measures, projects, and programs for unregulated fuels.

In the longer term the Board should open a proceeding to consider whether the Board should either raise or lower the existing externalities values, likely to focus on the contribution of carbon values that may not be appropriately captured in the combined price and externalities premium that is currently used for screening. The onset of this investigation can await the conclusion of the current round of discussion in this workshop process, but should conclude in time for the next biennial update to determinations of avoided costs.

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[21] DPS Comments, May 7, 2009.
[22] VGS Comments, June 18, 2009.
[23] EVT Comments, June 19, 2009.
[24] VGS Comments, June 18, 2009.

III. Overall Framework

A. Relationship to Screening of Electric and Gas Efficiency Measures —

This issue is addressed above in Section I.E. the heading of "Screening Tools and Consistent Application of the Tools."

B. Energy Affordability as a Design Parameter –

The Vermont Housing & Conservation Board would like energy affordability to be used "as a key design parameter" for properties in order to foster a "deeper" level of effort than would screen under the current screening tools used by "non-housing energy efficiency/weatherization partners."[25] They introduce the concept of "social" costs and benefits in addition to the societal costs that are being addressed through the existing screening process. The social costs would include consideration of affordability.[26] These comments appear to be echoed by Housing Vermont who indicates that "increased investment in energy efficiency decreases long term risk and increases affordability."[27]

Discussion and Recommendations:

There appears to be broad agreement among participants that "deeper" energy efficiency investments should be made in each publicly funded low-income residence that is served. While I am sympathetic to the concerns raised here, I am nevertheless unable to recommend that measure screening differentiate among customer types, without clear statutory direction to treat publicly funded low-income households differently than other households or customer classes. When energy efficiency fund or regulated utility investments are in question, I recommend that the tools used for screening be applied consistently across all customer classes and segments within those classes using the same standards and tools that appear to continue to enjoy broad support among the participants.

I do note, however, that currently program providers in regulated industries include different costs than other providers when they screen measures for cost-effectiveness. Program providers in regulated industries include the cost of the measure itself and the cost to install the measure. Low-income weatherization providers also include non-measure costs such as auditing and

[25] Vermont Housing & Conservation Board Comments, June 8, 2009.
[26] Vermont Housing & Conservation Board Comments, June 17, 2009.
[27] Housing Vermont Comments, June 7, 2009.

reporting costs as well as the costs associated with qualifying customers.[28] For one provider, these non-measure costs are approximately 80 percent of the measure costs.[29] The use of an 80 percent adder to measure costs could reduce the number of measures that pass the screening test. If greater standardization among energy efficiency providers regarding the costs included in measure screening were to occur, one possible result could be that more measures would pass the screening test, thereby allowing deeper investment in individual residences. However, as discussed in Section I.E, above, this issue is outside of the Board's jurisdiction. Instead, there may be a role for the Department to play in encouraging consistent screening practices among entities delivering programs funded in whole or in part by the state.

C. Other Non-Energy Benefits –

Here EVT/VEIC includes difficult to quantify factors such as customer motivation to make building improvements on the basis of non-energy considerations; or customers willingness to incur higher costs to address customer value associated with appearance, housing durability, maintenance, increased process output, ongoing operating labor reductions, increased worker or student productivity or decreased absenteeism, waste-stream reduction, or increased sustainability. VEIC recommends that the Board use Efficiency Fund program funds to sponsor research using hedonic methods to establish appropriate non-energy related benefits.

Comments Received:

EVT/VEIC noted in its June 8, 2009 comments that further refinements may be needed to distinguish between energy and non-energy-related benefits from projects and measures that create energy-related benefits. Specifically, EVT/VEIC recommends that for cost-effectiveness analysis of efficiency measures that save heating fuels, the energy efficiency-related costs of space heating measures be explicitly separated from the balance of all other costs. This general view appears to have the support of the DPS,[30] however, disagreement appears to exist in attempting to implement this shared view (see discussion below).

EVT/VEIC made clear that it is likely to be recommending that the screening of energy efficiency measures be done by reducing the cost of a project or measure by the amount of the non-energy

[28] Efficiency Vermont and regulated entities include these non-measure costs in the *program*'s costs, but not the *measure*'s costs. Thus, non-measure costs are included when determining whether a program is cost-effective, but not when determining whether an individual measure is cost-effective.

[29] Tr. 6/12/09 Workshop at 97, 109-110 (Chant).

[30] See DPS Comments, June 19, 2009 at 2.

related-benefits from the measure. EVT/VEIC indicates that "hedonic" research methods could be used to reasonably estimate the percentage split between energy-related and non- energy-related factors in the investment decisions made by Efficiency Vermont customers in recent years.

Here VEIC refers not specifically to the risk or externalities factors, nor specifically to the other resource benefits (water savings) that are already included in the screening of electricity programs and savings by EVT/VEIC, but rather to a wide range of largely subjective or not-readily-quantifiable factors that would include customers' motivation to make building improvements on the basis of non-energy considerations; or their willingness to incur higher costs to address customer value associated with appearance, housing durability, maintenance, increased process output, ongoing operating labor reductions, increased worker or student productivity or decreased absenteeism, waste-stream reduction, or increased sustainability. The example that was most often highlighted in the workshop discussions was a residential who replaces windows for increased comfort and ease of use. The replacement will also result in energy savings, but those savings constitute only a secondary consideration in the actual purchase and investment decision by the consumer.

The Department, for its part, acknowledges that these factors fall within the societal test that it supports, but raises concerns about the ability to quantify these factors and raises further concerns that the non-energy-related benefits could loom large in proportion to energy savings. In the Department's view, "[t]o the extent that these non-energy benefits drive measure screening, less energy could be conserved and more intangible benefits could be delivered to program participants."

The DPS suggests that the Board might simply limit consideration of such non-energy related factors to 5% of the overall cost-effectiveness equation.[31]

Discussion and Recommendations:

This issue relates to the array of benefits that have not been traditionally captured through the techniques applied through the screening of regulated fuels. They include factors that may be subjective, difficult-to-quantify, and variable (person-to-person). Given the examples provided, they also appear to be much more pronounced and potentially significant for unregulated fuels than for regulated ones.

[31] June 19, 2009, although in earlier comments the DPS indicates that this factor should be roughly 5-10%. See DPS Comments June 8, 2009.

While I agree that these factors may be potentially significant, it is difficult to place a clear value without more and better information, and potentially research. I am therefore inclined to recommend that the parties simply apply the stop-gap factor of 5% across-the-board to building shell and related improvements that are likely to produce such benefits.

While I agree that further research is needed, I am concerned that the challenges presented by the research appear formidable. Further, the research has relevance to energy efficiency programs that extend well beyond our borders. Limited funding support from one small state may yield results that prove inadequate to the task. I encourage the Department and VEIC to explore partnerships beyond our borders that can be leveraged for more material impact and to defray concerns that such research efforts by Vermont alone may be inadequate to benefit Vermont ratepayers. I do not recommend that Vermont embark on its own research efforts without the participation of other states or regions that could benefit from such research. That said, I believe the research is potentially valuable and should be considered by this Board if there are sufficient resources that can be leveraged outside the state to support it.

D. Relationship Between Screening and Recent Changes to Vermont Goals for Energy Efficiency –

EVT/VEIC refers to Title 10 Section 581, which establishes goals to reduce energy consumption by the existing housing stock by 25%, fossil fuel consumption by 10% by 2025, and to improve the energy fitness of 25% of the homes by 2020, among others.

Comments Received:

At this stage, the issue has been raised by EVT/VEIC.[32] EVT/VEIC suggests the following approach to reconciling statutory goals reflected in Title 10 with the screening of programs and measures under the Board's supervision.

- Start with building efficiency goals and work backward to find the least-cost level of investment to meet that goal (e.g., what is the cost necessary to achieve an average 25% savings in the majority of homes in Vermont?).
- This approach would then a need a mechanism to determine the appropriate level of investment for individual buildings. Consider, perhaps, an avoided-cost adjustment factor that captures the public policy decision to achieve building efficiency goals.

[32] See, for example, EVT Comments June 18, 2009.

Discussion and Recommendations:

This process to date has been inadequate to address the challenge of reconciling statutory goals against the cost-effectiveness screening of programs and measures under the Board's jurisdiction. The issue has been raised by EVT/VEIC, without response from the Department or others. However responsibility for planning efforts to reconcile statutory goals for energy efficiency logically reside with the Department in the context of its planning functions and responsibilties Further it is not clear how the statutory goals under Title 10 reconcile with the least-cost planning goals and directives of Title 30 that guide the Board in its actions related to energy efficiency investments under Section 209.[33] Before making further commitments to reconcile that goals, some understanding of the cost-effective potential and a commitment of resources consistent with the source of these investments is needed. Finally, the goals can be pursued through any number of avenues including building standards in concert with commitments through energy efficiency fund investments.

E. Project Versus Measure Screening –

In the May 14, 2009 Board staff memo, the question was asked about differences between measure and program screening.

Comments Received

Efficiency Vermont indicated in its June 19, 2009 filing that it supports expansion of its current standard practice regarding the cost-effectiveness screening at each of four levels: (1) individual measures; (2) projects (bundles of measures at a single location); (3) programs/initiatives; and (4) the overall portfolio. EVT/VEIC provided a powerpoint presentation summarizing current practices for the June 25, 2009 workshop.[34]

VGS noted that while it does not have a firm position on measure versus project-level screening, each individual *"program"* should be cost-effective. Within a given program, the energy efficiency provider should have some flexibility.[35] I also understand that in circumstances where there may be health and safety issues that require immediate attention, that actions may be

[33] Most relevant here are the requirements of 30 VSA 209(e)(1) and 209(e)(11)-(13) that require the Board to apply the standards of section 218c, the Public Service Board's Docket 5270 for least cost planning, and the requirements for the establishment of programs that are reasonable, comprehensive, and cost-effective.

[34] *See,* http://psb.vermont.gov/docketsandprojects/eeu/screening.

[35] VGS Comments, June 18, 2009.

needed regardless of the measure screening process.

For its part, the Department indicates that measures should include the incremental costs and benefits of the measure in screening and be included if they are cost effective.[36] Programs should include administrative and overhead costs to justify a program as cost-effective.

Discussion and Recommendations:

Based on the comments received, I conclude that there is little if any material distinction between the principles espoused, and practical application of those principles among regulated entities.[37] I agree with the Department that measures should be screened on the basis of incremental costs and benefits. Measure screening should not be loaded with administrative and overhead costs. Program screening should include the overhead and administrative costs that are associated with the program, but should not include other overhead costs that fall outside the program.

I agree with VGS that some flexibility is in order and that certain prescriptive measures included in programs may, for some customers be uneconomic. Because prescriptive measures are screened for "average" customers, it is expected that some customers will experience greater savings than others. It is possible that some customers might experience small enough savings that the measure would be uneconomic. However it would be inefficient to individually screen each prescriptive measure for each customer. Therefore I recommend that those prescriptive measures should screen as economic in the design of the program.

I also agree in concept with Efficiency Vermont in supporting the expansion of its current standard practice regarding cost-effectiveness screening at the four levels. I recommend, however, that EVT supplement its presentation with clear a statement of those practices in order to minimize any room for confusion surrounding those practices as they would apply to program, project, and measure screening of unregulated fuels.

Such a filing may be useful to low-income weatherization providers or other unregulated providers as they review their practices on what costs are included in measure screening.

[36] DPS Comments, June 19, 2009.
[37] See Section III.B. for discussion of differences between regulated entities and other entities in this area.

Summary and Next Steps

As indicated above, my intention here was to facilitate resolution of the issues in this process by identifying areas of general agreement and to bring clarity, or at least focus issues that do not enjoy such general agreement. For next steps I am establishing November 24, 2009 as a deadline for comments on this memo and the recommendations contained within. A brief summary of my recommendations is listed below under each topic.

I. Technical

A. Avoided Costs

The Department has filed its recommendations and the Board has scheduled a workshop for November 3, 2009. We have received comments from the parties on the range of wood and petroleum products, including customer volume differentiation. We encourage the Department to work through the AESC process in the future to facilitate further differentiation consistent with these recommendations. Further discussion of this issue can take place at the Board's November 3, 2009 workshop and in the context of future updates.

B. Costing Periods

I recommend only one costing period undifferentiated by season or time-of-day. The issue can be addressed in the future in the context of the biennial cycle of avoided-cost updates.

C. Reliance on AFUE

As discussed at the July 24, 2009 Workshop, the detailed technical concerns are best addressed through the Technical Advisory Group. The TAG should invite representatives of the Vermont Fuel Dealers Association and Vermont Gas to future meetings to address this issue. The Board should not address this issue further unless there are disputes that require Board involvement and guidance.

D. Assumptions Regarding the Characteristics of Liquid Fuels

I recommend that the emissions characteristics of the liquid fuels be addressed at a technical level by the Department of Public Service in collaboration with affected entities. Potential controversies that arise can then be raised and addressed in the context of biennial updates to the avoided cost determinations.

E. Screening Tools and Consistent Application of the Tools

a. Consistent Screening Among Program Providers in Regulated Industries

I agree with comments received that consistency as applied to energy efficiency programs and measures by providers of programs in regulated industries, to the extent practicable, is warranted. The Board has received a summary of the screening process from EVT/VEIC in the course of this process that demonstrate different screening practices among program providers in regulated industries. I seek comment and/or guidance from the parties in the November 24, 2009 filing on the path toward resolving inconsistencies.

b. Consistent Screening Between Program Providers in Regulated Industries and Programs Over Which the Board Has Approval and Oversight Authority

Here again, I recommend that the Board signal its expectations for consistent application of standards for program and measure screening. Further, I would welcome comments on how best to effectuate or ensure consistent screening practices over entities which the Board has Oversight Authority.

c. Programs Funded in Whole or Part by the State

The Board should encourage the Department to play an active role in facilitating coordination, and ensure that the standards, assumptions, and prices are public and transparent for ease of access by disparate organizations. No further action is needed other than implementation. Further comments are, however, welcome.

Customer Screening Tools

The Board should encourage the development of tools that empower consumers to better understand the costs and consequences of participation in measures and programs from the individual consumer's perspective. I am encouraging comments on whether there is a role for the Board in helping to encourage the development of such tools. If so, how and when should the Board act.

II. Policy

A. Risk Adjustment

I conclude that there are parallel risks that are quite distinct from those that serve as the basis for

risks among regulated utilities. I recommend that the Board extend application of the risk adjustment in screening energy efficiency measures to unregulated fuels.

B. Environmental Externalities

In the short term, I recommend that EVT/VEIC, VGS, and the VFDA work with the Department of Public Service to extend the values agreed to in Docket 5980 to process and heating fuels in a manner that treats emissions contributions in a comparable manner to reduce the potential for unintended bias between fuels. In the longer term, I recommend that the Board open a broader investigation into the topic in light of the significant changes that have taken place related to environmental externalities since concluding Docket 5980. This investigation should conclude in time for the next biennial update of avoided costs.

III. Overall Framework

A. Relationship between Screening of Electric and Gas Measures

This issue is address above in Section I.E

B. Energy Affordability as a Design Parameter

I recommend consistent application of the screening tool among customer classes and subgroups. As noted in the discussion, greater standardization among energy efficiency providers could reduce unwarranted barriers to deeper penetration of measures in low income households. I also welcome comments on further processes or decisions that the Board could make to help encourage more effective program screening and implementation, and leave it to the parties to provide comments on November 24, 2009.

C. Other Non-Energy Benefits

I recommend that the Board require a 5% adjustment factor to efficiency measures associated with building shell improvements. I am not recommending at this time, that the Board sponsor through EEU funds further research in this area at this time. I welcome comments on these preliminary conclusions.

D. Relationship Between Screening and Recent Changes to Vermont Goals for Energy Efficiency

I recommend no further action by this Board. Responsibility for planning efforts necessary to

reconcile statutory goals for energy efficiency logically reside with the Department in the context of its statutory planning functions and in the periodic efficiency potential studies. I also believe that Title 30 Section 209 directives should control the screening criteria that is the subject of this workshop process. Based on these conclusions I see no basis for further process outside of the Department's own planning efforts.

E. Project Versus Measure Screening

I agree that the current screening practices should logically extend to heating and process-fuel measures and programs. I also agree with the measure and screening practices that were articulated by the Department of Public Service. For clarity and transparency, however, I recommend that EVT/VEIC's current practices be clearly articulated and filed with the Board.