CURRENT POLICY:

Cost-Effectiveness Policy and General Methodology for Energy Trust of Oregon

Introduction

The Energy Trust of Oregon seeks a future that includes sufficient, stable, and affordable power available to all customers through sustained investment in energy efficiency and renewable resources that reduce the economic and environmental costs of using gas and electricity. To properly evaluate such investments, the Energy Trust of Oregon (Trust) evaluates energy saving projects and measures and analyzes how to compare their economic cost compares to alternative sources of gas and electric energy. In the past the Oregon Public Utility Commission (OPUC), the Northwest Power and Conservation Council (NWPPCC) and the Northwest Energy Efficiency Alliance (Alliance) have all used similar approaches and assumptions to analyze the cost-effectiveness of energy efficiency investments. This policy encompasses three generic perspectives – Consumer, Utility System, and Societal. It describes the key variables or economic model inputs that define these perspectives and allow the analyst to compare the cost of energy efficiency to conventional sources of gas and electrical energy.

Policy

The Energy Trust of Oregon adopts the Utility and Societal perspectives, as described below, as its primary perspectives for evaluating energy efficiency projects. It will also use the utility-system perspective as an additional tool to assure that the kWh saved per dollar invested by the Trust is reasonable. The Consumer perspective is used to help design projects.

The societal cost definition is in alignment with the OPUC docket no. UM-551's definition of Total Resource Cost (Societal) perspective as including total costs and total benefits in cost effectiveness calculations. The following costs will be included in the societal perspective:

1. Trust incentives paid to the participant
2. Trust administrative costs
3. Monitoring, evaluation and non-incentive costs of PMCs and Energy Trust staff
4. Oregon and local government administrative costs associated with incentives
5. The participants remaining out-of-pocket costs for the installed cost of the measures

The cost of tax credits to the State of Oregon will not be included, because they are considered to be a transfer, not a net cost to society. However, to the extent that they are significant, the administrative costs of those tax credits will be considered.

The Energy Trust will include the following benefits:

1. the value of the electrical and/or gas energy saved based on (1) the Regional Technical Forum long-term forecast of wholesale market prices for electricity and (2) the NW Natural gas price forecast for gas, as long as it is reasonably consistent with the Regional Technical Forum forecast of gas prices for power plant fuel.

2. non-energy benefits as quantified by a reasonable and practical method and described in situations where they cannot practically be quantified
3. for electricity, bulk system transmission capacity benefits (both line loss and avoided transmission construction.
4. for electricity, transmission and distribution benefits, both line losses and avoided Transmission and Distribution construction.
5. natural gas capacity benefits are of a lesser magnitude and difficult to quantify, so the Energy Trust will not quantify them. Natural gas delivery loss benefits are also modest in magnitude. Local delivery losses will be considered to the extent that they are included in NW Natural price forecasts. Gas transmission losses are difficult to quantify and will be described.

In addition, the Energy Trust will apply in its analysis the 10% credit for energy efficiency as required under the Northwest Power Act and OPUC docket no. UM-551. This credit recognizes the benefits of conservation in addressing risk and uncertainty.

Both the Power Act and OPUC docket no. UM-551 also suggest consideration of external costs such as environmental costs associated with air pollution. The Trust will initially use a credit of $15.00 per ton of carbon dioxide and will update that figure as information improves.

Methodology

The following additional decisions have been made about implementation of this policy:

- For the near-term, the Pro-cost model, using marginal costs from the Aurora model, will be used to analyze the costs and savings of efficiency programs. The selection and specifics of these tools will be updated as time, resources, and opportunities permit to maximize transparency, time-dependent variations in resource value, and reasonableness.
- The Energy Trust of Oregon will adopt a 5.2% discount rate for comparing the costs and benefits of efficiency investments to other investments.
- The Energy Trust of Oregon will refine estimates of line losses specific to Oregon based on new information from utilities.

The Energy Trust of Oregon will consider avoided transmission and distribution costs attributable to efficiency measures as appropriate.

The economic comparison will be presented as a benefit-to-cost ratio except for the consumer perspective that (for reference) will be presented as a two simple payback, one with non-electric benefits and one without non-electric benefits. The final decision on cost effectiveness will be based on the benefit-to-cost ratio for the Societal and Utility System perspectives (must pass both if data permits use of both) over the appropriate project period along with description and Board consideration of non-quantified costs and benefits. The Energy Trust will also consider other factors in selecting programs, as specified in the various strategic and action planning documents of the Energy Trust.

The cost-effectiveness analysis will include impact on the action of customers who do not directly participate and long term market effects (e.g., impact on long-term price, sales, or

efficacy of efficient technologies beyond the direct program participants) for projects where such effects are a significant and likely result.

In conclusion, an Energy Trust project should be reviewed from both the Utility system and the Societal perspectives, and if the Societal benefit-to-cost ratio is greater than 1.0, it should be considered cost effective.

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REVISED VERSION WITH REVISION MARKS

Introduction

The Energy Trust of Oregon seeks a future that includes sufficient, stable, and affordable power available to all customers through sustained investment in energy efficiency and renewable resources that reduce the economic and environmental costs of using gas and electricity. To properly evaluate such investments, ~~the~~ Energy Trust ~~of Oregon (Trust)~~ compares the cost of energy-saving programs and measures ~~analyzes how to compare their economic cost compares~~ to the cost of alternative sources of natural gas and electric energy. The cost of alternative sources is known as "avoided cost". ~~In the past t~~The Oregon Public Utility Commission (~~O~~PUC), the Washington Utilities and Transportation Commission (WUTC), the Northwest Power and Conservation Council (N~~WP~~PCC) and the Northwest Energy Efficiency Alliance (Alliance) ~~have all~~ used~~d~~ similar approaches and assumptions to analyze the cost-effectiveness of energy efficiency investments. Consistent with these approaches, ~~T~~this policy encompasses ~~three~~ two ~~generic perspectives~~tests to determine cost-effectiveness and ~~–~~ ~~Consumer, Utility System, and Societal. It~~ describes the key variables or economic model inputs that define these ~~perspectives~~ tests ~~and allow the analyst to compare the cost of energy efficiency to conventional sources of gas and electrical energy~~in Energy Trust analysis.

The Oregon Renewable Energy Act of 2007 (SB 838) allows supplemental energy efficiency funding, i.e., more than the three-percent public purpose charge authorized in the 1999 law. The 2007 Act, together with the agreements that fund Energy Trust natural gas efficiency programs in Oregon, support Energy Trust programs that help utilities meet goals that are determined through Integrated Resource Planning. In that process, the OPUC reviews and may acknowledge avoided cost forecasts from each utility. Because Energy Trust funding is significantly affected by this process, the following policy is designed to be consistent with OPUC guidance and, to the extent practical, with utility integrated resource plans. Energy Trust may consider prospective costs and benefits over a period of more than one year, as appropriate, for emerging technologies and market transformation ventures.

Policy

~~The~~ Energy Trust ~~of Oregon~~ adopts the Utility System and Societal ~~perspectives~~tests, as described below, as its primary ~~perspectives~~ determinants of whether efficiency investments meet cost-effectiveness criteria. The economic comparison will be presented as a benefit-to-cost ratio. Programs and measures that pass both tests, or are likely to over time, are eligible for Energy Trust investment.

For programs and measures that pass these cost-effectiveness tests, Energy Trust may consider other factors in configuring programs, consistent with its strategic plan and action plans ~~for evaluating energy efficiency projects. It will also use the utility-system perspective as an additional tool to assure that the kWh saved per dollar invested by the Trust is reasonable. The Consumer perspective is used to help design projects.~~.

Comment [a1]: Editorial clarification.

Comment [a2]: Editorial clarification

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Comment [a3]: Eliminates the "customer test" consistent with proposal to narrow focus of this policy to cost-effectiveness as defined in OPUC regulation. Consumer pay-back and other considerations are addressed in program design, which follows action plans and board strategic plan.

Comment [a4]: Updates the policy to acknowledge SB 838

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Comment [a5]: Clarifies that policy addresses cost-effectiveness determination, not broader investment considerations.

Comment [a6]: Clarifies that policy addresses cost-effectiveness, not broader investment considerations.

Costs

The societal cost definition is in alignment with the OPUC docket no. UM-551's definition of Total Resource Cost (Societal) perspective as including total costs and total benefits in cost effectiveness calculations.[1] The following costs will be included in the societal perspective:

~~6.~~1. Total cost ~~Trust incentives paid to the participant~~of efficiency measures and actions,[2] including costs to Energy Trust and participants

~~1.~~2. Energy Trust administrative costs

~~2.~~3. Energy Trust program management costs

~~3. Oregon and local government administrative costs associated with incentives~~

~~7. Monitoring, evaluation and non-incentive costs of PMCs and Energy Trust staff~~

~~8. The participants remaining out-of-pocket costs for the installed cost of the measures~~

These items comprise all Energy Trust efficiency costs.

The value of Oregon and/or Federal tax credits will be deducted from the cost of measures~~cost of tax credits to the State of Oregon will not be included,~~ because similar tax credits are not included in avoided costs used by Energy Trust. Program administration or management costs of local programs funded by Federal or state agencies will not be included, as they are often associated with non-energy considerations such as equity, employment, etc., and are not included in the benefit/cost tests under PUC guidance~~they are considered to be a transfer, not a net cost to society. However, to the extent that they are significant, the administrative costs of those tax credits will be considered~~.

Benefits

The Energy Trust will include the following benefits:

~~6.~~1. T~~t~~he value of the electrical and/or gas energy saved based on the avoided cost forecasts of the utilities whose customers are served by the Energy Trust, as reviewed and approved by the PUC.[3] Periodically, Energy Trust will work with the utilities and PUC to develop an average, or merged cost forecast. This will be done separately for the electric utilities and gas utilities, so that Energy Trust program decisions are based on a single set of price forecasts for each fuel. Energy Trust may include factors such as hedge value, if not considered in the utility forecasts, based on agreement with the utilities and PUC. ~~(1) the Regional Technical Forum long-term forecast of wholesale market prices for electricity and (2) the NW Natural gas price forecast for gas, as long as it is reasonably consistent with the Regional Technical Forum forecast of gas prices for power plant fuel~~.

[1] In Washington, the primary cost/benefit criterion is the societal test, applied to entire programs. In addition to following this guidance, Energy Trust will continue to apply the test to specific measures to assure consistency of programs across states (for administrative efficiency) and optimal rate payer value.
[2] For equipment or structures that would be purchased regardless of efficiency actions, this is the incremental cost of upgrading the efficiency of the purchase beyond common practice.
[3] This includes the value of avoided peak energy use.

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Comment [A7]: Footnote acknowledges Washington test.

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Comment [A8]: Footnote clarifies that for some efficiency measures, cost is of improvement over standard levels of efficiency.

Comment [a9]: Editorial clarification and aligns policy with ETO accounting categories

Comment [A10]: Addressed in first full paragraph immediately below.

Comment [A11]: Addressed in numbers 1 and 2, total costs and "Energy Trust administrative costs"

Comment [A12]: Included in number 1, "total cost"

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Comment [a13]: Updates the policy to reflect agreement with OPUC on treatment of tax credits.

Comment [a14]: New provision, which would exclude costs supported by government programs, e.g., Clean Energy Works costs.

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Comment [a15]: Updates the policy to show that we base our avoided cost for internal planning purposes on utility avoided cost, not directly on Power Council. OPUC reviews utility avoided costs and considers Power Council forecast in its review.

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2. N~~n~~on-energy benefits ~~as~~ will be quantified by a reasonable and practical method. Energy Trust may use proxies for these benefits ~~and described in situations~~ where such benefits clearly exist, are large, and ~~they~~ cannot practically be quantified.

~~7. for electricity, bulk system transmission capacity benefits (both line loss and avoided transmission construction.~~

3. ~~F~~for electricity, ~~transmission and distribution benefits,~~ both line losses and avoided Transmission and Distribution construction.

~~8.~~4. Natural gas capacity benefits and benefits from reduced transmission and delivery losses will be included where significant and quantifiable.

~~9. natural gas capacity benefits are of a lesser magnitude and difficult to quantify, so the Energy Trust will not quantify them. Natural gas delivery loss benefits are also modest in magnitude. Local delivery losses will be considered to the extent that they are included in NW Natural price forecasts. Gas transmission losses are difficult to quantify and will be described.~~

5. In addition, the Energy Trust will apply in its analysis the 10% credit for energy efficiency as required under the Northwest Power Act and OPUC docket no. UM-551. This credit recognizes the benefits of conservation in addressing risk and uncertainty.

~~1.~~6.

Currently, utility avoided costs include the forecast value of reduced carbon dioxide emissions. Oregon PUC guidance provides that other environmental pollutant costs may be considered only when specified by the PUC.

~~Both the Power Act and OPUC docket no. UM-551 also suggest consideration of external costs such as environmental costs associated with air pollution. The Trust will initially use a credit of $15.00 per ton of carbon dioxide and will update that figure as information improves.~~

Discount rates

Energy Trust will revise avoided costs and discount rate from time to time to be consistent with the cost of capital used in the utilities' Integrated Resource Plans.

In analysis and reporting, Energy Trust will use a discount rate based on OPUC-reviewed integrated resource planning discount rates used by the utilities whose customers are served by the Energy Trust. Periodically, Energy Trust will work with the utilities and OPUC to derive a single discount rate close to those employed by the utilities. This discount rate will be used to compare the costs and benefits of efficiency investments to other investments.

~~***Methodology***~~

~~The following additional decisions have been made about implementation of this policy:~~

~~For the near-term, the Pro-cost model, using marginal costs from the Aurora model, will be used to analyze the costs and savings of efficiency programs. The selection and specifics of these~~

Comment [a16]: Reflects agreement with PUC to use proxies where non-energy benefits are clear, large, and difficult to quantify.

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Comment [A17]: Reflects electric practice to count benefits only where significant and quantifiable.

Comment [a18]: Editorial changes for clarity. T&D benefits are determined by utility IRPs reviewed by OPUC.

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Comment [a19]: Updates policy to reflect that CO2 is part of utility price forecasts, and UM 551 does not include NOx. The policy does not need to address these benefits.

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Comment [a20]: Updates policy based on more recent agreement to use IRP discount rates.

Comment [a21]: "Methodology" section is eliminated in favor of addressing methodological issues above.

~~tools will be updated as time, resources, and opportunities permit to maximize transparency, time-dependent variations in resource value, and reasonableness.~~

- ~~The Energy Trust of Oregon will adopt a 5.2% discount rate for comparing the costs and benefits of efficiency investments to other investments.~~
- ~~The Energy Trust of Oregon will refine estimates of line losses specific to Oregon based on new information from utilities.~~

~~The Energy Trust of Oregon will consider avoided transmission and distribution costs attributable to efficiency measures as appropriate.~~

~~The economic comparison will be presented as a benefit-to-cost ratio except for the consumer perspective that (for reference) will be presented as a two simple payback, one with non-electric benefits and one without non-electric benefits. The final decision on cost effectiveness will be based on the benefit-to-cost ratio for the Societal and Utility System perspectives (must pass both if data permits use of both) over the appropriate project period along with description and Board consideration of non-quantified costs and benefits. The Energy Trust will also consider other factors in selecting programs, as specified in the various strategic and action planning documents of the Energy Trust.~~

~~The cost-effectiveness analysis will include impact on the action of customers who do not directly participate and long-term market effects (e.g., impact on long-term price, sales, or efficacy of efficient technologies beyond the direct program participants) for projects where such effects are a significant and likely result.~~

In conclusion, ~~an~~ Energy Trust programs and measures ~~project should~~ will be reviewed ~~from~~ using both the Utility system and the Societal ~~perspectives~~tests. I~~, and~~ if the ~~Societal~~ benefit-to-cost ratio is greater than 1.0, ~~it~~ a program should be considered cost-~~-~~effective and may be considered for Energy Trust efficiency funding.

Comment [a22]: Replaced with language above.

Comment [a23]: "board consideration of non-quantified benefits" was replaced by language regarding use of proxies consistent with OPUC agreements.

Comment [a24]: Language was moved and retained above.

Comment [a25]: Replaced with simpler language above.

Comment [a26]: Language cleanup. Clarifies that measures and programs must pass test.

REVISED VERSION WITH REVISION MARKS CLEARED:

Introduction

The Energy Trust of Oregon seeks a future that includes sufficient, stable, and affordable power available to all customers through sustained investment in energy efficiency and renewable resources that reduce the economic and environmental costs of using gas and electricity. To properly evaluate such investments, Energy Trust compares the cost of energy-saving programs and measures to the cost of alternative sources of natural gas and electric energy. The cost of alternative sources is known as “avoided cost”. The Oregon Public Utility Commission (PUC), the Washington Utilities and Transportation Commission (WUTC), the Northwest Power and Conservation Council (NPCC) and the Northwest Energy Efficiency Alliance (Alliance) use similar approaches and assumptions to analyze the cost-effectiveness of energy efficiency investments. Consistent with these approaches, this policy encompasses two tests to determine cost-effectiveness and describes the key variables or economic model inputs that define these tests in Energy Trust analysis.

The Oregon Renewable Energy Act of 2007 (SB 838) allows supplemental energy efficiency funding, i.e., more than the three-percent public purpose charge authorized in the 1999 law. The 2007 Act, together with the agreements that fund Energy Trust natural gas efficiency programs in Oregon, support Energy Trust programs that help utilities meet goals that are determined through Integrated Resource Planning. In that process, the OPUC reviews and may acknowledge avoided cost forecasts from each utility. Because Energy Trust funding is significantly affected by this process, the following policy is designed to be consistent with OPUC guidance and, to the extent practical, with utility integrated resource plans. Energy Trust may consider prospective costs and benefits over a period of more than one year, as appropriate, for emerging technologies and market transformation ventures.

Policy

Energy Trust adopts the Utility System and Societal tests, as described below, as its primary determinants of whether efficiency investments meet cost-effectiveness criteria. The economic comparison will be presented as a benefit-to-cost ratio. Programs and measures that pass both tests, or are likely to over time, are eligible for Energy Trust investment.

For programs and measures that pass these cost-effectiveness tests, Energy Trust may consider other factors in configuring programs, consistent with in its strategic plan and action plans.

Costs

The societal cost definition is in alignment with the OPUC docket no. UM-551's definition of Total Resource Cost (Societal) perspective as including total costs and total benefits in cost effectiveness calculations.[4] The following costs will be included in the societal perspective:

1. Total cost of efficiency measures and actions,[5] including costs to Energy Trust and participants
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These items comprise all Energy Trust efficiency costs.

The value of Oregon and/or Federal tax credits will be deducted from the cost of measures because similar tax credits are not included in avoided costs used by Energy Trust. Program administration or management costs of local programs funded by Federal or state agencies will not be included, as they are often associated with non-energy considerations such as equity, employment, etc., and are not included in the benefit/cost tests under PUC guidance.

Benefits

The Energy Trust will include the following benefits:

1. The value of the electrical and/or gas energy saved based on the avoided cost forecasts of the utilities whose customers are served by the Energy Trust, as reviewed and approved by the PUC.[6] Periodically, Energy Trust will work with the utilities and PUC to develop an average, or merged cost forecast. This will be done separately for the electric utilities and gas utilities, so that Energy Trust program decisions are based on a single set of price forecasts for each fuel. Energy Trust may include factors such as hedge value, if not considered in the utility forecasts, based on agreement with the utilities and PUC. .
2. Non-energy benefits will be quantified by a reasonable and practical method. Energy Trust may use proxies for these benefits where such benefits clearly exist, are large, and cannot practically be quantified.
3. For electricity, both line losses and avoided Transmission and Distribution construction.
4. Natural gas capacity benefits and benefits from reduced transmission and delivery losses will be included where significant and quantifiable.
5. In addition, the Energy Trust will apply in its analysis the 10% credit for energy efficiency as required under the Northwest Power Act and OPUC docket no. UM-551. This credit recognizes the benefits of conservation in addressing risk and uncertainty.

[4] In Washington, the primary cost/benefit criterion is the societal test, applied to entire programs. In addition to following this guidance, Energy Trust will continue to apply the test to specific measures to assure consistency of programs across states (for administrative efficiency) and optimal rate payer value.
[5] For equipment or structures that would be purchased regardless of efficiency actions, this is the incremental cost of upgrading the efficiency of the purchase beyond common practice.
[6] This includes the value of avoided peak energy use.

Currently, utility avoided costs include the forecast value of reduced carbon dioxide emissions. Oregon PUC guidance provides that other environmental pollutant costs may be considered only when specified by the PUC.

Discount rates

Energy Trust will revise avoided costs and discount rate from time to time to be consistent with the cost of capital used in the utilities' Integrated Resource Plans.

In analysis and reporting, Energy Trust will use a discount rate based on OPUC-reviewed integrated resource planning discount rates used by the utilities whose customers are served by the Energy Trust. Periodically, Energy Trust will work with the utilities and OPUC to derive a single discount rate close to those employed by the utilities. This discount rate will be used to compare the costs and benefits of efficiency investments to other investments.

In conclusion, Energy Trust programs and measures will be reviewed using both the utility system and societal tests. If the benefit-to-cost ratio is greater than 1.0, a program should be considered cost-effective and may be considered for Energy Trust efficiency funding.