Board Decision
Amending Cost-Effectiveness Policy

December 16, 2011

Summary

Adopt changes to the board policy on cost-effectiveness.

Background

- By law, Energy Trust's energy efficiency funding may be used only for "cost-effective energy conservation." ORS 757.612(1), 757.689.
- Cost-effectiveness is defined in several statutes and administrative rules. The residential energy efficiency (ORS 469. 631(4)) is representative:

> "Cost-effective" means that an energy conservation measure that provides or saves a specific amount of energy during its life cycle results in the lowest present value of delivered energy costs of any available alternative. However, the present value of the delivered energy costs of an energy conservation measure shall not be treated as greater than that of a nonconservation energy resource or facility unless that cost is greater than 110 percent of the present value of the delivered energy cost of the nonconservation energy resource or facility.

- Energy Trust first adopted a policy on cost-effectiveness in 2002 to explain how it would employ these requirements in implementing programs. It has updated the policy several times since then.
- There have been significant developments since the policy was last amended: The Oregon Renewable Energy Act authorized higher funding levels for Energy Trust programs in 2007, Energy Trust programs are much more closely integrated into the utility integrated resource planning process overseen by the OPUC, and Energy Trust adopted a new strategic plan in 2009, reflecting these developments.
- The changes proposed below were vetted with the Conservation Advisory Council, OPUC staff, and the Policy Committee.

Analysis

- The proposed changes are intended to accomplish several purposes:
    - To limit the policy to cost-effectiveness. As originally developed and amended over time, the policy adopted a range of investment considerations that were not, strictly speaking, relevant to cost-effectiveness. Those considerations are now addressed in the Energy Trust strategic plan, and reflected in program designs, action plans and elsewhere. They need not be addressed in the cost-effectiveness policy.

  - To align the policy with OPUC processes associated with supplemental energy efficiency funding under the Oregon Renewable Energy Act of 2007 and integrated resource planning.
  - These amendments are not meant to change our current practice, but make the policy simpler, avoid confusion with other policy documents, and make Energy Trust practice more transparent.
- Specific changes (references are to numbered parts of the attached clean version:
  - Eliminate reference to the consumer perspective (see **#1**). The consumer perspective "test" refers to a judgment whether a given efficiency measure has a short enough payback to appeal to consumers. It is not a test of cost-effectiveness, but is a judgment made in program design.
  - Cost-related changes:
    - Acknowledge that Energy Trust now offers services in Washington State, which uses a version of the Societal Test (see clean version, footnote 1).
    - For equipment or structures that would be purchased regardless of efficiency actions, the incremental cost of upgrading the efficiency of the purchase beyond common practice is used (see attached clean version, footnote 2 and accompanying text).
    - Exclude costs compensated by state and federal tax credits, because they are excluded in avoided cost calculations (see **#2**).
    - Exclude administrative and program administration costs that are paid by federal or state government, because they often reflect non-energy considerations (see **#3**). We explored this change with OPUC staff in connection with Clean Energy Works, and they acceded to our approach.
  - Benefit-related changes:
    - Energy values are based on avoided cost forecasts used in OPUC processes, with potential adjustments for hedge value (see attached clean version, footnote 3 and surrounding text).
    - Energy Trust may use proxies for non-energy benefits where the benefits are large, they cannot practically be quantified, and they clearly influence consumer decisions (see **#4**). The OPUC is reportedly working on a new approach to cost-effectiveness that could change the way we approach this subject. In particular, OPUC does not endorse broader use of proxy values for non-energy benefits. Therefore, our approach to this subject is meant to be used only until the OPUC develops an alternative approach.
    - Include bulk transmission system capacity benefits (see **#5**).
    - Benefits relating to natural gas capacity and reduced gas transmission and delivery losses are included where significant and quantifiable (see **#6**). The existing policy would not consider these benefits.
- Address carbon value consistent with OPUC guidance, which includes carbon value in utility price forecasts (see **#7**).
- Explain our current approach to discount rates, (**#8**), which is consistent with law, OPUC planning, utility avoided cost forecasts, and reflects the need for an aggregated rate.
- Eliminate "methodology" section (see redline version, second-to-last page) and instead address all major considerations in foregoing sections.
- Revise the "conclusion" section to reflect the foregoing.

Recommendation

Amend the board policy on cost-effectiveness, by adopting resolution #596.

RESOLUTION 596

AMENDING THE ENERGY TRUST POLICY ON COST-EFFECTIVENESS

WHEREAS:

1. **Energy Trust's energy efficiency funding may be used only for "cost-effective energy conservation." ORS 757.612(1), 757.689.**
2. **Cost-effectiveness is defined in several statutes and administrative rules, for example:**

   > **"Cost-effective" means that an energy conservation measure that provides or saves a specific amount of energy during its life cycle results in the lowest present value of delivered energy costs of any available alternative. However, the present value of the delivered energy costs of an energy conservation measure shall not be treated as greater than that of a nonconservation energy resource or facility unless that cost is greater than 110 percent of the present value of the delivered energy cost of the nonconservation energy resource or facility. (ORS 469. 631(4))**

3. **Energy Trust adopted a cost-effectiveness policy in 2002 and has updated it several times since then.**
4. **Since the policy was developed, the Oregon Renewable Energy Act authorized higher funding for energy conservation, the board adopted a new strategic plan, and Energy Trust programs have been much more closely integrated into the utility integrated resource planning process overseen by the OPUC.**
5. **Changes to reflect these developments were vetted with the Conservation Advisory Council, OPUC staff, and the Policy Committee.**

It is therefore RESOLVED, that the board of directors of Energy Trust of Oregon, Inc. amends the board policy on cost-effectiveness as shown in the attachment.

Moved by: Seconded by:

Vote: In favor: Abstained:

Opposed: [list name(s) and, if requested, reason for "no" vote]

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

Clean version:

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

(#1) 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. Both tests consider energy impacts on customers who are influenced by the program, and long term market effects of programs and measures (e.g., sales, or efficacy of efficient technologies beyond the direct program participants) where such effects are significant and likely. The difference between the Utility System and Societal tests is that the Societal Test includes all

costs (not just Energy Trust costs) and savings of program participants and others who were influenced to act by Energy Trust programs. The Utility System Test includes Energy Trust costs only, and savings from program participants and others who were influenced to act by Energy Trust programs.

For programs and measures that pass these cost-effectiveness tests, in configuring programs Energy Trust may consider other factors identified 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.[1] The following costs will be included in the societal perspective:

1. Total cost of efficiency measures and actions,[2] including costs to Energy Trust and participants
2. Energy Trust administrative costs
3. Energy Trust program management costs

The utility system test includes only items 2 and 3, above, i.e., all Energy Trust efficiency costs, not those paid by consumers.

Costs excluded: **(#2)** 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. **(#3)** Program administration or management costs of local programs that are paid 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

In the societal test, 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.[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] 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.

2. **(#4)** Non-energy benefits will be quantified by a reasonable and practical method. Unless and until the OPUC develops an alternative approach, Energy Trust may use proxies for these benefits where research shows that the benefits are large, they cannot be practically quantified, and they clearly influence consumer decisions. .
3. For electricity, both line losses and avoided Transmission and Distribution construction. (#5)
4. Natural gas capacity benefits and benefits from reduced transmission and delivery losses will be included where significant and quantifiable **(#6**).
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.

Avoided costs based on integrated resource planning will be provided to the Energy Trust by utilities. The utility system test will include items 1, 3, 4 and 5, above.

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. **(#7**)

Discount rates (#8)

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 the 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.

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REDLINE VERSION

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[a1]. 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~~ use~~d~~ similar approaches and assumptions to analyze the cost-effectiveness of energy efficiency investments[a2]. 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. [a3]

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.[a4]

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[a5]. ~~Energy Trust will also~~Both tests consider energy impacts on ~~all~~ customers who are influenced by the program, and long term market effects of programs and measures (e.g., sales, or efficacy of efficient technologies beyond the direct program participants) where such effects are significant and likely. The difference between the Utility System and Societal tests is that the Societal Test includes all costs (not just Energy Trust costs) and savings of program participants and others who were influenced to act by Energy

Trust programs. The Utility System Test includes Energy Trust costs only, and savings from program participants and others who were influenced to act by Energy Trust programs.

For programs and measures that pass these cost-effectiveness tests, in configuring programs Energy Trust may consider other factors identified in its strategic plan and action plans[a6]. 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..

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][A7] The following costs will be included in the societal perspective:

1. Total cost Trust incentives paid to the participantof efficiency measures and actions.[5][A8] including costs to Energy Trust and participants
1.2. Energy Trust administrative costs
2.3. Energy Trust program management costs
3. [a9]Oregon and local government administrative costs associated with incentives
1. Monitoring, evaluation and non-incentive costs of PMCs and Energy Trust staff
2. The participants remaining out-of-pocket costs for the installed cost of the measures

The utility system test includes only items 2 and 3, above, i.e., all Energy Trust efficiency costs, not those paid by consumers.

Costs excluded: The value of Oregon and/or Federal tax credits will be deducted from the cost of measurescost 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. [a10]Program administration or management costs of local programs that are paid 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[a11]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

In the societal test, The Energy Trust will include the following benefits:

[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.

1. Tthe 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. [a12]~~(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. Nnon-energy benefits ~~as~~ will be quantified by a reasonable and practical method. Unless and until the OPUC develops an alternative approach, Energy Trust may use proxies for these benefits where ~~and described in situations~~ research shows that the benefits are large, they cannot be practically quantified, and they clearly influence consumer decisions. ~~where they cannot practically be quantified~~. [a13]
   - ~~for electricity, bulk system transmission capacity benefits (both line loss and avoided transmission construction.~~
3. Ffor electricity, ~~transmission and distribution benefits,~~ 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[A14].
   - ~~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. [a15]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.

Avoided costs based on integrated resource planning will be provided to the Energy Trust by utilities. The costs associated with carbon dioxide production as provided by the utilities will be incorporated. The utility system test will include items 1, 3, 4 and 5, above.

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.

[a16]***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.

[6] This includes the value of avoided peak energy use.

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.[a17]

~~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***~~

[a18]~~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~~[a19]~~.~~
~~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.~~[a20] ~~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.~~[a21]

~~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.~~

[a22]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 i~~f 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.[a23]