An Overview of Cost-effectiveness at Energy Trust of Oregon

March 2021

Energy Trust of Oregon

Overview of Cost-effectiveness

- Cost effectiveness is central to how we plan and deliver energy efficiency programs

- **Measure and program-level cost effectiveness** is required in Oregon by UM 551 to ensure that Energy Trust is making good investments for ratepayers

- Aligns with utility long-term integrated resource planning (IRP)
  - Efficiency is a *resource* used to meet demand on par with supply resources
  - Cost-effectiveness tests are a way to determine investments in efficiency and compare with other resources

- Informs which measures Energy Trust offers and places an upper bound on incentive amounts

Cost-effectiveness Policy and History

Northwest Power Planning and Conservation Act of 1980 (Power Act)

- Established Northwest Power and Conservation Council to coordinate planning of power resources in the region
- Directs planners to include efficiency in forecasts, and states that planners shall *"give priority to resources which the Council determines to be cost-effective. Priority shall be given: first, to conservation; second, to renewable resources"*

OPUC Rulemaking - UM 551 (1994)

- Sets the rules and procedures for assessing cost-effectiveness for energy efficiency programs and measures in Oregon investor-owned utility territory
    1. Which tests to use
    2. How to calculate benefits and costs
    3. Procedures for handling measures that are not cost-effective

Cost-effectiveness Policy and History

Oregon Legislation, SB 1149 (1999)

- Public purpose charge created to fund conservation and efficiency

  "There is established an annual public purpose expenditure standard for electric companies to fund new cost-effective local energy conservation"

Energy Trust grant agreement with OPUC (2002)

- Implementation of efficiency, market transformation and renewables funding allowed via SB 1149
- Energy Trust selected to administer public purpose charge funds for the above purposes

  "Individual conservation programs will be designed to be cost-effective and will be independently evaluated on a regular basis. This guideline should not, however, restrict investment in pilot projects, educational programs, demonstrations, or similar endeavors."

Clean Electricity and Coal Transition Act, SB 1547 (2016)

"[Electric companies shall] Plan for and pursue all available energy efficiency resources that are cost-effective, reliable and feasible"

Cost-effectiveness Policy and History

- Board approved a *"Cost-Effectiveness Policy and General Methodology for Energy Trust of Oregon"* in 2014

- Policy is reviewed periodically by the board. The last review was in March 2019 with no change made

- The board-approved policy complements and reinforces existing OPUC policies while providing detail and procedure about how Energy Trust implements cost-effectiveness testing across the organization

- Available online at https://www.energytrust.org/wp-content/uploads/2016/11/4.06.000.pdf

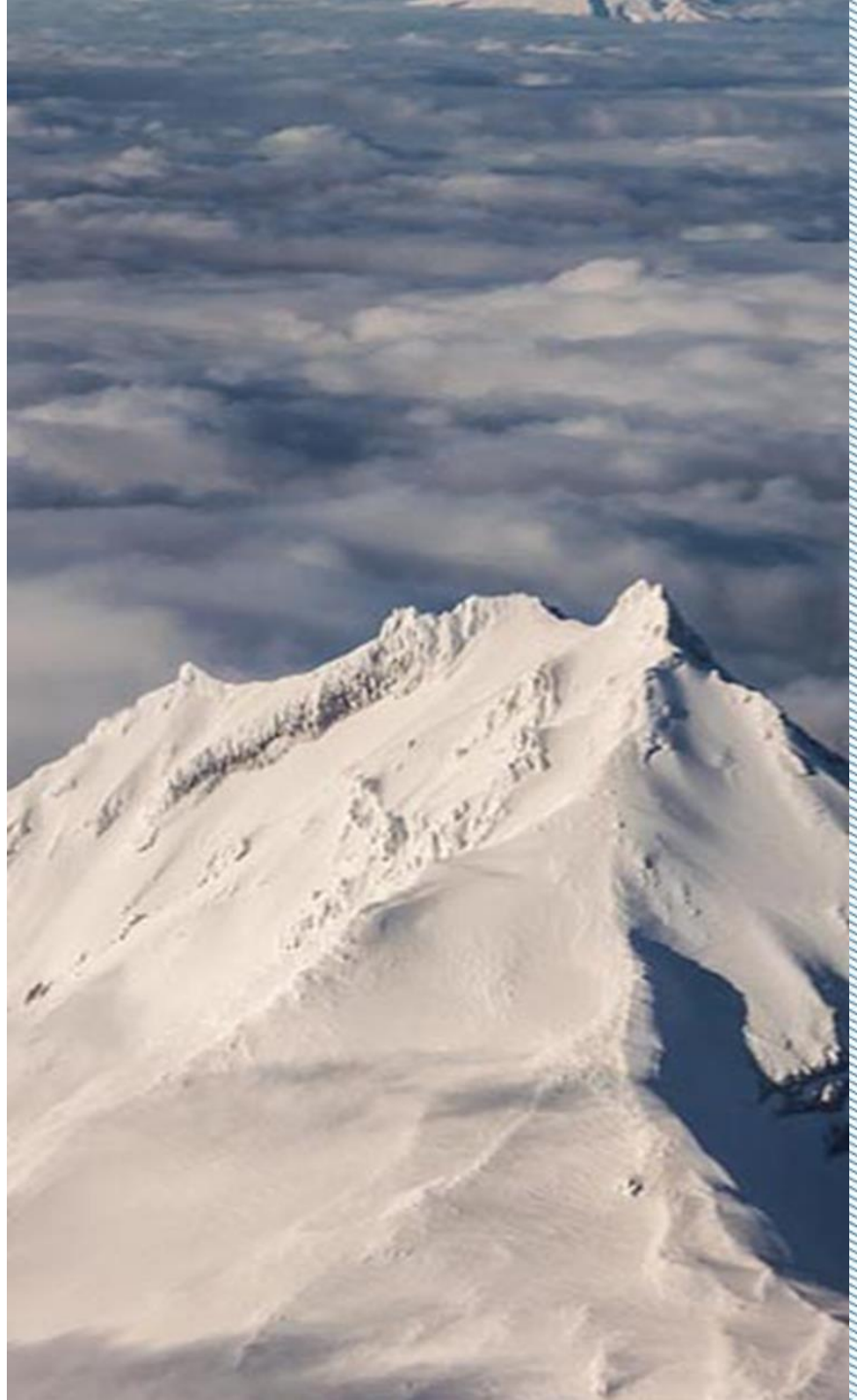
Applications of Cost-effectiveness

Where do our tests get applied?

1. Measure Development → (throughout the year)
2. Custom Project Screening → (throughout the year)
3. Efficiency Programs → (once a year, in April)
4. Energy Trust's Efficiency Portfolio → (once a year, in April)

Each application serves as a checkpoint to make sure our efficiency investments are sound.

Cost-effectiveness results represent one point in time. The analysis is reviewed periodically to reflect updated assumptions.



Two Tests, Two Perspectives

Total Resource Cost Test (TRC):

- Main test
- Intended to reflect the perspective of participant and utility
- Includes all benefits and all costs to utility system and to participants
- Program and administrative costs are not included for measure analysis

$$TRC = \frac{NPV\ ((Savings \times Avoided\ Cost) + Non\text{-}energy\ Benefits)}{NPV\ (Incremental\ Measure\ Cost)}$$

Utility Cost Test (UCT):

- Intended to reflect benefits to the utility system and costs to the program administrator
- Defines our maximum incentive, how much we could pay
- Program and administrative costs are not included for measure analysis

$$UCT = \frac{NPV\ (Savings \times Avoided\ Cost)}{NPV\ (Incentives\ Paid)}$$

Avoided Cost Components

Assign economic value to energy savings. Represent the supply side costs that are avoided by saving energy.

Components:

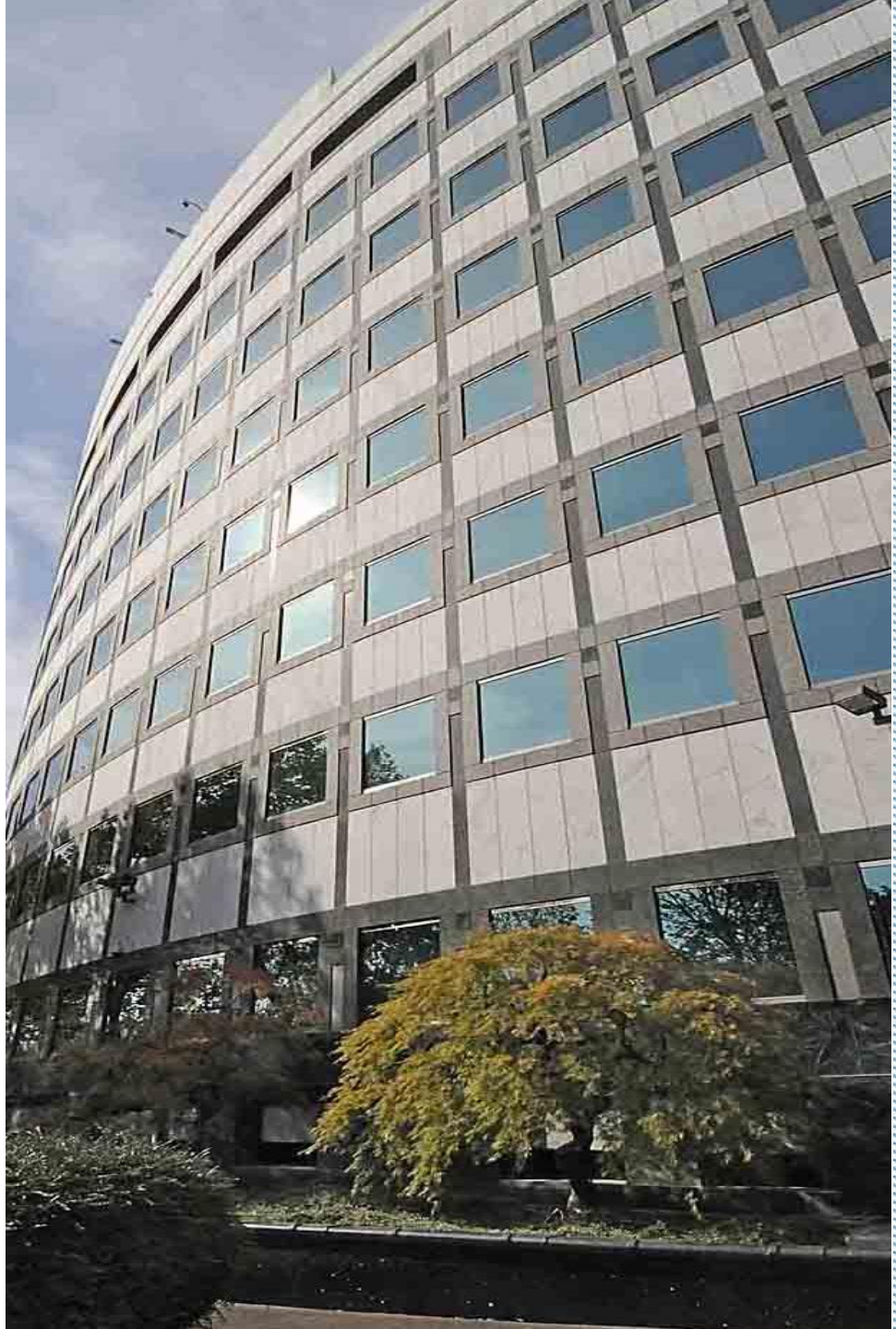
- 70-year forward market price of energy
- 10% NW conservation adder
- Avoided transmission & distribution (electric) or supply & distribution (gas) capacity investment
- Generation capacity deferral value (electric only)
- Risk premium (hedge) value
- CO2 emissions regulation value

Avoided Cost Assumptions

- Measure Life
  - Number of years to assign value
- Discount rate
- Load shape (or savings shape)
  - Determines peak impacts for deferring utility infrastructure
  - Shapes avoided market purchases

Avoided Cost Process

- Avoided cost inputs are received annually through OPUC docket UM 1893
- The process reviews our methodology and each utility provides their avoided cost inputs for examination
- The avoided cost output is a result of a coordinated process with OPUC staff and utilities
- Avoided costs from PGE, Pacific Power, NW Natural (in Oregon), Cascade Natural Gas and Avista are blended into electric and gas values based on % share of expenditures
- NW Natural (in Washington)
    - Avoided costs are taken from NW Natural's planning department and do not go through UM 1893



Measure Level Cost-effectiveness

	Total Resource Cost (TRC) Test	Utility Cost Test (UCT)
Purpose	To determine if we can offer a measure	To determine range of incentives for a measure
Measure passes if	$\frac{\text{Benefits}}{\text{Cost}} \geq 1$	$\frac{\text{Benefits}}{\text{Cost}} \geq 1$
Benefits	Avoiding the use of more expensive energy Quantified non-energy benefits	Avoiding the use of more expensive energy
Costs	Cost of measure (Incremental or full cost)	Incentives

Program/Portfolio Level Cost-effectiveness

- We publish combined TRC and UCT metrics each year in our annual report to the OPUC; fuel specific results are tracked annually to ensure compliance
- What's different between program level and measure level cost-effectiveness?
  - We include administrative and management costs (Program Cost):
    - Evaluation, market research and savings verification costs
    - Energy Trust staff and overhead costs
    - Program contractor costs
  - We include costs and benefits for measures under exception and pilots
  - We include all the applicable benefits and costs associated with projects in that year

$$TRC = \frac{\sum NPV\ ((Savings \times Avoided\ cost) + Non\text{-}energy\ benefits)}{\sum NPV\ (Incremental\ Measure\ cost + Program\ cost)}$$

$$UCT = \frac{\sum NPV\ (Savings \times Avoided\ cost)}{\sum NPV\ (Incentives\ Paid + Program\ cost)}$$

Cost-Effectiveness and Measure Development

- We evaluate cost-effectiveness:
  - Before: Should we do a new measure or program?
  - During: Have assumptions changed? Should we keep doing what we are doing?
  - After: How did we do? Was performance as expected?
- We report benefit-cost ratios to board, OPUC

Measure Development

- Screening for cost-effectiveness at measure-level per UM 551
- OPUC process for measure cost-effectiveness exceptions
- Program design and measure development