

Energy Efficiency Benefit-Cost Overview

Functionality within the Utility

Bobbi Wilhelm

Sr. Analyst, Competitive Intelligence

Date / Time

Topics

- Overview Benefit-Costs Tests Used by Puget Sound Energy
- Regulatory requirements for benefit-cost tests
- Benefits of itemizing beyond state requirements
- Concerns about all cost tests:
- Conclusions

Costs Tests Used by PSE

- Utility Cost Test
 - Program Level & Portfolio Level
- Total Resource Cost Test
 - Program Level & Portfolio Level
- RIM Test
 - Every two years, for the Biennial Report
 - Portfolio Level Only
- Participant Cost Test
 - Every two years, for the Biennial Report
 - Portfolio Level Only

Overview of Benefit-Cost Inclusions

	UCT	TRC	RIM	Partic.
Benefits				
Avoided Cost of Electricity/Gas	x	x	x	
Secondary Fuel Avoided Supply		x		
Primary Fuel Bill Savings				x
Secondary Fuel Bill Savings				x
Other Resoruce Savings		x		x
Environmental Benefits				
Other NEBs		x (water)		x (water)
10 % Credit (attempt to account for NEBS)		X		
Costs				
Program Admistration Costs	x	x	x	
Measure Costs				
Incentive	x	x	x	
Customer Cost		x		x
Utility Lost Revenue			x	
Other Fuel Costs (i.e. fuel switching)	x	x		x

Benefit-Cost Use For PSE

- TRC and UCT
 - Required on program level & Portfolio level
 - However, I conduct them on the measure level
 - Allows for optimization:
 - Most of our gas programs were not cost-effective on the program level when gas costs went down last year. However, because I itemized, it took me about 20 minutes to figure out a mix of measures that would allow for us to have a cost-effective gas portfolio.
- RIM and Participant Test:
 - Required only on portfolio level

Utility Cost Test

- Easiest test to conduct because it does not require knowledge of product costs, other fuels, secondary fuel savings, etc.
- Equivalent to what we use to select supply-side resources (sort of).
- Pitfalls of UCT as a stand alone test:
 - Potential to allow utilities to manipulate outcomes
 - With the lack of solid price elasticity research, setting incentives is always a SWAG. If something is not cost-effective the utility can simply change the incentive.
 - Potentially have a large freeridership rate if incentives become very small to make things pass the Utility Cost Test.
 - Requires considerable collaboration with load forecasting and constant monitoring of freeridership rates— and those can be political hot potatoes.

Utility Cost Manipulation

Cost Element	Utility Cost Test	Manipulated UTC
Incentive	\$619,238	\$559,238
Customer Cost	\$90	\$60,090
Utility Overhead	\$340,795	\$340,795
PV of Energy Benefits	\$847,493	\$847,493
PV Total Utility Cost	\$888,097	\$832,593
PV Total Resource Cost	\$888,180	\$888,180
UTC	0.95	1.018
TRC	1.05	1.05

Non-Energy Benefits and Freeridership

Showerhead Example:

Present Value Total Resource Costs: \$74,783

Present Value of Energy Benefits: \$680,783

Present Value of Non-Energy Benefits (NEBS): \$124,949

Clearly, this measure is cost-effective simply on water savings alone. Is this an electric or gas utility only program? Is this a water utility program? Is this a shared utility program?

Total Resource Cost Test

- Conducted in effort to look at the total cost of acquisition compared to the benefits.
 - Better than the UC in terms of protecting against manipulation of outcomes
 - Funky because it uses all costs, but only utility benefits
- More difficult because it requires knowledge of product costs, other resource savings values, quantifiable NEBs (such as water)
- WA has an additional 10% adder for benefits on the TRC
- We do not add a CO2 credit:
 - Not in our Current IRP because we don't believe it will be valued on the market (Not in WA)
 - May be in next IRP

Participant Cost Test

- Attempts to view energy efficiency as an investment for the participant
- Some utilities include only participant costs; other utilities include the utility incentives in the benefit side of the equation
- Requires forecasting of expected rates
- Some items can pass the TRC and fail the Participant Cost Test
 - Rates are designed on the average cost; avoided costs are designed on the marginal costs

New State Policy

- For residential programs
 - Gas Programs
 - Use T-Bill for Discount Rate; Use UC only
 - Electric Programs
 - Use WACC for Discount Rate; UCT and TRC
- For commercial programs
 - Use WACC for discount rate;
 - UCT only for gas programs
 - UCT and TRC for electric programs

Conclusions

- All tests have issues
- All cost tests have strengths (except the RIM)
- Important to understand the test being conducted and why it is being conducted
- Important to understand the shortcomings of each test
- Don't make decisions on one test alone