BENEFIT-COST TESTS FOR ENERGY EFFICIENCY: NATIONAL SURVEY RESULTS, AND SOME RELATED CONCERNS

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TOPICS

- Some initial national survey results regarding B/C tests for Energy Efficiency
- Problems with the currently dominant approach (TRC)

BACKGROUND FOR ACEEE NATIONAL SURVEY

THE CONCERN

- Each state is its own "kingdom" when it comes to regulating utilities and utility (ratepayer funded) energy efficiency programs
- As a result, evaluation requirements, methodologies and assumptions vary considerably from state to state
- This presents a significant challenge when trying to make comparisons across states in terms of energy efficiency program results….. and state "performance"

THE ACEEE STUDY

- As a first step in addressing this problem of inconsistency across states, ACEEE has just completed a national survey to identify and document energy efficiency program evaluation requirements and methods in each of the 50 states.
- Today we can look at some preliminary results relating to the topic of this panel: cost-effectiveness tests

CURRENT PRACTICE IN THE STATES REGARDING BENEFIT-COST TESTS

[preliminary results]

- 44 states have ratepayer funded energy efficiency programs
- 43 states indicated that they use some type of benefit-cost test

TESTS USED	PRIMARY TEST	[NEEP PRIMARY]
TRC 35 (81%)	30 (70%)	7 (70%)
UCT 28 (65%)	5 (12%)	2 (20%)
PCT 22 (51%)	0	
SCT 15 (35%)	6 (14%)	1 (10%)
RIM 21 (49%)	1 (2%)	

BENEFITS INCLUDED IN THE PRIMARY TEST

- Avoided costs: All
- Environmental: 18 (42%) [4 CO2; 5 other 'air; 9 general]
  [NEEP: 50%]
- Other 'societal: 6 (14%) [all also have 'environmental']
- **Customer non-energy: 2 (5%) [NEEP: 1]**
  - Reduced maintenance: 2 (5%)
  - Health: 0
  - Comfort: 0
  - Improved productivity: 0

[Only 1 out of 35 states using the TRC included a customer NEB as a quantified benefit.]

COSTS INCLUDED IN THE PRIMARY TEST

- Program costs: All
- **Customer costs: 35 (81%) (all of the TRC states)**
- Shareholder incentives: 12 (41% of states with shareholder incentives)

PROBLEM WITH THE TRC

The core problem:

As currently implemented, the TRC test is fundamentally imbalanced….

it ***includes all customer costs*** *for an energy efficiency project, but* ***ignores all of the customer 'non-energy' benefits*** *from the project.*

CURRENT STATE PRACTICE REGARDING CUSTOMER NON-ENERGY BENEFITS (NEB's)

- 35 out of 43 surveyed states with B/C tests use the TRC
- 34 of those 35 states do not consider any customer 'non-energy benefits' in calculating the TRC
- 1 TRC state has a NEB 'adder' (plus 1 state is examining the issue and may quantify NEBs)

THIS CURRENT PRACTICE WITH TRC IS;

- **Not conceptually logical** – customers invest their money in EE projects for a variety of benefits - - not solely to save energy. Why include all costs they incur but exclude many benefits in a B/C calculation?
- **Systematically biased against EE** – these extra 'customer' costs are not considered when selecting supply-side options (e.g., purchased power, distributed generation, customer-sited renewables, etc.)
- **Out-of-step with common practice in program design** and marketing (which often emphasizes NEBs)
- **Will result in 'screening out' programs** that would be cost-effective from a utility resource perspective

ARE THESE PROBLEMS WITH TRC IMPORTANT?

- Maybe not that important in the past
  - Simpler programs
  - Smaller EE budgets and savings goals
  - Lots of EE 'passed' TRC, so not an issue of concern
- Increasingly important today
  - Much more aggressive EE goals…will require "deeper" savings, bigger 'projects'
  - Program strategies that emphasize NEBs in persuading customers to participate

EXAMPLE: TRC AND HOME PERFORMANCE
Screening without NEBs (courtesy of Chris Neme)

Costs				
Measures				$7,500
Administration				$1,500
Total				$9,000
Benefits				
	Therms	kWh	kW	
Energy Savings	300	750	0.6	
Savings Life -Yrs	20	10	10	
Avoided Cost/Unit	$1.35	$0.14	$115	
Value	$ 4,645	$ 1,020	$ 682	$ 6,347
Net Benefits				**$ (2,653)**
Benefit-Cost Ratio				**0.71**

REMEDIATION OPTIONS

1. Adjust cost to “energy portion only”
2. Add NEBs to “benefits”
3. Switch tests – to the UCT/PACT (or societal)

Application of Fixes Home Performance Example

(courtesy C. Neme)

	Scenario		TRC Today	TRC Cost Adjusted	TRC w/NEBs	PACT
Costs						
Measure Costs		$7,500				
Rebate	33%	$2,500	$2,500	$2,500	$2,500	$2,500
Participant	67%	$5,000	$5,000	$5,000	$5,000	
Administration		$1,500	$1,500	$1,500	$1,500	$1,500
Customer Attribution of Costs						
Energy Reasons		50%				
Non-Energy Reasons		50%				
Cost Adjustment		$ (3,750)		-$3,750		
Total Costs			$9,000	$5,250	$9,000	$4,000
Benefits						
Energy - Avoided Costs		$ 6,000	$6,000	$6,000	$6,000	$6,000
Non-Energy		$ 6,000			$6,000	
Total Benefts			$6,000	$6,000	$12,000	$6,000
Net Benefits			-$3,000	$750	$3,000	$2,000
			FAIL	**PASS**	**PASS**	**PASS**

CONCLUSIONS

- Reliance upon TRC for cost-effectiveness screening is very widespread
- This is due more to the legacy of TRC and entrenched practice than it is to the merits of the methodology
- The TRC test (as commonly applied) has serious shortcomings that are likely to impede the full acquisition of cost-effective energy efficiency as a utility resource.
- Some combination of a Utility Cost Test and Societal Cost Test would be a preferred approach