



Synapse
Energy Economics, Inc.

The Resource Value Framework

Reforming Energy Efficiency Cost-Effectiveness Screening

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The National Efficiency Screening Project

ACEEE Summer Study – Afternoon Discussion Session

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The National Efficiency Screening Project (NESP)

- Mission:
 - To improve the way that utility customer-funded electricity and natural gas energy efficiency resources are screened for cost-effectiveness.
- Organizers:
 - Home Performance Coalition, with funding from the Energy Foundation, MacArthur Foundation, and several EE companies.
- Steering Committee:
 - Home Performance Coalition, Conservation Services Group, Synapse.
- Project Advisors:
 - Philippe Dunsky; Tom Eckman; Dian Grueneich; Sami Khawaja; Marty Kushler; Julie Michals; Peter Miller; Chris Neme; Jerrold Oppenheim; Sonny Popowski; Steve Schiller; Rodney Sobin; Carol White.

NESP Members to Date

National Home Performance Council / Home Performance Coalition; Alliance to Save Energy; American Council for an Energy Efficient Economy; Arkansas Advanced Energy Association; Arkansas Advanced Energy Association; Association for Energy Affordability; Bki; Building Performance Contractors Association; Building Performance Institute Clinton Foundation: Home Energy Affordability Program; Conservation Services Group; Democracy and Regulation; Efficiency First; Energy Federation Inc.; Environment America; Environment Northeast; Home Performance Guild of Oregon; Local Energy Alliance Program; MaGrann Associates; National Home Performance Council / Home Performance Coalition; National Housing Trust; Natural Resources Defense Council; Northeast Energy Efficiency Council; Performance Systems Development; Retrofit Software; Sealed; Sierra Club; Southeast Energy Efficiency Alliance; Southern Environmental Law Center; Truveon Corporation; Wisconsin Energy Center.

Why Are We Still Arguing Over This Issue?

- Cost-effectiveness issues have been hotly debated since utility-funded EE was first introduced.
- Even efficiency advocates – who share similar, or identical, goals – cannot agree on which test to use.
 - Utility Cost vs. Total Resource Cost vs. Societal Cost.
- Many states are currently revisiting their screening practices.
 - With no easy answers.
- Most states use the TRC, a few use the Utility, and a few use the Societal.
 - But every state uses very different assumptions.
 - Consequently, every state applies a different screening test.
- Why is this so difficult?
 - Because these debates are unduly constrained by the standard tests defined in the California Standard Practice Manual:
 - The Utility Cost test, the Total Resource Cost (TRC) test, and the Societal Cost test.

The California Standard Practice Manual

- The CA Standard Practice Manual is used or referred to in many states.
 - It is frequently used as if it is unquestioned, final word on cost-effectiveness.
- However, the CA Manual is woefully inadequate for today's needs.
- Energy policy goals are explicitly not addressed.
 - Despite a clear statement that policy goals are important (see p. 7.)
- Non-energy benefits are explicitly not addressed.
- The difference between the TRC and Societal tests is not well defined.
 - The Societal test is described as a variant of the TRC test.
- The RIM test should never be used for screening.
 - Other approaches should be used to assess rate impacts.
- Conclusion:
 - It is time to break free of the standard tests in the CA Manual.

Essential Elements of the RVF

1. Was developed with the support of a variety of efficiency experts, from different parts of the country, with different views.
 2. Builds off of the existing screening tests; but is not confined to any one of them.
 3. Allows flexibility for each state to determine an efficiency screening test that best meets its goals and interests.
 - But requires states to adhere to key principles.
 4. Clarifies the objective of efficiency screening: to identify resources that are in the public interest.
 5. The framework is “policy neutral.”
 - Each state should apply its own policies to the framework.
 - It is designed to be relevant nation-wide.
- It is still a work-in-progress.
 - See nhpci.org/caimpaigns.html for more information.

Key Principles of the RVF

- The Public Interest. The ultimate objective of efficiency screening is to determine whether a particular energy efficiency resource is in the public interest.
- Energy Policy Goals. Efficiency screening practices should account for the energy policy goals of each state, as articulated in legislation, commission orders, regulations, guidelines and other policy directives.
- Symmetry. Efficiency screening practices should ensure that tests are applied symmetrically, where both relevant costs and relevant benefits are included in the screening analysis.
- Hard-to-Quantify Benefits. Efficiency screening practices should not exclude relevant benefits on the grounds that they are difficult to quantify and monetize.
- Transparency. Efficiency program administrators should use a standard template to explicitly identify their state's energy policy goals and to document their assumptions and methodologies.
- Applicability. In general, the Resource Value Framework can be used by regulators in any state to determine if customer-funded energy efficiency resources are cost-effective.

These are slightly abridged – see document for full text.

The Importance of Addressing Energy Policy Goals

- Most, maybe all, states have already established energy policy goals that efficiency resources will affect. Examples include:
 - Reduce electricity and gas bills.
 - Assist low-income customers with high energy burdens.
 - Promote customer equity.
 - Reduce environmental impacts. Address climate change.
 - Promote local job growth and economic development.
 - Increase the reliability of electricity and gas systems.
 - Reduce the risks associated with electricity and gas systems.
 - Reduce the consumption of fossil fuels, or imported fuels.
- These goals are articulated in many ways:
 - Statutes; Regulations; Commission Orders; EE Guidelines; EE Standards; and others.
- Many states blindly apply the standard EE screening tests, without recognizing these policy goals. But they are critical in determining whether EE resources are in the public interest.
- These goals evolve over time.
 - Efficiency advocates can work to improve state energy policy goals.
 - Screening practices should account for the most recent policy goals.

Options to Account for Hard-to Quantify Benefits

- Monetization: estimating benefits in terms of dollar impacts, which can then be added to the other dollar costs and benefits in the analysis.
- Quantification: developing quantified values of benefits, even if those values are not put into monetary terms.
- Proxy adders: adjustments (either in terms of a percent of benefits, or in terms of \$/MWh or \$/therm) that are meant to approximate the value of the benefit as closely as possible.
- Alternative screening thresholds: developing screening thresholds that inherently account for the fact that some benefits are not accounted for.
 - For example, if BCR is $\Rightarrow 0.9$, EE is in the public interest.
- Regulatory judgment: regulators account for hard-to-quantify benefits without using any of the options above; by approving efficiency programs whose benefit-cost ratios are less than one, based upon the finding that the program helps achieve specific energy policy goals and is therefore in the public interest.

Challenges with the Standard Screening Tests - I

- The Societal Cost test is the most comprehensive test. It is often considered the best test by efficiency advocates.

However:

- It is difficult to implement in practice.
 - Many commissions view the societal perspective as too broad,
 - Some societal impacts may be outside a commission's authority.
 - Many consumer advocates see the societal perspective as too broad.
- The Utility Cost test offers the simplest, most direct indication of revenue requirements and average bills.
- However:
- It does not account for energy policy benefits.
 - It does not account for participant non-energy benefits.
 - Strict application of this test can lead to over-investment in EE, by splitting the incremental EE cost between the utility and the participant.

Challenges with the Standard Screening Tests - II

- The Total Resource Cost test is often described as measuring the impact on the utility and program participants.

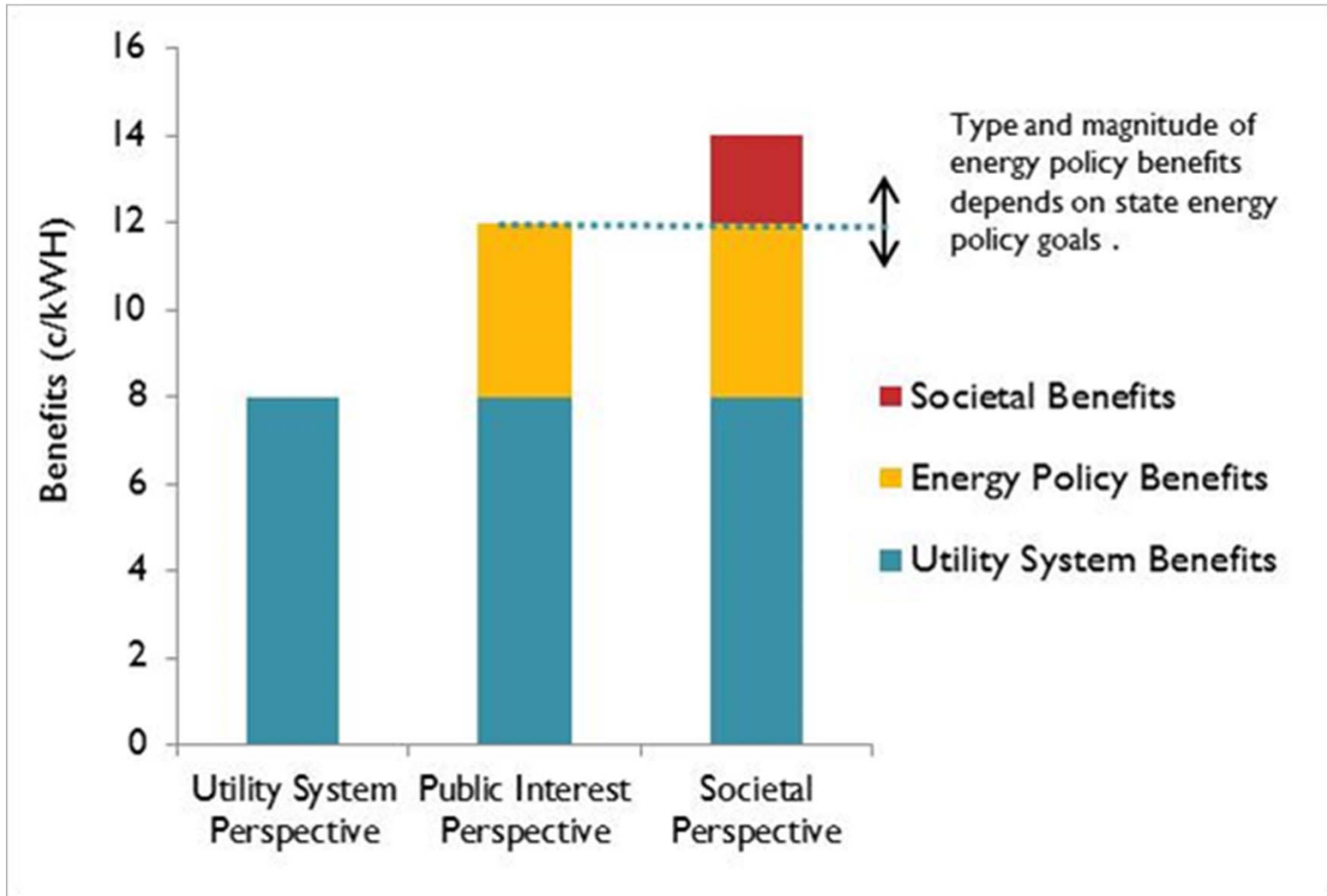
However:

- In practice, it does not capture participant non-energy benefits well.
 - Most states ignore or undervalue participant NEBs.
 - In theory, it does not capture participant energy benefits properly.
 - Participants benefit from bill reductions, i.e., avoided prices.
 - The TRC test uses avoided costs as the benefits.
 - It would be more accurate to say that the TRC test is a “partial societal cost test.”
 - It includes the total costs, but not the total benefits.
 - This is true even if participant NEBs are included, because societal benefits are excluded by design.
-
- Bottom line: All three of the tests are inadequate for screening EE, either in theory, in practice, or both.

The Public Interest Perspective

- Introducing the public interest perspective allows us to move beyond these three inadequate tests.
 - Allows us to expand upon the Utility Cost test, without necessarily applying the full Societal Cost test.
 - Allows us to include many (or all) of the elements of the Societal cost test, without going outside the bounds of a PSC's authority.
 - Allows us to make the policy decision as to whether the participant's cost (i.e., the total resource cost) should be accounted for.
- Regulators frequently make decisions based on what is in the public interest.
 - These decisions often require making tradeoffs, and accounting for difficult to monetize impacts.
 - These decisions are based on the relevant statutes, regulations, orders, and evidence before them.
 - Regulators have an obligation to consider this perspective.
- The Public Interest perspective is not the same as the Societal perspective.

Public Interest Perspective vs. the Societal Perspective



Resource Value Framework - Template			
Program Name:		Date:	
1. Key Assumptions, Parameters and Summary of Results			
Analysis Level	<input type="checkbox"/> Program		
	<input type="checkbox"/> Portfolio		
Measure Life		Discount Rate	
Projected Annual Savings		Projected Lifetime Utility Savings	
2. Monetized Utility Costs		Monetized Utility Benefits	
Program Administration		Avoided Energy Costs	
Incentives Paid to Participants		Avoided Capacity Costs	
Shareholder Incentive		Avoided T&D Costs	
Evaluation		Wholesale Market Price Suppression	
Other Utility Costs		Avoided Environmental Compliance Costs	
		Other Utility System Benefits	
NPV Total Utility Cost		NPV Total Utility Benefits	
3. Monetized Participant Costs		Monetized Participant Benefits	
Participant Contribution		Participants' Savings of Other Fuels	
Participant's Increased O&M Costs		Participant Non-Energy Benefits:	
Other Participant Costs		Participants' Water and Sewer Savings	
		Participants' Reduced O&M Costs	
		Participants' Health Impacts	
		Participant Employee Productivity	
		Participant Comfort	
		Additional Low-Income Participant Benefits	
		Other Participant Non-Energy Benefits	
NPV Total Participant Cost		NPV Total Participant Benefits	
4. Monetized Public Costs		Monetized Public Benefits	
Public Costs		Public Benefits of Low Income Programs	
		Reduced Environmental Impacts (if monetized)	
		Public Fuel and Water Savings	
		Reduced Public Health Care Costs	
		Other Public Benefits	
NPV Total Public Costs		NPV Total Public Benefits	
Total Monetized Costs and Benefits			
Total Costs		Total Benefits	
Benefit- Cost Ratio		Net Benefits	
5. Non-Monetized Public Costs and Benefits			
Non-Monetized Benefits		Comments	
Promotion of Customer Equity			
Reduced Risk			
Increased Reliability			
Reduced Environmental Impacts (if not monetized)			
Increased Jobs and Economic Development			
6. Determination:			
<input type="checkbox"/> Program is in the public interest		<input type="checkbox"/> Program is not in the Public Interest	

Example Template

- To promote transparency.
- This template is illustrative; states may choose different components to include, particularly in Sections 3, 4 &5.

Example Application: New York

- In April 2014, NY PSC opened a docket: Reforming the Energy Vision.
 - A key objective is to promote the development of EE, DR & DG.
- NY PSC explicitly outlined its energy policy goals:
 - Enhanced customer knowledge and tools.
 - Market animation and leverage of ratepayer contributions.
 - System-wide efficiency.
 - Fuel and resource diversity.
 - System reliability and resiliency.
 - Reduction of carbon emissions.
- NY has been using the TRC test to screen efficiency resources.
 - But the TRC test has been inadequate for EE (even without these new goals).
- Advanced Energy Economy hired Synapse in this proceeding to propose using the RVF to develop a new screening test for EE, DR & DG.
 - Will propose the New York Public Interest Test.

Next Steps for NESP

- Expand NESP membership.
- Expand activities at state proceedings.
 - We welcome suggestions for states where the RVF would be of interest.
- Prepare parallel reports on related issues.
 - Discount rates and risk.
 - Proper treatment of low-income EE programs.
 - Rate and bill impacts of EE.
 - Generic estimates of non-energy benefits.
 - Spillover and market transformation effects.
 - Recommended state energy policy goals.
- Develop a National Standard Practice Manual.
 - To replace the CA Standard Practice Manual.
 - To build upon the NESP recommendations and research to date.
 - Currently seeking funding.

Frequently Asked Questions / Concerns - I

- The RVF might preclude the use of the Societal Cost test.
 - The RVF does not preclude the use of the Societal Cost test.
 - If a state has policy goals to account for societal benefits, then the RVF could lead to a test that is comparable to or better than the Societal Cost test.
- The RVF might preclude the use of the TRC test.
 - The RVF does not preclude the consideration of total resource costs.
 - If a state articulates a preference for accounting for participant costs (i.e., total resource costs), and is willing to adopt reasonable estimates of relevant participant NEBs, then the RVF could lead to a test that is comparable to or better than the TRC test.
- The RVF might preclude the use of the Utility Cost test.
 - The RVF does not preclude the use of the Utility Cost test, as long as the test also accounts for the state's energy policy goals.
 - If a state has any energy policy goals, then the RVF should lead to a test that is better than the Utility Cost test.

Frequently Asked Questions / Concerns - II

- What about a state where the energy policies are not clearly articulated in legislation, regulations, or orders? How can the RVF be applied?
 - Regulators have the responsibility to interpret existing laws and regulations, prepare new regulations, issue orders, and make policy calls based upon the issues and the evidence before them.
 - Stakeholders should play a role in how the commission interprets what policy does exist.
- What about a state where the current energy policies are not supportive of energy efficiency? Will the RVF make screening worse?
 - Not necessarily. Stakeholders can always advocate for sound interpretation of existing energy policies.
 - Stakeholders can always advocate to change existing legislations, regulations, or policy determinations.

Frequently Asked Questions / Concerns - III

- Why does the RVF recommendations document not propose or recommend specific energy policy goals?
 - The RVF is intended to be “policy neutral,” so that it can be applied nation-wide, and so as to allow each state to apply its own policies.
 - NESP is not policy neutral.
 - The NESP advisors and members are not policy neutral either.
 - Any organization can support the RVF, but also support its own specific policy recommendations.
- What about when legislation requires a certain test (e.g., the TRC test).
 - Stakeholders and advocates can always assist with interpretation of what is in legislation.
 - For example, legislation or regulations may require that other policy goals be included as well.
 - Ensure that participant NEBs are included along with Participant costs.

Frequently Asked Questions / Concerns - IV

- Isn't it necessary to account for the total resource cost, to avoid over-investment in EE (as a result of splitting the incremental cost)?
 - Not necessarily. This is a policy call. Also, there are reasons why not including the total resource cost could be in the public interest.
 - The participants are almost always better off – check the Participant test.
 - If a program passes the UTC, then utility customers are also better off.
 - Nobody is worse off.
 - In theory, society is worse off, but then you should use a societal test.
 - Also, there is a much greater risk of under-investment than over-investment.
- Isn't it necessary to account for participant costs and benefits, in order to protect the interests of participants?
 - Not when screening EE. This is a program design issue.
 - Participant's interests are reflected in the Participant test, based on bill savings.
 - Participant's are always better off from the programs.

Contact Information

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Appendix

Various Slides that May be of Use

Key References

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- Synapse 2012b. Synapse Energy Economics, Inc., “Energy Efficiency Cost-Effectiveness Screening: How to Properly Account for Other Program Impacts and Environmental Compliance Costs,” prepared for Regulatory Assistance Project, November 2012, available at: <http://www.synapse-energy.com/Downloads/SynapseReport.2012-11.RAP.EE-Cost-Effectiveness-Screening.12-014.pdf>.

Applying the Resource Value Framework

1. Articulate the objective of energy efficiency screening: to identify resources that are in the public interest.
2. Explicitly require that efficiency program screening practices account for energy policy goals. Articulate which goals.
3. Explicitly require that efficiency program screening practices account for all the relevant benefits associated with the screening test used in that state. Articulate which benefits.
4. Explicitly require that efficiency screening practices should not exclude relevant benefits because they are difficult to quantify and monetize. Articulate which methodologies to use for which benefits.
5. Explicitly decide whether to account for the participant costs and benefits of energy efficiency resources.
6. Use a standard template to document assumptions, methodologies and results.

Energy Policy Goals in Legislation in Select States

Public Policy	CA	CO	DE	IL	ME	MA	MI	NV	NM	NY	NC	RI	VT	VA	WA
All Available Energy Efficiency	✓				✓	✓			✓			✓	✓		✓
Utility System Policies:															
System Reliability*	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓	
Affordability / Least Cost*	✓		✓	✓			✓		✓		✓	✓	✓	✓	
Resource Adequacy	✓		✓	✓			✓		✓	✓	✓	✓	✓	✓	
Resource Diversity*	✓	✓	✓	✓			✓	✓			✓	✓		✓	
Energy Security / Reduce Imported Fuels*	✓						✓		✓				✓		✓
Fair Utility Regulation				✓							✓				
Efficient Use of Resources / System Efficiency*			✓	✓				✓			✓	✓	✓	✓	
Economic Use of Resources*				✓				✓		✓	✓				
Consumer/Societal Policies:															
Public Interest (1)	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	
Reasonable Rates	✓	✓	✓	✓			✓		✓		✓				✓
Reduce the Burden on Low-Income Customers*									✓			✓		✓	
Equity				✓							✓	✓			
Economic Development*	✓	✓	✓					✓		✓		✓	✓	✓	✓
Meet Long-Term Needs		✓	✓	✓						✓	✓				
Encourage Private Investment							✓								
Environmental Policies:															
Environmental Quality (2)*	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓

* An asterisk indicates a policy goal that efficiency helps to achieve.

Source: Synapse. Preliminary, high-level summary to illustrate the types of policies in used in some states. Not meant to be exhaustive.

Three Primary Screening Tests

	Utility Test	TRC Test	Societal Cost Test
Energy Efficiency Program Benefits:			
Avoided Energy Costs	Yes	Yes	Yes
Avoided Capacity Costs	Yes	Yes	Yes
Avoided Transmission and Distribution Costs	Yes	Yes	Yes
Wholesale Market Price Suppression Effects	Yes	Yes	Yes
Avoided Cost of Environmental Compliance	Yes	Yes	Yes
Non-Energy Benefits (utility perspective)	Yes	Yes	Yes
Non-Energy Benefits (participant perspective)	---	Yes	Yes
Non-Energy Benefits (societal perspective)	---	---	Yes
Energy Efficiency Program Costs:			
Program Administrator Costs	Yes	Yes	Yes
EE Measure Cost: Program Financial Incentive	Yes	Yes	Yes
EE Measure Cost: Participant Contribution	---	Yes	Yes

Current Application of Screening Tests

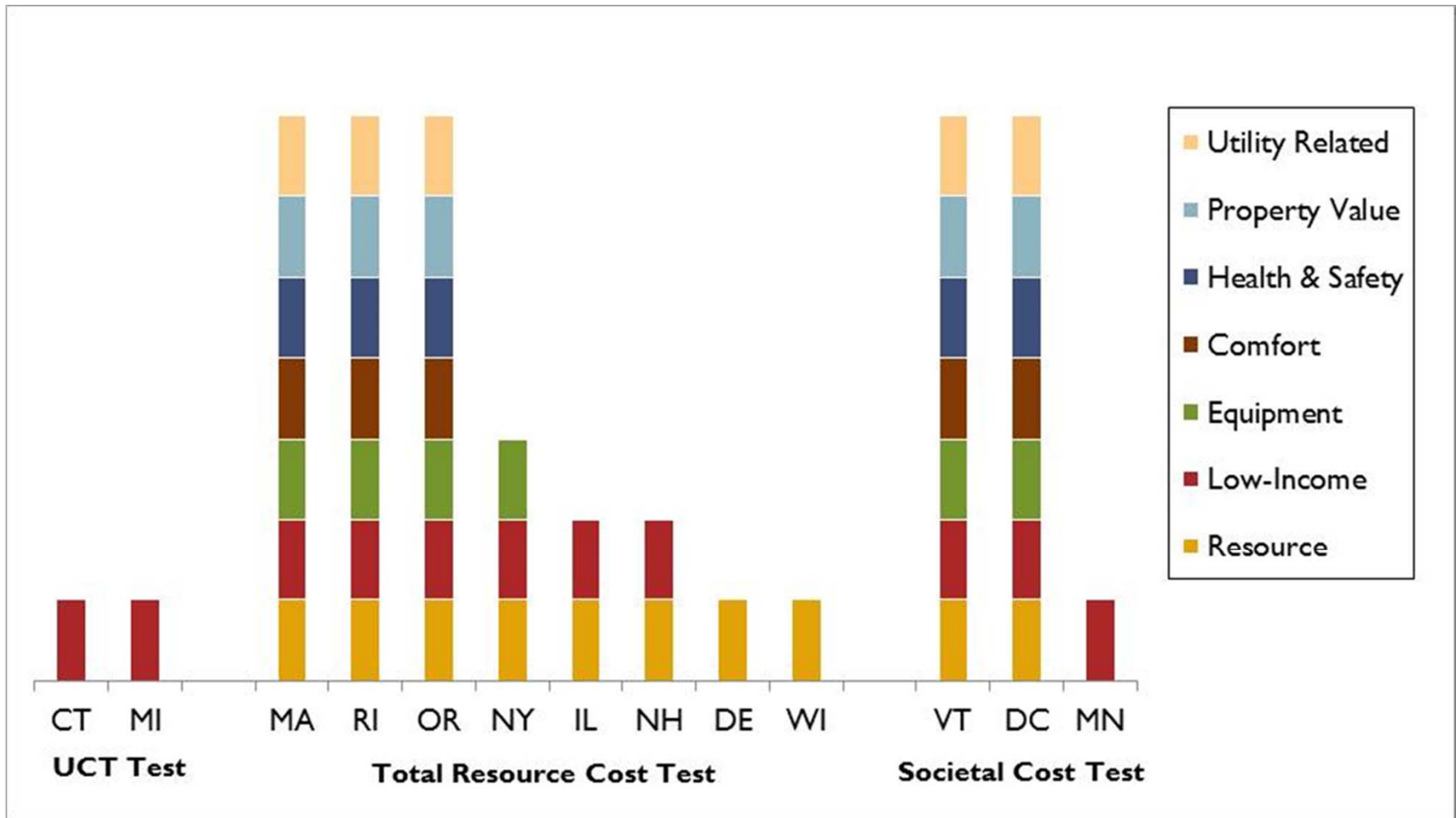
- The CA Standard Practice Manual and many states note that multiple tests should be applied when screening energy efficiency, so that multiple perspectives are taken into account.
 - However, in practice most states use one test as the primary criterion for screening.
- Most states use the TRC test as the primary test:
 - TRC test (roughly 71% of states)
 - Societal Cost test (roughly 15% of states)
 - Utility Cost test (roughly 12% of states)
 - Source: ACEEE 2012, based on state self-reporting
- But in many cases the tests are modified somehow.
 - Thus they vary considerably around the country.

Examples of Non-Energy Benefits

- Utility Perspective:
 - Reduced arrearages.
 - Reduced carrying costs on arrearages.
 - Reduced bad debt.
- Participant Perspective:
 - Improved safety.
 - improved health.
 - reduced O&M costs.
 - increased worker and student productivity.
 - increased comfort.
 - reduced water use.
 - improved aesthetics.
- Societal Perspective:
 - Environmental benefits.
 - Economic development and jobs.
 - Health care cost savings.

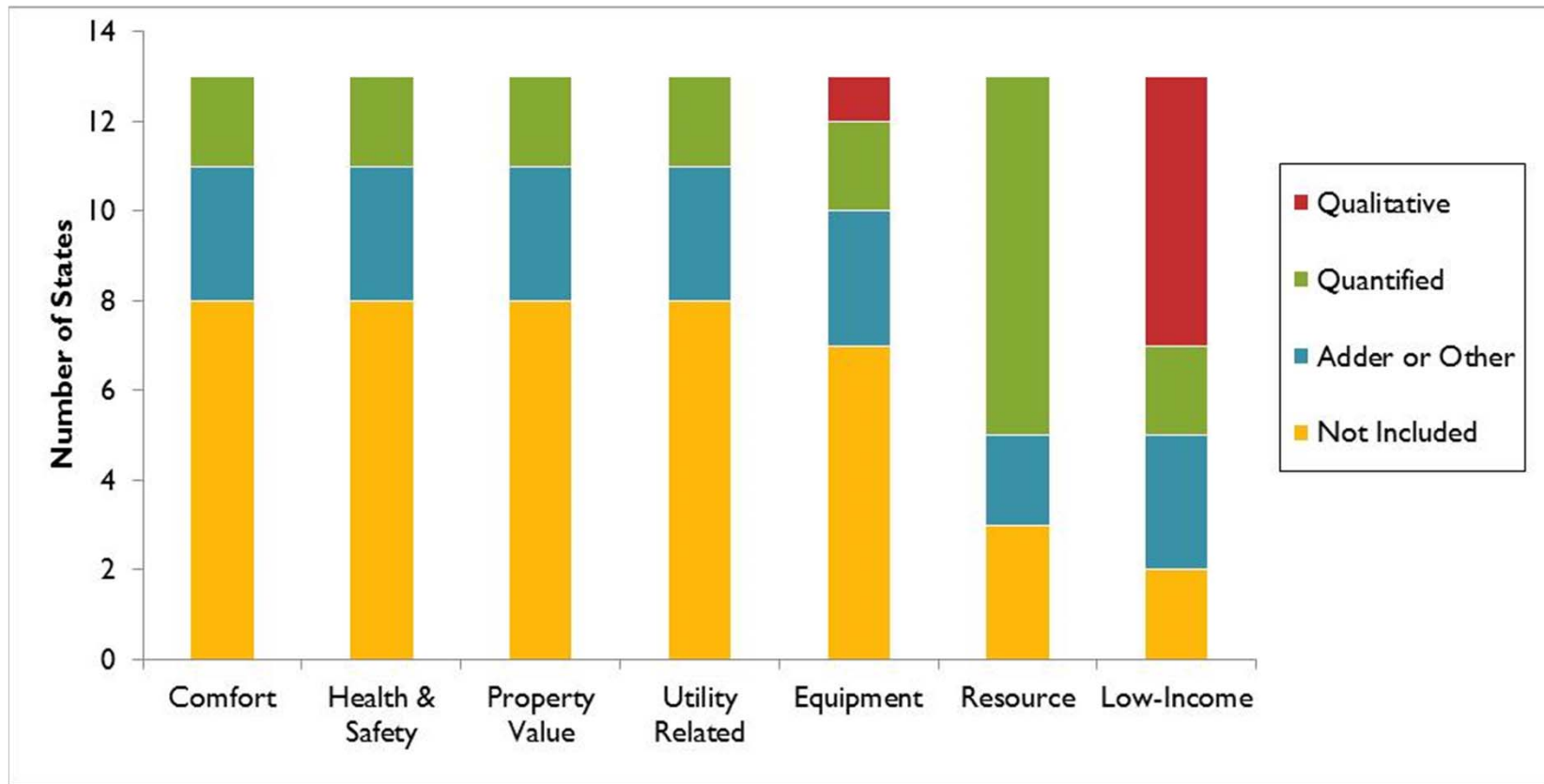
Participant NEB Types Included in Several States

Based on surveys of 13 Northeast, Mid-Atlantic and Midwest States



How are States Estimating Non-Energy Benefits?

Based on surveys of 13 Northeast, Mid-Atlantic and Midwest States



How are States Applying Participant NEBs?

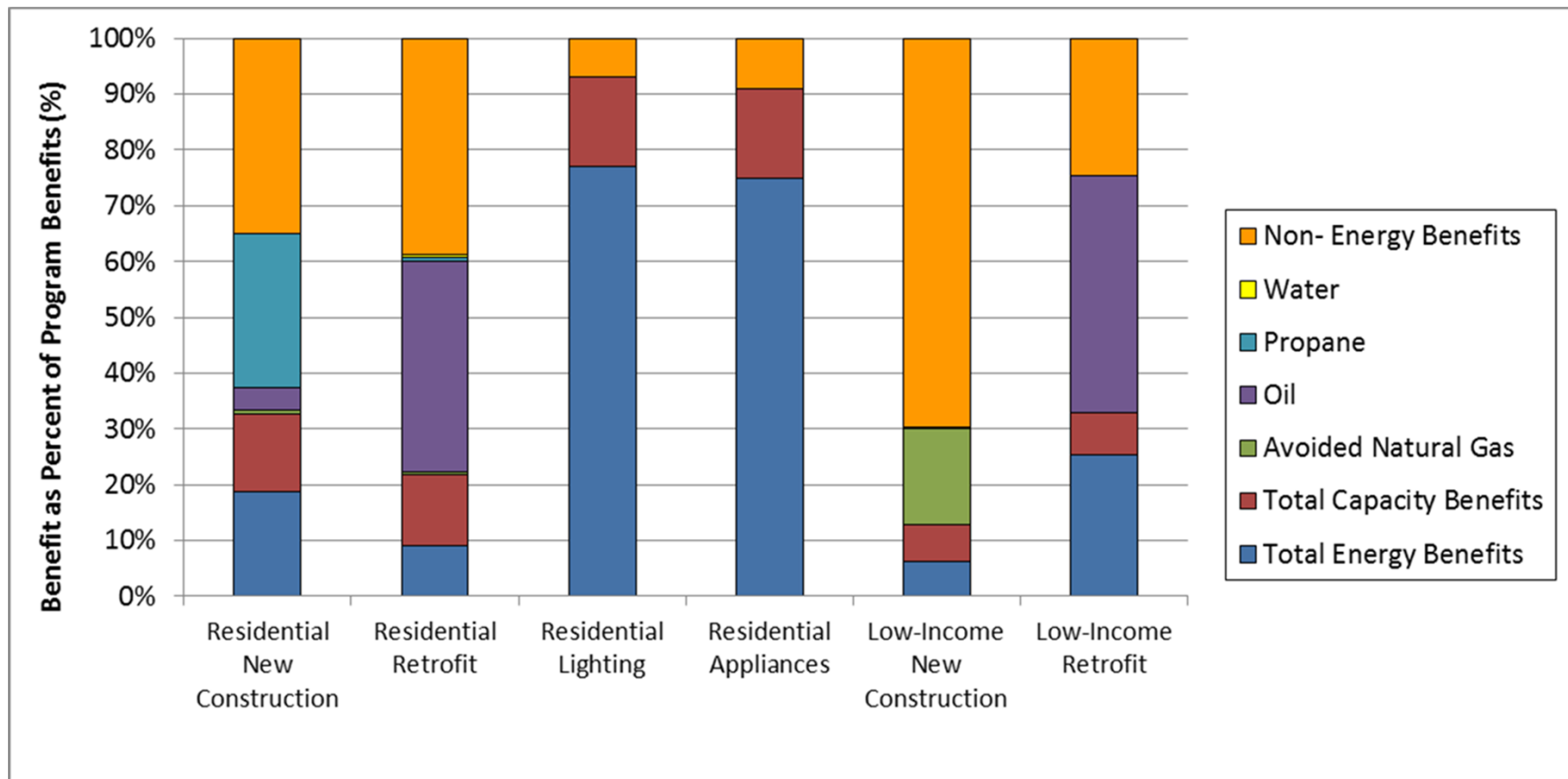
Treatment of participant NEBS in primary cost effectiveness tests in several Northeast and Mid-Atlantic states

Primary Test State	UCT	Total Resource Cost Test					Societal Cost Test	
	CT	MA	RI	NY	NH	DE	VT	DC
Low-Income	Qualitative	Quantified	Quantified	Qualitative	Qualitative		Add. 15% Adder	10% Adder
Equipment		Quantified	Quantified	Qualitative			O&M Quantified	O&M Quantified
Comfort		Quantified	Quantified				15% Adder	10% Adder
Health & Safety		Quantified	Quantified				15% Adder	10% Adder
Property Value		Quantified	Quantified				15% Adder	10% Adder
Utility Related		Quantified	Quantified				15% Adder	10% Adder

Quantified	Explicit \$/participant, \$/measure, \$/kWh savings value per non-energy benefit
Adder	A percentage of quantified benefits
Qualitative	Most often used for Low Income programs The state allows for non-cost effective programs

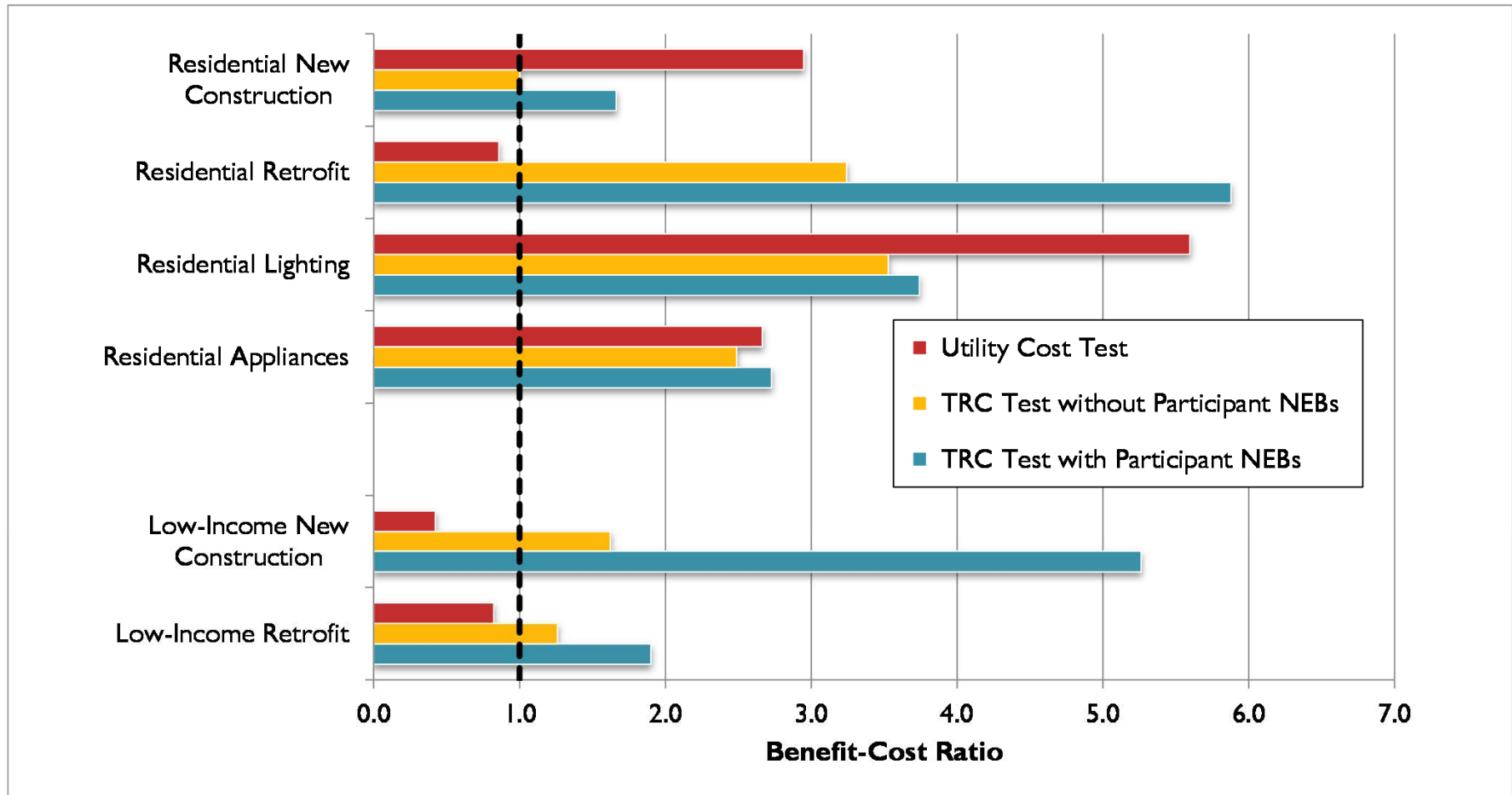
Impacts of NEB Assumptions – MA Utility Actual

Actual Results – MA Program Administrator



Implications of Participant NEBs and the TRC test

Actual Results – MA Program Administrator



MA NEBS: in terms of \$, \$/MWh, \$/MMBtu, % Adder

Sector / Program	Massachusetts								
	NEIs (\$)	Participants or Unit	NEI\$/Unit	Lifetime Electric Savings (MWh)	NEI\$/MWh	Lifetime Energy Savings (MMBtu)	NEI\$/MMBtu	Electric Benefits (\$)	% Adder
Residential:									
New Construction	2,973,977	4,082	729	94,405	32	1,025,047	3	20,707,708	14%
Home Energy Retrofit	230,401,701	45,507	5,063	439,534	524	7,272,785	32	63,081,897	365%
Products and Services	11,880,390	1,704,759	7	1,818,060	7	15,006,266	1	252,808,182	5%
Average Residential	249,267,785	2,655,894	94	2,803,962	89	26,579,446	9	394,000,079	63%
Low-Income:									
New Construction	2,091,096	663	3,154	6,253	334	104,751	20	1,499,141	139%
Single-Family	14,787,093	11,813	1,252	139,188	106	2,009,321	7	21,441,617	69%
Average Low-Income	30,143,459	35,793	842	315,878	95	3,497,519	9	43,220,724	70%
Commercial & Industrial:									
New Construction	27,917,270	22,982	1,215	2,787,145	10	21,604,730	1	425,275,873	7%
Small C&I Retrofit	34,184,135	5,551	6,158	1,187,307	29	8,848,203	4	177,389,086	19%
Large C&I Retrofit	91,820,037	2,184	42,042	4,907,610	19	33,887,618	3	686,087,421	13%
Average C&I	153,921,441	30,717	5,011	8,882,062	17	64,505,193	2	1,288,752,380	12%

Responses to Recent Screening Challenges

- Various responses to current screening challenges:
 - Develop new methods for measuring benefits and costs (e.g., conduct further research on non-energy benefits).
 - Proposals to reconsider the most appropriate screening test:
 - For example switch from the TRC test to the Utility test.
- However, these responses do not address the core causes:
 - Requirement to monetize every cost and benefit.
 - Some public policy goals are ignored.
 - Overly limited application of the tests.
- The RVF is designed to address these core causes.

Overview of the Five Tests

- Participant test: includes costs and benefits experienced by the program participants.
- Ratepayer Impact Measure (RIM) test: includes costs and benefits that affect utility rates.
- Utility Cost test: includes the costs and benefits that affect the utility system. (Sometimes called the Program Administrator Cost test.)
- Total Resource Cost (TRC) test: includes the costs and benefits experienced by all utility customers, including participants and non-participants.
- Societal Cost test: includes costs and benefits experienced by all members of society.

The Standard Cost-Effectiveness Tests

	Participant Test	RIM Test	Utility Test	TRC Test	Societal Test
Energy Efficiency Program Benefits:					
Customer Bill Savings	Yes	---	---	---	---
Avoided Energy Costs	---	Yes	Yes	Yes	Yes
Avoided Capacity Costs	---	Yes	Yes	Yes	Yes
Avoided Transmission and Distribution Costs	---	Yes	Yes	Yes	Yes
Wholesale Market Price Suppression Effects	---	Yes	Yes	Yes	Yes
Avoided Cost of Environmental Compliance	---	Yes	Yes	Yes	Yes
Non-Energy Benefits (utility perspective)	---	Yes	Yes	Yes	Yes
Non-Energy Benefits (participant perspective)	Yes	---	---	Yes	Yes
Non-Energy Benefits (societal perspective)	---	---	---	---	Yes
Energy Efficiency Program Costs:					
Program Administrator Costs	---	Yes	Yes	Yes	Yes
EE Measure Cost: Program Financial Incentive	---	Yes	Yes	Yes	Yes
EE Measure Cost: Participant Contribution	Yes	---	---	Yes	Yes
Lost Revenues Associated with Fixed Costs	---	Yes	---	---	---

The Rate Impact Measure Test

The RIM test should never have been invented.

It is inappropriate, incorrect, meaningless, and misleading.

- Inappropriate: includes sunk costs, which should not be used for choosing new resource investments.
- Incorrect: often overstates the amount of revenues actually lost.
- Meaningless: does not provide any meaningful information about the magnitude of rate impacts, or customer equity.
 - There are much more meaningful ways to assess equity issues.
- Misleading: results suggest that customers will be exposed to new costs.