

Undertaking #122: Mr. Dunsky to provide the recent report of the National Energy Efficiency Screening Project.

Response:

Please see attached the following report:

- *National Efficiency Screening Project, 2014. The Resource Value Framework: Reforming Energy Efficiency Cost-Effectiveness Screening”, March 28, 2014.*

The Resource Value Framework

Reforming Energy Efficiency Cost-Effectiveness Screening

The National Efficiency Screening Project

March 28, 2014



National Home
Performance Council

A Division of the Home Performance Coalition

The Resource Value Framework: Reforming Energy Efficiency Cost-Effectiveness Screening

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The National Efficiency Screening Project

The National Efficiency Screening Project (NESP) is a group of organizations and individuals that are working together to improve the way that utility customer-funded electricity and natural gas energy efficiency resources are screened for cost-effectiveness. NESP is coordinated by the National Home Performance Council, a division of the Home Performance Coalition. The purpose of this project is to improve efficiency screening practices throughout the United States, and to help inform decision makers regarding which efficiency resources are in the public interest and what level of investment is appropriate.

Project Members

The following organizations are members of the National Efficiency Screening Project, and support the principles and recommendations presented here.

National Home Performance Council / Home Performance Coalition
Alliance to Save Energy
American Council for an Energy Efficient Economy
Clinton Foundation: Home Energy Affordability Program
Conservation Services Group
Energy Federation Inc.
Northeast Energy Efficiency Council

NESP welcomes additional organizations to join this list of members. If your organization wishes to participate in this project, please sign up using the web site provided below.

Further Information

This document, and related materials from the NESP, are available at the following web site:
nhpci.org/caimpaings.html.

About this document

This document provides an overview of NESP's recommendations for using the Resource Value Framework (RVF) to improve cost-effectiveness testing. The rationale for and description of the RVF are intentionally succinct and compact in this report, despite the complexity of some of the issues. In the future, we may revise this report, as well as develop accompanying support documents or follow-up reports, to reflect stakeholder input and further analysis by the authors and project advisors.

Authors

This document was prepared by Tim Woolf, Synapse Energy Economics, Inc.; Chris Neme, Energy Futures Group; Pat Stanton, Conservation Services Group, Inc.; Robin LeBaron, National Home Performance Council; Kara Saul-Rinaldi, National Home Performance Council; and Steve Cowell, Conservation Services Group, Inc.

Project Advisors

Philippe Dunskey, Dunskey Energy Consulting

Tom Eckman, Northwest Power and Conservation Council

Sami Khawaja, Cadmus

Marty Kushler, American Council for an Energy Efficient Economy

Julie Michals, Northeast Energy Efficiency Partnerships

Peter Miller, Natural Resources Defense Council

Steve Schiller, Lawrence Berkeley National Laboratory

Rodney Sobin, Alliance to Save Energy

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1. MISSION STATEMENT

The National Efficiency Screening Project (NESP) is a group of organizations and individuals that are working together to improve the way that electricity and natural gas energy efficiency resources are screened for cost-effectiveness. The purpose of this initiative is to improve efficiency screening practices throughout the United States, and to help inform decision makers regarding which efficiency resources are in the public interest and what level of investment is appropriate.

Customer-funded energy efficiency programs have generated tens of billions of dollars of savings for households and businesses throughout the nation. In addition to reducing energy bills of program participants, efficiency programs create real benefits for all energy consumers, by deferring the need for new power plants, by avoiding transmission and distribution costs, by reducing risk on the utility system, and by helping to achieve a variety of important energy policy goals.

States have a tremendous opportunity to expand upon these benefits through on-going and future energy efficiency initiatives. However, to take full advantage of this opportunity many states need to revisit and update their cost effectiveness screening methods and practices.

The California Standard Practice Manual has been widely used for many years as a guide for how to apply energy efficiency screening tests. However, this manual is out of date and does not address several of the key challenges facing regulators today. Its treatment of many issues is also very general, leaving significant details to interpretation. As a result, what are commonly thought to be “standard” tests are in fact applied inconsistently across states, including in ways that do not accurately reflect the value of energy efficiency.¹

The NESP was formed with a view to encouraging more consistent application of energy efficiency screening tests. To this end, we will prepare an initial framework and, going forward, intend to design a new Standard Practice Manual to assist states in improving their efficiency screening.

2. THE RESOURCE VALUE FRAMEWORK

The NESP recommends that each state use the Resource Value Framework (RVF) for developing and implementing efficiency screening tests. The RVF includes the following elements.²

a. Both Flexibility and Guidance

The Resource Value Framework is not a recommendation for a single energy efficiency screening test. It is a framework of principles and recommendations to provide guidance for states to develop and

¹ For more information see National Home Performance Council, Best Practices in Energy Efficiency Program Screening: How to Ensure that the Value of Energy Efficiency is Properly Accounted For, July 2012.

² For more information see National Efficiency Screening Project, Recommendations for Reforming Energy Efficiency Cost-Effectiveness Screening in the United States, November 2013.

implement tests that are consistent with sound principles and best practices. It is intentionally designed to provide each state with the flexibility to ensure that the test they use meets their state's distinct needs and interests, as provided in relevant energy policies and regulatory orders.

b. Principles

In designing an energy efficiency screening test, each state should adhere to the following principles.

- The Public Interest. The ultimate objective of efficiency screening is to determine whether a particular energy efficiency program, or portfolio of programs, 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. These policy goals provide guidance with regard to which efficiency programs are in the public interest.
- Symmetry. Efficiency screening practices should ensure that tests are applied symmetrically, where both relevant costs and relevant benefits are included in the screening analysis. For example, a state that chooses to include participant costs in its screening test should also include participant benefits, including non-energy benefits, otherwise the test will be skewed against energy efficiency resources.
- Hard-to-Quantify Benefits. Efficiency screening practices should not exclude relevant benefits on the grounds that they are difficult to quantify and monetize. Several methods are available to approximate the magnitude of relevant benefits, as described below.
- 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 to all resources. In general, these principles should be applied to all types of electric and gas utility resources; both demand-side and supply-side resources. For the purpose of efficiency resource screening, supply-side resource costs and benefits should be treated comparably to demand-side resources, so that they are explicitly evaluated on equivalent terms.

c. Designing an Appropriate Screening Test with the Resource Value Framework

At the outset it is important to recognize that there are essentially two overall regulatory "perspectives" that may be appropriate to use when screening efficiency: a utility system perspective and a societal perspective. A utility system perspective includes all of the costs and benefits that are experienced by the utility system, i.e., the utility costs to implement the energy efficiency resources and the utility system benefits in terms of avoided costs. As soon as a state decides to be more expansive and to include program participant costs and benefits, it has shifted from the utility perspective to a societal perspective.

Note that when we refer to a "utility system perspective" and a "societal perspective," we are not referring to the standard Utility Cost test, or the standard Societal Cost test. One of the key concepts underlying the Resource Value Framework is that states are not limited to these two strictly-defined tests. We are referring to these two perspectives as two regulatory outlooks upon which a state's screening test can be based.

Furthermore, regardless of whether a state has chosen a utility perspective or a societal perspective, it should also account for its specific energy policy goals in designing its screening test. In other words, the utility perspective and the societal perspective provide two theoretical foundations upon which each state should design its screening test. Additional costs and benefits should be added to either of these foundations, based upon the energy policy goals of the state.

To summarize, each state that uses the Resource Value Framework to design (or modify) its efficiency screening test should take the following steps:

1. Decide which overall perspective is appropriate for the state to begin development of its screening test. We recommend starting with a utility perspective or a societal perspective.
2. Identify the state's energy policy goals that are relevant to, and might be affected by, energy efficiency resources. Such goals might include, for example: assist low-income customers with high energy burdens, increase the diversity of energy resources, improve system reliability, reduce energy price volatility, reduce the environmental impacts of energy, or promote economic development.
3. Identify a way of accounting for those energy policy goals in the state's screening test. Below we describe several methods to account for hard-to-quantify costs and benefits. Each state should identify which method will be used to account for each of its relevant energy goals.
4. Use the Resource Value Framework template to explicitly identify the assumptions and methodologies necessary to ensure that the test is balanced, transparent, and takes the appropriate energy policy goals into account. Below we provide some information and an example of what such a template should include.

We recognize that there may be value to applying more than one screening test when evaluating the cost-effectiveness of energy efficiency. In practice, however, it is often necessary to choose a *primary* test for screening energy efficiency, for those cases where an efficiency resource passes one test but not another. We recommend that states use the Resource Value Framework to design the primary test used to screen efficiency.

d. How the Standard Screening Tests Fit Within the Resource Value Framework

Here we briefly summarize how the Resource Value Framework compares with the standard efficiency screening tests described in the California Standard Practice Manual.³ (See Attachment 1 for an overview of the standard screening tests.) We also summarize some recommendations about how the standard screening tests should, or should not, be used when evaluating cost-effectiveness.

Note that while almost all states indicate that they are using the TRC test, the Utility Cost test, or the Societal test, in practice states use many different variations of these tests. In fact, very few states use the exact same screening test, because each modifies the "standard" tests in a variety of ways. The

³ We use the term "standard" screening tests to refer to the theoretical definition of the test, as distinct from the tests that are applied in practice, which vary considerably across states.

primary purpose of the Resource Value Framework is to provide a set of principles and concepts that allow states to continue this practice of developing their own screening test, but ensures that it is done in a way that is explicit, transparent, balanced, and methodologically consistent.

The Utility Cost Test⁴

The utility system costs and benefits should be included in any efficiency screening test, regardless of whether a state uses a utility system perspective or a societal perspective. Therefore, any efficiency screening test should include the components of the standard Utility Cost test. However, states that use the Resource Value Framework should recognize that utility system impacts are often not the only components to consider in a screening test. Every state should also ensure that its screening test properly accounts for its energy policy goals.

The Societal Cost Test

The Societal Cost test, as is sometimes applied today, typically includes utility system impacts, plus participant impacts, plus selected societal impacts (e.g., environmental externalities, economic development). States that use the Resource Value Framework to design a screening test, choose to apply a societal perspective, and have policy goals that address societal impacts (e.g., reduce environmental impacts of energy, promote job creation), will end up with a screening test that is similar to the Societal cost test as it is commonly applied today. It is important that if this perspective is chosen, *both* all participant costs *and* all participant benefits are included in the analysis.

The Total Resource Cost Test

We recommend caution in using the TRC test to screen energy efficiency resources. First, in practice, most states that currently use the TRC include participant costs, but do not include any relevant participant non-energy benefits, with the result being a test that is both biased against efficiency resources and that provides decision-makers with inaccurate information regarding "total resource" costs and benefits. States that decide to use the TRC test should ensure that participant costs and participant benefits are fully captured, using reasonable estimates of non-energy benefits. Second, a decision to fully include participant costs and benefits in the screening test essentially leads toward adoption of a societal perspective. By including participant costs of efficiency resources - costs which are outside of the scope of utility costs - the TRC test crosses a fundamental boundary and moves toward a societal scope. If the goal of the test is to include total costs and benefits beyond a utility cost framework, a societal perspective is more appropriate than the TRC test perspective.

The Participant Cost Test

We recommend that the standard Participant Cost test not be used for screening energy efficiency resources. While the impacts on program participants may be an important consideration, it is a secondary consideration relative to the impacts captured in the other tests. This test should be used for

⁴ This test is sometimes referred to as the Program Administrator Cost (PAC) test.

program design and customer information purposes, but not for portfolio or program cost-effectiveness screening.

The Ratepayer Impact Measure Test

We recommend that the standard Ratepayer Impact Measure test not be used for screening energy efficiency resources. Rate impacts are not a matter of cost-effectiveness; they concern transfers from non-participants to participants. Furthermore, the RIM test is not a good indicator of customer equity: It is overly narrow, ignores many of the benefits of energy efficiency programs, is inconsistent with the assessment of supply-side resources, does not necessarily reflect the actual impact on rates, and deprives customers of the opportunity to lower their bills through energy efficiency measures. Utilities and regulators that are concerned about the rate impacts of efficiency resources should address customer equity concerns separately from the cost-effectiveness screening, by comprehensively analyzing rate, bill and customer participation impacts, and by ensuring that all customer classes and segments have reasonable access to energy efficiency program opportunities.⁵

e. Treatment of Benefits

Efficiency screening practices should not exclude relevant benefits on the grounds that they are difficult to quantify.⁶ Applying rough or qualitative approximations of hard-to-quantify benefits is preferable to assuming that those benefits do not exist or have no value. We recommend that the following options be used to account for relevant benefits:

- Relevant benefits should be put into monetary terms to the greatest extent possible.
- In the absence of monetary terms, relevant benefits should be accounted for using proxies (either in terms of a percent of benefits or in terms of \$/MWh or \$/therm) to approximate the value of the non-monetized benefits.
- In the absence of monetary terms or proxies, relevant benefits should be accounted for using alternative screening benchmarks, i.e., allowing efficiency programs to be considered cost-effective at pre-determined benefit-cost ratios of less than one.
- In the absence of better alternatives, relevant benefits should be accounted for using regulatory judgment, i.e., allowing regulators and program administrators to account for hard-to-quantify benefits without using any of the options above.
- Those relevant benefits that are not put into monetary terms should nonetheless be quantified (e.g., estimated in terms of tons of emissions avoided, number of jobs produced, reduced sick days) to the extent possible. Quantification of relevant benefits can help inform the application of proxies, alternative benchmarks and regulatory judgment.

⁵ See State Energy Efficiency Action Network 2011. Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and Recommendations.

⁶ These recommendations and methodologies also apply to relevant hard-to-quantify costs.

f. Documentation and Transparency

We recommend that states use a Resource Value Framework template to provide a transparent, consistent structure for presenting efficiency costs and benefits. The template should clearly document the key screening assumptions (e.g., discount rate, measure life, savings levels), as well as the quantitative and qualitative cost and benefit findings. A sample Resource Value Framework template is provided below.

Section 1 of this template should include the key pertinent assumptions used in screening the efficiency resource. If the resource is screened at the program level, then there should be one template filled out for each program. If the resource is screened at the sector or portfolio level, then the template should be applied to the sector or portfolio.

Section 2 should include the monetized utility system costs and benefits. These costs and benefits should be the foundation for any efficiency screening test.

Section 3 should include monetized participant costs and participant benefits – for those states that have explicitly decided to include participant costs and benefits. If a state chooses not to include participant benefits (including reasonable estimates of participant non-energy benefits), then it cannot include participant costs either. In such a case, Section 3 should be left blank.

Section 4 should account for monetized public costs and benefits, as appropriate, in order to reflect the state’s articulated energy policies. These impacts can be added in to all of the other monetized costs and benefits. Finally, Section 5 should include all of the non-monetized public costs and benefits deemed necessary to reflect the state’s energy policies, so that these can be considered separately from the total monetized costs. These public costs and benefits should be accounted for in any efficiency screening test. Including these public impacts is necessary to align the efficiency screening test with the state’s energy policy goals. This alignment with a state’s energy policy goals is what distinguishes the Resource Value Framework from the standard efficiency screening tests.

It is important to reiterate that Section 2 presents a list of the utility system costs and benefits that should be included in any efficiency screening test. Sections 3, 4 and 5, however, present an illustrative list of costs and benefits that a state should take into account, depending upon its energy policy goals. States may choose to account for impacts beyond the illustrative impacts presented above. Also note that this template should be accompanied by references that provide full documentation for all the assumptions and results presented.⁷

⁷ These assumptions are often documented in a Technical Reference Manual.

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	
Other Utility Costs		Wholesale Market Price Suppression	
		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	
Promotion of Market Transformation	
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
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3. ADDITIONAL SCREENING METHODOLOGIES AND ASSUMPTIONS

Regardless of how each state ultimately designs a screening test, we recommend that each state apply the following best practices for screening energy efficiency:

- Avoided costs. States should require that efficiency screening analyses account for all relevant utility system costs avoided by efficiency resources, including: generation costs; transmission costs; distribution costs; environmental compliance costs; the price suppression effects in wholesale markets; and utility-perspective non-energy benefits.
- Additional utility system benefits. Energy efficiency screening practices should recognize the benefits that some programs offer regarding customer equity, risk reduction, DRIPE, and market transformation. These should be considered benefits that accrue to the utility system, and should therefore be included in any cost-effectiveness test.
- Discount rates. States should require that the discount rates used to screen energy efficiency be based on the overall regulatory perspective underlying the screening test, and the risk associated with the energy efficiency investment. For example, states that use the societal perspective should use a societal discount rate, such as a U.S. Treasury Note rate for a period of time equivalent to the efficiency portfolio lifetime.
- Risk benefits. States should account for risk mitigation benefits when screening energy efficiency. Risk benefits accrue to the utility system, and therefore should be included in any screening test. Risk benefits should be accounted for either in selecting a discount rate, in modeling avoided costs, or as an explicit benefit to be included in the cost-effectiveness analysis.
- Screening level. States should screen energy efficiency resources at the program, sector or portfolio level; not at the measure level.
- Study period. Efficiency screening analyses should use a study period that is long enough to include the full operating lives of all the measures included in the energy efficiency programs.

4. ADDITIONAL RESEARCH

We recommend that research be undertaken to address several efficiency screening issues that warrant additional analysis and discussion. For example, additional research on the following topics would help contribute to the improvement of energy efficiency screening in many states:

- An analysis of the appropriate choice of specific discount rates to use when screening energy efficiency resources to represent a utility or societal perspective. This would include an assessment of the cost of capital for funding energy efficiency, as well as the expected risk associated with the resource.
- An analysis providing generic estimates of proxy values for the most important participant non-energy benefits. The purpose of this would be to provide states with readily-available, well-documented, transparent and credible proxy values for non-energy benefits, making it more practical to account for these benefits without the need for sometimes costly research.
- An analysis of the appropriate way to account for rate and bill impacts when screening energy efficiency programs. This would include an assessment of how to quantitatively assess customer

equity issues associated with energy efficiency resources, without relying upon the flawed Rate Impact Measure test.

- An analysis of the appropriate way to account for free-riders, spillover, market transformation. The purpose of this would be to provide guidance for how states should use “gross” savings and “net” savings estimates in a consistent, sound manner over both the short-term and long-term planning horizon.
- An analysis of the true incremental cost of an efficiency measure. This would include recommendations for how to account for the incremental measure cost caused by improved efficiency, as distinguished from the incremental measure cost caused by non-efficiency features.
- An analysis of the proper application of measure lives and study periods.

Finally, we recommend that a new Energy Efficiency Standard Practice Manual be developed to build off of the concepts outlined in this document. The purpose of this new manual would be to update and expand upon the California Standard Practice Manual, and to provide comprehensive guidance for all states on how to improve their energy efficiency screening practices. We intend to develop such a manual and to include a wide range of stakeholders in that process.

Attachment 1 – The Standard Cost-Effectiveness Tests

Components of the Standard Cost-Effectiveness Tests

	Participant Cost Test	RIM Test	Utility Cost Test	TRC Test	Societal Cost Test
Energy Efficiency Program Benefits:					
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)	---	Yes	Yes	Yes	Yes
Non-Energy Benefits (participant)	Yes	---	---	Yes*	Yes*
Non-Energy Benefits (societal)	---	---	---	---	Yes
Customer Bill Savings	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 to the Utility	---	Yes	---	---	---

* In theory, participant non-energy benefits should be included in the TRC and the Societal tests. However, in practice they are typically underestimated or wholly neglected. As a result, most TRC assessments understate the efficiency benefits.

Implications of the Standard Cost-Effectiveness Tests

Test	Key Question Answered	Summary Approach	Implications
Societal Cost	Will total costs to society decrease?	Includes the costs and benefits experienced by all members of society.	Most comprehensive comparison.
Total Resource Cost	Will utility system costs plus program participants' costs decrease?	Includes the costs and benefits experienced by the utility system, plus costs and benefits to program participants.	By including impacts beyond the utility's costs and benefits, this test is essentially based on a societal perspective.
Utility Cost	Will utility system costs decrease?	Includes the costs and benefits experienced by the utility system.	Limited to impacts on utility revenue requirements. Indicates net impact on utility costs and utility bills.
Participant	Will program participants' costs decrease?	Includes the costs and benefits experienced by the customers who participate in the program.	Useful in program design to improve participation. Of limited use for cost-effectiveness screening.
Rate Impact Measure	Will utility rates decrease?	Includes the costs and benefits that will affect utility rates, including utility system costs and benefits as well as lost revenues.	Does not provide useful information regarding rate impacts or customer equity. Should not be used for cost-effectiveness screening.



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