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# The Resource Value Framework

*Reforming Energy Efficiency  
Cost-Effectiveness Screening*

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## The National Efficiency Screening Project

Updated August 16, 2014



A division of the Home Performance Coalition

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# 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, Inc., 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.

## **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.

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## **Project Members**

*As of October 22, 2014*

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

|   |   |
|---|---|
| Alliance to Save Energy                               | Local Energy Alliance Program   |
| American Council for an Energy Efficient Economy      | MaGrann Associates  |
| Arkansas Advanced Energy Association                  | National Association for State Community Services Programs                            |
| Association for Energy Affordability, Inc.            | National Center for Healthy Housing   |
| BKi   | National Grid   |
| Building Performance Contractors Association          | National Home Performance Council, Inc., a division of the Home Performance Coalition |
| Building Performance Institute, Inc.                  | National Housing Trust  |
| Clinton Foundation: Home Energy Affordability Program | Natural Resources Defense Council   |
| Conservation Connection Consulting                    | Northeast Energy Efficiency Council   |
| Conservation Services Group                           | PECI  |
| Consumers Union                                       | Performance Systems Development   |
| Democracy and Regulation                              | Retrofit Software   |
| Earth Advantage                                       | Sealed  |
| Efficiency First                                      | Sierra Club   |
| Efficiency Vermont                                    | Southeast Energy Efficiency Alliance  |
| Elevate Energy  | Southern Environmental Law Center   |
| Energy Federation Incorporated                        | Southwest Energy Efficiency Project   |
| Environment America                                   | Truveon Corporation   |
| Environment Northeast                                 | Union of Concerned Scientists   |
| Habitat for Humanity                                  | Wisconsin Energy Center   |
| Home Performance Guild of Oregon                      |   |

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, is available at the following website:  
<http://www.nhpc.org/campaigns.html>.

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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, reducing marginal energy costs, avoiding transmission and distribution costs, reducing risk on the utility system, and helping to achieve a variety of important energy policy goals.

States have a tremendous opportunity to expand upon these benefits through ongoing 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.<sup>1</sup>

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.<sup>2</sup>

## a. Both Flexibility and Guidance

One of the key concepts underlying the Resource Value Framework is that states should not be limited to the traditional screening tests presented in the California Standard Practice Manual (i.e., the Utility Cost,

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<sup>1</sup> 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.

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

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Total Resource Cost, Societal Cost, Participant Cost and Rate Impact Measure tests).<sup>3</sup> There are other ways of defining screening tests that are consistent with the principles outlined below and more in line with a state's energy policy goals.<sup>4</sup>

Further, 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 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 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. 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 low-income and other participant 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.** 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. The RVF may also be applicable for evaluating the costs and benefits of other demand-side and supply-side resources, although application in this context has not yet been fully examined.

## **c. The Public Interest Perspective**

Efficiency screening tests are often described as representing a particular “perspective.” For example, the Utility Cost test is meant to represent the perspective of the utility system and the Societal Cost test is meant to represent the perspective of society as a whole.

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<sup>3</sup> Currently few, if any, states apply these tests as defined in the California Standard Practice Manual, because each state modifies the “standard” tests in a variety of ways.

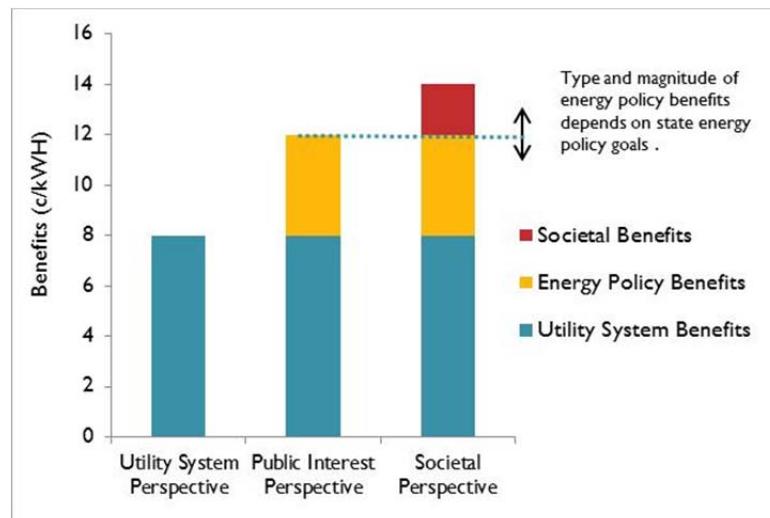
<sup>4</sup> Throughout this document we use the term energy policy goals to refer to those policy goals related to the regulated utilities in the state.

One of the challenges in designing an efficiency screening test is that these two perspectives do not fully address the perspective of utility regulators. The utility system perspective is sometimes considered to be too narrow because it does not account for some key energy policy goals, e.g., promoting customer equity, assisting low-income customers, or promoting economic development. The societal perspective is sometimes considered to be too broad because it could, theoretically, include some costs and benefits that are outside the scope of utility regulator's authority.

The utility regulator's primary responsibility is to serve and protect the public interest through oversight of the utility system.<sup>5</sup> In practice, utility regulators frequently make determinations as to whether utility investments or actions are in the public interest. Such determinations typically require weighing many different factors and considerations, some of which require tradeoffs (e.g., cost versus reliability). These public interest determinations require utility regulators to consider those factors that are within the bounds of their authority as economic regulators. This same approach can, and should, be applied to screening energy efficiency resources.

We recommend that the primary efficiency screening test used by each state reflect a public interest perspective. In other words, the test should account for all the costs and benefits that indicate whether an efficiency resource is in the public interest. The determination of whether an energy efficiency resource is in the public interest should be based on the energy policy goals of each state.

**Utility, Public Interest, and Societal Perspectives**



It is important to note that the public interest perspective is not the same as the societal perspective. Unlike the societal perspective, the public interest perspective is explicitly designed to include only those impacts that are determined to be within the bounds of utility regulators' scope and authority. Some

<sup>5</sup> The statutes that create public utility commissions and the commission mission statements often explicitly identify safeguarding the public interest as the commission's primary role. For example, The Texas Public Utility Regulatory Act states: "It is the purpose of this title to grant the Public Utility Commission of Texas authority to make and enforce rules necessary to protect customers of telecommunications and electric services consistent with the public interest" (Sec. 11.002). The California Public Utility Commission's mission states: "The CPUC serves the public interest by protecting consumers and ensuring the provision of safe, reliable utility service and infrastructure at reasonable rates, with a commitment to environmental enhancement and a healthy California economy."

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societal costs and benefits might fall outside those bounds. This is illustrated in the figure above. The energy policy benefits that are not typically included in the Utility System perspective but could be included in the public interest perspective include, for example: promote customer equity, reduce risk, improve system reliability, reduce energy price volatility, reduce the environmental impacts of energy, or promote economic development.

#### **d. Designing an Appropriate Screening Test with the Resource Value Framework**

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

1. Explicitly acknowledge that the ultimate objective of efficiency screening is to determine whether a particular energy efficiency resource is in the public interest, and that determinations of the public interest should include consideration of state energy policy goals.
2. Identify the state's energy policy goals that are relevant to, and might be affected by, energy efficiency resources, for example: ensure fair treatment of low-income programs and customers, promote customer equity, reduce risk, 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 resources.

#### **e. 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.<sup>6</sup> (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 primary purpose of the Resource Value Framework is to provide a set of principles and concepts that allow states

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<sup>6</sup> 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.

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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 Test<sup>7</sup>

The utility system costs and benefits are fundamental drivers for implementing efficiency resources, and should be included in any efficiency screening test.<sup>8</sup> Therefore, all the components of the standard Utility Cost test should be included in any efficiency screening test. However, states must recognize that the standard Utility Cost test by itself cannot properly reflect several important energy policy goals, for example the equitable treatment of low-income efficiency programs.<sup>9</sup> Therefore, states that use the Utility Cost test should supplement it by applying the principles outlined above, in order to ensure that the test properly accounts for all of the state's energy policy goals.

### The Societal Cost Test

The Societal Cost test, as is sometimes applied today, typically includes utility system impacts, participant impacts, and selected societal impacts (e.g., environmental externalities, economic development). It is important that if this approach is chosen, all societal costs *and* all societal benefits, including all participant costs and benefits, are included in the analysis. States that use the Resource Value Framework to design a screening test and that 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.

### The Total Resource Cost Test

There are serious concerns about how the TRC test is currently used in most states to screen energy efficiency resources. In practice, states that use the TRC test include participant costs, but typically do not include any or all of the 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. We recommend against using the TRC test, unless states apply the principles outlined above and ensure symmetry by fully capturing both participant costs and participant benefits, using reasonable estimates of non-energy benefits. Moreover, a decision to fully include participant impacts in the screening test essentially leads toward adoption of a public interest perspective. By including participant impacts, the TRC test crosses a fundamental boundary by including impacts that are outside the scope of the utility perspective. If the goal of the test is to include impacts outside the scope of the utility perspective, then a public interest perspective is more appropriate than the TRC test perspective. Jurisdictions that use a "modified" TRC test as their benefit/cost test frequently use modifications designed to account for public interest issues.

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<sup>7</sup> This test is sometimes referred to as the Program Administrator Cost (PAC) test.

<sup>8</sup> The one exception is the Participant test, which is focused exclusively on participant costs and benefits.

<sup>9</sup> Well-designed low-income programs often require that the utilities or other third parties pay all of the costs of efficiency measures, so that program participants do not have to make a contribution. Other types of efficiency programs, by contrast, often require a participant contribution and thus require a much smaller utility contribution. Consequently, a strict application of the Utility Cost test will structurally disadvantage low-income programs, relative to other programs, by including the total measure costs.

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*Regardless of whether a state currently uses, or starts modifying its screening test from, the Utility Cost test, the TRC test, or the Societal Cost test, it should make sure that the test accounts for the state's energy policy goals.*

#### 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, they are a secondary consideration relative to the impacts captured in the other tests. This test should be used for 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 (RIM) test not be used for screening energy efficiency resources. The RIM test is not a test of the cost-effectiveness of a new resource; instead it focuses on the re-allocation of already sunk utility system costs. The rate impacts from efficiency resources are essentially a matter of customer equity, but 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 short- and long-term rate, bill and customer participation impacts, and by ensuring that all customer classes and segments contributing to energy efficiency funding have reasonable access to energy efficiency program opportunities.<sup>10</sup>

### **f. Treatment of Benefits**

Efficiency screening practices should not exclude relevant benefits on the grounds that they are difficult to quantify.<sup>11</sup> Applying rough or qualitative approximations of hard-to-quantify benefits and costs 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 estimates (or 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 estimates, relevant benefits should be accounted for using alternative screening benchmarks, i.e., allowing efficiency programs to be considered in the public interest at pre-determined benefit-cost ratios of less than one.

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<sup>10</sup> See State Energy Efficiency Action Network 2011. Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and Recommendations.

<sup>11</sup> These recommendations and methodologies also apply to relevant hard-to-quantify costs.

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- 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, net number of jobs produced, reduced sick days) to the extent possible. Quantification of relevant benefits can help inform the application of other estimates, alternative benchmarks and regulatory judgment.

## **g. 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 completed for 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 and benefits. 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.<sup>12</sup>

| <b>Resource Value Framework - Template</b>                   |  |  |                                       |
|--|--|--|---------------------------------------|
| Program Name:  |  | Date:  |                                       |
| <b>1. Key Assumptions, Parameters and Summary of Results</b> |  |  |                                       |
| Analysis Level   | <input type="checkbox"/> Program<br><input type="checkbox"/> Portfolio |  |                                       |
| Measure Life   |  | Discount Rate                                |                                       |
| Projected Annual Savings                                     |  | Projected Lifetime Utility Savings           |                                       |
| <b>2. Monetized Utility Costs<sup>13</sup></b>               |  | <b>Monetized Utility Benefits</b>            |                                       |
| 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                   |                                       |
| <b>3. Monetized Participant Costs</b>                        |  |  | <b>Monetized Participant Benefits</b> |
| 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               |                                       |
| <b>4. Monetized Public Costs</b>                             |  |  | <b>Monetized Public Benefits</b>      |
| 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                    |                                       |
| <b>Total Monetized Costs and Benefits</b>                    |  |  |                                       |
| <b>Total Costs</b>   |  | <b>Total Benefits</b>                        |                                       |
| <b>Benefit- Cost Ratio</b>                                   |  | <b>Net Benefits</b>                          |                                       |
| <b>5. Non-Monetized Public Costs and Benefits</b>            |  |  |                                       |
| Non-Monetized Benefits                                       | Comments   |  |                                       |
| Promotion of Customer Equity                                 |  |  |                                       |
| Reduced Risk   |  |  |                                       |
| Increased Reliability  |  |  |                                       |
| Reduced Environmental Impacts (if not monetized)             |  |  |                                       |
| Increased Jobs and Economic Development                      |  |  |                                       |
| <b>6. Determination:</b>                                     |  |  |                                       |
| <input type="checkbox"/> Program is in the public interest   | <input type="checkbox"/> Program is not in the Public Interest         |  |                                       |

<sup>12</sup> These assumptions are often documented in a Technical Reference Manual.

<sup>13</sup> If a non-utility entity is responsible for providing energy efficiency services, then that Program Administrator's costs rather than "utility" costs should be included.

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### 3. ADDITIONAL SCREENING CONSIDERATIONS

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, 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 savings lifetime.
- Risk benefits. States should account for risk mitigation benefits when screening energy efficiency. For example, energy efficiency reduces the need for additional fossil-fired generation, thereby lowering the utility's exposure to both fuel price volatility and carbon control compliance cost risk.<sup>14</sup> Risk mitigation benefits accrue to the utility system, and therefore should be included in any screening test. Risk mitigation 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 resource 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

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<sup>14</sup> See Appendix L - Portfolio Model of the 5th Northwest Power and Conservation Plan, pp. 129-136 for an extended discussion of the risk mitigation benefits of energy efficiency. Available at: [http://www.nwcouncil.org/media/4401326/Appendix\\_L\\_Portfolio\\_Model.pdf](http://www.nwcouncil.org/media/4401326/Appendix_L_Portfolio_Model.pdf).

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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 values for the most important participant and societal non-energy benefits. The purpose of this would be to provide states with readily available, well-documented, transparent and credible estimated 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 and 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, thus ensuring symmetry in the analysis.
- 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.
- Guidance on how to determine the baseline that should be accounted for when screening the value of incremental benefits from an energy efficiency investment.
- 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 |
|--|-----------------------|----------|-------------------|----------|--------------------|
| <b>Energy Efficiency Program Benefits:</b>   |                       |          |                   |          |                    |
| 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                   | ---      | ---               | ---      | ---                |
| <b>Energy Efficiency Program Costs:</b>      |                       |          |                   |          |                    |
| 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 underestimate 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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