

National Standard Practice Manual Executive Summary

National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources

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Executive Summary

Assessing the cost-effectiveness of energy resources such as efficiency involves comparing the costs and benefits of such resources with other resources that meet energy and other applicable objectives. Historically, energy efficiency (EE) has been assessed through integrated resource planning processes or via standard tests defined in the California Standard Practice Manual (CaSPM). These assessments entail comparing the cost of EE resources to forecasts of avoided supply-side resources and other relevant costs and benefits. This National Standard Practice Manual (NSPM) builds and expands upon the decades old CaSPM, providing current experience and best practices with the following additions:

- Guidance on how to develop a jurisdiction’s primary cost-effectiveness test that meets the applicable policy goals of the jurisdiction.¹ The guidance also addresses the difficulties jurisdictions have had in consistently implementing concepts presented in the CaSPM.
- Information on the inputs and considerations associated with selecting the appropriate costs and benefits to include in a cost-effectiveness test and accounting for applicable hard-to-monetize costs and benefits, with guidance on a wide range of fundamental aspects of cost-effectiveness analyses.

The NSPM presents:

- **Universal Principles** for developing and applying cost-effectiveness assessments.
- **A step-by-step Resource Value Framework** for jurisdictions to use to develop their primary cost-effectiveness test: **the Resource Value Test (RVT)**, which addresses all of the traditional components of cost-effectiveness testing – but with explicit consideration of the specific policy framework for the particular jurisdiction.
- **Neutral, objective guidance and foundational information** for selecting and quantifying the components of a jurisdiction’s test(s), and for applying and documenting the policies and data that were used to define the test, building on lessons learned over the past 20 years and responding to current needs.

The NSPM is relevant to all types of electric and gas utilities, including: investor-owned utilities, publicly owned utilities, federal power authorities, and cooperatives, as well as to any jurisdiction where EE resources are funded and implemented on behalf of electric or gas utility customers.

While this NSPM focuses on the assessment of utility EE resources, the core concepts—including the principles described in Chapter 1 and the Resource Value Framework (‘the Framework’) described in Chapter 2—can generally be used to assess the cost-effectiveness of supply-side resources or distributed energy resources (DERs).

ES.1 Universal Principles

A unique attribute of the NSPM, and embedded in the Resource Value Framework, is a set of universal principles to follow when developing an RVT for any particular jurisdiction. These principles, provided in Table ES-1, represent sound economic and

¹ The NSPM uses the term “jurisdiction” broadly to encompass states, provinces, federal power authorities, municipalities, cooperatives, etc.

regulatory practices, and are consistent with the input received from a broad range of stakeholders during the development of this manual.

Table ES-1. Universal Principles

Efficiency as a Resource	EE is one of many resources that can be deployed to meet customers' needs, and therefore should be compared with other energy resources (both supply-side and demand-side) in a consistent and comprehensive manner.
Policy Goals	A jurisdiction's primary cost-effectiveness test should account for its energy and other applicable policy goals and objectives. These goals and objectives may be articulated in legislation, commission orders, regulations, advisory board decisions, guidelines, etc., and are often dynamic and evolving.
Hard-to-Quantify Impacts	Cost-effectiveness practices should account for all relevant, substantive impacts (as identified based on policy goals,) even those that are difficult to quantify and monetize. Using best-available information, proxies, alternative thresholds, or qualitative considerations to approximate hard-to-monetize impacts is preferable to assuming those costs and benefits do not exist or have no value.
Symmetry	Cost-effectiveness practices should be symmetrical, where both costs and benefits are included for each relevant type of impact.
Forward-Looking Analysis	Analysis of the impacts of resource investments should be forward-looking, capturing the difference between costs and benefits that would occur over the life of the subject resources as compared to the costs and benefits that would occur absent the resource investments.
Transparency	Cost-effectiveness practices should be completely transparent, and should fully document all relevant inputs, assumptions, methodologies, and results.

ES.2 Resource Value Framework

The Resource Value Framework is used to construct a jurisdiction's primary cost-effectiveness test, the RVT, using a series of seven steps that define the framework. In some cases, the steps align directly with one of the universal principles.

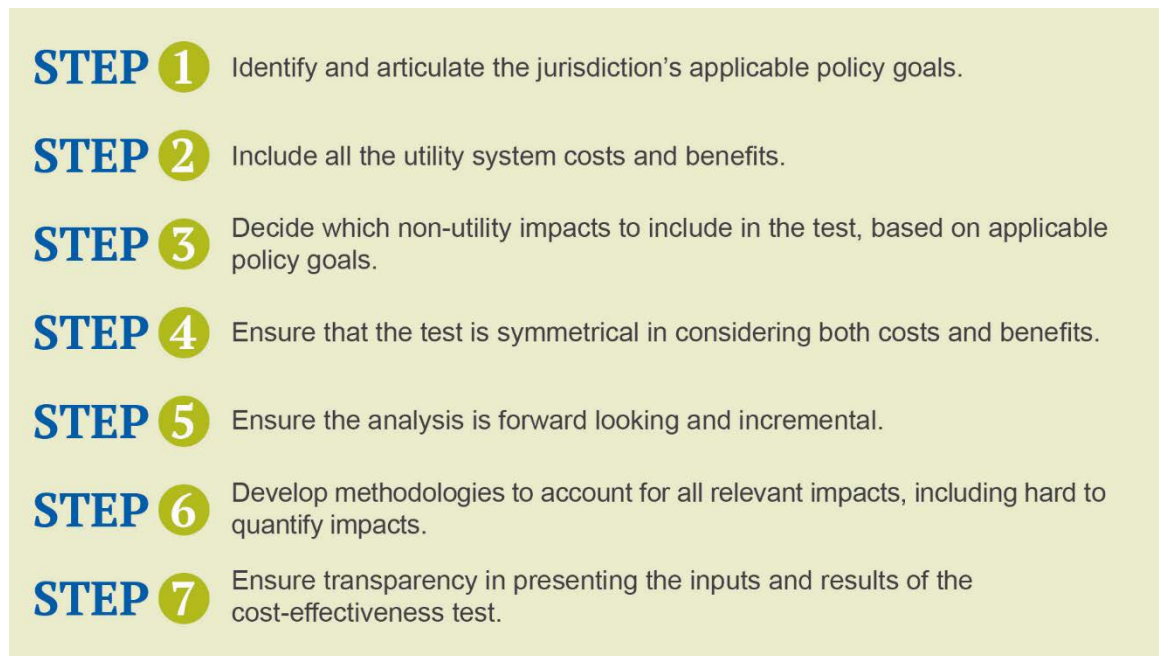
The Framework encompasses the perspective of a jurisdiction's applicable policy objectives, and it includes and assigns value to all relevant impacts (costs and benefits) related to those objectives. The NSPM refers to this as the 'regulatory' perspective, which is intended to reflect the important responsibilities of institutions, agents, or other decision-makers authorized to determine utility resource cost-effectiveness and funding priorities. This perspective flows from the notion that determining whether a resource has benefits that exceed its costs requires clarity about the purpose of the resource investment decision.

Regulators/decision-makers refers to institutions, agents, or other decision-makers that are authorized to determine utility resource cost-effectiveness and funding priorities. Such institutions or agents include public utility commissions, legislatures, boards of publicly owned utilities, the governing bodies for municipal utilities and cooperative utilities, municipal aggregator governing boards, and more.

The NSPM further provides information, templates, and examples that can support a jurisdiction in applying the universal principles, and also in constructing appropriate tests in a structured, logical, and documented manner

that meets the specific interests and needs (as defined by policies) of the jurisdiction. The seven steps of the Framework are summarized in Figure ES-1 below.

Figure ES-1. Resource Value Framework Steps



ES.3 Resource Value Test

The RVT is the primary cost-effectiveness test designed to represent a regulatory perspective, which reflects the objective of providing customers with safe, reliable, low-cost energy services, while meeting a jurisdiction's other applicable policy goals and objectives. As described in detail within the NSPM, each jurisdiction can develop its own RVT using the Resource Value Framework.

The RVT focus on the regulatory perspective differs from the three most common CaSPM traditional tests—the Utility Cost Test (UCT), Total Resource Cost (TRC) test and Societal Cost Test (SCT). These tests provide the perspective of the utility, the utility and participants, and society as a whole, respectively.

The RVT and Secondary Tests

The RVT serves as a primary test which assesses cost-effectiveness of efficiency resources relative to a jurisdiction's applicable policy goals that are under the purview of the jurisdiction's regulators or other decision-makers. However, there can be value in assessing cost-effectiveness of efficiency resources from perspectives represented by other tests. Among the potential purposes of using additional tests are:

- To inform decisions regarding how much utility customer money could or should be invested to acquire cost-effective savings;
- To inform decisions regarding which efficiency programs to prioritize if not all cost-effective resources will be acquired;
- To inform efficiency program design; and/or
- To inform public debate regarding efficiency resource acquisition.

Depending on a jurisdiction’s energy and other applicable policy goals, the resulting RVT may or may not be different from the traditional cost-effectiveness tests. Put another way, it is possible for a jurisdiction’s applicable policy goals to align with one of the traditional CaSPM tests, in which case its RVT will be identical to one of those tests. However, it is also possible—and indeed likely in many cases—that a jurisdiction’s energy and other policy goals will not align well with goals implicit in any of the traditional tests. In such cases, the RVT will be different than all the traditional tests.

Furthermore, each jurisdiction’s RVT can be unique, where the categories of impacts included in the RVT can vary across jurisdictions and/or over time. This is because the impacts are based on each jurisdiction’s policy concerns, which can and do vary. *In contrast, the traditional UCT, TRC, and SCT tests are conceptually static; they do not change geographically or over time if applied in their purest conceptual form.* Table ES-2 compares the RVT with the CaSPM tests.

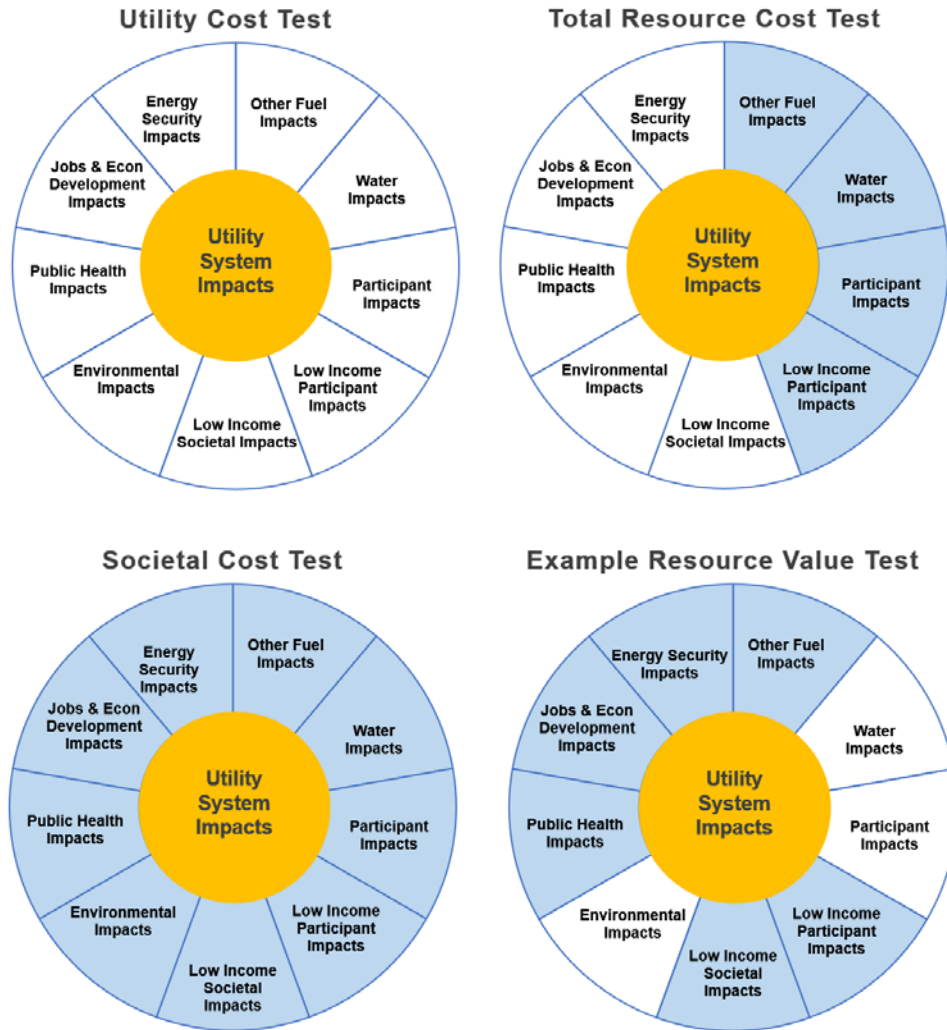
Table ES-2. Comparison of RVT with the Traditional CaSPM Tests

Test	Perspective	Key Question Answered	Categories of Costs and Benefits Included
Utility Cost Test	The utility system	Will utility system costs be reduced?	Includes the costs and benefits experienced by the utility system
Total Resource Cost Test	The utility system plus participating customers	Will utility system costs plus program participants’ costs be reduced?	Includes the costs and benefits experienced by the utility system, plus costs and benefits to program participants
Societal Cost	Society as a whole	Will total costs to society be reduced?	Includes the costs and benefits experienced by society as a whole
Resource Value Test	Regulator/decision makers	Will utility system costs be reduced, while achieving applicable policy goals?	Includes the utility system costs and benefits, plus those costs and benefits associated with achieving relevant applicable policy goals

In those cases where a jurisdiction’s policy goals align with one of the other tests, the RVT will be the same as that other test. This is discussed in Chapter 4.

Figure ES-1 compares the traditional cost-effectiveness tests to one that is developed using the Resource Value Framework. The gold circle in the center represents the utility system impacts, which should be included in any cost-effectiveness test. The sections around the circles represent non-utility system impacts that jurisdictions can choose to include in their primary test. Three of the circles indicate the impacts that would be included using the traditional cost-effectiveness tests. The fourth circle indicates a different set of impacts that would be included by a jurisdiction whose policies suggest accounting for other fuel impacts, low-income impacts, public health impacts, jobs and economic development, and energy security.

Figure ES-1. Examples of Primary Tests that Jurisdictions Could Develop Using the Resource Value Framework



To support the core principle to transparently document cost-effectiveness practices, this NSPM presents an RVT template, shown in Table ES-3, to assist jurisdictions in documenting assumptions and results of their analysis. More detail with examples is provided in Part I of the NSPM.

Table ES-3: Efficiency Cost-Effectiveness Reporting Template

Program/Sector/Portfolio Name:		Date:	
A. Monetized Utility System Costs		B. Monetized Utility System Benefits	
Measure Costs (utility portion)		Avoided Energy Costs	
Other Financial or Technical Support Costs		Avoided Generating Capacity Costs	
Program Administration Costs		Avoided T&D Capacity Costs	
Evaluation, Measurement, & Verification		Avoided T&D Line Losses	
Shareholder Incentive Costs		Energy Price Suppression Effects	
		Avoided Costs of Complying with RPS	
		Avoided Environmental Compliance Costs	
		Avoided Bad Debt, Arrearages, etc.	
		Reduced Risk	
Sub-Total Utility System Costs		Sub-Total Utility System Benefits	
C. Monetized Non-Utility Costs		D. Monetized Non-Utility Benefits	
Participant Costs	<i>Include to the extent these impacts are part of the RVT.</i>	Participant Benefits	<i>Include to the extent these impacts are part of the RVT.</i>
Low-Income Customer Costs		Low-Income Customer Benefits	
Other Fuel Costs		Other Fuel Benefits	
Water and Other Resource Costs		Water and Other Resource Benefits	
Environmental Costs		Environmental Benefits	
Public Health Costs		Public Health Benefits	
Economic Development and Job Costs		Economic Development and Job Benefits	
Energy Security Costs		Energy Security Benefits	
Sub-Total Non-Utility Costs		Sub-Total Non-Utility Benefits	
E. Total Monetized Costs and Benefits			
Total Costs (PV\$)		Total Benefits (PV\$)	
Benefit-Cost Ratio		Net Benefits (PV\$)	
F. Non-Monetized Considerations			
Economic Development and Job Impacts	<i>Quantitative information, and discussion of how considered</i>		
Market Transformation Impacts	<i>Qualitative considerations, and discussion of how considered</i>		
Other Non-Monetized Impacts	<i>Quantitative information, qualitative considerations, and how considered</i>		
Determination:	Do Efficiency Resource Benefits Exceed Costs? [Yes / No]		

ES.4 Applicability to Other Types of Resources

While this NSPM focuses on the assessment of EE resources, the core concepts can be applied to other types of resources as well. The cost-effectiveness principles described in Chapter 1, and the Resource Value Framework described in Chapter 2, can be used to assess the cost-effectiveness of supply-side resources or distributed energy resources (DERs)—including EE, demand response, distributed generation, distributed storage, electric vehicles, and strategic electrification technologies.

With regard to supply-side resources, the cost-effectiveness principles can be used in the context of integrated resource planning or when conducting any sort of economic analyses of specific generation, transmission, or distribution infrastructure investments. The Resource Value Framework can be used to identify the primary test for assessing these supply-side investments, or to identify the criteria that would be used to select the preferred resource plan in the context of an IRP. This approach would not only ensure sound practices for analyzing supply-side resources, it would also ensure that EE resources are analyzed comparably and consistently with supply-side resources.

With regard to DERs, the cost-effectiveness principles and the Resource Value Framework can be used as the foundation for assessing their cost-effectiveness. There are, however, ways in which other types of DERs might need to be treated differently from EE resources. These important DER-specific issues are beyond the scope of this NSPM, but should be addressed by each jurisdiction as they develop cost-effectiveness practices for DERs.

ES.5 Foundational Information Covered in the NSPM

Supporting the implementation of the Resource Value Framework for developing an RVT requires understanding of a wide range of cost-effectiveness related topics. These include identifying, quantifying, and documenting relevant policies, costs, and benefits—in addition to the analysis of related foundational considerations of cost-effectiveness tests. Thus, the NSPM not only presents the universal principles, the Framework, and associated RVT concepts and examples, but also provides information

on related foundational topics that can be particularly valuable to those responsible for developing the RVT and its inputs. The NSPM can also be helpful for those seeking to understand the range of options and outcomes that can result from different RVTs.

The foundational topics covered in the NSPM, found in Parts I, II, or in the appendices, are as follows:

- Ensuring transparency of the assumptions, analysis and results (Chapter 3)

Questions the RVT Does and Does Not Answer

The primary RVT can be used to answer the fundamental question of *which resources have benefits that exceed their costs*, where the benefits and costs are defined by the applicable policy goals of a jurisdiction and developed via Framework 7-step process. With this Framework, the resource investment decision question is addressed in a comprehensive and transparently documented manner.

Regulators and decision-makers typically need to answer a second critical question: *how much utility customer funding should be spent on EE resources?* The primary cost-effectiveness test is necessary but may not be sufficient for answering this second question, which requires consideration of jurisdiction-specific factors through a process such as integrated resource planning or rate proceedings.

- Use of primary vs secondary cost-effectiveness tests (Chapter 5)
- Identifying relevant impacts (costs and benefits) to include in a Resource Value Test (Chapter 6)
- Methods that can be used to determine or account for all relevant impacts (Chapter 7)
- Considerations for including Participant Impacts (Chapter 8)
- Identifying appropriate discount rates (Chapter 9)
- Selecting an assessment level (Chapter 10)
- Selection of an analysis period (Chapter 11)
- Treatment of Early Replacement (Chapter 12)
- Treatment of Free Riders and Spillover (Chapter 13)
- Traditional Cost-Effectiveness Tests (Appendix A)
- DER Costs and Benefits (Appendix B)
- Accounting for Rate and Bill Impacts (Appendix C)