

National Standard Practice Manual

for Assessing Cost-Effectiveness of Energy Efficiency Resources

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Presentation Overview

1. Context

- Why NSPM developed
- Development process

2. What's in the Manual

3. Addressing Rate Impacts (*for later panel discussion*)

Context

- A. Why the NSM Was Developed
- B. The Development Process

The Need for an NSPM (1)

Test Selection

- Traditional tests (UCT, TRC, SCT) not meeting states' needs
 - No underlying principles
 - Don't directly address policy goals/needs
 - Lack of clarity on their conceptual constructs
 - Only 3 options, despite much greater variability in state needs
 - Many states modified the tests
 - A good thing if done well, but that has only sometimes been the case...
- Efficiency is significantly under-valued in many states
 - Including participant costs, but not participant benefits in TRC/SCT
 - Not accounting for impacts on all key energy policy objectives
- Lack of transparency on why/how tests were chosen/developed

Developing the right test is critical to ensuring utility investments are economic.

The Need for an NSPM (2)

Test Use

- Absence of standard guidance on proper application of tests
- Inputs to tests are often problematic
- Most of the common problems lead to under-valuing efficiency:
 - Not accounting for full range of utility system impacts
 - Not valuing hard-to-quantify impacts (utility, participant or societal)
 - Defaulting to WACC for discount rate
 - Use of average instead of marginal line loss rates
 - Improperly counting free rider “costs” under TRC/SCT
 - Etc.

Regardless of which test is used, big improvement could be made in many states by just more comprehensively and accurately developing inputs to the test.

Overview of the NSPM Process

NSPM Drafting Committee:

- Tim Woolf, Synapse Energy Economics
- Chris Neme, Energy Futures Group,
- Marty Kushler, ACEEE
- Steve Schiller, Schiller Consulting
- Tom Eckman (Consultant)

Project Coordination and Funding:

- Coordinated and funded by E4TheFuture
- Managed by Julie Michals, E4TheFuture

Development Process:

- ~15 months
- Several rounds of external review
 - ~40 experts (PUCs, Utilities, Consumer Advocates, Env. Groups, etc.)
- Published May 2017

What's in the Manual

- A. Core Principles
- B. Developing/Choosing the Right Test for Your State
- C. Key Issues in Application of Tests

NSPM Outline

*Principal focus of the
balance of this presentation*

Executive Summary

Introduction

Part 1: Developing Your Test

1. Principles
2. Resource Value Framework
3. Developing Resource Value Test
4. Relationship to Traditional Tests
5. Secondary Tests

Part 2: Developing Test Inputs

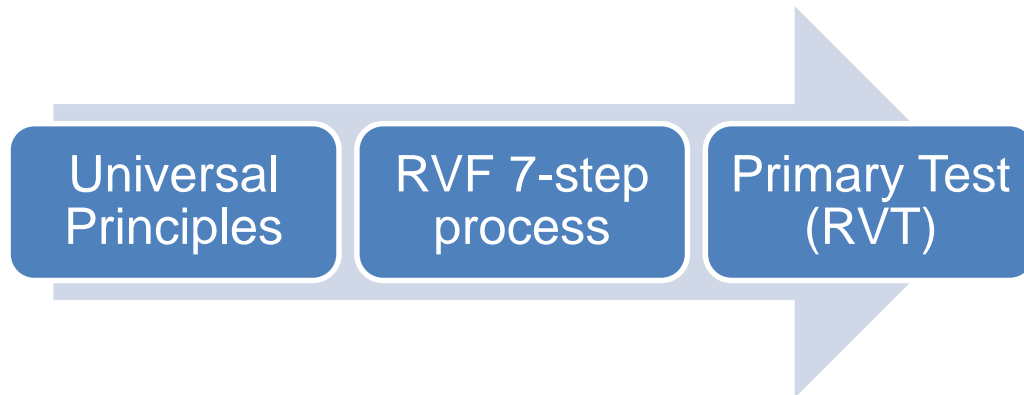
6. Efficiency Costs & Benefits
7. Methods to Account for Costs & Bens
8. Participant Impacts
9. Discount Rates
10. Assessment Level
11. Analysis Period & End Effects
12. Analysis of Early Retirement
13. Free Rider & Spillover Effects

Appendices

- A. Summary of Traditional Tests
- B. Cost-Effectiveness of Other DERs
- C. Accounting for Rate & Bill Impacts**
- D. Glossary

Part I

Developing a Cost-Effectiveness Test Using the Resource Value Framework



NSPM Principles

1. Recognize that energy efficiency is a resource.
2. Account for applicable policy goals.
3. Account for all relevant costs & benefits, even if hard to quantify impacts.
4. Ensure symmetry across all relevant costs and benefits.
5. Conduct a forward-looking, long-term analysis that captures incremental impacts of energy efficiency.
6. Ensure transparency in presenting the analysis and the results.

STEP 1

Identify and Articulate Applicable Policy Goals

Laws, Regs, Orders:	Policy Goals Reflected in Laws, Regulations, Orders, etc.					
	Low-Cost	Fuel Diversity	Risk	Reliability	Environmental	Economic Development
PSC statutory authority	X			X		
Low-income protection						X
EE or DER law or rules	X	X	X	X	X	X
State energy plan	X	X	X	X	X	X
Integrated resource planning		X	X		X	X
Renewable portfolio standard		X	X		X	X
Environmental requirements					X	

- Each jurisdiction has a constellation of energy policy goals embedded in statutes, regs, etc.
- This table illustrates how those laws, regs, etc. might establish applicable policy goals.

STEP 2

Include All Utility System Impacts (more in Chapter 6)

Utility System Costs	Utility System Benefits
• EE Measure Costs (utility portion – e.g. rebates)	• Avoided Energy Costs
• EE Program Technical Support	• Avoided Generating Capacity Costs
• EE Program Marketing/Outreach	• Avoided T&D Upgrade Costs
• EE Program Administration	• Avoided T&D Line Losses
• EE Program EM&V	• Avoided Ancillary Services
• Utility Shareholder Performance Incentives	• Wholesale Price Suppression Effects
	• Avoided Costs of RPS Compliance
	• Avoided Costs of Environmental Compliance
	• Avoided Credit and Collection Costs
	• Reduced Risk
	• Increased Reliability

- *This table is presented for illustrative purposes, and is not meant to be an exhaustive list.*
- *Some categories of benefits are potentially overlapping; care must be taken to ensure no double-counting of benefits.*

STEP 3

Decide Which Non-Utility System Impacts to Include, Consistent w/State Policy Goals (more in Chapter 6)

Impact	Description
Participant impacts	Impacts on program participants, includes participant portion of measure cost, other fuel savings, water savings, and participant non-energy costs and benefits
Impacts on low-income customers	Impacts on low-income program participants that are different from or incremental to non-low-income participant impacts. Includes reduced foreclosures, reduced mobility, and poverty alleviation
Other fuel impacts	Impacts on fuels that are not provided by the funding utility, for example, electricity (for a gas utility), gas (for an electric utility), oil, propane, and wood
Water impacts	Impacts on water consumption and related wastewater treatment
Environmental impacts	Impacts associated with CO2 emissions, criteria pollutant emissions, land use, etc. Includes only those impacts that are not included in the utility cost of compliance with environmental regulations
Public health impacts	Impacts on public health; includes health impacts that are not included in participant impacts or environmental impacts, and includes benefits in terms of reduced healthcare costs
Economic development and jobs	Impacts on economic development and jobs
Energy security	Reduced reliance on fuel imports from outside the jurisdiction, state, region, or country

This table is presented for illustrative purposes, and is not meant to be an exhaustive list.

STEP 4

Ensure Symmetry Across Benefits and Costs *(more in Chapters 7 & 8)*

- Ensure that the RVT includes costs and benefits symmetrically
 - If category of cost is included, corresponding benefits should be too
 - e.g., if all participant costs included, all participant benefits should also be included
- Necessary to avoid bias:
 - If some costs excluded, the framework will be biased in favor of EE;
 - if some benefits excluded, the framework will be biased against EE.
 - Bias in either direction results hurts ratepayers
 - misallocation of resources
 - higher than necessary costs to meet energy needs

STEP 5

Analysis Is Forward-looking, Incremental, and Long Term

- What matters is difference in costs/benefits relative to baseline
 - What would have occurred absent EE investment
 - Sunk costs and benefits are not relevant to a *cost-effectiveness* analysis...
 - ...which is why RIM Test is not a cost-effectiveness test
- Analysis also needs to capture full lifecycle costs

STEP 6

Identify Methodologies & Inputs for Considering All Impacts Included in RVT (more in Chapter 7)

Approach	Application
Jurisdiction-specific studies	Best approach for estimating and monetizing relevant impacts.
Studies from other jurisdictions	Often reasonable to extrapolate from other jurisdiction studies when local studies not available.
Proxies	If no relevant studies of monetized impacts, proxies can be used
Alternative thresholds	Benefit-cost thresholds different from 1.0 can be used to account for relevant impacts that are not monetized.
Other considerations	Relevant quantitative and qualitative information can be used to consider impacts that cannot or should not be monetized.

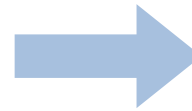
This applies to all types of inputs - both utility system impacts and non-energy impacts.

STEP 7

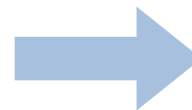
Ensure Transparency

Sample Template

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		Participant Benefits	
Low-Income Customer Costs	<i>These impacts would be included to the extent that they are part of the Resource Value (primary) test.</i>	Low-Income Customer Benefits	<i>These impacts would be included to the extent that they are part of the Resource Value (primary) test.</i>
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]		



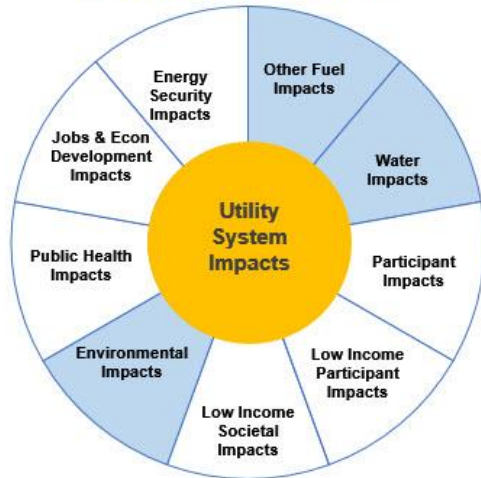
B. Monetized Utility System Benefits	
Avoided Energy Costs	
Avoided Generating Capacity Costs	
Avoided T&D Capacity Costs	
Avoided T&D Line Losses	
Energy Price Suppression Effects	
Avoided Costs of Complying with RPS	
Avoided Environmental Compliance Costs	
Avoided Bad Debt, Arrearages, etc.	
Reduced Risk	
Total Utility System Benefits	



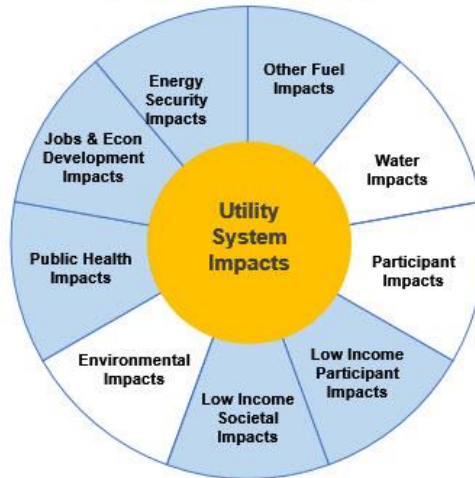
D. Monetized Non-Utility Benefits	
Economic Development and Job Benefits	
Energy Security Benefits	
Sub-Total Non-Utility Benefits	
Total Benefits (PV\$)	
Net Benefits (PV\$)	
<i>Quantitative information, and discussion of how considered</i>	
<i>Qualitative considerations, and discussion of how considered</i>	
<i>Quantitative information, qualitative considerations, and how considered</i>	
Do Efficiency Resource Benefits Exceed Costs? [Yes / No]	

Relationship to Traditional Tests - Examples

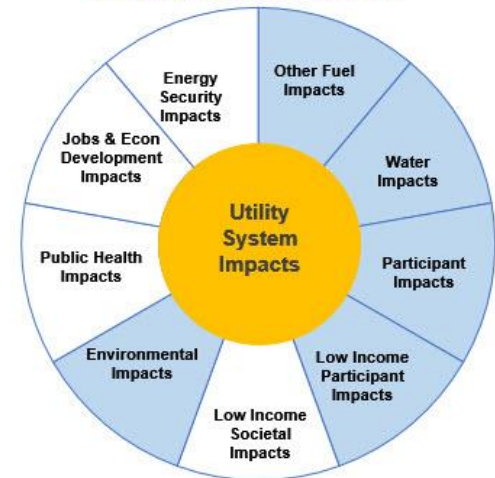
JURISDICTION 1: RVT



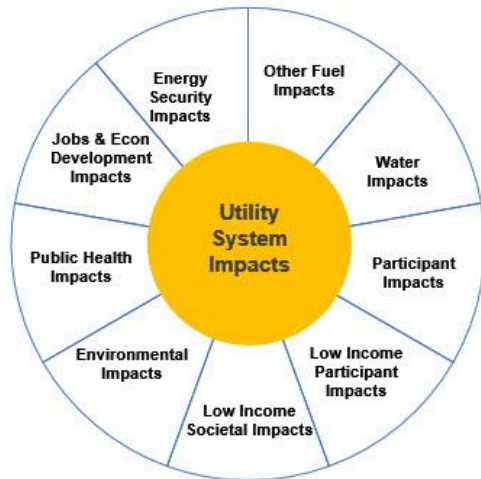
JURISDICTION 2: RVT



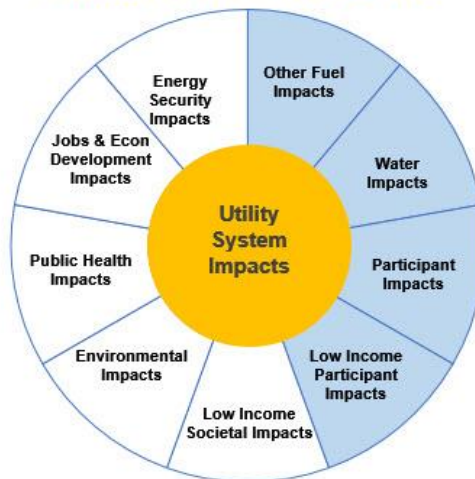
JURISDICTION 3: RVT



JURISDICTION 4: RVT = UCT



JURISDICTION 5: RVT = TRC



JURISDICTION 6: RVT = SCT



Manual Being Used in a Variety of Ways

- Building new state test from “ground up”
- Comprehensive review of current test
 - What’s included
 - How it is applied
- Review/refine select provisions of current test

The NSPM, and related materials from the NESP, are available at: nationalefficiencyscreening.org

Extra Slides for Reference

Appendix A: The Traditional Cost-Effectiveness Tests

Test	Perspective	Key Question Answered	Summary Approach
Utility Cost	The utility system	Will utility system costs be reduced?	Includes the costs and benefits experienced by the utility system
Total Resource Cost	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
Participant Cost	Customers who participate in an efficiency program	Will program participants' costs be reduced?	Includes the costs and benefits experienced by the customers who participate in the program
Rate Impact Measure	Impact on rates paid by all customers	Will utility rates be reduced?	Includes the costs and benefits that will affect utility rates, including utility system costs and benefits plus lost revenues

Appendix A: Conceptual Constructs of Traditional Tests

	UCT	TRC	SCT
Benefits			
Primary Fuel Avoided Supply Costs	✓	✓	✓
Secondary Fuel Avoided Supply Costs		✓	✓
Water Savings		✓	✓
Participant Non-Energy Benefits		✓	✓
Low Income Societal Benefits			✓
Environmental Benefits			✓
Public Health Benefits			✓
Jobs/Economic Development Benefits			✓
Other Societal Benefits			✓
Costs			
Efficiency Measure Rebates	✓	✓	✓
Participant Contributions to Efficiency Measure Costs		✓	✓
Other Program Costs (admin, marketing, training, etc.)	✓	✓	✓
Utility Shareholder Incentives	✓	✓	✓
Other Societal Costs			✓

Conceptually should be included in both TRC and SCT, but often are not.

Conceptually, all of these should be included in the SCT, but often only environmental benefits are