

National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources (NSPM for DERs)

PROJECT OVERVIEW

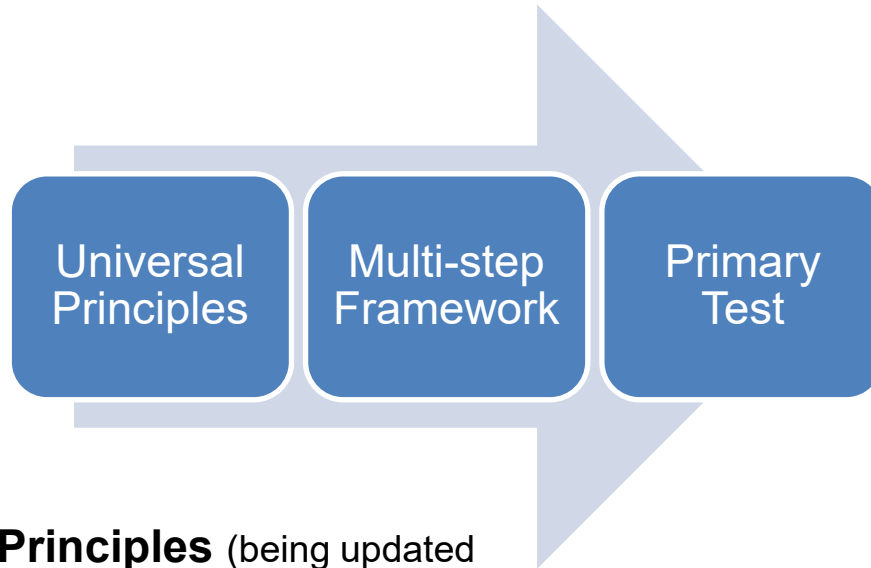
April 2020

The National Efficiency Screening Project

Overview

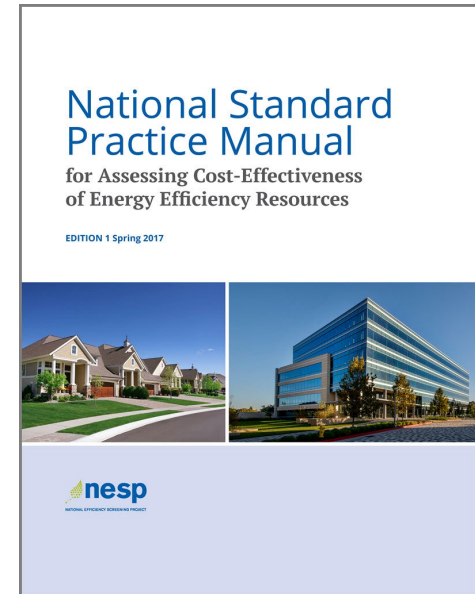
1. Background – Building on the NSPM for EE
2. Why an NSPM for DERs?
3. Who's Involved?
4. Project Schedule
5. Scope of Forthcoming Guidance

NSPM Process



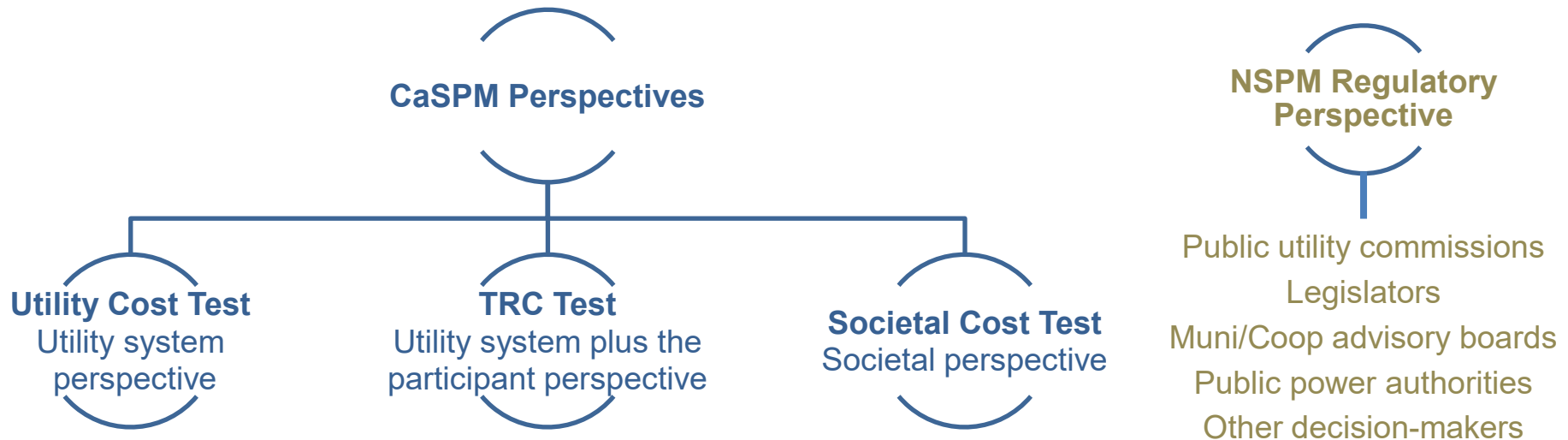
NSPM Principles (being updated for NSPM for DERs):

1. Recognize that EE (other DER) is a resource.
2. Account for applicable policy goals.
3. Account for all relevant costs & benefits (based on applicable policies), even if hard to quantify.
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.



NSPM for EE (May 2017)

Cost-Effectiveness Perspectives

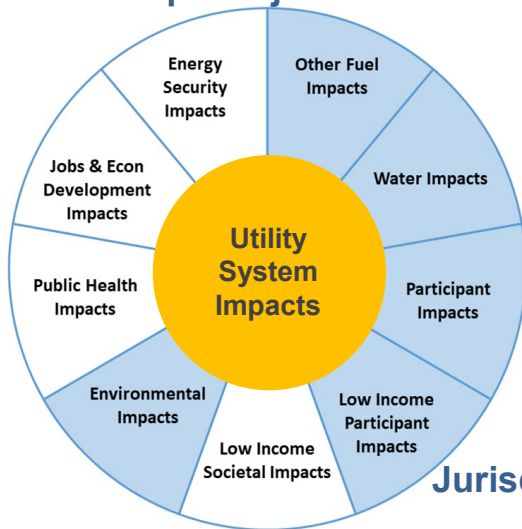


- California Standard Practice Manual (CaSPM) – test perspectives are used to define the scope of impacts to include in the ‘traditional’ cost-effectiveness tests
- NPSM focuses on the ‘regulatory’ perspective, which is guided by the jurisdiction’s energy and other applicable policy goals
- A jurisdiction that applies the NSPM may develop a, or modify its existing, test such that it differs from or may align with any one of the traditional tests, depending on its applicable policies

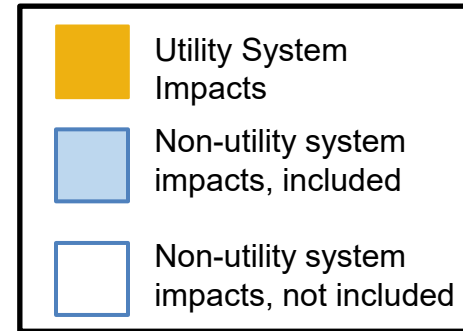
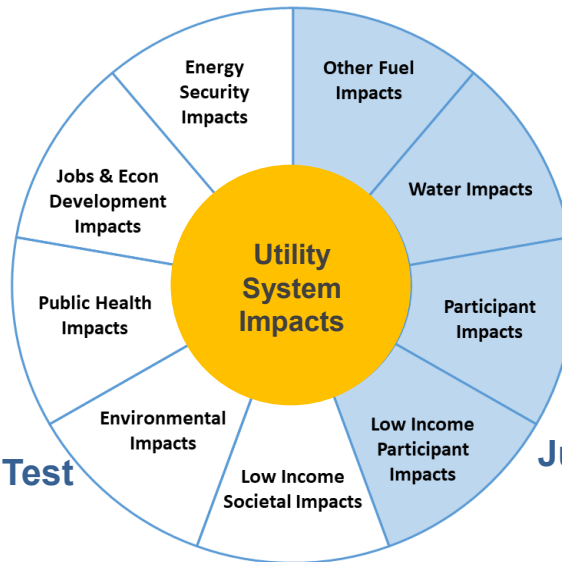
Primary Test Developed Using the NSPM

(Test may be unique to a jurisdiction or could align with a traditional CE test depending on the jurisdiction's applicable policies)

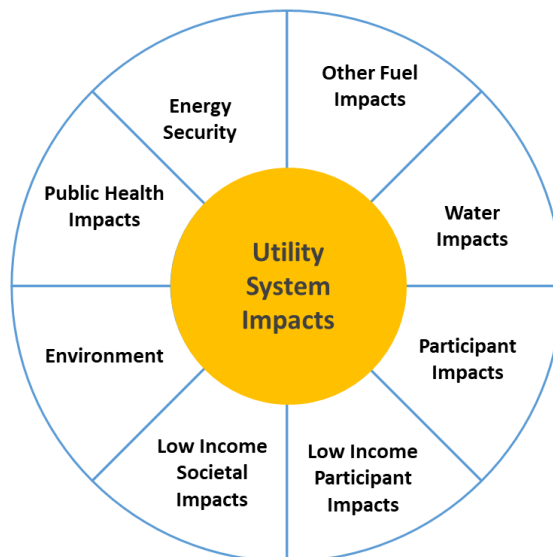
**Jurisdiction 1-specific Test
= Unique to jurisdiction**



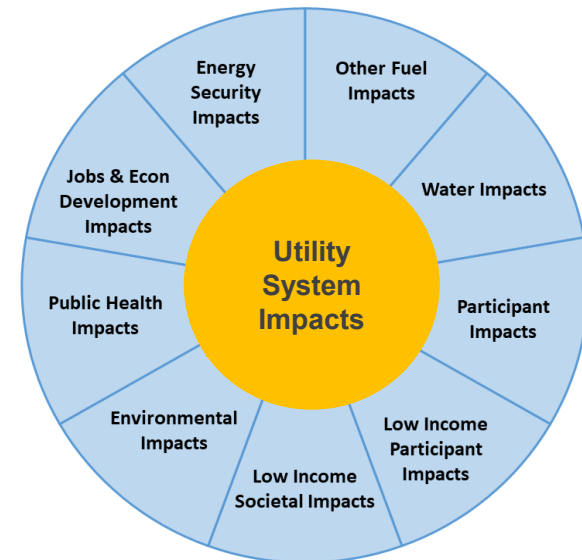
**Jurisdiction 2- specific Test
= TRC**



**Jurisdiction 3-Specific Test
= UCT**



**Jurisdiction 4-Specific Test
= SCT**



NSPM for DERs

Why an NSPM for DERs, and What Is It?

- Growing interest in DERs as grid resources and in DSP
 - Regulators looking for guidance to support BCA of DERs
- States use different methods, and assumptions for DER BCA
 - Inconsistent treatment of different DERs even within states
- NSPM for DERs serves as a reference document:
 - Principles and framework for assessing DER BCA
 - Policy and resource neutral
 - Conceptually similar to NSPM for EE
 - But significant refinements and additional material
 - Refines NSPM for EE principles and framework
 - Addresses issues/challenges of BCA for each DER type and multi-
DER use cases (including on context of non-wires solutions)
 - May address tools/techniques/methods for quantifying DER impacts
(contingent on added funding)

NSPM for DERs - Development

- Managed by E4TheFuture
- Funded by E4TheFuture and US DOE (via LBL)
- Multiple co-authors
 - Extensive understanding of regulatory economics
 - Specialized expertise with different DERs
- Advisory Group
 - 45+ individuals
 - Diversity of perspectives
 - Input on Manual outline and drafts
- Leveraging/referencing other work

NSPM for DERs - Project Team

Project Coordinator: Julie Michals – Director of Valuation, E4TheFuture

Project Consultants/Authors: Tim Woolf – Synapse Energy Economics, Lead

Name	Affiliation
Brenda Chew	Smart Electric Power Alliance
Chris Neme	Energy Futures Group
Karl Rabago	Pace Energy Center
Kate Strickland	Smart Electric Power Alliance
Mike Alter	ICF Consulting
Steve Fine	ICF Consulting
Steve Schiller	Schiller Consulting

NSPM for DERs - Advisory Group

Name	Affiliation
Adam Cooper	Edison Foundation
Andy Satchwell	Lawrence Berkeley Lab
Beth Conlin	US EPA
Christopher Budzynski	Exelon Utilities
Courtney Welch	Esource
Cyrus Bhedwar	Southeast Energy Efficiency Alliance
Dan Cross-Call	Rocky Mountain Institute
Dan Delurey	Wedgemere Group
Dan Violette	Lumina
Dana Lowell	MJ Bradley
Danielle Sass Byrnett	Nat'l Assoc of Regulatory Utility Comm.
Deborah Reynolds	WA Utilities and Transp Commission
Don Gilligan	Nat'l Assoc. of Energy Service Companies
Don Kreis	NH Consumer Advocate
Elizabeth Titus	Northeast Energy Efficiency Partnerships
Gregory Dierkers	US DOE - Wx/Intergovt Programs
Gregory Ehrendreich	Midwest Energy Efficiency Alliance
Greg Wikler	CA Efficiency Demand Mgmt Council
Jack Laverty	Columbia Gas of Ohio
Janet Gail Besser	Smart Electric Power Alliance
Jennifer Morris	Illinois Commerce Commission
Joe Cullen	Building Performance Assoc
Johanna Zetterberg	US DOE - EERE
John Agan	US DOE - Wx/Intergovt Programs
John Shenot	Regulatory Assistance Project
Julia Dumaine	CT Dept of Energy and Env. Protection

Name	Affiliation
Kara Podkaminer	US DOE Strgt Priorities & Impact Analy
Kara Saul Rinaldi	Building Performance Assoc
Katherine Johnson	Johnson Consulting
Kelly Speakes Bachman	Energy Storage Association
Lauren Gage	Apex Analytics
Maria Schnitzer	National Grid
Marty Kushler	American Council for Energy Eff Econ
Michael Goldman	Eversource Energy
Mohit Chhabra	Natural Resources Defense Counsel
Nadav Enbar	Electric Power Research Institute
Natalie Frick	Lawrence Berkeley Lab
Nick Dreher	Midwest Energy Efficiency Alliance
Olivia Patterson	Opinion Dynamics
Paula Carmody	Maryland Office of People's Counsel
Phil Jones	Alliance for Transp Electrification
Ric O'Connell/Taylor McNair	Grid Lab
Rick Gilliam	Vote Solar
Rodney Sobin	Nat'l Assoc of State Energy Officials
Ryan Chan	PG&E
Ryan Katofsky	Advanced Energy Economy
Sami Khawaja	Cadmus
Steven Rymsha	Sunrun
Susan Stratton	Northwest Energy Efficiency Alliance
Todd Bianco	RI Public Utilities Commission
Tom Stanton	Nat'l Regulatory Research Institute
Wally Nixon	Arkansas Public Service Commission

Project will Build on Past & Ongoing Projects

State BCA DER efforts (NY, CA, MN, etc.)

A Framework for Integrated Analysis of Distributed Energy Resources: Guide for States, LBNL+DOE 2018

- A framework for states to plan for and assess DER utility and non-utility impacts at the individual, multiple, and integrated levels.

NARUC-NASEO Task Force Comprehensive Electricity Planning 2019

- A task force on comprehensive electricity planning to align distribution system and resource planning processes.

NASEO-NARUC Grid-Interactive Efficiency Buildings (GEBs) 2018

- Role of Grid-interactive Efficient Buildings in grid-mod efforts

Integrated Distribution Grid: Decision Guide, vol iii (DSPx), 2017

- DOE 2017: A review of what is necessary to develop a grid with integrated DERs and five common BCA test overviews.

EPRI, 2014 + other Integrated Grid Projects

- A framework for DER-grid integration planning, including a BCA methodology which considers Distribution System, Bulk System, Customer, and Societal Impacts.

Project Schedule



NSPM for DERs – Scope (1)

- **Overview**
 - DERs covered in manual
 - Different levels of DER Benefit-Cost Analysis
- **Fundamental BCA Principles, Concepts and Practices**
 - Builds on principles from NSPM for EE
 - New principles: consistent BCA treatment across DERs; avoid double counting
- **Cost-Effectiveness and Rate Impacts**
 - Differentiating purpose/application across these areas
- **Developing Benefit-Cost Analysis Tests**
 - Traditional tests
 - Developing Primary Cost-Effectiveness Test
 - Use of Secondary Tests
- **Steps for Conducting DER Benefit-Cost Analyses**

Three Tiers of DER Analyses - Scope (2)

1. Single-DER analysis; where one type of DER is assessed relative to a fixed (i.e., static) set of alternative resources.
2. Multiple-DER analysis; where multiple DERs are assessed and optimized relative to a fixed set of alternative resources.
3. Integrated-DER analysis; where all electric resources, both distributed and utility-scale, are optimized.

NSPM for DERs will focus on #1-2

NSPM for DERs – Scope (3)

DER Costs and Benefits

- Utility System Impacts
- Gas Utility and Other Fuel System Impacts
- Host Customer Impacts
- Societal Impacts

Illustrative Example:
Utility System Impacts

Type	Utility System Impact	EE	DR	DG	Storage	V2G EVs	Other EVs & Bldg Electricification
Generation	Energy Generation	B	B/C	B	B/C	B/C	C
	Generation Capacity	B	B	B	B/C	B	C
	Environmental Compliance	B	B/C	B	B/C	B/C	C
	RPS Compliance	B	B/C	B	B/C	C	C
	Market Price Suppression	B	B	B	B/C	C	C
	Ancillary Services	-	B	B/C	B/C	B	B
Transmission	Transmission Capacity	B	B	B	B/C	B	C
	Transmission Line Losses	B	B	B	B/C	C	C
Distribution	Distribution Capacity	B	B	B/C	B/C	B	C
	Distribution Line Losses	B	B	B	B/C	C	C
	Distribution O&M	B	B	B/C	B/C	C	C
	Distribution Voltage	-	B	B/C	B/C	C	C
	Interconnection Costs	-	B/C	B/C	C	-	-
General	Utility portion of DER costs	C	C	C	C	C	C
	Program Administration Costs	C	C	C	C	C	C
	Utility Incentives	C	C	C	C	C	C
	Credit and Collection Costs	B	B	B	B	B	B
	Risk	B	B	B/C	B/C	B/C	B/C
	Reliability	B	B	B/C	B	B	C
	Resilience	B	B	B	B	B	-
	Enable other DERs	B	B	N/A	N/A	B	B

NSPM for DERs – Scope (4)

Additional DER Cost and Benefit Considerations

Considerations that span across different types of costs/benefits

- Temporal Impacts
- Locational Impacts
- Interactive Effects
- Behind-the-Meter Versus Front-of-the-Meter Considerations
- Load Reduction Versus Electricity Injection
- Accounting for Revenues from Wholesale Markets
- Impact of Each DER Too Small to Make a Difference
- Distribution Impacts Could Increase or Reduce Costs

NSPM for DERs – Scope (5)

Technology/Resource Specific Chapters

Energy Efficiency Resources

- Costs and Benefits of Energy Efficiency Resources
- Key factors that Affect Impacts
- Common Challenges in Estimating Costs and Benefits

Demand Response Resources

- Costs and Benefits of Demand Response Resources
- Key factors that Affect Impacts
- Common Challenges in Estimating Costs and Benefits

Distributed Generation Resources

- Costs and Benefits of Distributed Generation Resources
- Key factors that Affect Impacts
- Common Challenges in Estimating Costs and Benefits

Distributed Storage Resources

- Costs and Benefits of Distributed Storage Resources
- Key factors that Affect Impacts
- Common Challenges in Estimating Costs and Benefits

Electrification

- Costs and Benefits of Electrification
- Key factors that Affect Impacts
- Common Challenges in Estimating Costs and Benefits

Guidance to define each DER, discuss costs and benefits, and key issues and challenges.

NSPM for DERs – Scope (6)



Multi-DER Chapters

Multiple DER Types per Site

- Costs and Benefits
- BCA Issues and Challenges
- Use Cases / Case Studies

Multiple DER Types in a Geographic Area (Non-Wires Solutions)

- NWS Costs and Benefits Summary
- BCA Issues and Challenges
- Use Cases / Case Studies

System-Wide DER Portfolios

- Consistent Cost-Effectiveness Tests
- Enabling other DERs and Interactive Effects
- DER Planning Objectives
- Multiple Tests
- Designing and Optimizing DER Portfolios
- Use Cases / Case Studies

Integrated Distribution Planning

- Components of Integrated Distribution Planning
- Early Lessons Learned
- BCA Issues and Challenges
- Use Cases / Case Studies

NSPM for DERs - Appendices

Examples (still TBD):

Traditional Cost-Effectiveness Tests

Presenting BCA Results

Cost-Effectiveness vs Rate Impact Analysis

Approaches to Account for All Relevant, Material Impacts

Treatment of Transfer Payments

How NSPM for EE fits into the NSPM for DERs

Part I – Common BCA Framework (Ch 1-3)	Builds on NSPM for EE framework
Part II – DER Costs & Benefits and Cross-cutting Issues (Ch 4-5)	Includes EE Cost and benefits
Part III – BCA for Specific DER Types (Ch 6-10)	Chapter 6- EE (incorporates key concepts and issues from NSPM for EE)
Part IV – BCA for Multi-DER Types* (Ch 11-13)	Includes multi-DER examples with EE
Part V – Appendices	Incorporates key appendices from the NSPM for EE: List

* With use case examples

For More Info...

Stay informed with the *NSPM Quarterly* Newsletter:

<https://nationalefficiencyscreening.org/national-standard-practice-manual/news/>

**To download the NSPM for EE and find supporting Resources
visit: <http://www.nationalefficiencyscreening.org/>**

***Questions?* Email NSPM@nationalefficiencyscreening.org**