

# **Cost-Effectiveness Testing 2.0**

## **Applying the New National Standard Practice Manual**

**ACEEE Summer Study 2018**

Julie Michals – E4TheFuture  
Chris Neme – Energy Futures Group

# What we'll share today

1. Credit to co-authors on ACEEE Summer Study paper
  2. Brief background on NSPM
  3. The 'meat' (or tofu): What's happening 'on the ground' in selected states (AR and MN focus)
  4. Supporting NSPM resources in development
  5. What's coming next for NSPM
- ...and any tidbits on what we heard/learned at Tuesday **informal session** on NSPM with ACEEE and EPA

## NSPM - BACKGROUND

### NSPM Stakeholders

- National Efficiency Screening Project (NESP) includes stakeholders working to improve EE cost-effectiveness.
- Over 75 organizations representing a range of perspectives.

### NSPM Authors

- Tim Woolf, Synapse Energy Economics
- Chris Neme, Energy Futures Group
- Marty Kushler, ACEEE
- Steve Schiller, Schiller Consulting
- Tom Eckman (Consultant and formerly Northwest Power & Conservation Council)

# NSPM – BACKGROUND CONTINUED

## NSPM Review Committee

- Roughly 40 experts representing a variety of organizations from around the country.
- Provided several rounds of review/feedback on draft manual.

## NSPM Funding, Coordination, and Advisors

- Coordinated and funded by E4TheFuture
- Managed by Julie Michals, E4TheFuture
- Advisory Committee input on outreach & education
- Earlier work on the NESP and NSPM was managed by the Home Performance Coalition

**For more information:**

**<http://www.nationalefficiencyscreening.org/>**

# 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 under 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.*

## NSPM: Scope

- Focus is on utility customer-funded energy efficiency resources.
- Addresses 1<sup>st</sup> order question: “which EE resources merit acquisition?”
- Principles and framework apply to all other resources (including other types of distributed energy resources).
- *NSPM provides a foundation on which jurisdictions can develop and administer a cost-effectiveness test, but does not prescribe “the answer”*

# What's Covered -- NSPM Outline

## **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 & Benefits
8. Participant Impacts
9. Discount Rates
10. Assessment Level
11. Analysis Period & End Effects
12. Analysis of Early Retirement
13. Free Rider & Spillover Effects

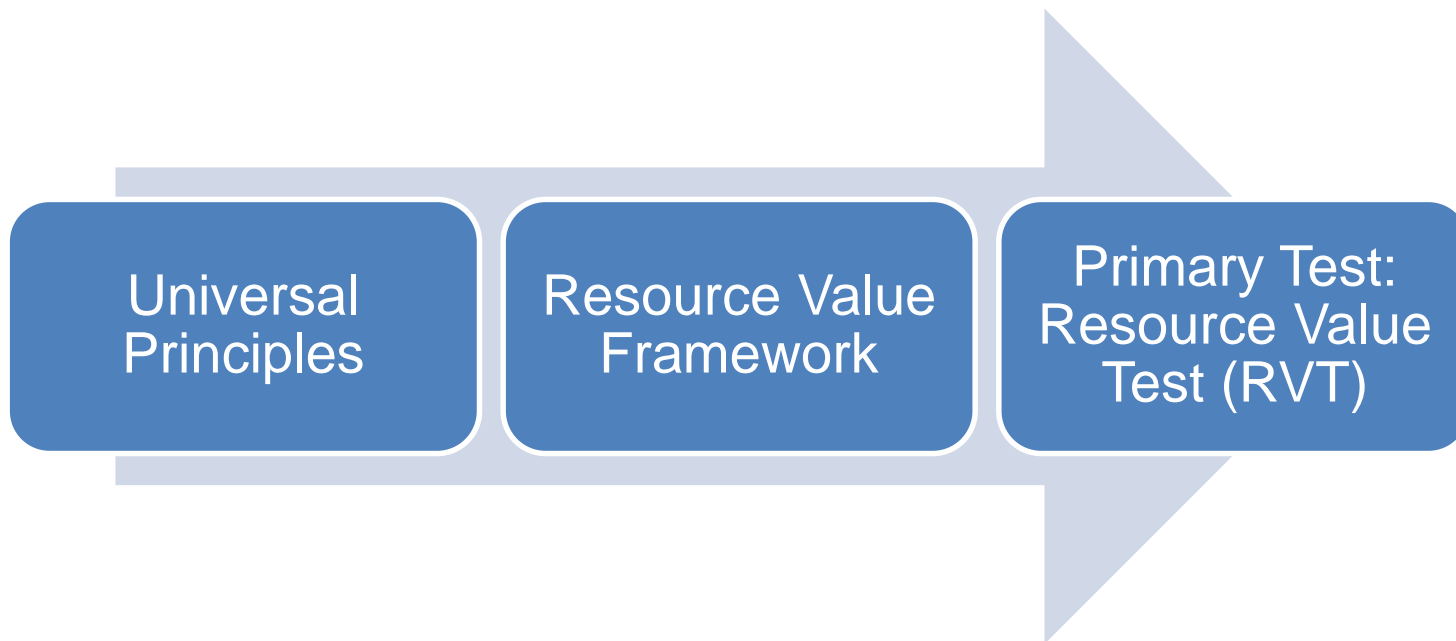
## **Appendices**

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



# Part I

## Developing the Primary Cost-Effectiveness Test Using the Resource Value Framework



# NSPM Principles

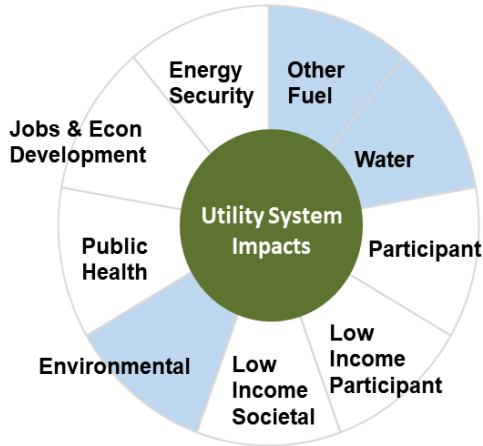
1. Recognize that energy efficiency is a resource.
2. Account for applicable policy goals.
3. Account for all relevant costs & benefits (based on applicable policies), even if hard to quantify impacts.
4. Ensure symmetry across all relevant costs and benefits.
5. Conduct a forward-looking, long-term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

# Implementing the Resource Value Framework Involves Seven Steps

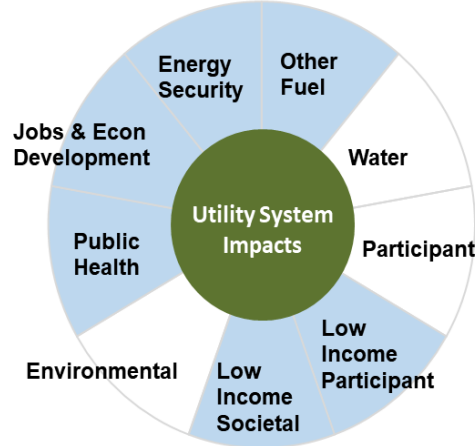
Step 1	Identify and articulate the jurisdiction's applicable policy goals.
Step 2	Include all utility system costs and benefits.
Step 3	Decide which additional <i>non-utility</i> system costs and benefits to include in the test, based on applicable policy goals.
Step 4	Ensure the test is symmetrical in considering both costs and benefits.
Step 5	Ensure the analysis is forward-looking, incremental, and long-term.
Step 6	Develop methodologies and inputs to account for all impacts, including hard-to-quantify impacts.
Step 7	Ensure transparency in presenting the analysis and the results.

# Relationship of Resource Value Test (RVT) to Traditional Tests – Results May Align or Not

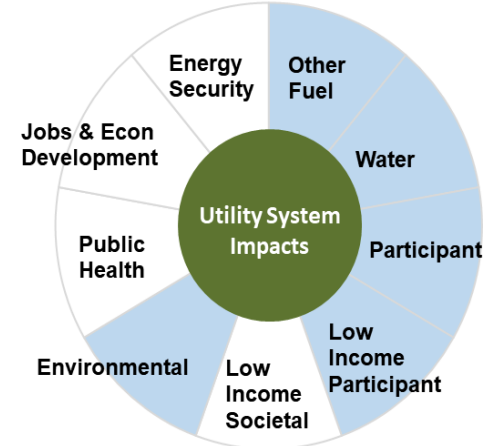
JURISDICTION 1: RVT



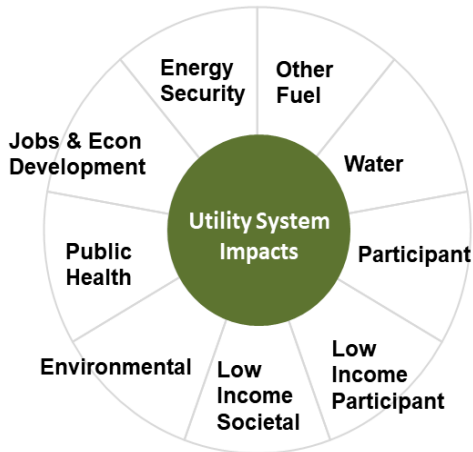
JURISDICTION 2: RVT



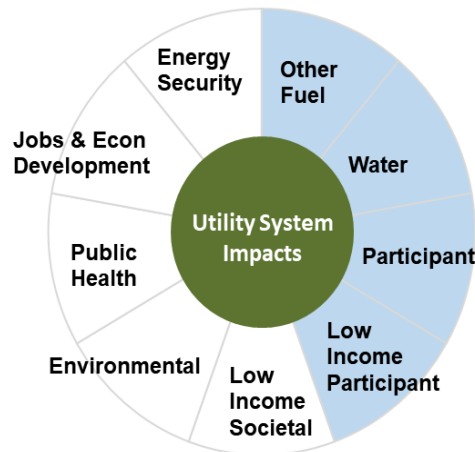
JURISDICTION 3: RVT



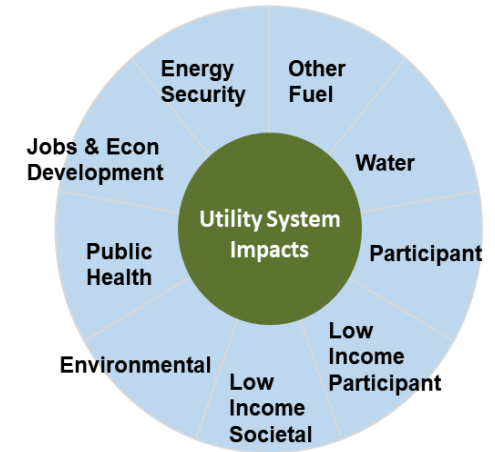
JURISDICTION 4: RVT = UCT



JURISDICTION 5: RVT = TRC



JURISDICTION 6: RVT = SCT



# NSPM References to Date

State / Other	Docket/Bill Number	State/ Other	Docket/Bill Number
AR *	13-002-U Order No 40 10-100-R Order No. 27	NY	New York White Paper and PSC Case 18-M-0084
CA	15-02-007 14-10-003	NV	17-08023
CT	2017 Comprehensive Energy Strategy	RI	Least Cost Procurement Standard
IA	RMU-2016-0018	SC	H 4425
ID	IPC-E-17-13	VA	PUR-2017-00047
IL	EE Stakeholder Advisory Group Evaluation Plan	WA **	UE-171087, PSE UE-171091, Avista UE-171092, Pacific Power
KS	Senate Bill 347 - draft	WV	17-0401-E-P
MI	2010-AD-2	US DOE	SEE Action: EM&V Framework for States
NH	DE-17-136	US DOE	EERE-2017-OT-0056
NJ	NJCEP FY 19-22 Strategic Plan Draft	ACEEE	The Role of Energy Efficiency in a Distributed Energy Future 2018

\*AR PSC order  
\*\* WA UTC Staff  
comments

[See NSPM  
References](#)

# NSPM Case Studies

(to be published Fall 2018)

## NSPM 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 of select provisions of current test

# Applying the NSPM in **Arkansas**



# Arkansas Case Study – Key Questions Considered

## Test Framework

- Does current AR test include all impacts of policy interest to the state?
  - Any included that maybe should not be?
  - Any not included that maybe should be?
- Is the full range of utility system impacts included?
- How could AR account for any impacts that should be added?
  - What methodologies approach(es) could be used?

## Test Application

- Are key principles of *applying* cost-effectiveness tests being followed?
  - Selection of discount rate
  - Treatment of free riders/spillover
  - Application level
  - Etc.

## Arkansas Case Study – Process

1. Cataloged/Summarized relevant policy documents (March 2018)
2. Assessed alignment of current test w/policy goals (May 2018)
  - Most policy goals already addressed by current test
  - A couple of secondary ones that are not
3. Catalog utility system impacts included by each utility (July 2018)
4. Review options for quantifying any impacts that should be included, but currently are not (Sept. 2018)
  - Avoided future carbon regulation impacts (directed by PUC)
  - Any other utility system impacts missing
  - Non-utility impacts deemed important given policy goals
  - Participant NEBs (given policy goal of including participant impacts)
5. Assess alignment of application principles w/current AR practice
  - One utility not treating free rider costs as Manual suggests (April 2018)
  - Other potential issues (discount rate, screening level, etc.) (Sept. 2018)
6. Develop plan & timeline for AR test refinement (Sept/Oct 2018)
7. Report to AR PUC (Oct/Nov 2018)

# Applying the NSPM in **Minnesota**

# Minnesota Case Study Scope

1. MN Department of Commerce hired Synapse to apply the NSPM to Minnesota cost-effectiveness practices ([January-August 2018](#))
2. Conducted surveys: Division of Energy Resources, Excel Energy, CenterPoint Energy, Minnesota Center for Energy and the Environment, Great River Energy, Fresh Energy, Public Service Commission
3. Reviewed relevant statutes, regulations, commission orders, state energy plans, and other policy directives to identify and articulate relevant policy goals
4. Reviewed all the utility system impacts that are currently accounted for by the Minnesota electric and gas utilities
5. Cataloged all non-utility system impacts currently included in the Minnesota cost-effectiveness tests
6. Assessed whether any additional non-utility system impacts should be included in primary test to be consistent with MN applicable policy goals
7. Drafted recommendations for modifying Minnesota cost-effectiveness practices to address relevant policy goals ([July 2018](#))

## Minnesota: Overview

- Large array of MN policy directives related to energy resources
- Next Generation Energy Act directs utilities to consider costs and benefits to:
  - the utility
  - society
  - program participants
  - ratepayers
- In practice:
  - The Societal Cost test is primary
  - The Utility Cost test is secondary
  - The Participant test is secondary
  - The Ratepayer Impact Measure test is secondary, but not really used

## Minnesota - Key Issues

- Consistency of utility-system avoided costs.
  - MN electric and gas utilities currently use avoided costs that are developed independently and are potentially inconsistent
- The use of multiple tests for screening energy efficiency programs.
  - MN currently uses the Societal Cost test as primary test but also considers the results of Utility Cost test
- Whether to include participant non-energy benefits in Societal Cost test
  - Minnesota currently does not include participant NEBs in this test.
- The proper treatment of low-income impacts.
  - Minnesota currently does not require low-income programs to pass a cost-effectiveness test.

# Minnesota: Initial Findings

- The Utility Cost test doesn't include some utility benefits
  - Wholesale price suppression effects
  - Avoided costs of complying with the RPS
  - Avoided environmental compliance costs
  - Avoided credit and collection costs
  - Reduced risk
  - Increased reliability
  - Market transformation
  
- The Societal Cost test doesn't include some societal benefits
  - Other fuel savings
  - Participant non-energy benefits
    - Many stakeholders expressed reluctance to include participant NEBs
  - Public health and safety
  - Jobs and economic development
  - Energy security

# Minnesota: Initial Recommendations

1. Modify the Utility Cost test to be consistent with theoretical definition.
  - Include all the missing utility impacts.
2. Modify the Societal Cost test to be consistent with theoretical definition.
  - Include all the missing utility, participant, and societal impacts.
  - May require some rough estimates or proxy values.
3. Decide whether one of these tests should be the primary test in MN.
  - Does one of these tests address relevant MN policy goals?
4. If not, then develop a “Minnesota Test.”
  - Include all utility impacts
  - Include water and other fuel impacts
  - Include environmental impacts
  - Include jobs and economic development impacts
  - Participant impacts. Either:
    - *Include both participant costs and NEBs; or*
    - *Exclude both participant costs and NEBs*
- Convene a stakeholder process to consider these recommendations and other CE testing issues



# Applying the NSPM in Rhode Island and Washington

## Rhode Island: Overview

- Since 2008 RI has:
  - Had a statutory requirement to implement all cost-effective EE
  - Used TRC test and included utility and participant NEBs
  - Use a robust collaborative process to help design, analyze, and plan EE programs (EE Resource Management Council)
- In 2017, Docket 4600 stakeholder process focused on updating and expanding the cost-effectiveness framework to apply to DERs. Outcome:
  - Adopted the NSPM Principles (pre-NSPM publication)
  - Articulated its applicable state policies
  - Adopted a **RI Value Test** that accounts for costs and benefits that align with applicable policies
  - Many other elements of the NSPM framework incorporated
- Efforts to identify and value all relevant impacts for DERs – e.g., avoided distribution costs, avoided locational distribution costs – is a work in process

# Washington: Overview

**Summer-Fall 2017:** WA UTC staff review of state's existing CE test initiated using NSPM principles and framework as guide

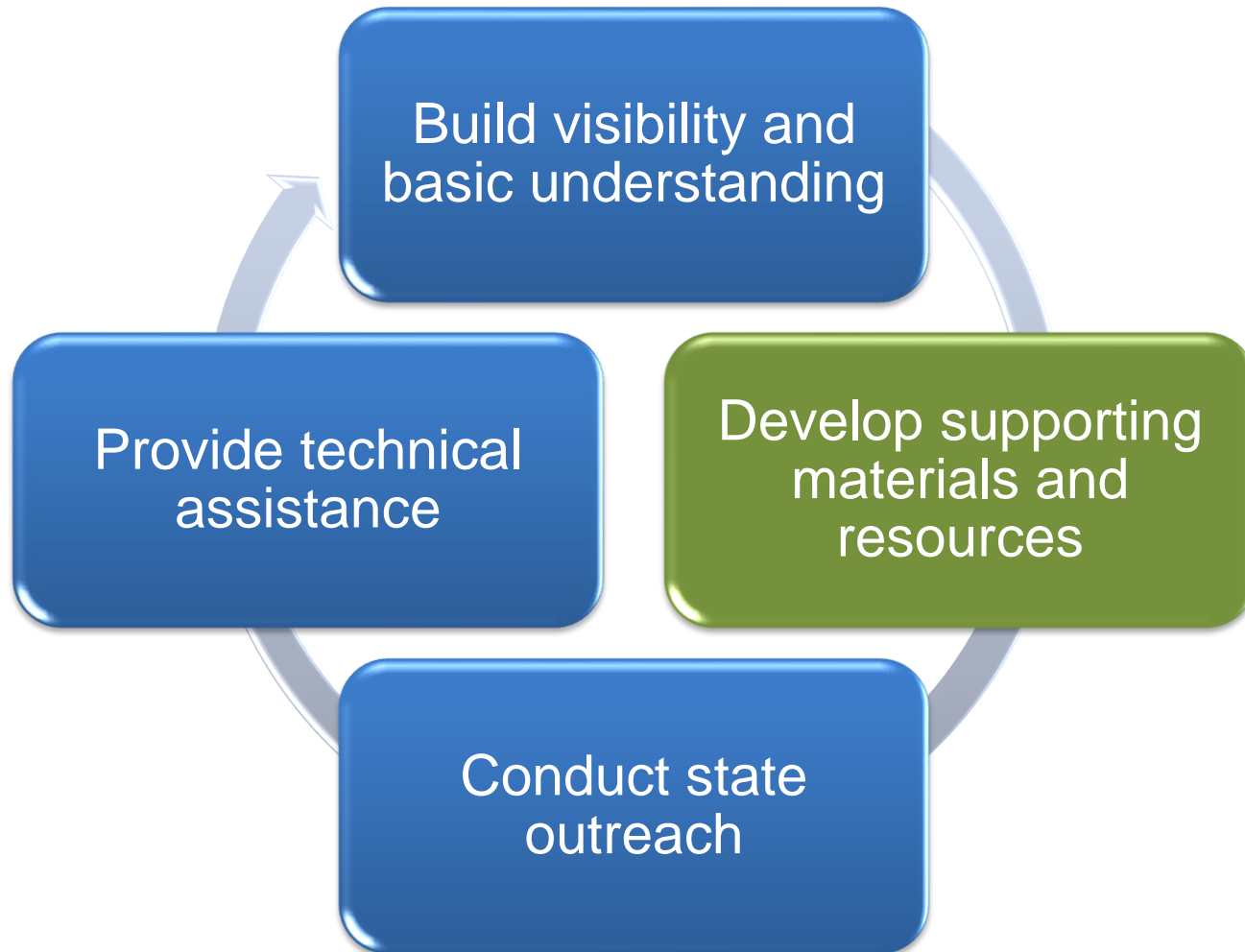
- UTC staff inventory of applicable state policies contained in state legislation and prior commission orders
- Process being used to inform stakeholder review of 2018-19 Biennial Conservation Plan filings by state IOUs

**Summer 2018** – Process underway to review alignment of state's current CE test with relevant state policies

- Review of participant costs & benefits and societal benefits e.g., public health and equitable service to low income customers
- Conduct legal review of Commission staff's assessment of applicable state policies in preparation for full discussion of non-utility system costs and benefits in September
- Review of utility system costs and benefits to ensure all were considered

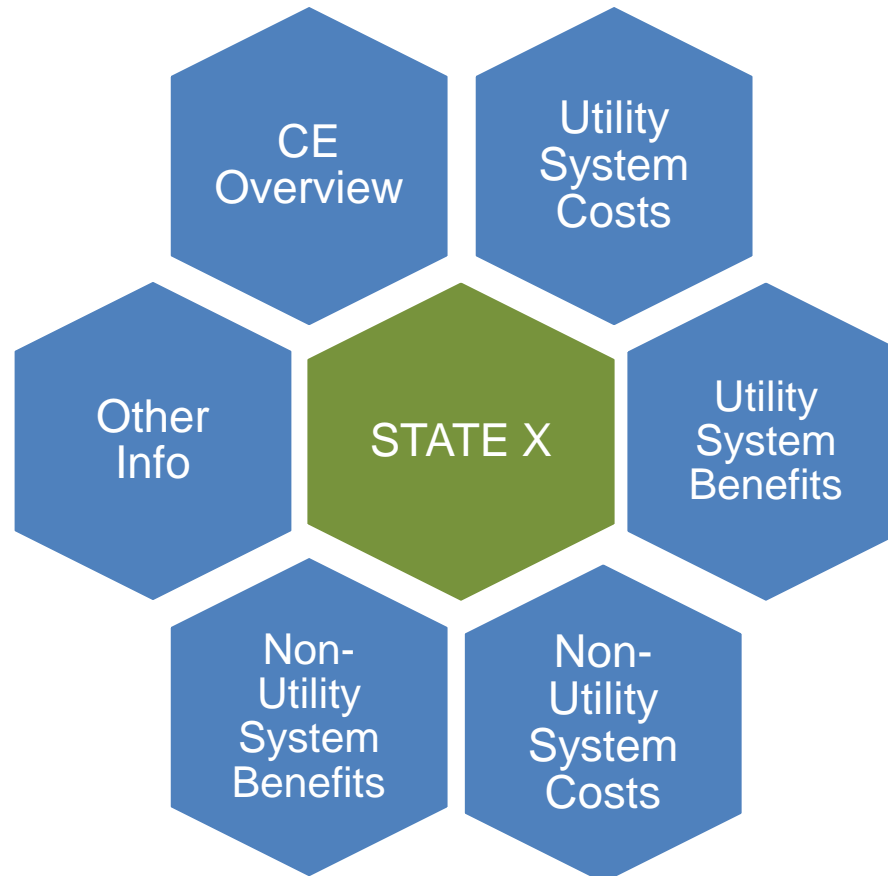
**Fall 2018** – complete review of applicable state policies and determine whether commission action needed to adjust cost-effectiveness test

# NSPM Outreach & Support Strategy



# NSPM Cost-Effectiveness Testing Repository (CETR) Comparison of State Practices and Supporting Sources

Synapse and ACEEE research



# States in CETR

## **Phase I (2018):**

- AR, AZ, CA, CO, CT, DE, DC, IA, ID, IL, MA, MD, MI, MN, NC, NH, NY, NV, RI, OR, UT, VT, WA, and WI
- 24 states in total
- Synapse – comprehensive research on 20 states
- ACEEE focusing on where states account for health and environmental impacts
- Gaps supplemented by E4 research
- Research coordinated across Synapse, ACEEE and E4

## **Phase II (2019):**

- Additional states – research late 2018 and publish in 2019

## CETR Construct

- Summary Tab
- Specific State tab – with query function
- State Comparison tab – with query function
- Guidance Documents tab – examples:
  - ACEEE job impacts methods
  - ACEEE recommended formulas and approaches to quantify health and environmental impacts
  - Risk and reliability guidance
  - US EPA AVERT- COBRA models and forthcoming Benefits per kWh Calculator
  - Other ...

## CETR Development: Process and Schedule

- Phase I: September 2018
- CETR to be published on NESP website
- Updated quarterly or as needed with new/corrected information and inclusion of new states
- Webinar and outreach to be coordinated with ACEEE, REEOs, and others



# FYI: NSPM Scoping to add other DERs

Scoping effort in process to expand NSPM guidance to:

- Informed by advisory group with broad DER representation
- Build on NSPM Edition 1 framework – specific DER chapters
- Recognize space is evolving – currently ‘wild west’ but guidance needed for regulators to provide common framework for BCA across DERs
- Address categories of costs and benefits for other DERs (single and multiple DERs)
- Address locational/temporal value of resources (for EE and other DERs - avoided T&D, net locational benefits, relevance to NWAs)
- Address briefly in context of distribution **planning** but not in depth (complicated and premature)
- Build on current / existing work in states etc

August – Scoping document complete by end of this month

Fall – secure funding for 2019 project

For more information, visit  
**[www.nationalefficiencyscreening.org](http://www.nationalefficiencyscreening.org)**  
to download the full NSPM and supporting documents

For additional questions contact:  
Julie Michals – [jmichals@e4thefuture.org](mailto:jmichals@e4thefuture.org)  
Chris Neme – [cneme@energyfuturesgroup.com](mailto:cneme@energyfuturesgroup.com)