



Connecticut Department of Energy and Environmental Protection



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

Economic Analysis (Cost-Benefit Testing) of Conservation and Load Management Programs: Overview of DEEP's Framework for Review

CT DEEP Public Information Meeting
September 13, 2018
EnergizeCT Center, North Haven, CT



Connecticut Department of Energy and Environmental Protection

Agenda

- DEEP review of cost-effectiveness testing for C&LM
 - Current cost-effectiveness testing in Connecticut
 - Process and timeline
 - Purpose of cost-effectiveness testing
- C&LM Plan
- National Standard Practice Manual
 - Review of NSPM Process
- NSPM steps for today



Process timeline for DEEP's review

- Multiple public meetings
 - September, November, March
 - Written comments will be accepted
- Collaborate with EEB
 - April, May
- Final determination June 2019 to Companies for inclusion in 2020 Plan update [submitted November 2019]



“Programs included in the plan shall be screened through cost-effectiveness testing which compares the value and payback period of program benefits to program costs to ensure the programs are designed to obtain energy savings whose value is greater than the costs of the programs.”

- Updated language in 16-245m(d)(3) is similar
- Statutory language does not define type of test, only that testing to be performed



Purpose of cost-effectiveness testing

What it is

- A method to assess if benefits resulting from an investment exceed the costs
- A screening mechanism used to assess how well an investment would achieve state policy objectives or goals relative to its costs
- Primary focus is energy efficiency as a resource

What it is not

- Does not set or change overall C&LM program budgets
- Does not set values for incentives, e.g. it does not dictate the “price” of what the C&LM will pay for the measures
- Is not dependent on funding source (i.e., test itself does not change based on source of funding for C&LM programs)



Current CT test

- The Utility Cost Test (UCT), in two forms, serves as the state's *primary test*
 - It includes the value of utility-specific benefits and program costs associated with those benefits
 - The Modified Utility Cost Test (MUCT) adds oil and propane avoided costs, and the program costs associated with acquiring those savings



Current CT test

- The Total Resource Cost (TRC) test is used in CT for low-income programs
 - includes environmental benefits (such as water savings and reduced air emissions) and maintenance savings
 - includes all the costs associated with acquiring those savings, including program costs and participant costs

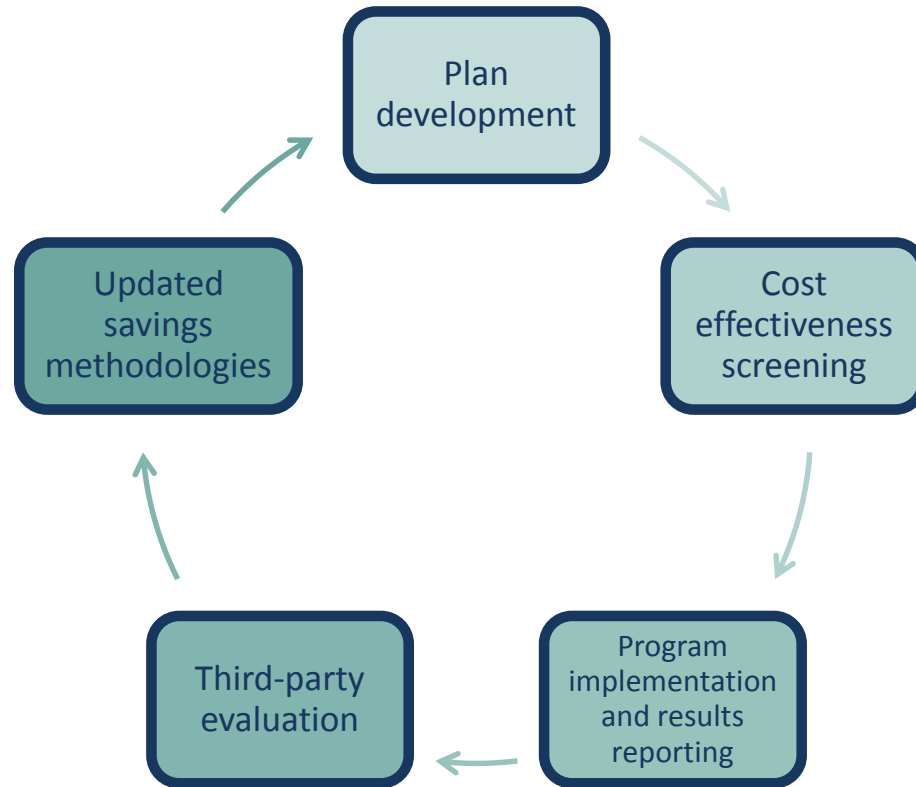


Current CT tests

| Perspective | Non-energy impacts (NEIs) | Current tests | |
|---------------------|---|----------------------|-----------|
| | | Primary | Secondary |
| | | UCT and Modified UCT | TRC |
| Utility | System reliability & peak load reduction | √ | √ |
| | Transmission & distribution savings | √ | √ |
| | Embedded cost of emissions reductions | √ | √ |
| Program participant | Other fuel costs | √ Residential only | √ |
| | Water consumption & sewerage cost | | √ |
| | Other operating & maintenance costs | | √ |
| | Health & safety | | |
| Public policy | CO ₂ + NO _x + SO ₂ emissions (non-embedded cost) | | √ |
| | Narrowing of affordability gap | | |



CET's role in the C&LM planning process



C&LM Plan incentives

- **Incentives** are designed to drive market transformation and can be a large component of program costs
- Incentives may be:
 - Standardized for common technologies
 - Designed to remove price barriers between standard and high efficiency equipment
 - Designed to include technical assistance and engineering costs
 - Tiered to encourage participants to address multiple efficiency improvements

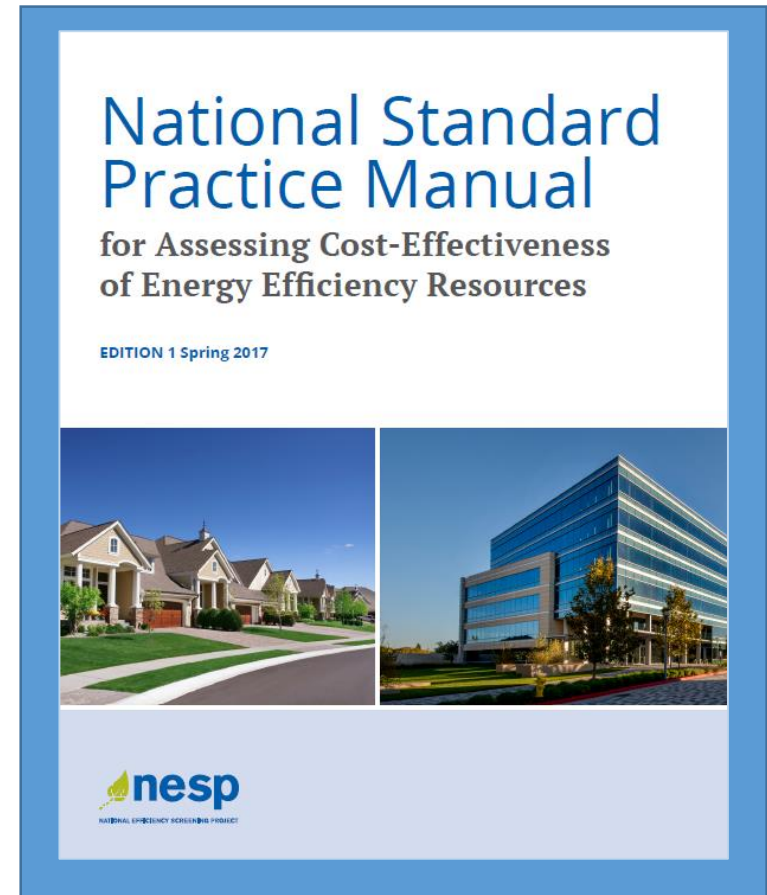


Measuring C&LM Plan results

- Cost-effectiveness testing is not the only metric or means to measure and ensure effectiveness of programs in the C&LM Plan
- C&LM Plan develops metrics for:
 - Total savings
 - Cost per kWh, cost per kW, cost per ccf
- After program implementation, *actual* savings realized are reported in comparison to predicted savings
 - Program effectiveness of spending vs. savings
- Additional metrics to ensure Plan objectives achieved



Overview of the NSPM



Published 2017 by National
Efficiency Screening Project

National Standard Practice
Manual

Goal of NSPM

- The NSPM approach recognizes that C&LM decisions have important impacts not just on utilities and participants, but on a jurisdiction's ability to meet its broader policy objectives
- Aim is to improve consistency and integrity in state energy-efficiency programs by equipping states with a step-by-step process to develop effective cost-effectiveness tests



- *NSPM provides a foundation on which jurisdictions can develop and administer a cost-effectiveness test, but does not prescribe “the answer”*

National Standard Practice Manual



New guidelines for cost-effectiveness testing

- Drivers...
 - The traditional tests often do not capture or address state policies related to the objectives of the relevant efficiency programs
 - The traditional tests often are modified by states in an ad hoc manner, without clear principles or guidelines
 - Efficiency is not accurately valued in many jurisdictions
 - There is often a lack of transparency on why tests are chosen and how they are applied



NSPM – Best practices for primary test

- 1. Policy-oriented** — Thoroughly and explicitly grounded in all applicable policy goals (e.g., energy, environment, public health, economic development, etc.)
- 2. Comprehensive** — Accounts for all relevant, substantive impacts, even those that are difficult to quantify and monetize
- 3. Symmetrical** — If a set of benefits is counted, so are corresponding costs, and vice versa
- 4. Oriented to long term** — “[T]he resource decisions made today will affect customers far into the future.”
- 5. Transparent** — Fully documents all relevant inputs, assumptions, methodologies, and results



NSPM

- Developed by National Efficiency Screening Project (NESP) – includes stakeholders working to improve economic analyses
 - Over 75 organizations involved, representing a range of perspectives
- Builds on previous work over many years, including California manual



NSPM

- Defines *principles* for developing cost-effectiveness tests
- Establishes a framework for selecting and developing a *primary test*
- Provides guidance on *key inputs*



NSPM – Process

| | |
|--------|--|
| 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. |



DEEP's plan

- Follow the NSPM process to review and re-evaluate the primary test to be used for Conservation and Load Management Plan programs
- Timeline provides for inclusion in 2020 Plan Update



DEEP timeline

- Multiple public meetings
 - September, November, March
 - Written comments will be accepted at each step
- Collaborate with EEB
 - April, May
- Final determination to Companies in June 2019 for inclusion in 2020 Plan update [submitted by November 2019]



Schedule for three public meetings

- September
 - Explanation of Steps 1-3
 - Written comments by 10/1
- November
 - Review of steps 1-3
 - Explanation of Steps 4-7
 - Written comments
- March
 - Review proposed refinements for cost-effectiveness testing



Explanation of NSPM steps 1-3

1. Articulate Connecticut's applicable policy goals
2. Identify all utility system costs and benefits
3. Consider which additional non-utility system impacts to include in the primary test, based on applicable policy goals



Step 1 – Identify applicable policy goals

Some potential examples:

Coordination of State Plans and Programs CGS 22a-1a: Establishes state policy to improve and coordinate state plans, functions, programs, and resources...to practice conservation in the use of energy, maximize the use of energy efficient systems, and minimize the environmental impact of energy production and use.

Global Warming Solutions Act—Global Warming Solutions Act

Targets: Reduce greenhouse gas emissions 10% below 1990 levels by 2020; 80% below 2001 levels by 2050 and with **Public Act 18-82:** Reduce greenhouse gas emissions 45% below 2001 levels by 2030.



Step 1 – Identify applicable policy goals

More potential examples:

Weatherization—CGS 16-245m: Sets goal of weatherizing 80% of residential units by 2030 through implementation of Conservation and Load Management Plan.

Energy Utilization and Planning—CGS 16a-35k: Establishes state policy is to conserve energy resources by avoiding unnecessary and wasteful consumption, ensure that low-income households can meet essential energy needs, and directs consumption of energy resources in the most efficient manner feasible, directs assistance to citizens and businesses in implementing measures to reduce energy consumption and costs, and says that when available energy alternatives are equivalent, give preference for capacity additions first to conservation and load management.



Step 2 – Identify utility-system impacts

- Include all utility-system impacts (costs and benefits)
 - Central to principle of efficiency as a resource
 - All costs to deliver utility service
- Examples:
 - Energy generation, capacity, transmission, distribution, reliability, pooled transmission facilities



Step 2 – NSPM Sample Template

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 | |
|---|--|
| Participant Benefits | |
| Low-Income Customer Benefits | |
| Other Fuel Benefits | |
| Water and Other Resource Benefits | |
| Environmental Benefits | |
| Public Health 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] | |



Step 3 – Identify non-utility system impacts

- Some potential examples that are not currently in CT C&LM Plan testing but would meet certain selected state policy goals:
 - Costs and benefits of addressing health and safety barriers preventing weatherization of low-income households
 - Costs and benefits to close affordability gap
- Costs and benefits not included in cost-effectiveness screening can still be used to target marketing of programs



Schedule recap

- September
 - Steps 1-3
 - Written comments by 10/1
- November
 - Review of steps 1-3
 - Steps 4-7
 - Written comments
- March
 - Review proposed refinements for cost effectiveness testing
- April and May
 - Collaborate with Energy Efficiency Board
- June
 - Provide direction for inclusion in 2020 Update of C&LM Plan





Thank you for your participation



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