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

May 18, 2017

Prepared by
The National Efficiency Screening Project

nesp

1. Principles of Cost-Effectiveness Analyses

This chapter presents the six core principles that are embodied in the Resource Value Framework and are fundamental to helping guide jurisdictions in the development of their primary cost-effectiveness test. These principles represent sound economic and regulatory practices and are consistent with the input received from a wide range of stakeholders during the development of this manual.

The following principles should be applied when developing and applying a jurisdiction's primary EE cost-effectiveness test:

1. **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.
2. **Applicable Policy Goals.** A jurisdiction's primary cost-effectiveness test should account for its energy and other applicable policy goals. These goals may be articulated in legislation, commission orders, regulations, advisory board decisions, guidelines, etc., and are often dynamic and evolving.
3. **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.
4. **Symmetry.** Efficiency assessment practices should be symmetrical, for example by including both costs and benefits for each relevant type of impact.
5. **Forward Looking**. Analysis of the impacts of efficiency investments should be forward-looking, capturing the difference between costs and benefits that would occur over the life of efficiency measures and those that would occur absent the efficiency investments.[6]
6. **Transparency.** Efficiency assessment practices should be completely transparent and should fully document all relevant inputs, assumptions, methodologies, and results.

These principles are relevant to cost-effectiveness analyses of any resource, supply or demand, and are embodied within the Resource Value Framework provided in this manual. The key issues associated with their application to such analyses will differ

[6] As further discussed in this chapter, sunk costs and benefits are not relevant to a cost-effectiveness analysis.

13. Free-Riders and Spillover

This chapter describes how to address free-riders and spillover effects in cost-effectiveness analyses, for those jurisdictions that focus on net savings for those analyses.

13.1 Summary of Key Points

In jurisdictions that focus on net savings for their cost-effectiveness analyses:

- The treatment of free ridership and spillover effects should be a function of the categories of impacts that a jurisdiction chooses to include in the cost-effectiveness test it adopts pursuant to the process outlined in Chapter 3.
- With regard to free riders:
  - Financial incentives paid to free riders are a cost only if the cost-effectiveness test excludes participant impacts; otherwise the value of the financial incentive to the participant offsets the cost of the financial incentive to the utility system. In other words, the net cost of free riders is zero under any test that includes participant impacts.
  - No benefits from free riders should be included in any cost-effectiveness test.
- With regards to spillover:
  - There are no costs associated with spillover in jurisdictions whose cost-effectiveness test includes only utility system impacts. Spillover should increase costs under tests that include participant impacts.
  - Spillover increases benefits in every test.

Table 26 summarizes which categories of impacts are affected by free-rider and spillover effects, as further discussed below.

Table 26. Categories of Impacts Affected by Free-Riders and Spillover

Category	Free-Riders		Spillover	
	Costs	Benefits	Costs	Benefits
Utility System Impacts	Increase	n/a	n/a	Increase
Participant Impacts	Decrease	n/a	Increase	Increase (if applicable)
Other Impacts	n/a	n/a	Increase (if applicable)	Increase (if applicable)
Total/Net Impact	Increase only if test *excludes* participant impacts; otherwise no net effect	No effect under any test	No increase if test includes only utility system impacts; otherwise an increase	Increase under every test

Costs: Any financial incentives paid to free-riders should be treated as a utility system cost, because they are part of the overall cost to the utility of operating an efficiency program. For example, if a customer that receives a $100 rebate from a utility efficiency program for an efficiency measure that it would have installed absent the program, the utility system has incurred a $100 cost.

13.3.2 Participant Impacts

Benefits: No participant benefits associated with any savings achieved by free-riders should be included in cost-effectiveness analyses of efficiency programs because the participants would have achieved the same benefits absent the program.

Costs: Financial incentives paid to free-rider participants should be treated as a negative cost to participants because such participants would not have received any such financial support absent the program. This reduction in cost to participants cancels out the cost of free-riders to the utility system. Thus, under cost-effectiveness tests that include both utility system and participant impacts, the net cost of free-riders is zero.

Consider the example in subsection 13.3.1 in which a customer that receives a $100 rebate from a utility efficiency program for an efficiency measure that it would have installed absent the program. As discussed in subsection 13.3.1, the $100 is a utility system cost. Thus, if the jurisdiction's cost-effectiveness test included utility system impacts (as all tests must) but did not include participant impacts, there would be a net cost from the free-rider of $100. However, that changes if the jurisdiction's cost-effectiveness test also includes participant impacts because $100 cost to the utility system is offset by a $100 benefit to the free-rider participant. Put another way, under a test that includes both utility system and participant impacts, the $100 rebate is what is often called a transfer payment. It has distributional impacts—by moving money between customers—but no *net* cost to customers as a whole (which is the perspective that matters under cost-effectiveness tests that include participant impacts as well as utility system impacts).

13.3.3 Other Types of Impacts

Benefits: No other types of benefits associated with any savings achieved by free-riders (other fuel savings, water savings, environmental emission reductions, public health cost savings, poverty reduction, job creation, energy security, etc.) should be included in cost-effectiveness analyses of efficiency programs because they would have been realized absent the program as well.

Costs: Any other types of costs associated with efficiency investments by free-riders should not be included in cost-effectiveness analyses of efficiency programs because they would also have been incurred absent the program.

13.3.4 Summary of Economic Treatment of Free-Riders

Table 27 summarizes the proper economic treatment of free-rider costs and benefits for jurisdictions that focus on net (rather than gross) impacts.