

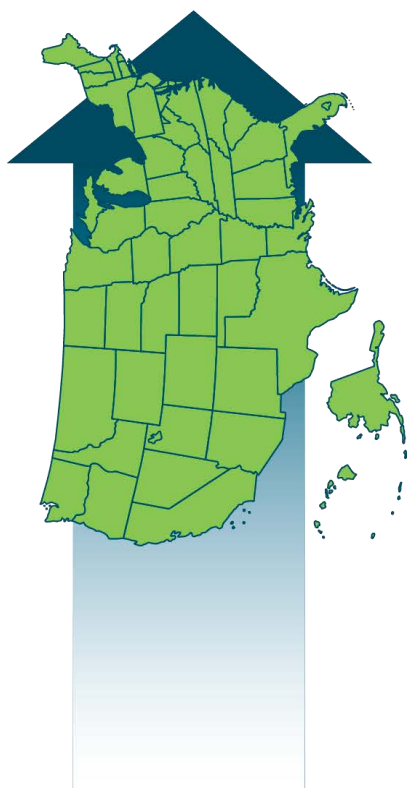
# SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

## Analyzing and Managing Bill Impacts of Energy Efficiency Programs: Principles and Recommendations


Driving Ratepayer-Funded Efficiency through Regulatory Policies Working Group

July 2011



The State and Local Energy Efficiency Action Network is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

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## Executive Summary

### Introduction

This document was prepared by the Driving Ratepayer-Funded Efficiency through Regulatory Policies Working Group of the State and Local Energy Efficiency Action Network.<sup>1</sup> The purpose of this document is to provide a set of principles and recommendations for regulatory commissions to consider in assessing rate impacts of utility-sector energy efficiency programs.

Energy efficiency programs offer a wide array of benefits to customers and energy utilities. While efficiency programs will reduce customers' bills, they can also result in increased rates. This increase in rates is most noticeable in the short term, while the reduced customer bills are experienced over the long term.

The increased rates from energy efficiency programs—and even the perception of increased rates—can pose a significant barrier to implementing energy efficiency programs. The typical response to rate impact concerns is to limit energy efficiency program budgets. However, this response is rarely based on a thorough assessment of rate and bill impacts. It will deprive customers of the many benefits offered by energy efficiency programs and significantly limit opportunities to use energy efficiency to achieve important public policy goals such as mitigating climate change.

### Principles and Recommendations

We recommend a completely different approach to addressing rate impacts from energy efficiency programs. This approach is based on first thoroughly assessing and understanding the rate and bill impacts expected from a proposed set of efficiency programs, and second managing energy efficiency programs and budgets in such a way as to mitigate rate increases.

In analyzing rate and bill impacts of energy efficiency programs, it is important to account for the long-term savings as well as the short-term costs. It is also important to account for all ways in which rates may be affected, including reduced generation costs and reduced wholesale electricity prices. The Ratepayer Impact Measure (RIM) test is an insufficient indicator of rate impacts, as it is overly narrow and does not present rate and bill impact information in a way that is useful to regulatory commissions.


In managing rate and bill impacts of energy efficiency programs, it is important to design programs in ways that reduce program costs and maximize customer participation. Increasing levels of customer participation is essential, because as more customers participate in energy efficiency programs, more customers will experience the benefits of net bill reductions. In fact, when seeking to mitigate rate impact concerns, regulators should consider increasing program budgets—rather than decreasing them—as a way of increasing participation and increasing the portion of customers that experience net benefits from the energy efficiency programs.

In order to implement all cost-effective energy efficiency, it will be necessary to provide efficiency services to the vast majority of customers over time. If the majority of customers eventually become program participants, then concerns about rate impacts should be significantly mitigated as so many customers experience net reductions in their bills.

Finally, when considering the rate impacts of efficiency programs, regulators should never lose sight of the many benefits of those programs, to both participants and non-participants (e.g., reduced energy costs, increased

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<sup>1</sup> The State and Local Energy Efficiency Action Network is sponsored by the U.S. Department of Energy and the U.S. Environmental Protection Agency as a follow-up to the National Action Plan for Energy Efficiency. The goal of the Driving Ratepayer-Funded Efficiency through Regulatory Policies Working Group is to provide key stakeholders with assistance in motivating utilities to support initiatives that target all cost-effective energy efficiency. It includes high-ranking members from public service commissions, consumer advocate offices, electric and gas utilities, efficiency advocates, and other industry stakeholders.



customer satisfaction,<sup>2</sup> improved reliability, reduced need for transmission and distribution facilities, reduced use of fossil fuels, and environmental benefits). The ultimate question to be addressed by commissioners is: are these benefits worth the expected rate impacts on non-participants?

It is important to note that the proper analysis of rate and bill impacts will require considerable effort, and there will be several uncertainties to address. This level of analysis is not necessarily required for all states or for all utility-sector energy efficiency programs. Many regulators should be comfortable approving well-designed, cost-effective energy efficiency programs without detailed review of the rate and bill impacts, based on the knowledge that rate impacts of many energy efficiency programs are typically quite modest and well worth the benefits. However, if a regulator is considering limiting energy efficiency budgets or activities because of concerns about rate impacts, then it is essential to first conduct a thorough assessment of the rate and bill impacts as well as a review of the opportunities for managing and mitigating them.

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<sup>2</sup> See State and Local Energy Efficiency Action Network. (2011). *Impacts of Energy Efficiency Programs on Customer Satisfaction*. [www.seeaction.energy.gov/pdfs/ratepayer\\_efficiency\\_customersatisfaction.pdf](http://www.seeaction.energy.gov/pdfs/ratepayer_efficiency_customersatisfaction.pdf).



## Description of Issue

Ratepayer-funded energy efficiency programs typically provide upward pressure on electric and gas rates, despite the fact that they reduce total costs and reduce average bills. Efficiency programs can increase rates even though their benefits clearly exceed their costs. The increase in rates is most noticeable in the short term due to the fact that efficiency program costs are typically collected from ratepayers in the early years while efficiency savings are enjoyed over many years.

The increased rates from energy efficiency programs can create a barrier—to utilities, regulators, and other stakeholders—to implementing energy efficiency programs. This may be true even in those states that are supportive of energy efficiency and that have mature energy efficiency programs.

Efficiency program administrators typically perform limited analyses to quantify the rate and bill impacts of energy efficiency programs. Consequently, the perception of rate increases can create a barrier, regardless of the actual magnitude of the rate impacts.

The typical response to concerns about rate impacts is to limit or curtail efficiency program budgets. This response (1) limits the amount of cost-effective efficiency that can be implemented; (2) deprives customers of the savings and benefits of efficiency programs; and (3) provides a negative signal to utilities and the efficiency industry with regard to future opportunities for efficiency investments.

It is important to note at the outset that the Ratepayer Impact Measure (RIM) Test—used by some states to evaluate the cost-effectiveness of energy efficiency programs—is an insufficient way to assess rate and bill impacts.<sup>3</sup> It is overly narrow, ignores many of the benefits of energy efficiency programs, is inconsistent with the assessment of supply-side resources, does not necessarily reflect the actual impact on rates, and deprives customers of the opportunity to lower their bills through energy efficiency measures. The recommendations and principles described below provide a more comprehensive and balanced means of addressing rate impacts.

## Principles for Regulators and Other Stakeholders

There are many considerations to account for when evaluating the rate and bill impacts of energy efficiency programs. In order to provide a useful framework for these considerations, The first begins with general principles for how to consider the issues. The next section lists principles for how to properly and thoroughly analyze rate and bill impacts. The final section lists principles for how to best manage and mitigate rate impacts of energy efficiency programs.

### General Principles


In instances where rate impacts pose a barrier to energy efficiency programs, regulators, utilities, and other stakeholders should analyze rate and bill impacts quantitatively and comprehensively, so that they are able to make informed decisions on how to address them.

Regulators, utilities, and other stakeholders should not automatically conclude that energy efficiency budgets should be limited or curtailed in order to mitigate rate impacts. Instead, they should first analyze the extent of the impact, and then consider a variety of options for how to manage it.

The central concern about rate impacts pertains to the different impacts on efficiency program participants and non-participants. In general, program participants experience most of the direct benefits of efficiency programs

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<sup>3</sup> See National Action Plan for Energy Efficiency. (2008). *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*. [www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf](http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf).



through reduced bills (relative to the cost without efficiency measures).<sup>4</sup> Non-participants experience higher rates without the same level of bill savings. In considering options for addressing rate impacts, it is essential to consider ways to mitigate this difference by increasing opportunities for participation by all customers.

In order to implement all cost-effective energy efficiency over time, it will be necessary to provide efficiency services to the vast majority of customers. If this goal is achieved, then most customers will eventually be program participants and will enjoy the benefits of the efficiency programs, thus the issue of differential treatment will be mitigated or eliminated. Therefore, pursuing the goal of achieving all cost-effective energy efficiency could lead to a reduction, not an increase, in rate impact concerns, as the vast majority of customers experience reduced bills over time. As participation levels increase, thoughtful program designs can ensure that all customers have a fair opportunity to participate.

## Analysis of Rate and Bill Impacts

It is essential that rate and bill impacts be properly quantified and presented in a way that is meaningful to stakeholders. The RIM test typically presents a very simplistic indication of whether rates will increase or decrease. It provides no indication of the extent to which rates will increase (e.g., 0.01 percent or 1.0 percent), the timing of the rate increase (e.g., for one year or for ten years), or the number of participants that will experience reduced bills (e.g., a small portion of customers or a large portion). All of this information is critical in properly weighing rate and bill impacts.

## Overarching Principles

Rate and bill impact analyses should be conducted in addition to cost-effectiveness analyses. Efficiency programs must first be deemed to be cost-effective as a threshold matter.<sup>5</sup> Cost-effective programs should then be evaluated for rate and bill impacts. The magnitude of rate impacts has no bearing on whether a program is cost-effective.

Rate and bill impact analyses should estimate the impacts of energy efficiency on customer bills, as well as customer rates, because the primary benefits of efficiency measures are reflected in the customer bills.

Rate and bill impacts should separately identify the impacts on (1) program participants, (2) program non-participants, and (3) all customers on average. Furthermore, rate and bill impact analyses should attempt to estimate the number of program participants, as well as the percentage of participants relative to total customers.

Rate and bill impact analyses should account for impacts over the long-term (e.g., using a study period that coincides with the average life of energy efficiency measures) in order to capture the full effect of energy efficiency savings.

## Analytical Principles


Rate and bill impact analyses should be performed on a portfolio basis (as opposed to, or in addition to, a program-by-program basis), because it is the entire portfolio of programs that will affect customer rates and bills.

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<sup>4</sup> All customers will experience several indirect benefits of energy efficiency, including reduced risk, improved reliability, reduced transmission and distribution costs, reduced costs of environmental compliance, reduced environmental impacts, and price suppression in wholesale electric markets.

<sup>5</sup> Cost-effectiveness should be determined on the basis of one of the following: the Societal Test, the Total Resource Cost Test, or the Program Administrator Cost Test, or a combination of these tests. The choice of which of these tests to use is outside the scope of this paper. A more detailed discussion is available in the document referenced in Footnote 3.





Rate and bill impact analyses should compare (1) the estimated rates and bills with the energy efficiency programs in place to (2) the estimated rates and bills that would be in effect in the absence of the energy efficiency programs.

Rate and bill impact analyses should present the percentage increases in total rates and total bills, as well as the absolute dollar increases in rates and bills.

Rate and bill impact analyses should account for all potential costs of energy efficiency, including program costs, shareholder incentives, lost base revenue collections, and decoupling adjustments, where relevant.

Rate and bill impact analyses should account for all potential savings that are expected to affect rates, including avoided generation costs, avoided transmission costs and losses, avoided distribution costs and losses, avoided environmental compliance costs, and wholesale market price suppression effects.

### Management of Rate and Bill Impacts

Once a thorough and meaningful understanding of rate and bill impacts is gained, then it is essential to consider the many opportunities available to help manage and mitigate rate impacts from energy efficiency programs. There are many more options available than simply cutting budgets or eliminating programs; these options should be fully explored in order to ensure that customers are provided sufficient opportunity to enjoy the benefits of energy efficiency programs.

### Principles for Managing Rate and Bill Impacts

When regulators, utilities, and other stakeholders assess the rate impacts of energy efficiency programs, they should:

- Consider the rate and bill impacts of energy efficiency programs in light of the many benefits of those programs (e.g., net reductions in energy costs, increased customer satisfaction, improved reliability, reduced need for transmission and distribution, reduced use of fossil fuels, environmental benefits, wholesale price suppression effects)<sup>6</sup>
- Recognize the benefits of energy efficiency that are enjoyed by all customers, including non-participants (e.g., improved reliability, reduced need for transmission and distribution, reduced use of fossil fuels, environmental benefits, wholesale price suppression effects, local economic development). The extent of these benefits may vary with individual efficiency programs
- Recognize that the short-term increases in prices due to energy efficiency are typically offset with long-term reductions in bills
- Consider options for increasing budgets in order to increase participants
- Consider options for redesigning programs in ways that will increase participants
- Compare the bill impacts of energy efficiency to those of other measures that may be necessary to meet environmental requirements, particularly with regard to climate change
- Consider the net benefits indicated by the Program Administrator Cost Test (if this is not the primary test used for cost-effectiveness), as this test provides the clearest indication of the direct impact on rates
- Explore potential revenue streams that would offset the costs of energy efficiency (e.g., regional transmission organization forward capacity market revenues, revenues from emission cap and trade programs).

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<sup>6</sup> A number of resources for evaluating energy efficiency program benefits are available from the National Action Plan for Energy Efficiency: [www.epa.gov/cleanenergy/energy-programs/suca/resources.html](http://www.epa.gov/cleanenergy/energy-programs/suca/resources.html).



## Efficiency Program Design Principles to Mitigate Rate Impacts

Energy efficiency program costs should be kept as low as possible, without sacrificing the goal of achieving all cost-effective energy efficiency, by:

- Minimizing program administration costs as much as is feasible
- Maintaining customer financial incentives that achieve the proper balance between minimizing program costs and overcoming market barriers
- Designing energy efficiency program administrator incentives that achieve the proper balance between minimizing program costs and providing sufficient incentive for effective program implementation
- Designing energy efficiency program administrator incentives that encourage energy savings and net benefits, as opposed to providing rewards for spending money
- Delivering all cost-effective efficiency measures to each participant, in order to leverage marketing and delivery costs (i.e., avoid lost opportunities)
- Conducting joint research and joint programs with other program administrators in order to achieve economies of scale and to share lessons learned.

Energy efficiency programs should be designed to maximize the opportunity for customer participation by:

- Addressing all end uses that have cost-effective efficiency opportunities
- Providing all customer types, especially low-income customers, with opportunities to participate
- Offering efficiency measures specifically tailored to each customer type
- Targeting and actively pursuing non-participants, as well as those customers that have not participated in recent years.

Program administrators should give more consideration to cost-effective demand response options, including rate designs to encourage efficiency, as a means of mitigating bill impacts from energy efficiency programs.



## Additional Resources

The resources listed below may be useful to assist stakeholders with the rate and bill impact issues outlined in this paper.

### Lawrence Berkeley National Laboratory Case Studies

Cappers, P.; Goldman, C.; Chait, M.; Edgar, G.; Schlegel, J.; Shirley, W. (March 2009). *Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility, Technical Appendices*. LBNL-1598E. Berkeley, CA: Lawrence Berkeley National Laboratory. <http://eetd.lbl.gov/ea/emp/reports/lbnl-1598e-app.pdf>.

Cappers, P.; Goldman C. (August 2009). *Empirical Assessment of Shareholder Incentive Mechanisms Designs under Aggressive Savings Goals: Case Study of a Kansas "Super-Utility"*. LBNL-2492E. Berkeley, CA: Lawrence Berkeley National Laboratory. <http://eetd.lbl.gov/ea/emp/reports/lbnl-2492e.pdf>.

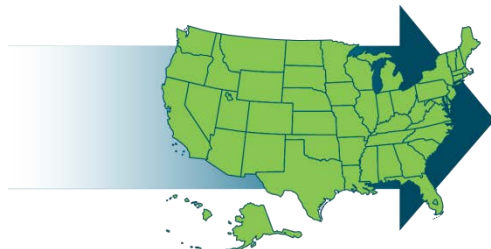
Cappers, P.; Satchwell, A.; Goldman, C.; Schlegel, J. (August 2010). *Benefits and Costs of Aggressive Energy Efficiency Programs and the Impacts of Alternative Sources of Funding: Case Study of Massachusetts*. LBNL-3833E. Berkeley, CA: Lawrence Berkeley National Laboratory. <http://eetd.lbl.gov/ea/emp/reports/lbnl-3833e.pdf>.

### National Action Plan for Energy Efficiency Benefits Calculator

This tool shows the broad benefits of energy efficiency for the entire spectrum of stakeholders: consumers, utilities, and society. It is available at: [www.epa.gov/cleanenergy/energy-programs/suca/resources.html](http://www.epa.gov/cleanenergy/energy-programs/suca/resources.html).



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