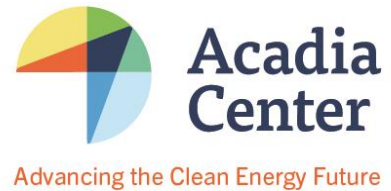


Energy Efficiency in Massachusetts

Our First and Least-Cost Resource

August 2015



What has Massachusetts' Least Cost Procurement Policy Achieved to Date?

Least Cost Procurement is the principle of ensuring that the utility purchases the lowest cost energy resource – energy efficiency – first. Massachusetts law requires utilities to invest in all cost-effective energy efficiency that is less expensive than buying electricity or natural gas. Electricity from a combined cycle natural gas power plant costs about 11-16 cents per kilowatt-hour (kWh), while it costs about 4 cents to save a kWh through efficiency. Massachusetts' strategy is based on economics, flexible to changing market conditions, and designed to maximize consumer benefits. For more information, see: [Investing in Energy Efficiency to Optimize the Electric System, Spur Markets and Achieve Consumer and Environmental Benefits](#).

And it's working. Over the last 5 years, Massachusetts has reaped \$11.5 billion in benefits for electric and gas ratepayers, with program costs of \$2.4 billion. That means for every \$1 that the utilities spend in these programs the residents and businesses of Massachusetts get \$4.79 in benefits. The energy efficiency programs have aggressively built towards capturing all cost-effective energy efficiency and Massachusetts has now been ranked first in the nation by ACEEE since 2011.

How has investing in energy efficiency helped Massachusetts improve employment and the economy?

Massachusetts' investments in cost-effective, low cost energy efficiency are creating jobs and boosting economic activity. Energy efficiency reduces the cost of doing business and lowers energy bills, leaving them with more disposable income to spend on other goods and services. These two effects lead to job creation and economic growth. In New England, every \$1 million invested in energy efficiency leads to the creation of 46 job-years of employment, and every \$1 invested boosts Gross State Product by \$5.90. The results speak for themselves:

- Since 2010, consumers have realized \$11.48 billion in economic benefits from \$2.44 billion in energy efficiency.
- The state's energy efficiency investments will create over 109,000 job-years of employment economy-wide and add \$16.4 billion to Gross State Product.
- The climate impacts are significant as well -- reducing CO₂ emissions by an estimated 3.61 million tons, the equivalent of removing over 750,000 cars from the road every single year – providing a large part of the state's mandate to reduce GHG under its Global Warming Solutions Act.

Massachusetts' 2014 Energy Efficiency investments alone will deliver:

- \$3.2 billion in benefits (115% of planned);
- Almost 25,800 job years of employment and add \$3.9 billion to the Gross State Product;
- Summer capacity savings equivalent to building a 180 MW power plant.

In 2014, the MassCEC found that:

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- There are 65,000 workers at more than 4,000 firms working in the Massachusetts energy efficiency industry, representing a 35.6% growth in the number of firms since 2013;
- Energy efficiency employment makes up half (50.9%) of jobs at startups working on pre-commercialized technologies;
- 68% of clean energy firms are engaged in energy efficiency work, the largest and fastest growing sector.

Doesn't the Energy Efficiency Surcharge Increase Rates and Bills?

Energy efficiency investments are funded through diverse sources including the system benefit charge. By making the charge clear on our bills, some conclude that the MassSave programs make our energy bills more expensive. This is misleading at best. Far from being any sort of “extra,” the Energy Efficiency Surcharge is the only portion of the bill that helps us save money. Energy efficiency is the least-cost fuel source so buying electricity from a natural-gas fired power plant costs 11-16 cents per kWh, yet saving power through energy efficiency actions costs about 4 cents per kWh. Efficiency savings are even more cost-effective compared to the full retail rate that consumers pay – the cheapest energy is that which we do not use. When efficiency investments lower demand, they avoid high cost investments like transmission lines and substations. In fact, due to the MA and other state efficiency investments, ISO-NE indefinitely deferred over \$400 million of planned transmission upgrades that were no longer justified. Lowering demand on the system improves reliability and contributes to nationally mandated reliability standards in the most cost-effective way possible.

Rhode Island's Division of Public Utilities--the state agency charged with watching out for consumer interests--recently commissioned the research firm Synapse Energy Economics to see what efficiency is really doing for our electric bills. The analysis finds that a homeowner who gets a home energy assessment can save approximately 12% on her electric bill by replacing inefficient lighting and appliances and upgrading home insulation and weatherization. Factor in savings on natural gas or fuel oil use and total spending on energy is even lower. And small business customers, who are eligible for free energy audits, can save as much as 37% to 47% by installing high efficiency equipment and making recommended retrofits.

What if a customer is already energy efficient? Why should they keep paying?

Everyone benefits from energy efficiency. Even consumers who do nothing to their own houses or offices (or have already made energy efficiency upgrades) benefit from their neighbors' energy efficiency actions. By reducing the state's demand for power, we drive down costs and those savings are passed on to all electric customers. These bill savings significantly outweigh the amount that we all pay to finance low cost, low risk energy efficiency investments. We benefit from system savings in other ways too. In 2012 and 2013, energy efficiency policies in Massachusetts and Vermont allowed regulators to defer indefinitely more than 10 planned transmission upgrades, saving all New England ratepayers about \$416 million in transmission costs. During the winter of 2014 along, Acadia Center analysis concludes that, without savings from energy efficiency programs, wholesale electricity prices would have been 24% higher and Massachusetts' electricity costs would have been about \$680,000,000 higher during the three-month winter period.

What benefits does the Energy Efficiency Advisory Council (EEAC) provide?

One of the principal contributors to Massachusetts' success saving energy is the EEAC, a board with a statutory mandate and resources to oversee programs, assess cost-effective efficiency potential, guide utility planning and budgeting, conduct evaluation of the efficiency programs, and promote public awareness and understanding of

energy efficiency. Utilities draft 3-year efficiency procurement plans that detail how they will invest in all cost-effective efficiency, including funds for the planned investments, and recommend utility performance incentives for meeting or exceeding planned goals. The plans go first for review, input and approval by the EEAC, and then for final approval by the DPU.

The strength of the EEAC comes from the fact that it brings together diverse, key stakeholders representing all types of consumers and interests -- business interests that include the state's largest employers, manufacturers, small businesses and institutions like hospitals, together with consumer advocates, environmental justice advocates, and energy efficiency experts.¹ A consensus position supported by such a broad representation of interests is a powerful signal to regulators, particularly when it is backed by a substantive record and quality of decision-making. Rather than expend effort on contentious litigated proceedings between utilities, intervenor groups, and public agencies, the EEAC can bring all stakeholders into the discussion before policies and program details progress to the point where there is little flexibility to address concerns. Reaching a unified vision can be tough work, but reaching consensus adds significant stability to the efficiency institution and to its programs

If energy efficiency is such a good deal, why don't people do it on their own?

There are many well-documented market barriers, market failures and other reasons why consumers consistently fail to adopt cost-saving efficiency measures that are in their own economic best interest. For example, it's impossible to identify inefficiencies by looking at a typical energy bill. Consumers cannot easily pinpoint what appliance to replace with a more efficient model or what building energy improvements to make to lower their energy costs. It is hard for consumers to calculate savings and be certain that making an efficiency investment will save money by reducing their energy bills over time, as future energy prices are always uncertain. Often, it just seems like too much time and effort to research an efficient upgrade, fill out a loan application, find a contractor and get quotes and supervise workers in his or her home or business. In addition, energy consumers – especially businesses – typically want a 2- to 3- year payback for capital investments, and if an efficiency project cannot meet that condition, it frequently will not get done. For more information, see [Weatherization and Energy Efficiency as a Resource](#).

How do Massachusetts' Energy Efficiency Programs overcome these barriers?

MassSave programs are designed to overcome most of these impediments through three primary tools:

- **Technical assistance and information:** Guidance from energy efficiency professionals can make energy efficiency improvements more understandable, accessible, and easily implemented by homeowners and business people. Experts help consumers work through the available information about upfront costs, how to choose a contractor, quotes and pricing, available incentives, and resulting energy savings. Experts also provide back-end assistance through commissioning and training on the use of equipment to make sure the customer knows how to operate it as intended.
- **Financial incentives and rebates:** Incentives help by reducing the risk (or perceived risk) of not recouping an energy efficiency investment and by guiding customers to the best options. Energy efficiency incentives reduce the length of the payback period and make the project feasible, even for business customers that must conform to strict payback requirements. For example, a residential customer is eligible to receive a free home energy assessment, during which the auditor will install

¹ The EEAC includes 15 voting members representing diverse organizations and interests named in the enabling legislation, see <http://www.ma-eeac.org/>.

energy efficient lighting and other measures at no-cost. The customer may also be eligible to have his home weatherized and pay only a portion of the total project cost. Utilities also buy down the price of LED lightbulbs at retailers like hardware stores so that the sticker price is significantly lower than it otherwise would be. The objective is to design the incentive to the market and fuel type, while simultaneously minimize the cost of saving energy.

- **Efficiency financing:** Access to capital is a barrier to implementing efficiency for some customers, and various forms of financing, notably the zero-interest HEAT loan, have been used to cost-effectively address this in many markets. Loans can help homeowners or business owners with efficiency upgrades when access to capital is a problem.

Why should utilities earn a “performance incentive” for energy efficiency?

There is an inherent conflict between the traditional utility business model and Massachusetts’ mandate to reduce the state’s energy costs by investing in all cost-effective energy efficiency. Under the traditional business model, the utility earns revenue when it sells electricity (or natural gas) – so energy efficiency directly undermines the utility’s bottom line by reducing sales. Massachusetts adopted revenue decoupling in 2008 in order to address this conflict. Decoupling keeps a utility from over- or under-collecting, relative to an approved revenue cap, due to variations in sales. However, decoupling only removes the *disincentive* for energy efficiency – it does not provide an incentive for the utility to be a full partner in energy efficiency and clean resource investments. Performance incentives are a key tool to motivate the utility to achieve high levels of efficiency savings by:

- Allowing energy efficiency activity by the utility to be a source of earning, rather than just a pass-through expense;
- Putting energy efficiency investments on a more comparable footing with other types of utility investments, such as in transmission and distribution, which are allowed to earn a rate of return;
- Offering a financial reward and motivation directly tied to achieving measurable successes in saving energy.

The performance incentive is one effective tool for delivering economic benefits and cost savings to Massachusetts that far exceed the amount invested. Between 2010 and 2014, Massachusetts has invested \$2.44 billion in cost-effective energy efficiency, and the utilities have been rewarded approximately \$149 million for achieving those savings. As a result, Massachusetts consumers have realized nearly \$8 billion in net economic benefits – an amount over 53 times greater than the total performance incentive reward. The performance incentive signals that utility executives must take energy efficiency seriously in Massachusetts, and devote the necessary resources to achieving the energy savings goals set by the Department of Public Utilities. The benefits to Massachusetts consumers far outweigh the cost of both the energy efficiency investment and the performance incentive reward.

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