

3. The Triennial Plan

3.1 Purposes and Requirements

The main purposes of the strategic plan for the Trust's programs are to:

- Serve as a guide for staff working to implement the programs;
- Help Trustees track the progress of staff's program implementation;
- Indicate the direction the Trust's programs are taking to customers, vendors, and contractors in the marketplace, and also to advocates and policymakers; and
- Satisfy the statutory requirement to present a document containing targets, objectives, performance metrics, strategies, and budget allocations for the Board and the Public Utilities Commission (Commission or PUC) to review.

The Efficiency Maine Trust Act specifies that, every three years, the Trust should prepare a strategic plan and that the Trust's programs should be administered by the Trust consistent with that plan. Pursuant to the statute, this plan, referred to as the "Triennial Plan," must:

- Be a detailed, triennial, energy efficiency, alternative energy resources and conservation plan;
- Identify all achievable cost-effective energy efficiency savings and related programs that could be implemented, the costs and benefits of such programs, and the basis and support for such identified costs and benefits;
- Include efficiency and conservation program budget allocations, objectives, targets, measures of performance, program designs, program implementation strategies, timelines and other relevant information;
- Provide integrated planning, program design and implementation strategies for all energy efficiency, alternative energy resources and conservation programs administered by the Trust;
- Include provisions for the application of appropriate program funds to support workforce development efforts; and
- Be consistent with the comprehensive state energy plan.¹

3.2 Process and Timeline

The Triennial Plan development process culminates with approval or rejection by the Commission through an adjudicatory proceeding. The statute provides that the standard for Commission approval is whether the Triennial Plan reasonably explains how its proposed use of funds would achieve the:

- Objectives and the implementation requirements of each statutory fund described herein; and
- Measures of performance (or "metrics") for each program funded by those funds.²

¹ 35-A MRS §10104(4).

² 35-A MRS §10104(4)(D); 35-A MRS §10104(3).

According to the statute, the Commission is to approve all elements of the Triennial Plan that it determines to be cost-effective, reliable, and achievable. The Commission also incorporates into gas and electricity utility rates sufficient revenue to provide for the procurement of energy conservation resources that are identified in the plan as being cost-effective, reliable, and achievable, within a statutorily established cap.

Before the Plan is submitted to the Commission, however, it undergoes several steps. The staff began developing Triennial Plan IV by reviewing recent past performance, working on a basic outline of priorities, identifying issues needing further analysis, and laying out a process and timeline. Trustees provided input during periodic program updates, budget discussions, and presentations on Triennial Plan issues. The staff obtained data from the utilities and market research from outside experts to help formulate program targets and strategies. The staff also commissioned several studies, which helped the staff estimate the budgets necessary to capture all efficiency resources that are reliable and achievable, and meet the standard for cost-effectiveness.

In addition, the staff launched a stakeholder engagement process. This process involved publishing a formal request for information before drafting this document, holding individual meetings, and holding a public hearing. It further involved soliciting and considering written comments on a draft version of the plan. All materials were made publicly available on a dedicated webpage that provided an ongoing means for stakeholders to submit questions, comments and recommendations, and supporting materials for the Trust's consideration. The Trust will also offer a detailed briefing on the Plan to the Legislature's Committee of jurisdiction to provide an opportunity for input. All written comments received by the Trust may be found at <https://www.energymaine.com/triennial-plan-iv/>.

After considering input from stakeholders and policymakers, the staff presents a final draft of the Triennial Plan at a meeting of the Board of Trustees. Once satisfied that the document comports with the objectives, targets, and requirements of the statute and provides a suitable explanation of the program strategies, the Board may approve the Plan by a two-thirds vote.

Finally, the process prescribes that the Trust staff will submit to the Board of Trustees an update to the Triennial Plan when significant changes are contemplated. Significant changes require approval by the Board before they may be put into effect. In the event these changes relate to the use of funds "generated by assessments" on utility ratepayers, the changes also require approval by the Commission "using the same standard as for the triennial plan."³

3.3 Program Implementation Priorities

In addition to best practices of administration and implementation, the plan reflects a balancing of the following priorities in its allocation of the budget and design of programs: acquiring resources, transforming the market, maintaining fairness, leveraging the private sector, and reducing environmental impacts of energy.

3.3.1 Acquiring Resources

A strong selling point for the Trust's programs is that they deliver energy resources that cost less than conventional energy resources and, therefore, reduce total energy costs. In the case of electricity, the

³ 35-A MRS §10104(6).

acquisition of low-cost energy resources also suppresses the rise of energy and capacity charges, and improves grid reliability. These benefits are essential if the Maine economy is to remain competitive with neighboring states and provinces. By investing in energy conservation projects that satisfy the Trust's stringent cost-effectiveness test, the programs are acquiring energy resources for the benefit of the participating customer and the ratepayers on the system. As a general rule, the budget allocations and program designs in this Triennial Plan reflect the Trust's top priority, which is reducing energy costs in Maine by the "maximum amount possible" through acquisition of demand-side energy resources that are cost-effective, achievable, and reliable.

3.3.2 Transforming the Market

Another priority of the Trust, as reflected in the Triennial Plan, is to help transform the marketplace with regard to energy conservation and cost-effective renewable energy resources. Market transformation in the Trust's programs takes several forms.

One example is building economies of scale for newer, high-efficiency products such that they are stocked on store shelves, salespeople and technicians are familiar with and promote the products, and the retail price is driven down. Recent energy-efficient technologies going through this transformation in Maine include ductless heat pumps and heat pump water heaters: these products are now available across the state due in significant part to the Trust's incentives, training for contractors and distributors, and informational materials.

Another means of market transformation is through workforce development. Triennial Plan IV continues the past success of promoting training for key players in the energy conservation supply chain. The Trust emphasizes the certification and licensing requirements for trade allies affiliated with Efficiency Maine programs. It also considers online and in-store training opportunities, scholarships, and other support for existing programs run by community colleges. In past years, Trust programs paid for and organized training for:

- Home energy auditors to learn sales skills when pitching their services to homeowners;
- Contractors to learn about new mini-split heat pumps;
- Sales staff at large retail chains who are responsible for promoting ENERGY STAR® lights and appliances;
- Large commercial contractors to learn about advances in variable frequency drives (VFDs); and
- Facility managers to become certified in best practices of operation and maintenance for the energy systems in their buildings.

A third area of activity that advances the priority of market transformation is the Trust's promotion of general energy education and awareness. The Trust maintains a website that helps both residential and business customers access information about available programs (including technical support and financial incentives), and has expanded the offerings to include more generic information about energy efficiency and the options available to consumers considering a purchase of new lighting, heating or cooling systems, water heaters, electronics, appliances, motors, or controls. Recently, this activity has included providing information to customers who may be unfamiliar with operating their new efficient equipment: the Trust's Ductless Heat Pumps web hub provides both pre- and post-installation information for customers (<https://www.energymaine.com/about-heat-pumps/>). Triennial Plan IV

continues to leverage these increasingly important website resources and expands the Trust's use of social media and digital advertising to effectively reach more customers.

Finally, market transformation includes activities to encourage the entry of new high-efficiency products and alternative energy products into the marketplace. The cost-effectiveness of new products or practices can be hard to demonstrate or predict. Meanwhile, making such products or practices available on a broad scale, while maintaining quality control, can be challenging. To address these issues, the Trust often seeks to start on a smaller scale by supporting innovative pilot initiatives. In this Triennial Plan, the Trust will continue to use the Innovation Program to pilot new products, or new applications of established products, as well as new approaches to running programs. The Trust will also continue its practice of funding custom projects in commercial and industrial settings, where appropriate. The funding of custom projects enables contractors and their customers to take advantage of energy-saving opportunities even if the product has not yet achieved sufficiently wide use to appear on a "prescriptive incentives list" of the most commonly used efficient products. Funding custom projects also enables the Trust to support best practices in building design, industrial processes, and building operation so that, over time, these will become standard industry practice.

3.3.3 Maintaining Fairness

The Triennial Plan also reflects the priority of maintaining fairness in the way that budgets are allocated and programs are designed and implemented. At a minimum, a degree of fairness is achieved by ensuring that statutory minimum funding levels are allocated to low-income customers (the greater of \$2.6 million or 10% of the Electric Efficiency Procurement and an appropriate percentage from the Natural Gas Conservation Fund) and to small business customers. Beyond these statutory directives for budget allocations, the Trust seeks to promote broad participation among customers and a reasonable distribution of project benefits throughout the state.

Before Triennial Plan III, the Trust allocated funds from electric customers (from the system benefit charge [SBC] and RGGI) and gas utility customers according to the percentage of total load represented by each customer class (e.g., approximately 40% for residential customers and 60% for business/institutional/industrial customers of electric utilities). Starting in Triennial Plan III and continuing with Triennial Plan IV, the Trust allocates funds on the basis of opportunity for cost-effective energy savings. This approach will continue to entail administering a blend of programs targeted to the needs of different customer types and the channels through which they access energy conservation. Some programs will result in a small number of very large projects acquiring extensive energy savings; others will result in tens of thousands of small, low-cost product upgrades that make small energy savings accessible to homeowners and businesses everywhere, even in more remote areas of the state. By contrast, other initiatives, such as the Small Business Initiative, will yield lower energy savings and incur greater cost. While these undertakings may run counter to the principle of maximizing resource acquisition, the Trust pursues them nonetheless because they are cost-effective, achievable, and reliable, and because it is important that customers from every sub-sector and every region of Maine have a reasonable opportunity to access the benefits of cost-effective energy conservation programs.

3.3.4 Leveraging the Private Sector

As noted above, an overarching purpose of the Trust is to reduce the energy costs of Maine's residential and non-residential customers to the maximum extent, consistent with the requirements of cost-

effectiveness. A core priority of the Trust is to leverage private sector funding and activities in the free market. This means that, as much as possible, the Trust designs its programs so that marketing and installation of efficiency, conservation, and alternative energy measures are incorporated into the normal, day-to-day activities of the existing supply chain, which comprises manufacturers; suppliers; vendors; architects and engineers; contractors (electricians, plumbers, heating technicians, builders); and retail stores. Leveraging the private sector entails taking advantage of competition in the marketplace to push down prices of equipment and services. This approach has the added benefit of avoiding “picking winners” in technology, fuel type, or service providers, leaving the outcome to the efforts of market players and the choices made by customers.

This market-based approach also means that in most cases, the homeowner or business owner bears ultimate responsibility for deciding what upgrades to install and which contractor to use, and for executing and paying for the transaction. Except for the case of improvements made in certain low-income homes, the Trust’s financial contribution takes the form of an incentive designed to move the customer from the status quo, or from purchasing the standard-efficiency model, to upgrading to a high-efficiency model. The incentive is designed to cover a portion of the cost of the energy upgrade, and the customer must bear the balance of the project cost. The Trust also offers loans for many upgrades to help customers reduce initial investment costs. Without this significant financial investment from the customers, the Trust’s costs for procuring cost-effective energy resources would be greatly increased, the overall cost of delivering energy through utility systems would be considerably higher, and emissions of carbon and other air pollutants would rise.

3.3.5 Reducing the Environmental Impacts of Energy

Traditionally, the production and consumption of energy have been among the largest contributors to air pollution, including greenhouse gases that cause climate change. Energy is also closely associated with other environmental and land use issues, such as water quality, solid and hazardous waste, wildlife impacts, scenic impacts, and sustainable use of finite resources. Energy conservation and clean alternative energy resources have the potential to not only reduce or mitigate harmful environmental impacts, but to do so more cost-effectively than other ways to mitigate such impacts.

Throughout the design and implementation of this Triennial Plan, the Trust’s top priority, as noted above, is to ensure that energy conservation and alternative energy resources maximize cost-effective energy savings and economic benefits to ratepayers and the local economy. In addition, consistent with statute, the Trust seeks to deploy these energy resources in a way that also advances state environmental policies.

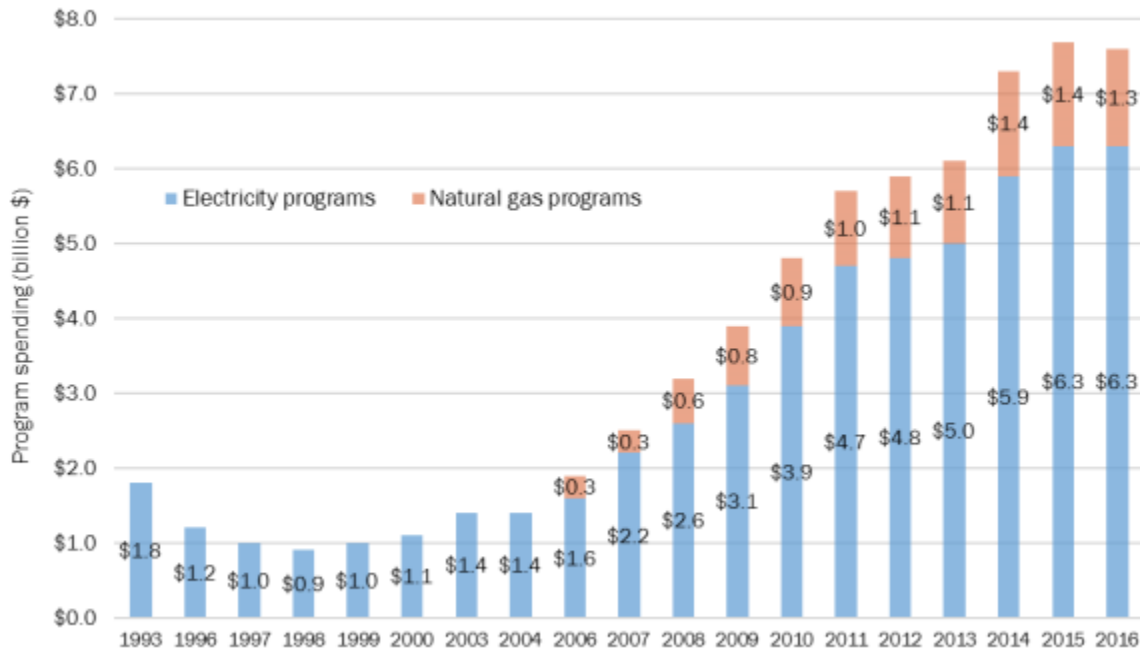
3.4 Results

3.4.1 Recent History of Energy Conservation Programs

Nationally, energy conservation programs are well-established as a means for cost-effectively lowering energy bills and reducing carbon dioxide and other air pollutants. Efficiency programs also have successfully promoted business profitability, local economic development, and jobs. It should be no surprise then to learn that across the United States, \$7.6 billion was invested in 2016 through programs

to promote the more efficient use of electricity, heating fuels, and industrial process fuels.⁴ Figure 3.4-1 shows that nationwide funding for energy conservation programs increased 443% between 2003 and 2016, reflecting a growing commitment to efficiency as a low-cost, low-carbon, and highly reliable energy resource.

Figure 3.4-1: National Spending on Energy Efficiency Programs



Note: Annual spending on electric and natural gas energy conservation. Natural gas spending is not available for the years 1993–2004. Sources: Nadel, Kubo, and Geller 2000; York and Kushler 2002, 2005; Eldridge et al. 2007, 2008, 2009; CEE 2012, 2013, 2014, 2015, 2016; Gilleo et al. 2015; Berg et al. 2016. As reprinted in American Council for an Energy Efficient Economy, “ACEEE: The 2017 State Energy Efficiency Scorecard,” September 2017.

Energy conservation programs have been delivering cost savings in Maine for decades. Before the restructuring of Maine’s electric utilities in 2000, the investor-owned utilities—Bangor Hydro Electric and Maine Public Service (now merged and renamed Emera Maine) and Central Maine Power—were vertically integrated, owning and managing generation stations as well as the transmission and distribution lines. They also offered energy conservation programs to their customers. Among the first energy conservation programs in the country, these initiatives were referred to as Demand Side Management (DSM) programs. Showing their commitment to providing Maine ratepayers with low-cost energy conservation, Central Maine Power proposed, and the Commission approved, DSM budgets above \$20 million per year in the early and mid-1990s.

⁴ American Council for an Energy Efficient Economy, “ACEEE: The 2017 State Energy Efficiency Scorecard,” September 2017, page vi.

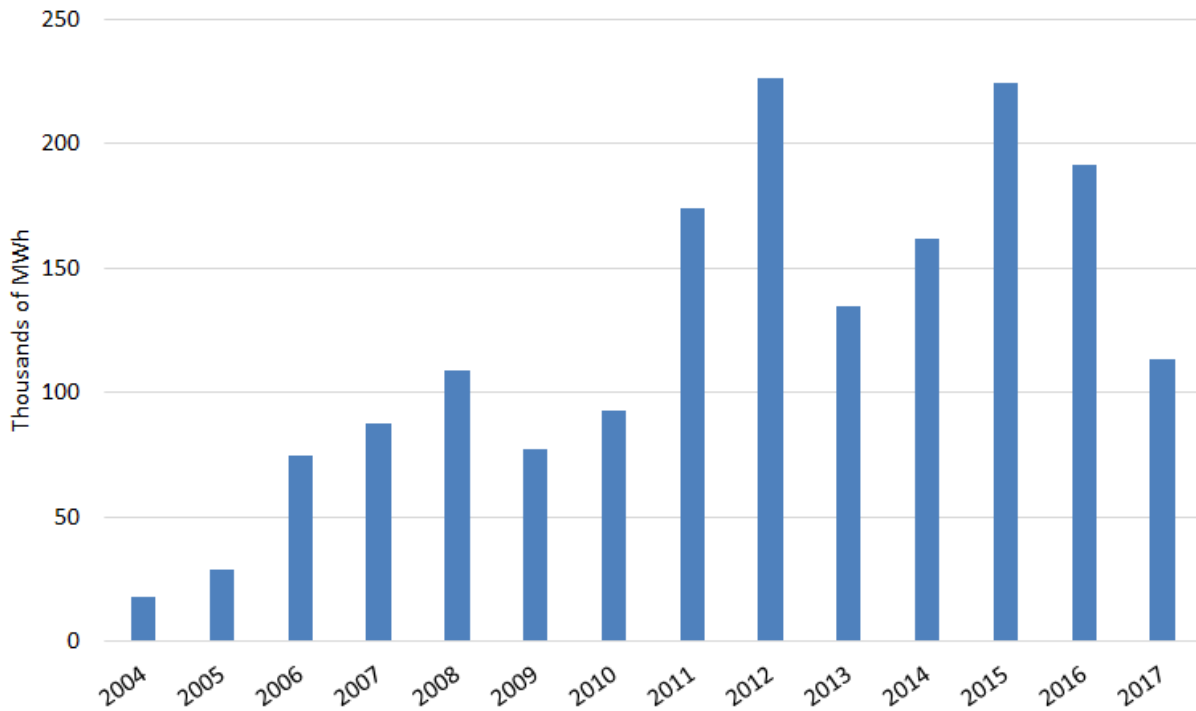
Starting in 2002, the Commission assumed responsibility for administering statewide energy conservation programs funded with an SBC. Over eight years, the programs grew from a handful of small educational and training initiatives to a full-fledged conservation unit, branded as “Efficiency Maine.” The unit offered energy-saving measures from the smallest low-income residential setting to the largest paper mills. Under Commission management, the Efficiency Maine programs adopted a market-based approach that relied on developing a network of trade allies (e.g., electrical and plumbing contractors, equipment suppliers, architects, and engineers) who are referred to as “Qualified Partners” (or “QPs”). Efficiency Maine also targeted residential and business lighting as among the most cost-effective opportunities for energy savings, and helped transform the lighting market to high-efficiency compact fluorescent bulbs and high-performance T8 linear fluorescent tubes. During this period in the middle of the decade, the Efficiency Maine programs were funded at about \$9 million per year. As certain pre-existing program commitments (from the so-called Power Partners Program) reached their end and made more funds available for Efficiency Maine, the annual budget for electricity savings programs grew to \$14-15 million by 2009.

In 2009, the State enacted legislation to shift responsibility for administering Efficiency Maine programs to a new independent trust — the Efficiency Maine Trust. Starting on July 1, 2010, the Trust consolidated responsibility for administering multiple revenue streams, including the Electric Conservation Fund, the Natural Gas Conservation Fund, the newly created RGGI Fund, the Renewable Resource Fund, and the federally funded State Energy Program. The mission given to the new Trust by the Legislature was to coordinate and, where appropriate, to integrate the administration of electric and thermal conservation programs and programs to promote alternative energy.

3.4.2 Energy Savings in Maine

Efficiency Maine has been steadily delivering energy savings to and lowering energy costs for Maine’s electricity, natural gas, heating oil, and propane customers. By way of illustration, Figure 3.4-2 shows the annual savings from Efficiency Maine electricity conservation programs – the longest running and most comprehensive Efficiency Maine programs -- from FY2004 to FY2017. Note that this figure shows only the savings from new program activity completed in each year. It does not reflect the cumulative savings from programs completed in prior years even though the savings from a conservation measure commonly persist throughout the lifetime of the equipment, usually more than a decade.

Figure 3.4-2 Annual Savings from Efficiency Maine Programs in Thousands of MWh (2004–2017)



Source: Efficiency Maine data.

3.4.3 Financial Savings (Benefits)

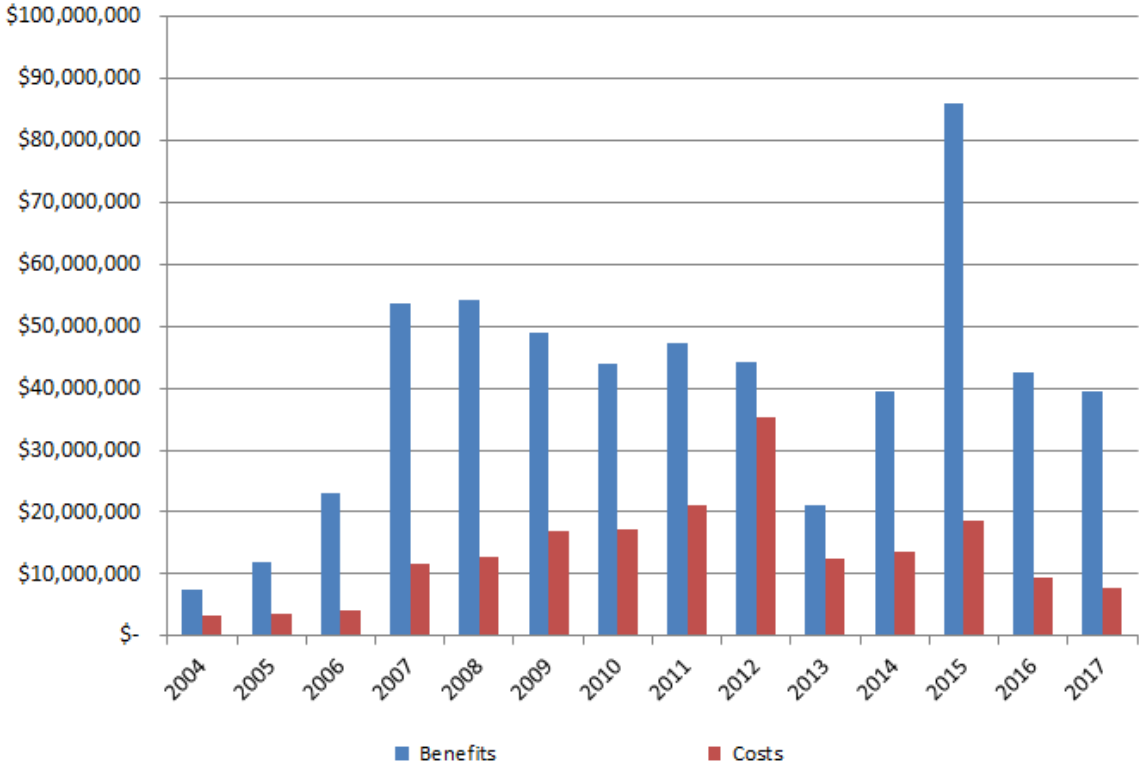
Energy and capacity savings from efficiency projects are the chief contributors to financial savings, which are referred to in the Trust’s calculus of cost-effectiveness as “benefits.” The financial savings represent the net cost that is avoided, or not paid, by the customer and other ratepayers as a result of the efficiency upgrade. Over the past decade Efficiency Maine programs have delivered significant benefits that outweigh the total costs.⁵

Figure 3.4-3 and Figure 3.4-4 highlight the financial savings, over the full lifetime that efficiency upgrades remain operational, for two of Efficiency Maine’s most popular and longest-running programs — the Commercial and Industrial Prescriptive Program and Retail Initiatives.⁶ Because the financial benefits are a function of the price of the energy use avoided, if energy prices drop they may decrease even as budgets or energy savings are increasing.

⁵ “Total costs” reflect the sum of the Trust’s costs for administration and financial incentives plus the incremental capital and operating costs paid by the customer.

⁶ The Business Incentive Program is now named the Commercial and Industrial Prescriptive Program.

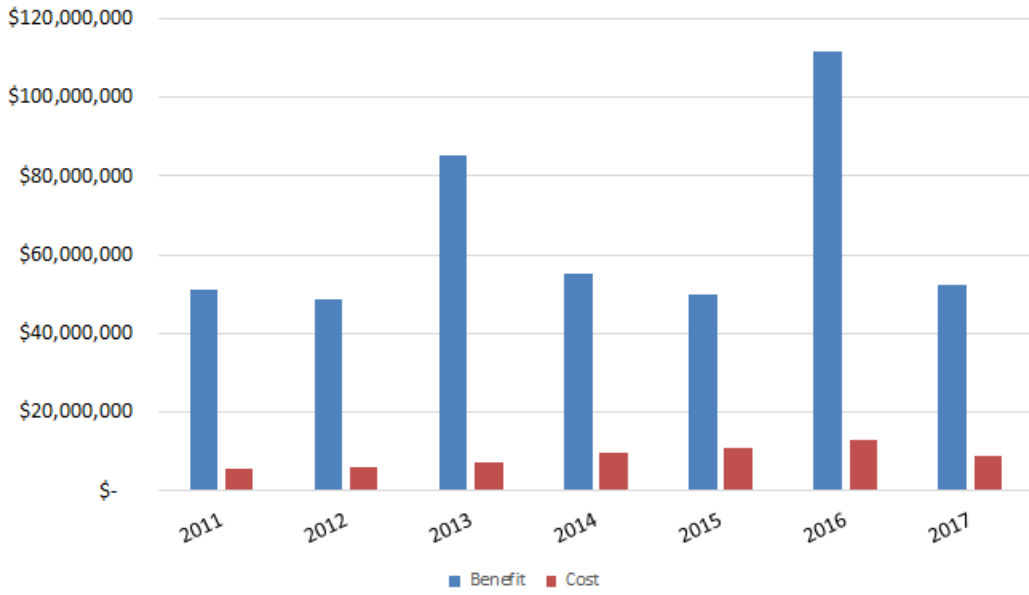
Figure 3.4-3: Benefits (Lifetime) vs. Costs of the Commercial and Industrial Prescriptive Program



Note: Reflects electric, natural gas, and unregulated fuel savings.

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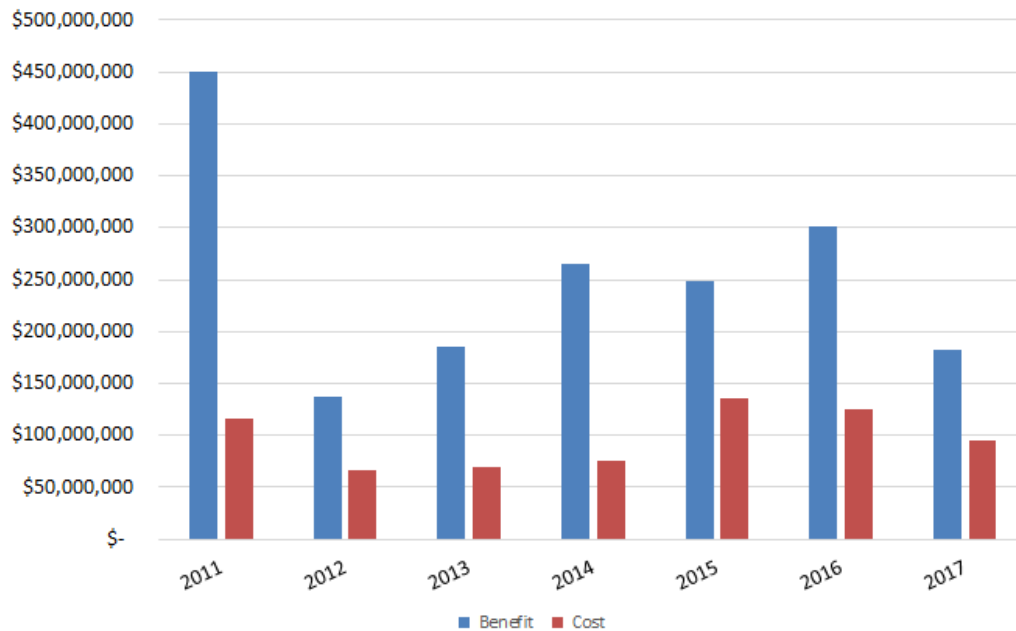
Figure 3.4-4: Benefits (Lifetime) vs. Costs of the Retail Initiatives Program



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Figure 3.4-5 highlights the program benefits from Trust programs targeting natural gas and unregulated fuel savings. These programs or measures are designed to achieve energy savings regardless of fuel type. For purposes of allocating budgets and tracking savings, the term unregulated fuels refers to fuels such as oil, propane, kerosene, or wood. These programs have delivered a large amount of heating fuel savings over the past three years. This increase in savings is driven primarily by activity in the Home Energy Savings Program.

Figure 3.4-5: Benefits (Lifetime) vs. Costs of Natural Gas and Unregulated Fuels Programs

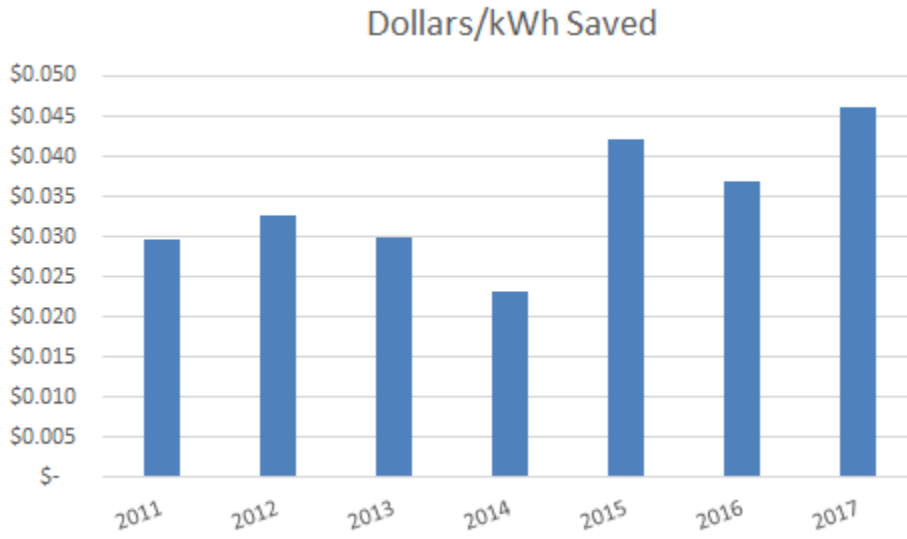


Note: Reflects electric, natural gas, and unregulated fuel savings.

3.4.4 Low Price of Efficiency

A different way to look at the value of energy conservation programs is to translate the cost savings into a price per unit of supply. When the total of the costs paid by the Trust and the incremental costs paid by participating customers is spread across the lifetime energy savings (e.g., electricity saved) of each year’s projects, the result is a price to deliver a unit of energy savings that can be usefully compared to the value of a unit of energy supply that is being avoided. As reported in each of the Trust’s Annual Reports from FY2011 to FY2017, the total cost of energy conservation improvements has ranged from 2.3 to 4.9 cents per kWh.

Figure 3.4-6: Total Cost of Electric Efficiency Improvements, FY2011-2017



3.4.5 Efficient Administration of Programs

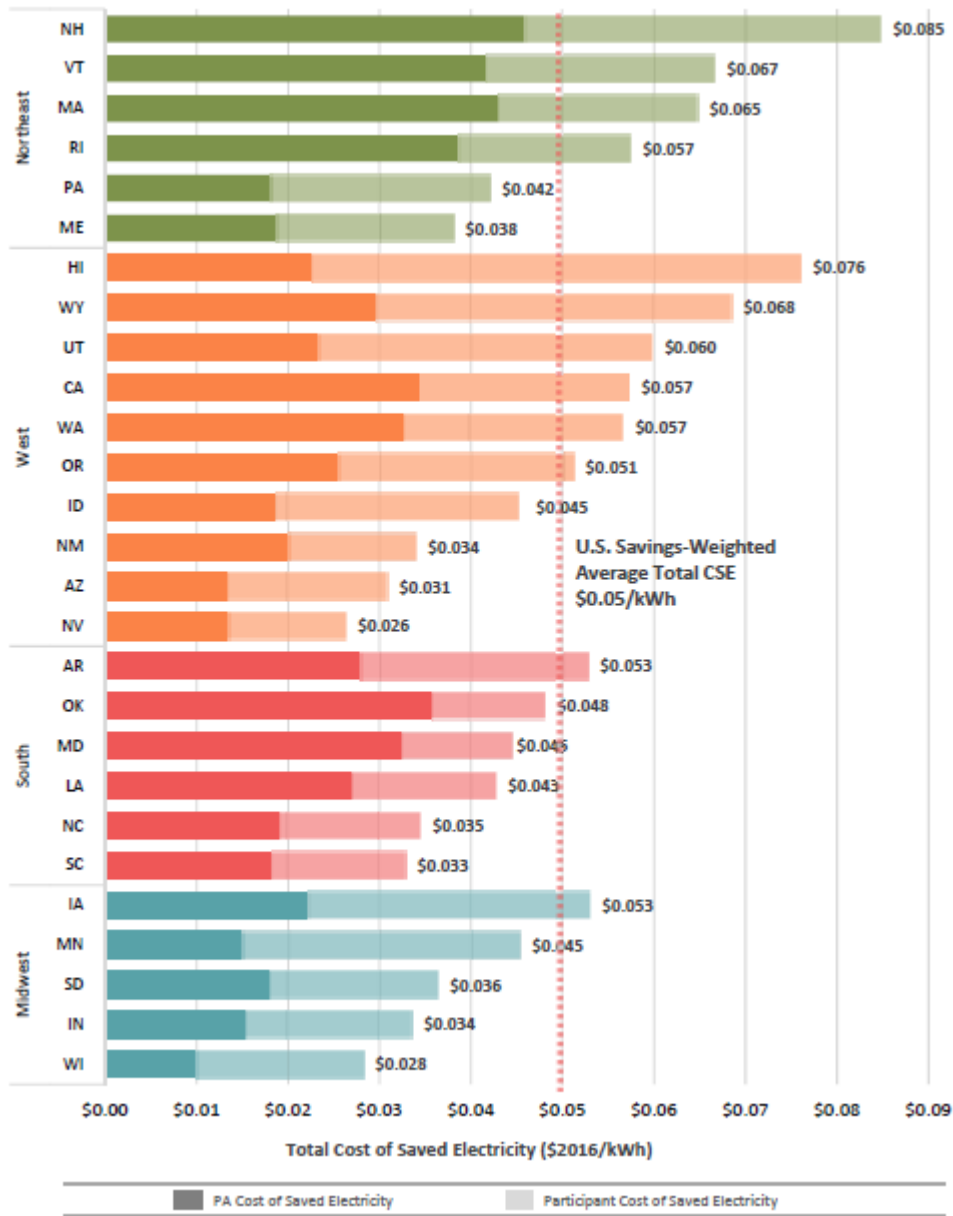
Maine statute identifies several best practices in program administration that the Trust is directed to pursue. Among these is the principle of maximizing “the efficiency with which programs are planned, designed, overseen and delivered.”⁷ This principle is complemented by statutory guidance regarding the efficient deployment of RGGI funds to “minimize administrative costs and maximize program participation and effectiveness.”⁸

The Trust has achieved reasonable success in delivering energy savings at a low cost of production during the previous Triennial Plan periods. This success is reflected in Figure 3.4-7.

⁷ 35-A MRS §10104(2)(C).

⁸ 35-A MRS §10109(4)(G) states, “In order to minimize administrative costs and maximize program participation and effectiveness, the trustees shall, to the greatest extent feasible, coordinate the delivery of and make complementary the energy efficiency programs under this section and other programs...”

Figure 3.4-7: State Rankings for Costs of Saving Energy



Note: PA = Program Administrator.

Source: Lawrence Berkeley National Lab, "The Cost of Saving Electricity Through Energy Efficiency Programs Funded by Utility Customers: 2009–2015," June 2018, page xvii.

The Trust regularly commissions independent, third-party evaluations and is committing more resources to measurement, verification, and analysis of program performance. By accelerating its collection of information on market prices, how measures are performing in the field, and what is driving customer participation in the programs, the Trust aims to continuously improve the effectiveness of its energy-saving strategies and maximize the efficiency of program delivery.