

Appendix A:

Long-Term Target Results

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Section 10104(4)(F) of the Efficiency Maine Trust Act provides that an objective of the Triennial Plan is to design, coordinate and integrate programs that advance six long-term goals related to reducing costs; weatherizing homes; reducing peak-load electricity demand; achieving savings of electricity, natural gas, and heating fuels; building private sector jobs; and, reducing greenhouse gas (GHG) emissions. This appendix presents historical results as they relate to the Trust's progress in advancing these goals.

1. Reducing Energy Costs, Including Residential Heating Costs

Section 10104(4)(F)(1) of Title 35-A provides the Trust the general goal of reducing energy costs. It does not specify a targeted amount of cost reduction. Rather, the statute directs the Trust to use energy efficiency, conservation and alternative energy resources to "help individuals and businesses meet their energy needs at the lowest cost"¹ and, specific to electricity customers, to "reduce energy costs for electricity consumers in the State by the maximum amount possible."² The annual and lifetime energy cost reductions achieved through the Trust's programs are provided in the Trust's annual reports, all of which are posted online.³

2. Weatherizing All Homes by 2030

Section 10104(4)(F)(2) of Title 35-A establishes a goal to weatherize "substantially all" homes whose owners or occupants are willing to participate in and share the costs of cost-effective home weatherization to a minimum standard of weatherization, as defined by the Trust, by 2030.

Since the launch of the first phase of the Home Energy Savings Program (HESP 1) in 2010, the Trust has provided rebates for energy upgrades⁴ in approximately 49,700 participating Maine homes, specifically:

- 2010–2011: 3,200 participants in HESP 1
- 2012–2013: 8,000 participants in Air Seal Initiative
- 2014–2018: 38,500 participants in the second phase of HESP (HESP 2)

Figure 1 illustrates the number of homes that participated in a weatherization program and have completed at least one prescriptive heating demand savings measure recognized and recorded by a Trust program. (It does not reflect homes that made improvements on their own, without participation in a Trust program, nor does it reflect the 200 to 300 homes per year that are weatherized through the federally funded programs to assist low-income residents administered by the Maine State Housing Authority.)

The Trust has historically assumed that approximately 20% (or 100,000 units) of the state's homes had been weatherized in prior years or were recently built and do not require additional weatherizing. A

¹ 35-A MRS §10103(1)(B).

² 35-A MRS §10110(2).

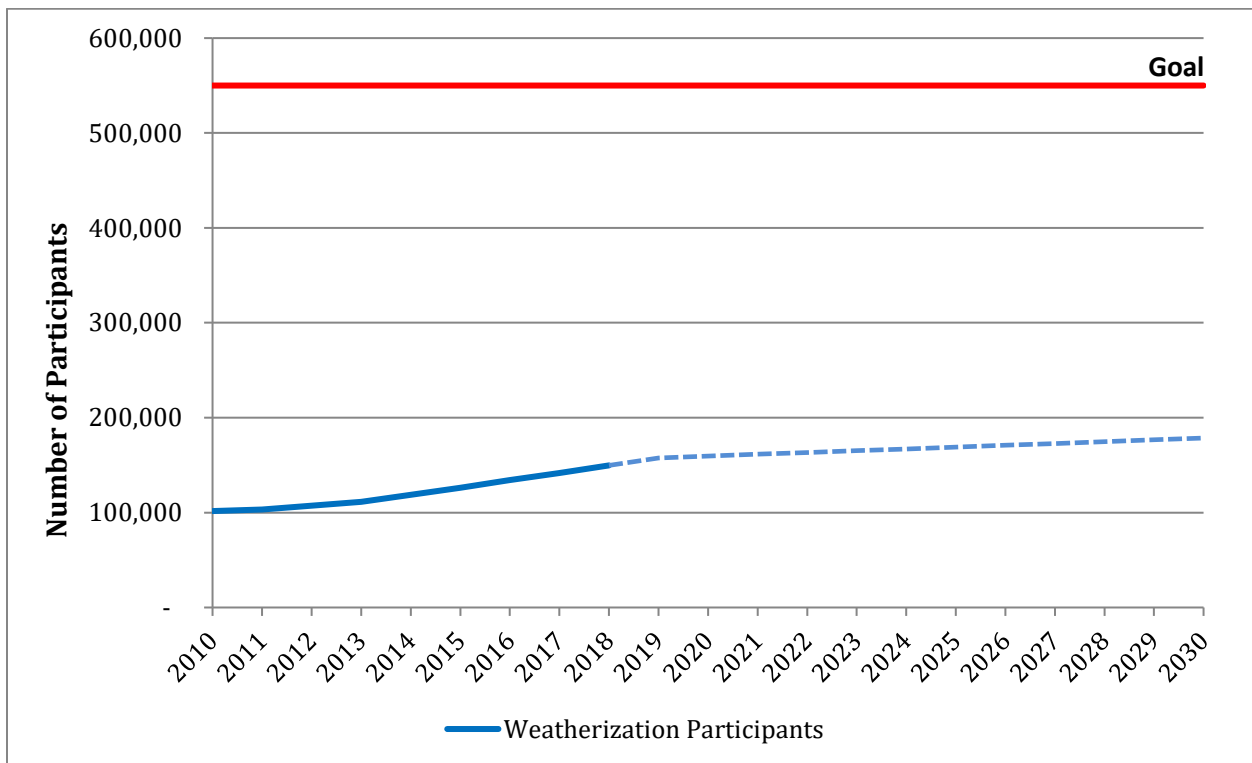
³ <http://www.efficiencymaine.com/about/library/reports/>.

⁴ "Energy upgrades" include insulation and air sealing, or efficient space heating or efficient water heating measures.

2015 residential baseline study showed that 20% of Maine homes have basement insulation.⁵ Using that figure as a proxy for weatherization, the Trust will continue to assume that 100,000 homes are already weatherized.

For projections beyond the Triennial Plan IV period, the Trust assumes a similar funding level and activity growth rate. Based on these assumptions, the Trust is unlikely to meet the 2030 target. With significant additional funding, the Trust could ramp up to weatherizing more homes every year. Nevertheless, the Triennial Plan does not propose or identify an applicable source of funding at this time.

Figure 1: Weatherizing Plan

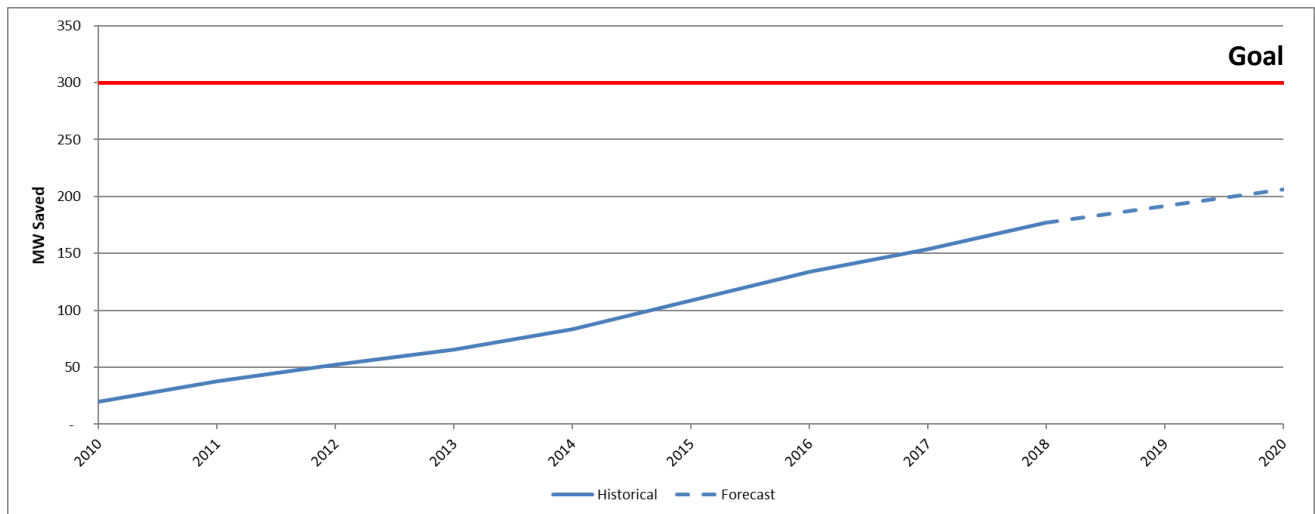


3. Reducing peak-load electric energy consumption by 300 MW by 2020

Section 10104(4)(F)(3) of Title 35-A sets a goal of reducing peak-load demand for electricity by 300 megawatts (MW) by 2020. By the end of FY2018, the cumulative effect of the Trust’s programs accounted for 177 MW of avoided capacity demand. Though the Trust expects to add additional capacity savings in FY2019, it will not reach the 300 MW target by 2020.

⁵ NMR Group, Inc., *Maine Single-Family Residential Baseline Study*, September 14, 2015. Table 17: Foundation Walls in Conditioned Space Detailed Characteristics.

Figure 2: Reducing Peak Load Electricity Demand by 300 MW by 2020



4. Achieving 20% Electricity Savings by 2020

Section 10104(4)(F)(4) of Title 35-A sets a goal to achieve electricity savings of at least 20% by 2020. In developing Triennial Plan I, the Trust elected to set 2007 as the baseline from which the target of achieving 20% electricity savings.⁶ The Trust selected 2007 as the baseline at the time because it was the most recent year with complete consumption data; it would have been fresh in legislators’ minds when they were debating the bill that initially set the goals in the fall of 2008 and winter of 2009; and, it predated the recession so was viewed as being more representative of typical consumption levels.

The electricity savings goal was arrived at by multiplying the 2007 consumption (or “load”) by 20%. The resulting target is slightly more than 2.3 million MWh of savings, as represented by the horizontal red line in Figure 3. When applied in this way, the goal avoids inhibiting economic growth in Maine.

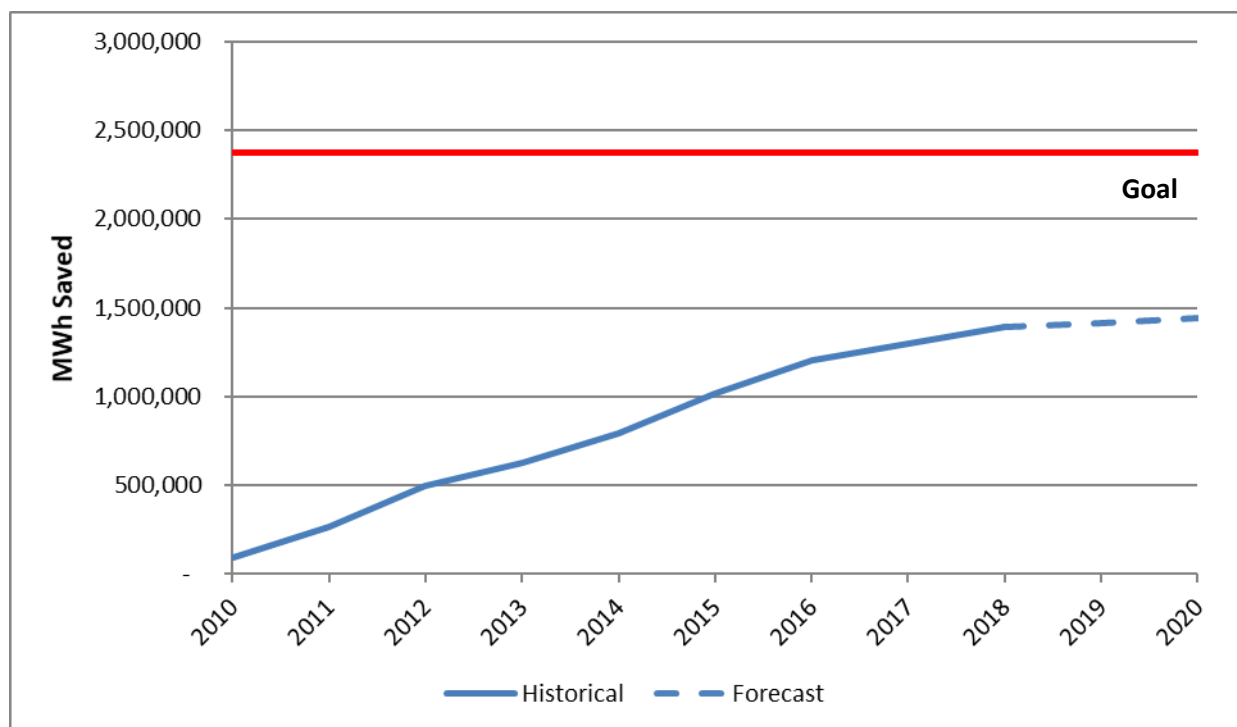
As in the three prior plans, this Triennial Plan recognizes that “savings” means that a quantifiable amount of energy has been saved as the result of an energy efficiency project or program, and that less electricity will be consumed relative to what would have happened without the project or program. It does not necessarily mean that net electricity consumption will decrease relative to the load in 2007. For example, if a factory installs high efficiency drives and controls that save energy compared to the old equipment, and at the same time decides to add a third shift of operations, the Trust still counts the savings even though net electricity consumption at the plant will increase due to the third shift. Furthermore, given the increasing popularity of ductless heat pumps, heat pump water heaters, and the prospect of more electric vehicles entering the marketplace, the Trust aims to promote higher efficiency equipment that lower energy costs rather than to discourage new consumption. The Trust views energy savings as a way to help Maine’s economy grow by enabling businesses and residents to stretch their

⁶ Optimal Energy Inc., “Strawman” Stakeholder Input Facilitation Tool, January 2010, p. 7.

energy dollars further; the Trust does not view the goal as a requirement that, by 2020, Maine’s electricity consumers should be using 20% less electricity than they did in 2007.

Figure 3 shows that, through 2018, the Trust programs’ “historical” savings came close to 1.4 million MWh. Though the Trust will add additional MWh savings in FY2019, it does not expect to meet the 2.3 million MWh target by 2020.

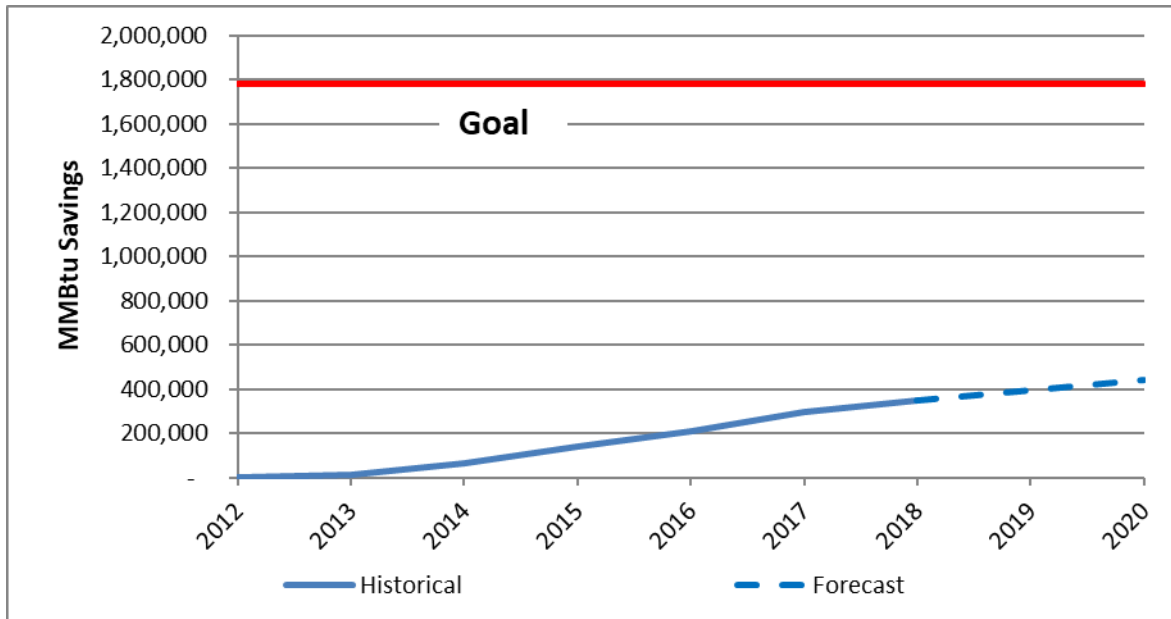
Figure 3: Achieving Electricity Savings of 20% by 2020



5. Achieving 20% Natural Gas Savings by 2020

A second goal set forth in Section 10104(4)(F)(4) of Title 35-A is to achieve natural gas program savings of at least 20% by 2020. The Trust’s historic and forecasted progress towards achieving 20% savings of natural gas and capturing all cost-effective natural gas is illustrated in Figure 4. Using the 2007 Baseline, the target for 2020 is to save 1.78 million MMBtu. As the figure shows, the Trust’s programs reached approximately 346,000 MMBtu of savings through 2018. Originally, program activity was limited to Unifil customers around Portland and Lewiston/Auburn; in FY2016, programs expanded to serve customers in all four natural gas utilities across the state. Though uptake in these new regions was slow in the first few years, activity was on track to meet forecasts by the end of FY2018. Nevertheless, the Trust does not expect to reach the 1.78 million MMBtu target by 2020.

Figure 4: Achieving Natural Gas Savings of 20% by 2020

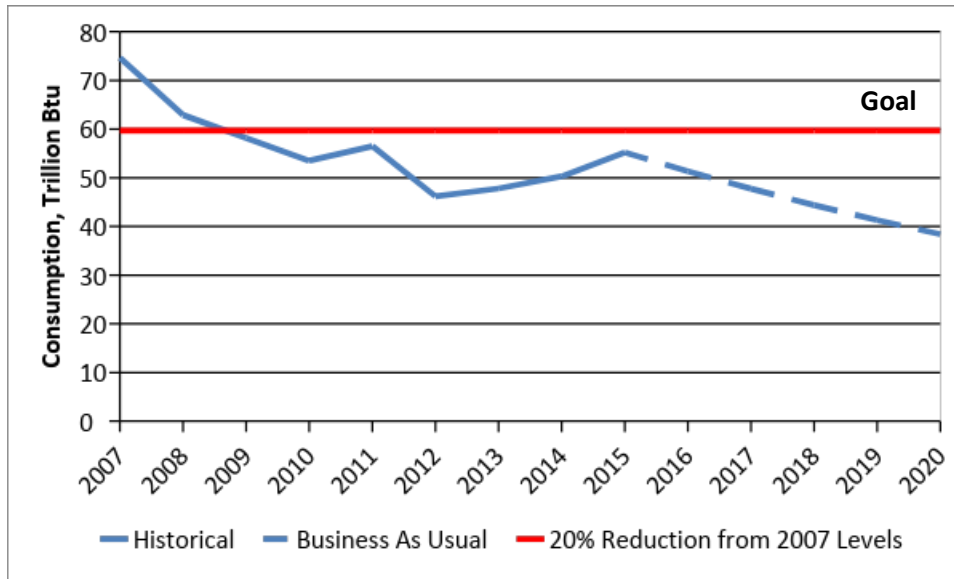


6. Saving 20% of Heating Fuel Use by 2020

The final goal set forth in Section 10104(4)(F)(4) of Title 35-A is for the statewide consumption of heating fuel to be reduced at least 20% by 2020. In the baseline year of 2007, the statewide consumption in the residential and commercial sectors of #2 distillate fuel, kerosene, and propane was 75 trillion Btu. A 20% savings from this baseline is 15 trillion Btu, which is reflected in Figure 5, along with the overall statewide reduction in heating fuel consumption. A significant portion of this reduction is due to fuel switching, and a modest contribution is also made by energy efficiency upgrades to homes and businesses. From 2009 to 2017, the Trust’s programs helped save 1.35 trillion Btu, which is projected to increase gradually over the Triennial Plan IV period. As a point of reference, Figure 5 presents the most recent available data⁷ (from 2007 to 2015) showing that consumption of heating fuels in Maine has declined by 20 trillion Btu, or 26%.

⁷ U.S. Energy Information Administration (EIA). State Energy Data System (SEDS): 1960-2015. <https://www.eia.gov/state/seds/seds-data-complete.php?sid=ME#Consumption>

Figure 5: Heating Fuel Use in Maine



7. Building Stable Private Sector Jobs Providing Clean Energy and Energy Efficiency Products and Services in the State by 2020

Section 10104(4)(F)(5) establishes a goal of creating stable private sector jobs providing alternative energy and energy efficiency products and services in the State by 2020. The Trust assumes 9.3 job-years are created per million dollars invested through cost-effective energy efficiency programs. A job-year is a full time equivalent job lasting one year. This ratio is based on a Pacific Northwest National Laboratory (PNNL) report prepared for the DOE, which surveyed seven similar studies.⁸

Through 2018, the Trust invested approximately \$349 million dollars through its programs, which, when applying the ratio from the PNNL report will result in an estimated 3,249 job-years.

8. Reducing Greenhouse Gas Emissions by 10% below 1990 Levels by 2020

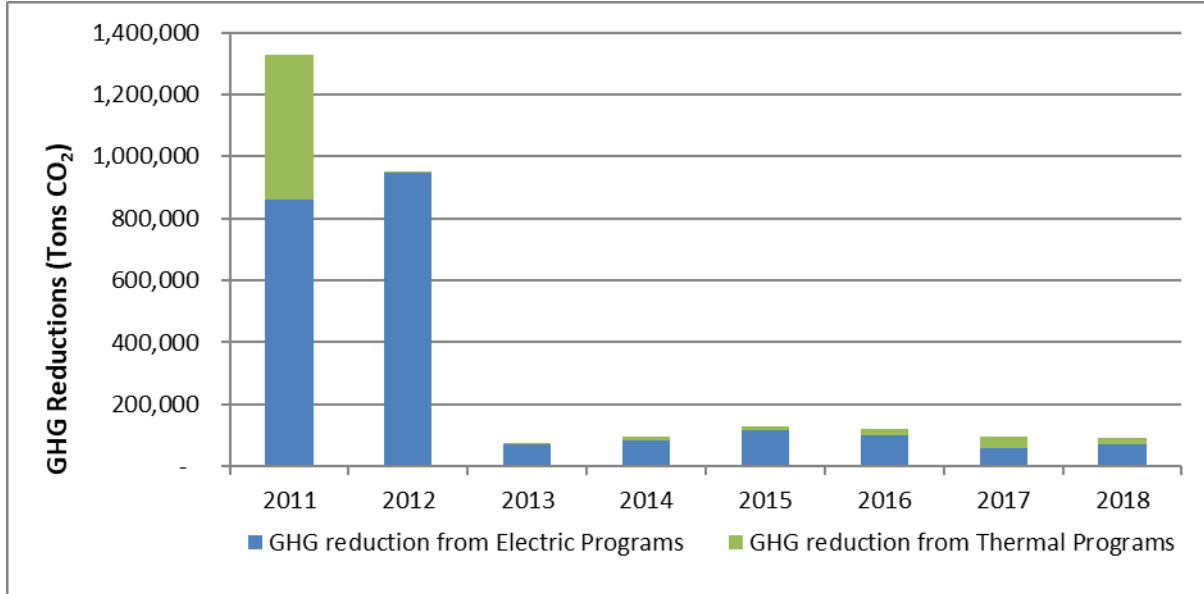
The final statutory long-term goal is reducing GHG emissions from the heating and cooling of buildings in Maine “by amounts consistent with the State’s goals established in Title 38, section 576.”⁹ The overarching goal in Title 38, section 576 is to reduce GHG emissions within the state by 10% below 1990 levels by 2020. Given that GHG emissions associated with the heating and cooling of buildings represent only a portion of all GHG emissions in the state, the Trust follows a general reduction goal rather than a specific target for these particular projects.

⁸ “Assessing National Employment Impacts of Investment in Residential and Commercial Sector Energy Efficiency: Review and Example Analysis,” Pacific Northwest National Laboratory, June 2014.

⁹ 35-A MRS §10104(4)(F).

Figure 6 shows the historical GHG reductions associated with the all of Trust’s programs (electric and thermal) from 2011 through 2018. Note that activity in 2011 and 2012 was considerably higher due to the influx of American Recovery and Reinvestment Act (ARRA) funds.

Figure 6: Historic GHG Reductions from Trust Programs¹⁰



¹⁰ The reported CO₂ reductions from electric generation in this figure does not factor into consideration the impact of Maine’s electricity generators being regulated under the carbon cap of the RGGI.