Appendix D

Long-Term Target Results

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By Lauren Scott
8-1-2024

Introduction

1. What is the purpose of this testimony?

This testimony presents historical results as they relate to the Trust's progress in advancing several long-term goals established in the Efficiency Maine Trust Act (the statute). Where relevant or appropriate, it also presents forecasts.

The statute provides that an objective of the Triennial Plan is to design, coordinate, and integrate programs that advance eight 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; reducing greenhouse gas (GHG) emissions; promoting high-efficiency heat pump systems; and promoting electric vehicles (EVs). The statute also sets a goal of installing 100,000 new high-performance air source heat pumps in the State from fiscal year 2019-20 to fiscal year 2024-25.

2. Who is introducing this testimony? Please state your name, title, and business address.

This testimony is provided by Lauren Scott, Strategic Initiatives Manager at the Trust. My business address is 168 Capital Street, Suite 1, Augusta, ME 04330.

3. Please summarize your educational and professional experience.

I have a Bachelor of Science degree in environment and natural resources from The Ohio State University. I was hired by the Trust in 2020. Including my prior roles as an environmental economics research assistant and environmental science teaching assistant, I have six years of experience in benefit-cost analysis, carbon emissions tracking, and environmental valuation.

Long-Term Target Progress

4. What is the statutory goal relating to energy cost reduction? What are the Trust's relevant historical results?

Section 10104(4)(F)(1) of Title 35-A of Maine Revised Statutes (the statute) provides the Trust the general goal of *reducing energy costs, including residential heating 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

[1] 35-A MRS §10103(1)(B).

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]

5. What is the statutory goal relating to weatherization of Maine homes? What are the Trust's historical results and future projections for weatherization?

Section 10104(4)(F)(2) of the statute establishes the following goal:

> *... for the period beginning January 1, 2020, and ending January 1, 2030, weatherizing 35,000 homes and businesses, with at least 10,000 of such weatherization projects completed in low-income households through the combined efforts of the Trust and the Maine State Housing Authority*.

This goal mirrors the weatherization targets set forth in Maine's climate action plan.

Figure 1 illustrates the cumulative number of homes, including those located in multi-unit dwellings, weatherized through the programs of the Trust and Maine State Housing Authority (MaineHousing) since January 1, 2020.[4] The blue dotted line reflects a projection based on the Trust's FY2025 year-to-date activity, as well as its Triennial Plan VI budgets and MaineHousing's budgets during that same timeframe. The green dotted line reflects a projection based on the pace required to reach the goal. The figure does not reflect homes that made/will make improvements exclusively paid for with their own funds, i.e., without participation in either of these programs. Figure 2 parses out the number of low-income homes weatherized through the Trust and MaineHousing programs.

In July 2021, the Maine Legislature enacted LD 1733, An Act To Provide Allocations for the Distribution of State Fiscal Recovery Funds. This law reflected Maine's plan – the "Maine Jobs and Recovery Plan" (MJRP) – to invest the Maine's allotment of the federal American Rescue Plan Act (ARPA). The MJRP allocated $25 million to the Trust to "accelerate weatherization and efficiency upgrades for homes in the State, especially for low-income, older residents and renters."[5] This influx of federal funding was the primary driver behind the increase in weatherization activity during the Triennial Plan V period. The Trust directed these federal funds from the MJRP specifically at weatherization projects in low- and moderate-income households.

Triennial Plan VI shows a commitment to continue the Trust's Triennial Plan V pace for weatherization by leveraging Regional Greenhouse Gas Initiative (RGGI) funds. (This will be supplemented by any remaining ARPA funds in FY2026.) These budgets will allow the Trust to weatherize 3,300 homes/year, of which 500 will be low-income homes, 600 moderate-income homes, and 2,200 all-income homes. During this same period, MaineHousing intends to supplement its existing programs with a one-time,

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[2] 35-A MRS §10110(2).

[3] Efficiency Maine, "Reports," http://www.efficiencymaine.com/about/library/reports/.

[4] The Trust counts each unique address receiving a weatherization rebate as an individual home weatherized. As of the writing of this plan, the Trust's FY2024 data is preliminary.

[5] Maine Jobs and Recovery Plan, May 4, 2021, p. 11.

$32 million federal grant from the Bipartisan Infrastructure Law. Both organizations plan to expand their weatherization offerings to include multifamily buildings with these budgets, yielding a higher number of dwellings weatherized per program dollar. The combination of these factors will put Maine on track to meet the 2030 climate action plan goals.

Figure 1: All Weatherization

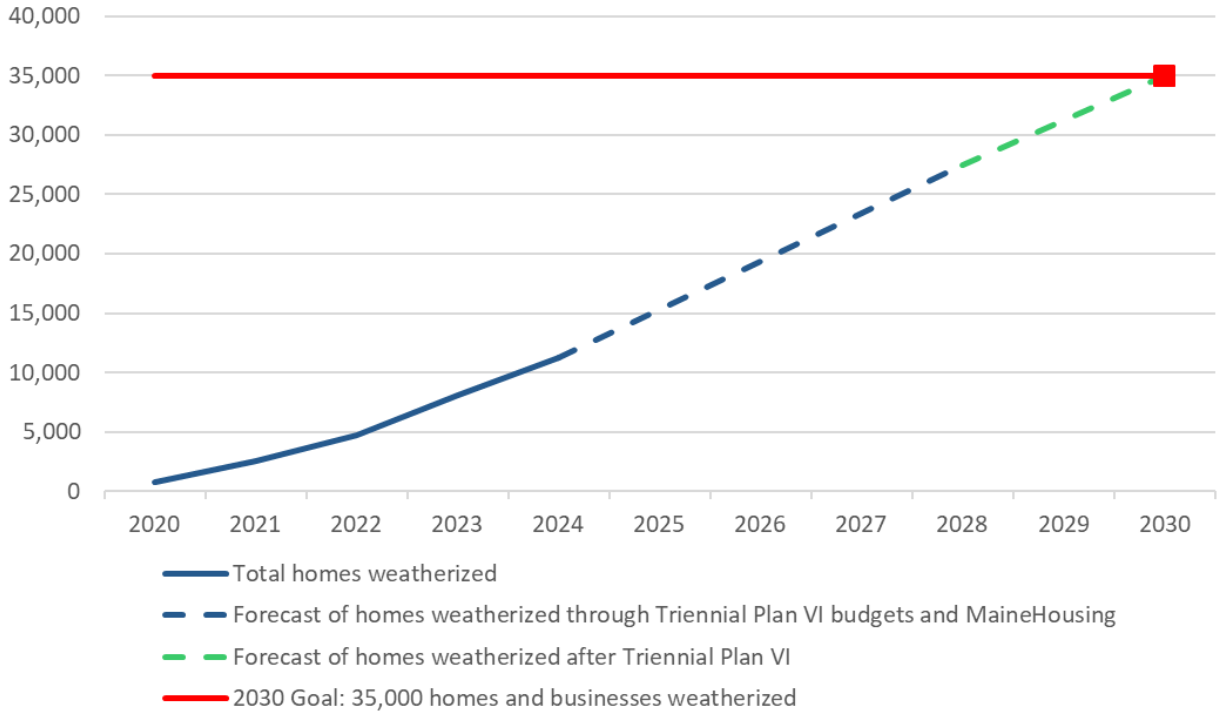
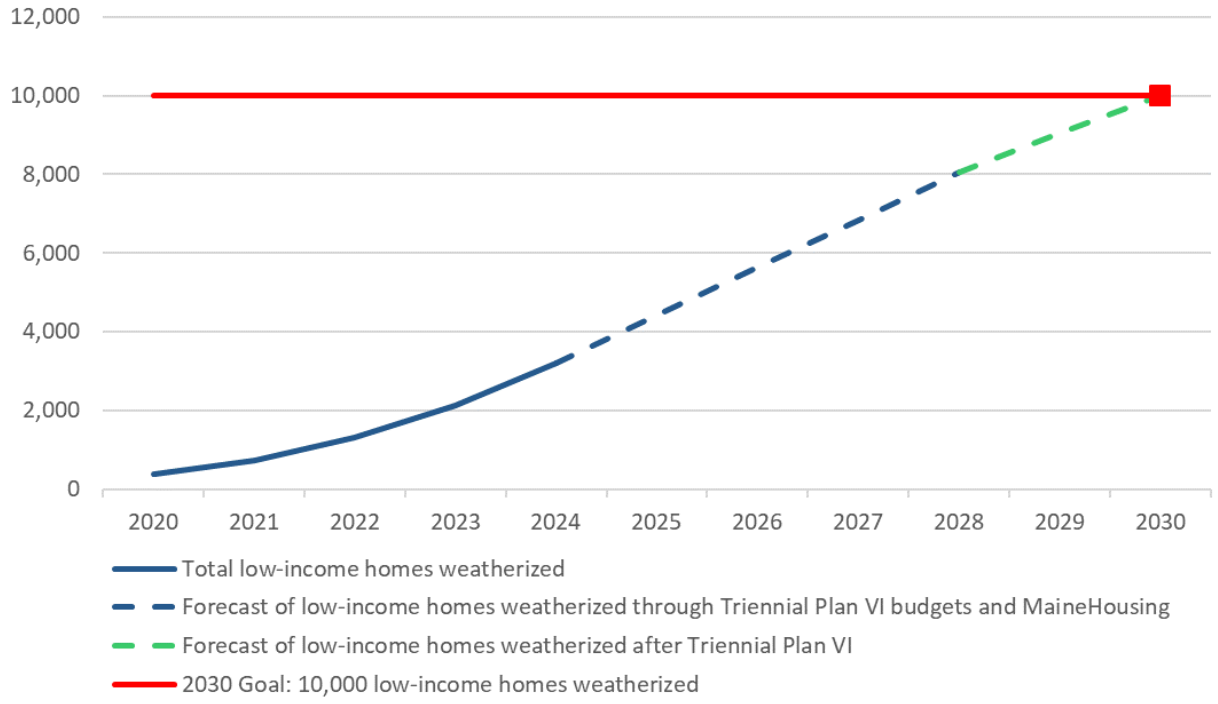


Figure 2: Low-Income Weatherization



6. What is the statutory goal relating to reducing peak electricity load (MW)? What are the Trust's historical results?

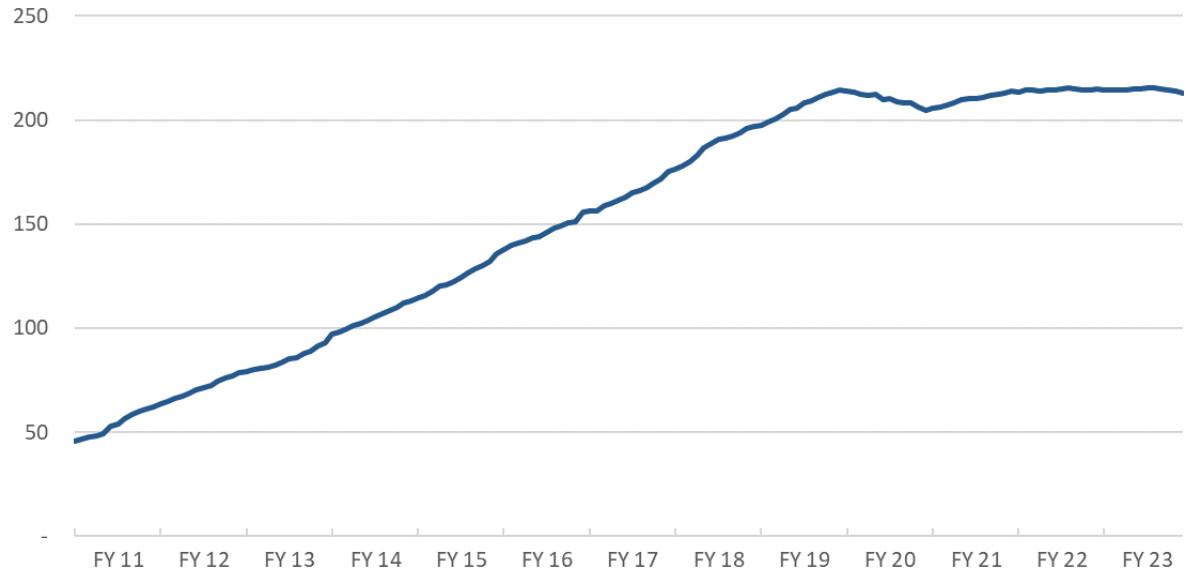
When the Trust commenced administration of Maine's conservation programs in FY2011, the long-term statutory target for peak electricity reduction was 100 MW by 2020. The Trust's programs quickly surpassed that goal, and the statute was amended in 2013 to set the goal at 300 MW by 2020. In 2021, the Legislature amended this provision yet again, replacing the absolute target and the 2020 target date with a standard of *reducing peak-load demand for electricity by the maximum achievable cost-effective amount.*[6] Figure 3 shows historical MW savings from Efficiency Maine's energy efficiency programs since inception.[7] By the end of FY2023, the cumulative effect of the Trust's programs accounted for approximately 213 MW of avoided capacity demand.[8]

[6] 35-A MRSA Sec. 10104(4)(F)(3).

[7] Though Figure 3 begins in FY2011 (the Trust's inception), it also includes those savings achieved between 2006-2010 (when Maine's Public Utilities Commission managed the state's energy conservation programs) that remained active during this timeframe. This is why savings are above zero in FY2011.

[8] This accounts for measure expirations (i.e., as measures reach the end of their useful lives, their savings are no longer counted in the cumulative total). It does not account for increases in electricity usage associated with fuel switching (i.e., beneficial electrification) projects or capture savings associated with demand management projects.

Figure 3: Cumulative Demand Savings (Summer MW)

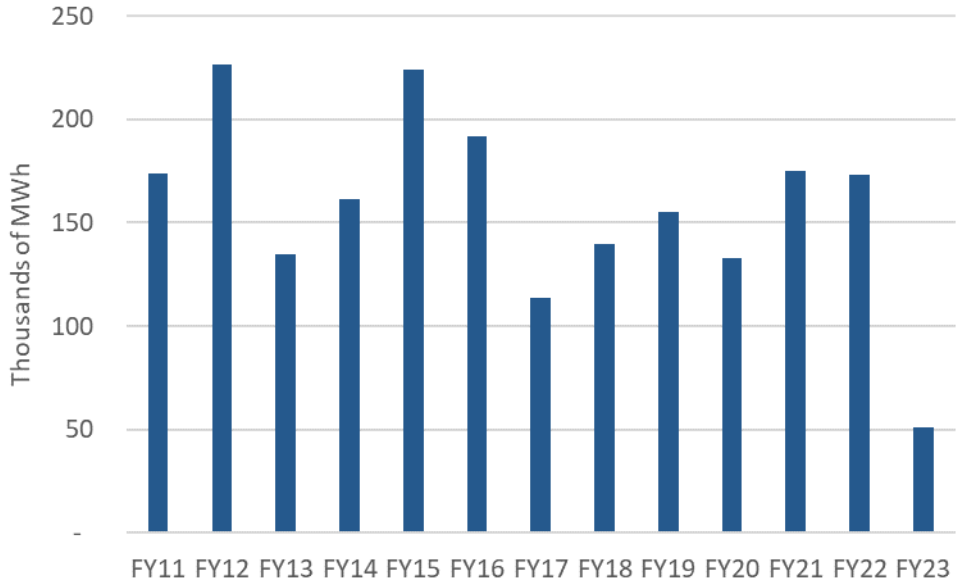


7. What is the statutory goal relating to electricity savings (MWh)? What are the Trust's historical results?

As with the peak demand reduction goal, the statutory goal regarding electricity savings has evolved over the past decade. Initially in FY2011, Section 10104(4)(F)(4) of the statute set a goal of achieving electricity savings of 30% by 2020. That goal was amended in 2013 to 20% savings by 2030. In 2021, the goal was amended to a standard of *achieving the maximum achievable cost-effective electricity (MACE) program savings.* The Trust's estimates of MACE are made during the preparation of each triennial plan and are updated periodically to reflect significant changes in avoided costs, equipment prices, market demand, supply chain and workforce challenges, and other factors. The savings achieved through the Trust's past programs are reflected in Figure 4.[9]

[9] FY2023 electricity savings appear to decline considerably due to a change in the Trust's reporting methodology. Through FY2022, electricity savings from the electric efficiency measures reported in this figure reflected the sum of a) actual electricity impacts (kWh) and b) any thermal savings (MMBtu converted to a kWh) associated with the electric efficiency measures, such as a new heat pump. As the Legislature's 2023 Beneficial Electrification Policy Act promoting fuel switching from fossil fuels to electricity takes effect and heat pumps have grown in prominence in the Trust's programs, the Trust elected to start reporting associated thermal savings from these measures separately. FY2023 results represent the first year in which the Trust is excluding fossil thermal savings from this report on electricity savings.

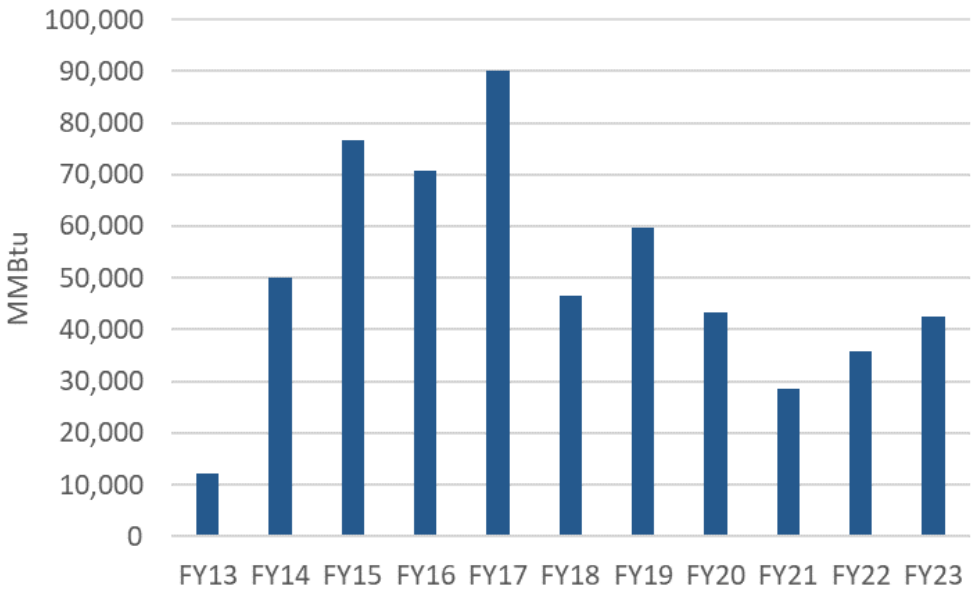
Figure 4: Annual Electricity Savings (MWh)



8. What is the statutory goal relating to natural gas savings? What are the Trust's historical results?

A second goal set forth in Section 10104(4)(F)(4) is to *achieve the maximum achievable cost-effective natural gas program savings, as defined in and determined pursuant to the performance metrics approved by the PUC under Section 10120*. Historically, the goals for natural gas savings mirrored those for electricity savings and were amended in 2013 and 2021. Actual savings achieved by the program in past years are reflected in Figure 5.

Figure 5: Annual Natural Gas Savings



9. What is the statutory goal relating to job creation in the alternative energy and energy efficiency marketplace? What are the Trust's historical results?

Section 10104(4)(F)(5) of the statute establishes a goal of *creating stable private sector jobs providing alternative energy and energy efficiency products and services in the State*. 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.[10]

Since its inception in FY2011 through FY2023, the Trust invested approximately $669 million dollars through its programs, which, when applying the ratio from the PNNL report will result in an estimated 6,222 job-years.

10. What is the statutory goal relating to GHG emissions reductions? What are the Trust's historical results and future projections?

Section 10104(4)(F)(6) of the statute establishes a goal of *contributing to the effort to reduce GHG emissions in the State by amounts consistent with the state's GHG reduction requirements*.

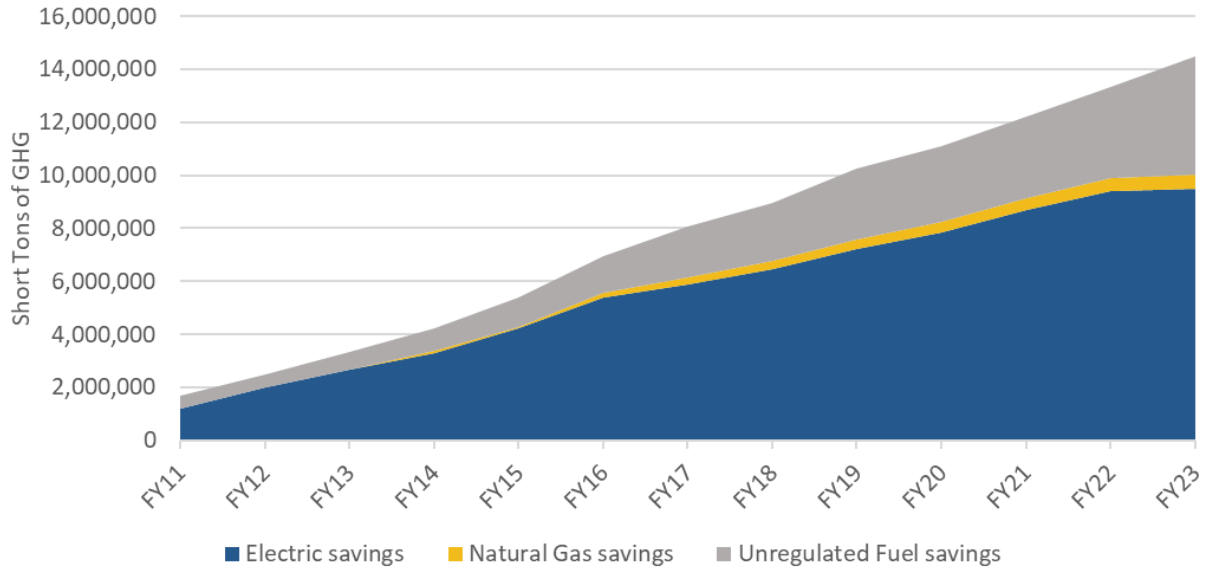
Title 38, Section 576-A sets the following binding targets for the State:

- By January 1, 2030, the State shall reduce gross annual greenhouse gas emissions to at least 45% below the 1990 gross annual GHG emissions level; and
- By January 1, 2050, the State shall reduce gross annual greenhouse gas emissions to at least 80% below the 1990 gross annual GHG emissions level.

Figure 6 shows the cumulative lifetime GHG reductions associated with all of the Trust's program savings (from electric, natural gas, and unregulated fuels measures) from FY2011 through FY2023. GHG reduction from electric savings is calculated using the ISO-New England reported marginal emissions rate for electricity each year the savings were reported, and GHG reductions from fuel savings are based on emissions factors reported by the U.S. Environmental Protection Agency.

[10] Pacific Northwest National Laboratory, *Assessing National Employment Impacts of Investment in Residential and Commercial Sector Energy Efficiency: Review and Example Analysis,* June 2014.

Figure 6: Cumulative Lifetime GHG Reductions from Trust Programs



Note: The reported CO_2 reductions from electric generation in this figure do not take into consideration the impact of Maine's electricity generators' being regulated under the carbon cap of the Regional Greenhouse Gas Initiative.

11. What are the statutory goals relating to heat pump installations? What are the Trust's historical results and future projections?

In recent years, the Legislature has established two principal goals relating to heat pump installations.

In 2019, the Governor and Legislature established a goal of installing 100,000 new high-performance heat pumps in the state before the end of fiscal year 2025. The metric was achieved by the end of June 2023, well ahead of schedule.

In the same year, the Legislature amended the Efficiency Maine Trust Act to insert a longer-term goal for heat pumps. The Legislature set a 2030 goal that matches the heat pump metrics contained in Maine's climate action plan. Specifically, this provision calls for the Trust to:

> *promote the purchase of high-efficiency heat pump systems to achieve by 2030 the goal of at least 115,000 households in the State wholly heated by heat pumps and an additional 130,000 households in the State partially heated by heat pumps.*[11]

[11] 35-A MRSA Section 10104(4)(F)(7).

Consistent with Maine's climate action plan, the Trust also is working in concert with MaineHousing to advance the goal that 15,000 of these heat pump installations should be in income-eligible homes by 2025.

Finally, though not codified in statute, the Trust will also work to advance the Governor's new goal to install 175,000 additional heat pumps in Maine by 2027 (announced in July 2023).

Figure 7 shows Maine's progress towards the 2030 whole-home heat pump goal, showing the actual and forecasted number of households with heat pumps serving the whole home. Figure 8 shows Maine's progress toward the 2030 supplemental (i.e., partial home) heat pump goal. Beginning part-way through FY2024, the Trust shifted away from incentivizing supplemental heat pumps. With one exception, the Trust's programs have since limited eligibility for rebates to heat pump systems that are sized and designed to serve the entire heating needs of a home. The Trust refers to these as "whole-home heat pump systems". (The Trust continues to offer rebates on supplemental heat pumps to eligible low-income households.) Figure 7 shows an ambitious ramp up in whole-home heat pump activity to meet the 2030 goal, made possible by policy changes through Beneficial Electrification Policy Act[12] and significant federal grant awards.

Figure 7: Number of Households (Cumulative) using Whole-Home Heat Pump Systems

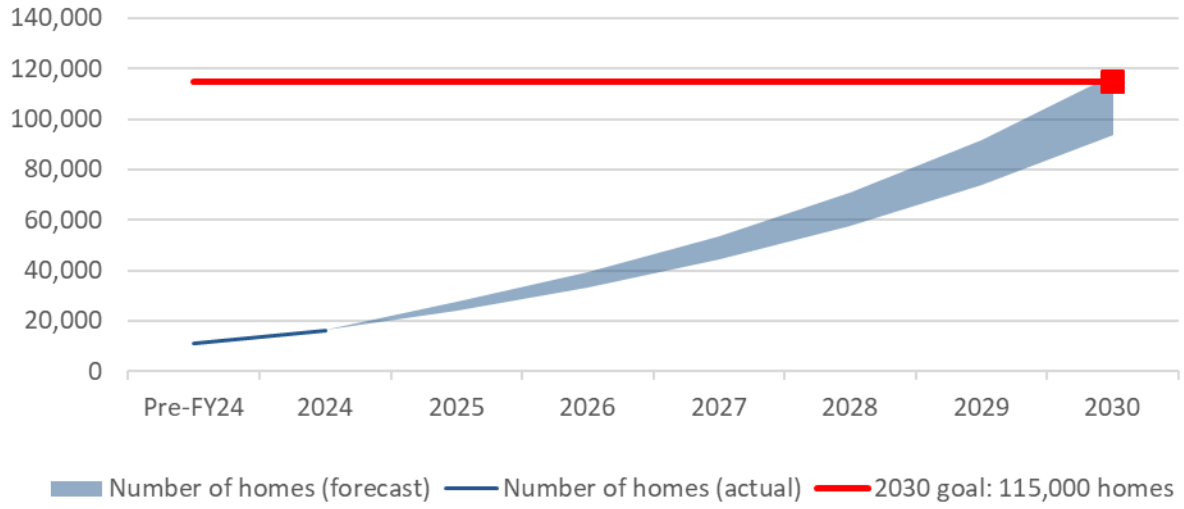


Figure 8 shows historic and forecasted number of heat pumps installed in Maine from 2014 to 2030. All points on the curve prior to FY2025 are actual. Points from FY2025 to FY2030 are forecasts. The figure illustrates the impact of Efficiency Maine's large-scale rebate activity for supplemental heat pumps effectively ceasing in FY2024 for all but qualifying low-income households. Though Maine can anticipate a modest level of additional activity through MaineHousing's programs, the bulk of future supplemental heat pump installations are likely to occur without a rebate from the Trust's programs (see the grey

[12] For additional detail, see Appendix H: *Beneficial Electrification Plan*.

section labeled “Market – Unrebated”). Most customers pursuing these installations are able to take advantage of the new $2,000 federal tax credit – an incentive that exceeds the rebates offered by the Trust in the past. The Trust projects that Maine will achieve the goal for supplemental heat pumps well in advance of 2030.

Figure 8: Number of Households (Cumulative) with 1 or 2 Supplemental Heat Pumps

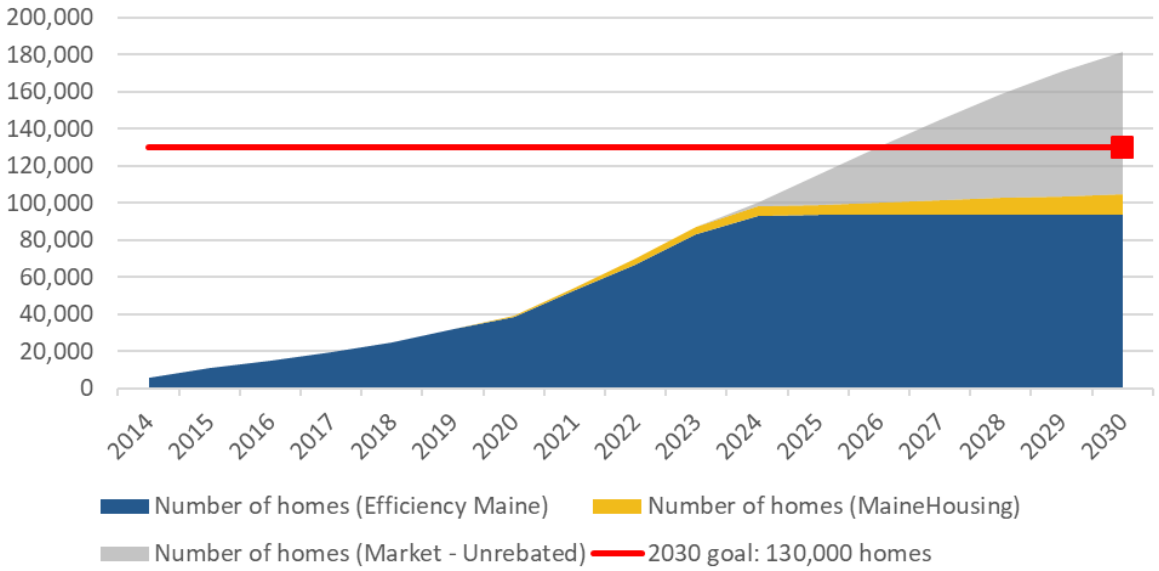


Figure 9 shows that Maine is on track to meet its climate action plan goal of installing 15,000 new heat pumps in income-eligible homes by 2025. The number of heat pumps[13] shown in the figure reflect actual installations through the end of FY2024 and forecasted installations in FY2025.

Figure 9: Number of Heat Pumps in Income-Eligible Homes

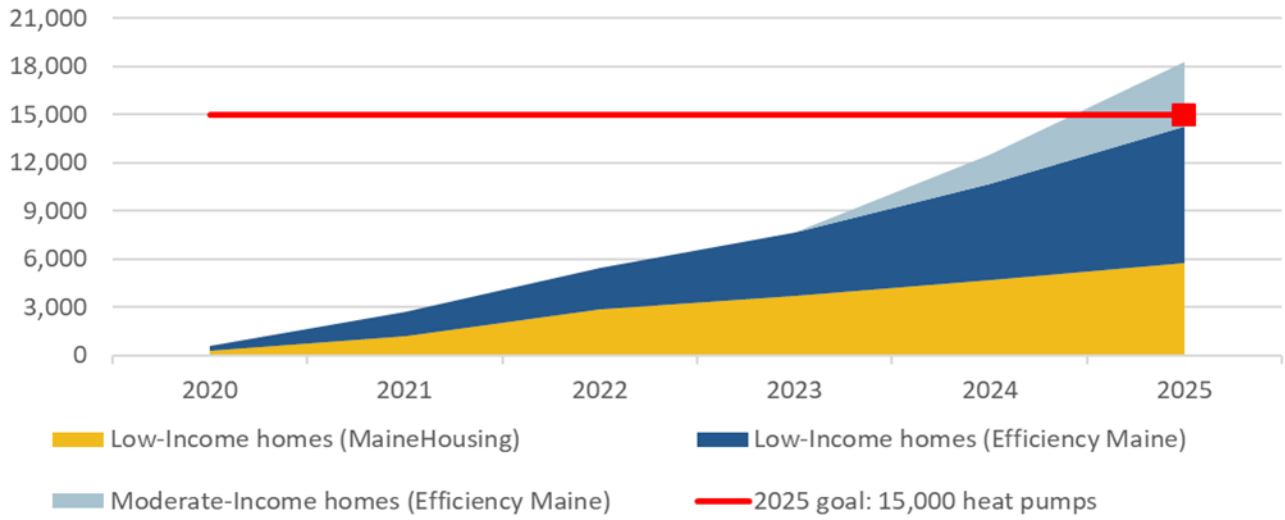
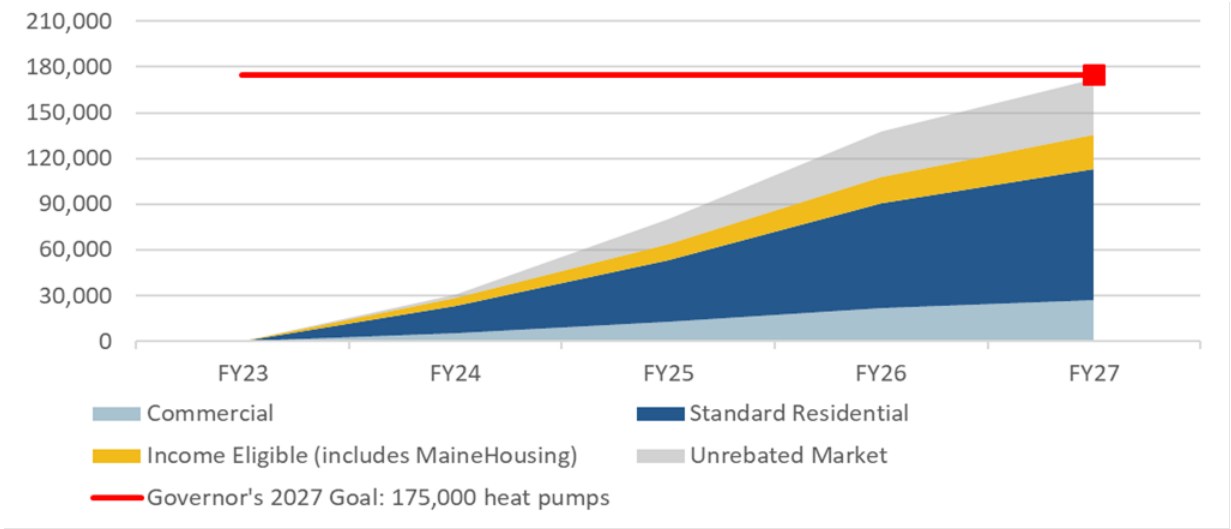


Figure 10 shows Maine's projected progress toward the Governor's new goal to install 175,000 additional heat pumps by 2027.[14]

Figure 10: Total New Heat Pumps in Maine

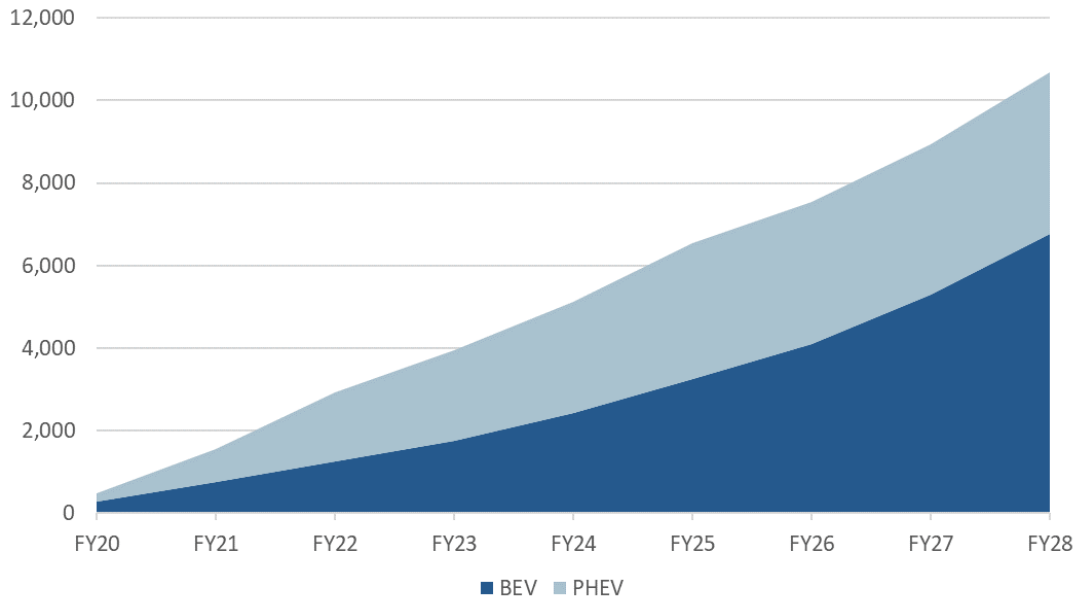


12. What is the statutory goal relating to electric vehicle (EV) adoption? What are the Trust's historical results?

The Efficiency Maine Trust Act establishes the goal of "promoting the purchase of battery electric vehicles [BEVs] and plug-in hybrid vehicles [PHEVs] to achieve by 2030 the goal of at least 220,000 such vehicles registered in the State."[15]

Figure 11 shows the Trust's historical results for EV rebates from the program's inception in FY2020 through FY2024 plus anticipated additional EVs that the Trust forecasts rebating from FY2025 through the end of Triennial Plan VI. The Trust assumes that achieving the 2030 goal will require a significant contribution from un-rebated purchases and leases over the next five years. The Trust anticipates that the primary drivers for un-rebated EV purchases will be declining EV prices, spurred by technological advancements and shifting priorities in the automotive industry, together with federal tax credits, expansion of Maine's public network of EV chargers, and complementary education and awareness campaigns.

Figure 11: Cumulative EV Rebates from 2019 through 2028



[13] The Trust uses a metric of "heat pump equivalents" to accommodate the diversity of systems installed across the residential and commercial sectors. The Trust assumes that one "heat pump equivalent" represents the potential to deliver 25.1 MMBtu/year of space heating. This metric is based on the modeled performance of a single residential heat pump.

[14] The Trust assumes this starts July 2023 (date of announcement) and ends December 31, 2026 (before 2027 begins). This timeframe is FY2024 to half-way through FY2027. As stated earlier, the Trust uses a metric of "heat pump equivalents" to accommodate the diversity of systems installed across the residential and commercial sectors. The Trust assumes that one "heat pump equivalent" represents the potential to deliver 25.1 MMBtu/year of space heating. This metric is based on the modeled performance of a single residential heat pump.

[15] 35-A MRSA Section 10104(4)(F)(8).