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TRIENNIAL PLAN
FOR FISCAL YEARS 2023–2025

11/29/2021

Updated 5/27/2022

**BY THE
EFFICIENCY MAINE TRUST**

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Abbreviations/Acronyms

ACEEE	American Council for an Energy-Efficient Economy
AEG	Applied Energy Group
AESC	Avoided Energy Supply Component
AFAP	Agricultural Fair Assistance Program
AMP	Arrearage Management Program
ARPA	American Rescue Plan Act
BYOD	Bring-your-own-device
BTM	Behind the Meter
C&I	Commercial and Industrial
C-PACE	Commercial Property Assessed Clean Energy
CCF	Centum Cubic Feet
CMR	Code of Maine Rules
Combi	Combination
CREED	Consortium for Retail Energy Efficiency Data
CSP	Curtailed Service Provider
DC	Direct Current
DEP	Maine Department of Environmental Protection
DER	Distributed Energy Resource
DIY	Do-it-yourself
DOE	U.S. Department of Energy
ECM	Electronically Commutated Motor
effRT	Efficiency Maine Reporting and Tracking
EISA	Energy Independence and Security Act
EM&V	Evaluation, Measurement, and Verification
EUT	Energy, Utilities and Technology
EV	Electric Vehicle
FAME	Finance Authority of Maine
FCM	Forward Capacity Market
FY	Fiscal Year
GEO	Governor's Energy Office
GHG	Greenhouse Gas
HESP	Home Energy Savings Program
HVAC	Heating, Ventilation, and Air Conditioning
ICE	Internal Combustion Engine
ISO-NE	Independent System Operator for New England
kW	Kilowatt(s)
kWh	Kilowatt-Hour(s)
LD	Legislative Document
LED	Light-Emitting Diode

LIAG	Low Income Advisory Group
LIHEAP	Low-Income Home Energy Assistance Program
MACE	Maximum Achievable Cost-Effective
MaineHousing	Maine State Housing Authority
MMBtu	Million British Thermal Unit(s)
MPRP	Maine Power Reliability Program
MRS	Maine Revised Statutes
MUBEC	Maine Uniform Building and Energy Code
MW	Megawatt(s)
MWh	Megawatt-Hour(s)
NECEC	New England Clean Energy Connect
NSPM	National Standard Practice Manual
NTGR	Net-to-Gross Ratio
NWA	Non-Wires Alternative
OPA	Office of the Public Advocate
O&M	Operations and Maintenance
PACE	Property Assessed Clean Energy
PTF	Pooled Transmission Facilities
PV	Photovoltaic (or Present Value)
QA	Quality Assurance
QC	Quality Control
R&D	Research and Development
RFP	Request for Proposals
RGGI	Regional Greenhouse Gas Initiative
RRV	Residential Registered Vendor
T&ST	Transmission and Sub-Transmission
TREC	Thermal Renewable Energy Credit
TRM	Technical Reference Manual
VEIC	Vermont Energy Investment Corp.
VRF	Variable Refrigerant Flow
VW	Volkswagen

I. Efficiency Maine Trust

1.1 Program Administrator for Energy Conservation and Greenhouse Gas Reductions

The Efficiency Maine Trust (the Trust) is the independent, quasi-state agency established for the purposes of planning, coordinating, and implementing certain energy programs in Maine.

The principal goals of the Trust’s programs are to help Maine’s homes and businesses reduce their energy costs and to improve the economic security of the State. In pursuing these goals, the Trust’s programs advance the objectives, enumerated in statute, of:

- Reducing the cost of energy in Maine;
- Maximizing the use of weatherization and energy efficiency;
- Reducing economic insecurity from the inefficient use of fossil fuels;
- Increasing new jobs and business development to deliver affordable energy and energy efficiency products and services;
- Enhancing heating improvements for households;
- Facilitating consumer access to technical assistance and financial incentives relating to energy efficiency and alternative energy resources; and
- Reducing greenhouse gas (GHG) emissions.

The Trust’s programs provide financial incentives for measures aimed at using energy more efficiently and reducing GHG emissions. Through its conservation programs, the Trust also delivers public information, technical assistance, and quality assurance (QA).

Electric utilities and natural gas utilities are the primary source of Efficiency Maine’s funding. Maine law requires that those utilities procure maximum achievable cost-effective (MACE) energy efficiency resources. The utilities fund the Trust to develop and deliver those resources. Additional funding comes from the sale of Maine’s carbon allowances under the Regional Greenhouse Gas Initiative (RGGI); from the Forward Capacity Market (FCM) at the Independent System Operator of New England (ISO-NE); and from the receipt of revenue from grants, voluntary payments, legal settlements, and other agreements.

1.2 Stakeholder Board of Trustees

The Trust is governed by a nine-member Board of Trustees, comprising:

1. The director of the Governor’s Energy Office (*ex officio*);
2. The director of the Maine State Housing Authority (*ex officio*);
3. Seven other members appointed by the Governor, who “adequately represent the interests of commercial energy consumers, industrial energy consumers, small business energy consumers, residential energy consumers and low-income energy consumers”¹ and among

¹ 35-A Maine Revised Statutes (MRS) §10103(2)(A).

whom there is knowledge of and experience in financial matters, consumer advocacy, management, conservation fund programs, carbon reduction programs, or relevant policy.

Nominations to the Board are reviewed by the Joint Committee on Energy, Utilities and Technology (EUT) and confirmed by the Senate. Appointed trustees serve three-year terms.

The Board generally meets monthly, and its meetings are open to the public.

1.3 Staff

Day-to-day operations of the Trust are managed by a staff of approximately 20 employees. The staff handles program design and management, financial accounting and reporting, competitive solicitations and procurement, grant compliance, and various marketing and information-sharing tasks. The staff also manages teams of contractors who may assist the Trust in implementing (or “delivering”) elements of programs. Elements of the Trust’s work that may be contracted out include market research, marketing, technical training of other contractors and suppliers, technical support, and engineering analysis on specific energy projects. It may also include handling of inbound calls, application processing, calculation and payment of financial incentives, loan underwriting and servicing, program compliance, program evaluation, and financial auditing.

2. Regulatory Framework

2.1 Purpose of the Trust

The Efficiency Maine Trust Act (or “the statute”) established the Trust to develop, plan, coordinate, and implement energy efficiency and alternative energy programs across Maine. The purposes of these programs are to:

- Provide uniform, integrated planning, program design, and administration of programs;
- Administer cost-effective energy and energy efficiency programs to help individuals and businesses meet their energy needs at the lowest cost and generally to improve the economic security of the State; and
- Actively promote investment in cost-effective energy and energy efficiency measures and systems that use energy resources that reduce overall energy costs for consumers in the State.²

The statute further specifies that the Trust’s programs should help lower costs across all fuel types—electric, natural gas, and unregulated fuels—and should extend to weatherizing homes, reducing inefficient use of fossil fuels, enhancing affordable heating systems, increasing jobs and business development, improving consumer access to energy programs, and reducing greenhouse gases.³

2.2 Program Funds—Objectives, Funding, and Implementation Requirements

The Trust is the designated recipient and administrator of several funding streams intended for use in promoting more efficient and affordable use of energy and customer-sited alternative energy systems.

While some of the Trust’s funding streams are recurring, the statute also contemplates that the Trust may access other funds. It may apply for grants from public or private sources, deposit the proceeds of bonds into program funds, collect revenue from the FCM or other capacity payments, and accept funds from any “other funds received by or from any entity with which the Trust has an agreement or contract.”⁴

An important feature of the Trust is its fiduciary responsibility. The funds it receives from electric and natural gas ratepayers, and from RGGI, are required to be held in trust for the benefit of the energy consumers who pay for the funds.

2.2.1 Electric Efficiency and Conservation Fund

The Electric Efficiency and Conservation Fund is dedicated to programs designed to increase the efficiency of electricity use. The objectives enumerated in statute for the use of this fund are to:

- Increase consumer awareness of cost-effective options for conserving energy;
- Create favorable market conditions for increased use of energy-efficient products and services;

² 35-A MRS §10103(1).

³ 35-A MRS §10103(1)(B).

⁴ 35-A MRS §10103(4).

- Promote sustainable economic development and reduce environmental damage;
- Reduce the price of electricity over time for all consumers by reducing or shifting demand for electricity or balancing load, including by the implementation of beneficial electrification and energy storage systems;⁵ and
- Reduce total energy costs for electricity consumers.⁶

The amount of the Electric Efficiency and Conservation Fund is established by determining the budgets necessary to capture the MACE electric energy efficiency potential. The principal revenue stream for this fund comes from payments that the electric utilities make directly to the Trust for the procurement of cost-effective energy efficiency. The Trust calls this the “Electric Efficiency Procurement.” The payments are deemed by statute to be a just and reasonable element of utility rates.⁷ The amount of the procurement payments may be reduced by netting out amounts that the Trust Board committed for this purpose from other funding streams, including federal or state grants, settlement funds, or payments from RGGI. The Electric Efficiency Procurement is statutorily capped at 4% of total revenues from retail electricity supply sales and transmission and distribution sales.⁸

Maine’s largest electricity customers, who take service at the transmission and sub-transmission (T&ST) voltage levels, do not contribute to and are ineligible for funding from the Electric Efficiency Procurement. T&ST customers remain eligible, however, for electric conservation incentives using other funding sources such as RGGI.

While pursuing the listed objectives, the Trust allocates budgets and deploys strategies for the Electric Efficiency and Conservation Fund to give all customers a reasonable opportunity to participate. The statute expressly directs the programs paid for through this fund to:

- Target at least 10% of the Electric Efficiency and Conservation Fund or \$2.6 million, whichever is greater, to low-income residential customers;
- Target at least 10% of the Electric Efficiency and Conservation Fund or \$2.6 million, whichever is greater, to small business customers; and
- Apportion the remaining funds among customer groups and geographic areas in a manner that allows all other customers to have a reasonable opportunity to participate in one or more efficiency programs.⁹

2.2.2 Natural Gas Conservation Fund

The Natural Gas Conservation Fund is established in statute to promote the efficient use of natural gas among the ratepayers of Maine’s natural gas utilities. Objectives for the use of the fund include increasing consumer awareness of cost-effective options for conserving natural gas; increasing efficiency

⁵ Beneficial electrification, which relates to electrification of a technology that results in reduction in the use of a fossil fuel, is discussed more in Section 7.2.7.

⁶ 35-A MRS §10110(2)(A).

⁷ 35-A MRS §10110(4)(A).

⁸ 35-A MRS §10110(4)(A).

⁹ 35-A MRS §10110(2)(B).

of natural gas use through efficient natural gas products and services; and promoting sustainable economic development and reduced environmental damage.¹⁰

The amount of the Natural Gas Conservation Fund is determined by establishing the budgets necessary to capture the MACE natural gas energy efficiency potential. The revenue stream for this fund comes from payments that the natural gas utilities make directly to the Trust for the procurement of cost-effective energy efficiency (the “Natural Gas Efficiency Procurement”). The payments are deemed by statute to be a just and reasonable element of utility rates.¹¹

A decade ago, the law limited application of the natural gas assessments to the largest gas utility in the State, Northern Utilities (doing business as Unitil). In 2013, the Legislature changed the law by expanding the Natural Gas Efficiency Procurement’s applicability to all local distribution companies providing natural gas in Maine, including Bangor Natural Gas, Maine Natural Gas, and Summit Natural Gas of Maine. In the spring of 2017, the Legislature amended the law once again, codifying the exclusion of natural gas-fired power generators and making special provisions for large, non-generator users. The law provides a limited exclusion for large manufacturers, agricultural, and aquaculture businesses; from FY2018 forward, these customers pay the natural gas assessment on their first 1 million centum cubic feet (CCF) of annual usage (but no more) and are eligible for the Trust’s natural gas efficiency programs.¹²

Consistent with the statute, the Trust targets the funds of the Natural Gas Conservation Fund so that a reasonable percentage will go to low-income residential customers and to small business customers, and so that remaining funds allow “all other [natural gas utility] consumers to have a reasonable opportunity to participate” in the programs.¹³

2.2.3 Regional Greenhouse Gas Initiative Trust Fund

RGGI is a regional program among states in the Northeast to limit carbon emissions from electricity generators. Maine joined RGGI in 2009 when the program was established. Under the program, large generators are required to purchase “carbon allowances” in an amount equal to their carbon emissions. Allowances are sold at quarterly auctions for this purpose. In Maine, proceeds from the auctions are transferred to the RGGI Trust Fund managed by the Trust.¹⁴

The RGGI Trust Fund is to be used for energy efficiency programs that reliably reduce electricity consumption or GHG emissions, giving priority to measures with the highest benefit-to-cost ratio. For the Triennial Plan V period, the law authorizes the Trust to allocate RGGI revenues across different programs or customer segments at the Trust Board’s discretion. This plan reflects the Trust’s priority to promote GHG reductions through measures and programs that are not otherwise sufficiently funded through other revenue streams (such as the electric and natural gas efficiency procurements, the FCM,

¹⁰ 35-A MRS §10111(1).

¹¹ 35-A MRS §10111(2).

¹² 35-A MRS §10111(2).

¹³ 35-A MRS §10111(1)(B)(3).

¹⁴ 35-A MRS §10109.

grants, and settlement funds). It also changes course from past triennial plans by declining to budget RGGI funds for fossil-fired heating systems.

The price per ton of carbon allowance, and the total number of tons of carbon allowances sold, has varied considerably over the last decade. Early on, annual auction revenues to Maine's RGGI Trust Fund were more than \$11 million per year. In the period around FY2012, the combination of reduced electricity consumption during the economic recession and a major switch by generators from oil to natural gas led to a drop in carbon emissions and a glut of carbon allowances. During that time, revenues from RGGI auctions fell to approximately \$4 million per year. When the regional carbon emissions cap was adjusted, the market rebounded; annual revenues between FY2014 and FY2016 ranged from \$12 million to \$14 million. Then, annual revenues began to decline rapidly in FY2017, falling to \$7 million. This drop was largely due to uncertainty regarding the future of RGGI, as participating states had not come to an agreement regarding whether to continue the arrangement beyond 2020. When the states officially decided to extend RGGI to 2030, market confidence returned, causing an increase in revenues. Annual revenues between FY2018 and FY2021 averaged \$X million, and the Trust expects \$X million for FY2022. In the period governed by Triennial Plan V, the Trust is projecting revenues to the RGGI Trust Fund at approximately \$13.9 million for FY2023, \$15.2 million for FY2024, and \$16.7 million for FY2025. (See [Appendix C](#) for further detail.)

2.2.4 Energy Efficiency and Renewable Resource Fund

The Renewable Resource Fund was originally established to support research and development (R&D) and demonstration projects for renewable energy.¹⁵ In 2011, the law was modified to further authorize use of the fund to provide rebates for customer-sited, commercialized renewable energy equipment meeting a particular cost-effectiveness test.¹⁶ In 2012, a bill from the Governor modified the law again, allowing voluntary contributions made to the fund to be used for energy efficiency projects (in addition to renewable energy projects) and changing the name of the fund to the Energy Efficiency and Renewable Resource Fund.¹⁷

During the period covered by Triennial Plans I through IV, this fund periodically received revenues from the following sources: voluntary contributions made by electricity ratepayers; alternative compliance payments made by electricity suppliers (to comply with their requirements to supply renewable energy); federal grants; and a dedicated system benefit charge. When it was in effect, this system benefit charge amounted to 0.005 cents/kWh for every unit of electricity consumed in Maine. In 2010, statutory authorization for this dedicated system benefit charge expired and was not reauthorized, ending this source of funds. In recent years, revenues to the fund from alternative compliance payments have dropped to zero, and revenues from voluntary ratepayer contributions have fallen to approximately \$60,000 per year. For the Triennial Plan V period, the Trust assumes that revenues for this fund will be

¹⁵ 35-A MRS §10121 and §3210(9)(B).

¹⁶ Public Law, Chapter 314, 125th Maine Legislature, First Regular Session, Legislative Document (LD) 761, An Act To Provide Rebates for Renewable Energy Technologies.

¹⁷ Public Law, Chapter 637, 125th Maine Legislature, Second Regular Session, LD 1864, An Act To Improve Efficiency Maine Trust Programs To Reduce Heating Costs and Provide Energy Efficient Heating Options for Maine's Consumers.

limited to voluntary contributions of \$60,000 per year. Per the statute, the Trust must direct 35% of annual revenues to the Maine Technology Institute to support the development and commercialization of energy efficiency and renewable energy technologies.

2.2.5 Heating Fuels Efficiency and Weatherization Fund

The Heating Fuels Efficiency and Weatherization Fund was established in 2009 for the primary purpose of reducing the consumption of heating fuel.¹⁸ At its creation, the fund's principal source of revenues was envisioned to be an efficiency charge or a carbon charge assessed on heating fuels such as fuel oil, propane, kerosene, and biomass. Such a charge would put these fuels on a level playing field with electricity and natural gas. Electricity and natural gas consumers already pay efficiency charges (and in the case of electricity customers, a carbon charge through RGGI). A decade later, even though oil, propane, kerosene, and biomass remain among Maine's largest and most potent sources of gross carbon emissions, there remains no efficiency charge or carbon charge on these fuels.

Without revenues for this fund from the "delivered" fuels, the Trust has made do with other alternatives. In 2019, the Legislature enacted Legislative Document (LD) 1766 to establish a statewide, five-year goal to install 100,000 high-performance heat pumps through this fund and to dedicate all revenues from the FCM to help fund the initiative.¹⁹ The legislation specified that any funds derived from the FCM must be used to supplement, but not supplant, incentives already being provided on the grounds that certain heat pump purchases constituted an electricity efficiency measure. The Trust has also dedicated a portion of RGGI revenues and certain settlement funds to meet the heat pump goal.

2.2.6 Electric Vehicle (EV) Fund and EV Charging Infrastructure Fund

In 2019, the Maine Legislature enacted LD 614, An Act to Increase Electric Vehicles in Maine, which established two EV-related funds to be administered by the Trust.²⁰ The EV Fund was established to transform markets toward the adoption of EVs and to support the purchase of EVs in the state.²¹ Additionally, the EV Charging Infrastructure Fund was established to increase the availability and effectiveness of EV charging infrastructure in the state.²² The Trust may deposit federal funds or any other funds from public or private sources received in support of the purposes for which these funds were established. The Trust has leveraged funds from the Volkswagen (VW) settlement and the New England Clean Energy Connect (NECEC) settlement, as well as a small grant for a pilot project awarded by the Public Utilities Commission. As described in more detail in Section Federal and Miscellaneous Funds 2.2.9, the settlements include specific allocations for programs that promote EVs and EV charging infrastructure.

¹⁸ 35-A MRS §10119.

¹⁹ *Id.*; see, Public Law, Chapter 306, 129th Maine State Legislature, First Regular Session, LD 1766, An Act To Transform Maine's Heat Pump Market To Advance Economic Security and Climate Objectives.

²⁰ Public Law, Chapter 258, 129th Maine State Legislature, First Regular Session, LD 614, An Act To Increase Electric Vehicles in Maine.

²¹ 35-A MRS §10126.

²² 35-A MRS §10125.

2.2.7 Agricultural Fair Assistance Program Fund

In 2019, the Legislature enacted LD 1186, An Act To Address Electricity Costs of Agricultural Fairs, requiring the Trust to administer a new program to help agricultural fairs reduce their electricity demand charges. The new law established the Agricultural Fair Assistance Program Fund to support this program. The Public Utilities Commission assesses each electric utility an amount necessary to collect the total value of demand charges paid by agricultural fairs in the State during the prior year.²³

2.2.8 Thermal Energy Investment Fund

In 2021, the Legislature enacted LD 597, An Act To Establish the Thermal Energy Investment Program, requiring the Trust to establish a new program to provide incentives and loans to businesses, municipalities, educational institutions, and nonprofit entities for the installation of new thermal energy-derived projects with the goal of strengthening the state's forest products industry and lower energy costs by increasing the efficient use of thermal energy production.²⁴ Thermal energy-derived projects are defined in the statute as projects that produce thermal energy and thermal renewable energy credits (TRECs) under Maine's renewable portfolio standard, such as wood-fueled combined heat and power or the conversion of fossil fuel-fired boilers to wood-fueled boilers or boilers using biofuels derived from wood. The new law provided that the Thermal Energy Investment Fund will be funded through alternative compliance payments from electricity suppliers who fail to secure their required quota of TRECs.²⁵ There is no forecast at this time as to what level of annual revenues, if any, this funding mechanism will generate. In any given fiscal year, program will be contingent on revenues being sufficient, from the alternative compliance offerings through this fund payments for TRECs or from other sources designated for this purpose, to run a program for a full year.

2.2.9 Federal and Miscellaneous Funds

The statute provides that the Trust shall oversee and administer federally funded programs and projects related to Trust programs.²⁶

During the first Triennial Plan period, the Trust administered programs funded by six separate federal grants totaling more than \$93 million. Nearly all of this amount came through one-time grants from the American Recovery and Reinvestment Act of 2009, which, except for certain revolving loan funds, was fully expended by 2013. The Trust may receive future allocations of federal funds relating to COVID-19 recovery initiatives, climate change programs, or infrastructure legislation, and may also apply for federal grants through competitive requests for proposals (RFPs) when they present a good fit with the Trust's mission and Triennial Plan. The Trust will incorporate any such revenues into its budget and performance metrics for Triennial Plan V as information becomes available.

²³ 35-A MRS §10124.

²⁴ 35-A MRS §10128.

²⁵ 35-A MRS §3210(9)(C).

²⁶ 35-A MRS §10115(1).

As mentioned above, the statute authorizes the Trust to accept “other funds received by or from any entity with which the Trust has an agreement or contract...”²⁷ As with any outside grants or funding streams, the allowable uses are typically set by the granting entity and memorialized in contract terms. The Board of Trustees must approve by an affirmative vote acceptance of funds and may do so where the receipt of those funds is consistent with the purposes laid out for the Trust in the statute.²⁸ As of the writing of this Triennial Plan, the Trust has two such funding sources that are expected to be active during FY2023, FY2024, and FY2025: the VW settlement funds and the federal American Rescue Plan Act (ARPA) funds.

Volkswagen Settlement Funds

In 2016 and 2017, VW agreed to settle allegations that it violated the federal Clean Air Act by installing “defeat devices” on certain diesel vehicles. Under a consent decree reflecting the settlement agreement, Maine (through the Office of the Attorney General) received settlement funds from VW. Through a Memorandum of Understanding, the Office of the Attorney General contracted with the Trust to administer approximately \$3 million of these funds to help state government facilities reduce their carbon footprint through energy efficiency improvements as part of the Governor’s “Lead by Example” initiative.²⁹ The Trust board voted unanimously in December 2019 to accept these funds.

American Rescue Plan Act Funds

In January 2021, the U.S. Congress enacted the American Rescue Plan Act of 2021 (ARPA), delivering \$350 billion to state, local, territorial, and tribal governments to respond to the COVID-19 emergency and spur economic recovery. In July 2021, the Maine Legislature enacted a bill reflecting its plan to invest the discretionary portion of State of Maine’s allotment of ARPA: LD 1733, An Act To Provide Allocations for the Distribution of State Fiscal Recovery Funds. Of these funds, the bill allocated \$50 million (\$15 million in FY2022 and \$35 million in FY2023) to the Trust to:

- Accelerate weatherization and efficiency upgrades for homes in the State, especially for low-income, older residents and renters (\$25 million);
- Assist municipal, county, school, and community organizations to secure efficiency grants by providing matching funds (\$15 million); and
- Support incentives for industries and businesses to invest in energy cost-savings and efficiency measures, especially those businesses struggling to recover from the economic downturn related to the COVID-19 pandemic, including through initiatives to develop and support climate change mitigation strategies designed to reduce GHG emissions at industrial facilities in the State (\$10 million).³⁰

²⁷ 35-A MRS §10103(4).

²⁸ 35-A MRS §10103(4).

²⁹ Maine Executive Order No. 13, FY 19/20, An Order for State Agencies to Lead by Example Through Energy Efficiency, Renewable Energy and Sustainability Measures, November 26, 2019.

³⁰ Office of the Governor, *The Maine Jobs & Recovery Plan: Investing in Maine’s Families, Businesses, Communities and Future*, May 4, 2021, p. 11.

The bill also allocated \$8 million (\$3 million in FY2022 and \$5 million in FY2023) to the Maine Department of Transportation to expand state, municipal, and other publicly accessible EV charging stations and related infrastructure in collaboration with the Trust.³¹

The Trust must commit any ARPA funds it receives by December 2024, and all funds must be fully spent by December 2026.

2.3 Long-Term Targets

Maine statute provides that an objective of the Trust’s Triennial Plan is to design, coordinate, and integrate programs that advance the following long-term goals.³² These goals are listed below.

1. Reducing energy costs, including residential heating costs;
2. 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;
3. Reducing peak-load demand for electricity by the maximum achievable cost-effective amount;
4. Achieving the maximum achievable cost-effective electricity and natural gas program savings;
5. Creating stable private sector jobs providing alternative energy and energy efficiency products and services in the State;
6. Contributing to the effort to reduce GHG emissions by the amounts consistent with the State’s GHG reduction requirements,³³ and in a manner consistent with the State's climate action plan;³⁴
7. Promoting 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; and
8. Promoting the purchase of battery electric vehicles and plug-in hybrid vehicles to achieve by 2030 the goal of at least 220,000 such vehicles registered in the State.

Appendix D details historical results as they relate to the Trust’s progress in advancing these goals.

³¹ Public Law, Chapter 483, 130th Legislature, First Special Session, LD 1733, An Act To Provide Allocations for the Distribution of State Fiscal Recovery Funds.

³² 35-A MRS §10104(4)(F). Note that due to a typographical error, sub-section (8) of this provision of statute indicates that the 2030 target for EVs in the state is 120,000. To match the targets recommended in the State’s climate action plan, the Trust will work toward the correct target of 220,000.

³³ 38 MRS §576-A.

³⁴ Maine Climate Council, *Maine Won’t Wait: A Four-Year Plan for Climate Action*, December 2020.

2.4 Principles of Administration

Leading up to the legislative decision to shift responsibility for administering programs to the new, independent Trust, there was robust policy debate about what principles should guide the implementation of programs. A consensus emerged to increase the focus on customers' energy needs; promote independent and objective planning and decision making; enhance nimbleness and flexibility in program management in order to adjust quickly to changes in energy prices and the emergence of new technologies or program strategies; and promote efficient administration, transparency, and accountability.

These industry best practices were later codified in the Efficiency Maine Trust Act, which directs the Trust to ensure that program design and implementation conform to enumerated "Principles of Administration," in order to be:

- *Consumer-oriented*: Programs are consumer-oriented such that the processes for participation and program design are targeted to serve the multiple needs of energy consumers in this State;
- *Independent, objective, nimble*: The effectiveness of programs is maximized by building up and centralizing expertise; addressing conflicts of interest; mitigating the influence of politics; promoting flexible, timely program management; and providing a champion for funding cost-effective energy and energy efficiency programs;
- *Efficient*: The efficiency with which programs are planned, designed, overseen, and delivered is maximized; and
- *Sustainable*: Sufficient checks and balances are provided to ensure consistency with public policy and accountability so that energy efficiency programs in the State are sustainable for the long term.³⁵

The model of using an independent, third-party administrator such as the Trust to help achieve these principles in the administration of efficiency programs and alternative energy programs is becoming more common across the United States. Variations on this model are also employed in Delaware, the District of Columbia, Hawaii, New Jersey, New York, Oregon, Wisconsin, and Vermont.

2.5 Other Statutory Directives

2.5.1 "PACE" Loans

The Property Assessed Clean Energy (PACE) Act was enacted in Maine in 2010 to facilitate financing of energy-saving improvements in Maine buildings.³⁶ The PACE Act establishes underwriting standards for small loans (up to \$15,000) and authorizes the Trust to administer a program of marketing, financing, and servicing loans for energy upgrades. In 2021, the Maine Legislature expanded the Trust's authority regarding property assessed financing with the passage of LD 340, An Act To Allow for the Establishment of Commercial Property Assessed Clean Energy Programs.³⁷ This new law authorizes the Trust to

³⁵ 35-A MRS §10104(2).

³⁶ 35-A MRS §10151 et seq.

³⁷ Public Law Chapter 142, 130th Legislature, LD 340, An Act To Allow for the Establishment of Commercial Property Assessed Clean Energy Programs.

facilitate financing of energy saving improvements at commercial properties in participating municipalities. The loans are to be secured by a priority lien against the property.

2.5.2 Capacity Resource Adequacy

State law contains a provision authorizing the Public Utilities Commission to approve long-term contracts for electricity capacity and energy under specific circumstances.³⁸ The purposes of this provision include:

- To reduce electric prices and price volatility for the State’s electricity consumers and to reduce GHG emissions from the electricity generation sector; and
- To develop new capacity resources to reduce demand or increase capacity so as to mitigate the effects of any regional or federal capacity resource mandates.³⁹

In past years, the Commission has used this authority to contract with the Trust to deliver energy efficiency capacity resources and the available energy that is associated with such resources.⁴⁰

2.5.3 Non-Wires Alternatives

In 2019, the Maine Legislature amended the process for planning and approving transmission and distribution investments by establishing a non-wires alternative coordinator in the Office of the Public Advocate (OPA).⁴¹ The amendments also direct the Trust to provide analysis of the benefits and costs of potential non-wires alternatives (such as energy efficiency, demand response, distributed generation, or storage) that can be found behind the meter (BTM). Where these alternatives are found to be more cost-effective than a transmission or distribution upgrade or other resources, the law directs the Trust to procure and deliver the BTM resources.

2.6 Program Guidelines

The regulatory framework in which the Trust operates starts with the statutory provisions outlined above. This framework is detailed in a series of rules that the Trust has adopted and through program guidelines. The Trust’s rules, codified at Section 95-648 of the Code of Maine Rules, and individual program guidelines are all available on the Efficiency Maine website at www.energymaine.com.

2.7 Oversight from the Public Utilities Commission

The Commission has oversight of the Trust’s program planning and administration, and must approve the Triennial Plan.⁴²

The Commission’s oversight includes reviewing performance of the programs and ratifying the performance metrics if the metrics conform with the statute’s principles of program administration and

³⁸ 35-A MRS §3210-C.

³⁹ 35-A MRS §3210(2)(C).

⁴⁰ 35-A MRS §3210-C(6)(A).

⁴¹ Public Law, Chapter 298, 129th Legislature, First Regular Session, LD 1181, An Act To Reduce Electricity Costs through Nonwires Alternatives.

⁴² See, generally, 35-A MRS §10104(4) and §10120.

are in the public interest. The Commission may open an investigation and issue appropriate orders to address concerns of non-compliance. The Commission is also empowered to establish a fund to cover the costs of its oversight responsibilities.

2.8 Legislature

The Trust's committee of jurisdiction in the Maine Legislature is the Energy, Utilities and Technology Committee. On December 1 of each year, the Trust presents to the EUT Committee the annual report of the prior year's activities, results, and financials. On January 30 and July 30 of each year, the Trust also submits to the EUT Committee year-to-date financial updates and the operating budget. By practice, the Trust typically also provides a briefing on the annual report and plans for the year ahead to the EUT Committee early in the year for each legislative session. Periodically throughout a session, the Trust provides briefings, written information, analysis, and testimony about energy issues. Occasionally, when relevant, the Trust offers similar input in other legislative committees, such as the Environment and Natural Resources Committee or the Appropriations Committee. When a Triennial Plan is under development, the Trust provides an opportunity for the members of the EUT Committee to ask questions and give input. The Trust also annually provides a summary financial report to the Speaker and the Senate President, as is required of all quasi-state agencies.

3. 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 to review.

The Efficiency Maine Trust Act specifies that, every three years, the Trust should prepare a strategic plan and that the Trust should administer its programs consistent with that plan. Pursuant to the statute, this plan, referred to as the “Triennial Plan,” must:

- Be a detailed plan for energy efficiency, alternative energy resources, and conservation.
- Provide integrated planning, program design, and implementation strategies for all energy efficiency, alternative energy resources, and efficiency programs administered by the Trust.
- Identify the MACE energy efficiency savings of electricity and natural gas, the costs and benefits of programs that will be used to achieve such savings, and the basis and support for the costs and benefits that have been identified.
- Include program budget allocations, objectives, targets, metrics of performance, program designs, program implementation strategies, timelines, and other relevant information;
- Include provisions for the application of appropriate program funds to support workforce development efforts.
- Take into consideration the comprehensive state energy plan⁴³ and help to align the Trust’s programs with the programs of state agencies and authorities as they relate to the purposes of the Efficiency Maine Trust Act. Of particular note during the period of this Triennial Plan will be the programs and activities of the Maine Climate Council, the non-wires alternative coordinator, relevant Commission proceedings and orders, the Technical Codes and Standards Board for the Maine Uniform Building and Energy Code, the “lead-by-example” efforts of the Bureau of General Services, and the weatherization programs of the Maine State Housing Authority.

3.2 Process and Timeline

The Triennial Plan development process culminates with a review, typically through an adjudicatory proceeding at the Commission, which leads to approval or rejection of the Plan.

⁴³ 35-A MRS §10104(4).

With regard to electricity efficiency and natural gas conservation, the Commission must determine whether the Triennial Plan as proposed will capture the MACE energy efficiency savings.

With regard to the funds generated through the Electric Efficiency and Conservation Program, the Natural Gas Conservation Program, and the Heating Fuels Efficiency and Weatherization Fund (§10110, §10111, and §10119, respectively, in the Efficiency Maine Trust Act), the Commission will review the Triennial Plan to determine if the Plan reasonably explains how it will achieve, for each of those funds, the objectives and implementation requirements enumerated in the statute and the metrics forecasted in the Plan.⁴⁴

The Commission will incorporate into electricity and natural gas utility rates sufficient revenue to provide for the procurement of the MACE energy efficiency resources (for electricity and natural gas, respectively) identified in the Plan.

Before the Plan is submitted to the Commission, however, it undergoes several steps. The staff began developing Triennial Plan V by reviewing recent past performance, updating the potential for MACE, 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 perform benefit-cost analysis and estimate the budgets necessary to capture MACE resources.

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

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 Act prescribes that the Trust staff will submit to the Board of Trustees an update to the Triennial Plan if significant changes are contemplated during the Plan period. Significant changes require approval by the Board before they may be put into effect. In the event these changes relate to the use

⁴⁴ 35-A MRS §10104(4)(D); 35-A MRS §10104(3). The statute calls for similar review and treatment of any funds the Triennial Plan might contemplate generating pursuant to 35-A MRS §3210-C, a provision allowing for long-term contracts to procure electricity capacity resources.

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.”⁴⁵

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, reducing environmental impacts of energy, maintaining fairness and promoting equity, and leveraging the private sector.

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 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. By investing in energy efficiency projects that satisfy the Trust’s stringent cost-effectiveness test, the programs are acquiring energy resources for the benefit of the participating customers and, in the case of energy delivered through utility distribution systems, for 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.

Over the last Triennial Plan period the Legislature expanded the Trust’s role in analyzing and procuring behind-the-meter resources as part of the least-cost transmission and distribution planning process overseen by the non-wires alternative coordinator.⁴⁶

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 efficiency, conservation, and carbon-saving alternatives. 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 become familiar with and promote the products, and the retail price is driven down. Recent energy-efficient technologies going through this transformation in Maine include high-performance 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 educational efforts.

Another means of market transformation is through workforce development. Triennial Plan V continues the past success of promoting training for key players in the energy efficiency and low-carbon alternatives supply chain. The Trust emphasizes the certification and licensing requirements for trade

⁴⁵ 35-A MRS §10104(6).

⁴⁶ 35-A MRS §3132-C and §3132-D.

allies—electricians, plumbers, builders, heating system and insulation technicians, architects, engineers, retailers, and wholesalers—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. For example, Trust programs recently developed and provided training for existing heating, ventilation, and air conditioning (HVAC) technicians on best practices for installing heat pumps. The Trust also provided scholarships for heat pump installers’ apprentices to attend formal heat pump training and awarded grants for heat pump training programs to acquire equipment and materials necessary for hands-on training. Other recent efforts have included extensive direct outreach and education to car dealers and salespersons about electric vehicles.

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). The site also includes extensive background information about energy efficiency and the options available to consumers considering a purchase of new lighting, heating or cooling systems, water heaters, electronics, appliances, and electric vehicles. In the case of new and transformational technologies like electric vehicles or heat pumps, the Trust’s educational efforts include providing information to customers on purchasing options and information on operating their new efficient equipment, where to find electric vehicle charging infrastructure, and other informational resources. The educational information that is available on the Trust’s website is also made available in printed brochures, guidebooks, and instructional videos, which are distributed through a variety of channels. Triennial Plan V 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 can be challenging. To address these issues, the Trust often seeks to start on a smaller scale by supporting innovative pilot initiatives and funding custom projects.

3.3.3 Reducing the Environmental Impacts of Energy

The Maine Climate Council’s *Maine Won’t Wait: A Four-Year Plan for Climate Action* recently identified that more than one-third of Maine’s carbon emissions result from heating, cooling, and lighting Maine buildings. The transportation sector is responsible for another 54% of the State’s emissions. Carbon emission reductions in these sectors are critical if the State is to help mitigate the risks of climate change and meet its 2030 and 2050 emission reduction requirements. *Maine Won’t Wait* points to energy efficiency and beneficial electrification as key strategies for meeting climate goals and mitigating climate and economic impacts associated with climate change. The Plan points to the Trust as a primary implementer of beneficial electrification through investment in electric vehicles and heat pumps in space heating and water heating.

Energy efficiency, beneficial electrification, and low-carbon alternatives have the potential to not only reduce or mitigate harmful GHG emissions and other environmental impacts, but to do so more cost-

effectively than other ways to mitigate such impacts. During the Triennial Plan V period, the Trust seeks to deploy cost-effective energy resources in a way that also advances State environmental policies and the goals outlined in *Maine Won't Wait*.

3.3.4 Maintaining Fairness and Promoting Equity

Triennial Plan V also reflects the priority of maintaining fairness and promoting equity in the ways that budgets are allocated and programs are designed and implemented under the Plan. Several groups and initiatives influence the Trust's consideration of fairness and equity issues.

Considerations

In 2017, the Trust formed the Low Income Advisory Group (LIAG) to help the Trust staff consider income-related equity issues in its program designs and implementation. The LIAG comprises representatives of the Office of Public Advocate, the Maine State Housing Authority, the Community Action Agencies, Maine Equal Justice, Seacoast Mission, United Way of Mid-Coast Maine, tribal groups, the utilities, the Consumer Assistance Division of the Commission, and others. It meets quarterly to review progress of the Trust's Low Income Initiatives, review potential program improvements, and discuss opportunities to collaborate in raising awareness about the Initiatives.

The Trust also maintains a strong focus on geographic equity in its programs, informed in part by the analysis set forth in the Island Institute's 2018 *Bridging the Rural Efficiency Gap* report.⁴⁷ This report highlighted the unique barriers to energy efficiency for rural and isolated populations, and presented several bridging models to overcome them.

In addition, the Trust has prepared Triennial Plan V in full awareness of new analysis and recommendations emanating from the federal Justice40 Initiative⁴⁸ and the initiatives of the Maine Climate Council. In directing the Council to develop and update a climate action plan, the Legislature enumerated objectives to be reflected in its work, including:

- Pursuing cost-effective, technologically feasible and equitable greenhouse gas emissions reduction pathways and adaptation and preparedness strategies, informed by scientific and technical expertise;
- Pursuing actions that minimize deleterious effects, including those on persons of low income and moderate income, to public health and the environment and that support economic sectors that face the biggest barriers to emissions reductions and creating, when feasible, additional employment and economic growth in the State, especially in rural and economically distressed regions of the State; and

⁴⁷ Brooks Winner, Suzanne MacDonald, Lisa Smith, and Juliette Juillerat, *Bridging the Rural Efficiency Gap: Expanding Access to Energy Efficiency Upgrades in Remote and High Energy Cost Communities*, Rockland, Maine: Island Institute, 2018.

⁴⁸ The White House, *"The Path to Achieving Justice40,"* July 20, 2021.

- Ensuring equity for all sectors and regions of the State and that the broadest group of residents benefit from the achievement of the greenhouse gas emissions reduction levels in section 576-A, with consideration of economic, quality-of-life and public health benefits; ...⁴⁹

In preparing this Triennial Plan, the Trust also has familiarized itself with and given consideration to the guidance provided in the report *Assessing the Potential Equity Outcomes of Maine’s Climate Action Plan: Framework, Analysis and Recommendations*, prepared for the Council by the Senator George J. Mitchell Center for Sustainability Solutions at the University of Maine.⁵⁰ Going forward, throughout the implementation of the Triennial Plan, the Trust will also review and consider the final report of The Maine Climate Council’s Equity Subcommittee—a group tasked with setting equity outcomes for climate actions, monitoring progress, and making recommendations to the Council to ensure programs and benefits reach diverse and isolated populations and communities.

Application of Fairness and Equity to The Plan

As an initial matter, a degree of fairness in the Trust’s programs is advanced by ensuring that statutory minimum funding levels are allocated to low-income customers and to small business customers (see [Appendix H, Statutory Budget Allocation Requirements](#)). Beyond these statutory directives for budget allocations, the Trust seeks to promote broad participation among customers. With projects funded by the Electric Conservation Fund and the Natural Gas Conservation Fund, the budgets are allocated wherever there are cost-effective savings opportunities. For most other funding streams, the Trust seeks to achieve a rough proportionality in the distribution of funds and the sources of those funds, both geographically and by customer segment. The Trust also seeks to maintain a balance with the other priorities described in this section (resource acquisition, market transformation, environmental improvement, and leveraging of private sector and private funding).

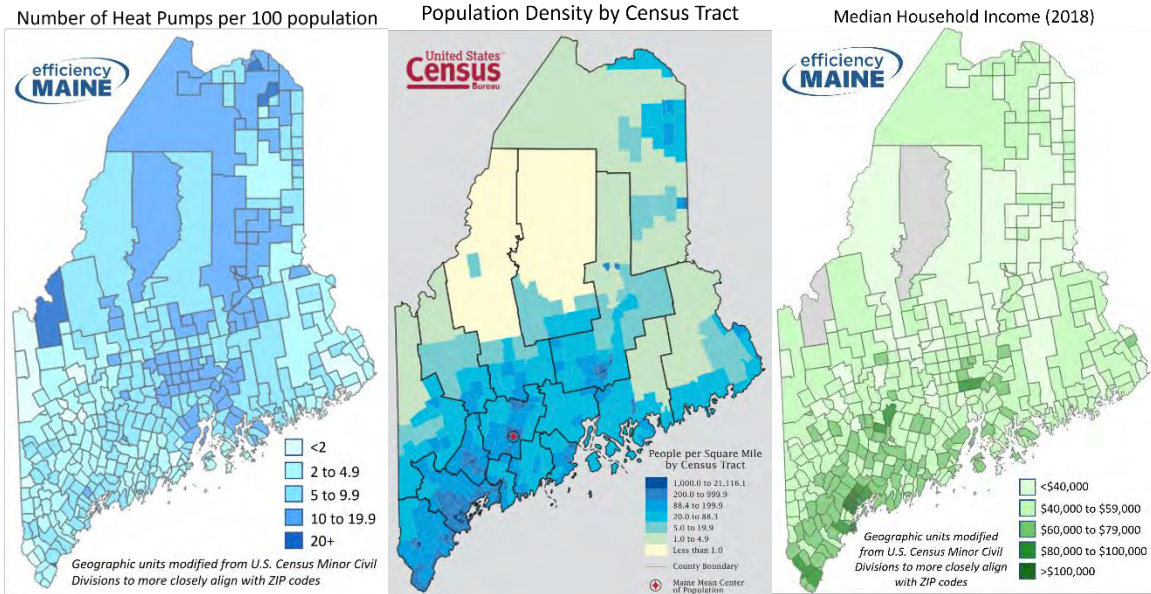
Equity and cost considerations factor into all of the Trust’s budget allocations and program designs, but particularly those targeted at low- to moderate-income households and small businesses. For these households and businesses, the overall energy burden is greater, and they are likely to need more support in making the shift to high-efficiency systems. These programs are designed to reduce the obstacles to participation; program design elements may include providing higher financial incentives or eliminating the need for upfront payment altogether. Furthermore, the Trust’s Low Income Initiatives include a variety of approaches to reach the largest number of low- and moderate-income households across the State.

Historical results of the Trust’s programs promoting heat pumps, light-emitting diode (LED) lights, and heat pump water heaters have shown strong distribution among low-income communities and in rural communities. Figure 1 illustrates how the Trust’s nationally recognized heat pump program is delivering benefits in Maine’s most rural and remote regions and in areas that have lower median incomes.

⁴⁹ 38 MRS §577(7).

⁵⁰ Senator George J. Mitchell Center for Sustainability Solutions at the University of Maine, *Assessing the Potential Equity Outcomes of Maine’s Climate Action Plan: Framework, Analysis and Recommendations*, Orono, Maine: University of Maine, September 2020.

Figure 1: Efficiency Maine Heat Pump Installations vs. Population Density vs. Income Distribution



Left: Geographic distribution of Efficiency Maine’s heat pump program from 2013 to 2021, representing more than 75,000 heat pump rebates (cumulative heat pump rebates per 100 population, where each rebate is equivalent to a single-head, mini-split air source heat pump); **Center:** US Census 2010 - Population density of Maine.; **Right:** Median income in Maine.

The Trust’s efforts to ensure its programs equitably deliver benefits of energy efficiency to renters is another important objective related to lowering energy costs and reducing carbon emissions. The Trust understands that a significant share of low-income Mainers rent, and do not own, their home. In Triennial Plan V, the Trust’s programs will increase efforts to target landlords and affordable housing providers, who hold the authority to make key purchasing decisions impacting the energy use of tenants. The specific strategies are described in more detail in the individual program descriptions in the Plan.

The Trust’s programs promoting equity and fairness have delivered tens of thousands of small, low-cost product upgrades that make small energy savings accessible to households and businesses everywhere, even in more remote areas of the State. Compared to the Trust’s initiatives targeting other consumer segments, investments targeting geographic, sector, community equity may incur greater cost while yielding lower energy and carbon savings, which the Trust acknowledges is in tension with some of the other priorities described in this section. The Trust pursues them nonetheless because they are cost-effective, and because the broad goals of lowering energy costs and carbon emissions through energy efficiency require sustained programs, and sustained funding, over a period of decades. To maintain public and political support over this timeframe, it is critical that the Trust’s programs achieve energy savings and carbon reductions from every subsector, income level, living situation, and region of the State.

The Trust will continue to assess how to improve accessibility and increase participation among Mainers carrying the greatest energy cost burdens, with special effort to engage low-income households and build equity-focused metrics for measuring progress through implementation. The Trust’s continued

commitment to market transformation across all programs to bring down the cost of efficiency products and services will ensure that all Mainers can experience the benefits of energy efficiency.

3.3.5 Leveraging the Private Sector

As noted above, an overarching purpose of the Trust is to minimize energy costs of Maine’s residential and non-residential customers, 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 low-carbon 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, insulation technicians), and retail stores. Leveraging the private sector entails taking advantage of competition in the marketplace to push down prices of equipment and services.

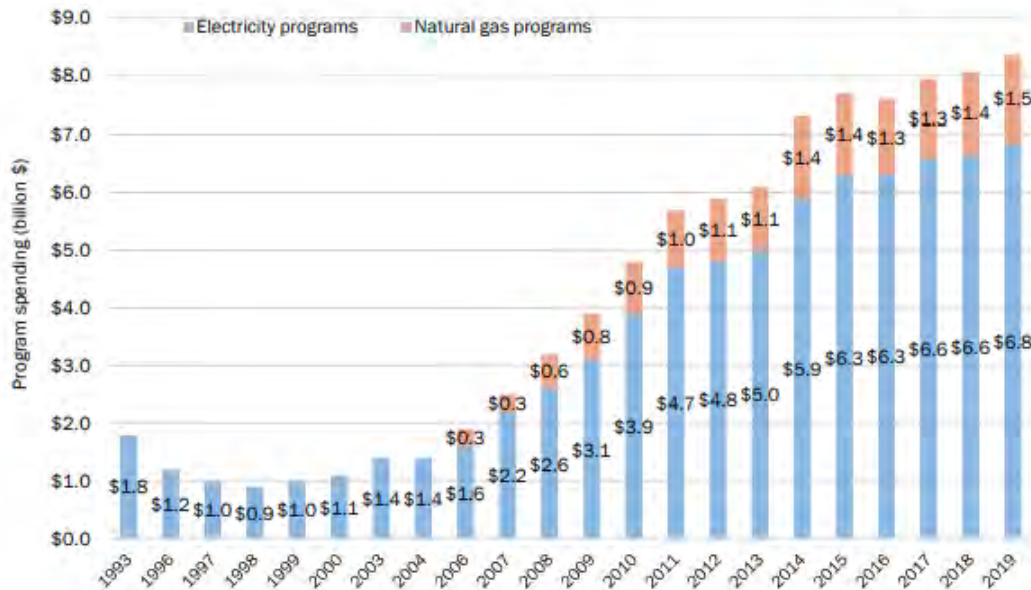
This market-based approach also means that in most cases, the homeowner or business owner bears ultimate responsibility for deciding what upgrades to install and which contractor to use, and for executing and paying for the transaction. Except for improvements made in certain low-income homes, the Trust’s 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 a 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.

3.4 Results

3.4.1 Recent History of Energy Efficiency Programs

Nationally, energy efficiency programs are well-established as a means for cost-effectively lowering energy bills, optimizing the size and performance of the electrical grid, 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, \$8.4 billion was invested in 2019 through programs to promote the more efficient use of electricity, heating fuels, and industrial process fuels.⁵¹ Figure 2 shows that nationwide funding for energy efficiency programs increased significantly between 2003 and 2019, reflecting a growing commitment to efficiency as a low-cost, low-carbon, and highly reliable energy resource.

⁵¹ W. Berg, S. Vaidyanathan, B. Jennings, E. Cooper, C. Perry, M. DiMascio, and J. Singletary, *The 2020 State Energy Efficiency Scorecard*, Washington, DC: ACEEE, December 2020, p. 19.

Figure 2: National Spending on Energy Efficiency Programs

Note: Annual spending on electric and natural gas energy conservation. Source: W. Berg, S. Vaidyanathan, B. Jennings, E. Cooper, C. Perry, M. DiMascio, and J. Singletary, *The 2020 State Energy Efficiency Scorecard*, Washington, DC: ACEEE, [aceee.org/research-report/u2011](https://www.aceee.org/research-report/u2011), 2020, p. 25.

Energy efficiency 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 Versant Power) and Central Maine Power—were vertically integrated, owning and managing generation stations as well as the transmission and distribution lines. They also offered energy efficiency programs to their customers. Among the first energy efficiency programs in the country, these initiatives were referred to as demand-side management programs. Showing their commitment to providing Maine ratepayers with low-cost energy conservation, Central Maine Power proposed, and the Commission approved, demand-side management budgets above \$20 million per year in the early and mid-1990s.

Starting in 2002, the Commission assumed responsibility for administering statewide energy efficiency programs funded with a system benefit charge. Over eight years, the programs grew from a handful of small educational and training initiatives to a full-fledged efficiency 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). 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

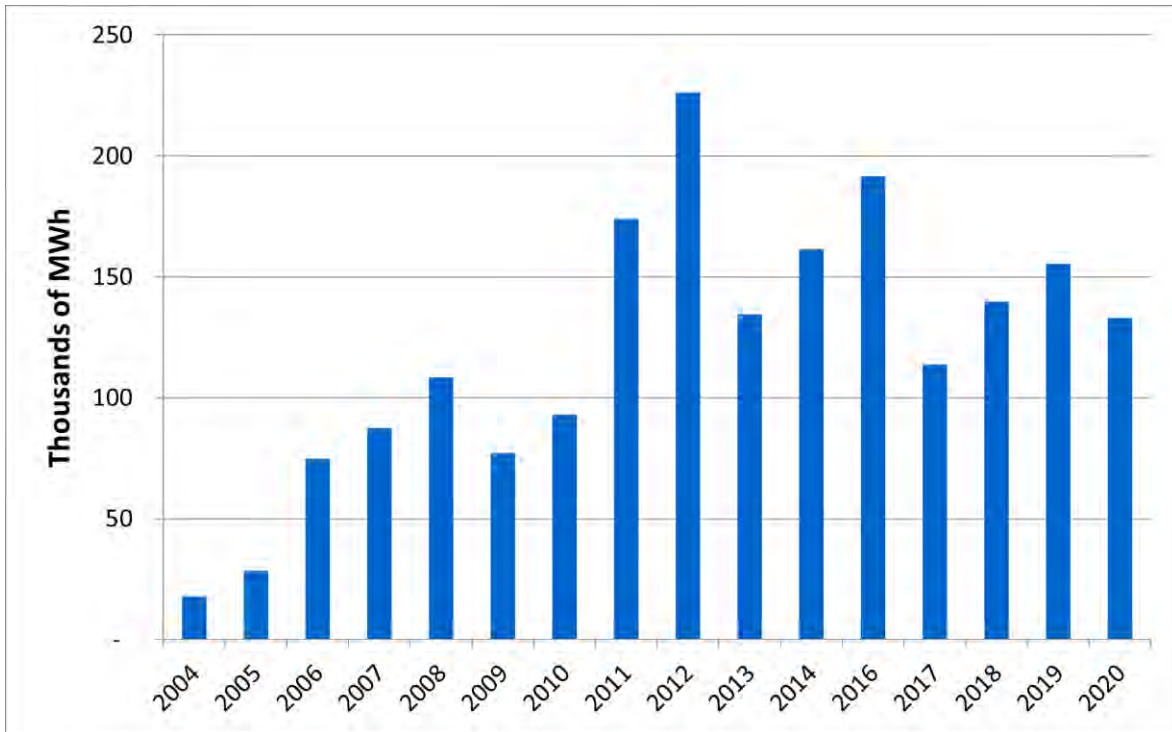
Partners Program) reached their end and made more funds available for Efficiency Maine, the annual budget for electricity savings programs grew to \$14-15 million by 2009.

In 2009, the State enacted legislation to shift responsibility for administering Efficiency Maine programs to a new, independent, quasi-State agency—the Efficiency Maine Trust. Starting on July 1, 2010, the Trust consolidated responsibility for administering multiple revenue streams, including the Electric Efficiency and Conservation Fund, the Natural Gas Conservation Fund, the newly created RGGI Trust Fund, the Energy Efficiency and Renewable Resource Fund, and certain initiatives of the federally funded State Energy Program. The mission that the Legislature gave to the new Trust was to coordinate and, where appropriate, to integrate the administration of electric and thermal efficiency programs and programs to promote low-carbon 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 shows the annual savings from Efficiency Maine electricity efficiency programs—the longest running and most comprehensive Efficiency Maine programs—from FY2004 to FY2020. 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 efficiency measure commonly persist throughout the lifetime of the equipment, usually more than a decade.

Figure 3: Annual Savings from Efficiency Maine Programs in Thousands of MWh (2004–2020)



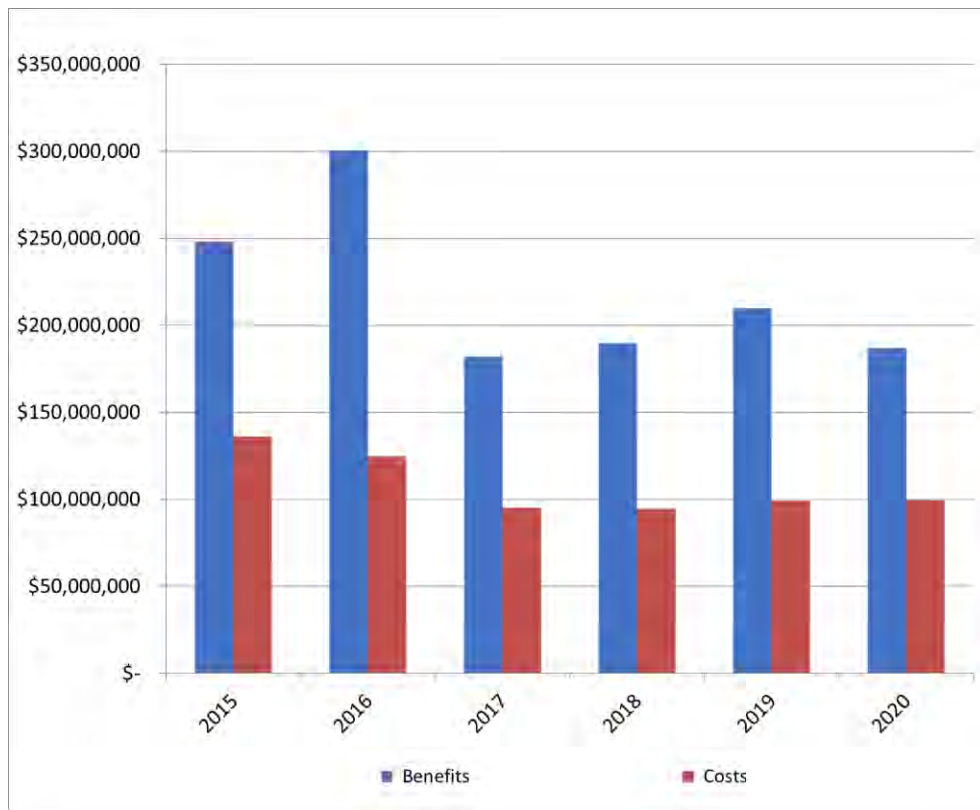
Source: Efficiency Maine data.

3.4.3 Economic Savings (Benefits)

Energy and capacity savings from efficiency projects are the chief contributors to economic savings, which are referred to in the Trust’s calculus of cost-effectiveness as “benefits.” The economic 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.⁵²

Figure 4 highlights the economic savings for the past five years of programs. Because the economic benefits are a function of the value of the energy use avoided, the benefits may decrease if energy prices drop even as budgets or energy savings are increasing.

Figure 4: Benefits (Lifetime) vs. Costs (EMT and Participant) of All Efficiency Maine Programs



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

⁵² “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.

4. Identification of Cost-Effective Opportunity

4.1 FY2023-FY2025 Program Budgets

See [Appendix A, Budget and Performance Metrics](#).

4.2 MACE Quantification Methodology

4.2.1 MACE Definition

The Efficiency Maine Trust Act establishes a standard for the quantity of energy efficiency resources to be delivered. The standard is described as the “maximum achievable cost-effective” resources and referred to as “MACE.” The Act further mandates that the Trust’s Triennial Plan be designed and funded at a level sufficient to meet this standard with regard to electricity and natural gas.⁵³

MACE potential is the amount of cost-effective energy resources that can realistically be conserved or delivered, taking into account the following considerations:

- Real-world barriers to consumers’ adoption of efficiency measures (e.g., upfront costs, supply chain limitations, lack of customer awareness, unwillingness or reluctance to participate in programs, technical constraints);
- Non-measure costs of delivering programs (for administration; marketing; analysis; and evaluation, measurement, and verification [EM&V]);
- Ability and capacity of programs and administrators to boost program activity over time;
- Policy or regulatory constraints;
- Other market-specific barriers that the “program intervention” is modeled to overcome; and
- Future market trends.

The Trust’s statutory directive to deliver MACE only applies to energy efficiency measures for electricity and natural gas—not unregulated fuels such as heating oil, propane, kerosene, or biomass. The statute directs electricity utilities and natural gas utilities to procure MACE by funding the Trust’s programs and authorizes the utilities to recover the cost of MACE from their ratepayers. By contrast, there is no such funding mechanism for unregulated fuels, and no MACE standard is applied to these fuels. Therefore, for unregulated fuels measures, the Trust must manage to match available funding from other sources.

4.2.2 Calculation of Benefits and Costs

The Trust follows the standard practice of energy efficiency programs by estimating economic benefits and costs based on the difference between two scenarios: (1) the baseline (i.e., what would have most likely happened if not for the program), and (2) an efficient scenario in which incremental energy resources are saved (or delivered) due to an intervention. The Trust’s Technical Reference Manuals (TRMs) serve as a central repository and common point of reference for the methods, formulas, assumptions, and sources used to estimate benefits from energy efficiency measures. The TRMs, which are described in further detail in Section 6.1, also provide a common platform for analyzing energy

⁵³ 35-A MRS §10110(4-A); 35-A MRS §10111(2).

savings across measures and programs. The current section provides a high-level overview of some related considerations and assumptions that go into the Trust's assessment of cost-effective opportunity.

Baseline Establishment

The baseline represents the starting conditions, or what would have happened if not for the energy efficiency program. Establishing the baseline allows for comparison between energy use with and without an energy efficiency upgrade. Considerations include assumptions about whether the average customer would have installed less efficient equipment or if they would have continued to use existing equipment.

Several sources of information support the Trust's baseline analysis. First, the Trust considers what customers are *required* to do or have done based on regulatory codes and standards. For example, in establishing the baseline for heat pump water heaters, the Trust looks at the federal minimum efficiency standards for the electric resistance water heater baseline. Second, the Trust conducts market research to gain a better understanding of the models and quantities of equipment being sold at Maine's retailers and distributors, and of how customers respond to different promotional conditions. For example, the Trust added electronically commutated motors (ECMs) to its Distributor Initiatives offerings after reviewing a 2018 study finding that ECMs constituted only 10% of small hot water pumps being sold in Maine at that time.⁵⁴ ECMs use brushless permanent magnet motors and variable speed control, requiring significantly less power to operate than standard hot water motors. This study revealed a sizeable, cost-effective opportunity to reduce the electricity used in hydronic heating systems. Third, the Trust assesses the current universe of installed equipment. For example, as part of Triennial Plan V, the Trust commissioned a baseline study on the state of commercial and industrial lighting in Maine (see [Appendix E-2](#)). This study updated the potential opportunity for lighting efficiency upgrades estimated for Triennial Plan IV taking into account the past three years of program activity and assessing the current commercial lighting market through interviews with distributors and contractors.

Assigning the relevant decision type that characterizes a customer's decision to undertake an energy upgrade is an important consideration in establishing the baseline (see Table 1). Decisions fall into one of two categories: (1) lost opportunity or (2) retrofit.

Lost opportunities cover measures such as those undertaken during new construction projects and planned equipment purchases. Planned equipment purchases include adding new equipment to an existing facility, whether in connection with remodeling, expansion, or otherwise, as well as "replacement on burnout" when equipment fails beyond repair or nears the end of its useful life. In all these cases, if the customer does not choose an efficiency upgrade, there may not be another economical opportunity to upgrade the equipment for many years. The opportunity to influence the adoption of high-efficiency equipment in new construction or expansion scenarios occurs at the point when new equipment is being specified and installed. The potential for upgrades in a given year in such

⁵⁴ Efficiency Maine Trust, "[Midstream HVAC Potential Study](#)," *Triennial Plan for Fiscal Years 2020–2022*, October 19, 2018, Appendix H.

cases is determined by the rate of new construction and plans for consumer facility upgrades. For “replacement on burnout” scenarios, the potential for upgrades in a given year is determined by the quantity of installed equipment, equipment failure rates, and the age of equipment stock.

Retrofits occur when the equipment replacement or upgrade occurs before the end of the equipment’s useful life. Barriers to retrofits include competing priorities for the property owner or contractors, lack of knowledge or expertise, workforce capacity, and long decision-making or budget process. The potential for upgrades in a given year in this scenario is not limited by the rate of “burnouts” but instead by factors such as workforce capacity, product availability, priorities of consumers, and the size of financial incentives offered. In practice, it takes many years to address an entire stock of buildings, even with the most aggressive energy efficiency programs.

Table 1: Assessment of Measure Cost for Different Decision and Project Types

Decision Type	Project Type	Scenario	Baseline	Measure Cost
Lost Opportunity	New Construction	Customer is in the market to purchase new equipment for a new construction project	Local building codes, State or federal standards, or standard market practice for new equipment	Incremental cost: difference between the cost of the baseline and high-efficiency equipment
	Addition of New Equipment	Customer is in the market to add new capacity to an existing facility/renovation or to add controls to improve the performance of new equipment	State or federal standards or standard market practice for new equipment	Incremental cost: difference between the cost of the baseline and high-efficiency equipment
	Replacement on Burnout	Customer is in the market to purchase new equipment to replace existing units that have worn out or otherwise need replacing	State or federal standards or standard market practice for new equipment	Incremental cost: difference between the cost of the baseline and high-efficiency equipment
Retrofit	Early Replacement	Customer’s existing equipment is in working order and has remaining useful life, or customer is adding controls to improve the performance of operating equipment in an existing facility	Existing equipment or conditions	Full measure cost: cost of the high-efficiency equipment (including installation)

Load Shape

For electricity customers, how a piece of equipment is used over the course of a day and year has implications for the energy and demand costs that the customer will incur when that equipment operates. Generally, electricity used during on-peak, or high-demand, periods is more expensive; certain customers are obligated to pay demand charges that increase during these timeframes. The Trust must therefore understand the coincidence factor, or the degree to which a given measure is likely to be operating during the peak hours defined by ISO-NE. The higher a measure’s coincidence factor, the higher the potential financial savings associated with avoiding peak demand (i.e., kilowatts). The Trust

also applies energy period factors to allocate the annual energy (i.e., kilowatt-hour) savings into one of the four energy periods, each with its own specific costs: (1) Winter On Peak, (2) Winter Off Peak, (3) Summer On Peak, and (4) Summer Off Peak. This allocation is performed in order to apply the appropriate avoided cost values in the calculation of program benefits.

Impact Factors

A series of other factors account for verified measure performance in a cost-effectiveness calculation. These include the following:

- *In-service rate*: The percentage of efficient units distributed through an energy efficiency program that are actually implemented, rather than left uninstalled for some reason.
- *Realization rate*: The comparison between predicted and actual energy savings, as determined by a program evaluation.

Program Attribution

Program attribution involves isolating savings achieved as a direct or indirect result of the program. The Trust considers program attribution when reporting on program results, but not when screening measures for cost-effectiveness. Elements of program attribution include:

- *Free-ridership rate*: The percentage of energy savings achieved by participants who would have implemented the measure or practice in the absence of the program. These savings are not attributable to the program's influence. The Trust sets free-ridership rates at the level determined in a given program's most recent evaluation. It uses a default free-ridership rate of 25% for unevaluated measures where comparable evaluated measures do not exist.⁵⁵
- *Spillover rate*: An estimate of energy savings attributable to spillover effects expressed as a percentage of savings from equipment that participants install through an energy efficiency program. Spillover refers to the installation of efficiency measures or adoption of efficiency practices by customers who did not directly participate in an efficiency program, but were nonetheless influenced by the program to make the efficiency improvement.⁵⁶

Secondary Impacts and Interactive Effects

Some energy efficiency measures have impacts beyond the targeted energy savings. For example, a high-efficiency clothes washer saves electricity and also reduces hot water usage. The Trust calculates the additional energy savings associated with this reduction, taking into account the specific fuel type used for water heating.

In some cases, an efficiency measure interacts with other equipment. An example of this interactive effect is the impact that efficient lighting has on a building's HVAC equipment. When efficient lighting is installed, the amount of waste heat produced by the lights is reduced. This results in additional electricity savings due to lower cooling loads but also leads to increased energy usage during the heating

⁵⁵ This value is consistent with the Triennial Plan III Settlement (see State of Maine Public Utilities Commission, Order Approving Stipulation, Docket No. 2015-00175, July 6, 2016).

⁵⁶ National Efficiency Screening Project, *National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources*, Edition 1 Spring 2017, p. 100.

season to offset the heat lost from the new lighting. The Trust includes both the cooling benefit and the heating penalty in its cost-effectiveness calculation of efficient lighting.

Other Quantified Impacts

Occasionally, an energy efficiency project has additional benefits and costs beyond the direct energy savings and costs associated with the new measure(s). Though there are a number of non-energy impacts associated with energy efficiency upgrades, Triennial Plan V incorporates only the following factors:

- Savings associated with reduced water usage (i.e., water supply and wastewater charges); and
- For measures involving changes to operations and maintenance (O&M) costs, quantifiable costs (or savings) associated with those changes.⁵⁷

Achievable Program Participation

The Trust analyzes additional information on program participation to further refine its calculations of what constitutes achievable, cost-effective opportunity. Historical performance offers valuable information for making projections of future performance. For example, if the Trust recorded that it incentivized heat pump water heaters at a rate of 10,000 per year through Retail Initiatives and Distributor Initiatives during the Triennial Plan IV period, using certain incentive levels and marketing strategies, it is fair to suggest that, all things equal, it could achieve a similar level of program activity in the Triennial Plan V period. The number of water heaters that burn out each year is predictable, and the price of inefficient water heaters is expected to remain fairly stable. However, if the Trust observed changing pricing trends or adjusted its program offering it would adjust the projected program activity accordingly. In the case of heat pump water heaters, the Trust plans to reintroduce and expand instant discounts through the Retail Initiatives. Program performance while instant discounts were available at retail stores indicates that program activity can run at 14,000 heat pump water heater rebates per year between Retail and Distributor Initiatives.

In some cases, a comparison of historical program participants and eligible non-participants can also be helpful. The analysis of the opportunity for the Commercial and Industrial (C&I) Custom Program, for example, cross-referenced the list of Maine's larger energy users with the list of past program participants to identify the untapped market (see [Appendix F-2](#)).

The Trust may also consider capacity within the contractor community and inventory availability in the supply chain. If there is a considerable opportunity for a particular measure, but only a limited number of contractors with the appropriate expertise to install it, that measure's potential figure must be limited accordingly. Similarly, inventory shortages in the supply chain can reduce levels of program participation.

4.2.3 Setting of Incentives

The incentive level applied to a measure tends to affect consumer demand and the quantity of that measure installed through a program. The Trust uses several strategies in setting appropriate incentive

⁵⁷ The Trust has applied O&M cost changes only to LED lights and measures in the C&I Custom Program.

levels. While the Trust does not want to pay more incentives than needed, setting incentives too low tends to result in a high free-ridership rate and raises equity considerations. The pool of free-riders is fixed; the only way to drive the free-ridership rate down is to incentivize broader participation, thereby reducing the proportion of free-riders.⁵⁸ Additionally, the Trust is trying to maximize resource acquisition of cost-effective energy resources and to advance market transformation in high-efficiency products. Both objectives are advanced when participation rates reach critical volumes. While very low incentives may be sufficient to attract participation from “early adopters,” they will be insufficient to reach volumes associated with maximizing resource acquisition and market transformation.

Determining the decision type is a key part of setting incentives. For retrofit measures, the incentive is applied to the full project cost, including labor costs for installation. It is meant to encourage the customer to replace a piece of equipment that is otherwise functioning properly. For lost-opportunity measures, however, the incentive is set based on the incremental cost between the efficient equipment and the standard, baseline equivalent. In this case, the incentive is designed to encourage the customer to upgrade to the more efficient choice; the incentive can account for the amount that the customer was already expecting to pay for the equipment and installation.

Beyond this basic consideration, the Trust looks to other sources of information to gather insight into appropriate incentive levels. Price elasticity studies can prove extremely helpful; these studies change incentive levels over a specific period and monitor the impact on program activity. In some cases, the Trust also considers the typical return on investment threshold for a particular customer sector. For example, homeowners might have less aggressive return on investment criteria than a corporate business. Finally, the Trust also looks to energy efficiency programs in other states for insight. This is particularly valuable for new measures, where the Trust can leverage the program administrator experiences in other jurisdictions.

Over the course of a Triennial Plan period, the Trust constantly monitors program activity and changes incentive levels accordingly.

4.2.4 Quantifying Benefits and Costs

Once the Trust establishes the types of energy impacts and costs associated with a given measure, it then calculates the economic values associated with those savings and costs.

Avoided Costs

Maine statute provides that when calculating cost-effectiveness:

... the trust shall use, and the commission shall give deference to, values for each element of avoided energy cost from a regional avoided energy supply cost study as long as the analysis has been developed through a transparent process, with input from state agencies, public advocates, utilities or energy efficiency administrators from at least 3 other states in New England and the analysis has been published not more than 24 months prior to the trust's filing of the plan. When values specific to the State are not available in the regional study, the trust may use, and the commission shall give

⁵⁸ This statement does not apply to Low Income Initiatives, where the customer's income status means that the customer is unlikely to take action without assistance.

deference to, regional values provided in that regional study or values determined from other sources when supported by evidence in the record...”⁵⁹

For the period covered by Triennial Plan V, the Trust uses the avoided costs laid out in the 2021 Avoided Energy Supply Component (AESC) Study. This study, the most recent version published from a regional, transparent process in which more than three other New England states participated, meets the criteria required in the Maine statute. The study was led by Synapse Energy Economics, Inc., managing a team of subcontractors on behalf of a group of regional stakeholders including the Trust, other program administrators, utilities, regulators, and advocates. (The AESC Study has previously delivered avoided cost values, used by the Trust in its cost-effectiveness calculations, in 2013, 2015, 2016, 2018, and 2021). A copy of the 2021 AESC Study can be found in [Appendix G-2](#).

In Triennial Plan V, the Trust for the first time incorporates into its avoided costs a value for the non-embedded costs of carbon.⁶⁰ The AESC Study offers multiple approaches and methodologies to consider when establishing a value for the avoided cost of non-embedded carbon. For calculating cost-effectiveness in Triennial Plan V, the Trust applies the New England marginal abatement costs for carbon. The 2021 AESC Study estimates this levelized cost at \$125 per short ton of carbon dioxide-equivalent emissions.⁶¹

Factoring the non-embedded cost of carbon into the Trust’s calculations of cost-effectiveness reflects the principles of the National Standard Practice Manual for Distributed Energy Resources (NSPM for DERs), Maine policy, and the input of comments received from stakeholders. According to the NSPM for DERs, one of the nine fundamental principles of benefit-cost analysis is that “a jurisdiction’s primary cost-effectiveness test should account for the jurisdiction’s applicable policy goals.”⁶² In recent years, Maine’s policy goals have placed increased focus on the urgency and importance of reducing carbon emissions to mitigate the risk of harmful impacts from climate change. The codification of aggressive carbon reduction requirements by 2030, the establishment of renewable energy standards for electricity supply, the tightening of building energy codes, and the setting of beneficial electrification goals for the installation of heat pumps and the purchase of new electric vehicles are but a few of the more notable manifestations of this trend in Maine policy since the last Triennial Plan.⁶³ More detail and targets related to carbon mitigation are provided in *Maine Won’t Wait*, the climate action plan produced in

⁵⁹ 35-A MRS §10110(4)(A), as amended by Public Law, Chapter 313, 129th Maine State Legislature, First Regular Session, LD 1757, An Act To Clarify Certain Standards for the Efficiency Maine Trust's Triennial Plan.

⁶⁰ The costs of RGGI carbon allowances are “embedded” in the AESC’s calculations of the avoided cost of electricity and are referred to as being “internalized.” The AESC Study therefore refers to other costs associated with carbon pollution, net of the embedded RGGI costs, as being “non-embedded.” See [Appendix G-2](#), p. 169.

⁶¹ See [Appendix G-2](#), p. 169, reflecting the study’s projection of future cost trajectories for offshore wind energy along the eastern seaboard.

⁶² National Energy Screening Project, *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources*, August 2020, p. 2-4.

⁶³ See, e.g., Public Law, Chapter 476 (2019), An Act To Promote Clean Energy Jobs and To Establish the Maine Climate Council; Public Law, Chapter 306 (2019), An Act To Transform Maine's Heat Pump Market To Advance Economic Security and Climate Objectives; Public Law, Chapter 313 (2019), An Act To Clarify Certain Standards for the Efficiency Maine Trust's Triennial Plan; and, Public Law, Chapter 365 (2019), An Act To Support Electrification of Certain Technologies for the Benefit of Maine Consumers and Utility Systems and the Environment.

2020 by the Maine Climate Council.⁶⁴ The Trust arrives at this approach to carbon having also considered the comments submitted through the stakeholder process employed to develop the plan. The Acadia Center, Natural Resource Council of Maine, Northeast Clean Energy Council, Northeast Energy Efficiency Partnerships, Inc., and Vermont Energy Investment Corp. (VEIC) were unanimous in their recommendation that the Trust’s new plan factor external costs of carbon into the cost-effectiveness analysis. The views of these commenters were synthesized by VEIC, which wrote: “Perhaps the most important change to the cost-effectiveness test would be to bring it in alignment with the state’s greenhouse gas reduction laws and targets by including an appropriate value for avoided emissions.”⁶⁵

To determine the amount of carbon saved from a measure that impacts electricity consumption, the Trust applies the forecasted marginal emissions rates included in the AESC Study for each of the relevant costing periods.

To determine the values of energy efficiency generally, the AESC Study calculates and provides hourly avoided costs for each New England state in a hypothetical future in which no new energy efficiency measures are installed. The study examines avoided costs of energy, capacity, natural gas, fuel oil, other fuels, other environmental costs, and demand reduction-induced price effects. It relies on a combination of models to estimate each of these costs for each future year.

Useful Measure Life

Useful measure life is another key consideration in monetizing savings and costs. How long will the measure be in place and active? The Trust uses product specifications, program evaluations, and measure life studies to determine these values.

Discount Rate

As set forth in its rules, the Trust calculates the present value of a measure over its expected useful life by taking into account the time value of money. According to Chapters 3 and 4 of the Trust’s rules, the discount rate used for electric and natural gas utility procurement-funded measures is the current yield of 10-year U.S. Treasury securities, plus two hundred basis points, adjusted for inflation.⁶⁶ The Trust uses the same discount rate for measures funded with other, non-utility funds.

Other Quantified Impacts

In monetizing the savings associated with other quantified impacts, the Trust applies the useful measure life and discount rate as defined above.

⁶⁴ Maine Climate Council, *Maine Won’t Wait: A Four-Year Plan for Climate Action*, December 2020.

⁶⁵ Vermont Energy Investment Corp., Responses to the Efficiency Maine Trust’s Request for Information on its Triennial Plan V, April 4, 2021, p. 7.

⁶⁶ 95-648 Code of Maine Rules (CMR) ch. 3, §4(3); 95-648 CMR ch. 4, §4(3).

Reduced water usage is monetized using an average cost of supply water and wastewater utility rates multiplied by the percentage of homes that are connected to the public water supply, plus an assumed avoided cost for homes served by wells.⁶⁷

As in Triennial Plan IV, the MACE potential for Triennial Plan V reflects O&M economic impacts, where they can be quantified, for each year over the life of the measure.

Program Delivery

In setting program budgets, the Trust must account not only for incentive costs, but also the costs of delivering (or running) a program. Elements of program delivery include rebate processing, program marketing, training and outreach for businesses in the supply chain, customer outreach, and field inspections. Each program has different considerations, depending on the target customer type or program design. Developing a delivery plan entails considering what is required to get the maximum achievable, cost-effective energy savings. Generally, the more significant the target customers' barriers and the more involved the program design, the higher the delivery costs.

The Small Business Initiative of C&I Prescriptive Initiatives (see [Section 5.2](#)) serves as a helpful example in illustrating this process. The *State of Commercial & Industrial Lighting in Maine – 2021 Update* ([Appendix E-2](#)) finds a significant opportunity for lighting retrofit projects in Maine's small business sector. At the same time, however, these customers are generally less likely than larger businesses to be aware of energy efficiency options and are more likely to face financial and time barriers to undertaking a retrofit. A program delivery mechanism to overcome these obstacles involves direct outreach; a no-cost consultation; and considerable ongoing communication among the customers, installers, and the Trust. The combination of the technical potential and these program design considerations determines what is achievable for this sector and how much it will cost to deliver.

Portfolio Costs

Costs not associated with specific programs are captured at the portfolio level as "Administration" and "Strategic Initiatives" costs. Administration costs include the Trust's office rent and utilities; staff salaries; legal counsel and accounting costs; and office supplies. Strategic Initiatives costs include the Trust's EM&V activities, its Innovation Program, and general public information and outreach.

4.2.5 Benefit-to-Cost Ratio Calculation

The Trust calculates the benefit-to-cost ratio according to Chapters 3 and 4 of its rules,⁶⁸ legislative directives, long-standing practice, and past directives from the Commission. As such, the costs and benefits include those experienced by the participant, the program administrator, and the utilities, as defined above. The formulas for the benefit-to-cost ratios for gross savings and costs are as follows:

⁶⁷ The avoided cost of water for homes with wells is based on the electricity consumption of the well pump and does not include water treatment costs.

⁶⁸ 95-648 CMR ch. 3; 95-648 CMR ch. 4.

Portfolio

$$\sum_{\text{measure life}} \frac{PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{\text{Administration} + \text{Program Delivery} + PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

Program

$$\sum_{\text{measure life}} \frac{PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{\text{Program Delivery} + PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

Measure/Project

$$\sum_{\text{measure life}} \frac{PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

Where:

PV = Present Value; and

O&M = Operations and Maintenance (where applicable).

The Trust screens for eligibility at the measure or project level, rather than the program level. A project is defined as a bundle of related measures installed concurrently. Any measure or project that has a benefit-to-cost ratio greater than or equal to one is eligible for inclusion in the Trust’s programs. This screening is conducted at the adjusted gross level, as opposed to the net level. This means that the calculation is adjusted for the impact factors but not the program attribution described in Section 4.2.2.⁶⁹ See [Appendix B-1](#) for the cost-effectiveness screening of measures that informed the opportunity assessment for the Triennial Plan V period.

Net cost-effectiveness is calculated by applying the net-to-gross ratio (NTGR) to both benefits and measure costs. The formulas for the benefit-to-cost ratios taking program attribution into account are as follows:

Portfolio

$$\sum_{\text{measure life}} \frac{NTGR \times PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{\text{Administration} + \text{Program Delivery} + NTGR \times PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

Program

$$\sum_{\text{measure life}} \frac{NTGR \times PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{\text{Program Delivery} + NTGR \times PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

⁶⁹ Maine statute speaks briefly to the roles of net savings and gross savings, providing: “The commission shall consider whether the trust is taking reasonable steps to achieve high net and gross efficiency savings, including but not limited to the use of national standard practices as identified by the trust by rule.” 35-A MRS 10110 (4-A).

Measure/Project

$$\sum_{\text{measure life}} \frac{NTGR \times PV(\text{Energy\&Demand Benefits} + \text{Water Benefits} + \text{O\&M Benefits})}{NTGR \times PV(\text{Fuel Costs} + \text{Measure Cost} + \text{O\&M Costs})}$$

5. Program Descriptions

5.1 Commercial and Industrial Custom Program

The C&I Custom Program incentivizes tailored projects delivering distributed energy resources, inclusive of energy efficiency, demand management, and distributed generation projects, that require site-specific engineering analyses and projects with energy efficiency measures that are not otherwise covered by prescriptive incentives. It also provides incentives for additional GHG reduction measures and strategies at industrial facilities.

Customer Segments

The C&I Custom Program is open to C&I customers in Maine. This group consists of all non-residential customers, including manufacturers, businesses, institutions, government entities, and multifamily (or apartment) property owners. It may include customers installing generation designed principally for use behind the meter but does not include central station generators. Despite its broad customer eligibility criteria, the program typically targets larger energy users with relatively complex facilities.

Channels

The C&I Custom Program targets eligible customers by making direct contact and collaborating with facility managers and corporate officials, as well as with vendors and installers.

5.1.1 Objectives

- Help C&I customers overcome the barriers to implementing complex, custom energy efficiency and BTM distributed generation projects;
- Reduce energy costs at C&I customer facilities and lower their carbon footprint;
- Reduce the price of electricity over time for all consumers by reducing or shifting demand for electricity or balancing load;
- Enhance grid reliability and help accommodate increasing amounts of variable renewable generation and beneficial electrification by promoting demand management;
- Reduce total energy costs for electricity consumers in the State by reducing inefficient electricity use or increasing the efficiency with which electricity is used; and
- Create more favorable market conditions for the increased use of energy-efficient products and services.
- Develop and support climate change mitigation strategies designed to reduce GHG emissions at industrial facilities in the State.

5.1.2 Market Barriers

- *Upfront cost and long payback periods*: Businesses commonly require that investments achieve a payback in no more than 1.5 to 3 years; custom projects typically have a 4- to 7-year payback before accounting for incentives. Businesses and institutions have many competing demands for

capital, and most efficiency projects are weighed against other capital investments in internal decision-making processes.

- *Lack of in-house capacity/expertise:* Businesses and institutions often lack a full-time staff dedicated to energy or facility management. Without in-house expertise, they rely on outside contractors and vendors to identify efficiency opportunities. Most custom projects require site-specific engineering; this can be capital-intensive and often extends beyond what most energy contractors or vendors are willing to explore on speculation. The Trust has found that relying on market-based contractors and vendors alone leaves the potential for many custom efficiency projects untapped.
- *Unfamiliarity with new technology or processes:* In some cases, a custom efficiency project involves technology or processes that are new to or uncommon in the marketplace. Such measures are not well-suited to promotion as part of a prescriptive list of highly standardized measures. The unfamiliarity of contractors and customers with uncommon measures represents a hurdle for custom projects.

5.1.3 Opportunity Analysis

Methodology

The Trust's opportunity analysis for the C&I Custom Program draws on the *2021 Custom, Refrigeration, and Compressed Air Potential Study* ([Appendix F-2](#)) conducted by the Applied Energy Group (AEG). First, this study segmented utility data by location, business type, annual usage, and demand. This process helped to characterize the marketplace by facility type and business type and to determine the size of the efficiency opportunity in each eligible business segment. AEG then reviewed past program performance. It analyzed program tracking data to determine average project size by year, end-use, and customer, then linked the program database with the utility dataset using a combination of unique identifiers. This approach allowed AEG to compare the two datasets by segment, identifying participants and non-participants.

AEG also interviewed the C&I Custom Program staff to gain further insights on market dynamics, measure trends, and program gaps. These tasks provided the quantitative and qualitative data to shape AEG's projection of future program opportunity. For clarity, the study looked at energy efficiency and distributed generation opportunity only; it did not investigate the potential for demand management measures or supplementary GHG mitigation strategies and measures at industrial facilities.

Findings

For the most part, the AEG study found that recent participation levels in the C&I Custom Program can be replicated in the Triennial Plan V period. The majority of measures remain cost-effective, and there remains ample unrealized opportunity among medium and large customers.

The study identified the cannabis sector as one relatively new market with considerable opportunity in the Triennial Plan V period. In December 2017, the Board of Trustees voted to exclude all cannabis-related businesses from eligibility for the Trust's programs. When the Board of Trustees reversed this

policy in October 2020, the program saw considerable uptake in horticultural lighting projects. AEG's analysis suggests that this trend will continue into Triennial Plan V as new facilities continue to come online and existing facilities look to retrofit their inefficient equipment. Though horticultural lighting represents the bulk of the opportunity, there is also notable room for improvement in high-efficiency HVAC systems.

In looking at the opportunity for distributed generation projects in Triennial Plan V, AEG found that small, combined heat and power projects involving natural gas-fired turbines are unlikely. As in Triennial Plan IV, the inclusion of O&M costs renders these projects non-cost-effective. Micro-steam turbine generator projects involving biomass, however, show significant promise. With recent technological advancements and enhanced local vendor capacity, the Trust expects an increase in activity for this measure in Triennial Plan V.

For the C&I Custom Program budget under Triennial Plan V, see [Appendix A](#). The Staff Testimony in [Appendix F-1](#) provides further detail on the assumptions and drivers behind this budget.

5.1.4 Program Design

Approach to Market Barriers

The C&I Custom Program's incentive structure is designed to overcome barriers associated with large upfront costs and insufficiently attractive payback periods. Generally pegged at 50% of project cost for retrofits and 75% of incremental cost for lost-opportunity projects, the program's incentives are designed to have a meaningful impact on investment decisions. Program staff reviews project proposals on a rolling basis pursuant to one or more standing Program Opportunity Notices. This approach helps to ensure that the program's incentive awards can sync with customers' internal budgeting processes and project development.

The program overcomes barriers associated with lack of in-house expertise by providing several levels of technical support. First, as appropriate, the program offers free scoping audits to customers where there is a reasonable likelihood of opportunities for cost-effective energy efficiency and distributed generation projects. The audits themselves are meant to be a starting point in the program, with a goal of identifying at least one project for which the customer could develop an application. In addition, many projects identified during scoping audits result in referrals to the C&I Prescriptive Initiatives.

In cases where a specific project has been identified but requires more in-depth evaluation, the program cost-shares an investment-grade analysis, or "Technical Assistance Study." The Trust has found that these studies result in well-designed and successful efficiency and distributed generation projects, reducing the need for costly review or redesign at later stages in the installation process.

In addition, the program has found that the Trust's expertise in providing impartial technical assistance and reviewing project applications helps improve the accuracy of projections of the amount of energy savings that can reasonably be expected from the energy upgrade. The Trust thus plays an important role in ensuring that program participants feel confident in moving forward with significant investments and helps secure necessary approval from corporate decision makers.

Measures Promoted

The C&I Custom Program is designed to be flexible enough to invite a broad array of potential projects and participation from customers of varying sizes. During the Triennial Plan V period, the Trust anticipates following the same practice of offering competitive incentives for relatively large electric and thermal energy efficiency projects where cost-effectiveness is specific to each project and must be determined on a case-by-case basis.

The C&I Custom Program will also continue to offer incentives for cost-effective distributed generation projects, as it has since 2009 when the program was initiated. In the case of distributed generation projects, the program will also apply the following extra criteria:

- The program will only consider the avoided electricity (including capacity) from the output of a generation unit that coincidentally offsets grid-supplied electricity. The program will examine hourly data to ensure that proposed projects' output will be used on site, behind the customer's meter.
- Projects that involve the combustion of fossil fuels will need to meet an overall annual threshold for operational efficiency.

The program may also offer incentives for large, customized demand management measures. The program would look for automated solutions that could respond to grid or energy constraint signals without intervention from onsite staff or third parties. These projects would be separate from the more prescriptive measures offered under the Demand Management Program's Load Shifting Initiative (see Section 5.9) but may coordinate any dispatch through that program.

The program also intends to offer incentives for climate change mitigation strategies designed to reduce GHG emissions at industrial facilities in the State. This is expected to be a discrete offering funded by the State's plan to spend American Rescue Plan Act (ARPA) funds, as set forth in LD 1733, An Act To Provide Allocations for the Distribution of State Fiscal Recovery Funds.⁷⁰ For the Triennial Plan V period, these funds will allow the Trust to prioritize projects capable of achieving significant greenhouse gas reductions, with a particular focus on fuel switching, process changes, and distributed generation or combined heat and power measures.

Incentives and Financial Considerations

The C&I Custom Program will invest in custom energy efficiency, demand management, distributed generation, and industrial climate mitigation projects consistent with the following program design elements:

- *Minimum project size:* The program will set a minimum project threshold in order to improve the likelihood that the project savings will exceed investment costs in custom engineering. In FY2021, the minimum electric project size was 36,000 kWh annual savings, and the minimum thermal project size was 4,000 MMBtu annual savings.

⁷⁰ Public Law, Chapter 483, 130th Legislature, First Special Session, LD 1733, An Act To Provide Allocations for the Distribution of State Fiscal Recovery Funds, July 19, 2021.

- *Simple payback*: The program will set a minimum simple payback threshold that will apply to all applicants. This floor helps ensure that the program incentive is instrumental in moving a project forward and mitigates the risk of free-ridership. Because most customers in the program have unique usage and costs of energy, program staff will perform an individualized simple payback assessment for each project. This involves estimating the financial value of site-specific energy savings through a billing analysis and comparing these savings to the total cost of the project as supported by specific bids from contractors and vendors.
- *Customer cost-sharing*: The program will continue to require that customers pay a percentage of the project's cost. This requirement may differ between retrofit and lost-opportunity projects.
- *Maximum incentive size*: The program will apply annual incentive caps in order to avoid exceeding the budget, causing program interruptions or suspensions. The balances within the relevant funding sources will dictate the appropriate threshold levels for different project types (i.e., electric, natural gas, unregulated fuels). If an electric or natural gas project shows potential for significant, cost-effective electricity savings but exceeds the program's incentive limit, the Trust may work with customers to bring a specific funding request to the Public Utilities Commission to be considered for funding through a budget adjustment.⁷¹

The program will also continue to provide incentives for Technical Assistance Studies. The cost share will be set at a meaningful percentage of the overall study cost and will be capped at a reasonable threshold. For example, the current program offers 50% up to \$20,000 for approved Technical Assistance Studies.

Finally, the program will encourage customers to leverage certain loan opportunities where appropriate, including those available through a Commercial Property Assessed Clean Energy (C-PACE) program or the Maine Clean Energy and Sustainability Accelerator (for more detail on these initiatives, see Section 7.1.1).

Marketing and Outreach

The unique, site-specific nature of custom projects and the barriers they face means the C&I Custom Program uses an individualized, customer-focused outreach strategy. Program outreach starts with raising awareness of the program among the leadership of targeted businesses and institutions and reaching out directly to facility or energy managers. After making contact, the program staff offers free scoping audits and encourages customers with promising projects to pursue Technical Assistance Studies.

In addition to targeting potential customers, the program markets custom energy efficiency opportunities to the major vendors and contractors, as well as architectural and engineering firms working in Maine. These energy professionals are able to "pitch" program participation to potential clients. Similarly, partnerships with trade associations or industry groups help spread the word about program offerings.

⁷¹ This option does not extend to all-fuels projects, which are funded using RGGI funds.

The Trust will also leverage the Maine Climate Council’s Industrial Task Force to spread the word about the C&I Custom Program’s offerings generally, and the incentive opportunities for industrial climate change mitigation strategies and measures in particular. (See Section 7.1.2 for more detail on the Industrial Task Force.)

Quality Assurance/Quality Control (QA/QC)

Because each custom project is unique, each requires site-specific review by program staff. The Trust independently verifies energy-saving calculations in project proposals and equipment specifications. By evaluating proposals in collaboration with the customer, the Trust provides added security to customers installing projects that may have been proposed by outside contractors or employ new technologies. The Trust also analyzes how the paybacks of the proposed projects relate to the customers’ internal investment hurdles.

The C&I Custom Program staff reviews projects from their earliest stages through to their completion. This includes conducting site visits, reviewing design plans, and reviewing invoices to ensure that each project is completed according to initial design specifications. If projects run over budget, the customer is responsible for the overrun, placing the onus on private sector project managers to exert budget oversight. Upon project completion, the program staff conducts a site visit to verify project installation details. All projects are inspected. Savings estimates (and incentives) are adjusted for “as-built” conditions. The Trust meters all distributed generation projects and logs their ongoing performance in the Trust’s customer tracking database.

The Trust employs several strategies to prevent stranded investments. These strategies include requiring program participants to fund at least 50% of project costs; requiring projects to achieve minimum thresholds of cost-effectiveness; setting minimum and maximum simple payback parameters; reviewing the financial and technical capacity of the proponents to execute and maintain the project; and setting a cap on the maximum incentive from the Trust.

5.2 Commercial and Industrial Prescriptive Initiatives

5.2.1 Overview

C&I Prescriptive Initiatives provide financial incentives and technical support for the installation of energy-efficient equipment through a suite of broad market-based initiatives and targeted- or sector-specific initiatives. The program promotes “off-the-shelf,” widely available equipment that has predictable operating characteristics and applications across the commercial and industrial sector. It further connects specific sectors or business types with targeted efficiency opportunities.

Customer Segments

This program serves all non-residential customers, including businesses, industrial customers, manufacturers, municipalities, agriculture, non-profit building owners, and multifamily buildings of five or more units.

Targeted Initiatives

Some initiatives of the program target specific customer types or geographic areas of Maine. Maine's smallest businesses (i.e., those with peak demand of 25 kW or less, or Small General Service/General Service [SGS/GS] customers) are targeted through the Small Business Initiative.⁷²

Channels

C&I Prescriptive Initiatives reach non-residential customers through broad, market-based initiatives delivered through a network of trade allies, or Qualified Partners. Qualified Partners are familiar with efficient technologies, product installations, available Efficiency Maine incentives, and the incentive application process. Most Qualified Partners are installation contractors, such as electricians, plumbers, and heating technicians. However, equipment distributors, engineers, and architects also serve as Qualified Partners and participate in the initiatives.

Targeted Initiatives

The broad offerings are complemented by targeted, market-based initiatives focused on specific sectors or hard-to-reach markets. These initiatives include direct-installation initiatives, such as the Small Business Initiative, which targets lighting and heating upgrades in Maine's smallest businesses. They also include initiatives where the Trust may offer enhanced incentives or technical support for a specific technology or customer sector.

5.2.2 Objectives

- Reduce total energy costs for electricity consumers in the State by increasing the efficiency with which electricity is consumed;
- Reduce total energy costs for natural gas consumers in the State by increasing the efficiency with which natural gas is consumed;
- Reduce GHG emissions, especially in relation to heating;
- Motivate non-residential customers to improve energy consumption through early retirement of inefficient equipment;
- Promote highest-efficiency equipment options when customers are replacing existing equipment or adding new equipment;
- Create more favorable market conditions for the increased use of energy-efficient products and services, including training trade allies on efficiency measures and incentives;
- Maintain a cost-effective, strategic approach to deliver efficiency and conservation resources to Maine's small businesses;

⁷² In Triennial Plan IV, the Small Business Initiative was treated as a standalone initiative. For Triennial Plan V, it has been folded into the description and administration of the C&I Prescriptive Initiatives. In recent years, C&I Prescriptive Initiatives have launched several targeted initiatives to acquire hard-to-reach efficiency resources; the Small Business Initiative is now one of multiple targeted initiatives in this sector. In addition, while the Small Business Initiative has been a geotargeted initiative for several years (beginning with underserved rural regions), the Trust plans to transition it to a statewide program during this Triennial Plan period.

- Contribute to a target of at least 10% of the Electric Efficiency Procurement or \$2.6 million, whichever is greater, to programs for small business customers⁷³; and
- Contribute to a target of allocating a reasonable percentage of Natural Gas Efficiency Procurement to programs for small business customers considering these consumers' share of gas load and the cost-effective efficiency opportunity available at their businesses.⁷⁴

5.2.3 Market Barriers

- *Upfront costs*: The increased price of energy-efficient options is a barrier for many customers. This program offers incentives to reduce the initial price difference between conventional and high-efficiency options.
- *Competing priorities*: Businesses have many competing demands for capital. It can be difficult for them to prioritize replacing inefficient, but functional, equipment with an efficient model. Efficiency incentives help move retrofit projects higher on the list of capital investments.
- *Lack of information*: Many customers are not familiar with high-efficiency choices: incentives help guide both customers and installation contractors to the efficient option.
- *Lack of in-house capacity*: Few Maine businesses have full-time facility managers or other staff who identify, manage, and install efficiency projects. A prescriptive list of incentivized measures removes uncertainty about incentive amounts and program criteria: this list enables contractors to confidently sell efficient projects to potential customers and enables customers to budget for an equipment upgrade.
- *Small project size*: A small business may not have a large enough efficiency project to be viewed by a contractor as worth the time and expense of a sales call.
- *Split incentives*: Sometimes the entity making decisions on energy efficiency investments does not pay the energy bills, and therefore has little incentive to reduce them. For example, tenants in commercial rental properties may pay their own electric utility bills, but the building owner is in the position to purchase and install equipment. In cases where energy costs are included in rent, the renter does not always see the benefit from energy conservation.

5.2.4 Opportunity Analysis

Due to the diversity of measures offered through C&I Prescriptive Initiatives, the opportunity assessment draws upon four separate analyses:

- For heat pumps, the Trust compiled its own analysis of the market for high-efficiency supplemental heating and cooling. This analysis may be found in [Appendix I](#).
- For compressed air and refrigeration measures, the Trust relied on the *2021 Custom, Refrigeration, and Compressed Air Potential Study* found in [Appendix F](#).

⁷³ See [Appendix H](#), Statutory Budget Allocation Requirements, for more details on this target and how the Trust plans to meet it in Triennial Plan V.

⁷⁴ See [Appendix H](#), Statutory Budget Allocation Requirements, for more details on this target and how the Trust plans to meet it in Triennial Plan V.

- The opportunity assessment for lighting measures was based on the *State of Commercial & Industrial Lighting in Maine – 2021 Update* found in [Appendix E](#).
- The energy-saving opportunities for other measure categories were determined by a staff review and relied principally on past program history, as described in [Appendix B-2](#).

These efforts looked to answer key questions:

- Are measures that the program currently incentivizes still cost-effective?
- Should other measures be added to the program?
- What size is the opportunity for specific measures in the State?
- Can hard-to-reach or specific efficiency opportunities be acquired through targeted program initiatives?

Methodology

Heat Pumps

The Trust’s assessment of the opportunity for heat pumps, including variable refrigerant flow technology, relies on its Heat Pump Analysis and Considerations ([Appendix I](#)). This analysis:

- Synthesizes the collective experience of program managers and delivery subcontractors, recent and ongoing evaluations, and experiences from other program managers around New England;
- Explains the Trust’s incentive rationale, describing the relevant decision types (lost-opportunity versus retrofit), the different factors in the cost-benefit calculations, and the applicable funding sources; and
- Estimates future program activity by analyzing funding availability, contractor capacity, customer interest, payback requirements, and past program activity.

Compressed Air and Refrigeration

The opportunity assessment included a targeted study of prescriptive refrigeration and compressed air measures (see [Appendix F](#)). The methodology for the *2021 Custom, Refrigeration, and Compressed Air Potential Study* is summarized in the C&I Custom Program description (see Section 5.1). The Trust attributed a portion of the opportunity identified through this study to the C&I Prescriptive Initiatives: that opportunity includes low-cost measures and measures for which the savings and cost could be quantified without site-specific analysis.

Lighting

The Trust commissioned a study to assess the baseline of lighting efficiency in Maine’s C&I sector. The authors of the *State of Commercial & Industrial Lighting in Maine – 2021 Update* ([Appendix E-2](#)) began by developing a statistically significant sample of commercial and industrial lighting in the State of Maine. They then conducted on-site surveys noting fixture type, wattage, and square footage to determine the current baseline characteristics of C&I lighting in the State. This opportunity assessment also took into account price trends, technology updates, and changes in the market. The results of the site-specific findings were extrapolated by facility type and square footage to a statewide opportunity.

The final step was to assess contractor capacity and other program adoption limitations to forecast expected program participation during the Triennial Plan period upon which program budgets were based.

All Other Measures

For the remaining electric or natural gas efficiency measures that are cost-effective, the Trust reviewed the level of past program activity and used that activity to extrapolate budgets and goals for the next program period.

Findings

Based on its opportunity analysis, the Trust determined that it should continue to offer many of the same Triennial Plan IV measures for Triennial Plan V, as they remain cost-effective. These measures include heat pumps, compressed air systems, ventilation systems, and retrofit lighting projects. The assessment found that the market for agricultural and compressed air systems will remain consistent with the previous period.

Heat pumps, including variable refrigerant flow installations, are projected to grow. This growth will be driven in large part by state policy directives, and the significant additional funding to support those priorities (ARPA funds.) The opportunity assessment also found expanded opportunities in other HVAC solutions including heat- and energy-recovery ventilation systems. The opportunity for cost-effective refrigeration and compressed air will remain relatively consistent.

The Trust conducted a lighting assessment to determine the amount of energy-efficient lighting opportunity specific to various consumer segments. The assessment found that for certain halogen and tubular replacement products, there continues to be a lost-opportunity market. This lost-opportunity lighting market is reflected here and in the Retail Initiatives sections (see Section 5.4). One segment of particular interest is the indoor horticultural industry.⁷⁵ There is also opportunity through advanced lighting controls. Finally, inefficient lighting is still found in Maine businesses, but much of it is in Maine's smallest businesses and those not traditionally served by regular contractor channels because of their small size. The Trust modeled acquiring some of this inefficient lighting opportunity through targeted initiatives, including the Small Business Initiative, as described below.

For the C&I Prescriptive Initiatives' Triennial Plan V budget, see [Appendix A](#).

⁷⁵ This includes both cannabis and non-cannabis indoor horticulture. AEG's *2021 Custom, Refrigeration, and Compressed Air Potential Study* found considerable energy efficiency opportunity for the cannabis sector. The Trust will attribute the full budget associated with that opportunity in the C&I Custom Program Budget for Triennial Plan V. If and when it determines that some of these measures yield consistent, predictable savings across different cannabis-growing facilities, the Trust will shift these opportunities, and the associated budget and performance metrics, to C&I Prescriptive Initiatives. (See [Appendix F-1](#) for further explanation.)

5.2.5 Program Design

Approach to Market Barriers

The program's market-based approach addresses the upfront-cost barrier by providing incentives that encourage customers to take action and select the high-efficiency option. These incentives may be paid to the customer or to the contractor, making it possible for contractors to sell efficiency projects with lower upfront costs paid by the customer. Some products offered through the program are discounted at the distributor, making it easier for contractors to choose the higher efficiency product on behalf of their customer.

In addition, the established network of efficiency contractors helps overcome a lack of customer knowledge about efficiency options by ensuring that contractors are familiar with efficient technologies and available incentives. The program provides a search tool on the Efficiency Maine website (<https://www.energymaine.com/at-work/qualified-partners/>) to connect prospective customers with Qualified Partners in their area; this is coupled with online information about efficiency solutions by energy use and sector.

Education, marketing, and outreach are important components of the program—whether educating Qualified Partners about new technologies, incentives, or initiatives or raising awareness among customers about the availability of particular solutions. In addition, Qualified Partners and participating distributors have an important role in educating customers and persuading them to invest in upgrading equipment. Marketing campaigns focus on ways that efficiency projects improve a business's bottom line and the strategic advantages of proactive replacement of inefficient equipment.

Targeted Initiatives

Targeted initiatives further address upfront costs by providing higher incentives for select projects or customer types; in some instances, these initiatives bundle incentives with direct installation to make the project simple for the customer. In the example of the Small Business Initiative, the program works with participating contractors to overcome competing priorities for the business owner and make it as easy as possible for the owner to participate. This might include providing the incentive directly to the contractor or providing a turnkey approach to the efficiency project. Some targeted initiatives, including the Small Business Initiative, provide assessment, installation, project management, and financing to businesses. This strategy is also important to overcome the lack of in-house capacity for supervising an efficiency upgrade.

The direct installation approach, along with targeted initiatives that incentivize particular measures for particular sectors, is also an important strategy in situations where small project size or hard-to-get efficiency opportunity would otherwise be missed through the existing contractor network or existing incentives. A small business's lighting upgrade might be overlooked because of its small project size, but when bundled as part of a direct installation program with a dozen other businesses in the same town, the projects are more viable for both the business owners and participating contractors.

As the program identifies particular technologies or sectors with efficiency opportunities not reached through the broad-based market aspect of the program, it will launch targeted initiatives—using a special promotion, higher incentive, or geographically targeted marketing—to further reduce barriers for participation. This strategy will be particularly important with technologies such as lighting, where much of the “low-hanging fruit” has been acquired and the remaining inefficient lighting is in hard-to-reach businesses. The Trust will also use this approach in crafting a landlord-focused initiative to accelerate energy efficiency and beneficial electrification projects at multifamily buildings to help overcome the landlord-tenant split-incentive barrier. As appropriate, this initiative will coordinate with Low Income Initiatives and the Home Energy Savings Program—both of which also provide incentives for multifamily buildings—to align targeting and communication strategies. Where multifamily buildings with more than four units have a majority of low-income tenants, Low Income Initiatives also may be a resource for funding enhanced incentives.

Targeted initiatives are another way that the program can educate customers in a particular region or sector. For example, a recent targeted initiative for hotels and motels shared information about upgrading individual room heating systems to packaged terminal heat pump units. The information campaign targeted both hotel managers and Qualified Partners, and was paired with a limited-time enhanced incentive on the technology.

Measures Promoted

The program incentivizes proven energy-saving measures that are widely available and represent a significant opportunity for Maine’s C&I sector. It prioritizes measures that have practical applications across the State, leveraging targeted outreach for sector-specific solutions. Whenever possible, the program takes advantage of third-party systems for verifying and vetting the performance of eligible measures. For example, measures incentivized through the program may be listed and verified by the Consortium for Energy Efficiency; the Air-Conditioning, Heating and Refrigeration Institute; or the DesignLights Consortium. Measures in the program range from lighting retrofits to heat pumps to compressed air systems to ventilation equipment. Incentivized measures will be continuously monitored and adjusted. The program will eliminate eligibility for measures that become “industry standard,” and may introduce new measures for proven technologies and strategies as they become commercially available and demonstrate cost-effectiveness. During the Triennial Plan period, the Trust plans to pilot high-performance new construction measures.

Incentives and Financial Considerations

For retrofit projects that replace existing, operational equipment, incentives are established based on the full installed costs of the efficiency measures. For upgrades made at the time of planned investment in equipment and systems (also referred to as lost-opportunity projects), incentives are set to reflect the incremental cost of efficient measures relative to standard measures. Incentives are monitored quarterly and may be adjusted to reflect market activity and market prices.

In addition to basing incentives on costs, the program sometimes implements alternative ways to calculate incentives beyond per-unit fixed values that can drive higher savings for lower costs. For example, high-efficiency lighting and lighting control projects do not always need one-for-one

replacements. By incentivizing a project based on savings rather than number of fixtures, fewer LED fixtures may be installed in a space. This approach will result in more energy savings at a lower total project cost.

Targeted Initiatives

The program's targeted initiatives often include customized calculator tools or product guides to ensure cost-effective installations in particular situations. For example, contractors working on Small Business Initiative projects use a customized lighting calculator tool to ensure that all measures are assessed for their cost-effectiveness during the on-site assessment.

The program also offers enhanced incentives for targeted initiatives, sectors, or customer types. This includes the Small Business Initiative, which has paired higher incentives for lighting and heat pump projects with direct installation services for Maine's smallest businesses. Enhanced incentives have also been offered for efficiency upgrades in municipal and school buildings.

In most cases, incentives may be directed to the contractor so that customers incur reduced upfront costs for the project. The Trust also offers loans to participating small businesses to further reduce barriers to participation. The Trust will continue to explore how financing may be paired with incentives and offered to more of the C&I sector, including ways to facilitate financing through the newfound C-PACE authority recently added through legislation.

Marketing and Outreach

The program leverages the Qualified Partner network to reach potential customers. The Qualified Partner network comprises more than 800 contractors, vendors, suppliers, and energy professionals that provide support to businesses interested in saving energy. These independent businesses are the primary marketers of the program—working with their existing customers and identifying new customers for energy-efficient equipment. For businesses that do not currently work with a contractor or a Qualified Partner, the Efficiency Maine website features an online search tool to easily put potential customers in touch with a Qualified Partner in their area.

The Trust communicates with Qualified Partners through a dedicated website as well as a monthly electronic newsletter and webinar. The Trust also convenes Lighting and HVAC Advisory Groups (which comprise installers, distributors, and manufacturers) as needed; this group consults with program staff on program opportunities, changes to the marketplace, and customer outreach. In addition, the program participates in open houses at supply houses and meets with professional associations and groups (e.g., the American Society of Heating, Refrigerating and Air-Conditioning Engineers; Illuminating Engineering Society; and International Brotherhood of Electrical Workers) to share information about energy efficiency opportunities and encourage more industry professionals to become Qualified Partners. Finally, the Trust offers training opportunities to Qualified Partners on specific technologies and program opportunities.

Marketing and outreach activities also include advertisements in trade or business publications, participation in trade shows, presentations to relevant business groups, direct mail, social media

advertising, and more. Finally, the program provides information to potential customers through the Trust's website, brochures targeting specific energy solutions or customer segments, as well as over the phone. On the website, the Trust provides information about product eligibility, shares case studies of Maine businesses and the efficiency solutions they implemented, and provides a starting point for Maine businesses organized by sector.

Targeted Initiatives

The Trust also markets directly to potential customers, particularly in hard-to-reach sectors or as part of targeted initiatives. For the Small Business Initiative, this marketing and research may include direct mail and phone calls to eligible businesses, collaboration with local groups including chambers of commerce, and public relations activities targeted at eligible participants. For other targeted initiatives, marketing and outreach might also include education about specific solutions in the form of mailings, brochures, informational webinars, and participation in industry events. The Trust collaborates with industry and professional associations to reach customers in key sectors. During the last Triennial Plan period, this included working with and exhibiting at conferences hosted by Maine Public School Facility Managers, the Maine Real Estate and Development Association, Maine Municipal Association, Maine Health Care Association, Maine Rural Water Association, Maine Restaurant Association, Rotary groups, economic development groups, local chambers of commerce, and more.

Quality Assurance/Quality Control

The program staff screens incentive applications for completeness, including a review of equipment cut sheets and contractor invoices. In addition, the customer signs all applications to ensure that both the customer and the contractor have reviewed and agree to applicable terms and conditions.

Applications above a certain cost threshold receive a technical review before the program staff grants project pre-approval. At project completion, the program staff reviews these larger projects again before issuing the incentive payment. In addition, the program staff inspects a random sample of projects on-site or through virtual platforms or a combination of methods; currently, 10% of all projects are inspected. Any significant issues identified during an inspection are addressed with the installation contractor.

In addition to these random inspections, the program provides technical assistance to participating contractors. The program makes program information and equipment information available on the Qualified Partner website. The Trust also sends Qualified Partners general information on the industry, the program, and incentivized measures via the newsletter. Technology-specific information may also be addressed through training on new technologies or advanced installation techniques. All Qualified Partners must go through an annual recertification process to ensure that they have the most up-to-date information about incentivized measures and that they are compliant with program eligibility criteria.

5.3 Distributor Initiatives

5.3.1 Overview

Distributor Initiatives offer incentives for efficient products acquired through distributors. Distributors are supply houses where contractors and larger customers go to purchase plumbing, heating, refrigeration, and electrical supplies. Distributors serve contractors, whereas homeowners and smaller commercial customers typically shop at retail stores.

In general, the measures discounted at distributors include:

- Products sold at significant volumes;
- Products that are not typically offered for sale at retailers, due to their size or specialized applications; and/or
- Products that are not typically chosen or specified by the customer.

Customer Segments

Distributor Initiatives serve all sectors of the Maine economy including residential, low-income, commercial, and industrial customers.

Channels

Distributor Initiatives encompass a network of electrical, HVAC, and plumbing distributors serving contractors that purchase equipment. The markdowns offered through these initiatives enable the Trust to capture more lost-opportunity purchasing situations, where equipment is being incorporated into a new construction project or is replacing an old unit at the end of its life. The distributor channel is particularly effective in the emergency replacement market because it makes it easier and more attractive for contractors to choose the efficient option when the product model is not specified. The markdowns also encourage distributors to stock efficient product models, enhancing their availability for interested contractors and customers.

5.3.2 Objectives

- Incentivize measures to reduce energy consumption;
- Reduce total energy costs;
- Reduce peak load demand for electricity;
- Help contractors and customers overcome barriers to implementing efficiency projects;
- Promote high-efficiency equipment options when customers and contractors are replacing inefficient or burned-out equipment or adding new equipment; and
- Create more favorable market conditions for the increased use of energy-efficient products and services.

5.3.3 Market Barriers

- *Upfront cost*: The relatively high cost of the energy-efficient option is a barrier for many customers. Distributor Initiatives rely on markdowns to overcome the price differential between

conventional and high-efficiency options. For many purchases, the price differential is key because the contractor typically makes the purchasing decision on behalf of the client, and commonly makes cost the chief criterion.

- *Short replacement decision cycle/emergency replacement:* Many replace-on-burnout situations have a short decision cycle for replacement. Capturing these emergency replacements is a challenge, especially if it requires the adoption of a new or unfamiliar technology; there may not be time to educate decision makers before the purchase. Upfront cost is the primary driver in these situations.
- *Lack of information:* Many customers are not familiar with high-efficiency choices: markdowns at distributors provide an added incentive for contractors to educate themselves and their customers about efficient options. Markdowns obviate any need to persuade the customer in cases where they cause the efficient product to become the lowest-cost option. Discounted, high-efficiency models can be marketed as “free product upgrades.”
- *Paperwork:* Many contractors consider the incentive application process burdensome and frustrating for some installations or projects. By discounting equipment at the distributor, the reporting requirement and any liability from rebate errors shift to the distributor. In turn, the Trust can ensure data integrity through participating distributors (a smaller pool than participating contractors) and underwrite some of the costs associated with reporting. This program design can remove the paperwork barrier for contractors, as well as invite contractors that are not trade allies to pass along the benefits of the program to their customers.
- *Installation:* Installing high-efficiency equipment may require more time and materials because the new system may, for example, require new piping or site preparation. Equipment markdowns can keep total project costs commensurate with those of a conventional system, allowing a customer to spend more on labor while spending less on equipment.

5.3.4 Opportunity Analysis

Beginning with Triennial Plan IV, the Trust decided to group its distributor-focused initiatives under this single program to consolidate planning and budgeting. In preparing to launch Distributor Initiatives, the Trust performed an in-depth opportunity analysis in 2018. It set out to assess which measures offered through Trust programs were best suited for instant discounts, if more measures would be purchased through Distributor Initiatives than through another program, and if new technologies or measures should be offered through these initiatives. The opportunity analysis for the Triennial Plan V period considers the 2018 study and updates it based on a review of program performance in Triennial Plan IV.

Methodology

The Trust conducted a review of the HVAC and water heating measures currently discounted through Distributor Initiatives. This assessment projected participation levels based on historical performance during the Triennial Plan IV period. The Trust maintains the premise that most purchases through the program are made because existing systems have reached the end of their useful lives or have otherwise failed. These purchasing decisions are categorized as replace-on-burnout; the baseline for these measures is a less expensive and less efficient system that meets minimum codes and standards. For

more detail on the methodology and assumptions related to heat pump water heaters specifically, see [Appendix J](#).

In contrast to Triennial Plan IV, Distributor Initiatives will not include LED replacement lamps in Triennial Plan V. Instead, LED replacement lamps sold through distributors will be captured in C&I Prescriptive Initiatives. The Trust has found that lighting distributors are key participants in the C&I Prescriptive Initiatives; they are integral players in the project scoping process and often have active inside sales teams. LED replacement lamps were therefore excluded from the opportunity analysis for Distributor Initiatives.

Similarly, the program will discontinue incentives on oil- and propane-fired boilers or furnaces in Triennial Plan V. The Trust's Board decided in FY2021 that it would no longer use limited RGGI funds to support measures that emit significant GHGs, reasoning that the perpetuation of these measures is inconsistent with the carbon reduction targets established in Maine statute⁷⁶ and with the priorities and recommendations made in the climate action plan.⁷⁷ Moreover, the Board noted that during the past decade, Maine's electricity customers have carried the burden of funding oil and propane efficiency measures (by using RGGI revenues), while no assessments have been made on oil or propane to help fund these programs. Concerned about inequities between competing fuel types and the inconsistency with state policy on carbon reductions, the Trust's Board voted to shift FY2022 RGGI funds to measures more in line with the recommendations of the Maine Climate Council. Because the Trust has no other revenue stream for which oil- and propane-fired measures would be eligible, these measures will be discontinued in Triennial Plan V.

Findings

The Trust's analysis determined that the electric and natural gas measures offered during Triennial Plan IV remain cost-effective in Triennial Plan V. The electric measures include heat pump water heaters and electronically commutated motor (ECM) circulator pumps. The natural gas measures include tankless water heaters and combi (combination) boilers.

With increased incentives and expanded consumer awareness, the size of the heat pump water heater market in Maine has grown substantially in recent years. The State now leads the nation in per capita heat pump water heater installations; in 2019, 8% of all ENERGY STAR-certified units shipped in the United States were installed in Maine (which has less than 1% of the nation's population).⁷⁸ The number of heat pump water heaters sold at distributors in FY2019 was 3,210; by FY2020, it had grown to 5,821. The Trust expects this increased level of activity to persist through Triennial Plan V.

For the Distributor Initiatives budget under Triennial Plan V, see [Appendix A](#).

⁷⁶ 38 MRS §576-A.

⁷⁷ Maine Climate Council, *Maine Won't Wait: A Four-Year Plan for Climate Action*, December 2020.

⁷⁸ ENERGY STAR® Unit Shipment and Market Penetration Report Calendar Year 2019 Summary, p. 6.

5.3.5 Program Design

The program relies on agreements with distributors to promote and incentivize efficient HVAC and water heating equipment. The agreements also require participating distributors to report on key data points including measure characteristics and installation location. The Trust will frequently visit participating distributors to ensure the availability of informational materials and answer distributor staff questions about data collection, eligible models, and more.

Approach to Market Barriers

The program addresses the upfront-cost market barrier by discounting the cost of the high-efficiency option to make it cost-competitive with conventional options; this amount is set high enough to guide contractor or customer choice to the high-efficiency model. The discounts also address the barrier presented by emergency replacements by having efficient options readily available at a competitive price compared to the conventional replacement model. This helps to overcome barriers presented by lack of information about efficient options or lack of time to research efficient options and available incentives. The reduction in upfront costs also helps mitigate additional installation costs that may be required for the efficient option. Finally, discounts offered at distributors help to overcome any barriers presented by rebate paperwork or processing—installing contractors simply have to present installation information to the distributor. In many cases, the Trust reimburses distributors for some of the costs associated with collecting and reporting this information.

Measures Promoted

Determining if a measure is a good candidate for this program involves consideration of several questions. First, is the equipment traditionally purchased at distributors? Second, is the market for the measure large enough that participating distributors will stock it? Extremely large items, for example, are not discounted through the program because they are installed infrequently and often are purchased directly from product manufacturers. The program instead focuses on the models of space and water heating systems that are commonly installed in Maine buildings. Though LED replacement lamp measures satisfy the criteria above, they are not captured in Distributor Initiatives in Triennial Plan V. As mentioned previously, the Trust has found that they are subject to unique market conditions and supply-chain dynamics that make them better suited to promotion through the C&I Prescriptive Initiatives.

Third, are the market barriers associated with selecting efficient equipment overcome by the program design? As described above, the program focuses on replace-on-burnout or emergency replacement measures. Trust incentive programs have traditionally captured only a small fraction of the heating and water heating replacement market because the abbreviated window of time for replacement made it difficult for customers to apply for rebates or investigate efficient alternatives. Distributor Initiatives are designed to capture more emergency replacement situations by reducing upfront costs and making the efficient measure the default replacement model. Providing instant discounts on efficient options assists contractors that may select the measure without customer guidance and therefore default to the least expensive option.

The program design also helps overcome other market barriers. For some measures in this program, the energy-saving potential was not being fully captured through other program delivery mechanisms, or potential participating contractors or customers deemed the rebate application process “not worthwhile.” For example, the Trust saw increased uptake in heat pump water heater activity when it expanded beyond mail-in rebates (delivered through retail stores) to include instant discounts through distributors. By targeting contractors, minimizing paperwork, and eliminating the upfront cost barrier, the Trust was able to capture a significantly larger share of the measure opportunity through the distributor channel.

Whenever possible, eligible measures will be verified and vetted by a third party. For example, measures incentivized through the program may be listed and verified by the Consortium for Energy Efficiency or the Air Conditioning, Heating, and Refrigeration Institute. These organizations also provide technical information on high-efficiency equipment and installation best practices.

Incentives and Financial Considerations

The program will discount efficient equipment by the amount required to motivate a significant volume of sales. These incentives will be delivered as a discount, administered according to individual agreements between the Trust and participating distributors. In some cases, the Trust may also incentivize distributors to collect and report data as that burden shifts from contractors to distributors in this program model. Furthermore, depending on the measure and level of activity, the Trust may provide distributors payments to offset administrative and marketing costs and to encourage sales.

Marketing and Outreach

The primary goal of this program is to capture replace-on-burnout or emergency replacement purchases rather than proactive replacements. These transactions are largely between distributor staff and installation contractors. With that in mind, the marketing and outreach for the program focuses primarily on distributors. This includes educating distributor staff, posting signage about instant discounts at the distributor, and making contractor- and customer-facing materials available at the distributor’s location. These materials are meant to equip contractors with everything they may need to choose efficient options.

Quality Assurance/Quality Control

Field representatives from the program will visit distributors to ensure that data collection processes are in place and that distributor staff is familiar with eligible equipment and incentives; in addition, program representatives will verify that informational materials are available for contractors. Program staff will review instant discounts processed by distributors to ensure that the product and participant are eligible. The Trust will carefully monitor product pricing and program participation to assess appropriate discount amounts. The program may also track market share of the various measures by branch for each participating distributor, using this data to promote best practices and target product training where market share is lowest.

5.4 Retail Initiatives

5.4.1 Overview

Retail Initiatives offer incentives for consumer products through retail channels. These products sell in relatively high volumes and achieve predictable savings when installed. High-efficiency products promoted through the program may include LEDs, water heaters, appliances, thermostats, and other consumer goods. The Trust provides incentives through Retail Initiatives in the form of instant discounts and mail-in rebates, complementing other Trust programs that engage the expertise of trade allies or incentivize products through distributors.

Customer Segments

Retail Initiatives offer incentives to multiple customer groups including residential, low-income, and commercial customers.

Channels

This program leverages purchases made through retail and online stores. The rebates and discounts offered through this channel complement the incentives offered by the Trust through Distributor Initiatives and other programs. Some measures, including LED bulbs and heat pump water heaters, are frequently purchased by either homeowners or contractors. For example, a homeowner may purchase a heat pump water heater at a retail store, and a plumber may purchase the same kind of unit at a distributor.

5.4.2 Objectives

- Reduce total energy costs;
- Offer all customers, regardless of geographic location or income level, a reasonable opportunity to participate in an efficiency program;
- Increase consumer awareness and use of high-efficiency products;
- Reduce peak load demand for electricity;
- Reduce GHG emissions associated with powering consumer products; and
- Create more favorable market conditions for the increased use of energy-efficient products and services.

5.4.3 Market Barriers

- *Upfront cost:* The increased price of the energy-efficient option is a barrier for many customers. This program relies on in-store discounts or rebates to overcome the price differential between conventional and high-efficiency options.
- *Short decision cycle for emergency replacement:* Many replace-on-burnout situations have a short decision cycle for replacement. Broken water heaters are typically replaced within hours or days of their failure. Capturing the opportunity to select an efficient option in these emergency replacements can be a challenge, especially if it requires the adoption of a different technology. Few customers are interested in thinking about their water heating systems until

their current system fails. For such emergency situations, as well as for routine bulb purchases, a customer's decision is most often based primarily on price.

- *Lack of information:* Many customers are not familiar with high-efficiency choices: heat pump water heaters, for example, are still an unfamiliar technology for many Maine households and even some plumbers.
- *Diversity of choices:* The number and diversity of consumer products and inefficient product options available on the market can make it difficult for customers to pick out the efficient option. Having so many choices can be overwhelming.

5.4.4 Opportunity Analysis

The opportunity analysis for Retail Initiatives set out to determine the type and quantity of energy-efficient consumer goods that might be cost-effectively delivered through the program.

Methodology

The opportunity for efficiency savings through Retail Initiatives was determined by assessing the results of multiple studies and past program performance. This assessment assumed that most purchases made through the program occur because existing bulbs and appliances have reached, or are about to reach, the end of their useful lives or have otherwise failed. Since these purchasing decisions take place due to equipment failure, they are categorized as replace-on-burnout. The baseline for these measures is a less expensive and less efficient bulb or appliance that meets minimum codes and standards. If the standard practice is to purchase a less expensive and less efficient model, then there is an opportunity to incentivize the efficient bulb or appliance.

The opportunity analysis also considered retrofit measures. These measures replace standard equipment that is still operational; customers are motivated by rebates to take early action to upgrade with an efficient alternative. Retrofit measures achieve savings equal to the difference between the energy consumption of the efficient technology and energy consumption of the previously existing product. An example of a retrofit measure captured in the opportunity analysis for this program is a "smart" thermostat.

The Trust assessed the historical performance of the program, including the rate of measure adoption. This review also took into account price trends, technology updates, changes in the market, changing energy standards and their enforcement, and the technology adoption curve. For example, in assessing the size of the opportunity for efficient water heaters, the Trust considered the number of water heaters in Maine, the number of water heaters likely to fail in any one year, the number of efficient models incentivized through the program in the past (as distinct from the number incentivized through the Distributor Initiatives), and projected changes to the water heater market and adoption of efficient measures.

By way of example, heat pump water heaters are a measure that has shifted along the technology adoption curve since they were first incentivized by the Trust; the technology has recently become more familiar to plumbers, contractors, retail salespeople, and many more homeowners. As a new technology becomes more familiar, end users and plumbers become more receptive to considering it when their

existing water heater needs replacement. However, the cost differential between an electric resistance water heater and a heat pump water heater is still a barrier. Program history shows that higher incentive levels lead to higher adoption rates and lower rates of free-ridership. More detail on the opportunity assessment for heat pump water heaters may be found in [Appendix J](#).

The opportunity analysis for this program conducted similar analyses for other consumer goods including thermostats, appliances, and LED bulbs. Future lighting savings may be impacted by the U.S. Department of Energy's implementation and enforcement of the Energy Independence and Security Act (EISA) standards regulating the energy efficiency of the lighting industry. At the time of writing this plan, there is considerable uncertainty regarding the implementation and enforcement of the lighting efficiency standards in EISA, as discussed in [Appendix K](#). For the purposes of the current plan, the Trust modeled the program opportunity without EISA 2020 enforcement. This assumption of a less efficient baseline is informed by market assessments, a lack of EISA enforcement to date by the federal government, and the current availability of incandescent bulbs in Maine stores despite some earlier EISA milestones that should have eliminated their availability. Please see [Appendix K](#) for more information.

Findings

Based on the opportunity analysis, the Trust determined that it should continue to offer many of the same retail consumer products from Triennial Plan IV in Triennial Plan V, where they remain cost-effective. These include heat pump water heaters, clothes washers, smart thermostats, and LEDs. The assessment found that with the help of incentives, the market for heat pump water heaters will continue to grow. Depending on funding availability and options for verifying installation, the Trust may also consider do-it-yourself (DIY) pipe and duct insulation products. Some measures may be offered through both retail and distributor channels to reach all potential participants.

The Trust's analysis of LED instant discounts found that the energy-saving potential is consistent with the energy savings of the last Triennial Plan period. The Trust's analysis did not add any new measures to this delivery channel but will continue to monitor the market and other efficiency programs for efficient products sold through the retail channel.

For the Retail Initiatives budget under Triennial Plan V, see [Appendix A](#).

5.4.5 Program Design

This program leverages relationships with retailers of energy-efficient products to apply instant discounts or mail-in rebates and to distribute rebate information to customers at the point of purchase. The program relies on extensive use of agreements with the major vendors of energy-efficient products. The Trust uses these agreements to negotiate markdowns or instant discounts for Maine customers, product placement, and availability of high-efficiency appliance models and informational materials. The Trust maintains in-store promotional materials and verifies pricing through frequent visits to all participating retailers.

Approach to Market Barriers

The program addresses the upfront-cost market barrier in several ways. For some items, including LEDs, the program discounts the price of the high-efficiency option to a level that makes it competitive with the price of the standard option. The program also provides mail-in rebates for certain measures; these rebate amounts attempt to make energy-efficient products cost-competitive with inefficient ones.

The program addresses short decision cycles by marketing to customers in replacement situations and, perhaps more importantly, lowering the price of the high-efficiency option to compete with the baseline products. Marketing activities include targeted online digital advertising for emergency replacement search terms, education of installers and retail store personnel about high-efficiency options and rebates, and in-store information and signage. In-store information, signage, and personnel training are also the key strategies for addressing the barriers presented by lack of information and diversity of choices. Because bulb and water heater purchases are typically based on price, the Trust may set incentives to make efficient products the same price as or lower price than the standard products as well as work with retailers to position discounted models for high visibility.

Measures Promoted

The Trust evaluates products for inclusion in Retail Initiatives based on cost-effectiveness, demand, and availability. The program often relies on third-party standards (e.g., ENERGY STAR-certified heat pump water heaters) to establish which energy-efficient products are eligible for incentives. That said, the appliance market has seen increasing efficiency across many products, meaning that the difference in baseline products versus efficient models can be more modest than in the past. This positive market transformation has resulted in some consumer products being removed or excluded from the program. By way of example, the energy savings between an ENERGY STAR television and the baseline model is so small that the Trust has found it better to invest in incentives for other high-efficiency products.

The Trust monitors the consumer products market for new energy-saving measures to offer through this channel.

Incentives and Financial Considerations

Retail Initiatives incentivize the purchase of energy-efficient lighting by providing the minimum discount necessary to drive significant consumer action and energy savings. The Trust bases incentives for appliances and other consumer products on the incremental price difference between conventional and high-efficiency models. Incentives are generally set at a level that makes the efficient option competitive with the price of the standard option and that will drive significant energy savings across the state.

These initiatives deliver financial incentives to participating Maine residents and businesses through markdowns, instant discounts, and mail-in rebates:

- *Markdowns:* The Trust enters into agreements with retailers and manufacturers. These agreements typically specify that the Trust will reimburse stores if they sell high-efficiency products at agreed, discounted prices according to program guidelines.

- *Instant discounts:* In some cases, Efficiency Maine reimburses stores for honoring store-specific barcodes provided by Efficiency Maine and unique to a consumer that are redeemed like a coupon at time of purchase.
- *Rebates:* For some items, such as appliances, consumers may make the purchase, pay full price, and then submit a rebate claim form to the Trust.

Marketing and Outreach

The purchasing decision for many energy-efficient consumer products is made at the store. In order to influence the customer to make an energy-efficient choice, the Trust focuses marketing efforts for this program on in-store promotional materials and training for store personnel. This has included working with stores on promotional placements including end caps and in-aisle displays; sales data demonstrate that these placements significantly impact sales volume, although only in conjunction with incentives. In-store personnel can also influence the number of energy-efficient models sold. In other cases, customers are motivated to purchase higher efficiency products based on low prices.

For situations where customers conduct research on consumer products prior to purchase, the Trust focuses its efforts on web search keyword marketing, website information, and education of the installer community. For example, if a Maine customer searches “broken water heater” online, they may see an ad describing water heater rebates and Trust resources. The Trust also works to educate plumbers and other contractors about heat pump water heaters and other technology to help vendors convince customers to purchase energy-efficient water heaters at the time of replacement. Because the replacement timeframe is so short, installer familiarity with efficient options is important; if the efficient option is less expensive than the standard unit, familiarity may be less important.

Quality Assurance/Quality Control

Field representatives will visit stores to ensure that agreed-upon markdown prices and discounted products match agreement terms, that marketing materials are being used properly, and that store employees are aware of the available measures. For example, the Trust will verify payments to participating retailers against agreements to ensure that only program-approved LEDs are being incentivized. Retailers will be required to receive a waiver for any purchases exceeding quantity limits as described in the agreements. In addition, a Maine installation address is required as verification for larger purchases and instant discounts.

The Trust will review all rebate claims to ensure that the product and participant are eligible. The Trust will carefully monitor product pricing and incentive amounts to motivate customers and installers to purchase high-efficiency models.

5.5 Home Energy Savings Program (HESP)

5.5.1 Overview

HESP is the program through which the Trust pursues savings from upgrades to a home’s building envelope and certain heating systems.

Customer Segments

HESP serves residential customers of all income levels who live in one- to four-unit residential buildings.

Channel

HESP is a market-based initiative that enlists the help of a network of independent trade allies (called Residential Registered Vendors [RRVs]) to drive program participation.

5.5.2 Objectives

- Invest in measures that lower residential heating energy demand and reduce GHG emissions;
- Advance the statutory goal of weatherizing 35,000 homes between 2021 and 2030;⁷⁹
- Advance the statutory 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;⁸⁰
- Advance the statutory goal of, by 2030, having 115,000 households in the State wholly heated by heat pumps and an additional 130,000 households in the State partially heat by heat pumps;⁸¹
- Increase consumer awareness of cost-effective options for conserving heating fuels; and
- Promote sustainable economic development and reduce environmental damage from home heating.

5.5.3 Market Barriers

- *Lack of technical expertise/familiarity with energy efficiency technologies:* Many customers are unfamiliar with energy efficiency options, are not confident in their knowledge of equipment performance, or feel overwhelmed by installation considerations.
- *Lack of upfront capital:* Weatherization and heating system replacements routinely cost several thousand dollars, with comprehensive projects costing more than \$10,000. These high upfront costs can pose a significant impediment to implementing home energy upgrades. Some residents also have difficulty accessing traditional financing.
- *Uncertainty:* Because each home and building is different and because energy prices fluctuate, customers are uncertain about the amount and timing of energy savings from any improvements. Energy efficiency is not a tangible concept for most people; it cannot be seen, it can be difficult to measure, and future energy prices are uncertain.
- *No contractor relationship:* Homeowners tend to find it intimidating to identify, schedule, and work with contractors.
- *Split incentive in rental situations:* In many rental situations where tenants pay for their own utilities, they have an incentive to save energy, but may not have authorization to make alterations, such as weatherization, or install efficient equipment. Landlords, who have such

⁷⁹ 35-A MRS §10104(4)(F)(2).

⁸⁰ 35-A MRS §10119(2)(A)(2).

⁸¹ 35-A MRS §10104(4)(F)(7).

authorization over their own properties, are able to invest in energy efficiency but may not directly benefit from energy saved where the tenants pay the heating bill.

- *Lack of workforce capacity:* Specialized skills are needed to complete home energy upgrades, especially insulation projects and heating system installations. Although these skills are not particularly difficult to develop, they require some training and practice. These jobs have to compete with a variety of other residential and commercial construction jobs and “clean tech” jobs that are in high demand at this time. For these reasons, it can be challenging for consumers to find and schedule available contractors to bid and perform home energy upgrades.

5.5.4 Opportunity Analysis

Methodology

As in Triennial Plan IV, the Trust’s opportunity assessment methodology in Triennial Plan V began with a bottom-up approach. This approach looked at contractor capacity and prior program participation rates. It then took into account the different funding sources available to fund measures offered through HESP. Some funding, such as the Electric Efficiency Procurement and the Natural Gas Efficiency Procurement, are modeled and administratively set at a level to capture the MACE energy efficiency. By contrast, RGGI revenues fluctuate based on the supply and demand for carbon allowances, and revenues from ISO-New England’s Forward Capacity Market reflect the Trust’s capacity resource bid. Because most of the building envelope improvement and biomass measures in HESP are funded through RGGI revenues, the budget for the opportunity must be adjusted to reflect the available funds forecasted from RGGI. Similarly, because heat pump retrofits are funded through FCM revenues, the budget for the opportunity must be adjusted to reflect available funds forecasted from the FCM. Thus, contractor capacity and past program participation rates are considered in the context of revenue projections to calculate the size of the cost-effective opportunity for HESP in Triennial Plan V.

The Trust’s assessment of the residential opportunity for heat pumps relies on its Heat Pump Analysis and Considerations ([Appendix I](#)). This analysis:

- Synthesizes the collective experience of program managers and delivery subcontractors, recent and ongoing evaluations, and experiences from other program managers around New England;
- Explains the Trust’s tiered incentive rationale, describing the relevant decision types (lost-opportunity versus retrofit), the different factors in the cost-benefit calculations, and the applicable funding sources; and
- Estimates future program activity by analyzing funding availability, contractor capacity, customer interest, payback requirements, and past program activity.

Findings

For building envelope improvement measures, the Trust forecasts a significant increase in program activity, driven by the state’s aggressive weatherization policy goals and the expanded funding available to support the required ramp-up. Indeed, because new ARPA funds will be allocated in Triennial Plan V to support a number of the Trust’s programs that previously relied on RGGI for funding, the Trust is able to redeploy some of the RGGI funds to prioritize a significant increase in HESP budgets. These increased

HESP budgets will be used to catalyze expanded weatherization activity. Beginning in FY2022, the program is developing and launching a broad range of strategies to spur growth, working in close coordination with the weatherization contractor community. These strategies include but not limited to expanded marketing and outreach, enhanced incentives, streamlined program requirements, and workforce capacity-building, all of which will carry into the Triennial Plan V period. It should be noted that to develop budgets for weatherization measures, the Trust looked at the fuel mix of past program participants to assign percentages of the opportunity that would be funded with sources (such as RGGI) for unregulated fuels, natural gas procurement, and electric procurement, respectively. In addition, the Trust recognizes that building envelope improvement measures can save electricity by reducing a building's heating load and the associated operating hours of heating systems and ancillary equipment.

Similarly, while the opportunity analysis for heat pumps also relied on an assessment of the contractor network and historical project totals, it further considered the State's 100,000 heat pump goal and the expanded funding available to support the required ramp-up. As described elsewhere in this Triennial Plan (see, for example, [Appendix I](#) and [Appendix D](#)), the Trust successfully accelerated heat pump activity over the course of Triennial Plan IV and is well-positioned to continue this trend through Triennial Plan V.

5.5.5 Program Design

The Trust will continue operating HESP using a market-based approach to promote home energy upgrades. Elements of this approach include rebates, financing, information, and a network of RRVs. A market-based approach, leveraging HESP program incentives to achieve significant private investment in home energy improvements, is essential for advancing participation and savings goals.

Approach to Market Barriers

- *Lack of technical expertise/familiarity with energy efficiency technologies:* The program will continue to offer a variety of educational resources through printed materials and online. This information will cover the benefits of, considerations for, and proper use of energy efficiency projects, and will provide tools such as guides and calculators that help customers make informed decisions.
- *Lack of upfront capital:* The program will offer rebates and financing to overcome the initial cost barrier. In addition, loans will allow customers to spread the cost of energy improvements over time.
- *Uncertainty:* The program will offer a variety of materials and online calculators to help customers estimate the impact of efficiency projects on their homes.
- *No contractor relationship:* To help homeowners identify qualified contractors, the program will continue to develop and support a network of licensed and insured professional contractors who are qualified to complete projects eligible for Efficiency Maine rebates. To help foster positive interactions, contractors in the network must sign a code of conduct.
- *Split incentive in rental situations:* The program conducts outreach to landlords who have properties eligible for the program (buildings with four or fewer units). Note that tenants in

buildings with five or more units may benefit from some of the Trust’s other efficiency programs offered to landlords through the C&I Prescriptive Initiatives, the Distributor Initiatives, or the Low Income Initiatives.

- *Workforce capacity*: The program will conduct outreach to RRVs to discuss program budgets, targets, and plans in order to provide sufficient information for them to make appropriate business decisions about expansion. Finally, the Trust will engage with various state agencies to ensure that new efforts for workforce development prioritize weatherization and other “clean tech” jobs.⁸²

Measures Promoted

The measures promoted through HESP fall into two general categories:

- *Building envelope improvements* refer to the improvement of a home’s thermal envelope, which may include activities such as insulating or air sealing (also known as weatherization), along with energy assessments to verify improvement in the home’s thermal envelope. In addition, building envelope improvements may cover the insulation and sealing of a home’s heating distribution system (ducts or pipes).
- *Heating systems* include heat pumps and biomass boilers and furnaces. HESP promotes heating system upgrades in situations where the customer is the decision maker working with the contractor to select an appropriate model for the specific space to be heated. In addition, the program will consider controls that balance multiple heating systems to maximize the use of the most efficient units.

Incentives and Financial Considerations

Incentives offered through HESP will include both (1) rebates to entice and lower costs associated with the uptake of envelope upgrades and equipment; and (2) financing options to help homeowners reduce upfront costs and spread out the cost of energy improvements over time.

During Triennial Plans II, III, and IV, the Trust moderated its promotion of the program to maintain contractor activity levels and participation without overextending the budget or experiencing gaps in availability of rebates. The Trust will continue this strategy through the Triennial Plan V period, though within the context of an expanded budget (particularly for weatherization). The goal is to support participation while seeking to minimize disruption to the contractor community, which occurs when significant changes are made to measure eligibility or program incentives. In situations where additional funding is made available to HESP, the Trust will make incremental changes to marketing and incentives to advance long-term objectives and energy savings goals.

Marketing and Outreach

To complement marketing performed by the contractor community, HESP will continue to use digital marketing as the primary approach for cost-effective outreach for the program. Digital marketing

⁸² The State’s plan for use of the ARPA funds includes more than \$250 million that is earmarked to help with various elements of workforce development and business support. (See: Office of the Governor, [The Maine Jobs & Recovery Plan: Investing in Maine’s Families, Businesses, Communities and Future](#), May 4, 2021.)

typically includes web ads, search engine optimization, video ad spots, and use of social media platforms for high-volume viewing or to engage potential participants directly. Marketing efforts are also likely to include print advertising, presentations at local events, and brochures in property tax bill mailings with participating municipalities. A less frequently used option, due to its cost and less targeted audience, is to pay for conventional radio or television ad campaigns.

The program will supplement its media outreach initiatives by engaging the Trust's network of RRVs. This community of trade allies has grown to more than 700 residential contractors, vendors, and energy professionals who provide services to homeowners that qualify for Efficiency Maine rebates. When warranted, the Trust sometimes offers training opportunities for vendors on topics related to program offerings. For example, the Trust launched a targeted education effort for heat pump installers in Triennial Plan IV to support the acceleration of activity associated with the State's 100,000 heat pump goal. As part of this campaign, the Trust developed the Efficiency Maine Annual Heat Pump Basics Module to supplement qualifying third-party installation trainings (usually offered by manufacturers and community colleges). This module is a video that highlights best practices, reviews system siting and selection considerations, and dispels common myths.

The Trust has also discussed the program on panels and workshops that cover program initiatives, emerging technologies, and best practices for effective installations or sales, and will continue to do so where applicable in Triennial Plan V. The Trust communicates with its RRV network to keep contractors up to date with the latest incentive levels and rebate eligibility criteria. Efficiency Maine has built, has maintained, and will continue to offer an online search tool to enable homeowners to easily locate energy service professionals.

Finally, the Trust will continue to curate a variety of informational materials on energy efficiency technology, options, and incentives. These will take the form of printed brochures, web pages, videos, and online calculators. These resources will give consumers the information they need to move forward with their energy efficiency projects.

Quality Assurance/Quality Control

The program has an established QA/QC process that includes in-home and virtual inspections conducted by highly experienced and certified building analysts. Program staff inspect a percentage of all program participants. Historically, that percentage has been between 10 and 15%. The focus of site inspections is to ensure that projects are completed as reported and to verify compliance with program rules including equipment specifications and configuration, satisfactory workmanship, and customer experience. Any discrepancies are recorded and brought to the attention of the participating contractor to remedy and to improve future work.

The Trust will continue to employ the following mechanisms, where appropriate, to help promote and ensure quality work:

- Registered Vendor Code of Conduct;
- Requirement of qualifying third-party installation training and completion of the Efficiency Maine Annual Heat Pump Basics Module (for heat pump installers);

- U.S. Environmental Protection Agency certification in Section 608 Refrigerant Handling;
- Building Performance Institute certification;
- Requirement for proper licensing by the Maine Fuel Board;
- Requirement of comprehensive general liability insurance;
- Completion of forms submitted to the Trust establishing eligibility of the home and the measures;
- Acknowledgment by the customer and the contractor attesting to the information represented in the rebate request;
- Reminders in communications with RRVs; and
- Possible removal of vendors from the RRV list for failure to comply with the Code of Conduct or program guidelines.

5.6 Low Income Initiatives

5.6.1 Overview

The Trust delivers energy-saving opportunities to low-income customers through a portfolio of initiatives, including market-based, direct installation, and direct-mail approaches.⁸³

Customer Segment

The target market for the Trust's Low Income Initiatives is all residential dwellings in Maine occupied by low- and moderate-income households.⁸⁴

⁸³ This section provides an overview of all programs in which low-income Mainers may participate, but the budget line associated with this section is limited to those programs that directly target low-income Mainers. Low-income funds may also be applied to the program budgets for Retail and Distributor Initiatives. In addition, Electric Vehicle Initiatives also target low-income participation. A cross-reference of investment of targeted low-income funds in all Efficiency Maine programs is included in Appendix H, Statutory Budget Allocation Requirements.

⁸⁴ Eligibility for Low Income Initiatives **funded by the Electric Efficiency and Conservation Fund** is limited to a customer of a transmission and distribution utility receiving benefits under the utility's program to assist low-income customers, or a household that has qualified at any time in the prior 12-month period to receive assistance through any State or federal program in which low income and/or limited assets are criteria for eligibility. See 95-648 CMR ch. 3, §2(D). Eligibility for Low Income Initiatives **funded by the Natural Gas Conservation Fund** is limited to a customer of gas utility receiving any special utility rates or benefits under programs designated for low-income customers, or a household that is heated with natural gas from any utility and has qualified at any time in the prior 12-month period to receive assistance through any State or federal program in which low income and/or limited assets are criteria for eligibility. See 95-648 CMR ch. 4, §2(C). Where **RGGI funds** are used, eligibility for low- and moderate-income customers expands upon these criteria, extending to owners of properties having low assessed property values. For Electric Vehicle Initiatives, the Trust's low-income criteria are evolving but in FY2022 limited eligibility to a member of a household that has qualified at any time in the prior 12-month period to receive assistance through the Maine Low Income Home Energy Assistance Program (LIHEAP).

Channels

The Trust's Low Income Initiatives target energy efficiency funding to eligible households through four channels:

- *Direct installation* of efficiency measures, where the Trust covers up to 100% of the cost of equipment and installation and oversees contractor support.
- *Direct-mail campaigns*, where customers receive an offer for free, small energy-saving devices.
- *Targeted initiatives*, where the Trust pilots new approaches or acquires efficiency opportunities in the low-income sector, such as supporting efficiency upgrades in multifamily buildings or high-efficiency new construction of affordable housing.
- *Market-based initiatives*, where low-income customers participate in the same programs the Trust offers to other residential customers. In some cases, the Trust may offer enhanced incentives to eligible low-income customers through market-based programs targeted at low- to moderate-income Mainers.

The resulting blend of approaches is designed to overcome obstacles to cost-effective energy efficiency for low-income Mainers and reach more participants than would be reached through a single program or program delivery strategy.

5.6.2 Objectives

- Maintain fairness and promote equity in Trust programs;
- Reduce the energy burden of low- to moderate-income households in Maine;
- Contribute to meeting the investment goal of at least 10% of the Electric Efficiency Procurement collected under §10110(4-A) or \$2,600,000, whichever is greater, to programs for low-income residential consumers;⁸⁵
- Contribute to investing a reasonable percentage of funds from the Natural Gas Efficiency Procurement to programs for low-income residential consumers, considering these consumers' share of gas load and cost-effective opportunity available at their homes;⁸⁶
- Advance the statutory goal of weatherizing at least 10,000 low-income households through the combined efforts of the Trust and the Maine State Housing Authority between January 1, 2020, and January 1, 2030;⁸⁷
- Advance the statutory goal of promoting 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;⁸⁸
- Reduce GHG emissions associated with heating and cooling in the residential sector;

⁸⁵ Please see [Appendix G](#) for more information.

⁸⁶ Please see [Appendix G](#) for more information.

⁸⁷ 35-A MRS §10104(4)(F)(2).

⁸⁸ 35-A MRS §10104(4)(F)(7).

- Increase consumer awareness of cost-effective energy saving opportunities; and
- Reduce total energy costs.

5.6.3 Market Barriers

- *Upfront cost*: Low- to moderate-income customers typically have limited access to disposable funds, making it hard to invest in building or equipment improvements that require an upfront payment.
- *Limited access to capital*: Poor credit or lack of collateral can restrict access to financing options.
- *Split incentives*: Sometimes the entity making decisions on energy efficiency investments does not pay the energy bills and therefore has little incentive to reduce them. This is typical of rental properties; for example, the tenant may pay the utility bills, but only the landlord is in a position to purchase and install equipment or improvements to the building envelope. Similarly, in cases where energy costs are subsidized or included in rent, the end user may not experience the benefit from energy efficiency. It is important to note that a significant share of low-income Mainers rent, and do not own, their home.⁸⁹
- *Lack of information*: Energy efficiency is not always an intuitive or easily understandable concept for most people. Some customers also are unfamiliar with energy efficiency options, are not confident in their knowledge of new technology and its performance, or feel overwhelmed by installation considerations. Confusion may be compounded by the fact that there are often multiple initiatives, from multiple organizations, attempting to assist this customer segment while employing different approaches and rules of participation.
- *Lack of awareness*: Eligible households may be unaware of Efficiency Maine and other assistance programs, and the Trust has limited access to lists that could help it share information with these households and verify their eligibility.
- *Lack of workforce capacity*: Specialized skills are needed to complete home energy upgrades, especially insulation projects and heating system installations. Although these skills are not particularly difficult to develop, they require some training and practice. These jobs have to compete with a variety of other residential and commercial construction jobs and “clean tech” jobs that are in high demand at this time. For these reasons, it can be challenging for consumers to find and schedule available contractors to bid and perform home energy upgrades. This challenge can be greater for projects targeting low-income consumers; generally, these projects are smaller and less profitable than other opportunities, and contractors are therefore less likely to prioritize them.

⁸⁹ For example, 47% of Mainers on the Low Income Heating Assistance Program list in 2020 were renters.

5.6.4 Opportunity Analysis

Methodology

The Trust's opportunity analysis for Low Income Initiatives in the Triennial Plan V period centered around four general questions:

- To what extent can the Trust continue to offer the same measures as it has in the past?
- Is there new information about the Low Income Initiatives program design and/or funding resources that might inform a change in measure offerings or delivery approach?
- How can the Trust best invest funds to benefit low- to moderate-income Mainers and reduce GHG emissions?
- What mix of program types can achieve both significant savings and broad reach among low- to moderate-income Mainers and support the Trust's goals of maintaining fairness and equity through its investment strategies?

Findings

The Trust's analysis determined that several measures offered during the last Triennial Plan period continue to be cost-effective and offer energy-saving opportunities for low-income households (see the measure list in [Appendix B-1](#)). These include heat pump water heaters, heat pumps, air-sealing and insulation measures, and the suite of small energy-saving measures relying on do-it-yourself or volunteer installation (such as LEDs, low-flow showerheads, and low-flow aerators).

In the most recently completed fiscal year (FY 2021), the Trust's efforts through the Low Income Initiatives reported the following metrics associated with income-eligible households:

1. 185 homes upgraded with improved building envelope insulation and air sealing;
2. 1,194 high-performance, cold-climate heat pumps installed;
3. 1,039 households with a heat pump water heater installed;
4. 77,203 LED bulbs delivered;
5. 20,139 faucet aerators delivered;
6. 6,774 low-flow showerheads delivered;
7. Marketing materials mailed directly to income-eligible households:
 - 29,200 households for the heat pump water heater promotion;
 - 208,797 invitations for LED, low-flow devices, and other Low Income Initiatives;
8. \$29,172,853 in reduced energy bills over the lifetime of the measures installed;
9. \$5,333,228 expended by the Trust for administration and incentives in the Low Income Initiatives; and
10. Geographic distribution (see Figure 1).

The Trust will continue to offer these measures through the direct-install, direct-mail, and market-based channels as well as through targeted initiatives.

The most significant development affecting the opportunity analysis for Low Income Initiatives in Triennial Plan V is the considerable influx of funding from ARPA funds earmarked for weatherization of

low- and moderate-income homes. This funding increase will have a significant impact on program activity during Triennial Plan V.

The program will continue direct installation of select retrofit measures where the avoided costs exceed the project costs and will meaningfully benefit participating households, and as funding is available. As modeled in [Appendix B-2](#), these direct installation measures include heat pump water heaters and heat pumps. Tankless coil water heater replacements represent a sizeable opportunity for heat pump water heaters Maine that has historically been funding constrained. The Trust's analysis also found that, with certain direct install measures, do-it-yourself energy bundles can deliver modest energy savings to a geographic and economically diverse low-income population and will be continued.

Certain measures, notably heat pumps and building envelope improvements, will be promoted to low- and moderate-income consumers through market-based program delivery, similar to how such measures are incentivized through the Home Energy Savings Program. This approach achieves very wide reach, very efficiently, by leveraging Maine's extensive network of contractors serving the residential sector. Again, expanded funding from ARPA makes the opportunity for these measures considerably larger in Triennial Plan V than in the past. The impact on weatherization opportunity is particularly striking; ARPA funding alone will drive a roughly six-fold increase in the program's weatherization budget over Triennial Plan IV levels. The Trust recognizes that this budget increase will not translate directly to a six-fold increase in activity; driving uptake will require considering a combination of strategies, including enhanced incentives, streamlined program requirements, targeted marketing and outreach, innovative financing, and workforce capacity-building. The Trust will also consider using competitive solicitations to secure vendors for a set number of installations (most likely for insulation projects), providing these businesses with a level of certainty to help plan for additional personnel, trucks, and equipment.

As described earlier in this document, customers are likely to address emergency replacement purchases for lights, appliances, and heating systems at a retailer or through a distributor. The Trust will therefore allocate a portion of its funds for low-income consumers to support this activity in the Retail Initiatives and Distributor Initiatives. The amount of the allocation will be proportionate to the participation rates in those initiatives attributable to low-income consumers, as measured through surveys (see [Appendix J](#)). By targeting emergency replacements where a low-income customer is required to make a purchasing decision, the Trust has the greatest chance to influence the purchasing decision and to provide an efficiency benefit to that customer. Please see Sections 5.3, 5.4, and [Appendix G](#) for more details; the budget for these measures appears in Retail Initiatives and Distributor Initiatives budget lines.

As in the Triennial Plan IV period, natural gas measures for low-income homes are opportunity-constrained. The universe of single-family homes that are heated by natural gas, owner occupied, and inhabited by eligible low-income households remains extremely small. The Trust plans to invest low-income natural gas funds in cost-effective measures where possible and will continue to evaluate other cost-effective opportunities for natural gas conservation.

The universe of low-income apartments heated by natural gas is considerably larger, but the opportunities for cost-effective building envelope measures and heating system measures in those buildings are also very limited and challenging to identify. Many apartments are relatively small and have only one or two external walls. Many of the envelopes on those apartment buildings are relatively well insulated already. In such cases, the apartments' annual consumption of natural gas is quite modest, leaving little opportunity (or value) to be saved through conservation. Because many low-income tenants do not directly pay their natural gas utility bill, the Trust works with the building owners to identify cost-effective opportunities to upgrade the envelope or the heating systems. During the Triennial Plan V period, the Trust plans to continue to invest natural gas funds in multifamily low-income buildings that show cost-effective opportunities. For apartments that are heated with unregulated fuels, such as oil or propane, the program will focus on opportunities for weatherization and installing heat pumps.

The Trust will reassess the cost-effectiveness of measures as new information becomes available over the course of Triennial Plan V and will add or remove measures as appropriate. The Trust will also continue to pilot new measures or strategies, including the new construction of affordable housing, through targeted initiatives.

For the Low Income Initiatives budget under Triennial Plan V, see [Appendix A](#). Low-income investments through the Trust's other programs are further broken out in [Appendix H](#).

5.6.5 Program Design

Approach to Market Barriers

In the Trust's experience, employing a variety of channels helps overcome obstacles to low-income program participation and implementation.

Direct-install initiatives, which fund up to 100% of the equipment and installation cost, overcome the customer's upfront-cost and financing barriers. Additionally, the turnkey direct-install approach, in which the Trust initiates contact with eligible households, selects product models, and coordinates qualified vendors, removes barriers associated with lack of information and subject-matter expertise. At the same time, however, the direct-install approach can incur higher costs per project than other approaches given that the Trust incurs the costs of customer acquisition, scheduling, vendor acquisition and management, and bulk product acquisition. It is thus budget intensive. Another consideration is that the higher costs of a direct-install approach sometimes face a greater challenge in meeting cost-effectiveness requirements. Therefore, direct-install projects must yield significant energy savings in order to be cost-effective. In Triennial Plan V, the Trust will continue to provide direct-install offerings to some customers, complementing market-based and direct-mail initiatives.

As with direct-install initiatives, direct-mail initiatives rely on Efficiency Maine or a third party (someone other than the customer) to initiate contact with eligible customers. Delivery costs for direct-mail initiatives, unlike those for direct-install initiatives, are extremely low. In relying on the end user to perform the installation, many of the applicable measures easily surpass the cost-effectiveness

requirement. Direct-mail initiatives can reach a significant number of low-income customers, making it an important way for the Trust to reach a large and diverse segment of the low-income sector.

Market-based initiatives help ensure competitive project costs and broad accessibility. By providing aggressive incentives on measures that are typically purchased as an emergency replacement when the old model burns out, the program can help overcome upfront-cost barriers, putting the inefficient replacement model and the efficient alternative on equal footing. By targeting emergency replacements where a low-income customer is already required to make a purchasing decision by the occasion of the burnout of an old model, the Trust can efficiently maximize its harvest of cost-effective opportunity among low-income households.

Even with non-emergency replacements or retrofits, market-based initiatives can be successful in leveraging the marketing efforts of the private sector and a low-income customer's willingness to contribute a co-pay. In these situations, requiring even a modest co-pay is helpful in motivating customers to advocate for quality work and pay ongoing attention to proper maintenance and operation.

In an effort to address the market barriers associated with the landlord-tenant split incentive, the program will explore a strategy similar to that deployed by the C&I Prescriptive Initiatives; to spur activity in this hard-to-reach sector, the Trust will issue limited-time offers for enhanced incentives to affordable housing owners, including affordable housing authorities and private landlords. As appropriate, this program will coordinate with the C&I Prescriptive Initiatives and the Home Energy Savings Program—both of which also provide incentives for multifamily buildings—to align targeting and communication strategies. Where multifamily buildings with more than four units have a majority of low-income tenants, Low-Income Initiatives also may be a resource for funding enhanced incentives.

Measures Promoted

As with all of the Trust's programs, the measure offerings through the Low Income Initiatives may be subject to different limitations based on the funding sources. The significant new funding from the ARPA effectively removes those limitations for weatherization measures in the Triennial Plan V period. Measures incentivized for residential customers through market-based programs are generally also good candidates for inclusion in the Trust's Low Income Initiatives. (An exception to this general rule sometimes applies when the low-income dwelling is in an apartment building, where the characteristics of the building and heating system may differ significantly from those of a single-family home). In other cases, only low-income customers are eligible for some measures, including do-it-yourself energy-saving kits and used electric vehicles. Across the various initiatives, the Trust's budget assumes promotion of measures for low-income customers, including heat pump water heaters; heat pumps; air-sealing and insulation measures; the suite of small, do-it-yourself energy-saving measures; window inserts; electric vehicles; and more. These measures appear in the Low Income Initiatives budget line as well as in Retail Initiatives, Distributor Initiatives, and Electric Vehicle Initiatives.

As discussed, the Trust will continue to reassess measures' cost-effectiveness as new information becomes available over the course of Triennial Plan V and will add or remove measures as appropriate.

Incentives and Financial Considerations

Low Income Initiatives may offer different financial incentive types and sizes depending on the delivery channel. Market-based initiatives may pay close to 100% of the incremental cost of a measure or require a co-pay from participating households. Where a co-pay is required, if the Trust has an administratively viable and efficient way to verify the customer's low-income eligibility, then it will reduce the cost-share requirements for eligible program participants compared to what is required of non-low-income customers. However, in some cases it is not practical to apply an enhanced rebate for low-income customers. In these cases, the low-income customer co-pay is the same as for other consumers.

Additionally, for qualifying customers the Trust will couple its incentives with access to financing in the form of small, unsecured loans or other forms of inclusive financing where approved by the Board. Through the turnkey direct-install approach, the Trust covers up to 100% of all costs of the upgrade, including opportunity assessment, project management, project materials, and installation costs. Direct-mail initiatives involve no financial contribution from the participant.

Marketing and Outreach

Driving demand for energy efficiency services and participation in the Trust's Low Income Initiatives generally requires targeted messaging to eligible households. Because of the sensitive nature of personal income information, identifying potential participants remains challenging for the Trust. Direct mail and outreach through traditional low-income program delivery agencies remain the most affordable and targeted strategies. The Trust will continue to market Low Income Initiatives to eligible households through partner organizations including the Maine Department of Health and Human Services, Maine State Housing Authority, Office of the Public Advocate, Community Action Agencies, General Assistance Program Officers, non-profit organizations, and the utilities. The Trust has also reached many eligible households meeting the assessed-value criteria for participation through tax mailers and other municipal outreach strategies.

Targeted marketing and outreach to landlords and affordable housing owners is another important strategy for reaching low-income households. To that end, Staff work closely with landlord associations and affordable housing associations, presenting at meetings, conferences, and other events. Staff has also worked with municipalities to connect with landlords of low-income multifamily housing. By raising awareness about the Trust's standard Low Income Initiatives, and in some cases providing targeted incentive offerings, the Trust works to overcome barriers associated with the split incentive in landlord-tenant relationships and help low-income renters reap the benefits of energy efficiency.

The Trust's licensed contractor network will also continue to serve as an active sales force for this sector. In addition to providing continued technical information and program guidance to the vendor community to support this effort, program staff will explore opportunities to enhance contractor interest in, and commitment to, project opportunities through this channel. Contractor-led customer acquisition has been particularly effective for low- to moderate-income heat pump initiatives, as some contractors have become more familiar with the assessed-value criteria for participation and have targeted specific communities or housing types likely to be eligible for enhanced incentives. This contractor-led customer acquisition is particularly helpful because it is not practical for the Trust to

identify customers using the property-value threshold, and the burden for program identification is with the contractor and/or customer. The Trust complements contractor-led marketing with targeted social media and web advertising.

The Trust will also drive participation in Low Income Initiatives through the statewide marketing of other Trust programs. This is particularly relevant to offerings through Retail Initiatives and Distributor Initiatives, where marketing and outreach materials in stores will effectively target all customer sectors. Furthermore, the Trust will leverage the various educational resources on its website and social media platforms to help low-income Mainers reduce their energy costs, including no- and low-cost energy tips, home energy calculators, case studies, and vendor locators.

Quality Assurance/Quality Control

The Trust will conduct QA inspections of 15 to 25% of all direct-install projects and market-based projects. The Trust requires that all installations be completed by contractors on the Trust’s Residential Registered Vendor list, ensuring that all participating installers abide by a specific code of conduct and adhere to certain licensing requirements. The Trust also provides installers with material and installation specifications for energy-efficient technologies installed through its direct-install initiatives.

5.7 Renewables Program

5.7.1 Overview

Maine statute establishes that the Trust shall administer the Energy Efficiency and Renewable Resource Fund.⁹⁰ The statute authorizes the Trust to use this fund for the purpose of funding renewable resource R&D, community demonstration projects of renewable energy technologies, and rebates for cost-effective renewable energy technologies.⁹¹ This fund receives annual revenues from voluntary ratepayer contributions and alternative compliance payments made through the Renewable Portfolio System. The Trust is also authorized to “seek and accept funding for the [Renewables] program ... from other sources, public or private.”⁹² This section of the Triennial Plan describes how the Trust will deploy funds that are received by the Energy Efficiency and Renewable Resource Fund.⁹³

⁹⁰ 35-A MRS §10121(1).

⁹¹ Section 10121(1) of the statute authorizes the Trust to use these voluntary contributions to promote R&D, demonstration projects, and rebates for “energy efficiency” measures. The Trust finds that funding from other sources that is used for promotion of energy efficiency is reasonably likely to be adequate for the duration of this Triennial Plan. By contrast, initiatives to help increase the market penetration and use of renewable energy lack significant funding in Maine. For this reason, the Trust intends to reserve funds received by the Energy Efficiency and Renewable Resource Fund for use in researching, demonstrating, and deploying renewable energy technologies.

⁹² 35-A MRS §10121(2).

⁹³ This section of the Triennial Plan does not address ways that the Trust might help promote customer-sited renewables using other funding streams or in conjunction with other programs. For example, the Trust supports installation of certain renewable energy resources with its suite of home energy loans and HESP. Details of how that program supports renewable energy resources are addressed in those sections.

Customer Segments

Following are the eligible customer segments by potential project type for this fund:⁹⁴

- *R&D Projects*: Customers in the University of Maine System, the Maine Maritime Academy, or the Maine Community College System.
- *Community Demonstration Projects*: Maine-based non-profit organizations, consumer-owned transmission and distribution utilities, community-based non-profit organizations, Community Action Agencies, municipalities, quasi-municipal corporations or districts, community-based renewable energy projects, and school administrative units.
- *Rebates*: The statute does not limit or prescribe what customer segments are eligible for rebates through the Energy Efficiency and Renewable Resource Fund.

Channels

When available funds in the Energy Efficiency and Renewable Resource Fund are too low to support a broadly available, prescriptive rebate initiative, the Trust focuses on supporting a smaller number of custom projects to advance the R&D or demonstration goals of the fund. The R&D and demonstration initiatives, when offered, are delivered primarily through competitive procurements. When applicable, rebates are delivered through the Trust's contractor-based programs for residential and commercial customers.

5.7.2 Objectives

- Simplify and enhance consumer access to technical assistance and financial incentives relating to the use of alternative energy resources;
- Promote community demonstration projects and support the development and commercialization of renewable energy technologies; and
- Increase public information and awareness of alternative energy technologies and their benefits.

5.7.3 Market Barriers

Market barriers for renewable energy technologies include the upfront cost of the improvement, access to financing, lack of information, and lack of technical expertise in broader trades.

5.7.4 Opportunity Analysis

Funding constraints represent the primary factor shaping opportunity for the Renewables Program. Absent new legislation or bonding to generate a new revenue stream, the Trust forecasts that the revenues in the Energy Efficiency and Renewable Resource Fund will be approximately \$60,000 annually. This level of funding is consistent with revenues received during each year of Triennial Plan IV. Thirty-five percent of the revenues are directed by statute to the Maine Technology Institute to help promote R&D of renewables.⁹⁵ The forecasted level of funding that will remain for the Trust after

⁹⁴ 95-648 CMR ch. 103, §3, 4.

⁹⁵ 35-A MRS §10121.

remitting the R&D funds to the Maine Technology Institute is insufficient to support a rebate program. With the limited revenue, the Trust will target projects that have the greatest impact on demonstrating low-cost renewable energy options with the greatest end-user payback in community facilities.

The market for demonstration grants consists of Maine-based projects submitted by eligible applicants. The projects must produce energy or heat from renewable sources, including solar photovoltaic (PV), solar thermal, biomass, landfill gas-to-energy, geothermal, wind, and wood pellet systems. Homes and businesses with rooflines or other areas that have an unobstructed orientation to the sun and the opportunity to displace expensive heating fuels for water or space heating are good candidates for PV systems, and also solar hot water or hot air. Per the Trust's rules, these projects must also be cost-effective, provide value to a community, and demonstrate broad community support.⁹⁶ The rules outline a different cost-benefit screening test for these renewables projects than the one the Trust uses for traditional energy efficiency measures; these projects must demonstrate a simple payback determined by comparing the net installation costs with the value of energy generated over the life of the equipment. Additionally, the Trust will focus on distributed resources on the customer side of the meter, as it does with its other programs. The Trust has not modeled this market potential for Triennial Plan V, as opportunity will depend entirely on funding availability.

5.7.5 Program Design

Given forecasted funding levels, the program will focus on community demonstration grants during the Triennial Plan V period. As discussed above, these grants are most likely to have the strongest demonstration impact and greatest direct end-user payback for public facilities.

Approach to Market Barriers

The primary purpose of the demonstration grant initiative is to illustrate the potential value of a renewable energy technology or application. The grants help offset the large upfront cost often associated with renewable energy projects. By focusing on community demonstration projects, the program also works to increase public awareness and overcome barriers associated with lack of information. Additionally, by spurring additional activity in the renewable energy marketplace, the grants help build technical experience among Maine's local contractors and installers.

Measures Promoted

Eligible projects will include installations of renewable energy equipment where the project demonstrates a simple payback determined by comparing the net installation costs with the value of energy generated over the life of the equipment. This program area focuses on customer-sited, renewable energy measures. Recipients of past grants have proposed projects involving solar electric PV, solar hot water, solar hot air panels, and biomass resources.

Incentives and Financial Considerations

Contingent upon available funding, the Trust will continue to offer grants to stimulate best practices and projects that demonstrate novel or niche applications. As it did during the Triennial Plan IV period, the

⁹⁶ 95-648 CMR ch. 103, §3(2).

Trust may defer grant offerings in a given fiscal year to allow revenues in the fund to accumulate. Once the pool of available funds reaches a sufficient level, the Trust will issue an RFP.

An increase in revenues to this fund would allow the Trust to offer more frequent rounds of competitive solicitations and to include demonstration of a broader array of technologies or applications. If the increase were significant, it could also enable the Trust to promote R&D of technologies or processes shown to fill a particular need or opportunity in the Maine economy and having good potential to be incorporated into the Trust's regular incentive programs.

Marketing and Outreach

The Trust notifies those on its interested parties list by email when there are new RFPs for demonstration projects and circulates information to relevant trade associations, community groups, and media outlets. These opportunities are also posted on the Trust's website.

Efficiency Maine's Renewable Energy Solutions webpage also provides relevant information and links pertaining to renewable energy technology. Program information may also be distributed through the HESP marketing initiatives (see Section **Error! Reference source not found.**), which may include television and radio campaigns, print advertising, local informational forums, and brochure insertion into property tax bill mailings in participating municipalities.

Finally, statute requires that, to the extent that resources allow, the Trust establish training programs for solar equipment installers.⁹⁷ Absent a significant change in the funding constraints of the Energy Efficiency and Renewable Resource Fund, the Trust currently does not expect to offer such training during the Triennial Plan V period. There are several reasons. First, there is no clear need for subsidized training for solar installers in Maine. Second, providing training would not be cost-effective on its own. Third, since the Trust's prior funding stream for solar rebates expired and was not reauthorized by the Legislature, it would not serve any program offered by the Trust to train solar installers.

Quality Assurance/Quality Control

The program will continue to apply its established QA/QC process. As part of the bid selection process, the RFP Review Team will evaluate all project documentation prior to accepting an application. Trust staff will monitor progress during the construction phase by reviewing invoices and conducting site visits to ensure that each project is completed according to initial design specifications. Upon project completion, staff will conduct an inspection to verify project installation details.

The Trust will continue to analyze situations in which renewable energy technology is able to meet the same cost-benefit screening test that the Trust uses to gauge cost-effectiveness for traditional energy efficiency measures. In cases where renewables can meet that test, they can be eligible for promotion through the Trust's other programs. This has been the case with biomass boilers and furnaces, as well as geothermal heat pumps in HESP (see Section 5.5). In particular, as the price of PV technology continues to drop, the Trust will closely track the potential cost-effectiveness of PV and other solar energy

⁹⁷ 35-A MRS §10113.

resources to determine if they can be promoted through more traditional resource acquisition programs.

5.8 Electric Vehicle Initiatives

5.8.1 Overview

The Trust administers programs to facilitate and accelerate Maine’s transition to a low-carbon transportation system. These programs expand availability of EV charging infrastructure and encourage the adoption of EVs in Maine. To date, funding for the EV Initiatives has come primarily from the settlement of a lawsuit against Volkswagen for violating environmental protection laws. The settlement specified that funds be used for environmentally beneficial purposes, such as the reduction of vehicle pollution. During the Triennial Plan IV period, the Trust was also awarded funding from the Maine Public Utilities Commission for a pilot project to support beneficial electrification in the transportation sector. For Triennial Plan V, the Trust anticipates using ARPA funds. The discussion in this section focuses on current Trust initiatives supported through these funds. [Appendix N](#), Electric Vehicle Initiatives: Targets and Priorities for Future Funding Sources, provides a more comprehensive look at the Trust’s strategic thinking for EV Initiatives generally and explores what the Trust might pursue if additional funding were to become available.

Customer Segments

EV Initiatives serve all sectors of the Maine economy including residential, low-income, non-profit, government, and business customers through incentives on the purchase of eligible EVs and charging infrastructure.

Channels

EV Initiatives provide instant rebates for eligible vehicles at participating car dealers in Maine, grants to fund the installation of EV charging infrastructure in Maine, consumer education to raise awareness about the benefits of EVs, and user guides for both EV drivers and EV charger hosts.

5.8.2 Objectives

- Facilitate market transformation that will, over time, result in more Maine drivers shifting to vehicles that operate on electricity to advance the carbon reduction goals of the Maine Climate Council;
- Facilitate equitable participation in EV Initiatives by offering all Mainers, regardless of geographic location or income level, a reasonable opportunity to participate;
- Establish and maximize Maine’s EV charging infrastructure by extending Maine’s EV Fast-Charging Network and increasing local access and destination charging with Level 2 chargers;
- Strengthen the Maine economy by reducing Maine drivers’ energy costs for transportation and by promoting tourism from neighboring provinces and states;
- Maximize the length of routes in Maine that satisfy Federal Highway Administration designations of signage-ready EV corridors; and

- Generate and share resources for consumers to aid in their decision to purchase an EV or install EV charging stations.

5.8.3 Market Barriers

- *Upfront cost*: The incremental cost of EVs compared to conventional internal combustion engine (ICE) vehicles is a barrier for many customers.
- *Lack of familiarity/awareness*: Many customers are not familiar with EV technology and benefits and, as with many energy-efficient choices, evaluating long-term operating savings against higher upfront costs is challenging. Similarly, there is a perception that there are not enough public chargers to meet demand.
- *Range anxiety*: Most EVs have the battery range to meet the driving needs of a typical Maine commuter, but many drivers believe that EVs are not practical or cannot meet their driving needs, particularly on longer trips.
- *Limited product inventory*: The market for new and used vehicles is large, yet relatively few car models and trim packages are currently available in electric options. In particular, limited EV options are available for larger vehicle types (such as SUVs and pickup trucks) compared to ICE vehicles, although many more EV models are projected to enter the market during the period of Triennial Plan V.

5.8.4 Opportunity Analysis

In Maine, consumers purchase between 60,000 and 70,000 vehicles each year. Of these, the Trust estimates that Mainers are on track to purchase 1,000–2,000 new EVs in 2021.

The Maine Climate Council’s climate action plan recommends setting a target of approximately 220,000 light-duty EVs registered in Maine by 2030. To reach this target, Maine should be adopting policies and programs that can at least double the rate of EV sales every year for the next five years and then, for the latter part of the decade, account for more than half of all new car sales. In some European countries, sales of new EVs have risen to more than 30% of the market in the span of less than three years.⁹⁸ During the next five years, the incremental price of EVs (driven mostly by battery prices) is expected to continue declining, while the range of available models will increase dramatically.⁹⁹

Funding constraints represent the primary factor shaping the opportunity for the Trust to administer EV Initiatives. Relying only on revenues that have already been identified, the Trust forecasts that funding for EV Initiatives during the entire Triennial Plan V period will include funds for rebates on the purchase or lease of qualifying EVs for low-income customers only, and grants to promote the installation of EV chargers. While this will not be sufficient to meet the targets established by the Maine Climate Council, it is a start to meet those targets. It will help to demonstrate the viability of the new technology and build the case for adopting new policies to further advance the targets. The Trust’s forecasts that federal

⁹⁸ CleanTechnica, “[Electric Vehicle Sales Charts, Graphs, & Stats](#),” accessed May 12, 2021.

⁹⁹ Deloitte, “[Electric Vehicles: Setting a Course for 2030](#),” July 28, 2020.

and State policies will focus increasing attention on EVs and will have a major impact on the EV landscape during the course of the Triennial Plan period.

The Trust has not modeled this market potential for Triennial Plan V, as the scope of the opportunity through the Trust's initiatives will depend entirely on funding availability. Further context is expected to emerge from the development of the Clean Transportation Roadmap being coordinated by the Governor's Office of Policy Innovation and the Future. The scope of the Roadmap includes conducting a comprehensive assessment: the current state of Maine's clean transportation activities and programs; key market factors that will determine EV adoption in 2025 and 2030; identification of barriers; and forecasts for different vehicle technologies.

5.8.5 Program Design

The program includes vehicle incentives, charging infrastructure, and education and outreach activities to increase familiarity with EVs and expand access to vehicle charging.

Approach to Market Barriers

The program addresses the upfront-cost market barrier in several ways. First, it educates potential customers, and the sales force of car dealerships, on the availability of vehicle rebates. With rebates available as an instant discount at the participating car dealership, customers benefit from a reduced incremental cost between a battery electric vehicle or plug-in hybrid EV and a conventional vehicle at the time of purchase. The program provides enhanced incentives for Mainers and entities for whom the price differential is a particular barrier for EV ownership or leasing. Enhanced incentives are offered to low-income Mainers, local and tribal governments, and select non-profits that provide health and human services to the most vulnerable populations. Unlike all other customers, low-income Mainers also are eligible for rebates on used EVs.

Other incentives, including manufacturer rebates and tax credits, can further reduce upfront costs, but sorting out the incentives can be confusing. In addition to incentives, the program provides information on upfront costs and operating costs on the Trust's website and through various marketing materials. The program also leverages potential customer education opportunities regarding long-term energy savings through the Trust website, social media, digital and radio advertisements, test drive events, workshops and other events, and printed materials distributed at the dealership. Education and informational efforts extend beyond savings and costs to touch on eligibility of models, performance of EVs, availability of chargers, home charging, and countless other questions potential customers might have about EVs. The program's educational campaign attempts to reach Mainers in various stages of the car shopping process.

As with other efficient technologies, sales staff can be heavily influential in customer choice of what model vehicle to purchase. The program provides ongoing information and training to car sales and dealership staff on EVs and the availability of rebates. Dealer education is particularly important given the diversity of vehicle choices and the fact that potential customers are evaluating battery or plug-in hybrid EVs that may not have comparable ICE models. Furthermore, there is often a limited inventory of

EVs on site, which can make comparison shopping difficult without the guidance of an informed salesperson.

The limited number of available EV options for larger passenger vehicles and pickup trucks remains a barrier to EV adoption for many Maine drivers, but many new makes and models are anticipated to enter the market during the Triennial Plan V period to address this demand. Program outreach and education strategies are planned to address this growing sector of the EV marketplace.

Importantly, the program works to overcome concerns about charging availability and range anxiety. The Trust has engaged in a plan since 2018 to install high-speed chargers at key travel locations and to complement these fast chargers with community chargers (also called “Level 2” chargers). The Trust prioritizes the development of community chargers across the State at public sites, workplaces, and multi-unit dwellings. By way of example, in the past year the Trust has awarded funds to install more than 130 Level 2 charger plugs across nearly 50 public host site locations. Community chargers have been installed as far as Fort Kent to the north, Kennebunk to the south, Calais to the east, and Greenville to the west.

The Trust will continue to focus on geographic distribution to ensure that Maine’s charging network can support current and future local EV driving as well as the growing needs of long-distance travelers going to and from Maine. Furthermore, drivers in rural Maine tend to have longer commutes, and fuel costs are a larger percentage of household expenses. By prioritizing charging locations in more remote communities, the Trust seeks to establish infrastructure that gives all Mainers a reasonable chance to participate in the benefits of EV driving. While most charging is done at home, the presence of public charging opportunities is crucial for overcoming range anxiety among prospective EV drivers and to enable longer-distance travel.

In addition to supporting the installation of DC fast chargers (also known as “Level 3” chargers) and Level 2 chargers, the Trust provides online tools to help drivers locate public chargers, resources to help prospective host sites design a charging-station project, information about how to charge at home and away, lists of vendors and installers, and general outreach on the scale and availability of charging resources across the State.

Measures Promoted

The program awards grants to install DC fast chargers (Level 3 chargers) along priority corridors and Level 2 chargers at host sites including non-profits, municipalities, large employers, and small businesses. The program also incentivizes qualifying battery electric vehicles (also sometimes called “all-electric” vehicles) and plug-in hybrid EVs. Pursuant to legislative directive, the program excludes eligibility for luxury vehicles priced above a threshold manufacturer’s suggested retail price.

Incentives and Financial Considerations

The Trust’s EV Initiatives will be tailored to the funding available and the barriers faced by various customer segments. As described above, the Trust provides grants to cover a portion of the costs of installing fast-charging and community-charging infrastructure through competitive solicitations. The

Trust will continue to distribute charger installation grants across regions and types of host sites, informing strategic decisions with stakeholder input and insights from the rapidly evolving industry. The Trust also plans to build upon the findings of an innovation project started in 2020 to leverage incentives to influence home charging behavior at varying times of use.

The Trust also provides instant and mail-in rebates for the purchase of qualifying battery EVs and plug-in hybrid EVs. For low-income Mainers, the rebates are enhanced, and they extend to qualifying *used* vehicles, further reducing the incremental cost barrier for households that experience larger energy cost burdens. From time to time, the Trust will also offer promotional rebates for targeted customer segments, such as local and tribal governments. These enhanced rebates are one way the Trust works to give all customers in Maine, regardless of region, sector, or income level, an opportunity to participate in EV programs.

Through the Triennial Plan V period, the Trust will continue to assess how it might increase participation among Mainers carrying the greatest energy cost burdens, with special efforts to engage low-income Maine drivers and establish equity-focused metrics to track progress.

Marketing and Outreach

Because EVs are a relatively new technology, the program invests considerable time and resources into building general awareness about, and consumer engagement with, electric vehicles. This strategy includes a large array of outreach activities including the continuous improvement of a robust website, radio and digital ads, educational videos, webinars, and test drive events. Informational materials on the website and in print address frequently asked questions, offer information about the life-cycle savings and true cost of EV ownership, and provide user manuals around EV ownership and charging. The Trust continues to expand its resources to serve specific customer segments such as fleet managers, municipalities, homeowners, and tenants.

In addition, the program works closely with participating car dealerships and the sales staff to ensure that all questions about EVs and the rebate program are answered. The salesperson plays a critical role as advocate because the vehicle market is so diverse, and many consumers are unfamiliar with EV technology. Furthermore, EV inventory on the lot is often limited, meaning that interested customers may not have the opportunity to test drive a wide selection of EV models. To address this limited availability, the program partners with dealers and other organizations to provide test drive opportunities.

Marketing and outreach efforts also extend to partnerships with charger host sites and other organizations to build awareness of charger availability and educate prospective charging station hosts. The Trust posts information about chargers and installation resources on its website and provides a link to an online charger locator tool that can be used to find public charging stations in Maine. The Trust frequently participates in webinars and forums to inform local governments, fleet managers, and other commercial customers about installing chargers and available funding opportunities and to demystify perceived barriers to EV adoption. When possible, the Trust also helps communities garner press

attention when new chargers are installed to further promote awareness of the growing charging network.

Outreach and program activities are also informed by routine surveys of EV drivers and participating dealers regarding their experience with the program, purchasing process, and vehicles.

The Trust plays an active role in multiple stakeholder groups related to EV adoption including Drive Electric Maine, the Maine Climate Council Transportation Working Group, and the steering committee for Maine’s Clean Transportation Roadmap.

Quality Assurance/Quality Control

The QA/QC process for EV rebates includes an internal review of each application submitted through the website and its associated paperwork to ensure program compliance. Staff closely monitor submission issues from participating dealers and promptly address these issues through direct outreach with dealers, program updates, training videos, and bi-monthly participating dealer newsletters. The program also periodically conducts customer satisfaction surveys, reviews dealership vehicle inventory, and tracks new models to ensure that eligible EVs are available at participating dealers.

The program also establishes service level agreements with fast charger operators to ensure minimum “downtime” of the chargers, maximum accessibility, and 24/7 customer support for the chargers throughout the multiyear contract. Community charger grants include minimum requirements related to maintenance, accessibility, and reliability for an established term of ownership and operation.

5.9 Demand Management Program

5.9.1 Overview

The Demand Management Program seeks to increase the efficiency of energy use in Maine by deploying measures and strategies that mitigate the impacts of peak demand on electricity utility transmission and distributions systems and balance the increased penetration of intermittent renewables on the grid.

In Triennial Plan V, this program will start with two discrete initiatives:

- *Demand Response Initiative:* A traditional demand response program where participants are compensated for reducing their electricity usage when called upon to do so. This typically occurs during periods of peak demand that drive system costs.
- *Load Shifting Initiative:* An initiative focused on using both passive and active load-shifting strategies across fleets of devices. These measures are programmable and, in some cases, networked, operating in response to internal or remote signals. (Also known as a “bring-your-own-device” or BYOD program.)

As described in more detail in Section 6.2 (Innovation Program), the Trust also intends to pilot new approaches to delivering “load flexibility.” We will work to integrate load flexibility into the Demand Management Program as we are able to demonstrate its cost effectiveness and technical feasibility.

Customer Segments

Demand Response Initiative

The Demand Response Initiative is open to all C&I customers in Maine. This group consists of all non-residential customers, including manufacturers, businesses, institutions, government entities, and multifamily (or apartment) property owners.

Load Shifting Initiative

The Load Shifting Initiative targets multiple customer groups including residential, low-income, and commercial customers.

Channels

Demand Response Initiative

The Demand Response Initiative targets eligible customers through pre-qualified third-party Curtailment Service Providers (CSPs). The CSPs recruit end-user participants and manage all aspects of demand response event participation and reporting to the Trust.

Load Shifting Initiative

The Load Shifting Initiative leverages equipment purchases made through manufacturers' web stores, online retailers, and retail stores. The program targets customers making these purchases, promoting incentive opportunities for enrolling in an active load-shifting initiative or demonstrating measure compliance with passive load-shifting requirements.

5.9.2 Objectives

- Reduce the price of electricity over time for all consumers by reducing or shifting demand for electricity or balancing load, including by the implementation of beneficial electrification and energy storage systems;
- Reduce total energy costs for electricity consumers in the State by increasing the efficiency with which electricity is consumed;
- Enhance grid reliability and help accommodate increasing amounts of intermittent renewable generation and beneficial electrification;
- Help customers reduce energy costs generally, and demand charges in particular;
- Create more favorable market conditions for the increased use of energy-efficient products and services; and
- Promote sustainable economic development and reduce environmental damage.

5.9.3 Market Barriers

Demand Response Initiative

- *Lack of in-house capacity:* Businesses and institutions often lack a full-time staff dedicated to energy or facility management, let alone electricity load management. Without in-house

expertise, these customers rely on outside contractors and vendors to both identify and act upon demand events.

- *Restrictive ISO-NE programs:* Over time the ISO-NE demand response programs have become increasingly restrictive and administratively burdensome. Most resources enrolled in the program must dispatch at least 100 kW per location; many of Maine’s customers cannot dispatch that amount and thus are ineligible. Even larger customers that are able to meet this requirement find that the administrative burden to participate in the ISO programs is too high; they often have to dedicate a full-time employee to monitor and call peak demand events, and only receive incentives in the relatively infrequent event of an emergency dispatch. This leaves most of Maine’s C&I customers unserved by any program that would promote load curtailment.
- *Lack of financial incentive:* For many C&I customers, reducing electricity usage in response to a curtailment event results in some degree of lost productivity. Without adequate incentives to cover the immediate cost of this lost productivity, there is not sufficient motivation for customers to significantly reduce their load during peak periods.

Load Shifting Initiative

- *Lack of information:* Many customers are not familiar with the intricacies of energy delivery and the associated benefits of load shifting.
- *Lack of financial incentive:* Some customer classes pay a flat rate for electricity, regardless of the time of day in which they use it, or are not subject to demand charges. They therefore have no financial incentive to shift usage to off-peak times.
- *Unfamiliarity with new technology or processes:* Load-shifting initiatives often involve technology and processes that are uncommon in the marketplace. The unfamiliarity of contractors and customers with uncommon measures and processes represents a hurdle for load-shifting programs.
- *Upfront costs:* The incremental cost between a “smart” measure and its corresponding non-programmable, non-networked counterpart often dissuades customers from purchasing the dispatchable unit, especially when it is unclear how they could get the most value from the device.

5.9.4 Opportunity Analysis

Methodology

Demand Response Initiative

The opportunity assessment for Triennial Plan V is largely informed by the Connected Solutions program, administered in Massachusetts, Rhode Island, Connecticut, and New Hampshire. This multistate initiative has demonstrated how these programs can utilize the administrative efficiencies of CSPs to maximize the return on allocated budget. The Trust has used this program, its supporting programmatic materials, and its program evaluation¹⁰⁰ as a primary resource in defining the size and

¹⁰⁰ DNV GL Energy Insights USA, Inc., *Evaluation of 2018 Demand Response Demonstration: C&I Connected Solutions*, April 26, 2019.

implementation of the Demand Response Initiative. The primary benefits of the program derive from its ability to reduce the system peak through targeted dispatch of customer curtailments.

The findings from the Connected Solutions program are further supported by the Smart Electric Power Alliance’s 2019 Utility Demand Response Market Snapshot, which shows Maine lagging behind other ISO-NE states in its curtailment activity.¹⁰¹

Load Shifting Initiative

Over the course of Triennial Plan IV, the Trust has explored various load-shifting measures and strategies through its Innovation Program. Through these pilot projects, the Trust gathered insights into the savings, costs, and customer response to program designs for various load-shifting measures in Maine applications. The Trust used these findings as the basis for the opportunity assessment for the Load Shifting Initiative.

The factors driving the cost-effectiveness of load-shifting measures were:

- Can the load be easily controlled and aggregated through a central platform?
- Is there enough load associated with the measure to justify the expense of customer incentives and compensation to the aggregator?
- Can the Trust shift the operation of a device without inconveniencing the customer?

Three categories of measures passed these screens: EV chargers, batteries, and thermal storage. The primary benefit of the load-shifting measures is their ability to reliably reduce the system peak. The Trust does not plan on using these load-shifting assets to balance intermittent renewables or local distribution constraints at this time, but will plan the program and choose technologies that could allow such activities in the future.

Findings

Demand Response Initiative

DNV GL, a multinational energy services firm, evaluated the National Grid’s Connected Solutions Program in 2018. The evaluation looked at the program’s effectiveness at dispatching its demand management resources coincident with the ISO-NE system peak and the response rate from customers to that dispatch. The evaluation found that the CSPs dispatched their resources coincident with the ISO-NE peak in 2018 and exceeded the goal of 50 MW by achieving 51.3 MW of load reduction.

Based on the findings of the DNV GL evaluation, the National Grid expanded its pilot to a full-scale program offering. The Trust has used the evaluation to inform its cost-effectiveness modeling for running this type of program in Maine. For more detail, see [Appendix L](#).

¹⁰¹ Smart Electric Power Alliance, *2019 Utility Demand Response Market Snapshot*, September 2019.

Load Shifting Initiative

Through its various Innovation Program pilot projects, the Trust has been able to better understand the cost-effectiveness, marketability, dispatchability, and relevance of various load-shifting technologies in the Maine context. The Trust's Aggregated Distributed Energy Resource Load Management Pilot held the most promise for identifying which technologies are best suited to prescriptive incentive offerings for both active and passive load shifting.

Within the pilot's portfolio of measures, EV chargers and battery storage systems demonstrated the highest potential for cost-effective load shifting. EV chargers have a peak design capacity of close to 7.5 kW, more than five times the peak demand of an average home. Additionally, as demonstrated in the Trust's Level 2 Smart Charging Pilot, customers are accepting of delaying vehicle charging to off-peak hours as long as the car is fully charged in the morning. Batteries in both commercial and residential settings are highly responsive to programmed events, making them ideal resources to shape peaks. The pilot also found that the primary driver for battery purchases is to secure back-up power during outages. Generally, batteries are too expensive to satisfy the Trust's cost-effectiveness test if the test accounts for the full cost of the battery and its installation. However, if a customer has already decided to purchase (and pay for) a battery for reliability, the relatively minor incremental cost of adding controls and providing financial incentives to manage demand are more than offset by the economic benefits, making the measure cost-effective.

Heat pump water heaters and heat pumps proved less viable because they are so efficient to begin with; the energy savings associated with load shifting is relatively insignificant on a per-measure basis. As a result, a significant volume of measures would be required to achieve meaningful demand impacts. Furthermore, this volume would make aggregator integration complex and difficult to scale.

Preliminary results from the Trust's other Innovation Program pilots suggest that there are nascent technologies that are not yet ready for a statewide roll-out or require site-specific engineering analysis that is better suited to the C&I Custom Program.

5.9.5 Program Design

Demand Response Initiative

The Trust will establish curtailment goals informed by programmatic activity of peer organizations and any needs prescribed by the non-wires alternative coordinator.¹⁰² To achieve these goals, the Trust will launch a Program Opportunity Notice to solicit bids from CSPs. The CSPs' bids will offer to claim a portion of the total curtailment goal.

By working with the CSP model, the Trust will leverage these entities' expertise in customer acquisition, retention, and management and will eliminate significant administrative burden. The CSPs will be responsible for calling a demand response event, contacting their customers, and achieving the total

¹⁰² For more detail on the Non-Wires Alternative process in Maine, see Section 7.1.1.

agreed-upon curtailment goal. At the end of the peak period, the Trust will review utility data to audit the total achieved curtailed kW and pay incentives to the CSPs based on this value.

Load Shifting Initiative

The Load Shifting Initiative will incentivize the purchase and operation of certain load management technologies. As described above, the Trust has identified EV smart chargers and battery storage systems as cost-effective prescriptive load management measures. The Trust will therefore launch the Load Shifting Initiative with these two measures in Triennial Plan V.¹⁰³ For EV smart chargers, the program will incentivize charging to take place during ISO-NE off-peak hours. For energy storage measures, the program will require verification of connectivity, curtailment performance, and algorithm effectiveness.

In the Level 2 Smart Charging Pilot performed in Triennial Plan IV, the Trust partnered with a single equipment manufacturer to automatically apply an incentive through the manufacturer's web store. Given that the universe of Level 2 smart chargers in Maine is currently relatively small, the Trust can easily deploy this program design more broadly across equipment manufacturers for the Load Shifting Initiative. These manufacturers also offer some sort of measure-level aggregation with their products, thus removing the need for a third-party aggregator to control the smart chargers. The use of these brand-specific aggregators will allow the Trust to effectively implement and update program design parameters without the end customer having to go into the user interface.

Approach to Market Barriers

Demand Response Initiative

In providing financial incentives for demand response curtailment activities, the program provides end customers and CSPs the opportunity to participate in a Maine-specific, State-wide demand response program, shave customer load to reduce facility-level capacity charges, and improve grid reliability. The program's incentives and collaboration with CSPs provide C&I customers the financial benefit and staff expertise to participate in a demand response program that would otherwise require additional internal staffing for non-guaranteed returns.

Load Shifting Initiative

The Load Shifting Initiative will offer incentives to reduce the upfront cost of equipment, installation, and commissioning as well as performance incentives based on actual load reductions. The Trust is well positioned to collaborate with its vendor and installer networks to disseminate information regarding best practices for installation, use, and benefits of the equipment.

¹⁰³ The Trust agreed in the settlement of this docket to remove small batteries from the budget of the first year of the plan.

Measures Promoted**Demand Response Initiative**

The Demand Response Initiative will not promote physical measures but instead the services offered through the Trust's collaboration with CSPs, ISO-NE, and the utilities to incentivize the curtailment of a customer's load during peak demand events.

Load Shifting Initiative

The Trust has identified EV smart chargers and battery storage (with controls) as the most promising prescriptive load management measures at this time. The Load Shifting Initiative will continue to monitor emerging load management measures and strategies, and, where applicable, fold them into the program as they mature over the course of the Triennial Plan period. Generally, the Load Shifting Initiative will focus on "off-the-shelf" measures with replicable applications and consistent installation criteria. More complex projects involving site-specific engineering analyses (including thermal storage projects) will be offered through the C&I Custom Program.

Incentives and Financial Considerations**Demand Response Initiative**

Financial incentives will be offered to CSPs based on an evaluated curtailed kW year. The incentives will be issued to CSPs following the Trust's evaluation of the period after the peak demand period. The distribution of incentives from CSPs to customers is the sole responsibility of the CSP with which a customer has entered into a service agreement.

Load Shifting Initiative

Incentives will be issued over the course of a consumer's engagement. First, incentives may be paid to customers in conjunction with the purchase of their equipment to reduce the upfront cost. Subsequently, incentives will be paid upon confirmation of program performance.

Marketing and Outreach**Demand Response Initiative**

CSPs will manage the majority of marketing and outreach activities for the Demand Response Initiative. Typically, CSPs have existing relationships with C&I customers and will offer demand response in addition to retail energy and capacity. The Trust will supplement this effort with an informational webpage. In the event a non-wires alternative (NWA) opportunity emerges in a specific geographic location, the Trust will engage the CSPs to perform a more targeted outreach campaign. The Trust will also fold communications about any Demand Response Initiative offerings into its general outreach strategy for that area.

Load Shifting Initiative

The Trust will work primarily with vendors, equipment suppliers, and installers to promote the Load Shifting Initiative, equipping these entities with the collateral necessary to inform potential customers of incentive opportunities, and collaborating on general marketing approaches. The Trust will also leverage

its existing programs (i.e., the EV rebate program), its webpage, and online advertising strategies where applicable.

Quality Assurance/Quality Control**Demand Response Initiative**

Evaluation of curtailments will be conducted in an assessment period immediately following the peak activity period (i.e., Summer Peak, Winter Peak) to evaluate curtailment performance and properly compensate CSPs. Baselines for customers will be set and evaluated following the ISO-NE “10 like day” methodology. (For more information please refer to [Appendix L](#).)

Load Shifting Initiative

The Trust will audit the results of various measures within the Load Shifting Initiative at least annually. The program will require network functionality of the measures incentivized through this program and the ability to evaluate individual customer performance. This assessment will be used to issue performance-based incentives.

6. Strategic Initiatives

6.1 Evaluation, Measurement, and Verification

6.1.1 Overview

EM&V activities encompass systematic data collection and analysis related to the Trust's initiatives. Trust staff and independent third-party contractors conduct EM&V activities using industry-standard practices and the Trust's EM&V systems and protocols. The Trust relies on program data that it maintains in the Efficiency Maine Reporting and Tracking (effRT) 2.0 database, the Technical Reference Manuals that document assumptions and methodologies used to calculate energy savings, and primary and secondary data collected through research efforts.

EM&V activities produce key data to inform the Trust's short- and long-term program planning and delivery strategies, and to meet reporting requirements. Key EM&V activities include reviews of TRMs; effRT database maintenance; independent third-party evaluations; commissioned research and analysis; general research; Forward Capacity Market analysis; data reporting; and QA, QC, and process improvement.

6.1.2 Objectives

- To provide data-driven research, analysis, and reports to inform program design and delivery strategies, verify program results, and ensure ongoing program and organizational improvement;
- To meet statutory requirements for independent evaluations;
- To satisfy the ISO-NE market rules for the sale of capacity resources; and
- To continuously improve the Trust's capacity to accurately track the status of efficiency projects, measure energy savings, generate reports, and maintain confidential treatment of customer information in a timely manner.

6.1.3 Technical Reference Manuals

TRMs document the methods and assumptions used to calculate energy and demand savings. The Retail/Residential TRM contains all the relevant references for savings measures promoted through the Home Energy Savings Program, Retail Initiatives, Distributor Initiatives (non-lighting measures), and Low Income Initiatives. The Commercial/Industrial and Multifamily TRM does the same for measures promoted through programs serving non-residential customers and multifamily buildings with five or more units. Each TRM serves as a central repository and a common point of reference for the methods, formulas, assumptions, and sources that are used to estimate savings from energy efficiency measures. The TRMs enable the Trust to analyze energy savings across measures and programs. For each measure, the TRM provides the following:

- A summary description of the measure and documentation of algorithms used to calculate gross energy savings and demand savings;
- Performance assumptions for the baseline and the efficient measure;

- Deemed parameter values or instructions for inputs to savings algorithms;
- Life and cost of the measure;
- Impact factors for calculating adjusted gross savings and net savings; and
- Notes and citations on the sources of information used to develop the TRM.

The Trust plans to continue issuing updated versions of its TRMs at least once a year. These updates will incorporate new measures as well as new results from program evaluations and other relevant research. For measures that experience more dynamic changes (such as the cost of LED bulbs), the Trust will typically reassess the TRM entries quarterly.

6.1.4 effRT Database

Historically, the Trust maintained separate databases to track progress for each of its programs. In large part, these databases evolved independently and varied in format and sophistication. During the first Triennial Plan period, the Trust initiated a significant effort to upgrade and transform its databases into a unified system supporting multiple programs with standardized internal processes, features, and quality. This initiative built on the foundation of the successful effRT database system that historically supported Commercial and Industrial programs to create a new, multi-program database referred to as effRT 2.0. During the second Triennial Plan period, the Trust integrated all active programs into effRT 2.0.

The effRT 2.0 platform supports the Trust's reporting and project activity tracking. The Trust will continue to build upon effRT 2.0 to take advantage of cost savings from streamlining administrative functions and automating processes. The platform will continue to support the Trust's reporting and project activity tracking. In addition, it will continue to support the Trust's participation in the FCM by accurately reporting incremental capacity savings monthly and forecasting FCM bids.

6.1.5 Independent Third-Party Evaluations

The Efficiency Maine Trust Act states that the Trust shall arrange for an independent evaluation of each major program at least once every five years.¹⁰⁴ The analysis is conducted by independent third parties that specialize in the evaluation of energy efficiency programs. Program evaluations conducted by these third parties are designed to:

- Document and verify the program impacts on energy and demand savings;
- Assess program cost-effectiveness;
- Provide recommendations for improving the accuracy of claimed savings; and
- Inform adjustments in program strategies and allocation of resources.

¹⁰⁴ 35-A MRS §10104(10).

Each program evaluation typically includes collection and analysis of both qualitative and quantitative data and methods, through steps such as:

- TRM review;
- Program staff interviews;
- Customer telephone surveys;
- Interviews with trade allies (participating installers, distributors, retailers, and manufacturers);
- On-site data logging and equipment verification;
- Analysis of utility bills;
- Assessments of impact factors (in-service rate, realization rates);
- Net impact assessment;
- Cost-effectiveness assessment;
- Findings review and presentation to the Executive Director and the Board;
- Reassessment of TRM entries based on evaluation results for:
 - Savings algorithms,
 - Deemed parameters,
 - Realization rates, and
 - Free-ridership and spillover rates; and
- Prioritization of future evaluation topics and studies.

During the Triennial Plan V period, the Trust will conduct independent evaluations of its major programs. The Trust expects to begin issuing RFPs in FY2023 to select evaluators for independent third-party program evaluations.

6.1.6 Commissioned Research and Analysis

During Triennial Plan III, the Trust established a group of pre-qualified research and evaluation contractors to perform targeted research and analysis of discrete issues and questions on an as-needed and ongoing basis. This research and analysis capacity has continued through Triennial Plan IV. Commissioned research and analysis complement formal program evaluations and informs the Trust's real-time program planning. The Trust plans to periodically issue a Request for Qualifications during the Triennial Plan V period to vet and update the list of pre-qualified contractors to support ongoing research and analysis activities.

Baseline Studies

The Trust periodically conducts studies on the current age and efficiency of equipment installed in Maine homes and businesses. These studies help quantify savings opportunities and validate deemed values in the TRM. Baseline studies typically involve the end users of equipment.

Market Research

Market research allows the Trust to better understand current market conditions and trends. This research can involve interviewing distributors and installers on stocking practices, the types of

equipment being offered and the reasons why, and supply chain considerations. Market research can also involve gaining access to external datasets that look at equipment sales and efficiencies at statewide, regional, and national levels.

Modeling and Analysis

The Trust engages consultants and contractors to perform various modeling and analysis activities that address specific topics. For example, the Trust has worked with experts to create a model of the performance of various heat pumps to predict their performance over multiple temperature bins. The model also can be used to show how a supplemental heat pump interacts with a central heating system and how an efficient model would compare to an inefficient model. The Trust also participates in forecasting studies such as the Avoided Energy Supply Component studies that help determine the avoided costs used in screening for cost-effectiveness. Finally, the Trust also engages contractors to perform metering and analysis on installed measures to gain insights into their usage and achieved savings in real-world applications.

Measure Development

The Trust also sometimes engages consultants and contractors to help with the definition of new measures. These efforts can include characterization of the market and opportunity for efficient measure adoption (through primary market research or secondary research), surveys of existing programs in other jurisdictions, establishment of existing and future baselines (through primary baseline studies or secondary research), modeling and estimation of energy and demand savings and measure costs, definition of measure eligibility criteria, and development of TRM entries. These efforts may also include the analysis of data from measures installed under the Trust's Innovation Program.

Customer Surveys

The Trust also will continue to implement near real-time surveys of customers in order to reduce the length of time between purchase and program feedback. These surveys allow the Trust to act on results more quickly and pursue more focused analysis of customer decision making.

6.1.7 General Research

Research Forums

The Trust participates in selected regional and national forums by contributing to data collection, participating in joint research studies, and attending informational webinars. The Trust plans to continue its participation in the Evaluation Committee of the Consortium for Energy Efficiency and will review other opportunities on a case-by-case basis.

Standards and Codes

Standards and codes at the federal, State, and local levels can have a large impact on energy efficiency programs by shifting the baseline. Examples include changes to ENERGY STAR® eligibility criteria, EISA lighting standards, and local building codes. Trust staff keep up to date with these developments to ensure that the EM&V systems and the program designs accurately reflect applicable regulations and standards.

Literature Review

The Trust stays abreast of the energy efficiency market by reviewing research, evaluations, and TRMs from other energy efficiency program administrators and stakeholders.

6.1.8 Forward Capacity Market Analysis

ISO-NE's FCM is a market into which electricity generators, efficiency program administrators, and others may bid to supply qualifying "capacity" to serve the New England grid. The Trust is a participant in this market, aggregating the summer-peak electricity savings from the many efficiency measures supported through its programs and bidding those savings resources into the FCM auction. In order to do so, the Trust must comply with the ISO-NE Manual for Measurement and Verification of Demand Resources. To comply, the Trust completes specific analyses and reports, including demand resource qualification packages, measurement and verification plans, monthly performance reports, and annual certifications of compliance with measurement and verification plans. Throughout the Triennial Plan V period, the Trust will continue to complete the various analyses, documentation, and reports required for its demand resources in the FCM, as it has in the past. The Trust will enter into a contract with an independent third party to complete the required annual verification of compliance with the measurement and verification plan.

6.1.9 Data Reporting

The Trust reports on a variety of program and portfolio metrics through an annual report and through information submitted to the Legislature as part of public hearings and work sessions. In addition, the Trust responds to external data requests from organizations such as the Consortium for Energy Efficiency, the U.S. Department of Energy (DOE), the Energy Information Administration, RGGI, and the American Council for an Energy Efficient Economy (ACEEE).

6.1.10 Quality Assurance, Quality Control, and Process Improvement

The Trust's EM&V staff will oversee QA/QC standards across all programs. QA/QC activities will focus on verification of methodology and savings estimates consistent with the TRMs, and verification that eligibility criteria are applied according to program manuals and consistent with statute and Trust rules. The Trust staff implements continuous process improvement in the establishment of tools, processes, and procedures designed to improve accuracy, timeliness, and efficiency of data gathering and reporting.

6.1.11 Utility Data and Modern Analytics

In the past decade, Maine's electricity utilities have installed a significant amount of new metering equipment at their customers' properties and throughout the transmission and distribution system. One feature of this new equipment is its capacity to deliver data about how much electricity is being consumed for each customer in 15-minute or one-hour increments. The Trust has been taking advantage of this data in recent years and piloting its use in a variety of applications. During Triennial Plan V, the Trust will seek opportunities to expand the use of utility interval data and modern analytics in the performance of its EM&V activities. This will include encouraging and assessing evaluation and

study proposals that include modern analytics that may be employed to improve the accuracy and lower the costs of measuring, verifying, and evaluating energy savings.

6.2 Innovation Program

6.2.1 Overview

The Trust's Innovation Program provides funding to conduct pilot projects that demonstrate new types of energy efficiency, demand management, beneficial electrification, or alternative energy measures, or new strategies for promoting such measures. The program focuses on measures or strategies that show significant potential to be cost-effective and to provide energy savings or GHG savings but are not yet well understood or established in the marketplace. The measures piloted may or may not prove to be cost-effective or popular in the Maine marketplace. The Innovation Program thus uses smaller pilot projects to generate findings about cost-effectiveness and market demand before making larger investments in incentives and program delivery.

The Innovation Program facilitates the early stages of market transformation. It is not intended to target a specific segment of the market. By its nature, this program is a tool or an avenue for testing the potential for new technologies and strategies to advance the Trust's purpose and goals, regardless of which customer sector is served. In doing so, the Innovation Program attempts to advance unfamiliar, untested products and strategies to the point that they can be incorporated into the Trust's resource acquisition, market transformation, or GHG reduction initiatives.

The Trust will allocate approximately 1% of its total program budgets to the Innovation Program. It will issue one or more competitive solicitations annually to target the specific opportunities and needs for demonstrating new program measures or designs. The Trust may, at its discretion, complement this approach by self-administering certain discrete initiatives to advance the Innovation Program objectives where to do so would be more cost-effective than outsourcing the activity.

6.2.2 Objectives

- Conduct pilot projects testing new technologies or strategies to determine their potential for advancing the Trust's purpose and goals;
- Increase consumer awareness of cost-effective options for conserving energy or reducing GHG emissions;
- Create more favorable market conditions for the increased use of energy-efficient products and services; and
- Test new measures to increase the efficiency with which energy is used, including strategies to manage demand and implement beneficial electrification.

6.2.3 Market Barriers

The Innovation Program targets the barriers facing newly commercialized efficiency products and efficiency applications or operations that are not widely understood or employed in the Maine marketplace. Upfront costs tend to be even higher for newcomers that have not generated any economies of scale. Familiarity and acceptance among vendors and their customers are lower for new

technologies. In many cases, a technology or process that is new to a marketplace has difficulty demonstrating that its participation in an energy efficiency program will meet the cost-effectiveness test.

6.2.4 Program Design

Approach to Market Barriers

In providing financial support during the early stages of commercialization, the Innovation Program provides new market participants and Maine contractors with an opportunity to test performance, raise product or process awareness, and build experience, thereby advancing the development of the product or process.

Measures Promoted

Eligible measures include any commercially available energy efficiency, demand management, beneficial electrification, or alternative energy measures that meet the targeted criteria specified in the Trust's request for proposals and are consistent with any limitations or requirements of the revenue source that funds this program. Eligible measures must typically show that they have the potential to meet the Trust's cost-effectiveness test and that if the pilot project is successful, the measure has a reasonable likelihood of graduating to the Trust's regular program offerings. In the case of pilot projects that are awarded funding through the RGGI Fund, it may alternatively be necessary to demonstrate that the measure can, in theory, quantifiably and cost-effectively achieve GHG reductions.

Among the Trust's top priorities for Triennial Plan V will be piloting the next generation of demand management measures. For example, measures that deliver load flexibility may help shape load and balance increasing supplies of variable renewable energy. Load flexibility can play an important role in managing costs and grid reliability, helping to integrate higher penetrations of renewable energy and reducing the curtailment of those resources. As Maine makes advances in the sophistication of its grid operations, including improved granularity of customer usage data, real-time monitoring on utility distribution circuits, and time-of-use pricing, the Trust will seek more opportunities to apply load flexibility. Through the Innovation Program, the Trust will use its pilots to generate data and learnings to inform the development of the necessary systems and rate designs and to develop the next generation of demand management programs.

The program may, on occasion, promote limited demonstration projects for near-commercial technologies that show substantial energy-saving opportunities for the State. The program may also promote demonstration and analysis of varying program designs to help shape the ultimate design of a full-fledged program in the Trust's portfolio.

Incentives and Financial Considerations

The Innovation Program will use competitive solicitations to screen and select pilot programs for commercialized products or new ways of delivering cost-effective measures. The competitive solicitations will dictate the level of financial assistance for a given pilot project. Certain projects may offer financial incentives to customers to promote uptake of a product or process, while other projects

may simply seek the Trust's investment of a portion of the costs to install the product or implement the process and then measure and report on the results.

Marketing and Outreach

The Trust notifies those on its interested parties list by email when there are new RFPs, and circulates information to relevant trade associations, community groups, and media outlets. These opportunities are also posted on the Trust's website.

Throughout the Triennial Plan V period, the Trust will conduct outreach and networking efforts with existing public and private organizations. The Innovation Program will seek to leverage the efforts of other agencies and organizations where appropriate.

When the Trust does not have a fully formed, concrete direction for a competitive solicitation under the Innovation Program, it may issue a formal request for information. This process allows the Trust to solicit ideas from knowledgeable members of the energy efficiency community.

Quality Assurance/Quality Control

QA/QC features will be determined through the competitive solicitation process. If a pilot project is seeking to demonstrate a particular program design for future consideration by the Trust, QA/QC features will generally be used and tested as part of that demonstration. If a pilot is testing a particular product or process, the steps by which the results will be measured, analyzed, verified, and shared should be provided in the bidder's proposal and memorialized in the contract deliverables. The Trust will maximize the use of utility interval data to help measure, verify, and analyze the results of pilot projects.

6.3 Public Information and Outreach

6.3.1 Overview

The Trust seeks to provide information about energy efficiency and GHG reductions to all parties involved in selling, servicing, purchasing, or using devices that consume energy.

The Trust reaches prospective consumers through tailored marketing and outreach campaigns across its various programs. These consumer information efforts are complemented by the Trust's work to provide general energy information and education through its website, media relations, social media, blog posts, events, brochures, and other activities and materials to help consumers consider energy efficiency and/or GHG-reducing options as they purchase lighting, appliances, commercial and industrial equipment, home improvements, or electric vehicles. The Trust seeks to foster energy savings and/or GHG reductions by increasing awareness of the benefits of cost-effective, customer-sited energy measures. It provides basic guidance in how to access its rebates and programs, and promotes workforce development relevant to energy conservation. Additionally, as Maine's energy efficiency program administrator, the Trust is frequently called on to participate in energy-related events and to provide input on energy policy issues.

6.3.2 Objectives

- Increase consumer awareness of cost-effective options for conserving energy, using energy more efficiently, or using more alternative or renewable energy, as well as for financing related projects;
- Assist market transformation and further influence the behavior of Maine consumers regarding the increased use of energy-efficient products and services, such as heat pumps and electric vehicles;
- Provide general information about the benefits of energy efficiency and distributed renewable or alternative energy;
- Provide tools and resources to support decision-making related to energy conservation, including best practices, usage tips, calculators, purchasing guides, and vendor locators; and
- Support training and workforce development efforts to contractors, supply houses, and other vendors to promote best practices and expand customer access to energy efficiency services, including technical training on best practices in marketing, installing, and maintaining energy upgrades to maximize energy savings, cost-effectiveness, and customer satisfaction.

6.3.3 Market Barriers

- *Lack of information:* Many customers are not familiar with energy efficiency choices. Public information resources help guide both customers and contractors to high-efficiency options as well as to strategies to conserve energy.
- *Diversity of choices and information:* The number and diversity of products and contractors available in the market can be overwhelming for customers who are planning upgrades or replacing burned-out products. The Trust's website is a trusted, accessible resource for information and can act as support for customers choosing among efficient equipment options and contractors.
- *Lack of familiarity with efficient technologies:* The Trust provides resources for Maine's efficiency contractors to increase their familiarity with efficient technologies and best practices for installation.

6.3.4 Program Design

Approach to Market Barriers

The Trust shares information on energy efficiency issues through several channels. The Trust's website is a significant resource for consumers, providing web tools including a lighting savings calculator, vendor locator, heating system comparison tool, and virtual tour of energy-saving household technologies. Additional web resources focus on the installation and operation of high-efficiency equipment; for example, the heat pump web hub (<https://www.energymaine.com/about-heat-pumps/>) shares installation considerations, user tips, case studies, and more. The Trust has also developed an in-depth web hub on electric vehicles and electric vehicle charging (<https://www.energymaine.com/ev/>).

The Trust attempts to drive interested Maine consumers to the website via targeted press releases and media outreach, social media posts, digital ads, and search engine (or web) optimization strategies. At this time, the website averages close to 17,500 visitors a month. The Trust has increased its presence on social media. While the Trust continues to share information at symposiums, conferences, industry meetings, workshops, fairs, conferences, and trade shows, educational efforts have increasingly focused on virtual web meetings and digital resources that reach out directly to potential customers.

To complement these digital resources, the Trust maintains a pool of its own customer service representatives, who are available via email and a toll-free phone number to answer questions about efficiency options and Efficiency Maine incentives. Staffed from 8:00 a.m. to 5:00 p.m. Monday through Friday, this call center receives more than 1,400 calls, 700 emails, and 2,800 letters a month.

In addition to the call center, Efficiency Maine provides information at the point of purchase, such as signs and brochures in the water heater aisle at a major retailer or in front of an off-shelf display of LED bulbs. Efficiency Maine contractors frequently educate their customers as they provide their specific services.

The Trust periodically provides trainings and scholarships to overcome market barriers to workforce development. Specific trainings for installers and building contractors will be offered as appropriate during the Triennial Plan V period when new technologies come on the market or as the Trust becomes aware of evolving technologies or building energy codes. Workforce development is discussed in more detail in Section 7.

Measures Promoted

The public information and outreach efforts fund educational resources and in-person or online workshops that present and discuss the benefits of energy efficiency and options for pursuing energy efficiency or distributed renewable and alternative energy systems. The activities funded range from organizing or participating in workshops and conferences, to creating and distributing written materials, to developing web tools or digital resources.

Incentives and Financial Considerations

Financial incentives are typically not a feature of the Trust's public information and outreach efforts. However, the Trust has offered scholarships and training discounts to energy efficiency contractors and facility managers participating in training programs. The Trust will consider the use of scholarships to promote its objectives where appropriate and as budgets allow during the Triennial Plan V period. The Trust has also provided grants to educational and training organizations for heat pump equipment and materials in order to outfit training classrooms with up-to-date equipment.

While the majority of the Trust's public information and outreach efforts—including web design and production—are managed by staff, the Trust may use a competitive bidding or selection process to supplement in-house capacity if necessary.

Marketing and Outreach

The Trust will continue to build on the growing awareness of energy conservation, management of energy costs through energy conservation, and Efficiency Maine programs. The Trust will communicate with various Maine audiences through press releases, digital, print, and video case studies; website and digital technologies; social media; blog posts, seminars/webinars, symposia, and forums; workshops and trainings; print and television media; and other vehicles that make the Trust's programs and information accessible to Mainers statewide. As the Trust's responsibilities expand to address a wider range of solutions for Maine's energy consumers, the Trust will update the webpage and make it more user friendly and efficient to navigate.

The Trust's marketing efforts are largely focused on educating potential customers about a specific energy-efficient technology or energy-saving solution promoted through a specific program. However, the Trust may from time to time undertake general energy efficiency marketing campaigns or educational initiatives the scope of which extends beyond any one of the channel-specific programs. The Trust aims to do more public service announcement initiatives, as it did successfully in the last Triennial Plan period with heat pump user tips and introductions to electric vehicles. Increasingly, the Trust will employ radio, short videos, and social media as among the most efficient and effective ways to reach Maine consumers.

Quality Assurance/Quality Control

The Trust will consider the following measurement tools when gauging the success of its public information and outreach efforts:

- Web metrics;
- Social media followers and participation;
- Survey instruments;
- Frequently asked questions and inquiries directed toward the Trust's website and toll-free number;
- Course and workshop participation rates and participant assessments;
- Program participation rates; and
- Frequency of energy efficiency and customer success stories in the media.

7. Other Initiatives

During the Triennial Plan V period, the Trust will spearhead the implementation of several miscellaneous initiatives, some of which may leverage or supplement the Trust's existing programs, and others that are stand-alone initiatives with unique characteristics. The Trust also plans to engage in various State, regional, and national forums and initiatives that advance the purposes for which the Trust was established. A brief description of these initiatives and forums follows.

7.1 Implement Prescribed Initiatives

7.1.1 Non-Wires Alternatives

In 2019, the Legislature enacted LD 1181, An Act To Reduce Electricity Costs through Nonwires Alternatives, amending the process for planning and approving investments in the electric utilities' transmission and distribution system. The new law incorporates a formal, independent process for the consideration of NWAs.¹⁰⁵ The law established an NWA coordinator position within the Office of the Public Advocate to review annual plans and individual project proposals. In these reviews, the law requires the Trust to analyze the potential for cost-effective NWA resources, such as energy efficiency, distributed generation, load management, or energy storage, located on the customer's side of the meter (also called "behind the meter" or BTM). It assigns the Trust the role of developing and delivering all customer-sited NWA resources that are determined to be more cost-effective than the proposed transmission and distribution system investments and allows the utilities to contract directly with the Trust for those resources. In the event of a cost-effective NWA project, the Trust would need to amend the findings of MACE under this plan to include the budget for the new project.¹⁰⁶

The Trust contracts with a team of experts to assist in carrying out its new duties under the act.

7.1.2 Agricultural Fair Assistance Program

In 2019, the Legislature enacted LD 1186, An Act To Address Electricity Costs of Agricultural Fairs, requiring the Trust to administer a new program to help agricultural fairs reduce their electricity demand charges. The new law established the Agricultural Fair Assistance Program (AFAP) Fund to support this program. The Public Utilities Commission assesses each electric utility an amount necessary to collect the total value of demand charges paid by the roughly 25 agricultural fairs in the State during the prior year and transfers this amount to the AFAP Fund.¹⁰⁷ The law sunsets at the end of June 2024.

Agricultural fairs only operate during a few days or weeks of the year. While their electricity usage can be significant during this specific timeframe, it is generally negligible for the remainder of the year. Classified as commercial and industrial electricity customers over a certain size, they pay demand charges based on the maximum amount of electricity used during a given interval during the billing period, typically the 15-minute period during which their demand is highest. Though this can represent a financial burden for the fairs, it is intended to ensure that utilities can adequately cover the costs associated with transmission and distribution infrastructure. Even though the impact of the fairs is limited over the course of the year, the grid must still be sized to meet system peak conditions. Indeed, in examining potential rate design for agricultural fairs and other customers with seasonal, limited-duration, demand peaks, the Commission determined that it could not recommend any changes to

¹⁰⁵ 35-A MRS §3131-3134.

¹⁰⁶ 35-A MRS §10104(4)(G) (as enacted by Public Law, Chapter 298, §21 [2019]).

¹⁰⁷ 35-A MRS §10124.

electric utility rate structures as they apply to these entities, since doing so would require a subsidy from other ratepayers.¹⁰⁸

Beyond the demand charge challenge, several market barriers prevent agricultural fairs from investing in energy cost-reduction measures. These include the upfront cost of the improvements, lack of information, and lack of technical expertise. Additionally, there is a “split incentive” at play; the powered equipment is generally owned and operated by the vendors and exhibitors, while the agricultural fairs pay the electricity bills. The vendors and exhibitors therefore do not have a strong incentive to invest in energy-efficient equipment, onsite generation, or load shifting.

In FY2020, the Trust assessed the opportunity for electricity cost-reduction measures at agricultural fairs by conducting a customer survey, performing site visits, and analyzing utility data. This review identified considerable electricity usage from plug loads, including amusement rides, cooking equipment, refrigeration, ice machines, vending machines, water heaters, and fans. During evening hours, lighting loads were also significant. As expected, most electricity usage spiked during the fair’s active period, and fell to close to zero when the fair was not active.

The Trust’s C&I Prescriptive Initiatives offer incentives on energy-efficient products that could reduce electricity costs at fairs, including LED lights; high-efficiency HVAC equipment; high-efficiency compressed air systems and components; and certain agricultural equipment. However, the Trust determined that fairs do not have sufficient run-hours throughout a full year for these measures to satisfy the cost-effectiveness test for these incentives. Furthermore, this type of equipment is generally owned and operated by the vendors and exhibitors, not the agricultural fairs themselves.

The Trust has determined that the opportunity for onsite generation measures and support infrastructure (including, for example, portable generators, solar arrays, expanded electrical connection points) and operational changes (such as charging vendors and exhibitors for electricity usage) has a higher likelihood of helping the fairs address their electricity costs. At the same time, some of the C&I Prescriptive Initiatives noted above could still be helpful in certain situations. The Trust is securing a third-party contractor to conduct a more comprehensive assessment of this opportunity and generate specific program recommendations. Given that the AFAP is not subject to the Trust’s standard cost-effectiveness requirement for Electric Efficiency Procurement-funded programs,¹⁰⁹ the Trust has greater latitude in the types of measure and strategies it can promote through this channel than through most of its other programs. The program will work directly with the industry’s trade organization—the Maine Association of Agricultural Fairs—on all marketing and outreach activities associated with its incentive offerings.

Maine statute requires that the Trust submit a report on the AFAP to the Legislature’s Energy, Utilities and Technology Committee no later than January 15, 2022, and January 15, 2024. The report must include information on program implementation; total deposits into and expenditures from the AFAP

¹⁰⁸ Maine Public Utilities Commission, *Report Related to Electricity Costs of Agricultural Fairs*, presented to the Joint Standing Committee on Energy, Utilities, and Technology, December 1, 2019.

¹⁰⁹ 35-A MRS §10124(2).

Fund; program activity; and reductions in peak electricity demand, energy consumption, and electricity costs achieved.¹¹⁰

7.1.3 Thermal Energy Investment Program

In 2021, the Legislature enacted LD 597, An Act To Establish the Thermal Energy Investment Program, to “strengthen the State’s forest products industry and lower energy costs by increasing the efficient use of thermal energy production.”¹¹¹ The law requires the Trust to administer a new program to provide incentives and loans to businesses, municipalities, educational institutions, and nonprofit entities for the installation of new thermal energy-derived projects (i.e., projects that produce thermal energy and thermal renewable energy credits, such as wood-fueled combined heat and power or the conversion of fossil fuel-fired boilers to wood-fueled boilers or boilers using biofuels derived from wood.) The law established the Thermal Energy Investment Fund to support this program; it will leverage revenue from electricity suppliers that elect to meet their thermal renewable energy portfolio standard obligations through alternative compliance payments.¹¹² This provision requires the PUC to conduct a rulemaking, and the level of revenue will depend on market forces. The Trust’s budget for this program is therefore unknown at this time. The law also requires the Trust to develop activities promoting the Thermal Energy Investment Program in consultation with the Finance Authority of Maine (FAME), and to consult with FAME in its decisions to award incentives and loans when appropriate. In FY2022, the Trust will work with FAME to design this program with the goal of launching it during the Triennial Plan V period. The Trust anticipates that it will fold the program into its existing C&I Custom Program offerings.

7.1.4 School Decarbonization Program

Prior to 2021, the statute required the Trust to administer the School Energy Savings Program, providing incentives and technical support for energy audits, as well as incentives for energy-saving measures at kindergarten to grade 12 schools in Maine. In 2021, the Legislature enacted LD 815, An Act To Support School Decarbonization, expanding the scope of this program to provide a more comprehensive technical and financial support to help kindergarten to grade 12 schools become carbon neutral.¹¹³ The bill renamed the initiative the School Decarbonization Program, and allowed the Trust to facilitate access to and cost-share a variety of “professional services” beyond energy audits, including technical support, financing, and legal services. During the Triennial Plan V period, the Trust will assign a staff member to serve as the primary point of contact for schools seeking this type of assistance. This person will assess each school’s inquiry on a case-by-case basis, directing them to the Trust’s existing program offerings where appropriate and facilitating access to professional services as funds allow.

7.1.5 Commercial Property Assessed Clean Energy (C-PACE) Program

C-PACE is a financing model that enables a commercial property owner to place a special assessment on their property to finance energy efficiency upgrades and renewable energy installations. This

¹¹⁰ 35-A MRS §10124(4).

¹¹¹ 35-A MRS §10128.

¹¹² 35-A MRS §3210(9)(C).

¹¹³ Public Law, Chapter 152, 130th Maine State Legislature, First Special Session, LD 815, An Act To Support School Decarbonization.

assessment is collected through the municipal property tax bill and runs with the property. In 2021, the Legislature enacted LD 340, An Act To Allow the Establishment of Commercial Property Assessed Clean Energy Programs, enabling municipalities in Maine to establish this type of offering in their jurisdictions through passage of a local ordinance.¹¹⁴ It allows for a participating municipality to administer the C-PACE programs on its own or contract with the Trust to administer them on the municipality's behalf. It allows a C-PACE loan to cover up to 100% of the cost of an energy savings improvement, including audits, project development, and application fees. The Trust will conduct a rulemaking in FY2022 to establish the terms and conditions under which municipalities and commercial property owners may participate in a commercial PACE program, which may include issues relating to program design, implementation and administration, cost sharing, collection of C-PACE assessments, and recording of liens. The Trust plans to launch this financing offering early in the Triennial Plan V period.

7.1.6 Maine Clean Energy and Sustainability Accelerator

In 2021, the Legislature enacted LD 1659, An Act To Create the Maine Clean Energy and Sustainability Accelerator, establishing a dedicated, specialized finance program at the Trust designed to drive private capital into market gaps for goods and services producing low or zero GHG emissions.¹¹⁵ This program would essentially serve as a “green bank” for Maine, a financing model used in Connecticut and several other states. In Maine, qualifying projects would include renewable energy generation, grid investments (including storage), energy efficiency, industrial decarbonization, and clean transportation (including vehicles and fueling/charging infrastructure.) The bill also sets forth a number of requirements, including that the program (1) maximize the reduction of GHGs for every dollar deployed, (2) ensure that 40% of its investment activity is directed to serve vulnerable communities, and (3) ensure that workers employed by contractors and subcontractors in construction work on projects over \$100,000 in total cost are paid prevailing wages.

Though there is no funding source to support this initiative as of the writing of this plan, one may become available during the Triennial Plan V period; pending federal legislation would provide seed capital to state-based loan programs to accelerate financing of climate mitigation and resiliency projects.¹¹⁶ The Trust stands ready to administer such a program should the opportunity arise.

7.2 Track and Participate in State Energy Initiatives

Within Maine, there are a multitude of forums and initiatives that could impact the Trust's programs. The Trust makes a practice of engaging in these forums and initiatives with an eye to maximizing the installation and use of measures that deliver cost-effective energy efficiency or reduce GHG emissions, consistent with the Efficiency Maine Trust Act.

¹¹⁴ Public Law, Chapter 142, 130th Maine State Legislature, First Special Session, LD 340, An Act To Allow the Establishment of Commercial Property Assessed Clean Energy Programs.

¹¹⁵ Public Law, Chapter 358, 130th Maine State Legislature, First Special Session, LD 1659, An Act To Create the Maine Clean Energy and Sustainability Accelerator.

¹¹⁶ 117th Congress, 1st Session, HR 806, Clean Energy and Sustainability Accelerator Act.

7.2.1 Legislature

The Trust plans to remain engaged at public hearings and work sessions of the Maine Legislature to fulfill its duty as “a champion for funding cost-effective energy and energy efficiency programs.”¹¹⁷ The Trust staff will provide information, analysis, and testimony on all matters directly relating to the Trust and its programs. The staff may also engage in legislative discussions that touch on the issues of energy conservation, customer-sited alternative energy systems, and GHG emissions reduction as well as on the administration of publicly funded programs.

7.2.2 Governor’s Energy Office

The Trust works in close collaboration with the Governor’s Energy Office (GEO). Together, these two organizations provide data and activity reports to the DOE, Maine’s federal delegation, ISO New England, and numerous non-profit and academic initiatives seeking energy data from Maine. Trust staff regularly confer with GEO about grant opportunities and the implications of federal, regional, and State policies.

The Trust provides input to GEO’s preparation of the comprehensive state energy plan, which is due to be submitted to the Legislature every two years. The Trust also takes that plan into consideration when developing its Triennial Plan.

The Trust will continue to provide GEO with information about Trust programs for reporting to DOE and other national and regional information systems.

7.2.3 MaineHousing

The Trust will also coordinate with the Maine State Housing Authority (MaineHousing). Annually, MaineHousing updates its annual plan for the DOE Weatherization Assistance Program, the Low-Income Home Energy Assistance Program (LIHEAP), and the Central Heating Improvement Program. Each year, as part of its update process, MaineHousing briefs the Trust’s Board, at a public meeting, on the elements of the next year’s weatherization plans. The Trust has the opportunity to ask questions and provide input regarding lessons learned, best practices, and opportunities to ensure that similar initiatives are complementary and not duplicative.

The Trust will also continue collaborating with MaineHousing on programs to deliver heat pumps to low-income Mainers. With the passage of LD 1766, An Act To Transform Maine's Heat Pump Market To Advance Economic Security and Climate Objectives, MaineHousing agreed to allocate a portion of its federal LIHEAP funds for heat pump installations in support of the State’s new 100,000 heat pump goal.¹¹⁸ After conferring with the Trust about its existing equipment criteria, installation requirements, and inspection training protocols, MaineHousing incorporated into its new heat pump program many of the Trust’s program design elements. As with weatherization initiatives, the two organizations will work to provide programs that are complementary and not duplicative.

¹¹⁷ 35-A MRS §10104(2)(B).

¹¹⁸ 35-A MRS §10104(8).

7.2.4 Maine Public Utilities Commission

The Trust staff is active in proceedings at the Maine Public Utilities Commission. The Trust staff files and presents all necessary testimony, evidence, comments, briefs, and exceptions related to the development, review, and approval of the Trust’s Triennial Plan, Annual Updates (to the Triennial Plan), and related dockets.

In addition to the Triennial Plan dockets, the Trust staff engages at the Commission in other proceedings that have a direct or indirect impact on the Trust’s programs. Certain other matters pending before the Commission may prompt the Trust to get engaged where these matters relate to the Trust’s programs and purposes. Cases that involve the establishment and use of “avoided costs” and other values used in the calculations of “benefits” and “costs” that determine “cost-effectiveness” are of direct interest to the Trust. Similarly, the Trust will monitor rulemakings that may impact its programs or procedures, and such rulemakings may prompt the Trust’s engagement. Finally, various reporting initiatives are likely to continue to require collaboration between the Trust and the Commission. As one example, the Trust works with the Commission to develop reports on the uses of funding from the Regional Greenhouse Gas Initiative.

7.2.5 Department of Environmental Protection

The Trust works with the Maine Department of Environmental Protection (DEP) where there is an intersection of environmental objectives and the kinds of programming and efficiency measures or “clean tech” that the Trust promotes. For example, in the past the Trust has talked with DEP about how the Trust’s program designs could be used to reduce emissions from biomass combustion and mitigate the risk of leaking fuel tanks.

While no specific initiatives have been identified for collaboration during the next Triennial Plan period, the Trust expects to continue working with DEP where the Trust’s programs, data, or analysis may be of assistance in helping the DEP advance its mission. For example, the Trust will assist DEP, if asked, in implementing legislation establishing minimum energy efficiency standards for appliances, and also in its preparation of a biannual status report to the Legislature on progress toward Maine’s statutory carbon reduction goals.¹¹⁹ Additionally, the Trust and DEP, together with the Commission, will continue their practice of preparing an annual report for the Legislature on the activities and results of RGGI in Maine.

¹¹⁹See, 38 MRS §576-A: “By January 1, 2030, the State shall reduce gross annual greenhouse gas emissions to at least 45% below the 1990 gross annual greenhouse gas emissions level. ... By January 1, 2050, the State shall reduce gross annual greenhouse gas emissions to at least 80% below the 1990 gross annual greenhouse gas emissions level.” See also, 38 MRS §578, “... every 2 years ... the department shall evaluate the State’s progress toward meeting the reduction goals specified in section 576, review the cost-effectiveness of the actions taken toward meeting the reduction goals and shall amend the action plan as necessary to ensure that the State can meet the reduction goals. The department shall submit a report of its evaluation to the joint standing committee of the Legislature having jurisdiction over natural resources matters and the joint standing committee of the Legislature having jurisdiction over utilities and energy matters by January 1, 2016 and by that date every 2 years thereafter.”

7.2.6 Lead by Example

The Trust will participate in implementing the Governor’s Executive Order 13, FY 19/20, An Order for State Agencies to Lead by Example through Energy Efficiency, Renewable Energy and Sustainability Measures.¹²⁰ The Order directs State agencies to meet or exceed the State’s renewable energy and GHG reduction targets. The Trust will serve on the Sustainability Leadership Committee, working with sustainability coordinators from GEO, the Governor’s Office of Policy and Innovation for the Future, DEP, the Department of Administrative and Financial Services, and the Department of Transportation to lead development and implementation of plans, seek consistency and cost efficiencies where appropriate, and track progress.

The Trust will also coordinate with the Bureau of General Services and State facilities managers to create an initiative to promote the increased installation and use of clean, cost-effective energy measures at State properties. Per a December 29, 2020 Memorandum of Understanding between the Trust and the Office of the Attorney General for the State of Maine, the Trust received approximately \$3.7 million in Volkswagen settlement funds to support this initiative.

7.2.7 Maine Climate Council

In late FY2019, the Legislature passed a bill establishing the Maine Climate Council to develop a four-year climate action plan that would put Maine on a trajectory to reduce emissions by 45% by 2030 and at least 80% by 2050.¹²¹ The Council and its six Working Groups comprise scientists, industry leaders, local and state officials, and engaged citizens. The Trust is an ex-officio member of the Council, and the Trust’s executive director serves as co-chair for the Buildings, Infrastructure, and Housing Working Group. Each Working Group is charged with developing, analyzing, and recommending strategies to inform the Council’s plan to mitigate emissions and support resilience in Maine’s various sectors.

From the fall of 2019 through May 2020, the Buildings, Infrastructure, and Housing Working Group convened once a month to gather information and identify strategies that would both reduce emissions and benefit Maine’s people, businesses, and institutions. The Working Group reviewed more than 40 recommendations and generated a final report to the Maine Climate Council identifying six broad strategies to help the State meet its carbon reduction targets. The report enumerated a range of benefits, such as reducing energy costs, enhancing energy independence, improving health and productivity, making the grid more reliable, keeping businesses competitive in a global marketplace, and fostering jobs and local entrepreneurs. The Working Group also gathered information about costs that would be associated with the recommendations, discussed ways these costs could be mitigated, and discussed equity impacts on vulnerable communities. The Trust was also actively involved in the Maine Climate Council’s Energy Working Group and the Transportation Working Group.

¹²⁰ Maine Executive Order No. 13, FY 19/20, An Order for State Agencies to Lead by Example Through Energy Efficiency, Renewable Energy and Sustainability Measures, November 26, 2019.

¹²¹ Public Law, Chapter 476, LD 1679, 129th Maine State Legislature, An Act To Promote Clean Energy Jobs and to Establish the Maine Climate Council.

The Council compiled the various recommendations from of all six Working Groups and released *Maine Won't Wait: A Four-Year Plan for Climate Action* in December 2020. The plan identifies the Trust as the “lead agency” on several of the plan’s key strategies. Where it has clear authority and funding to do so, the Trust has incorporated these strategies (and targets) into its programs for Triennial Plan V. The Trust will update the Triennial Plan as new directives or funding streams emerge through the legislative process or other pathways.

In addition to increasing clean, renewable electricity supply and improving energy efficiency, a key strategy identified in the climate action plan is that of “beneficial electrification.” This approach to GHG mitigation involves transitioning energy end uses from fossil fuels to cleaner electricity. As the trend toward a decarbonized electricity supply continues, supporting more end uses with electricity means powering more of Maine’s energy needs with renewables. Maine has emerged as a national leader in the beneficial electrification of space and water heating as a result of the Trust’s heat pump and heat pump water heater incentive programs. The Trust’s Electric Vehicle Initiatives are also encouraging beneficial electrification in the transportation sector. As discussed throughout this Triennial Plan, the Trust will continue to promote beneficial electrification through several of its programs where appropriate.

Another strategy identified in the climate action plan is for Maine to create an Industrial Task Force through which industry and stakeholders can collaborate to study and pilot innovations and incentives to reduce carbon emissions from Maine’s industrial processes. The Trust worked with GEO and DEP to launch the Industrial Task Force in 2021 and will continue to convene the group throughout the Triennial Plan V period. The Trust’s executive director will also continue to serve as co-chair of the Maine Climate Council’s Buildings, Infrastructure, and Housing Working Group during the Triennial Plan V period, convening at least two meetings per year to review implementation progress, suggest legislation, make updated recommendations, and foster ongoing research and discussion where appropriate.

The climate action plan also lays out a strategy for advancing the design and construction of new buildings, acknowledging that the most cost-effective time to improve a new building’s energy efficiency is during the initial design and construction. It calls for the development of a long-term plan to phase in modern, energy efficiency building codes to reach net-zero carbon emissions for new construction in Maine by 2035. It also calls for enhanced training on building codes and expanded programs to support ongoing education of contractors and code-enforcement officials. The Trust will play a role in both of these initiatives during the Triennial Plan V period (see *Codes and Standards* below for more detail.)

7.2.8 Arrearage Management Program (AMP)

AMP initiatives are required of each electric utility by a Maine law enacted in April 2014.¹²² The AMP legislation was intended to help reduce the number of low-income customers in arrears on their electric bills and, therefore, lower the “bad debt” burden to ratepayers that is associated with customers who fail to pay their utility bills. Customers who agree to join the program are enrolled in a payment plan

¹²² Public Law, Chapter 556, 126th Maine State Legislature, Second Regular Session, LD 1825, An Act To Assist Electric Utility Ratepayers.

with the utilities and are contacted by the Trust with information and analysis about their energy usage, energy-saving options, and a free offer for a DIY electricity-use-reduction kit. The Trust will continue to collaborate with the electric utilities, the OPA, and the Commission in managing and evaluating this program during the Triennial Plan V period.

7.2.9 Workforce Development

The Trust monitors workforce capacity and skillsets as part of its planning and implementation of efficiency programs. Where the Trust identifies specific skills needed for designing, installing, and maintaining high-efficiency equipment, it may support targeted training and other means of promoting quality assurance.

During the Triennial Plan IV period, the Trust focused its workforce development efforts on the heat pump installer community. Staff developed the Efficiency Maine Annual Heat Pump Basics Module to supplement qualifying third-party heat pump installation trainings (usually offered by manufacturers and community colleges). This module is a video that highlights best practices, reviews system siting and selection considerations, and dispels common myths. Additionally, the Trust offered a scholarship (50% up to \$500) to support heat pump installers' receiving training through any heat pump training program at a community college or at other training providers, such as the Maine Energy Marketers Association. The Trust has also provided grants to educational and training organizations for heat pump equipment and materials in order to outfit training classrooms with up-to-date equipment.

The Trust has also sponsored trainings in commercial building energy management and lighting, supported classes for facility managers, hosted webinars for contractors to learn about the latest technology developments, and facilitated continuing education credits for real estate agents or other trade professionals on issues related to energy conservation. Specific trainings for installers and building contractors will be offered as appropriate during the Triennial Plan V period when new technologies come on the market or as the Trust becomes aware of evolving technologies or building energy codes. These specific trainings complement annual trainings provided by the Trust for trade allies on programs, incentives, and incentivized measures. The Trust will engage with various state agencies to ensure that new efforts for workforce development prioritize weatherization and other "clean tech" jobs.¹²³

7.2.10 Codes and Standards

State and local building codes and equipment standards are occasionally the subject of policy change. When this happens, it can impact energy efficiency programs in a variety of ways. For example, in 2019 the Maine Legislature reformed Maine's regulatory framework for building codes. The reforms included establishing a requirement that the Maine Uniform Building and Energy Code (MUBEC) be updated and made effective in every municipality across the State. The Legislature further appointed the Trust's executive director to serve, *ex officio*, on the MUBEC Technical Board and mandated that the Board establish a "stretch code" that municipalities may elect to adopt. With the arrival of these new codes,

¹²³ The State's plan for use of the ARPA funds includes more than \$250 million that is earmarked to help with various elements of workforce development and business support. (See: Office of the Governor, [The Maine Jobs & Recovery Plan: Investing in Maine's Families, Businesses, Communities and Future](#), May 4, 2021.)

the Trust has provided resources from its public information and outreach budget and its contacts across Maine’s network of builders, electricians, plumbers, insulation, and HVAC technicians. During the Triennial Plan V period, the Trust will continue to deliver a series of trainings to contractors, vendors, architects and engineers, and code enforcement officers on the new codes and techniques to improve compliance.

7.3 Track and Participate in Regional and National Initiatives

The Efficiency Maine Trust Act provides that: “The trust shall monitor efficiency planning and program development activities in the region and around the country ...” and also that “The trust may coordinate its efforts under this section with similar efforts in other states in the northeast region...”¹²⁴

7.3.1 ISO-New England

The Independent System Operator for New England operates wholesale markets that serve New England’s electricity customers. Among these is the Forward Capacity Market into which electricity generators, efficiency program administrators, and others may bid to supply qualifying “capacity” to serve the New England grid. The Trust is a participant in this market, aggregating the summer-peak electricity savings from the many efficiency measures supported through its programs and bidding those savings resources into the FCM auction.

The Trust’s participation in the FCM entails collecting and supplying data, making forecasts of future capacity savings, delivering certification of measurement and verification protocols, providing financial assurance, and reporting to ISO-NE as required in the FCM rules. The Trust also occasionally participates in planning and policymaking discussions at ISO-NE. The Trust will continue these activities during the Triennial Plan V period.

7.3.2 Energy Forums

From time to time, the Trust will engage in regional and national forums related to energy. Illustrative forums include DOE conferences and gatherings of ACEEE, the Northeast Energy Efficiency Partnership, and the Consortium for Energy Efficiency. The Trust’s participation typically includes sharing data and analysis about efficiency programs or engaging in discussions about emerging issues in state-delivered energy programs. In recent years, Maine’s leadership in beneficial electrification (e.g., transitioning to high-performance heat pump technology) has been recognized nationally, resulting in numerous requests for the Trust to participate in discussions about program design, lessons learned, and best practices. The Trust staff generally participates in these forums by means of conference calls and online webinars. On occasion, where there may be opportunities for the Trust to raise grant funds for Trust programs or to gain concrete insights into specific technical or administrative matters of direct relevance to Trust programs, a member of the staff will travel to a workshop or conference.

¹²⁴ 35-A MRS §10110(2)(D) and (I).

7.3.3 Grid Modernization

Many states have recently found themselves undertaking proceedings to discuss major reforms around electric utility planning, power production, and operation of the grid. As a shorthand, these initiatives are sometimes referred to as discussions about “grid modernization.” With the accelerating evolution in “smart” energy devices and various means of communicating with those devices (e.g., via the internet), it is becoming technically and economically possible to communicate with and control end-use energy equipment, and new possibilities to improve efficiency are emerging. Grid operators and grid customers are developing the ability to monitor and manage electricity usage (load) in real time. Programs, such as those run by the Trust, are increasingly engaged in promoting the installation and use of customer-sited equipment and systems that can take advantage of the emerging capacity to cost-effectively provide real-time monitoring and both passive and active demand management. During the Triennial Plan V period, the Trust will continue to monitor developments in “grid modernization” in other states and will engage in policy discussions and Commission proceedings on the topic when the opportunity presents itself.