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Administration

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# Northeast Regional Energy Efficiency Database (REED), Program and Measure Data: Report on Results of Investigations (Fiscal Year 2019)

May 2020



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## Northeast Regional Energy Efficiency Database (REED), Program and Measure Data: Report on Results of Investigations

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Energy efficiency (EE) incentives offered by electric and natural gas utilities and state EE organizations are an important component of evolving state and local EE policies. To understand how these incentives affect energy consumption and technology choices in buildings, the U.S. Energy Information Administration (EIA) incorporates sub-federal EE incentives for a variety of end-use technologies into its National Energy Modeling System (NEMS) [Residential Demand Module \(RDM\)](#) and [Commercial Demand Module \(CDM\)](#). The NEMS RDM and CDM subtract incentives (equipment subsidies or rebates) from installed equipment costs for high-efficiency equipment—namely, those [equipment or appliances](#) that meet or exceed ENERGY STAR® specifications—in RDM and CDM technology choice menus. This approach lowers the relative cost of efficiency adoption when consumers choose between equipment that meets federal minimum EE standards and equipment that is more efficient. EIA and others use NEMS to produce long-term projections of energy use within the United States.

To enhance its representation of state and utility EE programs in NEMS, EIA contracted with the Northeast Energy Efficiency Partnerships (NEEP) to characterize these programs in the Northeast in fiscal year 2019 (FY 2019). This contract followed a similar FY 2018 contract. The project had two components. First, NEEP updated its Regional Energy Efficiency Database (REED) to include 2017 incentive data for 10 states in census divisions 1 (New England), 2 (Middle Atlantic), and 5 (South Atlantic). REED provides information on annual and lifetime energy savings, peak demand savings, program expenditures, the cost of saved energy, and program funding sources, among other metrics. During this process, NEEP added two new reports containing the complete REED program-level dataset, added descriptions to report views, added previously missing labels to the bars, and added a feature to auto-update the default year annually as new data are uploaded. The 2017 REED update informed NEEP's [2019 Energy Efficiency Snapshot](#) and four [REED Rendering](#) blog posts.

Second, NEEP collected detailed measure-level information on EE program incentives from selected utilities. In this report, measures refer to the specific technologies or projects supported or implemented to reduce energy consumption. This report defines measure-level data as fine-grained information on incentives for individual technologies or projects. Incentive levels were listed by technology, and the report focuses on utilities and state EE organizations in states that were not featured in NEEP's FY 2018 report: New York (Central Hudson), Virginia (Dominion), New Jersey (Clean Energy and South Jersey Gas), West Virginia, and Pennsylvania. NEEP also summarized energy efficiency plans in Delaware, the District of Columbia, Pennsylvania, New York, and Maine and researched fuel-switching policies in the Northeast region.

Finally, NEEP engaged in strategic planning for REED's future. A draft *REED Strategic Vision* establishes a path forward for REED to adapt to a changing energy efficiency landscape, incorporating feedback from a survey of REED users and input from EIA staff. NEEP held a REED stakeholder meeting on November 7, 2019, to further discuss how REED can continue to meet stakeholder EE data needs.

The contract report is to be cited as a report by the Northeast Energy Efficiency Partnerships (NEEP) prepared for the U.S. Energy Information Administration (EIA).

## APPENDIX

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## MEMORANDUM

To: U.S. Energy Information Administration (EIA)  
Meera Fickling  
Erin Boedecker

From: Northeast Energy Efficiency Partnerships (NEEP)  
Cecily McChalicher  
Elizabeth Titus  
Samantha Caputo

Date: December 27, 2019

Re: NEEP REED Project – Final Report 2019

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The following is a final report of work completed for the REED and Metrics Project for the U.S. Energy Information Administration (EIA) under PNNL Contract 391977.

### REED Program Year 2017 Data Collection & Analysis

Northeast Energy Efficiency Partnerships (NEEP) completed program year 2017 data collection and quality control and uploaded the data to the Regional Energy Efficiency Database (REED), at the end of March 2019. NEEP also updated [the footnotes](#) to reflect the data collection process this year, including updating the state and regional emissions factors.

The following REED website functionality updates were made:

1. Added two new reports that have the complete REED program-level data set. Both reports are labeled with All Data.
2. Added descriptions to report views as needed.
3. Previously missing labels were added to the bars.
4. Updated the default year that the reports open to, and added a feature to auto-update the default year each year as new data is uploaded.

NEEP provided a spreadsheet of the full program year 2017 REED data to EIA.

NEEP also published the following [REED Rendering](#) blogs<sup>1</sup>:

1. [REED Rendering #11](#): Northeast Region Wins Energy Efficiency's Best in Show
2. [REED Rendering #12](#): Transforming Markets
3. [REED Rendering #13](#): The Data is In

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<sup>1</sup> "These blog posts drew on information in REED. However, they were not funded by EIA, and the views expressed in them do not necessarily reflect the views of EIA or the U.S. Government."



#### 4. [REED Rendering #14](#): Capturing Evolving Energy Efficiency Programs in REED

NEEP developed the [2019 Energy Efficiency Snapshot](#), which uses REED data to showcase *Energy Efficiency by the Numbers in the Northeast and Mid-Atlantic States*. The snapshot provides various analyses of data from REED, including cumulative energy savings and expenditures, as well as a breakdown of savings by program type. Policy highlights are also included that provide background context for the energy savings. NEEP uses the analysis from the snapshot in various presentations and reports.

#### **REED Database Hosting Update**

REED's original database host, [Peregrine Energy Group](#), ended their database hosting services on June 30, 2019. NEEP transferred the REED database hosting services to [OptiMiser](#), the company that Peregrine Energy Group arranged to service all of its database hosting services. For the long-run, NEEP will consider other hosts that can support potential updates to REED with greater functionality (e.g., data analysis and report options) to meet changing state needs and metrics for energy efficiency programs (see attached draft, *REED Strategic Vision*).

#### **Metrics-Related Work: State Plan Summaries**

NEEP staff reviewed and prepared brief summaries of the state plans listed below to provide a primarily qualitative look at energy efficiency targets and plans. NEEP summarized other state plans in the NEEP region in last year's report for EIA. We focused on the following states because they were not looked at last year.

1. **Delaware:**
  - Delaware Three-Year Program Plan 2017-2019, Energy Efficiency and Conservation Portfolio – Delmarva Power
  - Delaware Sustainable Energy Utility: Program Portfolio Operating Plan
2. **District of Columbia:** Clean Energy DC: The District of Columbia Climate and Energy Plan
3. **Pennsylvania:**
  - PPL Electric Utilities Energy Efficiency and Conservation (EE&C) Plan: Act 129, Phase III: Summary of Plan Targets
  - PECO Program Years 2016 – 2020 Act 129 Energy Efficiency and Conservation Plan
4. **New York:** New York Utilities Report Regarding Energy Efficiency Budgets and Targets, Collaboration, Heat Pump Technology and Low- and Moderate-Income Customers and Requests for Approval
5. **Maine:** Efficiency Maine Trust Energy Efficiency Triennial Plan IV (reflecting changes in the Plan recently approved by the Maine Public Utilities Commission)

#### **Metrics-Related Work: Energy Efficiency Measure Incentives**

NEEP researched and provided energy efficiency (EE) incentives information (minimum dollar amount, maximum dollar amount, and notes) in an Excel file to EIA for the following states/program administrators: New York (Central Hudson), Virginia (Dominion), New Jersey (Clean Energy and South Jersey Gas), West Virginia, and Pennsylvania.



## REED User Survey

To inform REED's future plans to stay current with Northeast stakeholder needs, NEEP sent an email with a link to a REED user survey to the 227 individuals who accessed REED from January 2018 to June 2019. The REED user survey was intended to help determine whether REED is meeting users' needs, and how REED may be changed to better serve current and potential users going forward. NEEP received 13 survey responses out of the 227 users who received a survey link (a 6% response rate).

The survey responses indicated that REED is a helpful resource to a variety of energy efficiency stakeholders, including consultants, analysts, program administrators, government officials, non-governmental organizations (NGOs), and educators. REED registration data tracking shows that most REED users are domestic, but some international groups also use it to inform energy efficiency program development. Respondents found REED's program level data particularly useful because it is more granular than most other energy efficiency data resources. While REED is considered a valuable resource by those who use it, it is used by a limited number of people (~13 users per month). The survey results are further summarized in the attached draft, *REED Strategic Vision*.

## Draft REED Strategic Vision

NEEP developed a draft *REED Strategic Vision* that incorporates feedback received from the REED user survey and input from EIA staff. The strategic vision establishes a path forward for REED as a regional information resource to meet the changing needs of state agencies and other energy efficiency stakeholders in the Northeast and mid-Atlantic states. The vision calls for increased scope, visibility, and interest. It also calls for REED to continue to be a comparative resource that informs state and regional energy planning, forecasting, and analyses. To achieve this, NEEP would like to modify and expand REED to provide energy savings data and associated metrics to address evolving state, local, and regional goals and programs for energy efficiency as a resource to meet energy, environmental, and economic goals (e.g., expanding utility efficiency programs from natural gas and electric to all fuels, measured in either million British thermal units (MMBtu) or CO<sub>2</sub>e (a greenhouse gas unit of measurement)).

The vision includes an analysis of REED's strengths, weaknesses, opportunities, and threats, and looks at performance indicators, marketing, and operations. NEEP would like to convene a REED Advisory Committee in 2020 to finalize the strategic vision and further map out REED's future (e.g., identifying new key metrics, mapping out pathways for changes, and exploring long-term home options for the REED data).

## REED Stakeholder Meeting

NEEP held a REED Stakeholder Meeting on November 7. Participants attended from six states in the Northeast and mid-Atlantic regions (Connecticut, Maryland, New Jersey, New York, Rhode Island and Vermont) and the District of Columbia. ISO-New England (ISO-NE), EIA, the Consortium for Energy Efficiency, and E4theFuture also attended the meeting.



This meeting was an opportunity to hear from states about their future needs and plans to develop, track, and report new energy efficiency data metrics related to changing and expanding policy goals. It was also an opportunity to discuss key challenges associated with these new data metrics, and determine their implications for REED's evolution. The meeting's goals were to:

- Identify leading trends in changing EE policy and program goals and metrics in Northeast and mid-Atlantic states
- Identify state challenges and solutions in tracking and reporting new EE policy and program metrics and associated changes in state data reporting practices
- Identify priorities to revise REED to stay relevant to inform state EE policy and program planning and analyses

The four main takeaways from the REED Stakeholder Meeting were:

1. Several states in the NEEP region either have, or are looking to incorporate, an all-fuels metric in EE program tracking and reporting. Both MMBtu and GHG (CO<sub>2</sub>e) are being used, or considered, as the best metric to capture all-fuels program impacts.
2. Currently, there is no consensus about the best methodology to calculate all-fuels program impacts. There may be an opportunity for NEEP to develop a consistent methodology for use in REED and continue to engage stakeholders in a REED forum.
3. There is a trend toward developing publicly accessible websites for visualizing EE data and energy data more broadly (for example, the [NY State Clean Energy Dashboard](#) and EIA's [State Energy Portal](#)). A REED Advisory Committee could help chart REED's path forward in this online energy data landscape.
4. NEEP should engage in more REED data analysis and reporting, whether through the REED Rendering blogs or other formats.

The REED Stakeholder Meeting agenda, notes, and summary are attached.

## Fuel Switching Research

NEEP developed the attached *Fuel-Switching in the NEEP Region* document that summarizes recent legislative bills signed into public law or in session (as of August 2019) that relate to fuel-switching. In addition, this document summarizes program administrator/utility three-year energy efficiency plans as they relate to fuel-switching. State carbon reduction goals are also summarized because these are a primary driver for fuel-switching policies and programs.

This research was completed to inform EIA about trends in the region that may have implications for EE programs. These trends were further discussed in the November REED Stakeholder meeting.





## Regional Energy Efficiency Organization (REEO) Data Research and Meeting

NEEP researched whether and how other Regional Energy Efficiency Organizations (REEOs) make energy efficiency program data publicly available. The findings were summarized in the attached *REEO Public Energy Efficiency Data* document and shared with EIA.

NEEP also held a September conference call with representatives from other REEOs and from EIA to discuss EE data collection and sharing practices. Representatives from [Midwest Energy Efficiency Alliance](#) (MEEA), [Southeast Energy Efficiency Alliance](#) (SEEA), [Southwest Energy Efficiency Project](#) (SWEEP), and EIA participated in the call. NEEP shared the attached *REEO Meeting Notes* with EIA after the call.

## Monitoring ISO-NE Forecast Development

NEEP shared with EIA meeting information and notes from ISO-NE's Energy Efficiency Forecast Working Group (EEFWG) meetings throughout the year. Materials are posted on the [EEFWG section](#) of the ISO website, and links to a selection of these materials are provided below.

NEEP's notes on the ISO-NE EEFWG meeting on December 12, 2019 and September 13, 2019 are also attached.

### ISO-NE Energy-Efficiency Forecast Working Group Materials:

1. [Updates to the 2020 Energy Efficiency Forecast Model Methodology](#) – October 18, 2019
2. [Estimating EE Peak Impacts](#) – October 18, 2019
3. [2020 Energy Efficiency Forecast Data Collection](#) – September 13, 2019
4. [Final 2019 Energy Efficiency Forecast](#) – May 1, 2019
5. [Review of Comments on the Draft 2019 Energy Efficiency Forecast](#) – March 8, 2019
6. [ISO-NE Response to Comments on the Draft 2019 Energy Efficiency Forecast](#) – March 8, 2019
7. [Draft 2019 Energy Efficiency Forecast](#) – February 8, 2019



## Appendix: State Summaries

### Delaware

#### Delaware Three-Year Program Plan 2017–2019

#### Energy Efficiency and Conservation Portfolio – Delmarva Power

##### 2017–2019 Plan Metrics

Incremental Electric Energy Savings	44,830 MWh / year
Incremental Electric Demand Savings	8.418 MW / year
Savings as a % of Retail Sales	0.22% in 2017 0.33% in 2018 0.41% in 2019
Total Program Portfolio Costs	\$17 million

Delaware energy efficiency programs are just getting started, and program offerings are limited. Delmarva, the state’s primary utility, developed a Delaware 2017–2019 program plan that includes two programs: the Residential Consumer Products Program and the OPOWER Behavior-Based Program.

The targeted state savings goal (incremental annual electric net energy savings as a percentage of sales forecast) for Delaware is 0.4% in 2017, 0.7% in 2018, and 1.0% in 2019. Delmarva Power plans to contribute to the statewide goal by achieving 0.22% savings as a percentage of its total retail sales in 2017, 0.33% in 2018 and 0.41% in 2019. Delmarva designed Delaware programs and estimated savings largely based on its experience with administering energy efficiency programs in Maryland.

Delmarva calculated cost effectiveness at the program level with the Total Resource Cost (TRC) Test, using assumptions provided in the Energy Efficiency Advisory Council-approved EM&V Regulations. The cost effectiveness is estimated at a benefit cost ratio (BCR) of 2.18 for the Residential Consumer Products Program and a BCR of 2.93 for the OPOWER Behavior-Based Program.

The total program costs for the portfolio plan is about \$17.6 million for the three-year period. Five percent of each program’s total budget is allocated to EM&V activities.

The Residential Consumer Products Program has three elements:



- **Residential Lighting:** Offers instant in-store discounts on certain ENERGY STAR-certified LED bulbs and fixtures at participating retailers. Light bulbs will also be distributed at food banks and other locations targeted to low-income customers.
- **Appliance Rebates:** Offers rebates for ENERGY STAR appliances including refrigerators, clothes washers, freezers, room air conditioners, and heat pump water heaters.
- **Appliance Recycling:** Removes old, inefficient refrigerators; freezers; dehumidifiers; and room air conditioners. Disposes of them in an environmentally responsible way. Residential customers will be offered an incentive to have a vendor pick up the appliance from their homes.

The OPOWER Behavior-Based Program regularly distributes personalized home energy reports that help customers compare their energy use with a peer group. The reports also include High Usage Alerts. This information is based on hourly data provided by advanced metering infrastructure (AMI) meters. In addition to the home energy reports, a web portal provides even more detail about customer energy use, allows customers to develop energy saving goals and track progress. This program will use the OPOWER platform that Delmarva is also using in Maryland.

### Delaware Sustainable Energy Utility

#### Program Portfolio Operating Plan – January 2017

The Delaware Sustainable Energy Utility (DE SEU) Program Portfolio Operating Plan addresses each energy program in the DE SEU portfolio. The following information is provided for each program: general operations and delivery approach, available measures and incentive structure, marketing strategy, and best practice protocols for savings estimation, EM&V, quality assurance, and quality control.

The DE SEU's programs are primarily funded through Regional Greenhouse Gas Initiative (RGGI) dollars, and therefore have a strong focus on reducing the state's carbon emissions, in addition to saving energy and money.

Residential Services:

- **Home Performance with ENERGY STAR® Program:** This program provides a rebate covering 75% of the cost, up to \$300, of a home energy audit. An Energize Delaware energy advisor or approved contractor performs the audit, installs energy saving measures, and identifies potential energy saving home improvements. Program rebates are available up to \$6,750 for the installation of recommended air sealing, insulation, and HVAC upgrades, and low-interest loans of up to \$25,000 are available to finance the improvements. ICF, a global consulting services company, is the program implementer. The person who performed the initial audit returns to the home to conduct post-installation diagnostic testing and estimate energy savings achieved by the improvements.
- **Green for Green Program:** Until September 1, 2015, the DE SEU provided rebates up to \$4,500 to homebuyers and nonprofit homebuilders (e.g., Habitat for Humanity) who built new homes upgraded to



meet or exceed national standards for energy efficiency, water conservation, indoor air quality, building materials, and other conservation-oriented features. This program has been suspended since September 2015 because of Delaware’s adoption of the 2012 International Energy Conservation Code (IECC), which increased savings baselines and reduced energy savings, affecting cost-effectiveness. Delaware may administer a redesigned version of this program in the future.

#### Commercial and Nonprofit Services:

- **Energize Delaware Revolving Loan Program:** This program encourages the purchase and installation of energy efficiency measures and customer-sited renewable generation by providing loans ranging from \$10,000 to \$1,000,000 for energy efficiency, renewable energy, and clean vehicle projects. The program is available to all credit-qualified public agencies, businesses, and nonprofits in Delaware. It is particularly focused on loans for clean vehicle projects, significant carbon reduction projects, and smaller energy efficiency upgrade projects. Participants must hire a professional to conduct an energy audit and recommend energy-saving facility upgrades.
- **Sustainable Investment Evaluation (SIE) Program:** This program covers 50% of the cost (up to \$150,000) of an investment-grade energy audit for public agencies and school districts. If the energy saving improvements recommended by the audit are made, the audit cost is rolled into project financing. Projects are then rolled into the Performance Contracting Program or Revolving Loan Program for financing. Customers may select and work with pre-qualified energy service companies (ESCOs) on the audit.
- **Energize Delaware Performance Contracting Program:** This program provides investment grade audits and financing to encourage participants to implement recommended efficiency improvements. The program is for public entities with annual utility bills greater than \$100,000 and with energy conservation opportunities that will produce savings that exceed the cost of project financing. Improvements are funded using long-term utility cost savings derived from the implementation of the projects. Pre-approved ESCOs deliver the program and offer guaranteed energy savings that cover annual payments for project costs, usually over contract terms of 15 to 20 years.
- **Energy Assessment Program for Nonprofits and Government Agencies:** This program funds energy assessments for nonresidential buildings operated by nonprofits or government agencies. The DE SEU partners with the University of Delaware’s Industrial Assessment Center (IAC) to deliver the program. Graduate students perform the audits. The program covers 90% of the audit cost and provides information on low-interest financing options.
- **Energize Delaware Loans for Communities in Need:** This program offers low-interest loans to finance low- and moderate-income housing projects, as well as energy efficiency projects, for community nonprofit organizations that serve low- and moderate-income families. It is a pilot program, and its design will evolve based on market conditions. DE SEU will provide 10% of the loan amount, and its



partner, the Delaware Community Investment Corporation is responsible for raising the remaining 90% of the loan capital from its member banks and other sources.

- **Delaware Pathways to Green Schools:** The DE SEU partners with the Delaware Valley Green Building Council to implement this program, which provides grants, one-on-one support, and expert resources to K-12 Delaware schools that are committed to becoming healthier, more sustainable, and more energy efficient. This program has three components:
  1. Creation of an Eco-Action team in the school that identifies and helps implement sustainability actions.
  2. School energy assessments.
  3. Benchmarking of energy and water use through the Portfolio Manager website.
- **Faith Efficiencies Partnership Program:** This program is run in partnership with Delaware Interfaith Power and Light. It provides a comprehensive energy audit, along with detailed repair and upgrade recommendations ranked by the investment rate of return. The DE SEU covers 75% of the cost of the audit and provides information on its low-interest financing options. The program is open to all small- and medium-sized houses of worship, regardless of religion.

#### Renewable Energy Services:

- **Solar Renewable Energy Credit (SREC) Upfront Purchase Program:** For this program, the DE SEU partners with InClimate, which manages the enrollment website and reviews and approves program applications. The DE SEU provides an upfront payment of \$0.45/watt (\$450/kilowatt) in exchange for the rights to the first 20 years of SRECs generated by a participant's solar photovoltaic (PV) system. All Delaware-sited solar systems less than or equal to 50 kilowatts in size are eligible for the program.
- **Solar Thermal and Geothermal Commercial and Industrial (C&I) Incentive Program:** This program offers grants up to \$200,000 to Delaware nonresidential and nonprofit customers who install qualified solar hot water and geothermal systems. The Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Energy and Climate administers the program. The joint program offering allows for higher program incentives for C&I and nonprofit customers (up to \$200,000 per project). InClimate manages the program enrollment website.

**Energize Delaware Farm Program:** This program helps agricultural producers to become more energy efficient through strategies including cost-shared energy audits, direct install LEDs, renewable energy assessments, grants and loans for energy efficiency and renewable energy projects, assistance with grant writing for a federal energy grant program and assistance accessing complementary programs such as those through the U.S. Department of Agriculture.

**ZeMod Delaware Program:** This program is a three-year pilot program that ran from July 1, 2016 to June 30, 2019. It helped low income Delaware residents buy an affordable, zero energy modular home designed to



replace manufactured homes (mobile homes). It was a partnership between DE SEU (fiscal sponsor and program oversight), Milford Housing Development Corp (pilot program manager responsible for the day-to-day implementation), Vermont Energy Investment Corporation (technical and implementation support), and Beracah Homes (ZeMod builder).

## *District of Columbia*

### Clean Energy DC: The District of Columbia Climate and Energy Plan

October 2016

Developed by DC's Department of Energy and the Environment (DOEE), the plan proposes to reduce greenhouse gas (GHG) emissions by 50% lower than 2006 levels by 2032. DC's sustainability plan, [Sustainable DC](#), also outlines targets for reducing energy consumption and increasing renewable energy. After modeling, DC determined it would be very difficult to achieve the targets in all three areas: GHG emissions, energy consumption and renewable energy. As a result, this plan focuses only on GHG emissions reductions.

The plan provides a roadmap to meet the 50% GHG reduction goal by identifying major DC consumption sectors (buildings, energy supply, transportation), and quantifying existing and proposed policies directly affecting GHG emissions in those sectors (building codes, the Renewable Portfolio Standard (RPS), and DC's transportation plan (MoveDC)). The ultimate goal is to reduce GHG emissions by 80% by 2050.

The plan covers three sources of GHG emissions:

1. **Buildings (new and existing):** The plan calls for DC to move to a zero net-energy building code and provide incentives, education, training, and leadership to build public support. DC also plans to retrofit a large portion of its existing building stock (targeting nearly 1 in 5) to increase efficiency and reduce use of fossil fuels.
2. **Energy Supply (focusing on electricity):** The plan calls for DC to design a Renewable Portfolio Standard (RPS) that
  - Requires 100% of electricity supply from renewable sources by 2050
  - Requires an increasing proportion of renewable energy in its supply
  - Promotes ways of procuring energy that result in GHG reductions

Along with the RPS, DC plans to work to increase the adoption and performance of solar energy equipment and other forms of renewable energy.

The plan also calls for DC to modernize its electricity system and shift to distributed energy resources (through the use of new regulatory frameworks, market structures and utility incentives). Cost-effective distributed energy resources will be used to reduce peak demand and manage load growth in busy neighborhoods. The Plan recommends building on DOEE and DC PSC efforts that are already exploring these types of efforts.



- 3. **Transportation:** The plan focuses on shifting passenger vehicles to primarily zero-emission electric vehicles. DC will work to support electric vehicle readiness and adoption, including the building of infrastructure such as charging stations in order to widen opportunities for people to buy electric cars (both by lowering the cost of vehicles and by improving customer understanding and comfort with the technology).

DOEE will collaborate with stakeholders and the public to regularly update or modify the plan. The Clean Energy DC Plan will also be closely coordinated with other related DC government efforts.

**Pennsylvania**

PPL Electric Utilities Energy Efficiency and Conservation (EE&C) Plan: Act 129, Phase III

Plan Period: June 1, 2016 - May 31, 2021

**Summary of EE&C Plan Targets**

	Pennsylvania PUC Compliance Target	PPL EE&C Plan Target
Overall energy reductions (MWh/year)	1,443,035 (3.8% reduction in consumption relative to the 2010 load forecast)	1,582,985  (Residential Portfolio = 656,000, Nonresidential Portfolio = 838,000)
Low-income energy reductions (MWh/year)	79,367	88,147 (96,500 with Phase II carryover)
Government/Non-Profit/Education (GNE) energy reductions (MWh/year)	50,507	81,000 (94,500 with Phase II carryover)
Overall peak reductions (MW)	92 (1.4% reduction relative to the 2007–2008 peak demand)	115
Budget cap (excluding SWE costs)	\$307,500,000	\$307,479,000
Cost Effectiveness (per TRC)	BCR = 1.0	BCR = 1.61 (energy efficiency) 1.90 (demand response)



The plan includes a portfolio of sixteen energy efficiency, demand reduction, and conservation programs comprising five customer sectors (residential, low-income, small commercial and industrial (C&I), Large C&I, and government/non-profit/education (GNE)). Thirteen of the programs are continuing programs from Phase II, with three new demand response program offerings in the small C&I, large C&I and GNE sectors.

The Phase III energy reduction compliance targets are more difficult to achieve than the Phase II targets because the Phase III per-unit program acquisition budget is considerably lower than the Phase II EE&C Plan. Also, the Phase III low-income set-aside target is 25% higher than Phase II and can only be met through the participation of income-qualified residential customers, unlike Phase II, when low-income participation in general residential programs could also be counted.

PPL developed the following strategies for addressing these challenges:

- Reducing administrative costs by using a single Conservation Service Provider (CSP) for each sector, improving the programs tracking system and reducing the cost of evaluation
- Focusing on more comprehensive projects and measures
- Providing customers with a smooth transition from Phase II to Phase III programs
- Focusing on cost-effective measures that deliver high savings and solid net-to-gross (NTG) ratios
- Improving the customer and trade ally experience, in part by better training PPL electric program staff

**Residential Programs:** The residential portfolio should achieve verified gross energy savings of 656,000 megawatt hours (MWh) per year over the five-year plan at a total program cost (including the allocation of common costs) of \$112 million. The program acquisition cost for the residential sector is \$0.17 per annual kilowatt hour (kWh) saved.

- **Appliance Recycling:** Offers free pick-up and recycling of refrigerators, freezers, room air conditioners, and dehumidifiers. It may also include consumer electronics (without savings or incentive). The customer will receive a rebate for each functioning recycled appliance (\$10–\$75).
- **Efficient Lighting:** Encourages customers to buy point-of-sale discounted LED lightbulbs and fixtures in retail stores. The incentives provided at the retail level should cover 25% to 50% of the retail cost of LEDs (including general service, specialty, reflectors, and fixtures), ranging from an incentive of \$1–\$8.
- **Energy Efficient Home Program:** Includes three options for new and existing homes
  - New Homes – provides a rebate to builders or homeowners who exceed the energy efficiency performance requirements of the building code. Incentives up to \$2,500.
  - Online Audit and Weatherization – provides insulation and duct sealing rebates and teaches participants about other energy efficiency measures.





- Energy Efficient Equipment – provides rebates for heat pumps, heat pump water heaters, pool pumps, and central air conditioners.
- **Student Energy Efficient Education:** Provides energy efficiency kits and education to students and teachers in grades 2–12.
- **Home Energy Education:** Educates customers about behaviors and measures they can adopt to reduce energy consumption in their homes. This program is targeted to high-use customers. The residential CSP will send customers a series of Home Energy Reports that show customer’s home energy use and how it compares with others.

**Low-Income Programs:** The low-income portfolio (which is offered at no cost to households that are at or lower than 150% federal poverty income guidelines), should achieve verified gross energy savings of 88,000 MWh/year at a total program cost of about \$55,000,000. PPL Electric's low-income program acquisition will be \$0.62 per annual kWh saved (38% lower than in Phase II). The low-income portfolio will achieve at least 15% of the total gross program savings per year.

- **Low-Income WRAP:** Offers a wide selection of energy saving improvements and education to low-income customers, including HVAC, lighting, weatherization, and home health and safety
- **Energy Efficiency Kits and Education:** Delivers Energy Efficiency kits and education are delivered either through targeted direct mailings or energy education workshops.

**Non-Residential Programs (includes the small C&I, large C&I, and GNE sectors):** The nonresidential portfolio should achieve verified gross energy savings of about 838,000 MWh per year at a cost of \$72,000,000 for small C&I, \$51,000,000 for large C&I, and \$20,000,000 for GNE. The program acquisition cost for nonresidential programs is \$0.21 per annual kWh saved. The Pennsylvania Public Utilities Commission requires the Efficient Equipment, Custom, and Demand Response Programs to officially be separate programs for each nonresidential customer sector (i.e., small C&I, large C&I, and GNE), but PPL Electric offers each of these programs to all nonresidential customer sectors in a unified nonresidential category.

- **Efficient Equipment Program:** Promotes the purchase and installation of high-efficiency equipment, including lighting, HVAC, and other measures. PPL also provides information on the features and benefits of energy efficient equipment.
- **Custom Program:** Provides financial incentives to customers who install measures that are not offered in other programs, such as new or replacement energy efficient equipment, retro-commissioning, repairs, equipment optimization, new construction projects, operational and process improvements, combined heat and power projects, and behavioral changes. It also includes measures that are not addressed in the technical reference manual. The large C&I sector will focus on compressed air projects because it’s a high impact measure.



- **Demand Response Program:** A load curtailment type program for nonresidential customers. Through the program, PPL Electric offers incentives to customers who reduce their electric demand during specific curtailment events. Events will be limited to the months of June through September. Each curtailment event will last four consecutive hours and occur during the day's forecasted peak hours above 96% of PJM's regional transmission organization (RTO) summer peak demand forecast. The demand response program will be suspended once six demand response events have been called in a program year.

**Program Evaluation:** PPL Electric's EM&V CSP will conduct ongoing and annual evaluations of each program. The EM&V CSP will develop an evaluation plan with the EM&V scope of work, objectives, methods, and activities for evaluating program impacts, processes, cost-effectiveness, NTG adjustment, quality assurance and quality control.

PPL will continue to use a data tracking system (EEMIS) to record energy efficiency transactions and calculate reported savings.

[PECO Program Years 2016–2020](#)

[Act 129 Energy Efficiency and Conservation Plan](#)

Metric	5-Year PA PUC Target	5-Year PECO Forecast
Total MWh Energy Savings	1,962,659	2,100,875
Total Spending	\$427,385,830	\$427,385,830
Low-Income MWh Savings	107,946	123,991
G/E/NP MWh Savings	68,693	275,018
Demand Response 4-year Average MW Savings (PY 2017 – PY 2020)	161	171

The focus of the Phase III PECO programs is to provide comprehensive energy solutions and innovative technologies for all customers. PECO also seeks to improve customer participation and the customer experience by offering One Stop Shop solutions, including offering a broad range of participation opportunities.



PECO's portfolio implementation strategy includes contracting with Conservation Service Providers (CSPs) that have demonstrated experience implementing energy efficiency programs, using a variety of program delivery channels, engaging in a public awareness and marketing plan, continuing to use a tracking database, and continuously reviewing implementation practices.

PECO is offering eight programs as part of its Act 129 Energy Efficiency and Conservation Phase III Plan. The costs and savings noted in each program description covers the plan period.

- **Residential Energy Efficiency Program:** This program includes a retail pathway for lighting, appliances and HVAC measures, as well as appliance recycling. It also offers a comprehensive Whole Home Solution for existing homes and a New Construction Solution for new home construction. The program focuses on multi-family buildings in particular. The program budget is \$100.1 million with a projected savings of 727,195 MWh.
- **Low-Income Energy Efficiency Program:** PECO plans to improve the efficiency and implementation of this program because it is often challenging to reach this market segment (income equal to or less than 150% of the Federal Poverty Level). The main focus of the program is a direct install, whole home service that provides on-site audits and direct installation of measures. The program offers additional incentives in retail locations in low-income neighborhoods. Education and increasing program awareness will be a major focus. The program budget is \$36.1 million with a projected savings of 123,991 MWh.
- **Small Commercial and Industrial Energy Efficiency Program:** This program includes an Equipment and Systems Solution that helps customers with purchasing decisions for retrofits or new equipment, including lighting, HVAC, refrigeration, and compressed air end-uses. The program will also offer a Whole Building Solution for direct installation of energy efficient measures, as well as a New Construction Solution targeted to developers or customers. A new offering in the Phase III plan is the Behavioral Solutions program. The program budget is \$44.5 million with a projected savings of 405,280 MWh.
- **Large Commercial and Industrial Energy Efficiency Program:** This program includes an Equipment and Systems Solution that helps customers with purchasing decisions for retrofits or new equipment, including lighting, HVAC, refrigeration, and compressed air end uses. Custom options are also available for customers who do not fit into the other pathways. Account management services will be provided for the largest customers. New Construction Solutions will also be offered. A significant focus of the program will be master-metered multifamily buildings, including educating and building program awareness for multifamily building owners. A new targeted market segment for Phase III is Data Center projects. The program budget is \$55.1 million with a projected savings of 480,875 MWh.
- **Combined Heat and Power (CHP) Program:** The CHP program provides financial incentives and technical assistance to C&I customers (including multi-metered multifamily buildings) who install CHP technology to reduce facility energy use. The program provides design, capacity, and performance incentives to



program participants that are distributed at key milestones during the project. The program budget is \$24.9 million with a projected savings of 54,871 kW.

- Residential Demand Response Program:** This program is intended to capture demand reductions from residential customers during summer system peak hours. Participants will have three program options: Direct Load Control Solutions, Smart Thermostat Demand Response (DR) Solutions, and Behavioral DR Solutions. PECO will call up to six summer DR events each year. Participating customers will receive a monthly credit on their PECO bill in the summer months. Anticipated incentive payments will range from \$0–\$40 per controlled device. The program has a proposed budget of \$13.7 million with a projected savings of 216,140 kW.
- Small Commercial and Industrial Demand Response Program:** This program is intended to capture demand reductions from small commercial and industrial customers during summer system peak hours. It is a Direct Load Control program in which PECO will remotely cycle or shut down a customer’s central air conditioner unit on short notice during peak demand. Customers will receive a monthly credit on their PECO bill in the summer months. Anticipated incentive payments will range from \$0–\$28 per controlled central air conditioner unit. The program has a proposed budget of \$943,000 with a projected savings of 6,290 kW.
- Large Commercial and Industrial Demand Response Program:** This program is intended to capture demand reductions from large commercial and industrial customers during summer system peak hours. It is a Demand Response Aggregator program in which PECO will call a demand response event and aggregators relay the events to their enrolled customers. The customers then cut a specified portion of their demand. Customers are compensated by the aggregators. The program has a proposed budget of \$27.1 million with a projected savings of 501,573 kW.

**New York**

**[NY Utilities Report Regarding Energy Efficiency Budgets and Targets, Collaboration, Heat Pump Technology and Low- and Moderate-Income Customers and Requests for Approval](#)**

April 1, 2019

In this report, the New York utilities request New York Public Service Commission (PSC) approval of budgets and savings targets for 2021 through 2025, as outlined in the below table:

IOU	Electric Budget (Millions \$)	Gas Budget (Millions \$)	Electric Savings Targets (MWh)	Gas Savings Targets (MMBTu)
CenHud	\$18	\$1.1	68,700	35,040
ConEd	\$649.5	\$128.1	159,284	2,773,335
KEDLI		\$27.5		976,200



IOU	Electric Budget (Millions \$)	Gas Budget (Millions \$)	Electric Savings Targets (MWh)	Gas Savings Targets (MMBTu)
KEDNY		\$73.9		2,255,688
NFG		\$2.6		49,950
NiMo	\$132.6		656,200	
NYSEG	\$121.8	\$10.3	563,540	449,560
O&R	\$36.6	\$11.1	256,447	297,363
RG&E	\$53.8	\$4.7	260,000	229,399
Total	\$1,012.3	\$259.3	3,964,171	7,066,535

The program budgets, targets, and concepts outlined in this report are current best estimates and, to meet the targets, the utilities must have flexibility to adjust programs as needed.

In addition to covering the topics in bold that are pertinent to all utilities and summarized below, the end of the report also provides utility-specific chapters that address items of concern for individual utilities.

New York utility-specific energy efficiency plans, proposals, and quarterly reports are available on the [New York Department of Public Service \(DPS\) website](#).

**Energy Efficiency Targets and Budgets:** The electric targets assume a 2% reduction in electric sales by 2025 for each utility. Combined with the New York State Energy Research and Development Authority (NYSERDA) energy efficiency efforts, these programs will achieve 3% of electric sales (MWh) by 2025.

**Increased Collaboration:** From 2021 to 2025, the utilities and NYSERDA will continue to collaborate. They plan to share energy efficiency strategies by sector and regularly look out for opportunities to collaborate. This collaboration is intended to strengthen programs and take advantage of potential market opportunities. The utilities and NYSERDA are also already working together to develop the online Clean Energy Dashboard, which tracks results from all customer-funded clean energy programs. Another collaborative effort may include the development of more uniform contractor eligibility requirements.

**Accelerated Heat Pump Deployment:** These budgets reflect modifications in funding for heat pump programs as a result of changes NYSERDA made to its heat pump savings methodology (which is now better aligned with the New York Technical Reference Manual). The updates increased the budget estimate from \$250 million to \$334 million. The utilities are still uncertain about whether the heat pump savings targets are realistic and about the budget required to meet the targets. The utilities will create and run heat pump programs intended to transform the market in the next six years, driven by a 250% increase in annual funding for heat pump programs in 2020 to 2025 as compared with 2019.

The heat pump program is designed to:

1. Drive market scale to produce lower costs



2. Provide a clear and stable market signal
3. Produce a simple and workable customer experience
4. Develop a uniform and flexible program offering
5. Smoothly transition current programs to the new framework

The incentive structure is still under discussion, but the report proposes the following characteristics:

1. Flexibility
2. One-time rebate payments per ton for residential and small-scale commercial (up to 10 tons)
3. One-time rebates for larger non-residential installations, but specifics will be developed as part of the utility implementation plans
4. Different incentives based on geography
5. Limited differences in incentives based on heat pump type
6. Potentially combine heat pumps with building efficiency efforts
7. Downstream, midstream and upstream delivery options
8. Potentially reducing incentives over time
9. Setting up a program review process to determine any incentive changes over time

The electric utilities will explore potential for a statewide collaborative approach model for the development of the heat pump program framework and program delivery that would be led by a Joint Management Committee, in order to provide economies of scale, reduce customer confusion, and provide consistent messaging. The utilities would continue to solicit NYSERDA feedback throughout the program period.

**Low and Moderate Income (LMI) Portfolio:** The utilities and NYSERDA will continue to work together to develop a statewide LMI portfolio. This approach is intended to improve the customer experience for those LMI customers using energy efficiency services, to reduce administrative costs, and to provide more consistency for participating service providers. NYSERDA will continue to take the lead role in administering LMI programs, and the utilities will be closely involved in order to better reach the full range of potential participants. The statewide approach will better address energy affordability issues.

## Maine

### Maine's Energy Efficiency Triennial Plan IV

Summary of Maine Public Utilities Commission Order (dated May 24, 2019)

See: [Docket No. 2018-00321](#)

In this order, the Maine Public Utility Commission (PUC) partly approves and partly rejects the Triennial Plan IV submitted by Efficiency Maine Trust (EMT). The PUC rejects certain measures laid out in EMT's plan because it does not find them to be cost-effective.

### Maine PUC-Approved Energy Efficiency Electric and Natural Gas Program Budgets (FY 2020 – 2022)



	<b>Electric</b>	<b>Gas</b>
FY 2020	\$36,755,030	\$324,570
FY 2021	\$36,849,412	\$326,550
FY 2022	\$37,009,620	\$328,530
<b>Total</b>	<b>\$110,614,062</b>	<b>\$979,650</b>

The PUC stated that the unregulated fuels budget will be determined by the availability of Regional Greenhouse Gas Initiative (RGGI) funds and any other available unregulated fuel funds.

The Triennial Plan IV submitted by EMT totaled \$138.2 million for electric and \$3.1 million for gas for the three year period. The estimated unregulated fuel budget of \$25.2 million was constant between the EMT Plan and PUC-approved plan.

As background, the PUC has had increased oversight of the triennial plans since 2013, and EMT may not spend any funds until the PUC has approved the plan. The PUC ensures that the plans achieve the maximum achievable cost-effective energy efficiency (MACE). After EMT submitted its plan, the PUC's consultant, London Economics International (LEI), raised concerns about the methodology used in the 2018 Avoided Energy Supply Components (AESC) in New England report that EMT used in its plan to assess cost-effectiveness. LEI questioned the AESC forecast market prices that they said resulted in avoided energy costs that were too high. Furthermore, an examination of the previous AESC study in 2015 revealed that the forecast market prices were overstated, and thus some of EMT's ratepayer-funded budgets may have been spent on measures that were in fact not cost-effective and not consistent with state statute.

After further review of the EMT Plan, PUC staff determined that certain measures included in the Triennial IV Plan were not cost-effective and therefore should not be in the plan. As a result, the staff presented a budget that was \$29.8 million (18%) lower than proposed by EMT. Staff were also concerned about restrictions for spending on natural gas programs and the impact of potential changes to federal lighting standards.

The measures with a large budgetary impact that PUC staff did not find cost-effective were:

1. Heat pump water heaters (determined to be not cost-effective in both the distributor program and the low-income direct install program)
2. Modulating Burner Controls for Boilers and Heaters in the C&I natural gas prescriptive program
3. Custom measures in C&I electric.



The order also calls for EMT to provide several updates to the PUC as part of its annual report in March 2020. These include:

- An AMI data update that includes information about what AMI data has been considered, whether and how it’s been used, any insights resulting from the use of AMI data, and an overview of how other program administrators are using AMI data in the region
- An update on the Independent Evaluation of the Ductless Heat Pump (DHP) program, and any changes to the technical reference manual that result from the evaluation
- Results from the market assessment regarding the boiler baseline

Throughout the PUC review and approval process of the Triennial Plan, various parties have discussed and disagreed about the role and extent of PUC oversight of the Triennial Plan. The Maine state legislature is currently considering clarifying this process between EMT and the PUC, which should hopefully resolve such issues. The text in the proposed bill will require the Maine PUC to “review the triennial plan to determine whether it will capture the maximum achievable cost-effective energy efficiency savings. In conducting the review, the commission shall defer to the trust’s calculations of energy savings as long as the calculations were conducted consistent with rules of the trust and are supported by evidence in the record and the trust used a reasonable and transparent process to make the technical determinations necessary to make those calculations.” See: [http://www.mainelegislature.org/legis/bills/bills\\_129th/billtexts/HP125101.asp](http://www.mainelegislature.org/legis/bills/bills_129th/billtexts/HP125101.asp).

**Maine**

[Triennial Plan IV: FY 2020-2022](#)

FY 2020-2022 Plan Budgets

<b>PROGRAMS</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>TOTAL</b>
<b>Electric</b>	\$46,010,000	\$46,071,000	\$46,212,000	<b>\$138,293,000</b>
<b>Natural Gas</b>	\$1,043,000	\$1,041,000	\$1,037,000	<b>\$3,121,000</b>
<b>Unregulated Fuels</b>	\$7,815,000	\$8,769,000	\$8,619,000	<b>\$25,203,000</b>
<b>TOTAL</b>	<b>\$54,868,000</b>	<b>\$55,881,000</b>	<b>\$55,868,000</b>	<b>\$166,617,000</b>

Performance Metrics - Savings Goals





SAVINGS TYPE	FY 2020	FY 2021	FY 2022	TOTAL
Electric (MWh)	260,153	260,097	260,403	780,653
Demand (MW)	42.24	41.84	41.53	125.61
Natural Gas (MMBtu)	33,635	33,573	33,449	100,657
Heating Oil and Other (MMBtu)	249,571	337,719	335,833	923,123

The plan has a total budget for the three year period of \$167 million for electric, natural gas and unregulated fuels programs. (See *Triennial Plan IV: FY 2020–2021* page 4-1 ([hyperlink above](#)) for budgets by individual program.)

The following program priorities are implemented by investing in energy conservation projects that satisfy the Trust’s stringent cost-effectiveness test. Maine screens for eligibility at the project level, defined as a bundle of related measures installed concurrently. Any 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 net level, as opposed to the gross level. Costs and benefits include those experienced by the participant, the program administrator, and the utilities.

#### Program implementation priorities

- **Acquiring resources:** *Top priority* = reducing energy costs in Maine by the *maximum achievable cost-effective* (MACE) energy efficiency by acquiring demand-side energy resources that are cost-effective, achievable, and reliable.
- **Transforming the market:**
  - Build economies of scale for newer, high-efficiency products such as ductless heat pumps and heat pump water heaters (HPWH) through incentives, contractor and distributor training, and development and distribution of informational materials.
  - Develop the workforce through training (online, in-store, and workshops) and emphasize certification and licensing requirements for trade allies.
  - Promote general energy education and awareness through website, social media and digital advertising



- Support innovative pilot initiatives through the Innovation Program and continue funding custom projects.
- **Maintaining fairness:**
  - Allocate sufficient funds to the low-income sector (statutory mandate for the greater of \$2.6 million or 10% of the Electric Efficiency Procurement and an appropriate percentage from the Natural Gas Conservation Fund) and small businesses.
  - Continue to allocate funds on the basis of opportunity for cost-effective energy savings (an approach that was new for the previous triennial plan).
- **Leveraging the private sector:** Use a market-based approach to designing programs so that the marketing and installation of efficiency measures are incorporated into the normal activities of the existing supply chain.
- **Reducing the environmental impacts of energy:** Energy efficiency and clean alternative energy resources reduce or mitigate harmful environmental impacts more cost-effectively than other options. These energy resources will be deployed in a way that also advances Maine’s environmental policies.

#### Notable program changes/observations for Triennial Plan IV

- EMT finds that a significant opportunity still exists for retrofit lighting savings in the C&I Prescriptive Program and Small Business Initiative programs. The C&I Prescriptive Program budget reflects the opportunity that can be captured through a market program driven mainly by contractors and end users.
- For ductless heat pumps, EMT expects its programs to significantly influence both the number and quality of heat pumps installed in Maine.
- All distributor initiatives will be grouped under a single program to consolidate delivery and administration. The program will continue to mark down many of the Triennial Plan III measures for this plan, as they screen as cost-effective. These measures include HPWHs, boilers, furnaces, commercial kitchen equipment, and screw-in LEDs. EMT expects more HVAC measures to be purchased through the distributor channel than through the downstream programs that EMT offered during the previous plan period.
- For lighting through the Retail Initiatives program, EMT will update the plan when the U.S. Department of Energy rulemaking process to finalize standards on general service lamps is done. For the purposes of the current plan, EMT modeled the program opportunity without Energy Independence and Security Act (EISA) 2020 enforcement. If EISA is enforced, it would reduce but not eliminate the number of cost-effective measures through Retail Initiatives.



- The market for HPWHs (with incentives) is expected to grow compared with the previous Triennial Plan period. HPWHs will continue to be offered through Retail Initiatives and Distributor Initiatives.
- For the Low-Income program, the Trust will increase its efforts to market directly to customers in the Statewide Arrearage Management Program (AMP) and work with AMP stakeholders and the Low Income Advisory Group to consider ways to expand offerings for AMP participants.
- The Renewables Program will focus on community demonstration grants.

#### Evaluation

- During FY 2020–2022, EMT will conduct independent evaluations of its major programs. EMT expects to begin issuing requests for proposals in FY 2020 to select evaluators for independent third-party program evaluation.
- 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.