

The Regional Greenhouse Gas Initiative

An Initiative of the Northeast and Mid-Atlantic States of the US

The Investment of RGGI Proceeds through 2014

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Executive Summary

Proceeds from the Regional Greenhouse Gas Initiative (RGGI) have powered an investment of \$1.37 billion in the energy future of the New England and Mid-Atlantic states. This report reviews the benefits of programs funded through 2014 by RGGI investments, which have reduced harmful carbon dioxide (CO₂) pollution while spurring local economic growth and job creation. The lifetime effects of these RGGI investments are projected to save 76.1 million MMBtu of fossil fuel energy and 20.6 million MWh of electricity, avoiding the release of approximately 15.4 million short tons of carbon pollution.

The benefits tracked in this report arise from RGGI investments in energy efficiency, clean and renewable energy, direct bill assistance, and greenhouse gas abatement. Any benefits associated with other types of funds (such as future committed funds or transfers to general funds) are outside the scope of this report.

As a whole, the RGGI states have reduced power sector CO₂ pollution over 45 percent since 2005, while the region's GDP has grown by approximately 8 percent. RGGI-funded programs also save consumers money and help support businesses. RGGI investments through 2014 are estimated to return \$4.67 billion in lifetime energy bill savings to more than 4.6 million participating households and 21,400 businesses.

RGGI states have individual discretion as to how they invest RGGI proceeds. RGGI investments fall into four major categories:

Energy efficiency makes up 49 percent of 2014 RGGI investments and 58 percent of cumulative RGGI investments. Programs funded by these investments are expected to return \$3.62 billion in lifetime energy bill savings to over 960,000 participating households and 20,800 businesses in the region.

Clean and renewable energy makes up 23 percent of 2014 RGGI investments and 13 percent of cumulative RGGI investments. RGGI investments in these technologies are expected to return \$836.1 million in lifetime energy bill savings to 1.1 million participating households and more than 600 businesses in the region.

Greenhouse gas abatement makes up 8 percent of 2014 RGGI investments and also 8 percent of cumulative RGGI investments. RGGI investments in greenhouse gas (GHG) abatement are expected to avoid the release of 417,000 short tons of harmful CO₂ pollution into the atmosphere.

Direct bill assistance makes up 15 percent of 2014 RGGI investments and also 15 percent of cumulative RGGI investments. Direct bill assistance programs funded through RGGI have returned \$178.2 million in bill savings to 2.6 million participating households.

These investments, in concert with the broader energy policies in each RGGI state, have enabled the region to continue to set a national example in reducing harmful GHG pollution and improving energy efficiency.

Introduction

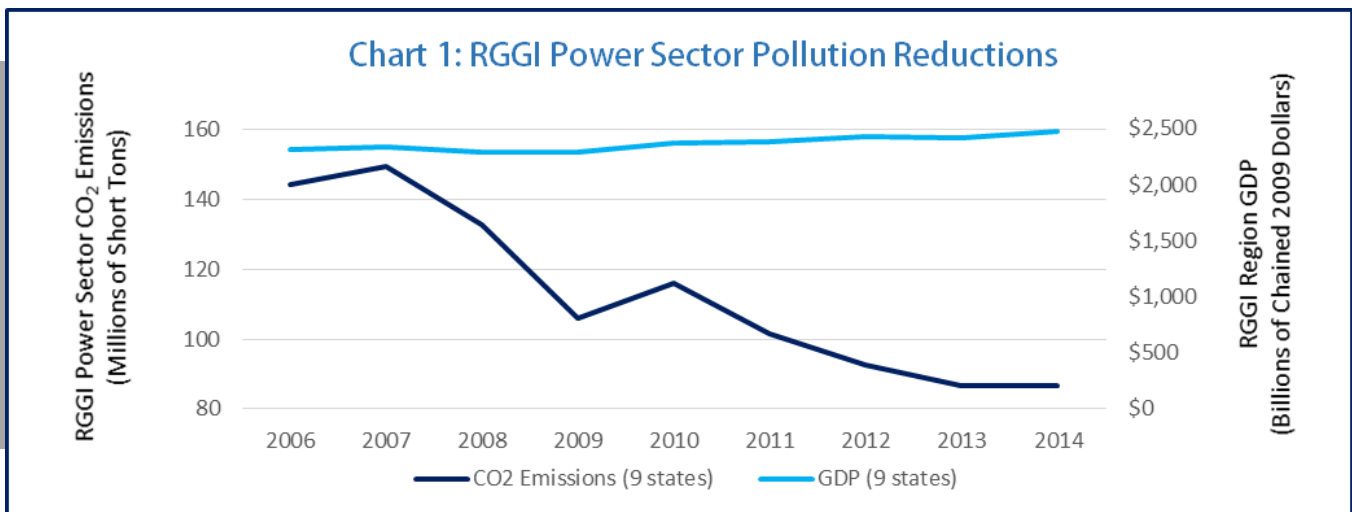
The Regional Greenhouse Gas Initiative

RGGI is the nation's first mandatory multi-state program to reduce power sector CO₂ emissions. The RGGI states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont) establish a regional cap on the amount of CO₂ pollution that power plants can emit, by issuing a limited number of tradable CO₂ allowances. Each allowance represents an authorization for a regulated power plant to emit one short ton of CO₂. Individual CO₂ budget trading programs in each RGGI state together create a regional market for CO₂ allowances. This allows market forces to determine the most cost-effective means of reducing emissions, and creates market certainty needed to drive long-term investments in clean energy. Each state's regulations are independent, and are based on the RGGI Model Rule.

The RGGI states have distributed approximately 90 percent of CO₂ allowances through quarterly regional auctions, generating proceeds for reinvestment. The remaining allowances are allocated to state set-aside accounts, from which allowances may be distributed according to state-specific regulations, or auctioned in future years. Each RGGI state has discretion over the investment of RGGI proceeds, and all programs funded through RGGI investments are independently administered and operated by the states.

Through September 2016 the RGGI states have offered allowances in 33 quarterly auctions. Allowance prices have ranged from \$1.86 to \$7.50. These auctions have cumulatively raised over \$2.58 billion for reinvestment.

The RGGI states have experienced a reduction of more than 45 percent in power sector CO₂ pollution since 2005, even as the regional economy has grown 8 percent (see Chart 1). In 2016, the RGGI states are undergoing a comprehensive program review. The program review process is an important element of the RGGI program, which invites stakeholders and experts to provide input on program design elements, successes, and improvements. Changes arising from the previous program review in 2012 included a 45 percent reduction in the RGGI cap to 91 million tons, which took effect in 2014.



This Report

This report is designed to inform the public on the use of funds generated by the auction of RGGI CO₂ allowances through 2014. Cumulative auction proceeds through 2014 fall into several categories (see Chart 2). This report estimates the benefits of RGGI investments, while other uses of funds are outside this report's scope.

RGGI investments: This report estimates benefits, such as energy bill savings and short tons of CO₂ emissions avoided, which arise from RGGI investments. RGGI investments as defined within this report include investments in energy efficiency, clean and renewable energy, greenhouse gas abatement, and direct bill assistance, as well as administrative costs associated with these programs.

Future committed funds: Auction proceeds generated in a given year may not always be invested during the same year. A portion of cumulative auction proceeds generated through 2014 were committed to future programs, but not yet invested within the time period covered by this report. These funds are referred to as "future committed" funds.

General fund transfers: In some cases auction proceeds have been transferred to state general funds by acts of state legislatures. Any benefits generated from the use of these proceeds are not within the scope of this report.

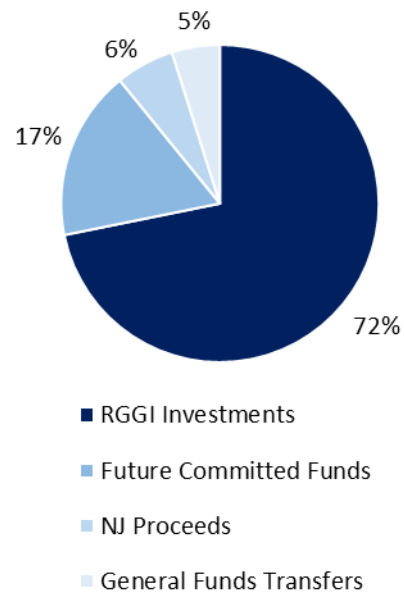
New Jersey proceeds: New Jersey participated in RGGI from 2009-2011. Any benefits generated from the use of RGGI proceeds in New Jersey are also not within the scope of this report.

The data presented in the report is compiled using the output of state-based and program-based estimates for actual and projected savings and benefits. The methods of these analyses differ between states and between programs, which are each unique and operate independently. For example, a program offering discounts encouraging homeowners to use efficient lightbulbs would collect quite different data from a competitive-bid program offering grants to factories to install solar panels.

Also (as seen in Table 1), two states report program data according to the fiscal year (July 1 - June 30) rather than the calendar year. A fiscal year adjustment is used to compare numbers between the states.

Chart 2: RGGI Investments as a Subset of Total Proceeds

Description	Funds
Proceeds through Dec. 31, 2014	\$1,935,045,944.05
Adjustment for Fiscal Year Reporting	-\$34,144,517.69
New Jersey Proceeds	\$113,344,551.27
General Funds Transfers	\$93,100,000.00
Future Committed Funds	\$329,418,354.31
RGGI Investments	\$1,365,479,614.73



Total RGGI proceeds represent \$1.90 billion (after fiscal year adjustment) in the period covered by this report. In 2009, \$90 million in NY proceeds were transferred to general funds as a deficit reduction measure. In 2010, \$3.1 million in NH proceeds were transferred to general funds. NJ received \$113.3 million in proceeds from 2009-2011. RGGI investments represent \$1.37 billion, and \$329.4 million is committed to 2015 and future programs.

Table 1: Cumulative Proceeds by State

State	Reporting Basis	Cumulative Proceeds Through 2014 Period
Connecticut	Calendar Year	\$125,408,275.61
Delaware	Calendar Year	\$63,852,728.77
Maine	Fiscal Year	\$53,565,703.01
Maryland	Fiscal Year	\$373,885,661.28
Massachusetts	Calendar Year	\$316,488,293.21
New Hampshire	Calendar Year	\$76,335,390.34
New York	Calendar Year	\$728,232,766.75
Rhode Island	Calendar Year	\$35,727,553.64
Vermont	Calendar Year	\$14,501,596.43
Total		\$1,787,997,969.04

RGGI Investments

Total Investments

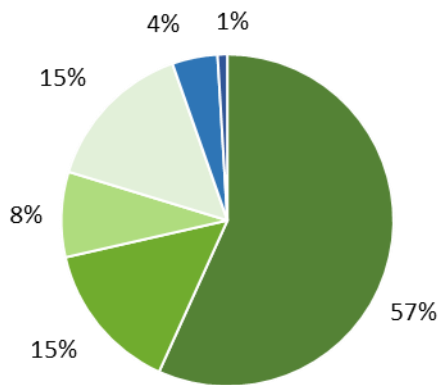
RGGI investments throughout the region cover a wide variety of programs, which divide into four main categories: energy efficiency, renewable energy, direct bill assistance, and greenhouse gas abatement. Chart 3 and 4 show how RGGI investments are divided between these categories, for all cumulative investments and for the current period. Chart 5 displays cumulative investments differentiated more finely between program types.

Overall, RGGI investments have benefited 4.6 million participating households and more than 21,400 participating businesses. These investments have saved participants money on their energy bills, created jobs, and reduced pollution. Over their lifetime they will save participants an estimated \$4.67 billion on their energy bills, and avoid the use of 20.6 million MWh of electricity and 76.1 million MMBtu of fossil fuel. For more detail, see Table 2.¹

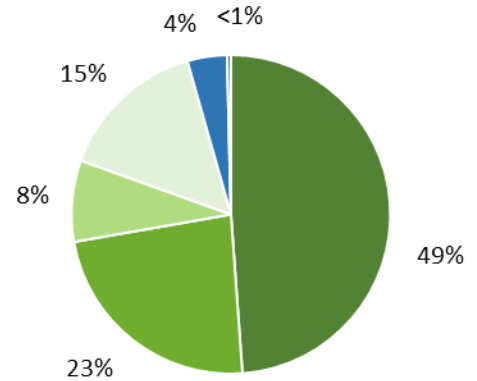
RGGI investments benefit more than just those who directly participate; for example, money not spent on energy by families and businesses can be used in other ways that boost the economy. Reduced demand for energy also keeps prices lower for everyone.

Charts 3 and 4: RGGI Investments by Category

Cumulative: 2008-2014



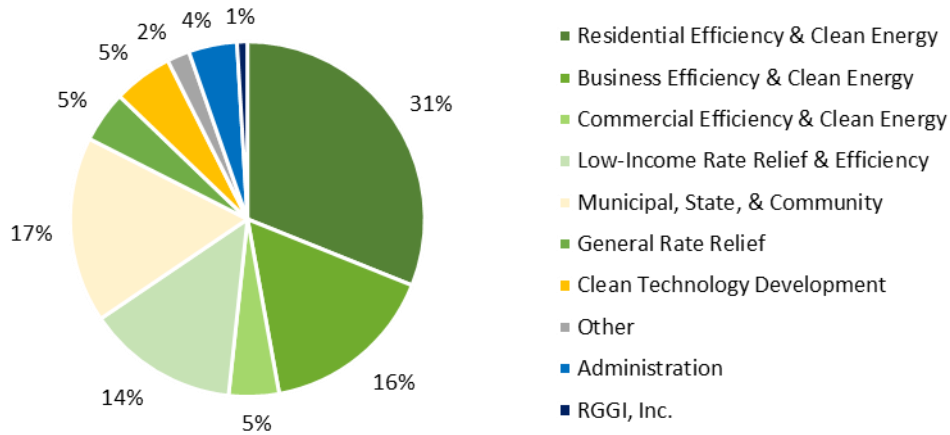
Current Period: 2014



The nine participating RGGI states received \$1.79 billion in auction proceeds in the period covered by this report. RGGI investments represent \$1.37 billion, \$93.1 million was transferred to state general funds by acts of state legislatures, and \$329.4 million is committed to 2015 and future programs.




¹ In this report, two states have made adjustments to reported benefits from years prior to 2014. These adjustments are included within cumulative and lifetime regional totals, and do not substantially alter regional trends.

Chart 5: Cumulative RGGI Investments by Program Type



The nine participating RGGI states received \$1.79 billion in auction proceeds in the period covered by this report. RGGI investments represent \$1.37 billion, \$93.1 million was transferred to state general funds by acts of state legislatures, and \$329.4 million is committed to 2015 and future programs.

Table 2: Benefits of RGGI Investments

Category	Cumulative (2008-2014)	Lifetime
 Participating Households	4.6 million	N/A
 Participating Businesses	21,400	N/A
 Workers Trained	7,200	N/A
 Short Tons CO ₂ Avoided	1.7 million	15.4 million
 Equiv. Cars Off Road	319,000	2.9 million
 Megawatt-Hours Saved	2.4 million MWh	20.6 million MWh
 MMBtu Saved	5.3 million MMBtu	76.1 million MMBtu
 Energy Bill Savings	\$618.1 million	\$4.67 billion

Energy Efficiency

Energy efficiency represents the largest portion of cumulative RGGI investments. Approximately 49 percent of 2014 RGGI investments, and approximately 58 percent of cumulative RGGI investments, have supported energy efficiency programs in the region. Over the lifetime of the installed measures, these investments are projected to save participants \$3.62 billion on energy bills, providing benefits to more than 960,000 participating households and 20,800 participating businesses. They are also projected to avoid the release of 12.9 million short tons of CO₂ pollution (see Table 3).

These programs allow consumers and businesses to take full advantage of modern appliances, heating, and cooling, increasing the comfort of homes, offices, and businesses while using less energy and paying less on their energy bills. Energy efficiency improvements can be achieved cost-effectively by upgrading appliances and lighting, weatherizing and insulating buildings, upgrading HVAC at offices, and improving industrial processes. For example, occupancy sensors automatically turn lights off when a room or building is not in use, saving significant amounts of energy.

Energy efficiency is also a job creator. Programs such as home retrofits directly spur employment gains in housing and construction, and lowered energy costs create numerous benefits across the economy as families are able to invest savings in other priorities and businesses are able to grow.

Ultimately, all electricity consumers, not only those who make upgrades, benefit from energy efficiency programs. Lower overall demand for electricity results in lower wholesale electricity rates, as power plants with the highest costs do not run as often, and expensive transmission upgrades can be deferred in some cases. A range of independent reports have affirmed these widespread benefits of energy efficiency, including work by the Analysis Group, Regulatory Assistance Project, and more.

RGGI-funded investments in energy efficiency, in concert with the broader energy policies in each RGGI state, have made an impact. Six RGGI states once again ranked among 2014's top ten states for energy efficiency, according to the American Council for an Energy Efficient Economy.

A High-Performance Home Success Story

When Jessica Gulley-Ward moved into her new husband Kevin's modest-sized ranch in Bennington, Vermont three years ago, there were some issues with the home that needed a hard look. The home's dirt-floor basement that extended into a crawlspace underneath the bedrooms was poorly insulated. Attic spaces, too, were not properly sealed, and the result was a winter home temperature regularly 15 degrees cooler than the thermostat setting.

"It was very drafty," Jessica recalled. Inspired by the benefits of energy efficiency they heard about through a local radio show, the two found a list of contractors and discovered Thomas Reuter of Shaping Energies in Rutland, a participating Home Performance with ENERGY STAR® contractor. After a full energy audit, Reuter and the couple came up with an energy investment plan that included:









- Installing cellulose loose fill insulation in the open attic spaces above the main living quarters and bedrooms;
- Performing air sealing throughout the above-ground home areas, including air penetration areas in the attic and along floor and ceiling moldings;
- Upgrading insulation in the basement/crawlspace, and applying closed cell spray foam insulation to rim joists.

The results? The home's air leakage has been reduced by 61%, saving the couple an estimated \$1,100 per year in energy costs. To help with upfront costs, the Wards received \$600 in incentives from Efficiency Vermont.



The Wards enjoy their home. Photo Credit: Efficiency Vermont

Table 3: Benefits of RGGI Investments in Energy Efficiency

Category	Cumulative (2008-2014)	Lifetime
 Participating Households	960,000	N/A
 Participating Businesses	20,800	N/A
 Workers Trained	7,200	N/A
 Short Tons CO ₂ Avoided	1.6 million	12.9 million
 Equiv. Cars Off Road	294,000	2.4 million
 Megawatt-Hours Saved	2.2 million MWh	16.2 million MWh
 MMBtu Saved	5.0 million MMBtu	73.1 million MMBtu
 Energy Bill Savings	\$388.6 million	\$3.62 billion








Clean and Renewable Energy

Approximately 23 percent of 2014 RGGI investments, and approximately 13 percent of cumulative RGGI investments fund clean and renewable energy programs in the region. Over the lifetime of the installed projects, these investments are projected to offset \$836.1 million in energy expenses for more than 1.1 million participating households and 600 businesses. They are also projected to avoid the release of 2.1 million short tons of CO₂ pollution (see Table 4). Many RGGI-funded energy programs provide grants or low-interest financing to businesses and homeowners seeking to install on-site renewable or clean energy systems. For example, they might deploy rooftop solar panels, farm-based wind turbines, or fuel-cell systems. These programs allow participants to minimize up-front expenses and use the savings generated by the installed measure each month to pay for the system.

Clean energy systems require labor to install, and many programs additionally require that components be manufactured in-state. This directly creates jobs and boosts local economic activity. Energy expenditures that might otherwise be used to purchase out-of-state fossil fuel resources are kept within the region. As with energy efficiency, “behind-the-meter” programs also contribute to lowering wholesale electricity prices by effectively lowering the demand for electricity at the wholesale level. As demand for electricity decreases, the most expensive power plants run less often, driving long-term prices down for all consumers. Households and businesses both with and without clean energy systems save money on their bills.

While RGGI investments are just a small part of widespread clean and renewable energy investments in the region, together these actions are having measurable impact on the energy mix. Since 2005, RGGI states have increased their non-hydro renewable generation by 74 percent. In 2014 the RGGI states derived 50 percent of total generation from clean or renewable sources.

Table 4: Benefits of RGGI Investments in Clean Energy

Category	Cumulative (2008-2014)	Lifetime
 Participating Households	1.1 million	N/A
 Participating Businesses	600	N/A
 Short Tons CO ₂ Avoided	112,000	2.1 million
 Equiv. Cars Off Road	21,000	393,000
 Megawatt-Hours Saved	264,000 MWh	4.4 million MWh
 MMBtu Saved	118,000 MMBtu	2.1 million MMBtu
 Energy Bill Savings	\$50.1 million	\$836.1 million

GHG Abatement

GHG abatement programs promote the research and development of advanced energy technologies, the reduction of vehicle miles traveled, and the reduction of GHG emissions in multiple sectors. Approximately 8 percent of 2014 RGGI investments, and also approximately 8 percent of cumulative RGGI investments to date, fund GHG abatement programs in the region. Over their lifetime these investments are expected to avoid the release of 417,000 short tons of harmful CO₂ pollution into the atmosphere (see Table 6).






These programs vary according to local needs. Some examples have included electric car charging stations and rebates, research into new policies and plans to reduce greenhouse gases and adapt to the impacts of climate change, and forestry projects that enhance wildlife habitats while increasing carbon sequestration. Each program is designed to select and support specific projects that will reduce GHG emissions. GHG abatement programs vary in the types of economic benefit they provide. Many competitive projects reduce electricity and fossil fuel use as part of their efforts to reduce overall emissions. Certain programs generate economic benefits similar to those realized through energy efficiency and clean and renewable energy programs. GHG abatement projects are generally optimized to reduce emissions, which may actually increase electricity use in the case of electric car incentives, or upgrades to industrial processes to reduce the use of fuels such as oil or propane.

A GHG Abatement Success Story: New York RGGI Proceeds Help Decrease Diesel Use and Pollution

RGGI investments with two short line railroad companies resulted in decreased fuel use and greenhouse gas emissions while maintaining routine railroad operations and reliability by keeping locomotive engines warm overnight in cold weather without idling. The two short line rail companies, the Mohawk Adirondack and Northern Railroad of Utica, and the New York, Susquehanna and Western Railway of Cooperstown, invested in water-heating auxiliary power units (APUs) that heat and circulate water to keep the locomotive warm while the train is parked outside overnight. The APUs help to maintain battery life and ensure a smooth start the next day, and replace the practice of running large diesel locomotive engines throughout the night. Application and use of the APUs will reduce overnight fuel consumption and greenhouse gas emissions by up to 80 percent.

The project advances the State's goal to reduce greenhouse gas emissions 40 percent by 2030 by addressing emissions and supports Governor Andrew M. Cuomo's Reforming the Energy Vision (REV) strategy to build a clean, resilient and affordable energy system for all New Yorkers. REV places clean, locally produced power at the very core of New York's energy system. The transportation sector accounts for 40 percent of the greenhouse gas emissions in New York State. Reducing locomotive idling therefore simultaneously protects the environment and lowers business expenses for the railroads.

Table 6: Benefits of RGGI Investments in GHG Abatement

Category	Cumulative (2008-2014)	Lifetime
 Participating Households	32,300	N/A
 Short Tons CO ₂ Avoided	34,700	417,000
 Equiv. Cars Off Road	6,600	78,800
 MMBtu Saved	113,000 MMBtu	959,000 MMBtu
 Energy Bill Savings	\$3.8 million	\$37.0 million

Direct Bill Assistance



Direct bill assistance returns money to consumers as a rebate on their energy bills. Approximately 15 percent of 2014 RGGI investments, and also approximately 15 percent of cumulative RGGI investments, have funded direct bill assistance. RGGI investments in direct bill assistance have returned \$178.2 million in bill savings to 2.6 million participating households (see Table 5). The average participant saved \$69.47.

These programs provide rate relief to electricity consumers in the RGGI region. Many programs provide assistance specifically to low-income families, while other programs provide small on-bill credits to all consumers.

Direct bill assistance typically appears as a credit on a consumer's electricity bill, and can be a resource to help families afford fuel during the winter months. Direct bill assistance programs support economic activity by providing funds directly to consumers, who can then spend those funds on other priorities. Unlike energy efficiency or clean energy programs (which generate benefits for the lifetime of the installed measures), direct bill assistance programs provide benefits only for the length of the bill-assistance program. Direct bill assistance programs also do not reduce or affect wholesale electricity prices. Finally, direct bill assistance programs do not directly reduce or offset fossil-fueled electricity use. Because of this, they tend to have lower lifetime economic and environmental benefits than other programs.

RGGI proceeds provide only a small percentage of low-income direct bill assistance programs across the states. Other sources of funds come from on-bill system benefit charges, and federal funds in the case of LIHEAP programs.

Table 5: Benefits of RGGI Investments in Direct Bill Assistance

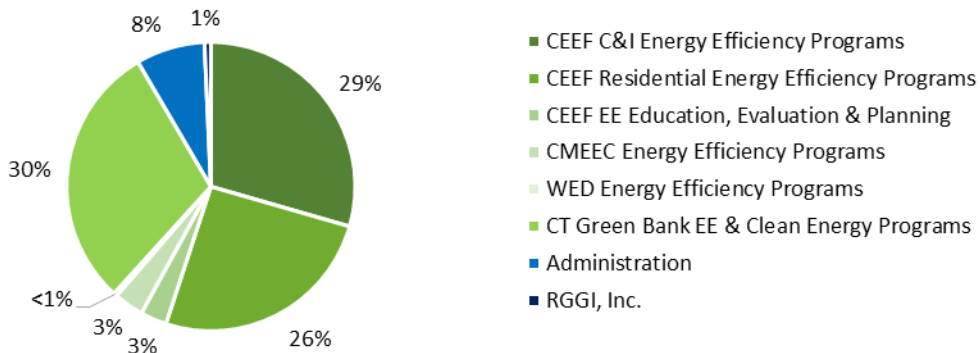
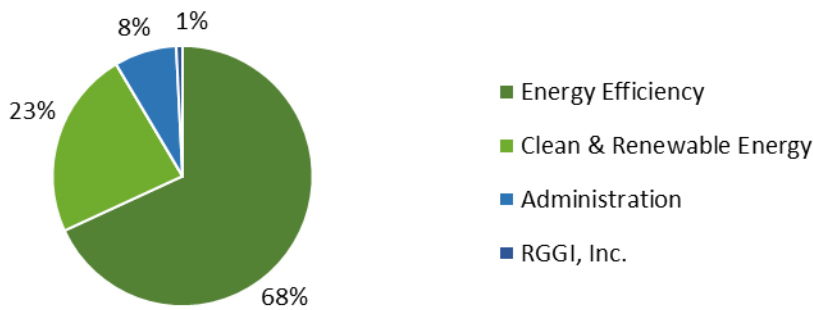
Category	Cumulative (2008-2014)	Lifetime
 Participating Households	2.6 million	N/A
 Energy Bill Savings	\$178.2 million	N/A

Connecticut

Connecticut predominantly invests its share of RGGI auction proceeds towards programs dedicated to the deployment of energy-efficient measures and improvements, and financing options for renewable energy projects. During 2014, Connecticut directed 69.5 percent of its RGGI auction proceeds toward the energy efficiency programs of the Connecticut Energy Efficiency Fund (CEEF), the Connecticut Municipal Energy Cooperative (CMEEC), the Town of Wallingford – Electric Division (WED) (formerly a member of CMEEC), and the Connecticut Green Bank (formerly the Connecticut Clean Energy Finance and Investment Authority). A further 23 percent went to support clean and renewable energy programs of the Connecticut Green Bank.

The energy efficiency programs funded through the CEEF are administered by the electric distribution companies (Eversource, and The United Illuminating Company) and the local gas distribution companies (Connecticut Natural Gas Corporation, Southern Connecticut Gas Company, and Yankee Gas Services Company) in the state. RGGI auction proceeds supplement CEEF’s energy efficiency funding from other sources, chiefly from a mandated conservation charge of three mills per kilowatt hour collected from electric ratepayers.

Cumulative Connecticut RGGI Investments by Category and Program Type



Connecticut received \$125.4 million in auction proceeds in the period covered by this report. RGGI investments represent \$109.0 million, and \$16.4 million is committed to 2015 and future programs.

During 2014, the CEEF's programs provided funding for home energy audits under the Home Energy Solutions (HES) program, discounted lighting products under the Retail Lighting Products program, incentives for homes and businesses under the New Construction programs, financing options under the Small Business Energy Advantage program, and sustainability measures under the Business and Energy Sustainability program. CEEF's programs served over 989,000 households and more than 6,000 businesses during 2014.

The member electric utilities of CMEEC used 2014 RGGI proceeds to conduct 304 home energy audits and provide a Cool Choice rebate to the Second Congregational Church in Jewett City for the installation of high-efficiency A/C equipment. WED utilized its 2014 RGGI proceeds to promote and conduct 514 home energy audits, and distribute LED lighting products to residential customers.

The Connecticut Green Bank used its 2014 RGGI funds to finance project costs under its nationally recognized Commercial Property Assessed Clean Energy (C-PACE) program.

Connecticut's robust portfolio of energy efficiency programs has led the American Council for an Energy-Efficient Economy (ACEEE) to rank the state 6th in the nation on its [2014 State Energy Efficiency Scorecard](#). In particular, ACEEE found noteworthy the C-PACE program, and the Small Business Energy Advantage program, which was broadened in 2014 to include state agencies and municipalities interested in installing energy efficiency measures in their buildings.

Program Highlight: Commercial Property Assessed Clean Energy Program

With a portion of its share of RGGI funding, the Connecticut Green Bank launched, in January 2013, the Commercial Property Assessed Clean Energy (C-PACE) program, which helps commercial, industrial and multi-family property owners access affordable, fixed-rate, long-term financing (for up to 25 years) for qualifying clean energy and energy efficiency improvements to their buildings at no upfront costs. Building owners finance C-PACE improvement projects through a voluntary assessment on their property tax bill, which are paid back over time. Repayment obligations transfer automatically to subsequent owners if any of the properties are sold. Participating building owners benefit from lower energy costs, and the communities in which they are located experience reduced electricity demand and new clean energy generation. As of year-end 2014, the Connecticut Green Bank approved a combined total of over \$63 million in C-PACE financing for more than 90 projects, which are estimated to avoid 13,000 tons of CO₂ emissions annually.

Success Story: C-PACE Brings Solar PV to Sofia's Plaza

Originally constructed between 1981 and 1986, Sofia's Plaza contains retail and professional spaces along 2 North Road and 122 Prospect Hill Road in East Windsor, Connecticut. The buildings in Sofia's Plaza have a combined area of 90,000 square feet.

Utilizing \$1.5M in construction financing through the C-PACE program, Sofia's Plaza installed a 250-kW solar PV rooftop system and a 250-kW solar PV ground mount system with no upfront costs. One-hundred percent of project costs were funded through RGGI auction proceeds.



The solar PV system at Sofia's Plaza. Photo Credit: Connecticut Green Bank

Completed in 2014, the Sofia's Plaza project is expected to annually save 475,230 kilowatt hours of electricity, save \$153,183 in energy costs, and avoid 275 short tons of CO₂ emissions.

Resources:

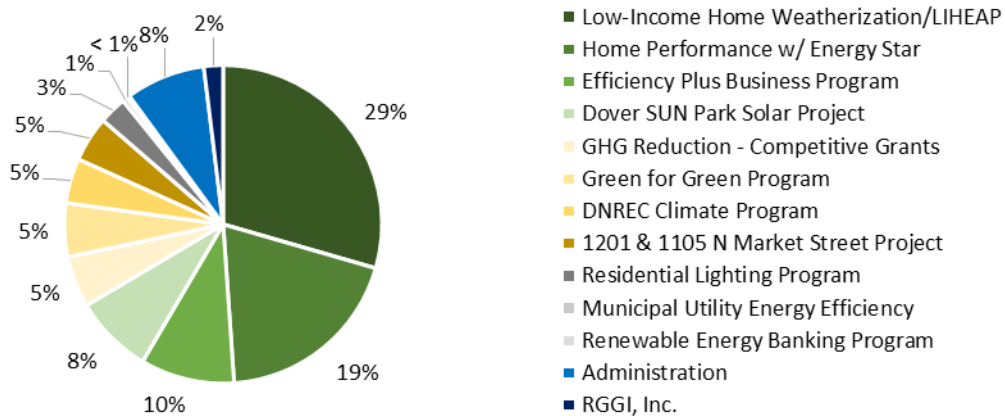
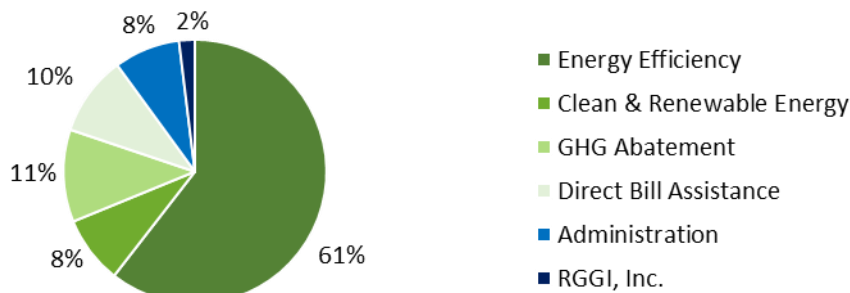
- [Connecticut Energy Efficiency Fund 2014 Report](#)
- [Energize Connecticut](#)
- [The Connecticut Green Bank](#)
- [C-PACE](#)

Delaware

Delaware directs the majority of the RGGI proceeds to energy efficiency and renewable energy projects. The Delaware Sustainable Energy Utility (SEU) is a unique non-profit organization that offers a one-stop resource for energy efficiency and clean energy for Delawareans, Delaware businesses and non-profits. The SEU programs are focused on helping Delawareans save money, create jobs and improve the environment.

In 2014, the SEU restarted their Home Performance with Energy Star Program. Home Performance with Energy Star is a whole-house approach to improving energy efficiency and comfort in Delawareans' homes. Home Performance with Energy Star allows homeowners to have a whole-home energy audit with a certified contractor. Homeowners are able to take action on the recommended energy saving improvements and rebates offered by the SEU. Homeowners are also given an energy-savings package that includes light bulbs, shower heads, faucet aerators, pipe insulation and smart power strips. In 2014, over 350 Delaware households took advantage of this program. And SEU programs are not only focused on homes: in 2014 the SEU partnered with the Delaware Valley Green Building Council to reduce energy costs and promote sustainability initiatives in Delaware schools (see Program Highlight).

Cumulative Delaware RGGI Investments by Category and Program Type



Delaware received \$63.9 million in auction proceeds in the period covered by this report. RGGI investments represent \$27.1 million, and \$36.7 million is committed to 2015 and future programs.

RGGI proceeds were also used to develop and implement climate change policy for the State of Delaware. In 2014, eleven state agencies and departments worked together to develop greenhouse gas reduction strategies, adaptation strategies, and guidance recommendations related to sea level rise and flooding under Executive Order 41. The State of Delaware adopted a greenhouse gas reduction strategy that includes a target of 30% greenhouse gas emissions reductions from a 2008 baseline by 2030, along with specific strategies to achieve the target. Delaware adopted 150 agency-specific actionable climate change adaptation recommendations for improving Delaware's preparedness and resilience to climate impacts. Flood avoidance strategies and design guidance were developed to reduce current and future flood risks to new and existing structures and infrastructure.

RGGI funds also support the Delaware low-income weatherization program, and provide heating bill assistance to low-income Delawareans. Delaware has invested approximately 15 percent of its cumulative-to-date investments in low-income home weatherization and low-income heating assistance, implemented by the Delaware Division of Energy and Climate housed in the Department of Natural Resources and Environmental Control (DNREC).

Program Highlight: Pathways to Green Schools

In 2014, the SEU along with the Delaware Valley Green Building Council launched the Delaware Pathway to Green Schools Program. This program aimed to reduce environmental impacts and costs, improve health and wellness, and provide effective environmental education in Delaware schools. Eight schools were selected to participate in the program. Each school received a free building assessment and energy audit, assistance with using the U.S. Environmental Protection Agency's ENERGY STAR Portfolio Manager Program, and technical assistance throughout the year. Each school that completed the program received \$1,000 and one school received \$10,000. The schools that participated in the program created recycling programs, community and school gardens, tracked and monitored their energy usage, and implemented recommendations in their energy audits.

Success Story: The I.M. Pei Building Energy Efficiency Project

The Delaware Sustainable Energy Utility (SEU), the Buccini-Pollin Group (a well-known real estate development company based in Wilmington, Delaware), Seiberlich Trane Energy Services, and the State of Delaware partnered to develop an energy efficiency project for the I.M. Pei Building - a 21 floor, 170,000 square foot office building located in the heart of downtown Wilmington. This building is one of the most prominent buildings in the Wilmington skyline. The SEU provided a \$1 million low-interest loan to the Buccini-Pollin Group to assist with the completion of this project.

The I.M. Pei Building project included installing multiple energy conservation measures (ECMs). These measures built on a 2004 renovation which included a new roof, double paned windows, window tinting, and upgrades to the HVAC system. The 2014 project included a steam boiler retrofit, cooling tower replacement, chiller tower optimization, and a lighting retrofit. Two 1970, #2 fuel oil fire steam boilers were replaced with three natural gas modular, dual-fired steam boilers that allow for increased efficiency and phased startup to meet the building's demand. The new boilers alone are expected to save 3.4 million MMBtu of energy annually. The chiller tower optimization, which included advanced building automation control strategies and upgrades to all variable frequency drives (pumps), will save over 400,000 kWh annually. The lighting retrofit included 3,565 T-8 lamp fixtures with special reflectors that will save 310,000 kWh annually by providing more effective lumens. All of the replacements and retrofits were completed in August of 2014.

The most recent measurement and verification reconciliation report reported that total savings through year 1 (9/2014-11/2015) were \$301,161. The I.M. Pei Building project is expected to save \$2 million dollars and over 32 million kWh over the lifetime of the project.

Resources:

- [Energize Delaware](#)
- [Delaware Weatherization Assistance Program](#)



The I.M. Pei Building located in Wilmington, Delaware.

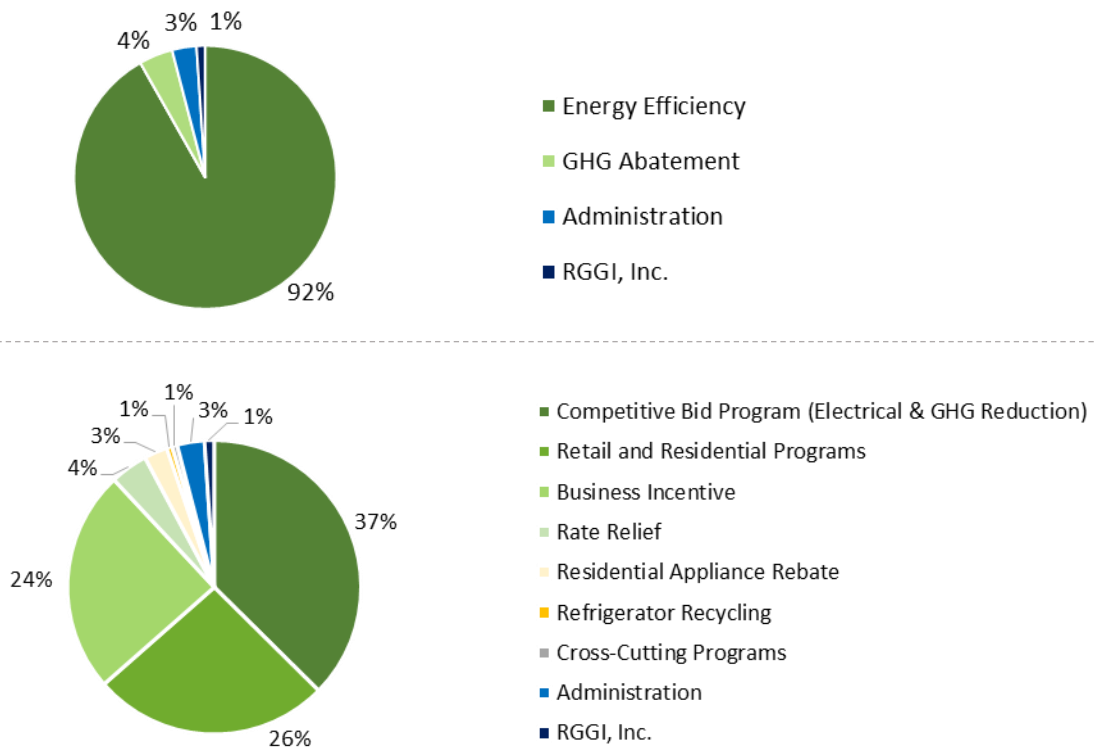
Photo Credit: The Sustainable Energy Utility

Maine

Through 2014, Maine has directed 98 percent of its invested CO₂ allowance proceeds towards a combination of energy efficiency and direct bill assistance. The Maine Department of Environmental Protection (DEP) and Efficiency Maine are authorized to use a portion of proceeds to support program administration, as well as carbon offsets research. Efficiency Maine is the independent, third-party administrator for all programs in Maine that help to promote all-fuels energy efficiency for Maine residents and businesses. Over the lifetime of the investments, efficiency programs funded in Maine by RGGI proceeds are conserving over 135,000 MWh of electricity, and lowering participants' energy bills by more than \$62 million.

Energy efficiency programs funded by RGGI proceeds in 2014 included retail and residential programs which worked with lighting manufacturers, retailers and distributors to reduce the prices of energy-efficient lighting products statewide. Programs also included a business incentive program, as well as industrial and large commercial competitive bid programs that are helping Maine businesses sustain jobs and stay competitive.

Cumulative Maine RGGI Investments by Category and Program Type



Maine received \$53.6 million in auction proceeds in the period covered by this report. RGGI investments represent \$37.1 million, and \$16.5 million is committed to 2015 and future programs.

Most Efficiency Maine programs are funded by a combination of system benefit charges, forward capacity market proceeds and RGGI proceeds. Maine's statutory 10- and 20-year energy savings targets include:

- Capturing all cost-effective energy efficiency resources available for electric and natural gas utility ratepayers.
- Achieving electricity, natural gas and heating oil savings of 20 percent within a decade.
- Substantial weatherization of all homes by 2030.

Program Highlight: The Home Energy Savings Program

Efficiency Maine's Home Energy Savings Program (HESP) serves as the framework for market-based weatherization and heating system improvements achieved through a combination of rebates, financing, and customer education. HESP is designed to raise awareness about the benefits of home weatherization and to encourage Maine homeowners to make energy efficiency upgrades.

FY 2014 was a significant year for HESP. With its passage of the Omnibus Energy Bill in June 2013, the Maine State Legislature directed Efficiency Maine to invest 35% of Regional Greenhouse Gas Initiative (RGGI) auction revenues in measures to reduce home heating demand. This change in the RGGI statute allowed Efficiency Maine to expand its funding for projects that save heating oil, Maine's most common heating fuel, without relying on federal funds. More than 7 in 10 Maine households use fuel oil as their primary energy source for home heating – a higher share than in any other state. In 2014, HESP invested \$3,870,000 of RGGI funds, approximately 99% of the Program's total budget.

FY 2014 also saw the expansion of loan product offerings through HESP to include new unsecured energy project financing. These smaller loans have continued to increase in popularity, as they require less paperwork and can be processed more quickly than the other loan products. By the end of FY 2014, unsecured loans accounted for 80% of the loans administered by Efficiency Maine. The average amount financed was approximately \$8,200.

HESP provided more than 6,400 participants with rebates for energy saving measures in FY 2014, including more than 2,500 rebates for ductless heat pumps. The average HESP rebate of \$839 incentivized an average total project cost of \$4,936. Through these incentives, Efficiency Maine was able to facilitate more than \$21 million in private energy efficiency investments. Overall, the measures incentivized through HESP in FY 2014 generated lifetime energy savings of 1,298,600 MMBtu, helping Mainers save roughly \$47.5 million in lifetime energy costs. Given that RGGI funds constituted 99% of the budget for HESP in 2014, they were responsible for a proportionate share of these savings.

Success Story: The Island Institute Community Energy Efficiency for Maine

Maine's island residents have some of the highest energy costs in the nation; heating oil, propane, wood pellets, and other fuels are transported by ferry or barge, adding significantly to their price. The Island Institute's Community Energy Program helps island communities confront their unique energy challenges through energy efficiency and renewable energy initiatives.

In 2014, Efficiency Maine awarded the Island Institute with a \$75,000 grant to support the Community Energy Efficiency for Maine (CEE ME) project. The goal of the project was to develop and test models for delivering effective outreach, education, and energy efficiency retrofit services in remote communities.

Through their "Weatherization Weeks," the Island Institute promoted and coordinated air sealing and insulation efforts on seven islands. By bundling jobs across the island in one week, they were able to create economies of scale for participating homeowners and contractors. This initiative enabled Efficiency Maine's Home Energy Savings Program (HESP) to reach homeowners who experience higher energy costs but who, because of their remote location, have found it more challenging to weatherize their homes. During the grant period, the initiative touched over 75 island homes, reducing annual energy costs by roughly \$120,000.¹ The Island Institute continues to implement this model in Maine, and has proudly shared it with their peers in other states.



*Island Institute and Home Energy Answers staff accompany representatives from Efficiency Maine and the Governor's Energy Office on the barge trip to Monhegan Island for the community's Weatherization Week in June 2014. The barge carries all the necessary equipment, including a spray foam truck.
Photo Credit: The Island Institute.*

Resources:

- [Efficiency Maine 2014 Annual Report](#)
- [Efficiency Maine Case Studies](#)

¹ Island Institute, Community Energy Efficiency for Maine (CEE ME): Final Report. June 2015.

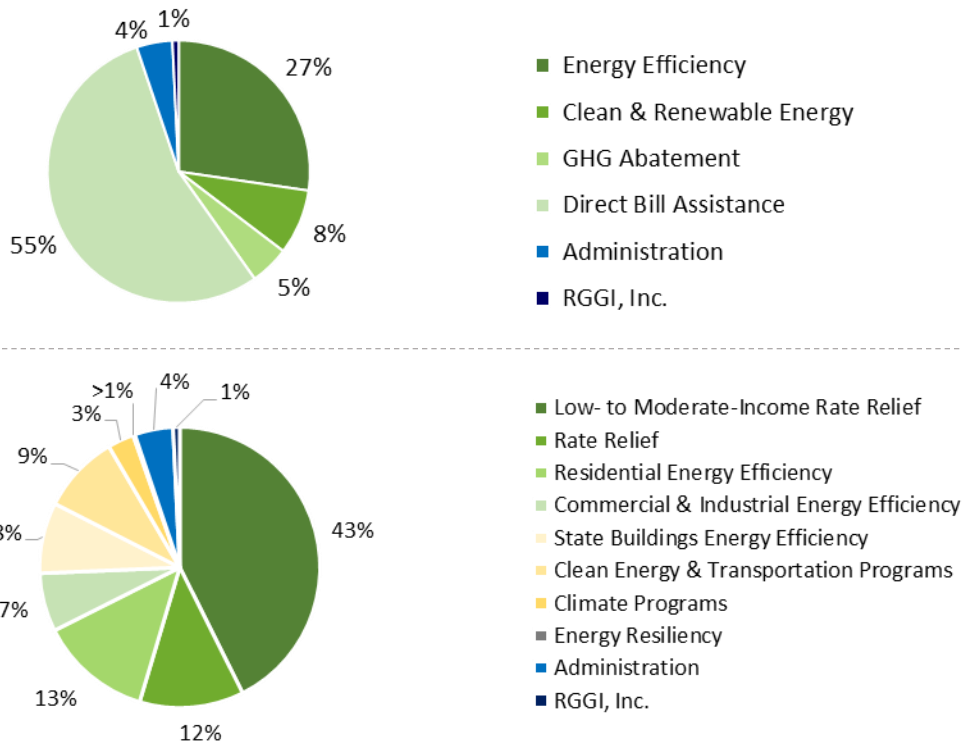
Maryland

Maryland invests proceeds from the sale of CO₂ allowances into the State's Strategic Energy Investment Fund (SEIF), a special, non-lapsing fund administered by the Maryland Energy Administration (MEA). MEA deploys SEIF funds to promote affordable, reliable and clean energy across all of Maryland's diverse regions and communities. These programs have reduced household bills, created new jobs in growing industries, and promoted energy independence. The programs have also significantly reduced the energy costs of Maryland's businesses.

Maryland's investments funded through RGGI proceeds have:

- Supported energy efficiency upgrades at 14,380 low- to moderate-income households;
- Provided grants of over \$2 million to help 39 businesses upgrade their efficiency through the Game Changer Competitive Grant Program;
- Supported residential renewable energy at 7,587 households.
- Saved Marylanders \$457 million in estimated lifetime energy bill savings.

Cumulative Maryland RGGI Investments by Category and Program Type



Maryland received \$373.9 million in auction proceeds in the period covered by this report. RGGI investments represent \$320.5 million, and \$53.4 million is committed to 2015 and future programs.

Program Highlight: EmPOWER Clean Energy Communities

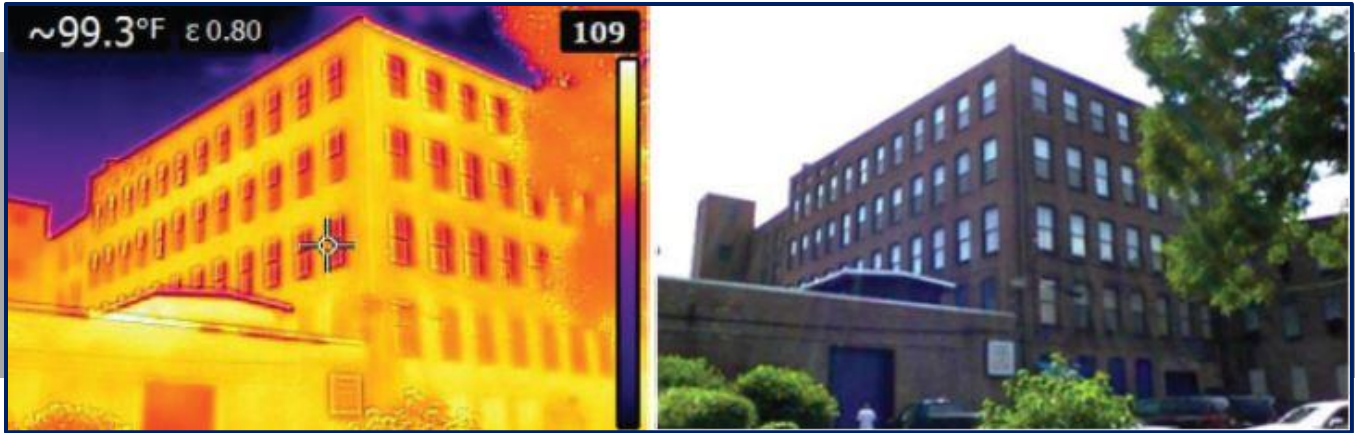
The 2014 EmPOWER Clean Energy Communities Low-to-Moderate Income Grant (LMI) Program is delivering significant annual energy savings to thousands of low to moderate income Maryland residents through recently completed energy efficiency projects spearheaded by a wide range of non-profit and government organizations. Through 62 grants ranging from just over \$5,000 to nearly \$1 million, MEA supported a wide range of energy efficiency measures that maximized energy savings in the commercial and residential facilities in which they were installed. Grantees have included:

- A collaborative of local governments within Prince George's County improved 154 homes with annual energy savings of more than \$61,000.
- Almost 200 families in five counties are saving more than \$70,000 annually in energy costs through a project with the Community Action Council of Howard County.
- Two Habitat for Humanity chapters are saving homeowners more than \$25,000 annually in energy bills by making smart energy efficiency upgrades.
- The Baltimore organization Healthy Neighborhoods, Inc. improved 27 facilities and delivered annual energy savings of more than \$131,000 to groups serving the city's underserved.

Success Story: Healthy Neighborhoods with Energy Efficiency

A non-profit that has been working to improve Baltimore's neighborhoods for more than a decade, Healthy Neighborhoods, Inc. (HNI) harnessed the Maryland Energy Administration EmPOWER Clean Energy Communities Low-to-Moderate Income Grant Program to extend its reach in some of the city's neediest communities. Working in partnership with the Baltimore City Energy Office and 11 other city nonprofits, HNI helped make 27 facilities more energy efficient. By lowering operating costs at these sites, HNI makes it possible for the savings to be directed to serving some of the city's most vulnerable residents such as the homeless, those with mental, physical or developmental disabilities, and persons with substance abuse disorders, among others.

With its grant award, HNI was able to improve a total of 27 sites with a range of upgrades including HVAC systems, building envelope improvements, health and safety measures, lighting, appliances and other projects. HVAC and building envelope improvements together accounted for more than half of the total project costs of nearly \$1.2 million, followed next by lighting upgrades. Through BGE incentives and the Baltimore Energy Initiative (BEI), HNI leveraged \$408,660 to help cover the cost of several projects.



Thermal imaging of the Maryland Center for Veterans Education and Training (MCVET) in Baltimore indicates building heat gain prior to MEA-funded insulation and other upgrades. Photo Credit: Maryland Energy Administration.

Two cool roof projects were included in the award to assess whether the savings associated with these projects would demonstrate cool roofs to be cost effective in Baltimore. All roofing materials are either ENERGY STAR certified or meet ENERGY STAR specifications and also meet solar reflectance and thermal emittance requirements based on the roofing slope and material. The Baltimore Energy Office will monitor the two buildings' energy use for at least two years and analyze the effect of the cool roof on the building's heating and cooling loads. The energy savings associated with the cool roofs will be estimated by subtracting the anticipated energy efficiency savings associated with the non-cool roof energy measures installed under this grant scope from the total observed energy savings. MEA will receive a report detailing the findings of cool roof impact on the buildings' energy requirements in early 2017.

Together, all of the Healthy Neighborhoods measures are estimated to generate annual energy savings of 722,154 kWh, and estimated annual cost savings of \$131,200. At an installed cost of \$1,197,257, that means the measures will pay for themselves in 9.1 years.²

Resources:

- [Maryland Energy Administration](#)
- [Maryland Energy Administration Success Stories](#)
- [Maryland Incentives](#)

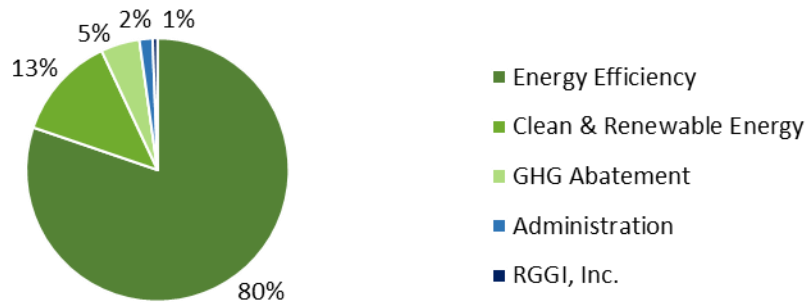
² Assumptions: residential electric rate, \$0.1347/kWh; commercial electric rate, \$0.1099/kWh; natural gas rate, \$1.00/Therm; lighting operating hours – 60 hrs/week (3,120 hrs/year); reduced hours due to occupancy sensors – 20 hrs/week (1,040 hrs/year); exterior lighting operating hours – 84 hrs/week (4,368 hrs/year)

Massachusetts

Massachusetts has put its RGGI allowance proceeds to work advancing the Commonwealth’s energy goals. Since 2008, Massachusetts has invested more than \$306 million in RGGI proceeds, and more than 97 percent of these funds have been directed into strategic energy programs and initiatives. Two top initiatives are Massachusetts’ statewide Three-Year Energy Efficiency Investment Plans, which are implemented through the Commonwealth’s investor-owned utilities under the Mass Save® brand, and the Green Communities Designation and Grant Program, which provides funds to communities that meet ambitious energy criteria. These programs reduce harmful pollution, build the Commonwealth’s clean energy economy, and increase the predictability of energy costs for homes and businesses.

Through 2014, investor-owned utilities and energy efficiency providers have delivered energy efficiency programs to Massachusetts residences and businesses, generating more than \$691 million in lifetime energy bill savings. These programs gain additional funding through the state’s Energy Efficiency Reconciliation Factor (EERF), system benefit charges, and regional forward capacity market auction proceeds.

Cumulative Massachusetts RGGI Investments by Category and Program Type



Massachusetts received \$316.5 million in auction proceeds in the period covered by this report. RGGI investments represent \$304.6 million, and \$11.9 million is committed to 2015 and future programs.

Mass Save programs provide energy assessments, air sealing and weatherization, and rebates for insulation and efficient lighting, appliances, HVAC, and water heating equipment. They incentivize the implementation of combined heat and power, and enable industrial facilities to improve process efficiency. RGGI proceeds also support incentives to promote the development of markets for energy-efficient technologies. This can include building code consultations, community-based initiatives, public education and outreach, and other programs helping to develop and commercialize energy-efficient products and practices.

Massachusetts' energy policies and programs, including those funded in part by RGGI proceeds, have made Massachusetts the nation's top state for efficiency according to the American Council for an Energy Efficient Economy (ACEEE)'s 2014 Scorecard.

Program Highlight: Green Communities

The Green Communities Division strives to help all Massachusetts cities and towns find clean energy solutions that reduce long-term energy costs and strengthen local economies. The division provides technical assistance and financial support for municipal initiatives to improve energy efficiency and increase the use of renewable energy in public buildings, facilities and schools.

The Green Communities Designation and Grant Program has helped 155 cities and towns earn Green Community designation. As energy leaders in Massachusetts, Green Communities are eligible for state grants. Nearly \$29 million from those Green Community grants is already at work in 136 communities, with more than \$3 million in additional grants for energy projects in the newest 19 designated communities. The Green Communities Division staff continues to work with scores of other local government entities on an array of energy activities: from reducing energy use in municipal and school buildings to establishing power purchase agreements that enable financially attractive renewable energy generation, adopting the latest building codes, and much more.

Success Story: Town of Natick Reaches Efficiency Goal

In the spring of 2010, Natick was one of the first Green Communities designated by DOER. One of the criteria to become a Green Community is to establish an energy use baseline and develop a plan to reduce energy use by 20 percent within five years. Natick was one of the first communities to achieve the program's energy reduction goal, reducing



*The town of Natick is recognized for reducing its energy use by 20 percent.
Photo credit: Town of Natick.*

municipal energy consumption by 20 percent from fiscal year 2008 to 2014. The town's annual energy costs have been reduced by approximately \$387,000.

Natick has used a wide range of measures to achieve this success:

- Converted street lights, lighting in municipal parking lots, and interior lighting to efficient LED lighting, and installed occupancy sensors in some facilities.
- Upgraded HVAC systems, including variable frequency drives and demand control ventilation.
- Optimized operation of the domestic hot water systems in several schools by making improvements such as installing timers to turn pumps off when the building is closed.
- Selected several energy efficient models when replacing municipal vehicles, purchased one electric vehicle, and currently in the process of installing an electric vehicle charging station.
- Natick leases an ice rink and as part of the contract, the town requires the operating company to reduce energy use. Upgrades have included LED lighting, better insulation, building controls and a more efficient cooling system.

Resources:

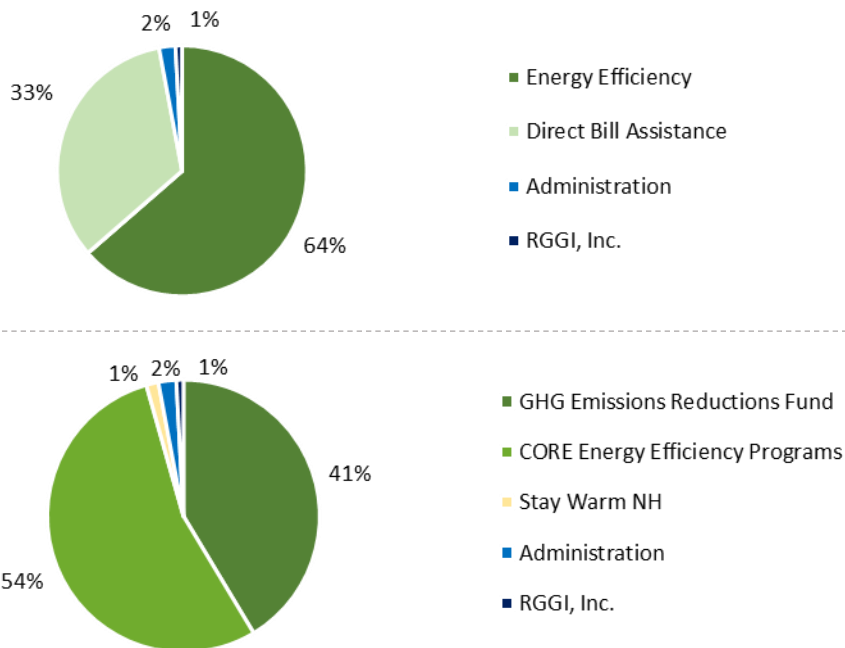
- [MassSave](#)
- [Massachusetts Dept. of Energy Resources Green Communities Program](#)
- [Massachusetts Energy Efficiency Advisory Council](#)

New Hampshire

In 2014, New Hampshire invested approximately \$4.5 million in RGGI allowance proceeds to its Energy Efficiency Fund (EEF), which, in conjunction with the System Benefits Charge, funds efficiency programs administered by the state’s electric utility companies. Legislative changes enacted in 2013 revised the state’s RGGI proceeds investment plan leading to approximately \$14.4 million in direct bill assistance to NH electric consumers. In 2014, \$4.3 million from the Energy Efficiency Fund was used to expand programs run by the four New Hampshire electric utilities, enabling them to:

- Weatherize 155 income-eligible homes and 129 high energy use homes.
- Work with builders to certify 48 of their new homes as Energy Star.
- Incent the purchase of 2,369 high efficiency appliances
- Help New Hampshire residents purchase and install 7,666 CFL or LED light bulbs.
- Upgrade to highly efficient equipment at 337 businesses and municipalities.
- Host workshops throughout the state educating code officials, home builders, homebuyers, realtors, and more on the energy code and how to build above code.

Cumulative NH RGGI Investments by Category and Program Type



New Hampshire received \$76.3 million in auction proceeds in the period covered by this report. RGGI investments represent \$72.1 million, \$3.1 million was transferred to the state general fund in 2010, and \$1.2 million is committed to 2015 and future programs.

New Hampshire's RGGI-funded Core Energy Efficiency programs were established in 2012. Cumulative RGGI-funded investments in Core Energy Efficiency programs will save 438,330 MWH of electricity and 1,023,193 MMBtus over the expected life of the energy efficiency improvements, saving electric utility customers \$92 million in energy costs that can be reinvested in the NH economy.

Program Highlight: New Municipal Program

On July 24, 2013, Senate Bill 123 (SB 123) was signed into law. This bill amended RSA 125-O:23 II-III (Multiple Pollutant Reduction Program) effective January 1, 2014, and requires that certain proceeds from the Regional Greenhouse Gas Initiative (RGGI) Program be allocated to municipal and local government energy efficiency projects. The primary focus in the first year was to expand on the success achieved through the foundation of the existing Core commercial and industrial programs, and to gain insight and experience that could be utilized in the program design in 2014 and in subsequent years.

During the first year, approximately 200 energy efficiency projects were completed under the Municipal Program. These projects resulted in energy savings of 67,620 MWH and 33,071 MMBtus over the expected life of the energy efficiency improvements, and saved municipalities \$12 million in energy costs.

Success Story: Berlin Waste Water Treatment Upgrade Project

The Pollution Control Facility in Berlin, New Hampshire, annually processes about 690 million gallons of sanitary sewer flows and another 65 million gallons of leachate from the Mt. Carberry Landfill. It also treats over 300,000 gallons of septic tank waste trucked in from other communities. In 2012, the increased population from the new medium-security federal correctional institution prompted the city of Berlin to upgrade its wastewater infrastructure to meet its changing needs.



The Berlin Waste Water Treatment Plant. Photo Credit: New Hampshire.

The Pollution Control Facility, in operation since August 1979, was designed to treat an average daily flow of 2.64 million gallons of wastewater, and produce an effluent that will enhance the waters of the Androscoggin River. The facility's upgrade project increased

the capacity by about 14%, to an average daily flow of 3.0 million gallons, and ushered in a thoroughly modern control system. The project provided an opportunity for the City of Berlin to work with its electric utility to install energy efficient measures that resulted not only in lower energy costs but also reduced maintenance costs. The facility replaced two older centrifuges with an energy efficient slow speed screw press for removing moisture content from the activated sludge.

A centrifuge removes water by spinning the sludge at very high speeds, an energy-intensive operation; whereas the slow speed screw press squeezes the water out at slow, constant speeds which reduces energy use and wear and tear. New variable frequency drives were also installed to control the new pump systems. Integrated with the advanced control system, the variable frequency drives allow the pump motors to operate at the absolute minimum speed, drastically reducing energy consumption. Additional energy efficient measures included the installation of ductless mini split heat pumps in the laboratory for precise temperature control and high performance T8 lighting in the plant. Implementing energy efficient measures as part of this upgrade project resulted in annual energy savings of \$42,000.

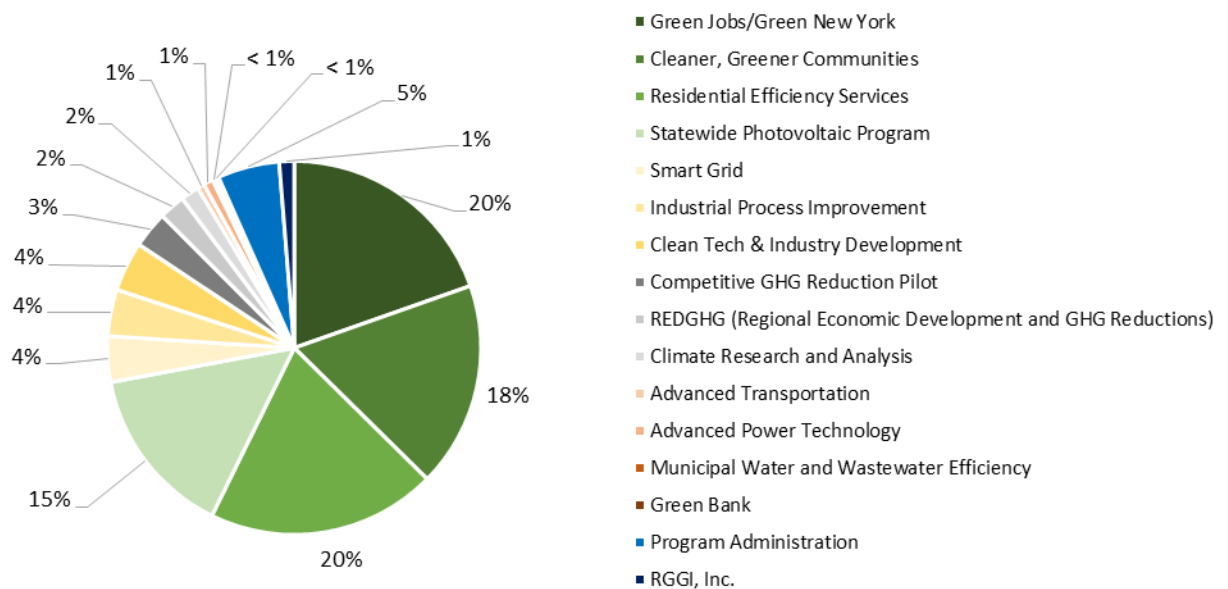
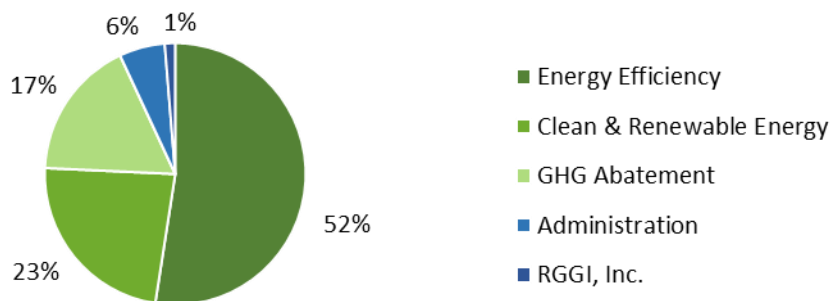
Resources:

- [2014 Core New Hampshire Energy efficiency Programs, Docket DE 12-262, Rev. December 3, 2013](#)
- [NH Core Energy Efficiency Programs, 4th Quarter Report, January 2014 – December 2014](#)

New York

New York State invests RGGI proceeds to support diverse strategies that mitigate global climate change and reduce pollution. The strategic goals of RGGI investment in New York are to reduce in-State GHG emissions through energy efficiency and renewable energy projects, build New York’s capacity for long term carbon reduction, empower communities to transition to cleaner energy, stimulate entrepreneurship and growth of clean energy companies in New York, and support innovative financing to increase adoption of clean energy.

Cumulative New York RGGI Investments by Category and Program Type



New York received \$728.2 million in auction proceeds in the period covered by this report. RGGI investments represent \$466.1 million, \$90 million was transferred to the state general fund in 2009, and \$172.1 million is committed to 2015 and future programs.

New York's diversified approach supports Governor Andrew M. Cuomo's Reforming the Energy Vision strategy to build a cleaner, more resilient, and affordable energy system for all New Yorkers. New York's investments of RGGI funds sit alongside other regulatory and programmatic initiatives such as the Clean Energy Standard and Clean Energy Fund that will both transform the energy marketplace and further reduce carbon emissions.

This approach will significantly increase the scale of clean energy in both supply-side markets as well as distributed energy resources that will be necessary to achieve the level of clean energy market penetration and greenhouse gas reductions that are at the core of State policy objectives. One exemplary approach that demonstrates how New York is advancing market scale for clean energy is through the NY-Sun initiative, which seeks a self-sustaining market for solar PV technologies through complementary approaches that support the State's existing grid infrastructure, create jobs throughout the state, and provide clean affordable power to homes throughout New York. NY-Sun provides incentives for the installation of solar systems, while simultaneously promoting actions that can realize solar technology advancements as well as targeting efforts to drive down the 'soft costs,' such as marketing and customer acquisition, associated with solar PV installations. NY-Sun is also designed to ensure all New Yorkers have access to the benefits that solar PV systems can provide, and through the Affordable Solar program, New York is helping to provide solar options for income-eligible New Yorkers, reaching homeowners with total household income less than 80% of the area or state median income.

New York is also fostering energy efficiency market development to scale by building "whole-house" solutions that provide greater carbon reductions and consumer cost savings than electric efficiency alone can achieve. Initiatives in 2014 that have advanced this objective include Home Performance with ENERGY STAR®, Assisted Home Performance with ENERGY STAR®, and Empower New York, which provide comprehensive opportunities to address all residential energy uses, providing cost savings on all utility and heating bills; increase comfort and quality of life in the home; and significantly cut carbon emissions from the housing sector. RGGI also supported community-based programs like Cleaner, Greener Communities and Climate Smart Communities, which are designed to enable statewide long-term deep carbon reductions, and which allow the community to realize its own energy and environmental objectives. Cleaner, Greener Communities has assisted localities throughout the State with sustainability planning and facilitating project aggregation that helps leverage private capital and capture economic and societal benefits through innovative projects like mixed-use development, innovative financing mechanisms like Property-Assessed Clean Energy (PACE) financing, and climate action planning.

Program Highlight: Growing the Energy Storage Industry

RGGI investments are supporting the New York Battery and Energy Storage Technology Consortium (NY-BEST) Testing and Commercialization Center, which was created to catalyze, attract and grow the energy storage industry in New York. The world-class Center provides unique testing and validation services needed to bring new battery and energy storage technologies to the commercial market.

The Center offers product development services that are essential for researchers and companies to test the viability and performance of innovative energy storage technologies before they are introduced to the marketplace as new commercial products. These services can be difficult for individual companies to procure within a reasonable geographic proximity or at a reasonable cost, and include: testing for small single-cell batteries to larger megawatt systems, product development, performance validation, certification testing, environmental testing and battery lifetime testing, mobile in-field testing and on-site product commissioning.

Energy storage technologies, such as batteries, ultracapacitors, fuel cells and flywheels are being used to increase efficiency and reliability on the electric grid, as well as in transportation, buildings, and portable electronics where they are helping to drive a cleaner, more sustainable and secure economic future. An Economic Impact Study commissioned by NY-BEST estimated that the energy storage sector could grow more than 11,400 new jobs in New York by 2020 and 43,000 new jobs by 2030.

Success Story: New York Transforms Historic Building with Energy Upgrades

RGGI investments are supporting community redevelopment such as the Cleaner, Greener Communities program award to realize a major redevelopment project in downtown Rochester. The iconic Sibley Building, renamed Sibley Square, first opened in 1868 as the city's first department store. It has long been a highly recognizable Rochester landmark earning its spot on the National Register of Historic Places in 1984. The redevelopment of Sibley Square will revitalize and transform this once nearly vacant building in Rochester into a multi-use destination for residents and investors. Sibley Square's downtown location will provide residents with a walkable community, helping them to use their cars less while combatting urban sprawl and spurring further investment in downtown revitalization.

The project is an example of Governor Andrew M. Cuomo's strong focus on rebuilding the Upstate New York economy and his vision for moving the Finger Lakes region forward. Once completed, Sibley Square will be a model for environmentally responsible design. It will undergo significant energy improvements including new energy efficient windows, hybrid heat pump systems, high efficiency HVAC systems, electric vehicle charging stations, an educational energy kiosk that raises awareness about energy use, and amenity space on a backup generator for use during emergency situations. Additional sustainability components in various phases of the Sibley Square Project include using healthy materials, low flow water fixtures and ENERGY Star appliances and lighting.

The energy efficiency improvements are expected to reduce carbon emissions by 1,458 metric tons annually. Furthermore, Sibley Square anticipates it will save approximately 1.8 million kWh of electricity and 140,000 therms of natural gas, resulting in reduced energy costs of \$319,000 each year.

Resources:

- [2014 Operating Plan for Investments in New York under the CO₂ Budget Trading Program and the CO₂ Allowance Auction Program](#)
- [New York's RGGI-Funded Programs Status Report, Quarter Ending December 31, 2014](#)
- [NY-Sun](#)



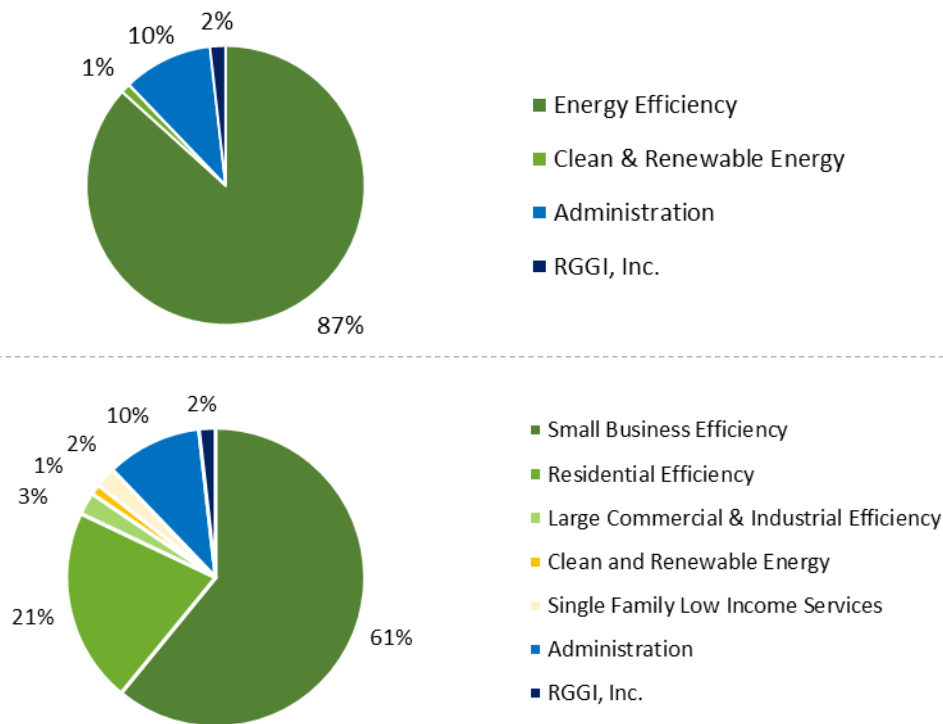
The Sibley Building. Image Credit: NYSERDA.

Rhode Island

Rhode Island continues to invest RGGI proceeds to deploy clean energy resources throughout the state and drive associated economic and job growth throughout its local economy. These investments are supporting both public and private sector institutions, and local residents, adopt cleaner, more sustainable energy solutions that can reduce energy costs, mitigate energy price volatility, and reduce carbon footprints.

In 2014, Rhode Island utilized its RGGI proceeds to support cost-effective energy efficiency resources and the integration of renewable energy projects throughout the local grid. For example, Rhode Island began investing funds allocated in 2012 for the Rhode Island Public Energy Partnership (RIPEP), a three-year competitive grant from the USDOE. RIPEP is a precedent-setting collaboration to achieve deep energy savings in municipal, school and state facilities. Funds were used for rebates and on-bill repayment to support project implementation. Also, Rhode Island Office of Energy Resources (OER) awarded RGGI-supported grants to Rhode Island public and private schools (K-12) to support their adoption of energy efficiency and renewable energy projects.

Cumulative Rhode Island RGGI Investments by Category and Program Type



Rhode Island received \$35.7 million in auction proceeds in the period covered by this report. RGGI investments represent \$14.5 million, and \$21.2 million is committed to 2015 and future programs.

RGGI funds were also allocated to the state's primary electric utility, National Grid, to provide energy efficiency rebates to homes heated with deliverable fuels (oil and propane). Use of the funds for efficiency services to this sector captures electricity savings (including potentially significant savings from oil-heated homes with air conditioners) and achieves reductions in carbon emissions associated with more efficient use of delivered fuels.

Funds were also invested in energy efficiency programs dedicated to community buildings. These not-for-profit organizations typically do not have funds available for their portion of energy efficiency project costs. These supplemental incentives enabled projects that would not have otherwise been completed due to lack of customer funds.

The OER has also invested funds to jump-start a farm-specific energy efficiency program. Funds were used to support comprehensive energy audits for pilot farms ranging from dairy to greenhouse operations. These pilot audits will provide OER and the Utility with a better understanding of farmer needs and farm-specific energy efficiency opportunities.

Finally, funds were also invested in:

- Rhode Island Solarize campaign: Solarize is a targeted marketing and education campaign aimed at increasing the adoption of small-scale solar across the state.
- Evaluation, measurement and verification study of ductless mini-split heat pumps.
- Pilot study to explore how distributed solar photovoltaics can provide value to Rhode Island's electric grid.

Program Highlight: Renewable and Efficiency Projects at Rhode Island Schools

OER awarded \$1.16 M to local public and private schools to support energy efficiency and renewable energy projects at Rhode Island schools. Three school districts were awarded grants totaling \$538,000 for energy efficiency projects and four schools were awarded \$622,250 in grants to install photovoltaic systems. Each awardee was required to have an educational component for the students at the school.

Success Story: Rocky Hill School

Rocky Hill School is a K-12 co-educational college preparatory school located in East Greenwich, Rhode Island. With a \$104,000 grant from the Rhode Island Office of Energy Resources, the Rocky Hill School installed a 33 kW solar photovoltaic array on the Alan F. Flynn Upper School Building, which will provide 20% of the building's annual electricity for the next 30 years. Over the system's lifetime, the project is projected to reduce carbon dioxide emissions by 906 metric tons.

"For the 300 students from preschool to grade 12 on the 84-acre campus along the shores of Narragansett Bay, it's part of a multi-pronged effort to run a sustainable campus and to instill

environmental stewardship into the student body” Peter Hanney, Director of Communications and Marketing at Rocky Hill School.

A Davis Vantage Pro2 weather station and a solar irradiance meter were installed adjacent to the array, to collect real time weather and irradiance data, allowing the students access to the data in real time. In addition, the Advanced Placement Environmental Science Class used the data as part of the class curriculum.



Rocky Hill School with rooftop solar array. Photo credit: Peter Frost, Rocky Hill School parent.

Resources:

- [2011 - 2014 Plans for the Allocation and Distribution of RGGI Auction Proceeds](#)
- [National Grid RGGI Auction Proceeds, Quarter Four Report 2014](#)
- [RI Division of Purchases Continuous Recruitment #37](#)

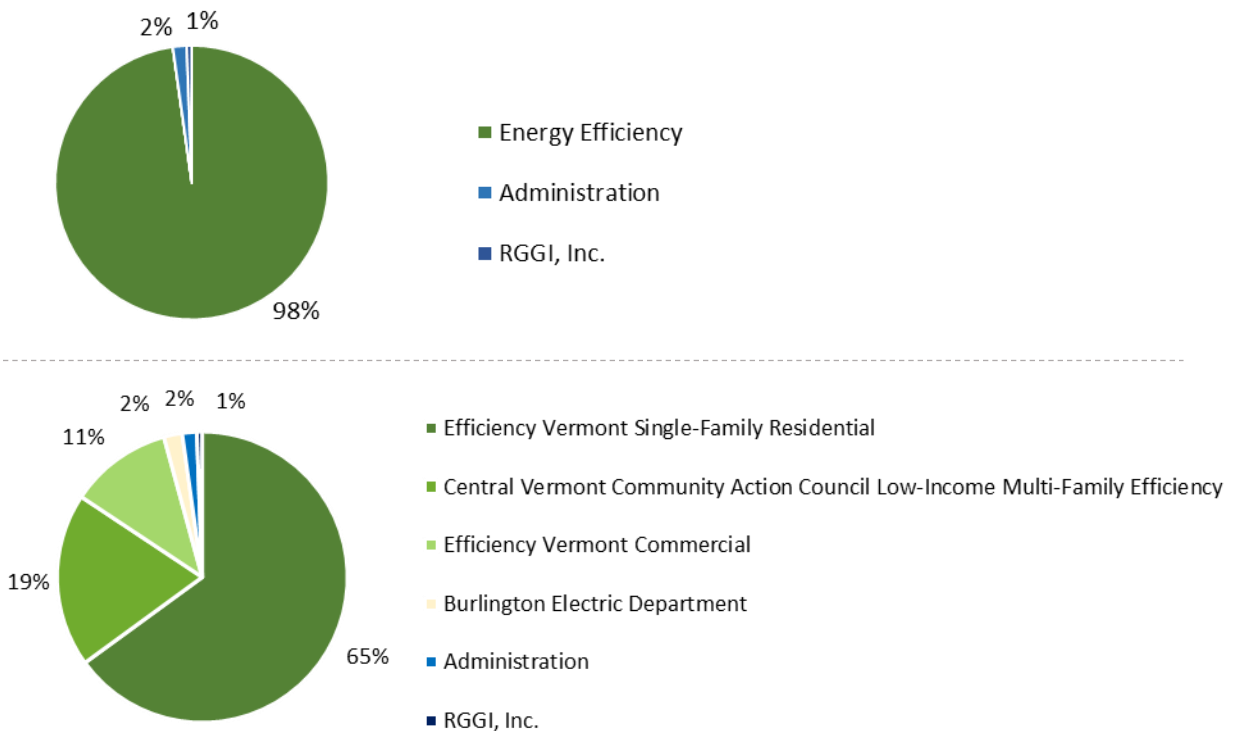
Vermont

Vermont invests the majority of its CO₂ allowance proceeds in programs managed by Efficiency Vermont and the Burlington Electric Department. RGGI funds allow these entities to expand their electrical energy efficiency programs to include thermal energy and process fuel efficiency programs. Efficiency Vermont's participation in the regional grid's forward capacity market also provides funds for this program expansion.

Vermont's thermal energy and process fuel efficiency programs funded by RGGI through 2014 are estimated to result in lifetime energy savings of 2 million mmBTUs. Together with electric efficiency investments, these programs are estimated to avoid the emission of an estimated 138,859 short tons of CO₂, and to save participants an estimated \$115 million on their energy bills over the lifetime of those investments. Vermont's RGGI-funded programs have served 4,523 households and 297 businesses.

Programs currently supported by CO₂ allowance proceeds include the Home Performance with ENERGY STAR® service for residential customers, the Building Performance service providing incentives for efficiency services to small business customers, and low-income energy efficiency provided through the Champlain Valley Community Action Council.

Cumulative Vermont RGGI Investments by Category and Program Type



Vermont received \$14.5 million in auction proceeds in the period covered by this report. RGGI investments make up \$14.5 million. \$1,563 has been advanced from 2015 and future programs.

Efficiency Vermont, the nation's first ratepayer-funded energy efficiency utility, is overseen by the Vermont Public Service Board. Efficiency Vermont's programs have a proven track record of saving energy and money for commercial, industrial and residential consumers. These and other energy efficiency programs helped to rank Vermont in a tie for third place in the nation in 2014, according to the American Council for an Energy Efficient Economy (ACEEE) State Energy Efficiency Scorecard.

Program Highlight: Home Performance with ENERGY STAR®

The Efficiency Vermont Home Performance with ENERGY STAR service is an incentive-based program for single-family Vermont residences, including properties with fewer than five units, to lower utility bills and increase home comfort and safety by installing insulation, air sealing, ventilation, and heating systems improvements. Vermonters can access comprehensive thermal efficiency retrofits, along with incentives to offset project costs. For eligibility, customers work with participating Home Performance with ENERGY STAR contractors. Efficiency Vermont manages this network of participating, Building Performance Institute (BPI) certified contractors, as well as performs quality assurance of the projects. In order to join the Home Performance with ENERGY STAR branch of Efficiency Vermont's Efficiency Excellence Network, these trade allies must meet qualifications for training and certification—ensuring they have the skills to deliver high-quality efficiency services.

The Efficiency Vermont Home Performance with ENERGY STAR service officially launched in 2005. In 2008, when the Vermont Legislature set a statewide goal to weatherize 80,000 homes by the year 2020, the Home Performance with ENERGY STAR service was galvanized. The legislation sought to harness energy efficiency as a driver of savings for consumers and economic development in Vermont. Home Performance with ENERGY STAR is one of the primary programs contributing to these goals.

Home Performance with ENERGY STAR is a national brand managed by the U.S. Department of Energy (U.S. DOE). Across the United States, there are some 50 organizations that have signed on to sponsor local programs under this overarching brand. Although there are differences among those local programs, they all follow the same basic structure, designed to ensure a comprehensive, whole-house approach to energy efficiency and maximize long-term savings for homeowners. The key components of the Home Performance with ENERGY STAR program approach are outlined by U.S. DOE and implemented in Vermont by Efficiency Vermont.

Success Story: Lynn and Buddy Behrendt's Home

For most of the 32 years Lynn and Buddy Behrendt have lived in their 1860s farmhouse, logging, splitting, and hauling the six to seven cords of wood used each winter was a chore. At 80, Buddy was ready to find an easier way to heat their home in Windham, VT. "We wanted to start thinking of a way to simply use less fuel," he said, "including the oil we need for the auxiliary, as-needed burner."

“That—and the house was simply old and drafty,” Lynn added. “There was no getting around it. Ours was never a super tight, comfortable, toasty house, and it was time to address both issues.” After searching for a contractor on Efficiency Vermont’s website, Lynn found Vermont Foam Insulation, Inc. (VFI) in Chester, a Home Performance with ENERGY STAR contractor. An energy audit conducted by John Birch from VFI concluded that an air leakage reduction of 25% was achievable with improved insulation. After going over various options with the couple, a two-fold plan was initiated, which included installing open-cell (low density) spray foam insulation throughout open and closed spaces within the attic, as well as performing air-sealing throughout the home to reduce outside air penetration within the attic. This included air-sealing around the chimney/flue, wiring and pipes, scuttle hole entrance, and around basement walls where closed-cell foam was used.



The Behrendts enjoy their comfortable home. Photo credit: Efficiency Vermont.

For Buddy, results from the one-day project have been measurable. “The difference is incredible,” he said. “Now the whole home is toasty, and we use about a cord and a half less wood to achieve that. At my age, it just makes sense to plan ahead.”

Incentives from Efficiency Vermont, totaling \$1585, helped to make the Behrendt’s project a reality. They save an estimated \$325 per year on wood in addition to having a more comfortable and convenient home.

Resources:

- [Efficiency Vermont for Homes and Businesses](#)
- [Efficiency Vermont 2014 Highlights](#)

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The Behrendts enjoy their comfortable home. Photo credit: Efficiency Vermont.

Glossary of Terms

Program Categories

Administration

Funds directed to administrative overhead expense associated with all RGGI-funded programs, including outsourced and in-house overhead expenses.

Clean and Renewable Energy

Programs directed at accelerating the deployment of renewable or other non-carbon emitting energy technologies. Program costs include evaluation and measurement. Examples: wind, solar, fuel cell, biomass, and hydroelectric power.

Direct Bill Assistance

Programs providing energy bill payment assistance, including direct bill assistance to low-income ratepayers. Program costs include evaluation and measurement.

Energy Efficiency

Programs designed to improve energy efficiency by reducing overall energy use without degrading functionality. This includes programs directed at assisting low-income families and small business. Program costs include evaluation and measurement. Examples: Home Energy Audit Programs, Home and Building Weatherization, Energy Efficient Appliance or Industrial Equipment Rebate Programs, Compact Fluorescent Light Bulb Programs, and Energy Efficiency Workforce Training Programs.

Greenhouse Gas Abatement

Programs promoting the research and development of advanced energy technologies, the reduction of vehicle miles traveled, the reduction of emissions in the power generation sector, forestry projects designed to increase carbon sequestration, and other initiatives to reduce greenhouse gases. Program costs include evaluation and measurement.

RGGI, Inc.

Funds provided to RGGI, Inc. to support and implement state CO₂ Budget Trading programs.

General Terms

RGGI Investments

RGGI Investments are the proceeds generated by RGGI CO₂ allowance auctions that have been invested by the RGGI states in the energy efficiency, clean and renewable energy, GHG abatement, and direct bill assistance programs discussed in this report. These investments do not include New Jersey proceeds or investments, transfers to state general funds, or future committed funds.

Future Committed

Future committed funds are the proceeds generated by RGGI CO₂ allowance auctions that have not yet been invested by the RGGI states. Future committed proceeds represent funds that could be invested by the state in 2015 and beyond.

Current Period (2014)

The twelve-month period being reported, which may be either the fiscal year or calendar year 2014, as defined by each state. See table 2 on page 8 for state-by-state reporting periods.

Cumulative (2008-2014)

The elapsed time from the inception of the RGGI auctions (Sept. 2008) through the end of the Current Period (i.e. past and present).

Lifetime

The full length of time (past, present, and future) over which effects from each program will be realized. Varies by program.

Benefits and Statistics

Funds Invested – Current Period (2014)

Total dollar amount of RGGI proceeds invested in each program for the Current Period (e.g. Calendar year 2014). For programs that are partially funded by RGGI, only the amount provided by RGGI funds is included. Remaining data on these programs is prorated based on the percentage of the program funded by RGGI. For example, if 30 percent of a program's total funding comes from RGGI, 30 percent of the households served by the program are reported under "Participating Households" in this report.

Funds Invested – Cumulative (2008-2014)

Total dollar amount of RGGI proceeds invested in each program from RGGI's inception through the Current Period. For programs that are partially funded by RGGI, only the amount provided by RGGI funds is included. Remaining data on these programs is prorated based on the percentage of the program funded by RGGI. For example, if 30 percent of a program's total funding comes from RGGI, 30 percent of the households served by the program are reported under "Participating Households" in this report.

Participating Households – Cumulative (2008-2014)

Measured in: Number of Households

Number of households that have directly received assistance as a result of each program (e.g. number of homes weatherized, number of families receiving direct bill assistance, number of households receiving home energy audits, etc...) from inception through the Current Period. Households participating in more than one program may be counted under each program they have participated in (e.g. a completed home energy audit constitutes a participating household even if the household may elect to further participate in programs to install recommended measures). For multi-family dwellings, each unit within the multi-family home is considered to be a household. "Participating Households" may include households whose services have been approved and confirmed, but not yet completed in some states.

Participating Businesses – Cumulative (2008-2014)

Measured in: Number of Businesses

Number of "end-user" businesses and government entities who have directly received assistance as a result of the program (e.g. number of businesses whose offices were weatherized, number of businesses receiving grant assistance to install energy efficiency measures, etc... via a grant, loan, or rebate) from inception through the Current Period. Businesses participating in more than one program will be counted under each program they have participated in (e.g. a completed audit constitutes a Participating Business even if the business may elect to further participate in programs to install recommended measures). "Participating Businesses" may include businesses whose services have been approved and confirmed, but not yet completed in some states.

Workers Trained – Cumulative (2008-2014)

Measured in: Number of Workers

Total number of training seats filled directly by the program from inception through the Current Period. This measure accounts for the fact that some workers may have attended more than one training course as they seek to expand their skills.

MWh Avoided – Cumulative (2008-2014)

Measured in: MWh

Estimated total MWh avoided cumulatively from inception through the Current Period as a direct result of Funds Invested from inception through the Current Period (i.e. the total past and present MWh avoided by all Funds Invested to date). Calculated using program-specific savings, as defined by each state.

MWh Avoided – Lifetime

Measured in: MWh

Estimated total MWh projected to be avoided over the total lifetime of the program as a direct result of cumulative Funds Invested from inception through the Current Period (i.e. the total past, present, and future MWh avoided by all Funds Invested to date). This does not include projected effects from funds not yet expended. Calculated using program-specific savings, as defined by each state.

MMBtu Avoided – Cumulative (2008-2014)

Measured in: MMBtu

Estimated total MMBtu avoided from inception through the Current Period as a direct result of Funds Invested from inception through the Current Period (i.e. the total past and present MMBtu avoided by all Funds Invested to date). Calculated using program-specific savings, as defined by each state.

MMBtu Avoided – Lifetime

Measured in: MMBtu

Estimated total MMBtu projected to be avoided over the total lifetime of the program as a direct result of cumulative Funds Invested from inception through the Current Period (i.e. the total past, present, and future MMBtu avoided by all Funds Invested to date). This does not include projected effects from funds not yet expended. Calculated using program-specific savings as defined by each state.

Energy Bill Savings – Cumulative (2008-2014)

Measured in: Current Year Dollars

Estimated gross amount saved from inception through the Current Period by the total number of households and/or businesses participating in the program as a result of cumulative Funds Invested from inception through the Current Period (i.e. the total past and present savings by all program participants to date). Calculated using program-specific savings, as defined by each state. Initial investment in installed measures is not deducted.

Energy Bill Savings – Lifetime

Measured in: Current Year Dollars

Estimated gross amount projected to be saved over the total lifetime of the program by the households and/or businesses participating in the program as a result of cumulative Funds Invested from inception through the Current Period (i.e. the total past, present, and future savings by all program participants to date). This does not include projected effects from funds not yet invested. Calculated using program-specific savings, as defined by each state. Initial investment in installed measures is not deducted.

CO₂ Emissions Avoided – Cumulative (2008-2014)

Measured in: Tons of CO₂

Estimated total number of short tons of CO₂ avoided cumulatively from inception through the Current Period as a direct result of cumulative Funds Invested from inception through the Current Period (i.e. the total past and present CO₂ emissions avoided by all Funds Invested to date). Calculated using a program-specific formula, as defined by each state.

CO₂ Emissions Avoided – Lifetime

Measured in: Tons of CO₂

Estimated total number of short tons of CO₂ projected to be avoided over the total lifetime of the program as a direct result of cumulative Funds Invested from inception through the Current Period (i.e. the total past, present, and future CO₂ emissions avoided by all Funds Invested to date). This does not include projected effects from funds not yet expended. Calculated using a program-specific formula, as defined by each state.

Cars Taken Off the Road

Measured in: Cars

Estimated number of cars that would need to be taken “off the road” for one year to reduce CO₂ emissions by the same amount as the RGGI-funded measures. Calculated using average annual CO₂ emissions for passenger cars (10,582 pounds or 5.29 short tons of CO₂), as published by the U.S. Environmental Protection Agency. View conversion rates at: <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>

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