



State of Maine
Paul R. LePage
Governor

March 15, 2018

Senator Thomas B. Saviello, Chair
Representative Ralph L. Tucker, Chair
Members of the Joint Standing Committee on Environment and Natural Resources
100 State House Station
Augusta, Maine 04333-0100

Senator David C. Woodsome, Chair
Representative Seth A. Berry, Chair
Members of the Joint Standing Committee on Energy, Utilities and Technology
100 State House Station
Augusta, ME 04333-0100

RE: Regional Greenhouse Gas Initiative (RGGI) 2017 Annual Report

Dear Senator Saviello, Senator Woodsome, Representative Tucker, Representative Berry,
Members of the Joint Standing Committee on Environment and Natural Resources, and
Members of the Joint Standing Committee on Energy, Utilities and Technology:

Title 38 Maine Revised Statutes (M.R.S.) §580-B, sub-§10, established by Public Law, Chapter 317 of the 123rd Legislature and amended by Public Laws, Chapter 372 of the 124th Legislature and Chapter 369 of the 126th Legislature, directs the Department of Environmental Protection (Department), the Public Utilities Commission (Commission), and the trustees of the Efficiency Maine Trust (the "Trust" or "Efficiency Maine") to submit a joint report to the joint standing committees of the Legislature having jurisdiction over natural resource matters and utilities and energy matters by March 15th annually, regarding items related to implementation of the Regional Greenhouse Gas Initiative (RGGI). This letter serves as the annual report and addresses the seven items listed in the statute. This letter also provides an update on the appropriateness of the number of allowances reserved in accordance with the voluntary renewable energy set-aside provisions and a progress report on the development of a fuel switching offset category, as required by Public Law, Chapter 369 of the 126th Legislature.

A. The reductions of greenhouse gas emissions from carbon dioxide budget units, conservation programs funded by the Regional Greenhouse Gas Trust Fund pursuant to Title 35-A, section 10109, and carbon dioxide emissions offset projects.

Reductions of greenhouse gas emissions from carbon dioxide (CO₂) budget units. As a group, CO₂ budget units (RGGI units) located in Maine and throughout the RGGI region have experienced significant reductions in CO₂ emissions from the baseline period (2000 to 2005) both prior to and since the program began with the first auctions in 2008 (see Tables 1 and 2, below). To date, CO₂ emissions from RGGI units have decreased by over 50% from emission levels measured during the baseline period.

The RGGI program was originally designed to stabilize CO₂ emissions from CO₂ budget units in the region for the period from 2009 through 2014. Subsequently, beginning in 2015 and extending to 2018, the annual cap on emissions was to have been reduced by 2.5% per year to achieve a 10% reduction in emissions from baseline levels. Due to the achievement of greater reductions in CO₂ emissions from RGGI units than originally anticipated, the State of Maine, along with the other RGGI participating states, made program changes to adjust the annual cap downward in 2014 and beyond, to build on these significant emission reduction achievements. For the calendar year 2014, the annual cap for the region was reduced from 165 million allowances to 91 million allowances, representing a 45% reduction in the cap. Maine's share of the adjusted regional annual cap is 3.6%, representing approximately 3.3 million allowances in 2014. The 91 million allowance annual cap was further adjusted to address a surplus of unused allowances remaining in the secondary market following the first and second three-year compliance periods, which closed at the end of 2011 and at the end of 2014, respectively. The cap is being reduced gradually at the rate of 2.5% per year between 2015 and 2020. The RGGI participating states recently completed another program review, which resulted in agreement by the participating states to make further changes to the program, including extending the regional cap reduction from 2020 thru 2030 by 2.5% per year based on the 2014 regional cap.

Table 1, on the following page, shows CO₂ emissions data from Maine's RGGI units from 2000 thru 2016. Maine's RGGI units consist of the following facilities:

- FPL Energy Wyman, an 850 MW oil-fired power plant owned and operated by NextEra Energy Resources and located on Cousins Island in Yarmouth, Maine. This facility is currently functioning as a peaking unit that operates during times of high electricity demand when called on by ISO-New England.
- Androscoggin Energy, a 164 MW combined cycle natural gas-fired cogeneration power plant owned and operated by Verso Androscoggin LLC and located adjacent to the Verso Androscoggin paper mill in Jay, Maine.
- Bucksport Generation, a 187 MW combined cycle/simple cycle natural gas-fired power plant owned and operated by Bucksport Generation LLC and located at the former Verso Bucksport paper mill in Bucksport, Maine. This facility is currently functioning as a simple cycle peaking unit that operates during times of high electricity demand when called upon by ISO-New England.
- Maine Independence Station, a 550 MW combined cycle natural gas-fired power plant owned and operated by Casco Bay Energy Company LLC and located in Veazie, Maine.

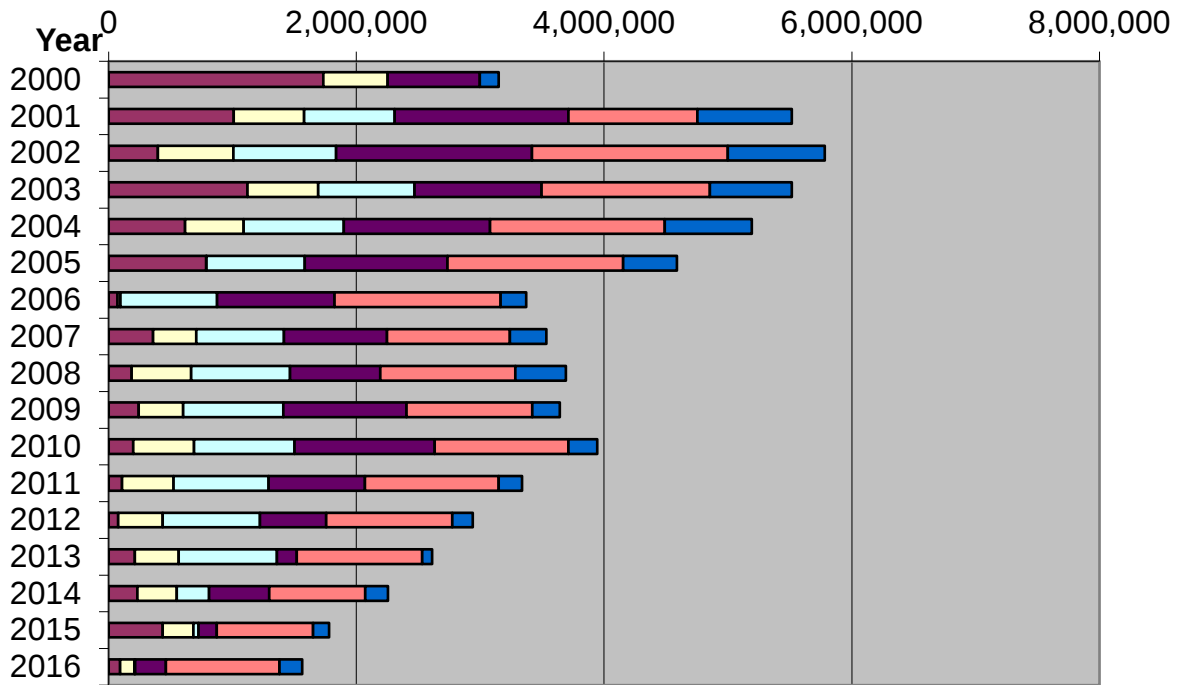
- Westbrook Energy Center, a 565 MW combined cycle gas turbine power plant owned and operated by Calpine Corporation and located in Westbrook, Maine.
- Rumford Power, a 275 MW combined cycle natural gas-fired power plant owned and operated by Emera Energy and located in Rumford, Maine.

Emissions for 2017 are projected to continue on a downward trend; however, 2017 emissions data will not be quality-assured until the second quarter of 2018, so they are not included in Table 1, below.

Table 1

Maine RGGI Source Annual CO₂ Emissions

U.S. (Short) Tons of CO₂

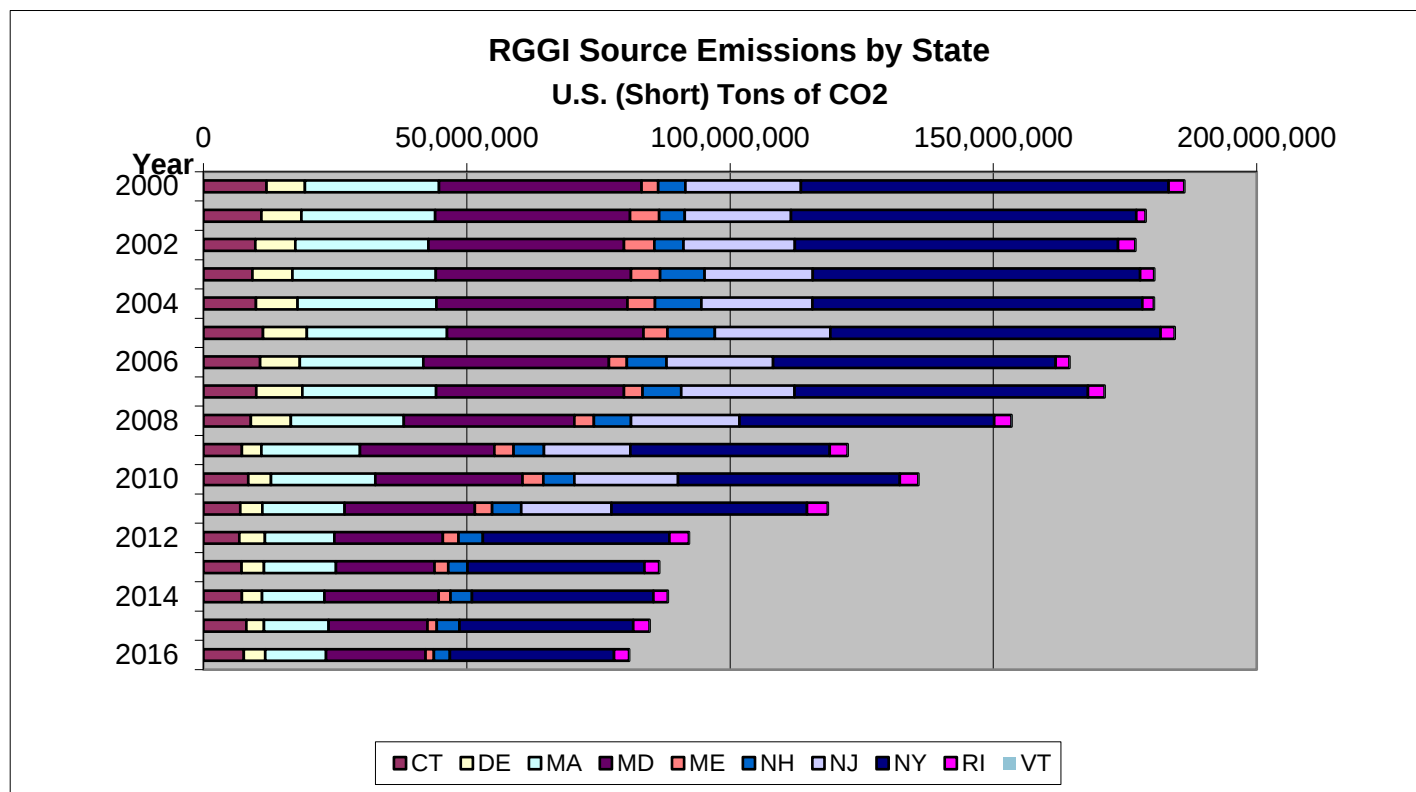


■ FPL Energy Wyman	■ Androscoggin Energy
■ Bucksport Generation	■ Maine Independence Station
■ Westbrook Energy Center	■ Rumford Power

Maine RGGI Source Annual CO ₂ Emissions (U.S. Tons)							
Year	FPL Energy Wyman	Androscoggin Energy	Bucksport Generation	Maine Independence Station	Westbrook Energy Center	Rumford Power	Annual Totals
2000	1,731,846	519,770	0	744,689	0	153,306	3,149,611
2001	1,010,729	565,951	731,450	1,402,914	1,042,637	762,634	5,516,315
2002	397,062	608,960	829,490	1,582,011	1,580,945	782,900	5,781,368
2003	1,119,510	571,181	778,527	1,025,612	1,358,157	661,740	5,514,727
2004	616,030	472,481	810,749	1,178,901	1,412,282	701,496	5,191,939
2005	788,209	1,019	792,796	1,153,173	1,419,619	432,298	4,587,114
2006	70,853	24,826	780,609	946,041	1,341,636	207,857	3,371,822
2007	357,638	349,532	708,412	831,251	991,719	294,645	3,533,197
2008	185,915	481,163	796,139	730,736	1,090,087	407,238	3,691,278
2009	242,371	357,730	809,077	995,235	1,015,132	223,948	3,643,493
2010	198,691	489,273	813,064	1,130,402	1,079,445	232,583	3,943,458
2011	107,642	416,387	766,548	778,158	1,081,176	187,549	3,337,460
2012	77,825	357,371	787,071	532,676	1,018,917	166,212	2,940,072
2013	211,641	352,862	793,406	161,783	1,011,082	81,649	2,612,423
2014	231,610	318,997	259,499	485,857	775,593	182,988	2,254,544
2015	434,966	248,856	40,780	147,372	778,409	127,963	1,778,346
2016	93,552	114,878	6,323	247,610	916,993	183,510	1,562,866

Table 2 shows CO₂ emissions data from all RGGI units in the region, by state, from 2000 thru 2016. Emissions data for 2017 will not be quality-assured until the second quarter of 2018, so they are not included in this Table 2, below.

Table 2



RGGI Source Annual CO₂ Emissions by State (U.S. Tons)											
Year	CT	DE	MA	MD	ME	NH	NJ	NY	RI	VT	ANNUAL TOTALS
2000	11,977,434	7,308,248	25,452,680	38,446,856	3,156,292	5,178,731	21,954,959	69,809,356	2,959,594	24,914	186,269,063
2001	11,005,310	7,612,366	25,400,430	36,980,555	5,517,285	4,862,445	20,177,621	65,553,672	1,782,110	22,015	178,913,809
2002	9,842,414	7,616,896	25,278,273	37,084,544	5,784,563	5,556,992	21,145,667	61,367,406	3,254,015	5,171	176,935,941
2003	9,273,759	7,628,367	27,218,204	37,064,738	5,515,325	8,478,382	20,543,331	62,129,292	2,668,990	12,094	180,532,482
2004	9,989,119	7,884,001	26,369,630	36,281,466	5,191,939	8,812,538	21,133,145	62,612,353	2,219,100	14,779	180,508,070
2005	11,323,844	8,300,628	26,640,945	37,263,686	4,587,114	8,972,027	21,937,521	62,718,683	2,692,228	7,781	184,444,457
2006	10,761,759	7,561,295	23,449,199	35,233,070	3,371,822	7,568,884	20,224,255	53,638,129	2,625,422	6,337	164,440,172
2007	10,052,782	8,744,154	25,366,733	35,700,194	3,533,197	7,314,954	21,515,622	55,717,151	3,161,200	6,112	171,112,099
2008	8,988,858	7,615,966	21,438,041	32,383,517	3,691,278	7,095,147	20,601,805	48,348,177	3,292,517	2,559	153,457,865
2009	7,322,364	3,708,331	18,661,076	25,572,943	3,643,493	5,769,881	16,359,443	37,861,408	3,416,783	1,965	122,317,687
2010	8,527,102	4,299,269	19,804,384	27,958,958	3,943,457	5,899,447	19,681,308	42,113,171	3,504,392	3,756	135,735,244
2011	7,018,498	4,150,396	15,634,872	24,699,638	3,337,460	5,525,369	17,117,779	37,137,382	3,946,582	6,537	118,574,513
2012	6,819,155	4,839,522	13,218,481	20,596,979	2,940,072	4,642,898	*	35,417,901	3,735,785	2,319	92,213,112
2013	7,224,361	4,285,050	13,677,273	18,683,424	2,612,423	3,653,195	*	33,607,796	2,771,105	2,761	86,517,388
2014	7,271,363	3,881,298	11,793,969	21,709,133	2,254,554	4,081,341	*	34,432,956	2,767,290	2,708	88,194,602
2015	8,154,295	3,350,072	12,280,219	18,736,064	1,778,346	4,326,890	*	32,991,130	3,075,646	1,216	84,693,878
2016	7,681,343	4,042,227	11,564,113	18,898,507	1,562,866	3,051,846	*	31,194,515	2,829,861	2,678	80,827,956

**** New Jersey's emissions are not included in Table 2 beyond 2011 since New Jersey ended its participation in RGGI at the end of 2011.***

Reductions of greenhouse gas emissions from conservation programs funded by the Regional Greenhouse Gas Initiative Trust Fund.

The carbon dioxide savings from Efficiency Maine conservation programs funded by RGGI monies to-date is estimated at 1,470,830 annual short tons, from both direct fossil fuel reductions and reduced electricity use. In June 2013, the Maine Legislature passed LD 1559, *An Act to Reduce Energy Costs, Increase Energy Efficiency, Promote Electric System Reliability and Protect the Environment*, also referred to as the Omnibus Energy Bill (Public Law 2013, Chapter 369). The Omnibus Energy Bill authorized the Trust to fund, on a large scale, projects that save heating oil, Maine's most common heating fuel.

In the spring of 2016, the Maine Legislature passed LD 1398, *An Act to Reduce Electric Rates for Maine Businesses* (Public Law 2016, Chapter 498), amending the Efficiency Maine Trust Act to provide new direction on the allocation of RGGI investments. Beginning in

fiscal year 2017 (FY 2017), the amended law required the Trust to allocate \$3 million annually to the PUC to be disbursed to a select group of energy-intensive manufacturers, known as “affected customers.”

In light of declining RGGI revenues over a period of multiple quarters during the past two years, the Maine Legislature instituted further amendments to the statute in the spring of 2017 through LD 1313, *An Act To Establish Energy Policy in Maine* (Public Law 2017, Chapter 282). First, it reduced the \$3 million annual affected customer transfer to \$2.5 million in FY 2018 and \$2.5 million in FY 2019, and added a \$1.0 million payment in FY 2020. Second, it eliminated, for the next three years, the requirement that the Trust split the remaining RGGI revenues evenly between residential and commercial and industrial programs. These changes will be reflected in next year’s RGGI Annual Report.

The objectives currently set in Maine statute for the Trust’s use of RGGI funds are to support the goals and implementation of the carbon dioxide cap-and-trade program established under Title 38, section 580-B, and to promote measures that reduce electricity consumption, lower energy costs, and increase energy efficiency or reduce greenhouse gas emissions.

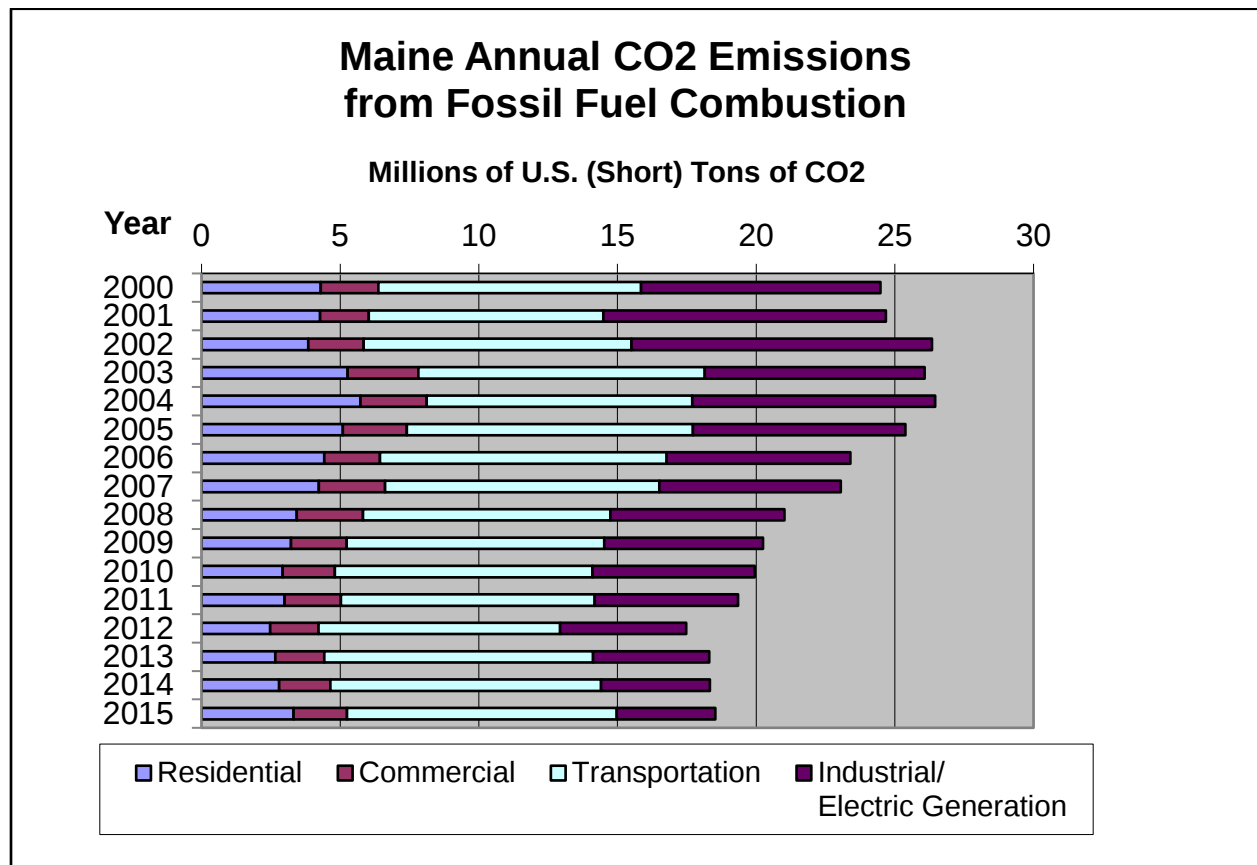
Reductions of greenhouse gas emissions from offset projects.

The offset project certification and application process was implemented in June of 2009. Independent third-party verifier status has been approved for private entities in several of the RGGI participating states. Maine has received and approved applications from two entities for providing independent third-party verification services; however, to date Maine has received no applications for RGGI offset projects located within the state. There has only been one project that has completed the application process in the entire RGGI region. It is possible the demand for offset projects and their associated allowances may increase if allowance prices increase to a point where offset projects become more economically competitive.

B. The improvements in overall carbon dioxide emissions and energy efficiency from sources that emit greenhouse gases including electrical generation and fossil fuel-fired units.

The yearly totals displayed in Table 3 below show the improvements in CO₂ emissions from source sectors within Maine that emit greenhouse gases.

Table 3



Maine Annual CO₂ Emissions from Fossil Fuel Combustion (In Millions of U.S. Tons)					
Year	Residential	Commercial	Transportation	Industrial/Electric Generation	Total
2000	4.30	2.08	9.47	8.63	24.48
2001	4.28	1.75	8.46	10.18	24.67
2002	3.85	2.00	9.65	10.84	26.34
2003	5.27	2.55	10.33	7.92	26.07
2004	5.73	2.39	9.58	8.75	26.45
2005	5.10	2.30	10.32	7.66	25.38
2006	4.43	2.00	10.34	6.62	23.39
2007	4.23	2.39	9.89	6.54	23.05
2008	3.43	2.39	8.92	6.28	21.02
2009	3.23	2.00	9.29	5.72	20.24
2010	2.92	1.89	9.28	5.85	19.94
2011	2.99	2.03	9.15	5.18	19.35
2012	2.48	1.74	8.71	4.55	17.48
2013	2.66	1.77	9.69	4.19	18.31
2014	2.80	1.85	9.76	3.92	18.33
2015	3.32	1.93	9.72	3.56	18.53

Note: Emissions data for calendar years 2016 and 2017 are not yet available.

C. The maximization of savings through systemic energy improvements statewide.

The Trust's programs are described in more detail in section E. A review of the Trust's FY 2017 annual report illustrates a strong cost-effective statewide presence made possible through effective marketing and vendor partnerships. This has allowed the Trust to develop a robust, low-cost infrastructure for delivering conservation programs to Maine's energy consumers.

By using RGGI funds to provide technical assistance and financial incentives, the Trust's programs have succeeded in helping Maine's residential, institutional, commercial, and larger industrial energy customers to make investments in their energy infrastructure. Leveraging RGGI funds, these customers have installed such upgrades as insulation, new heating systems, high-efficiency lights, and improved industrial processes that otherwise would not have occurred. Directing RGGI funds to be invested through the Trust's programs is helping Maine's energy consumers make a transition to a higher level of energy efficiency and reduced reliance on fossil fuels, while enjoying lower greenhouse gas emissions and operating costs.

D. Research and support of new carbon dioxide offset allowance categories for development in the State.

CO₂ allowance prices associated with the RGGI program auctions have never exceeded \$7.50 per allowance, with levels generally remaining in the \$2 to \$5 per allowance range. Due to this relatively low cost of allowances, there has not been a demand for offset allowances (or the projects that create them).

Public Law 2013, Chapter 369, section D-8, the Omnibus Energy Bill, directs the Department and the Commission to work together to develop and promote for recognition by the other states participating in RGGI, a modification of the existing end-use energy efficiency offset category to provide incentives for industrial and residential consumers to switch from the use of oil and coal to fuels with lower greenhouse gas emissions. The law also directs the Department and the Commission to report progress on the development of this offset category as part of this annual report. To date, the Department and Commission have conferred and exchanged ideas on how best to move forward with this directive. However, considering the current lack of demand for offset allowances; the fact that many residential, commercial, and industrial customers are switching to natural gas for economic reasons alone; and issues associated with the “maximum market penetration rate” concept, the Department and Commission have determined that expending time and effort on developing this offset project category is not a cost-effective use of resources at this time. The “maximum market penetration rate” concept means that if offset projects within a specific category have already penetrated the market at a rate of 5% or more, offset projects in that category no longer qualify for offset allowances under the program. The Department and Commission will continue to monitor the level of demand for offset allowances, and if things change, will re-evaluate the situation.

E. Management and cost-effectiveness of the State's energy conservation and carbon reduction programs and efforts funded by the RGGI Trust Fund through Efficiency Maine established pursuant to Title 35-A, section 10109.

Table 4 shows how the Trust expended RGGI funds, by program, in FY 2017.

Table 4: FY 2017 RGGI Funding

Program	FY 2017 Funds
Commercial & Industrial Custom Program	\$ 2,937,022
Commercial & Industrial Prescriptive Program	\$ 823,599
Commercial New Construction Program	\$ 315,190
Home Energy Savings Program	\$ 2,449,807
Low-Income Initiatives	\$ 414,786
Strategic Initiatives	\$ 51,107
Administration	\$ 597,563
Inter-Agency Transfers	\$ 3,036,796
RGGI Inc. Payment	\$ 80,605
Total	\$ 10,706,476

Note: RGGI Auction proceeds actually received in FY2017 totaled \$8.3 million. Commercial & Industrial Custom Program funds discussed in this report reflect energy upgrade installations that were completed in FY 2017. Some RGGI funds were allocated in FY 2016 to projects which were completed in this year, and some projects funded in FY 2017 will be completed in future years. The spending and savings associated with those projects will be reflected in the RGGI annual report for the year in which the project is completed.

Table 5 shows savings of electricity (kWh), heating and process fuels (MMBtu), and greenhouse gases (GHG) attributable to the expenditure of RGGI funds.

Table 5: Results Attributable to RGGI Funds

Program	FY 2017 Funds	Annual kWh Savings	Annual MMBtu Savings	Annual GHG Savings (Tons CO ₂)
Commercial & Industrial Custom Program	\$ 2,937,022	-	251,871	20,280
Commercial & Industrial Prescriptive Program	\$ 823,599	-	33,011	2,658
Commercial New Construction Program	\$ 315,190	517,496	1,317	372
Home Energy Savings Program	\$ 2,449,807	-	62,960	5,069
Low-Income Initiatives	\$ 414,786	-	8,264	665
Strategic Initiatives	\$ 51,107			
Administration	\$ 597,563			
Inter-Agency Transfers	\$ 3,036,796			
RGGI Inc. Payment	\$ 80,605			
Total	\$ 10,706,476	517,496	357,423	29,044

Commercial & Industrial Custom Program

The Trust's Commercial & Industrial Custom Program incentivizes tailored energy projects that require unique engineering analyses and/or projects with energy conservation measures that are not covered by Efficiency Maine's prescriptive incentive program. The Custom Program is designed to overcome the barriers that confront Maine's larger businesses and institutions when making investments in complex energy efficiency and distributed generation projects. These projects represent important facility improvements that keep operating costs down for Maine's largest energy users.

The Trust completed 39 custom projects in FY 2017, five of which were fully or partially funded using \$2,937,022 in RGGI funds. This investment comprised approximately 42% of the program's overall commitments, and accounts for an estimated 251,871 MMBtu of fossil fuel savings annually.

Commercial and Industrial Prescriptive Program

The Trust's Commercial & Industrial Prescriptive Program (CIP) offers fixed-price financial incentives for a predefined list of widely available "off-the-shelf" efficiency measures. Typical measures promoted through this program include high efficiency lighting fixtures and heating systems; and sector-specific solutions, such as commercial kitchen appliances and agricultural equipment. These measures have practical applications across the state in commercial, industrial, nonprofit, government, and institutional settings. The menu of fixed

incentives is used to overcome the barrier represented by the incremental cost of high efficiency equipment. The program encourages businesses to install more energy-efficient models than they would have otherwise.

In FY 2017, CIP invested \$823,599 of RGGI funds, comprising approximately 11% of the program's overall expenditures. The efficiency projects made possible by these RGGI funds will save an estimated 33,011 MMBtu annually in avoided energy consumption associated with heating oil and other fuels.

Commercial New Construction Program

The Commercial New Construction Program provides a pathway for achieving significant energy savings in new construction or major renovation projects in commercial buildings. In FY 2017, the program continued use of the Maine Advanced Buildings Program (MAB) framework, based on national standards developed by the New Buildings Institute. MAB offers education and financial incentives to promote and encourage a whole-building integrated design approach, resulting in projects that exceed baseline code requirements for energy efficiency. The program provides an alternative to the often-used "design-build" approach. Incentives in FY 2017 targeted comprehensive energy-efficient design and savings rather than individual efficiency measures.

The program completed six high-performance building projects in FY 2017, several of which were supplemented with RGGI funding. Overall, the program invested \$315,190 in RGGI funds, representing approximately 57% of the program's total expenditures. This investment will save an estimated 517,496 kWh and 1,317 MMBtu annually.

Home Energy Savings Program

The Home Energy Savings Program (HESP) drives market-based home weatherization and high efficiency heating system installations by offering rebates and loans, providing customer education, and developing a vendor network. HESP encourages energy efficiency upgrades in single-family homes and multifamily homes with up to four units. Program activity in FY 2017 fell into one of three categories of measures: supplemental heating systems, central heating systems, and building envelope improvements.

RGGI funds were used to pay for \$2,449,807 of HESP program costs in FY 2017, accounting for approximately 33% of the program's total expenditures. Efficiency projects made possible by RGGI funds will save an estimated 62,960 MMBtu annually in avoided energy consumption associated with heating oil and other fuels.

Low-Income Initiatives

The Trust implements several initiatives that target low-income households. Each initiative has its own approach to providing energy assistance, and each may be subject to different limitations based on its sources of funding. The resulting blend of approaches is designed to overcome obstacles to cost-effective energy efficiency improvements for low-income Mainers.

The Trust's market-based weatherization and ductless heat pump (DHP) incentive program leveraged RGGI funds for the benefit of low-income customers in FY 2017. This initiative,

referred to in FY 2017 as the Low Income Home Energy Savings Program, provided enhanced rebates, as well as financing, to qualifying low-income residents. Using \$414,786 in RGGI funds, the Trust was able to incentivize 669 thermal home energy efficiency upgrades through this channel. These projects will help low-income Mainers save an estimated 8,264 MMBtu annually in avoided energy consumption associated with heating oil and other fuels.

F. The extent to which funds from the Regional Greenhouse Gas Initiative Trust Fund established pursuant to Title 35-A, section 10109 serve customers from all classes of the State's transmission and distribution utilities.

Funding from the Trust was used to provide programs for residential (including low-income), commercial and industrial customer classes, including transmission and sub-transmission customers, as set forth in previous sections of this report.

G. The revenues and expenditures of the Regional Greenhouse Gas Initiative Trust Fund, established pursuant to Title 35-A, section 10109.

Revenues from the sale of Maine's allowances under RGGI have totaled \$91.9 million as of the end of calendar year 2017 (\$5.6 million in 2008, \$9.6 million in 2009, \$8.3 million in 2010, \$5.2 million in 2011, \$5.5 million in 2012, \$14.1 million in 2013, \$11.4 million in 2014, \$15 million in 2015, \$8.9 million in 2016, and \$8.3 million in 2017). Expenditures of the Regional Greenhouse Gas Initiative Trust Fund are described in section E of this report.

Voluntary Renewable Energy Set-aside

The number of allowances withheld from auction for use in the Voluntary Renewable Energy set-aside program are sufficient to adequately cover the number of claims, therefore the Department recommends maintaining the amount of the set-aside at the current level of 2% of Maine's annual CO₂ allowance budget.

Recommendations

The statutory reporting requirement also provides for the Department, the Commission, and Efficiency Maine to propose improvements to the program for the committee to consider.

The RGGI participating states completed a regional program review in 2017. The result of the program review was agreement to continue regional cap reductions of 2.5% per year based on the 2014 regional cap from 2020 thru 2030. Legislation was introduced and passed during the current legislative session to amend the law to incorporate elements of the program review. The Department will begin the rulemaking process to adopt changes to our regulations based on the recently approved legislative changes.

The Department, the Commission, and Efficiency Maine are available to present this report, and answer any questions you may have.

Respectively submitted,



Paul Mercer, Commissioner
Maine Department of Environmental Protection



Dr. R. Bruce Williamson, Commissioner
Maine Public Utilities Commission



Michael Stoddard, Executive Director
Efficiency Maine Trust