New Hampshire Public Utilities Commission

NEW HAMPSHIRE RENEWABLE ENERGY FUND

ANNUAL REPORT

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THE LEGISLATIVE OVERSIGHT COMMITTEE
ON ELECTRIC UTILITY RESTRUCTURING

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THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

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THE HOUSE SCIENCE, TECHNOLOGY AND ENERGY COMMITTEE

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Table of Contents

Executive Summary 1
Renewable Energy Fund Programs 1
Competitive Grant Program 1
Solar Rebate Programs 1
Pellet Rebate Programs 2
State Building Projects 2
Outlook for Fiscal Year 2018 3
Renewable Energy Fund Programs 3
Net Metering 3
2018 Renewable Portfolio Standard Review 3
Overview of New Hampshire's Renewable Portfolio Standard Policy 4
Legislative Summary and Update 6
Fiscal Year 2016: RPS and Net Metering Legislation Update 6
Renewable Portfolio Standard Legislation 6
Net Metering Legislation 6
Fiscal Year 2017: RPS Legislation 8
Renewable Portfolio Standard Legislation 8
RPS Revenues and Costs 9
Revenues 9
Table 1 – Inflation Adjusted Alternative Compliance Payment Rates ($ per Megawatt Hour) 9
Table 2 – ACP Revenues by Calendar Year 10
Revenues by RPS Class 10
ACP Revenues by Class, and Trend by Calendar Year 10
Class I & Class I Thermal - New Renewable Energy Production of Electricity or Useful Thermal ACPs 11
Class II – New Solar Electric ACPs 11
Class III – Existing Biomass/Methane Electric Technologies (Prior to January 1, 2006) ACPs 11
Class IV – Existing Small Hydroelectric (Prior to January 1, 2006) ACPs 11
Table 3 - ACP Revenue by Supplier and RPS Class for Compliance (Calendar) Year 2016 12

RPS Compliance Costs 13
Annual RPS Compliance Costs and Rate Impact 13
Administrative Costs 14
Table 4 –Budgeted and Actual Administrative Costs by Fiscal Year 14
Rebate and Grant Program Summaries and Results 15
Renewable Energy Fund Rebate Programs 15
Table 5 – Summary of Renewable Energy Fund Rebate Programs 15
Table 6 – REF Rebate Program Results for Fiscal Year 2017 17
Table 7 – Cumulative Rebate Program Results through June 30, 2017 18
Commercial and Industrial Competitive Grant Program 19
Table 8 - REF Competitive Grant Program Summary 19
Table 9 – REF Competitive Grants Awarded in Fiscal Year 2017 20
REF Competitive Grant Completed in Fiscal Year 2017 21
Budgets, Expenditures, and Statutory Funding Requirements 22
Table 10 – Analysis of Funds for Fiscal Year 2018 22
Allocation of Funding Between Residential and Non-residential Sectors 23
Funding Cap for Residential Renewable Electricity Rebate Program 24
Use of Class II Revenues for Solar Technology Incentives 24
Net Metered Capacity, Net Metered Facilities and Group Net Metering 25
Net Metering 25
Table 11 – Net Energy Metering (NEM) Allocations to Electric Utilities per Statute (RSA 362-A:9 as amended by HB1116) 25
Table 12 – Total Net Metered Facilities as of December 31, 2016 26
Group Net Metering 27
Table 13 – Group Net Metering Applications Approved 27
Conclusion 28

Executive Summary

A decade ago, New Hampshire implemented a renewable energy policy, the Electric Renewable Portfolio Standard (RPS), which determined that it is in the public interest to stimulate investment in low emission renewable energy generation technologies within the state. As part of the policy, the Public Utilities Commission (Commission) is required to make an annual report to the Legislative Oversight Committee on Electric Utility Restructuring, the Senate Energy and Natural Resources Committee and the House Science, Technology and Energy Committee, detailing how the Renewable Energy Fund (REF) is being used. The report that follows is the October 1, 2017, New Hampshire Renewable Energy Fund Annual Report.

Renewable Energy Fund Programs

Competitive Grant Program

The Commission issued the annual Request for Proposals (RFP) on September 30, 2016, for non-residential renewable energy projects located in New Hampshire and eligible to generate renewable energy certificates (RECs). The Commission received seven proposals requesting a total of almost two million dollars in grant funds. Proposed projects included a variety of technologies: biomass for schools, hydro-electric facility expansions and redevelopment, and varied projects using biomass district heating and geothermal. Six projects were selected to receive almost $1.3 million in funding, and grant contracts were presented to and approved by the Governor and Executive Council.

UNH Rudman Hall Steam Turbine

Solar Rebate Programs

Even with reduced incentive levels relative to prior fiscal years, demand for solar photovoltaic (PV) incentives continued to grow in fiscal year 2017 (July 1, 2016 through June 30, 2017). Due to funding limitations and continued high demand, the solar electric rebate programs were closed to new applicants at the end of the fiscal year. The residential program had a waitlist totaling approximately $600,000 in rebate requests and the commercial and industrial (C&I) program had a waitlist totaling approximately $1,000,000. However, because the construction cycle for large C&I projects is long, on average approximately one year, the REF is carrying forward a balance of reserved and encumbered funds. The expectation is these projects will be built and become operational during the upcoming fiscal year.

Pellet Rebate Programs

The continued growth and stability of the pellet industry in New Hampshire continues to depend, in part, on the pellet rebate programs. As a result of the pellet rebate programs' performance during fiscal year 2016, the Commission took input from stakeholders and increased the incentive levels of the wood pellet furnace and boiler programs to 40% of eligible project costs, up to a maximum $10,000 for residential installations and $65,000 for commercial and industrial installations. To encourage larger and more economical pellet deliveries, the residential program now offers a supplemental rebate adder of $100 per ton for fuel storage systems larger than the three ton minimum requirement, up to a maximum of $500. The C&I program offers additional incentives for the installation of a thermal storage tank and/or a production meter to track thermal generation for REC certification.

The increased incentive levels and rebate adders became effective on July 9, 2017, but demand for the biomass pellet boiler/furnace programs remained relatively flat due to low oil and propane prices. Commission staff continues to monitor the programs and, with rising oil prices, expects to see an increase in demand in fiscal year 2018.

State Building Projects

Through a grant provided from the REF, the Department of Administrative Services (DAS) installed a solar PV energy system associated with the Department of Motor Vehicles Contingent Project. The 54 kilowatt (kW) PV system located on the Department of Motor Vehicles building in the Hazen Drive Complex in Concord generates renewable electricity for facilities connected to the Hazen Drive master meter. The system is expected to generate approximately 10% of the building's annual electricity usage. Since its date of operation, the system has generated over 78 megawatt-hours (MWh) of electricity; enough electricity to power over 236,000 light bulbs for one day. The environmental benefits include saving over 120,000 pounds of carbon dioxide emissions, the equivalent of planting over 3,000 trees.

DMV Solar PV Array

In fiscal year 2018, DAS plans to install a 100 kW solar PV energy system at the new women's prison with funding from the Renewable Energy Fund. The renewable attributes of these projects will help the state to meet its 2020 goal of reducing fossil fuel use in state facilities by 30 percent over 2005 levels.

Outlook for Fiscal Year 2018

Renewable Energy Fund Programs

Alternative Compliance Payments are down approximately a half million dollars compared to the last fiscal year. Payments for calendar year 2016 were $3.6 million which will limit the funding available for the rebate and grant programs. With reduced funding, growing waitlists and continued strong demand for programs, Commission staff will be considering revisions to current rebate levels and program terms and conditions. All program changes will be considered as part of an open public hearing process with stakeholder involvement.

The fiscal year 2018 grant offering will focus on thermal and hydro projects that create Class I-Thermal and Class IV RECs to spur growth in classes in which RECs are expected to be in shorter supply. The Sustainable Energy Division will continue to manage the REF to ensure funds are properly allocated to programs, and applications and deadlines are met to ensure projects move from approval to completion as efficiently and quickly as possible.

Net Metering

The Commission's Sustainable Energy Division will lead the design and implementation of a new low and moderate income program. This effort will involve working closely with stakeholders and the net metering working group in its development of a low moderate income pilot program to maximize the benefits through prudent use of limited funds.

In addition, Commission Staff will work with the net metering working group to develop the scope and timeline for the Value of Distributed Energy Resources study which will be completed and submitted to the Commission for approval in February 2018.

Working in conjunction with stakeholders, Commission Staff will conduct technical working group sessions to inform the design and development of utility proposed pilots, including a Real-Time Pricing Pilot, Time-of-Use Pilot Programs, Non-Wires Alternative Pilot Programs, and Low and Moderate Income Pilot Program.

2018 Renewable Portfolio Standard Review

Pursuant to RSA 362-F:5, a mandated review of the class requirements and other aspects of the electric renewable portfolio standard program will be conducted in 2018, and again in 2025. The review will commence in January, and the Commission shall make a report of its findings to the General Court by November 1, 2018, including any recommendations relative to the class requirements or other aspects of the RPS program. The statute outlines nine specific areas for review. Additionally, there are a number of topics that could be considered for exploration in their relationship to the RPS. These include: features of the Class II obligations, peak load reduction, grid modernization, and storage in the development of renewable technology capacity.

Overview of New Hampshire's Renewable Portfolio Standard Policy

New Hampshire's Renewable Portfolio Standard statute establishes the renewable energy policy for the state. Common renewable energy sources are solar, wind, hydropower, biomass, and geothermal. These energy sources provide a sustainable and affordable power supply. Renewable energy enables New Hampshire municipalities, schools, businesses, and residents to realize economic and energy security benefits. Renewable energy generation technologies provide fuel diversity to the state and the New England generation supply through the use of renewable fuels sourced locally, lowering regional dependence on fossil fuels. Renewable resources also have the potential to lower and stabilize future energy costs by reducing exposure to rising and volatile fossil fuel prices. Use of local and renewable fuels also allows more energy dollars to be retained in the state rather than spent on imported fuels. In addition, utilizing renewable technologies can help reduce the amount of greenhouse gases, nitrogen oxides, and particulate matter emissions generated in the state, which helps improve air quality and public health.

The RPS statute established four classes of renewable energy resources (summarized in the box to the right). Electricity providers must obtain RECs for each of the four classes as a set percentage of their retail electric load. One REC represents one megawatt-hour of electricity or the equivalent amount of thermal energy (3,412,000 Btu), generated from a renewable source.

RECs are generated by certified renewable energy facilities and sold into a regional market. Renewable energy facilities must apply for New Hampshire RPS eligibility. Facilities submit to the Commission a class-specific application for review and approval. The Sustainable Energy Division certifies the systems as

New Hampshire RPS Class Definitions*

Class I - New Renewable Energy. Sources producing electricity or "useful thermal energy" (i.e., Class I Thermal) generated by any of the following resources, provided the generator began operation after January 1, 2006, except as noted below:

- Wind energy;
- Hydrogen derived from biomass fuels or methane gas;
- Ocean thermal, wave, current, or tidal energy;
- Methane gas;
- Eligible biomass fuels (including the biomass share of certain generators co-fired with fossil fuels);
- Solar-electric energy not used to satisfy the minimum Class II obligation;
- The incremental new production of electricity in any year from an eligible biomass, eligible methane source, or hydroelectric generating facility of any capacity, over its historical generation baseline;
- The production of electricity from Class III or IV sources that have been restored through significant investment.

Class I Thermal- Useful Thermal Energy. Class I Thermal resources must be used to meet a set percentage of the total Class I RPS obligation as outlined in RSA 362-F:4. Eligible Class I Thermal sources include the following technologies that began operation after January 1, 2013 except as noted below:

- Geothermal systems that began producing thermal energy;
- Solar-thermal systems that produce useful thermal energy only;
- Eligible biomass generators that meet emissions criteria;
- The production of useful thermal energy from certain biomass thermal sources which began operation prior to January 1, 2013 and have been upgraded or replaced through significant investment.

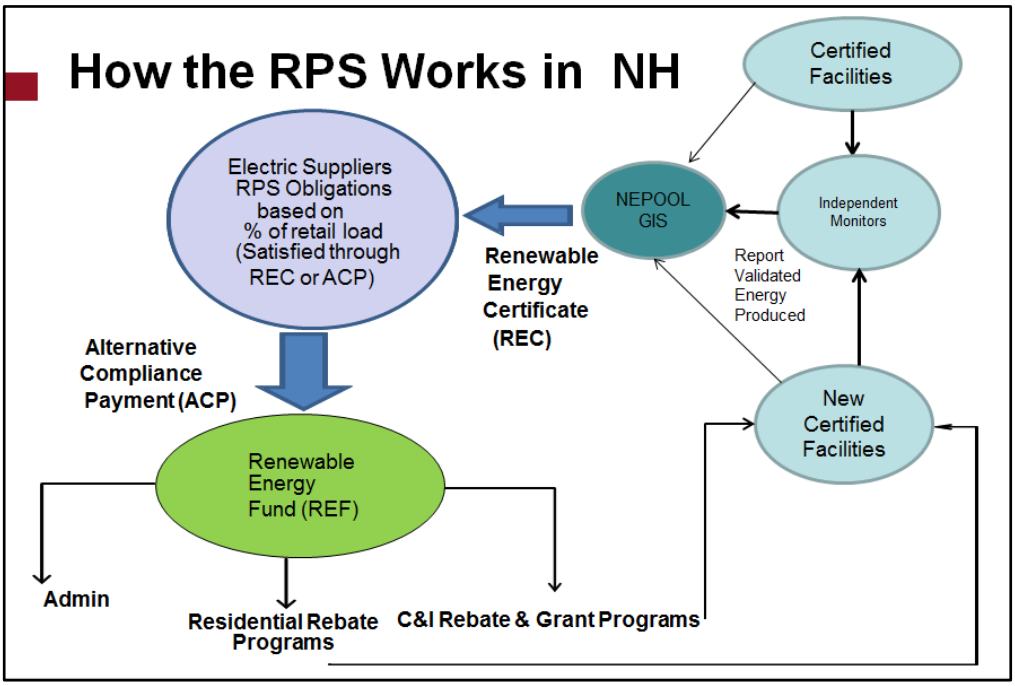
Class II - New Solar. Solar technologies; provided the electric generator began operation after January 1, 2006.

Class III - Existing Biomass/Methane. Eligible biomass systems of 25 megawatts (MW) or less, and methane gas, provided the generator began operation before January 1, 2006. Methane gas sources which began operation prior to 2006 and exceed an aggregated gross nameplate capacity of 10 MW at any single landfill site are not eligible.

Class IV - Existing Small Hydroelectric. Hydro facilities up to 5 MW, provided the generator began operation before January 1, 2006, and complies with certain environmental protection criteria; and hydroelectric facilities up to 1 MW that are interconnected to the distribution grid in New Hampshire.

*refer to RSA 362-F for detailed Class definitions

eligible under state statutes and rules (Puc 2500 rules) to generate RECs. Per the Puc 2500 rules, facility owners must purchase and install a revenue quality meter to record the gross output and retain the services of an independent monitor to be eligible for certification. All classes of applications that are considered complete must be approved or rejected within 45 days of receipt.



Upon certification, Commission Staff notifies the New England Power Pool Generation Information System, which issues and tracks RECs for the region. Gross output from certified customer-sited facilities is verified and reported by independent monitors to NEPOOL GIS. On a quarterly basis, NEPOOL GIS issues RECs for reported generation and administers a two-month trading period. RECs generated in one state may be sold in another provided the facility is certified in that state as well.

If electricity providers cannot, or choose not to, purchase or obtain sufficient RECs to comply with the RPS law, they must make alternative compliance payments (ACPs) to the REF. On an annual basis, the Commission reviews electricity providers' compliance with the previous calendar year's RPS requirements. Electricity providers include New Hampshire's competitive electricity providers and electric distribution utilities (Eversource, Liberty Utilities, Unitil Energy Systems, Inc. and the New Hampshire Electric Cooperative).

The REF is a dedicated, non-lapsing fund, the purpose of which is to support electrical and thermal renewable energy initiatives. ACPs are the only source of funding for the REF and fluctuate from year to year, depending on the price and availability of RECs in the regional market.

The Commission's Sustainable Energy Division administers three residential rebate programs, two commercial and industrial rebate programs and one competitive grant program with funding from the REF. Projects installed with incentives from the REF are eligible facilities which may become certified, thereby generating RECs to trade in the NEPOOL GIS market. Incentivizing the installation of new renewable facilities enables New Hampshire to continue to meet its increasing RPS goals.

Legislative Summary and Update

Fiscal Year 2016: RPS and Net Metering Legislation Update

Renewable Portfolio Standard Legislation

In 2016, the Renewable Portfolio Standard law, RSA 362-F, was amended through the passage of Senate Bill 386[1] to include useful thermal energy from the production of biodiesel fuel sold into the thermal energy market as an eligible source for RPS compliance. The RECs associated with the production of biodiesel fuel by any facility located in New Hampshire may be used to meet no more than one-eighth of an electricity provider's non-thermal Class I requirement in any given year, provided that all applicable air emission and water discharge standards are met by the biodiesel production facility. The biodiesel production facility must document the sale of the biodiesel fuel into the thermal energy market and provide documentation of end-user efficiency rating, or, where such documentation is not practicable, assume the average end-user efficiency rating by customer class. The legislation required the Commission to establish procedures for the metering, verification, and reporting of useful thermal energy output for producers of biodiesel fuel no later than December 31, 2017.

On October 18, 2016, the Commission opened a rulemaking proceeding, Docket DRM 16-829, with respect to potential amendments of the Commission's rules relative to the RPS rules (Puc 2500)[2]. Several technical sessions were held to solicit stakeholder input regarding potential amendments to the rules. Staff worked with the New England Power Pool (NEPOOL) Markets Committee to establish changes required to be made to NEPOOL's Generator Information System (GIS) operating rules in order to accommodate the creation, tracking, and sale of biodiesel production RECs. The NEPOOL Markets Committee has approved the necessary revisions to the GIS operating rules. On September 12, 2017, draft rules were filed with the Office of Legislative Services Administrative Rules Division. The Commission expects the amended rules will be adopted by December 31, 2017.

Net Metering Legislation

New Hampshire's net metering policy, set forth in RSA 362-A:9, provides a billing, crediting, and compensation mechanism for electricity generated "behind-the-meter" by solar and other interconnected renewable energy generation systems. Under traditional net metering, when a system produces more electricity than is used on-site at the customer's premises, the excess electricity flows back into the electric grid. This effectively reverses the direction of the meter, "netting out" that production so the customer-generator's overall billed kilowatt hour usage is lower at the end of the billing cycle. If the total usage in a billing cycle is negative, then the customer receives a bill credit that can be carried forward for application in future billing cycles.

[1] Senate Bill 386 http://www.gencourt.state.nh.us/bill_status/billText.aspx?sy=2017&id=1135&txtFormat=pdf&v=current

[2] Other changes to the Puc 2500 rules also will be considered through the rulemaking process, including changes relative to the requirements for independent monitors and aggregators, and miscellaneous revisions necessitated by other legislative amendments.

In May 2016, House Bill 1116[3] was signed into law. This legislation amended the State's net metering statute by increasing the net metering cap to 100 megawatts(MW), which provided an additional 50 MW of capacity to Eversource Energy, Liberty Utilities, and Unitil Energy Systems. It also directed the Commission to initiate a proceeding to develop new alternative net metering tariffs, which may include other regulatory mechanisms and tariffs for customer-generators. It is important to note that New Hampshire Electric Cooperative (NHEC) was not subject to this legislation. NHEC, as a rural electric cooperative with a certificate of deregulation on file with the Commission in accordance with RSA 362:2 II, had decided to continue net metering above its share of the original 50 MW cap on terms and conditions it determined to be reasonable and appropriate; therefore, it was not required to participate in the Commission's alternative net metering tariff development proceeding.

The Commission conducted a litigated proceeding[4] that began in mid-2016 and concluded with hearings held in late March 2017. On June 23, 2017, the Commission issued Order No. 26,029,[5] which accepted the common elements of two filed settlement proposals and resolved the differences between those two settlements, providing for the adoption of an alternative net metering tariff to be in effect for a period of years while further data is collected and analyzed, pilot programs are implemented, and a distributed energy resource (DER) valuation study is conducted.

During the next several years, small customer-generators (with renewable energy systems of 100 kW or less) will net meter their distributed generation resources with monthly netting. Those customer-generators will receive monthly excess export credits equal to the value of kWh charges for energy service and transmission service at 100 percent and distribution service at 25 percent, while paying non-bypassable charges, such as the system benefits charge, stranded cost recovery charge, other similar surcharges, and the state electricity consumption tax, on the full amount of their electricity imports from the electric grid. Large customer-generators will continue to be net-metered in the same manner as under the original net metering tariff, receiving credit for electricity exports only at the utility's default energy service rate. Under the new alternative net metering tariff, customer-generators will receive monetary bill credits rather than kWh credits on a monthly billing cycle basis. The Commission did not impose any limitation on the amount of generating capacity eligible for the new net metering tariff provisions.

To facilitate the collection of data to inform the value of DER study, the Commission authorized the development of several pilot programs, including:

- Real-Time Pricing Pilot Program in the City of Lebanon;
- Time-of-Use Pilot Programs;
- Non-Wires Alternative Pilot Programs; and
- Low and Moderate Income Pilot Program.

[3] House Bill 1116 http://www.gencourt.state.nh.us/bill_status/billText.aspx?sy=2017&id=293&txtFormat=pdf&v=current
[4] DE 16-576, Development of New Alternative Net Metering Tariffs and/or Other Regulatory Mechanisms and Tariffs for Customer-Generators; http://puc.nh.gov/Regulatory/Docketbk/2016/16-576.html
[5] Order No. 26,029 - Order Accepting Settlement Provisions, Resolving Settlement Issues, and Adopting a New NEM

Pilot program design and related evaluation, measurement, and verification plans will be reviewed and discussed with interested stakeholders through a working group process, following which specific proposals will be filed by the utilities for review and approval, rejection, or modification by the Commission. The goal is to have all four of the pilot programs approved and initially implemented within 18 months from June 23, 2017, the date of the order.

Following the completion of the DER valuation study, and with the availability of additional customer load and system data, the Commission will open a new proceeding to determine whether and when further changes should be made to the net metering tariff structure.

Fiscal Year 2017: RPS Legislation

Renewable Portfolio Standard Legislation

With the passage of Senate Bill 129, the "New Hampshire Clean Energy Jobs and Opportunity Act of 2017," several amendments to the RPS law were enacted to "promote customer choice and energy independence by eliminating market barriers to solar energy that low-to-moderate income residential customers face, by sustaining and promoting local renewable energy resources and New Hampshire jobs in the solar and wood products industries, by promoting the stabilization and lowering of future energy costs with more clean energy supply and greater energy diversification, and by further reducing energy costs by reducing New Hampshire's peak demand, including our share of regional electric transmission costs, which recently went up due to our increased share of the regional peak demand." [6]

Specifically, this legislation increased electricity providers' RPS Class II (solar) requirement from 0.3% to 0.7% by 2020, and adjusted the Class I Thermal requirement by 0.2% per year through 2023. In regard to Class III (Existing Biomass/Methane), the Class III alternative compliance payment was increased to $55 in calendar years 2017, 2018, and 2019, and Class III eligible methane facilities may no longer exceed a gross nameplate capacity of ten MW in aggregate at any single landfill site. The statutory amendments include exemption periods for certain electrical supply contracts.

The legislation also included a new program funding requirement intended to reduce market barriers to solar energy participation by low and moderate income residential customers. Beginning in fiscal year 2018, at least fifteen percent of the REF must be used to benefit low and moderate income residential customers. Program design may include, but is not limited to, financing or leveraging of financing for low and moderate community solar projects in manufactured housing communities or in multi-family rental housing. The collaborative stakeholder process will begin in October 2017.

[6] Senate Bill 129 http://www.gencourt.state.nh.us/bill_status/Results.aspx?q=1&txtsessionyear=2017

RPS Revenues and Costs

Revenues

Alternative Compliance Payments are the only source of revenue for the REF. One ACP is paid for each megawatt hour of compliance obligation not met by purchasing a REC. The ACP rate serves as a ceiling price in the market for RECs. Generally, REC prices trading at or near the ACP rate indicate an under supply of RECs in the market, whereas RECs trading well below the ACP rate indicate an oversupply of RECs in the market. ACP rates are defined by RPS Class and are adjusted annually. In accordance with RSA 362-F:10, III. (a), the ACP rate for Class IV is adjusted by the Consumer Price Index (CPI) and for Classes I and II by ½ of the CPI. In accordance with RSA 362-F:10, III. (b), the Class III ACP is $45 for 2015 and 2016, and $55 for 2017, 2018 and 2019.

Basic Class Definitions

Class I
- New Renewable
- New Useful Thermal
- Production of Biodiesel

Class II
- New Solar

Class III
- Existing Biomass
- Existing Methane

Class IV
- Existing Hydro

(Refer to RSA 362-F for detailed Class definitions)

Table 1 – Inflation Adjusted Alternative Compliance Payment Rates ($ per Megawatt Hour)

Inflation Adjusted Alternative Compliance Payment Rate ($ per Megawatt Hour)						
ACP RATE	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Class I (Non-thermal)	$ 64.02	$ 55.00	$ 55.37	$ 55.75	$ 55.72	$ 56.02
Class I Thermal		$ 25.00	$ 25.17	$ 25.34	$ 25.33	$ 25.46
Class II	$ 168.13	$ 55.00	$ 55.37	$ 55.75	$ 55.72	$ 56.02
Class III	$ 31.39	$ 31.50	$ 31.93	$ 45.00	$ 45.00	$ 55.00
Class IV	$ 31.39	$ 26.50	$ 26.86	$ 27.23	$ 27.20	$ 27.49

Alternative compliance payments from electricity providers are made annually by July 1, for the prior calendar year. For example, ACPs for calendar year (CY) 2016 were to be paid by July 1, 2017. Entities paying ACPs include New Hampshire's electric utilities as well as competitive electric power suppliers. As designed, the ACP funding to the REF is expected to, and does, fluctuate over time. CY 2016 saw a reduction in total ACPs. ACP revenues in 2017 (for compliance year 2016) were $3,589,252 as compared to the prior year's revenue of $4,224,339.

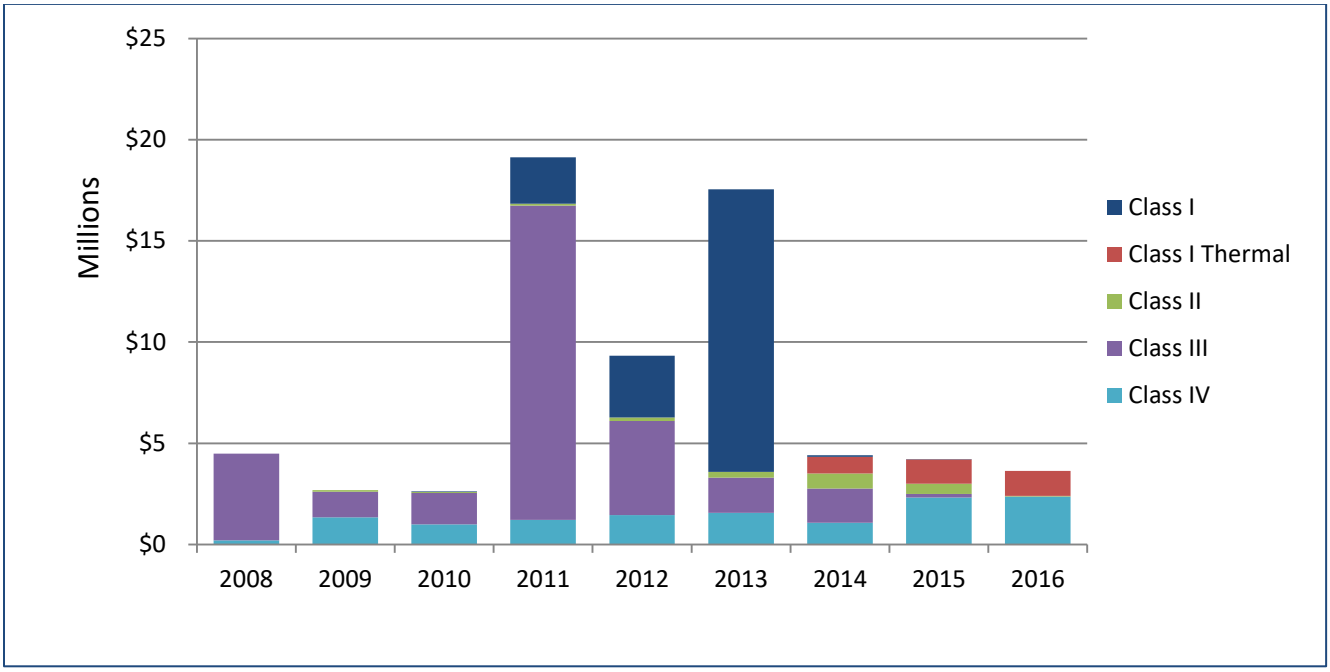
Table 2 – ACP Revenues by Calendar Year

Calendar Year	Total ACP Revenue
2008	$ 4,483,917
2009	$ 1,348,294
2010	$ 2,625,499
2011	$ 19,121,853
2012	$ 9,323,198
2013	$ 17,458,196
2014	$ 4,406,804
2015	$ 4,224,339
2016	**$ 3,633,342**

Revenues by RPS Class

The chart below illustrates the fluctuating nature of the annual ACP revenue while providing a year-to-year comparison of ACP revenues by RPS Class. The next section provides a discussion of possible market conditions contributing to the 2016 ACP revenues by class.

ACP Revenues by Class, and Trend by Calendar Year



Class I & Class I Thermal - New Renewable Energy Production of Electricity or Useful Thermal ACPs

ACPs for Class I decreased from $18,676 for CY 2015 to zero for CY 2016, even with an increased obligation requirement of 5.6% versus 5.4% for CY 2015. This may be due, in part, to more facilities becoming certified to produce RECs. In addition, pursuant to RSA 362-F:6, II-a and Puc 2503.04(d), every year the Commission computes an estimate of a percentage credit an electricity provider may take for Class I based on the capacity of customer-sited sources that are net metered and are not certified to create Class I RECs. For CY 2016, the credit for Class I was 0.0047% (total obligation 6.20%). At the time of its RPS compliance filing, an electricity provider may claim this Class I REC credit in an amount equal to the percentage credit for Class I times the total electricity (MWh) provided to end-use customers by that electricity provider.

ACPs for the Class I Thermal were $1,237,644 for CY 2016 compared to $1,204,232 for CY 2015. Per Commission order the obligation for Class I Thermal remained at 0.6%[7]. The Commission continues to modify programs and target the competitive grant program toward the development of projects which generate thermal RECs.

Class II – New Solar Electric ACPs

Solar installations and Class II REC certified facilities increased in 2016, which reduced ACP revenues for Class II from $499,299 in 2015 to $23,179 in 2016. The reduction in ACPs is due in part to the significant increase in solar installations and a credit for Class II net metering, similar to that described above for Class I. For CY 2016, the credit for Class II was 0.2484% (total obligation 0.30%), which an electricity provider may claim at the time of its RPS compliance filing.

Class III – Existing Biomass/Methane Electric Technologies (Prior to January 1, 2006) ACPs

Class III revenues decreased from $174,240 (CY 2015) to $24,840 (CY 2016) due to the reduction in the 2016 Class III REC requirement and the fact that the NH Class III ACP price in 2016 was closer to that of other New England states.

The Commission modified the Class III obligations[8] reducing the requirement from 8.0% to at 0.5% of an electricity provider's retail sales for 2016 as there had been no significant change in the Class III REC market in New England. This action prevented a substantial shortfall of Class III RECs in 2016 and significantly higher ACPs, the cost of which is ultimately borne by New Hampshire ratepayers. Because the New Hampshire RPS law operates in conjunction with the regional REC market operated through the NEPOOL GIS, New Hampshire eligible facilities may certify and sell their RECs in other states as Class I RECs. In recent years, New Hampshire facilities producing Class III RECs have been able to sell the RECs they produce at a higher price in the Class I REC markets in Connecticut and Massachusetts than in the Class III REC market in New Hampshire.

Class IV – Existing Small Hydroelectric (Prior to January 1, 2006) ACPs

Class IV ACPs remained basically level; $2,327,892 (CY 2015) and $2,348,039 (CY 2016).

[7] Docket DE 15-477; Order No. 25,844
[8] Docket DE 15-477; Order No. 25,844

Table 3 lists the distribution utilities and other electricity suppliers that filed compliance reports for calendar year 2016, documents each company's total alternative compliance payments, and further breaks down these payments by renewable energy class. Where no revenue appears for a class, it is because the company obtained RECs to satisfy its obligation for that class.

Table 3 - ACP Revenue by Supplier and RPS Class for Compliance (Calendar) Year 2016

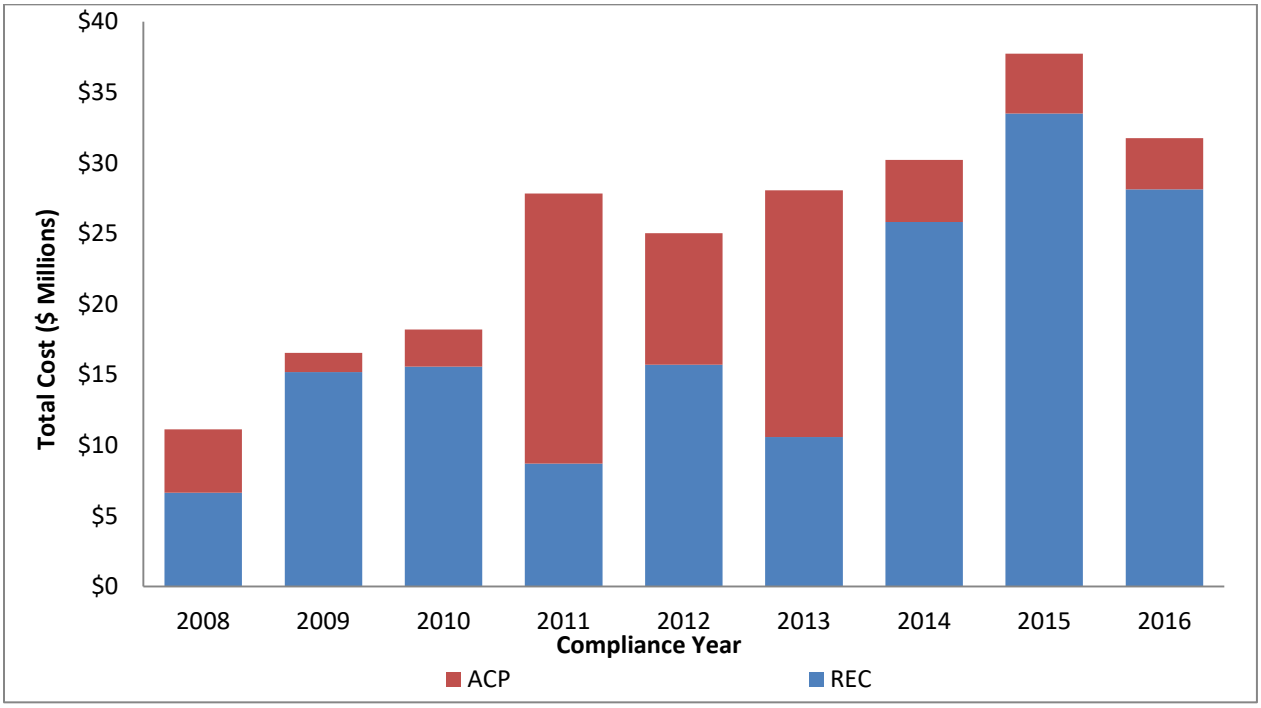
Alternative Compliance Payment Revenue by Supplier and RPS Class for Compliance (Calendar) Year 2016						
Company	**Class I**	**Class I Thermal**	**Class II**	**Class III**	**Class IV**	**Total**
Distribution Utilities						
Liberty Utilities (Granite State)	$ -	$ -	$ -	$ -	$ -	$ -
NHEC	$ -	$ -	$ -	$ -	$ 26,493	$ 26,493
Eversource (PSNH)	$ -	$ 416,653	$ -	$ -	$ 388,090	$ 804,743
Unitil	$ -	$ -	$ -	$ -	$ 62,696	$ 62,696
Competitive Suppliers						
Agera Energy LLC	$ -	$ 19,327	$ 2,396	$ 20,025	$ 51,870	$ 93,618
Ambit Northeast LLC	$ -	$ 6,231	$ -	$ -	$ 16,701	$ 22,932
Calpine	$ -	$ 15,097	$ -	$ -	$ 40,528	$ 55,625
CleanChoice Energy	$ -	$ -	$ -	$ -	$ -	$ -
Clearview Energy	$ -	$ 2,761	$ -	$ 4,095	$ 7,398	$ 14,254
Consolidated Edison Solutions, Inc.	$ -	$ 41,617	$ -	$ -	$ 25,731	$ 67,348
Constellation Energy Services, Inc. (Integrys Energy)	$ -	$ 111,756	$ -	$ -	$ 300,016	$ 411,772
Constellation New Energy, Inc.	$ -	$ 205,249	$ -	$ -	$ 521,043	$ 726,292
Devonshire (Fidelty)	$ -	$ 7,802	$ -	$ -	$ -	$ 7,802
Direct Energy Business, LLC	$ -	$ -	$ -	$ -	$ -	$ -
Direct Energy Business Marketing (Hess)	$ -	$ 51,977	$ -	$ -	$ 139,536	$ 191,513
Direct Energy Services, LLC (First Choice Power)	$ -	$ 8,080	$ -	$ -	$ 21,733	$ 29,813
EDF Energy Services LLC	$ -	$ 101		$ 135		$ 236
Ethical Electric, Inc.	$ -	$ -	$ -	$ -	$ -	$ -
Engie Resources Inc	$ -	$ 735	$ 167	$ -	$ 82	$ 984
ENH Power	$ -	$ 58,892	$ -	$ -	$ 158,086	$ 216,978
Fairpoint Energy, LLC	$ -	$ 8,410	$ -	$ -	$ -	$ 8,410
First Point Power, LLC	$ -	$ 48,273	$ -	$ -	$ 129,526	$ 177,799
Glacial Energy LLC	$ -	$ -	$ -	$ -	$ -	$ -
Gulf Oil Limited Partnership	$ -	$ -	$ -	$ -	$ -	$ -
Mega Energy of New Hampshire	$ -	$ 2,913	$ 557	$ -	$ 7,834	$ 11,304
Mint Energy, LLC	$ -	$ 4,382	$ -	$ -	$ 11,778	$ 16,160
NextEra Energy Services New Hampshire, LLC	$ -	$ 59,652	$ -	$ -	$ 119,190	$ 178,842
Noble Americas Energy Solutions, LLC	$ -	$ -	$ -	$ -	$ -	$ -
Nordic Energy Services	$ -	$ -	$ -	$ -	$ -	$ -
North American Power and Gas, LLC	$ -	$ 46,506	$ -	$ -	$ 816	$ 47,322
PNE Energy Supply, LLC (Power New England)	$ -	$ 1,393	$ -	$ -	$ -	$ 1,393
Reliant Energy Northeast, LLC (NRG)	$ -	$ -	$ -	$ -	$ -	$ -
REP Energy, LLC	$ -	$ 152	$ -	$ 225	$ 408	$ 785
Smart Energy Holdings LLC	$ -	$ -	$ -	$ -	$ -	$ -
South Jersey Energy Company	$ -	$ 4,382	$ 836	$ -	$ 11,805	$ 17,023
Texas Retail Energy	$ -	$ 14,362	$ -	$ -	$ 38,570	$ 52,932
Think Energy (Engie Retail, LLC)	$ -	$ 76	$ -	$ -	$ -	$ 76
Town Square Energy, LLC (Twin Cities Power)	$ -	$ 2,964	$ -	$ -	$ -	$ 2,964
TransCanada Power Marketing, Ltd.	$ -	$ 96,786	$ 19,223	$ -	$ 268,110	$ 384,119
Xoom Energy New Hampshire, LLC	$ -	$ 1,115	$ -	$ -	$ -	$ 1,115
TOTAL	**$ -**	**$ 1,237,644**	**$ 23,179**	**$ 24,480**	**$ 2,348,039**	**$ 3,633,342**

RPS Compliance Costs

The RPS is a market based policy with RECs being traded through the NEPOOL GIS. NEPOOL GIS issues and tracks certificates for all MWh of generation and load produced in the ISO New England control area, as well as imported MWh from adjacent control areas. Electricity providers comply with RPS requirements by purchasing RECs or making ACPs. Therefore, the total cost of RPS compliance is equal to the cost of RECs plus the ACPs. The average rate impact from 2008 to 2016 is $0.0023 per kWh.

As the charts illustrate, ACPs have generally declined while REC purchases have increased in recent years. Between 2008 and 2016, the annual RPS obligation has increased from 4% to 8.5%.

Annual RPS Compliance Costs and Rate Impact



Compliance Year	Total REC Costs	Total ACP Costs	Total RPS Compliance Cost	Average per kWh Rate Impact
2008	$ 6.6	$ 4.5	$ 11.1	$ 0.0011
2009	$ 15.1	$ 1.3	$ 16.4	$ 0.0016
2010	$ 15.5	$ 2.6	$ 18.1	$ 0.0017
2011	$ 8.7	$ 19.1	$ 27.8	$ 0.0026
2012	$ 15.7	$ 9.3	$ 25.0	$ 0.0023
2013	$ 10.6	$ 17.5	$ 28.1	$ 0.0026
2014	$ 25.8	$ 4.7	$ 30.5	$ 0.0028
2015	$ 33.5	$ 4.2	$ 37.7	$ 0.0035
2016	$ 28.1	$ 3.6	$ 31.7	$ 0.0030
Total	**$ 159.7**	**$ 66.6**	**$ 226.3**	

All costs presented in millions and rounded to the hundred thousand.

Administrative Costs

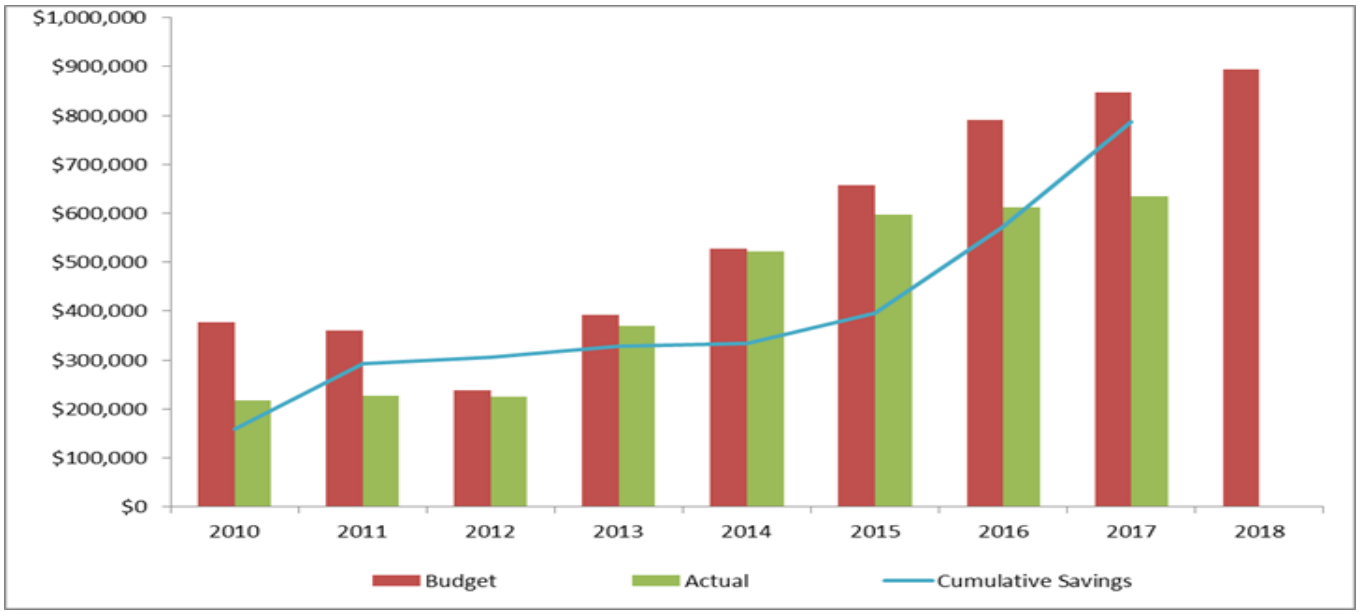
Administrative costs are estimated during the state biennium budget process and include, for example, personnel, consultants, and membership dues. REF administrative expenditures cover the cost of managing the various rebate and grant programs, monitoring and validating facility and supplier compliance with the RPS, and working on RPS-related dockets such as Puc 2500 rules, Puc 900 rules, net metering, and REF program revisions. Administrative budgeted and actual costs since REF inception are provided in Table 4.

Table 4 –Budgeted and Actual Administrative Costs by Fiscal Year

Fiscal Year	Budget	Actual	Annual Savings	Cumulative Savings
2010	$376,735	$217,581	$159,154	$159,154
2011*	$360,326	$226,042	$134,284	$293,438
2012*	$237,594	$224,754	$ 12,840	$306,278
2013*	$391,670	$369,260	$ 22,410	$328,688
2014**	$528,499	$522,656	$ 5,843	$334,531
2015**	$657,913	$596,940	$ 60,973	$395,504
2016	$790,136	$612,511	$177,625	$573,129
2017	$847,325	$633,965	$213,360	$786,489
2018	$894,835			
Cumulative FY 2010-18	**$5,085,033**	**$3,403,709**	**$786,489**	

* Administrative costs were partially offset during these fiscal years with ARRA funds made available by the New Hampshire Office of Energy and Planning, and the federal Department of Energy.

** Administrative costs increased, reflecting an increase in the number of rebate programs administered, and a substantial increase in the amount of rebate and grant funds disbursed.



Rebate and Grant Program Summaries and Results

Pursuant to RSA 362-F:10, the Commission administers three residential renewable energy rebate programs, two commercial and industrial renewable energy rebate programs, and a competitive grant program for non-residential renewable energy projects. For all rebate programs and grants, projects funded must be located in New Hampshire.

Renewable Energy Fund Rebate Programs

Rebate programs funded by the REF are described in Table 5.

Table 5 – Summary of Renewable Energy Fund Rebate Programs

Rebate Program	Eligible Technologies and Capacity Limits	Incentive Levels (Rebate)	Authority, Date of Inception
Residential Electrical Renewable Energy Rebate (PV and Wind)	Solar electric (PV) and wind turbines systems up to and including 10 kilowatts (kW) DC in capacity	$0.50 per watt up to a maximum of $2,500, or 30% of the total cost of the facility, whichever is less	RSA 362-F:10, V July 2009
Residential Solar Water Heating Rebate	Solar water heating systems with annual production capacity of 5.5 MMBtus or greater	$1,500, $1,700, or $1,900 depending on system capacity	RSA 362-F:10, VIII April 2010
Residential Wood Pellet Boiler/Furnace Rebate[9]	High efficiency, bulk-fed wood pellet central furnaces/boilers	40% of the eligible system cost and installation, up to a maximum rebate of $10,000. The program also provides a supplemental adder of $100 per ton for fuel storage systems larger than the three ton minimum requirement, up to a maximum of $500. (*Beginning July 9, 2016*)	RSA 362-F:10, VIII April 2010 *Program was modified in July 2016 per Docket DE 16-614, Order No. 25, 921.*

[9] *Residential Wood Pellet program was modified in July 2016 per Docket DE 16-614, Order No. 25, 921* *http://www.puc.nh.gov/Regulatory/Orders/2016orders/25921e.pdf*.

Rebate Program	Eligible Technologies and Capacity Limits	Incentive Levels (Rebate)	Authority, Date of Inception
Commercial & Industrial (C&I) Expanded Solar Technologies Rebate[10] Category 1 - PV and Thermal	PV systems and solar thermal systems less than or equal to 100 kW (AC) or thermal equivalent	$0.70 per watt (AC and DC) for new solar electric facilities with Step 1 application received prior to Sept. 1, 2016, and $0.65 with applications received after Sept. 1, 2016. $0.12/rated or modeled kBtu/year for solar thermal facilities 15 collectors in size or fewer, and $0.07/rated or modeled kBtu/year for solar thermal facilities greater than 15 collectors. Incentives are limited to 25% of the total project cost. Expansions to existing solar systems are not eligible.	RSA 362-F:10, VIII October 2010 *Program modified and opened through DE10-212 Order No. 25,764 on April 17, 2016.* *Program modified and opened on May 6, 2016 through Order DE10-212, Order No. 25,878.*
Category 2 - PV	PV systems greater than 100 kW (AC) and less than or equal to 500 kW (AC)	$0.55 per watt (AC) for new electric facilities. Expansions to existing solar systems are not eligible.	
Commercial and Industrial Wood Pellet Furnace/Boiler Rebate[11]	Non-residential bulk-fuel fed wood pellet boilers and furnaces rated 2.5 million Btus or less	40% of the eligible system cost and installation, up to a maximum rebate of $65,000. The program also provides supplemental adders for storage and metering. (*Began July 9, 2016*)	RSA 362-F:10, VIII December 2013 *Program was modified in July 2016 per Docket DE 13-298, Order No. 25,922.*

[10] *Program opened on May 6, 2016 through Order DE 10-212,* Order No. 25,878 *http://www.puc.nh.gov/Regulatory/CASEFILE/2010/10-212/ORDERS/10-212%202016-02-20%20ORDER%20NO%2025-764.PDF*

[11] *Commercial and Industrial Wood Pellet program was modified in July 2016 per Docket DE 13-298, Order No. 25,922 http://www.puc.nh.gov/Regulatory/Orders/2016orders/25922e.pdf.*

New Hampshire's solar electric market continues to grow. Net metering, the RPS, and REF programs are incentives and drivers for participants in this market. As a result of market conditions, including the continuing decline in the cost of solar technology and installation, available incentives, and increased consumer awareness, both the residential electrical renewable energy rebate program and the commercial and industrial solar rebate program experienced an increase in demand, and program budgets for both programs were fully committed at the end of the fiscal year. The waitlist totaled approximately $600,000 in the residential solar program and almost $1,000,000 for Category 1 and Category 2 projects in the commercial and industrial solar rebate program. Specific program results for the REF rebate programs in FY17 are summarized in Table 6.

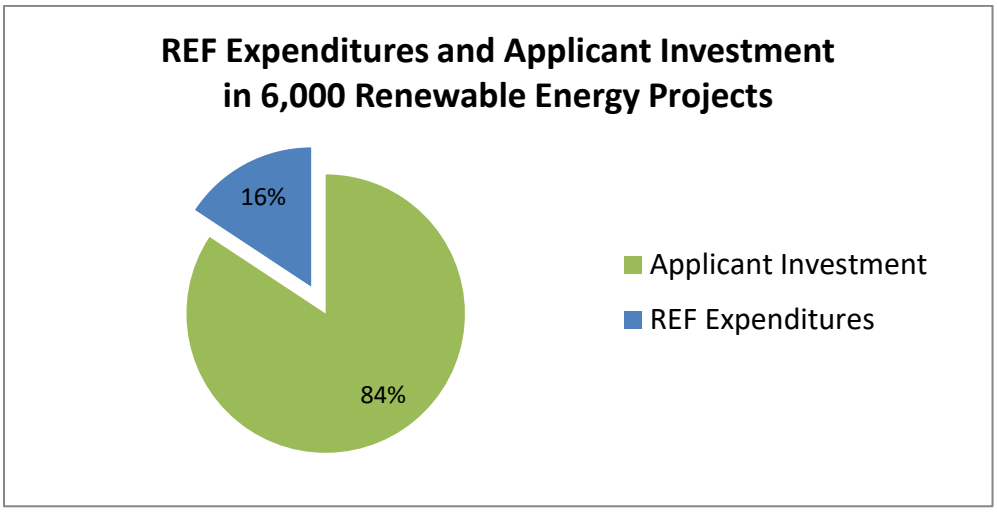
Table 6 – REF Rebate Program Results for Fiscal Year 2017

REF Rebate Program	Number of Applications Received	Number Rebates Awarded	Rebate Funds Disbursed	Average Rebate Award
Residential Electrical Renewable Energy (PV and Wind)	1,080	1,056	$ 2,639,196	$ 2,499
Residential Solar Water Heating	5	3	$ 6,200	$ 2,066
Residential Wood Pellet Furnace/Boiler	37	23	$ 245,427	$ 10,670
C&I Solar Technologies (Electric and Thermal)	115	94	$ 2,607,062	$ 27,734
C&I Wood Pellet Furnace/Boiler	12	3	$ 155,256	$ 51,752
Totals	**1,249**	**1,179**	**$ 5,653,141**	**n/a**

Cumulative results for the rebate programs, since their inception through June 30, 2017, are shown below in Table 7. The program rebates have leveraged private investment in a ratio greater than six to one.

Table 7 – Cumulative Rebate Program Results through June 30, 2017

REF Rebate Program	Number of Applications Received	Number of Rebates Awarded	Rebate Funds Reserved or In-Process	Rebate funds disbursed	Aggregate Applicant Investment *(rounded to nearest thousand)*
Residential Electrical Renewable Energy (PV and Wind)	4,399	3,783	$ 1,045,698	$ 12,665,650	$ 103,908,000
Residential Solar Water Heating	510	492	$ 3,000	$ 1,004,900	$ 3,280,000
Residential Wood Pellet Boiler/Furnace[12]	354	351	$ 119,413	$ 1,912,903	$ 4,182,000
C & I Solar Technologies (Electric and Thermal)	662	380	$ 5,439,394	$ 7,537,283	$ 39,951,000
C&I Wood Pellet Boiler/Furnace	73	51	$ 447,768	$ 1,382,880	$ 4,644,000
Totals	**5,998**	**5,057**	**$ 7,055,273**	**$ 24,503,616**	**$ $155,965,000**



[12] Includes ARRA funded projects.

Commercial and Industrial Competitive Grant Program

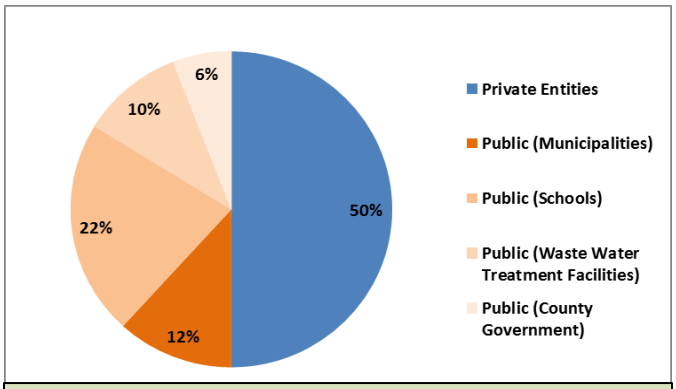
RSA 362-F:10, XI requires the Commission issue an annual RFP for non-residential (commercial and industrial) renewable energy projects that are not eligible to participate in incentive and rebate programs developed under RSA 362-F:10, V and RSA 362-F:10, VIII.

The Commission issued the annual RFP for renewable energy projects on September 30, 2016, stating that the RFP program had a minimum of $1,000,000 in available grant funds. This RFP sought project proposals which would increase the supply of RECs from thermal renewable energy or non-photovoltaic electric renewable energy projects located in New Hampshire. Specifically, projects which will generate Class I, Class I Thermal, or Class IV Renewable Energy Certificates were eligible to apply. Seven grant proposals were received by the Commission, and these proposals represented $8.5 million of total investment and requested approximately $2 million in grant funds. The Commission recommended, and the Governor and Executive Council approved, six grant awards totaling $1.27 million. Once installed and certified, these projects are estimated to create over 12,000 RECs annually. Refer to Table 9 for a complete list of grant awards.

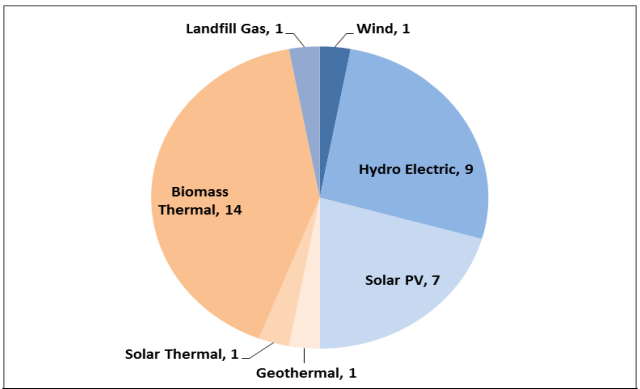
Table 8 and the subsequent charts summarize all grant awards since program inception.

Table 8 - REF Competitive Grant Program Summary

REF Grant Program Year	Quantity Awarded	Total Grant Amount	Total Value of Projects
2011	4	$ 650,890	$ 1,280,923
2012	6	$ 654,750	$ 4,035,424
2013	9	$ 3,637,890	$ 28,888,905
2014	5	$ 2,107,199	$ 7,683,400
2015	4	$ 1,025,000	$ 2,927,000
2016	6	$ 1,272,425	$ 6,106,790
Totals	**34**	**$ 9,348,154**	**$ 50,922,442**



Grant Award Recipients
Private Entities in blue; Public Entities in oranges



Grants by Technology
Electricity Generation in blues; Thermal Generation in oranges

Table 9 – REF Competitive Grants Awarded in Fiscal Year 2017

Grantee	Technology	Project Description	Total Project Costs	Leveraged Funds	Grant Amount	Estimated Annual RECs
Sugar River Power, LLC	Hydro Electric	Reactivate and upgrade the Lower Village Hydro site in Claremont	$ 739,425	$ 570,000	$ 169,425	5,418 Class IV or Class I
University of New Hampshire	Biomass Thermal	Install a wood chip biomass boiler district heating system to serve buildings of UNH's Thompson School of Applied Science	$ 1,260,000	$ 960,000	$ 300,000	1,600 Class I Thermal
Bantam Realty Trust, L.L.C.	Biomass Thermal	Install a wood chip biomass fired heating system at its manufacturing facility in Keene	$ 330,700	$ 180,700	$ 150,000	756 Class I Thermal
Jaffrey-Rindge Cooperative School District	Biomass Thermal	Install a wood chip biomass fired heating system at the Jaffrey Rindge High School	$ 800,000	$ 520,000	$ 280,000	1,125 Class I Thermal
Contoocook Hydro, LCC	Hydro Electric	Reactivate and upgrade the Bell Mill hydroelectric site in Peterborough	$ 259,250	$ 86,250	$ 173,000	710 Class IV or Class I
Merrimack County	Biomass Thermal	Install a wood chip biomass fired heating system at the Merrimack County Jail facility in Boscawen	$ 2,717,415	$ 2,517,415	$ 200,000	2,784 Class I Thermal
Totals			**$ 6,106,790**	**$ 4,834,365**	**$ 1,272,425**	

REF Competitive Grant Completed in Fiscal Year 2017

Several projects that were awarded grants during previous fiscal years became operational in fiscal year 2017.

The Pemi-Baker School District's Plymouth Regional High School received a grant in fiscal year 2016 and, in October 2016, completed the installation of a processed dry chip boiler to heat the high school. The new heating system was part of a major comprehensive energy efficiency performance contract in the school. It is anticipated that use of locally produced dry wood chip fuel will offset over 45,000 gallons of fuel oil consumption. A new biomass boiler, shown here, will be utilized as the primary heating system at the school. A dry chip storage silo and truck unloading station were also installed as part of the project.

To significantly reduce the use of oil for heat and hot water at the Merrimack County Department of Corrections, a new central boiler house and biomass boiler system was installed. The wood chip boiler will burn an estimated 990 tons of chips and produce an estimated 2,784 Class I Thermal RECs annually. The picture to the right shows the boiler, chip delivery conveyor and large distribution pipes that deliver hot water from the boiler house to the two prisons above the ceilings of two new connector walkways.

Geothermal Ribbon Cutting

The Town of Bedford completed installation of a closed-loop geothermal system for heating and cooling at the Bedford Town Library. The Town first undertook extensive energy efficiency improvements at the library and then replaced an old, inefficient, oil-powered HVAC system with a geothermal system. In its first year of operation, the library paid no heating fuel (oil) bills, dramatically reduced cooling costs, and reduced year round electricity consumption. The Bedford Public Library is committed to welcoming visitors and making information available about its experience in the construction and performance of the geothermal system.

In the fall of 2017, the Commission plans to issue the annual RFP for fiscal year 2018 for non-residential renewable energy projects that are not eligible to participate in incentive and rebate programs. The RFP will be posted on the Commission's website (http://puc.nh.gov/Home/requestforproposal.htm).

Budgets, Expenditures, and Statutory Funding Requirements

Table 10 below summarizes the available REF available funds for grant and rebate programs in fiscal year 2018, net of transfers, administrative costs, and funds previously and committed.

Table 10 – Analysis of Funds for Fiscal Year 2018

Program Funding Analysis	
$9,721,833	Renewable Energy Fund Balance as of June 30, 2017
$2,418,047	Calendar Year 2016 (CY16) Alternative Compliance Payments (ACP) received in FY17
$1,215,733	CY16 ACP received in FY18
$96,849	Interest Earned - May, 2012 through June, 2017
$13,452,462	**FY18 Beginning REF Balance**
($44,527)	ACP Compliance Adjustments
($8,744,819)	Rebate and Grant Program Funds Encumbered and Committed in Prior Fiscal Years
$3,768,282	**FY18 Rebate and Grant Funds Available** (Adjusted for Administrative Costs[13])

The table below summarizes the carry forward program funds and the statutorily required funding breakdown between the residential and Commercial & Industrial (C&I) sectors:

Program Funding Allocations by Sector	
$3,768,282	**FY18 Rebate and Grant Funds Available**
($290,559)	Carry Forward Unreserved Funds from Fiscal Year 2017
$3,477,723	**FY18 Adjusted New Funding Available for Grant and Rebate Programs**
$1,425,866	Funds allocated to Residential Sector (41%)
$2,051,857	Funds allocated to Commercial & Industrial (non-residential) Sector (59%)

[13] FY 18 administrative costs were estimated during the State Biennium Budget process and include, e.g., personnel, consultants, and membership dues.

Allocation of Funding Between Residential and Non-residential Sectors

In 2010, the New Hampshire legislature required the Commission to reasonably balance REF expenditures between the residential and non-residential sectors over each two-year period beginning July 1, 2010, in proportion to each sector's share of total retail electricity sales. In 2012, the legislature modified this requirement such that the Commission must reasonably balance the amounts expended, allocated or obligated during each two-year period. Refer to RSA 362-F:10, X.

In fiscal year 2017, which is the first year of the two-year period beginning July 1, 2016, new revenues deposited into the REF consist of ACP revenues and the repayment of funds provided to the Tri-County Community Action Program in 2013. In 2016, retail electricity sales for the residential sector represented 42% of the total retail sales, while sales for the non-residential (commercial & industrial) sector accounted for 58% of total retail sales. Accordingly, based on these percentages, the new revenues (less ACP adjustments and administrative cost) were allocated as follows:

- Residential Programs: $1,671,910, or 42% of allocated funds
- Non-residential (C&I) Programs: $2,308,827, or 58% of allocated funds

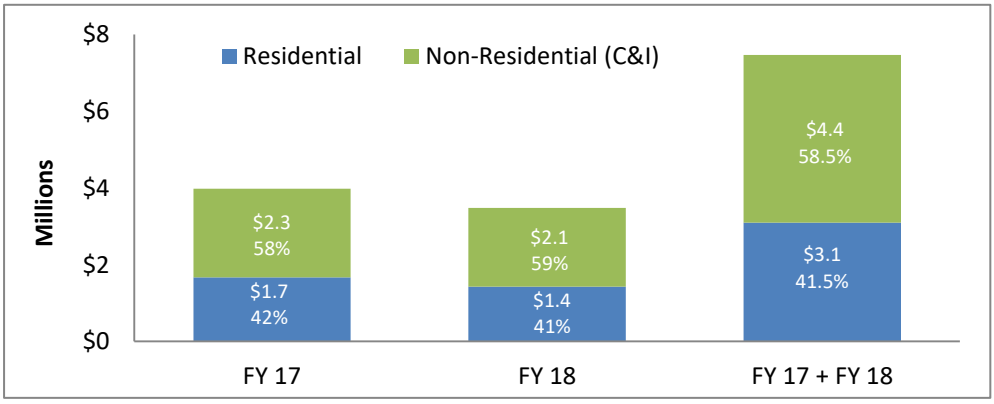
In fiscal year 2018, which is the second year of the two-year period beginning July 1, 2017, new revenues deposited into the REF consist of ACP revenues and interest earned (May, 2012 through June, 2017). In 2016, retail electricity sales for the residential sector represented 41% of the total retail sales, while sales or the non-residential (commercial & industrial) sector accounted for 59% of total retail sales. Accordingly, based on these percentages, the new revenues (less ACP adjustments and administrative cost) were allocated as follows:

- Residential Programs: $1,425,866, or 41% of allocated funds
- Non-residential (C&I) Programs: $2,051,857, or 59% of allocated funds

The allocation of funds, over two-years, was budgeted as follows:

- Residential Programs: $3,097,776 or 41.5% of allocated funds
- Non-residential (C&I) Programs: $4,360,684, or 58.5% of allocated funds

Allocation of Funding Between Sectors



Funding Cap for Residential Renewable Electricity Rebate Program

RSA 362-F:10, VI places a cap on spending for the residential rebate program for solar electric panels and wind turbines up to and including 10 kilowatts (kW) in capacity. No more than 40% of the REF can be allocated to this program, measured over two-year periods commencing July 1, 2010.

In fiscal year 2017, which is the first year of a next two-year cycle commencing July 1, 2016, the Commission allocated $1,600,000, not including carry-forward funds, for the above-referenced residential renewable energy rebate program. This amount represents approximately 37% of available REF program funds (i.e. ACP revenue) for fiscal year 2017, below the applicable biennial cap of 40%.

In fiscal year 2018, which is the second year of a next two-year cycle commencing July 1, 2017, the Commission allocated approximately $845,000, not including carry-forward funds, for the above-referenced residential renewable energy rebate program. This amount represents approximately 23% of available REF program funds (i.e. ACP revenue) for fiscal year 2017, well below the applicable biennial cap of 40%.

Use of Class II Revenues for Solar Technology Incentives

RSA 362-F:10, I requires that "Class II moneys shall primarily be used to support solar energy technologies in New Hampshire." For calendar year 2016, ACPs for Class II were received in July 2017, in the total amount of $23,179. In fiscal year 2018, these funds, and more, will be budgeted and expended on various REF rebate and grant programs for solar energy technologies.

Net Metered Capacity, Net Metered Facilities and Group Net Metering

Net Metering

House Bill 1116 amended the net metering statute by increasing the allowed net metering capacity to 100 MW and allocating the additional 50 MW among the three regulated utilities. It further stated that 80% of the additional 50 MW must be allocated to projects less than or equal to 100 kW capacity. Systems larger than 100 kW but less than or equal to the 1 MW capacity limit were allocated the remaining 20%.

Table 11 – Net Energy Metering (NEM) Allocations to Electric Utilities per Statute (RSA 362-A:9 as amended by HB1116)

Electric Distribution Utility	2010 Peak Load (MW)	Portion of 2010 Peak Load	NEM Amount of Original 50 MW	ADDT'L 50 MW of NEM Portion	ADDT'L 50 MW of NEM Amount	New Amount (MW) to Projects <= 100 KW (80%)	New Amount (MW) to Projects >100 KW (20%)	Total NEM Amount (MW)
Liberty Utilities	189	8.71%	4.12	9.24%	4.62	3.70	0.92	8.74
New Hampshire Electric Cooperative	124	5.72%	3.16					
Eversource Energy	1,588	73.21%	36.55	77.65%	38.83	31.06	7.77	75.38
Unitil Energy Systems, Inc.	268	12.36%	6.17	13.11%	6.55	5.24	1.31	12.72
Total	**2,169**	**100%**	**50**	**100%**	**50**	**40**	**10**	**100**

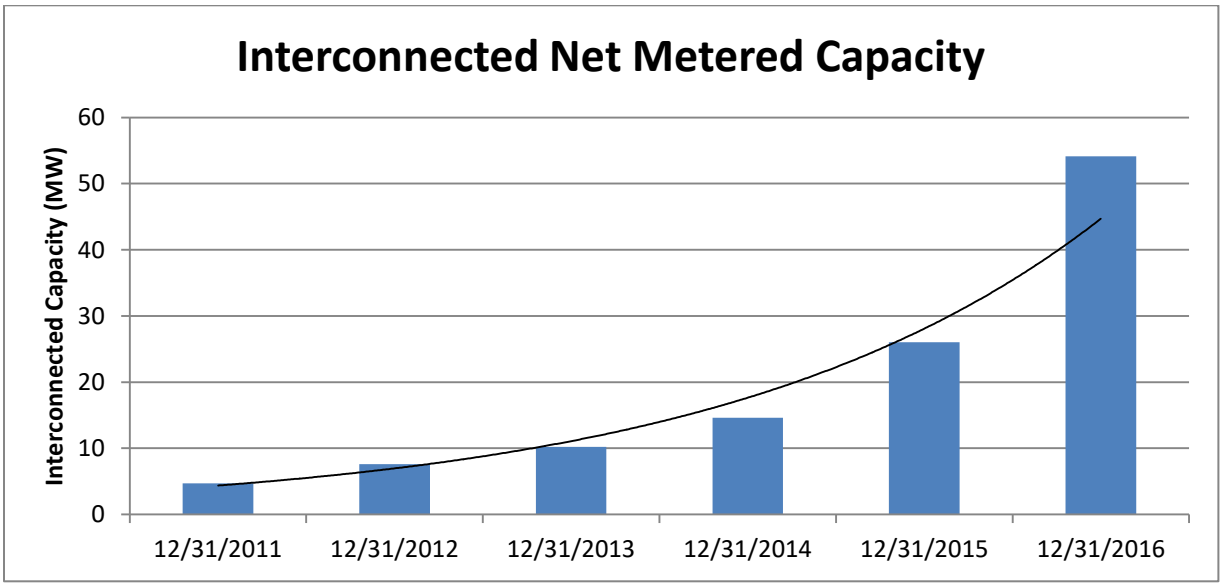
KW = Kilowatt MW = Megawatt

Each utility's total installed capacity of net metered facilities is listed in Table 12. With the exception of New Hampshire Electric Cooperative, the amounts of energy net metered by each utility are below the net metered capacity per utility as set forth in RSA 362-A:9, I (amended).

Table 12 – Total Net Metered Facilities as of December 31, 2016

Electric Distribution Utility	Total Installs in 2016	Total Installs (End of CY2016)[14]	2016 Capacity Added (MW)	Total Capacity (End of CY2016)[15]	Peak Load (MW)[16]	Allowed Net Metered Capacity[17]
Liberty Utilities	93	357	1.375	3.299	189	8.74
New Hampshire Electric Cooperative	85	737	1.141	6.251	124	3.16
Eversource Energy	1,819	4,081	17.862	38.947	1,588	75.38
Unitil Energy Systems, Inc.	308	637	2.622	5.622	268	12.72
Total Net Metered Facilities	**2,305**	**5,812**	**23.000**	**54.119**	**2,169**	**100**

The chart below illustrates the historic trend of installed net metered capacity in New Hampshire starting in January 2011 through December 2016. Overall, at the end of 2016, the total installed net metered capacity was 54.119 MW with 23 MW being installed in 2016.



[14] Based on the utility reports to DOE (EIA Form 826) and includes system expansions.
[15] Based on the utility reports to DOE (EIA Form 826) and includes system expansions.
[16] Based on the share of 2010 peak load pursuant to Puc 900 and RSA 362-A:9.
[17] Based on statute; RSA 362-A:9.

Group Net Metering

In July 2009, the Legislature enacted SB 98, amending RSA 362-A:9 to allow for group net metering. The law permits net-metered renewable energy facilities, known as hosts, to share the proceeds from sales of surplus electricity generation with other electric utility account holders, known as group members. In some cases, the group host and the group members may be the same party. For instance, a town might net meter a solar array and use the proceeds to offset utility expenses associated with other town electric meters. The host and the group members must all be default service customers of the same distribution utility, meaning they may not procure energy from a competitive electric power supplier. Group net metering applications are reviewed and approved by the Commission. The Commission adopted final rules for group net metering that went into effect on January 7, 2016.

During the fiscal year 2017 legislative session, Senate Bill 378 (SB378) was signed into law[18]. The amendment added language to RSA 362-A:9, XIV(a) which requires the Commission to review agreements between group hosts and group members. It also now requires the host be registered by the Commission prior to receiving a net metering queue allocation.

Table 13 provides information about group net metering applications approved by the Commission in calendar year 2016.

Table 13 – Group Net Metering Applications Approved

Electric Distribution Utility	Total Cumulative Number of Applications Approved		Total Cumulative Capacity of Approved Host Installations (Kilowatts AC)		2016 Net Generation By Host (kWh)[19]	2016 Total Member Load (*excluding Host*) (kWh)
	Solar	Hydro	Solar	Hydro		
Eversource Energy	163	28	6,916	12,395	16,053,237	21,817,069
Liberty Utilities	13	--	369	--	289,910	408,150
New Hampshire Electric Cooperative	11	--	307	--	11,985	790,610
Unitil Energy Systems, Inc.	12	--	269	--	107,753	103,090
Total	**199**	**28**	**7,861**	**12,395**	**15,883,065**	**23,118,919**

[18] Senate Bill 378 http://www.gencourt.state.nh.us/bill_status/billText.aspx?sy=2017&id=1013&txtFormat=pdf&v=current
[19] "Net Generation by Host" is the amount of electricity generated and available for the group members, excluding any usage by the host.

Conclusion

Since its inception in July 2009, the Renewable Energy Fund has been used to establish six grant and rebate programs that have experienced substantial demand and growth. The Renewable Energy Fund has been utilized to fund over 5,000 rebates for renewable energy systems to New Hampshire homeowners, businesses, schools, towns, non-profit organizations, and other eligible entities. In addition, the competitive grant program has provided more than $9 million in funding for 34 renewable energy projects for schools, businesses, and municipalities, featuring technologies from biomass heating systems to hydroelectric project upgrades to photovoltaic arrays and solar hot air, among others.

As this report illustrates, demand for rebates and grant awards continue to be strong. Rebate and grant funds have leveraged over $200 million in private investment, providing a boost to the state's economy and creating jobs for electricians, plumbers, and alternative energy businesses. In addition, there has been substantial growth in distributed generation renewable energy systems that serve to diversify our energy sources, reduce our reliance on fossil fuels, reduce greenhouse gas emissions, and increase our energy independence.

Fiscal year 2018 will be challenging for the Commission and its Sustainable Energy Division. Commission Staff continues to monitor industry and renewable energy certificate market trends, and technological developments such as energy storage. With reduced funding, program waitlists and continued strong demand for programs, Commission staff will be considering revisions to current rebate levels and program terms and conditions. Staff will also work with the net metering working group to design and develop the Commission ordered Value of DER Study and net metering pilot programs. Data from the pilot programs will be used to inform the Value of DER Study and future net metering tariffs.

In January 2018, the Commission will commence a review of the RPS. The Commission will make a report of its findings to the legislature by November 1, 2018, and the report will include any recommendations to the class requirements or other aspects of the RPS program.

2018 Renewable Portfolio Standard Review (RSA 362-F:5)

I. The adequacy or potential adequacy of sources to meet the class requirements of RSA 362-F:3;
II. The class requirements of all sources in light of existing and expected market conditions;
III. The potential for addition of a thermal energy component to the electric renewable portfolio standard;
IV. Increasing the class requirements relative to classes I and II beyond 2025;
V. The possible introduction of any new classes such as an energy efficiency class or the consolidation of existing ones;
VI. The timeframe and manner in which new renewable class I and II sources might transition to and be treated as existing renewable sources and if appropriate, how corresponding portfolio standards of new and existing sources might be adjusted;
VII. The experience, with and an evaluation of, the benefits and risks of using multi-year purchase agreements for certificates, along with purchased power, relative to meeting the purposes and goals of this chapter at the least cost to consumers and in consideration of the restructuring policy principles of RSA 374-F:3; and
VIII. Alternative methods for renewable portfolio standard compliance, such as competitive procurement through a centralized entity on behalf of all consumers in all areas of the state.
IX. The distribution of the renewable energy fund established in RSA 362-F:10.