

2018 RPS REVIEW:

EESE BOARD MEETING

PUBLIC UTILITIES COMMISSION

JUNE 15, 2018

RPS Efforts: National Status and Trends

New Hampshire's RPS: Overview and Status

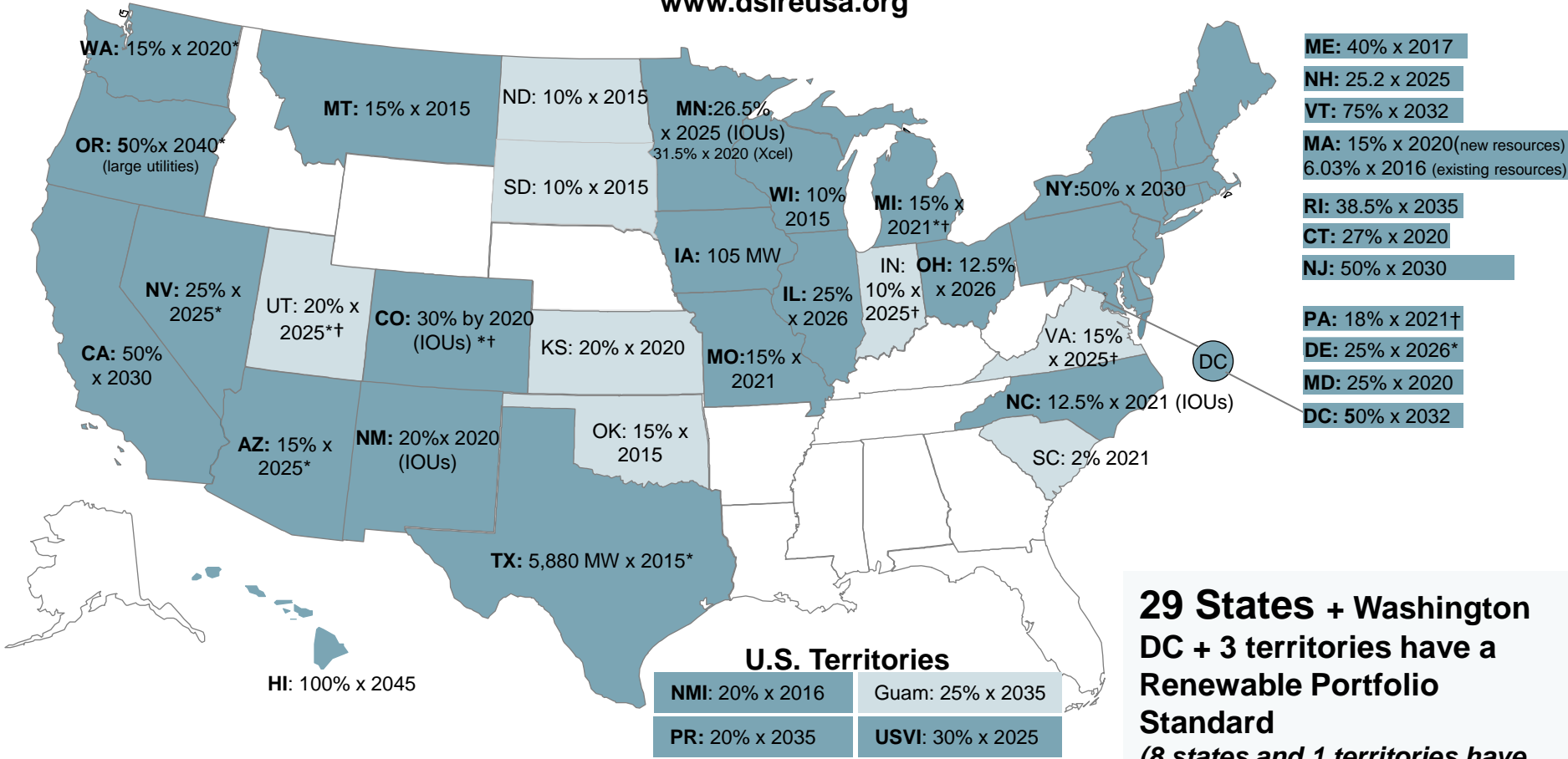
2018 RPS Review: Process & Timeline

RPS EFFORTS: NATIONAL STATUS & TRENDS

**MATERIALS FROM WARREN LEON
CLEAN ENERGY STATES ALLIANCE (CESA)
PRESENTATION TO THE 2018 RPS REVIEW
STAKEHOLDER SESSION ON APRIL 16, 2018**

Renewable Portfolio Standard Policies

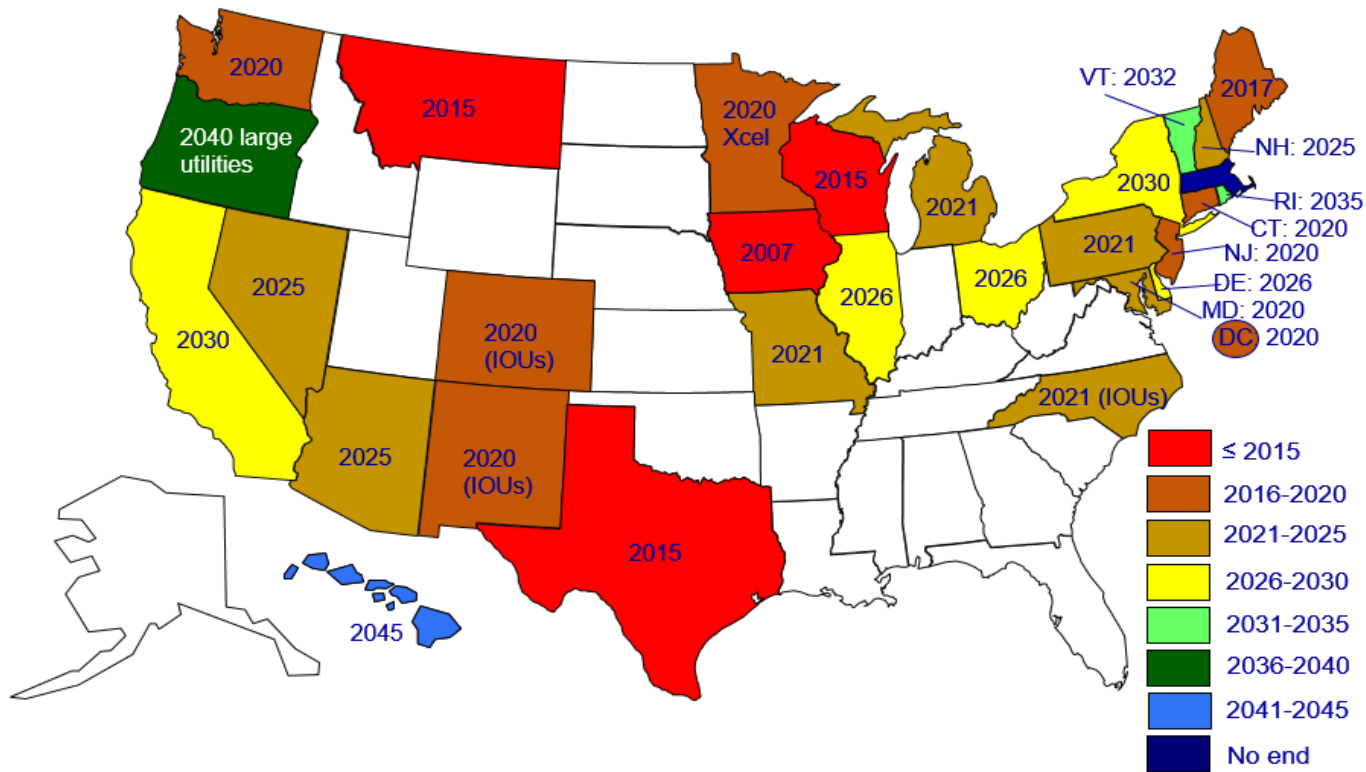
www.dsireusa.org



29 States + Washington DC + 3 territories have a Renewable Portfolio Standard
(8 states and 1 territories have renewable portfolio goals)

Renewable portfolio standard
 Renewable portfolio goal
* Extra credit for solar or customer-sited renewables
† Includes non-renewable alternative resources

States Reaching Their Maximum Targets

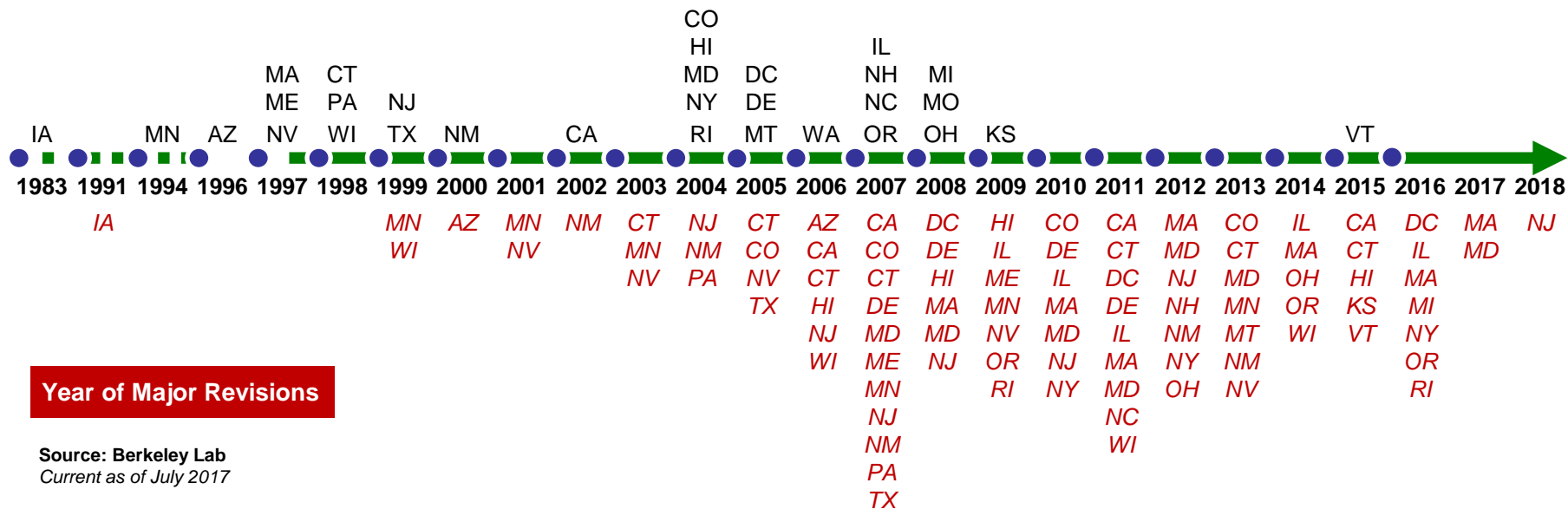


Source:
Holt, *When Renewable
Portfolio Standards Max Out*,
CESA, 2017

- 4 states have already reached their maximum target
- 15 more states will reach their max by 2025
- Options
 - Sunset the RPS
 - Leave targets unchanged but extend compliance period
 - Increase RPS targets (8 states have done that since 2015)

States make regularly and significant revisions to their RPSs

Year of RPS Enactment



Year of Major Revisions

Source: Berkeley Lab
Current as of July 2017

Most RPSs have been in place for at least 10 years

General Trends in RPS Revisions

Creation of resource-specific carve-outs: Solar and DG carve-outs are most common (18 states + D.C.), often added onto an existing RPS

Increase and extension of RPS targets: More than half of all RPS states have raised their overall RPS targets or carve-outs since initial RPS adoption

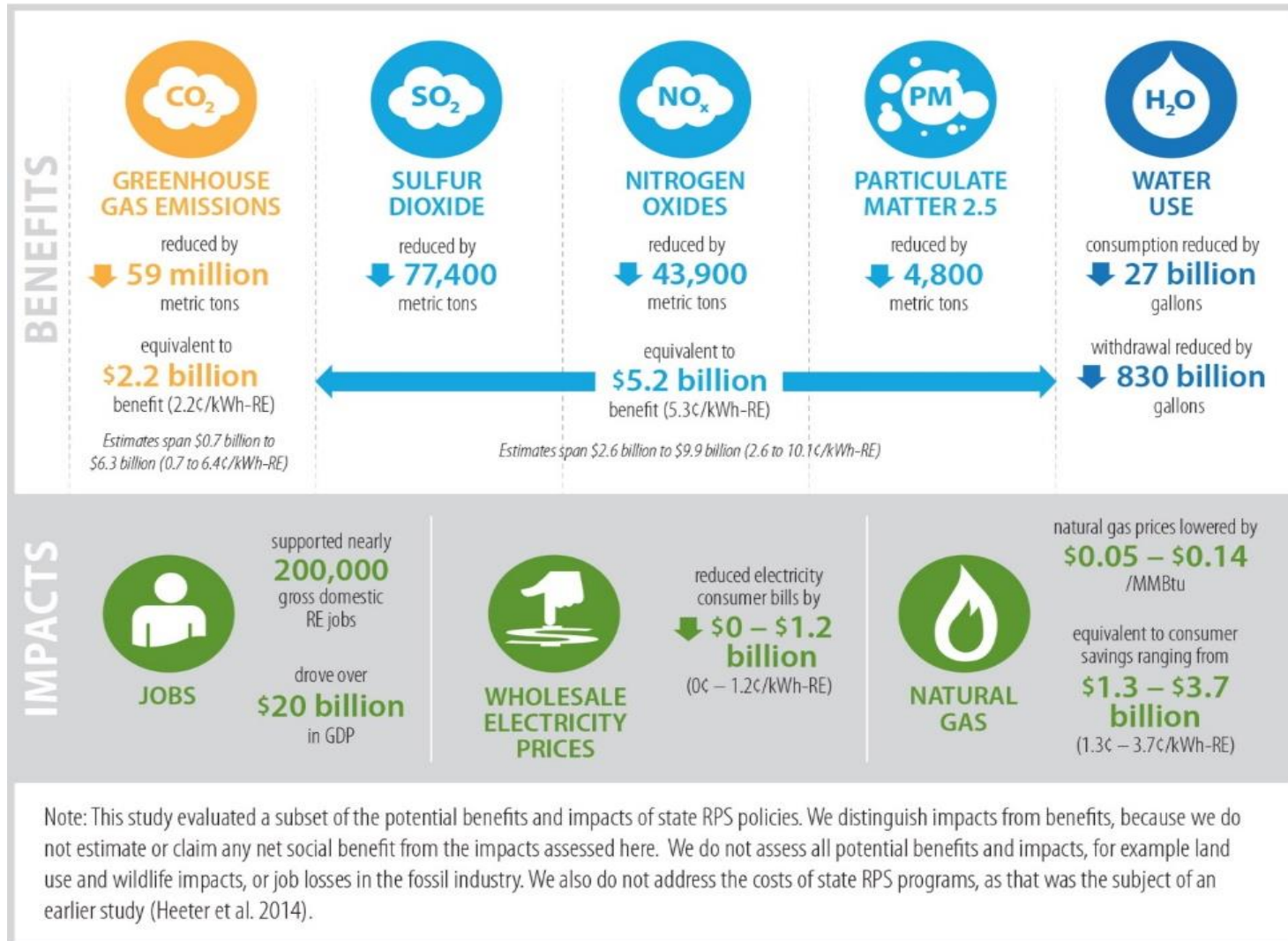
Long-term contracting programs: Often aimed at regulated distribution utilities in competitive retail markets; sometimes target solar/DG specifically

Refining resource eligibility rules: Particularly for hydro and biomass, e.g., related to project size, eligible feedstock, repowered facilities

Loosening geographic preferences or restrictions: Sometimes motivated by concerns about Commerce Clause challenges or to facilitate lower-cost compliance

Note: Although many states have introduced bills to reduce, repeal, or freeze their RPS, only two (Kansas, Ohio) have been enacted

Historical Benefits of RPSs



From:

Wiser et al, [A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards](#), National Renewable Energy Laboratory and Berkeley Lab, 2016

NEW HAMPSHIRE'S RPS: OVERVIEW AND STATUS

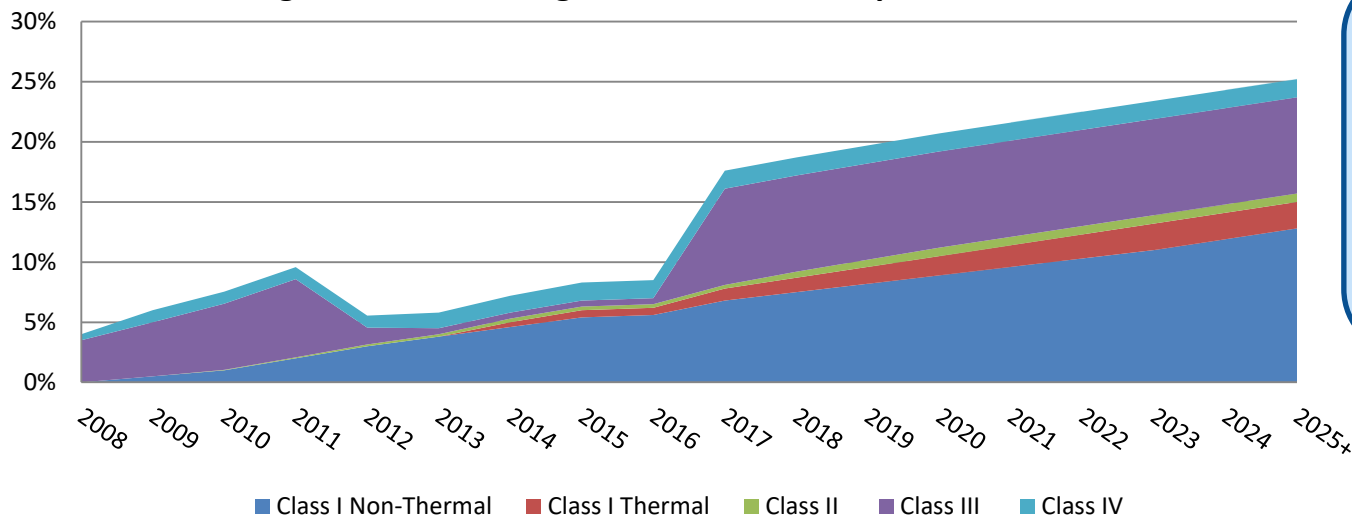
KAREN CRAMTON
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION
SUSTAINABLE ENERGY DIVISION
JUNE 15, 2018

NEW HAMPSHIRE'S RENEWABLE PORTFOLIO STANDARD (RPS)

- Renewable energy policy was established in 2007 (RSA 362-F)
- The purpose of this renewable energy policy is to:
 - Provide **fuel diversity**
 - Utilize renewable fuels **sourced locally**
 - **Retain energy and investment dollars within the state** to benefit New Hampshire's economy
 - **Lower the need to use fossil fuels** for power generation and thermal purposes
 - Provide the potential to **lower and stabilize future energy and transmission costs**
 - Reduce emissions thereby providing **environmental and health benefits** by improving air quality and public health
- Established portfolio requirements for new (Class I & II) and existing (Class III & IV) sources
- Goal 25.2% energy by 2025

RPS REQUIREMENTS

RPS Obligations - Percentage of Total New Hampshire Electric Load



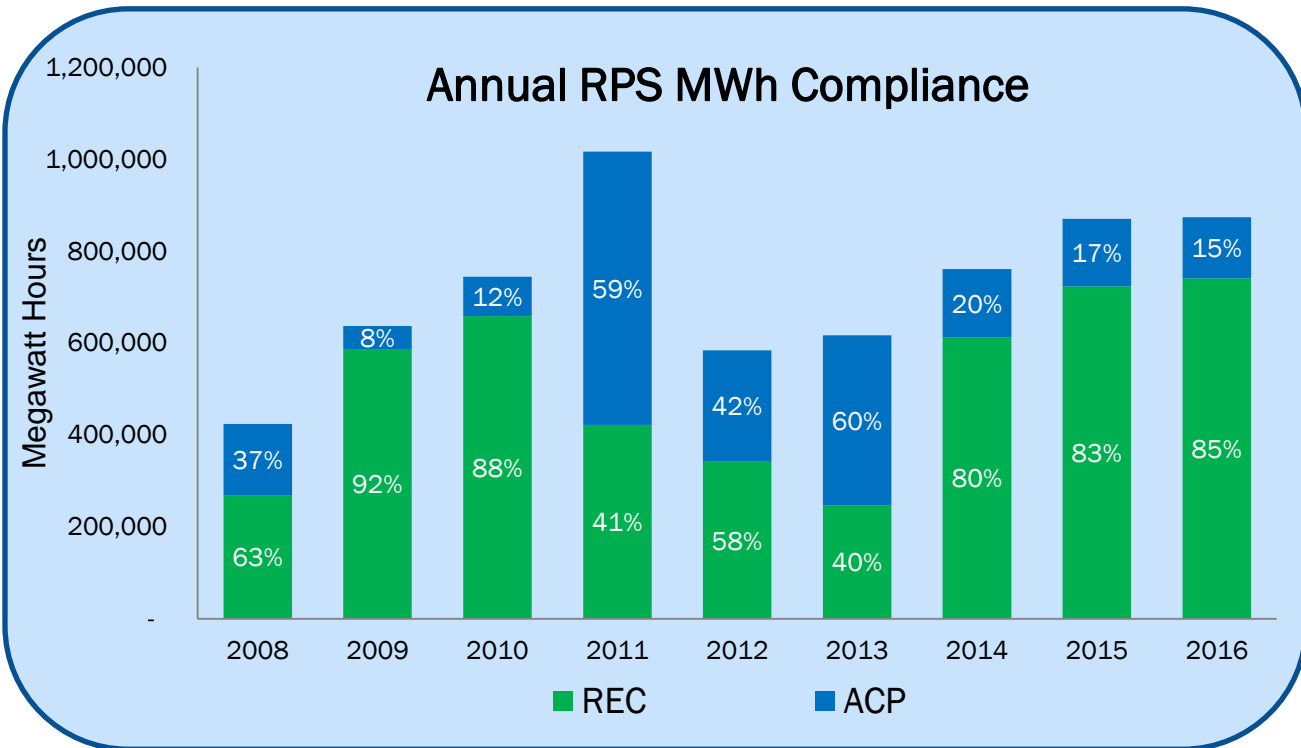
Electric Supplier RPS Obligations

Obligations calculated as a percentage of annual retail load (sales)

- ## 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

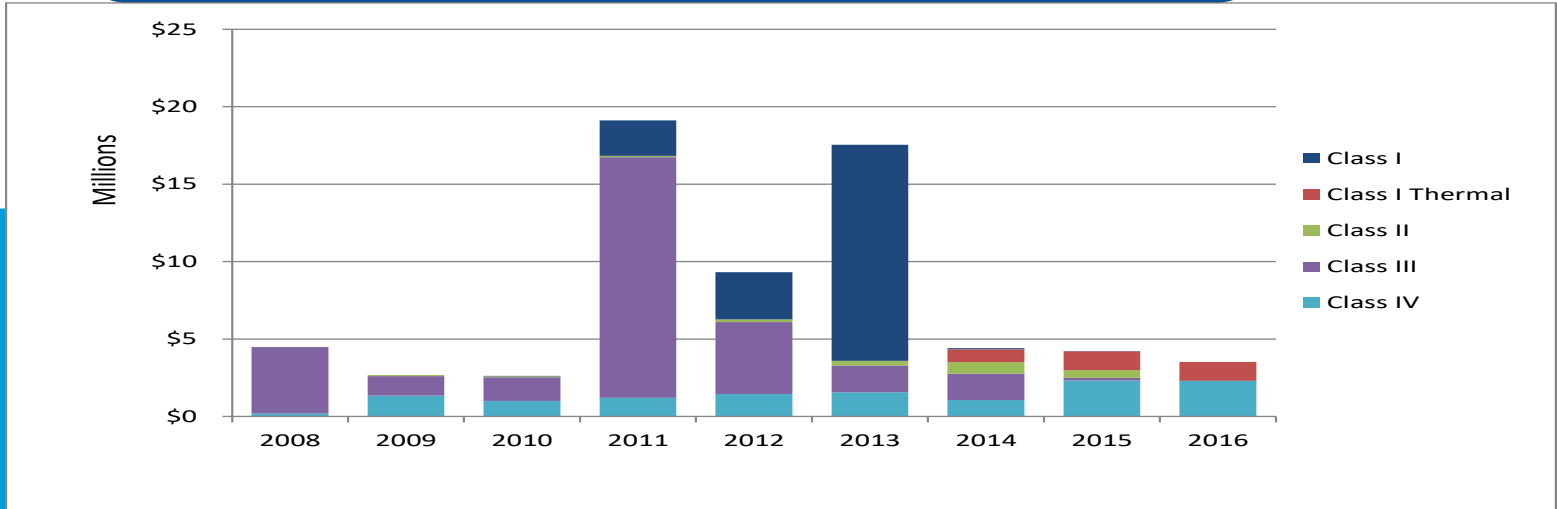
Renewable Portfolio Standard Obligations							
Calendar Year	Total RPS Requirement	Class I Non-Thermal	Class I Thermal	Total Class I	Class II	Class III	Class IV
2008	4.00%	0.00%	0.00%	0.00%	0.00%	3.50%	0.50%
2009	6.00%	0.50%	0.00%	0.50%	0.00%	4.50%	1.00%
2010	7.54%	1.00%	0.00%	1.00%	0.04%	5.50%	1.00%
2011	9.58%	2.00%	0.00%	2.00%	0.08%	6.50%	1.00%
2012	5.55%	3.00%	0.00%	3.00%	0.15%	1.40%	1.00%
2013	5.80%	3.80%	0.00%	3.80%	0.20%	0.50%	1.30%
2014	7.20%	4.60%	0.40%	5.00%	0.30%	0.50%	1.40%
2015	8.30%	5.40%	0.60%	6.00%	0.30%	0.50%	1.50%
2016	8.50%	5.60%	0.60%	6.20%	0.30%	0.50%	1.50%
2017	17.60%	6.80%	1.00%	7.80%	0.30%	8.00%	1.50%
2018	18.70%	7.50%	1.20%	8.70%	0.50%	8.00%	1.50%
2019	19.70%	8.20%	1.40%	9.60%	0.60%	8.00%	1.50%
2020	20.70%	8.90%	1.60%	10.50%	0.70%	8.00%	1.50%
2021	21.60%	9.60%	1.80%	11.40%	0.70%	8.00%	1.50%
2022	22.50%	10.30%	2.00%	12.30%	0.70%	8.00%	1.50%
2023	23.40%	11.00%	2.20%	13.20%	0.70%	8.00%	1.50%
2024	24.30%	11.90%	2.20%	14.10%	0.70%	8.00%	1.50%
2025 and thereafter	25.20%	12.80%	2.20%	15.00%	0.70%	8.00%	1.50%

RPS COMPLIANCE



RPS Compliance

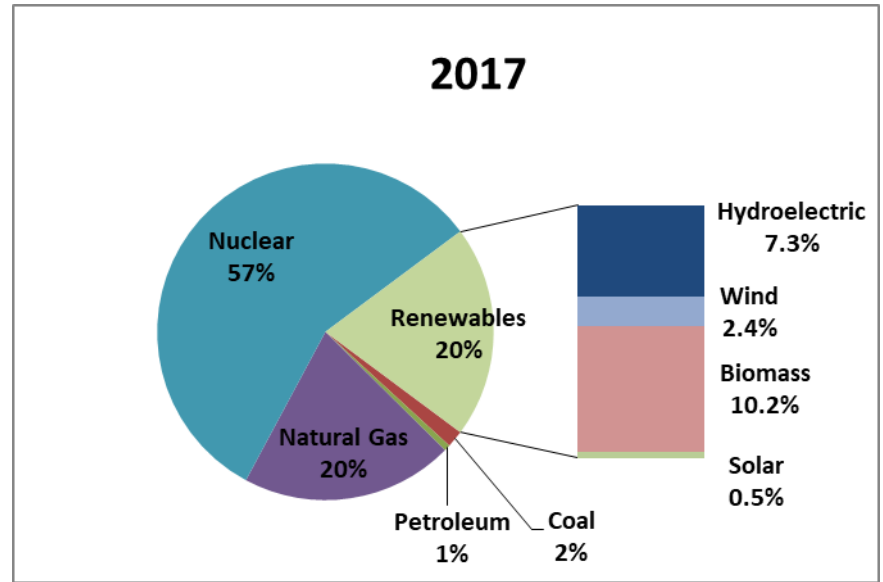
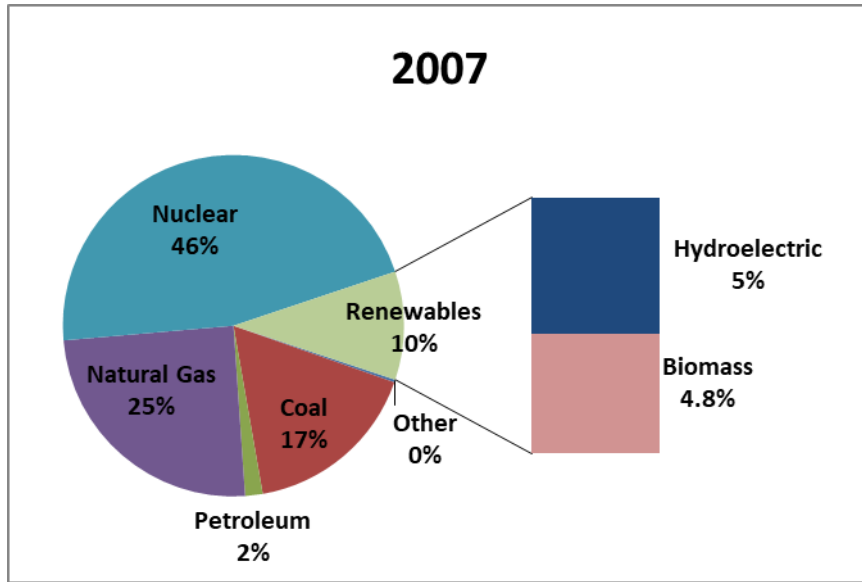
Obligations are satisfied by electricity providers purchasing Renewable Energy Certificates (REC) or making Alternative Compliance Payments (ACP)



Annual ACPs by Class

ELECTRICITY GENERATION IN NEW HAMPSHIRE

Electricity Generation from Facilities Located in New Hampshire



Source: U.S. Energy Information Administration, YTD Electric Power, 2007 & 2017

RENEWABLE ENERGY FUND (REF) PROGRAMS & OPPORTUNITIES FOR RATEPAYERS

Renewable Energy Fund (REF) Supported Programs

- Residential PV/Wind Rebate Program
- Residential Solar Hot Water Rebate Program
- Residential Wood Pellet Heating System Rebate Program
- Low and Moderate Income Solar PV Program (beginning Fiscal Year 2018)
- Commercial & Industrial PV/SHW Rebate Program
- Commercial & Industrial Wood Pellet Heating System Rebate Program
- Competitive Grant Program - Request for Proposals

ACP Revenue to REF

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

RENEWABLE ENERGY FUND (REF) REBATE PROGRAM RESULTS CUMULATIVE THROUGH JUNE 30, 2017

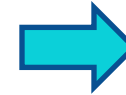
REF Rebate Program	Number of Rebates Awarded	Funds Disbursed	Aggregate Applicant Investment (rounded to nearest thousand)
Residential Electrical Renewable Energy (PV and Wind)	3,783	\$12,665,650	\$103,908,000
Residential Solar Water Heating	489	\$1,004,900	\$3,280,000
Residential Wood Pellet Boiler/Furnace*	328	\$1,912,903	\$4,182,000
C&I Solar Technologies (Electric and Thermal)	380	\$7,537,282	\$39,717,000
C&I Wood Pellet Boiler/Furnace	48	\$1,382,880	\$4,644,000
TOTALS	5,028	\$24,536,015	\$155,731,000

Rebate Program Leveraging Ratio > 6:1

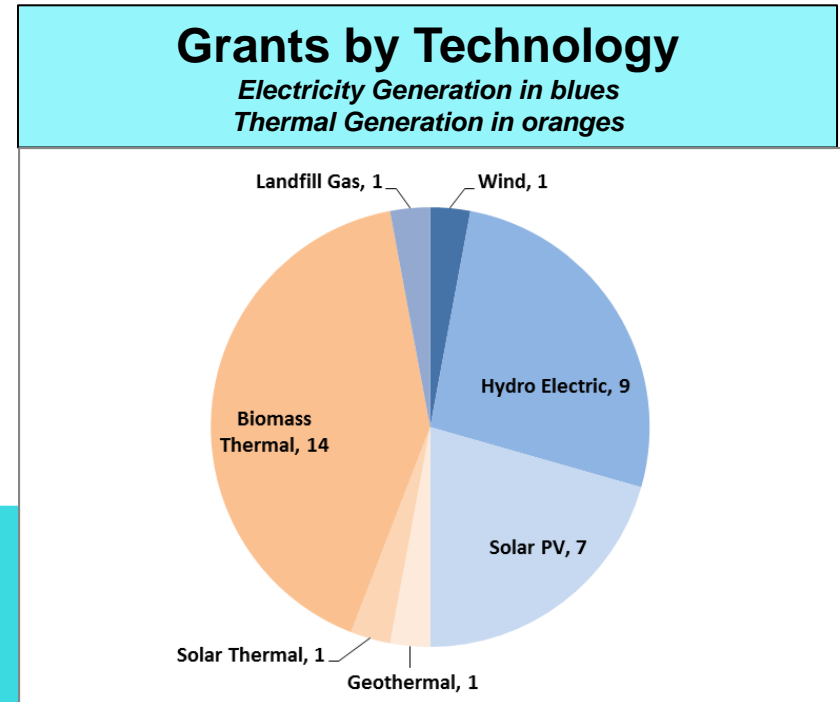
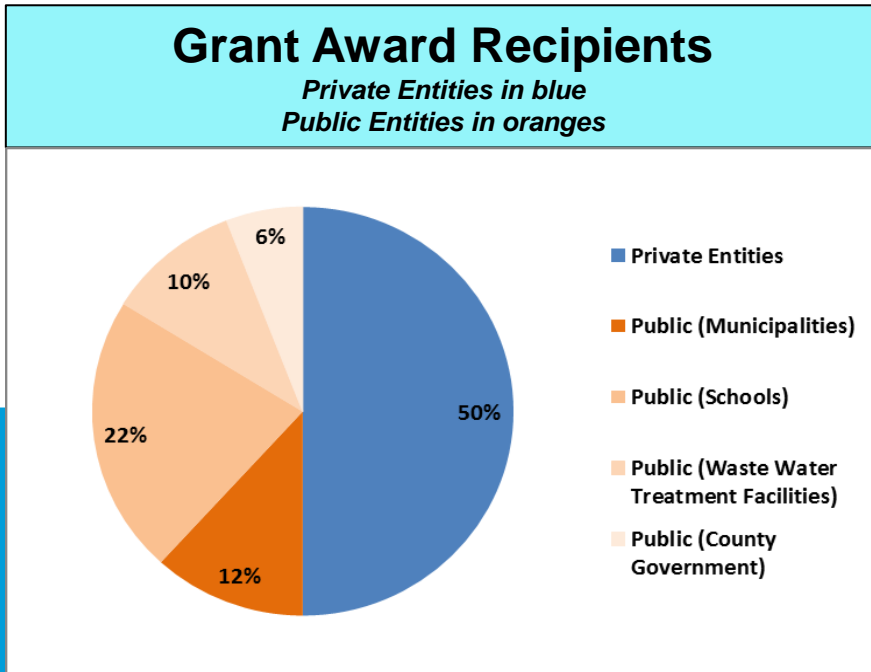
*Includes ARRA funded projects

COMMERCIAL & INDUSTRIAL COMPETITIVE GRANT PROGRAM AWARDS (2011-2016)

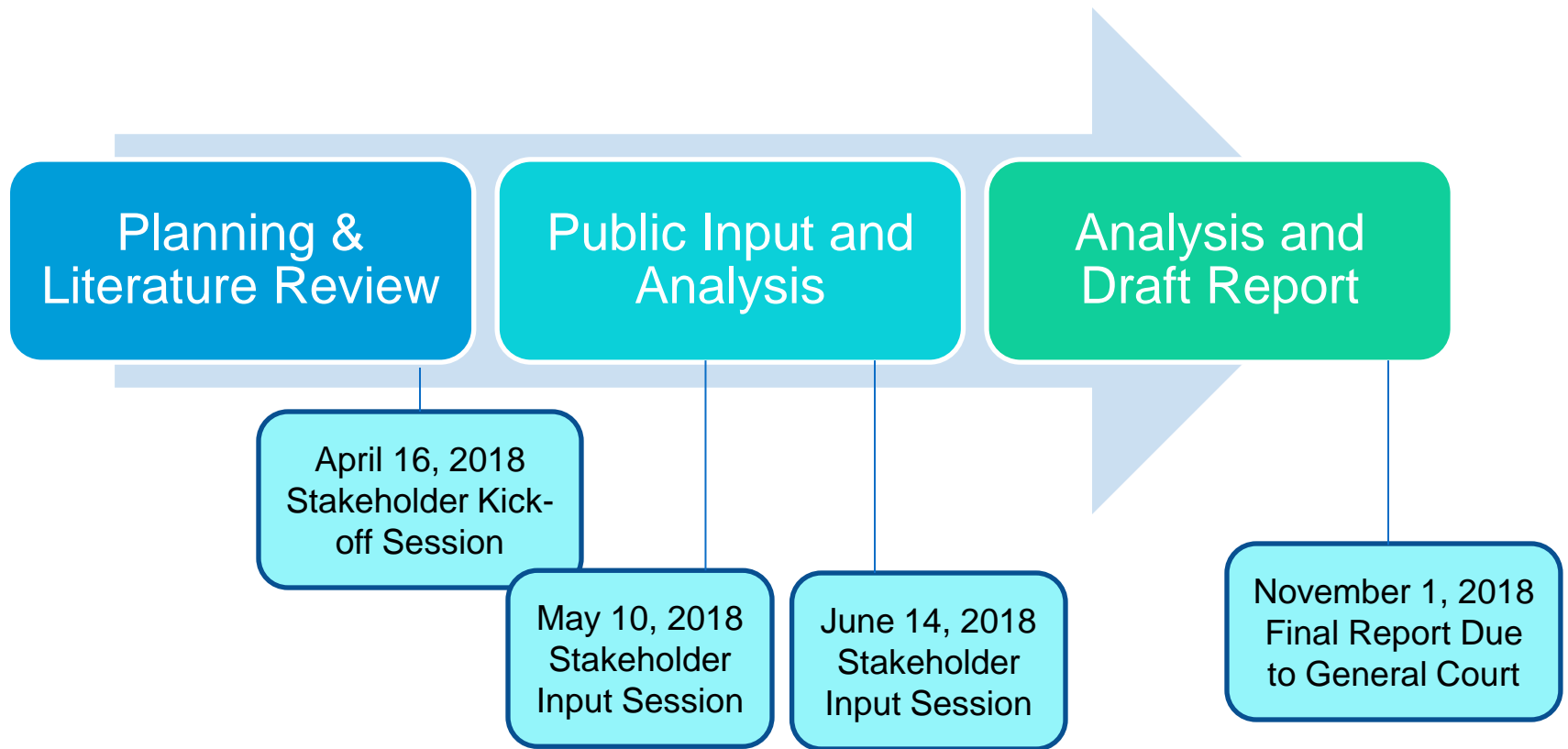
REF Grant Program	Number of Grants Awarded	Total Grant Amount	Total Value of Projects
2011	4	\$650,890	\$1,280,923
2012	6	\$654,750	\$4,035,424
2013	9	\$3,637,890	\$28,888,905
2014	5	\$2,107,199	7,683,400
2015	4	\$1,025,000	\$2,927,000
2016	6	\$1,272,425	\$6,106,790
Totals	34	\$9,348,154	\$50,922,442



**Grant Program
Leveraging Ratio
> 5:1**



2018 RPS REVIEW: PROCESS AND TIMELINE



NEW HAMPSHIRE SPECIFIC RPS REVIEW

MAY 10TH STAKEHOLDER SESSION

RPS Targets and Classes (RSA 362-F:5 I-VI)

- **Adequacy of current/ potential sources to meet class requirements (I)**
- **Class requirements of all sources in light of existing and expected market conditions (II)**
- **Potential for addition of a thermal energy component to the electric RPS (III)**
- **Increasing the class requirements relative to class I and II beyond 2025 (IV)**
- **Increasing the class requirements relative energy efficiency class or the consolidation of existing ones (V)**
- **Timeframe and manner in which new renewable class I and II sources might transition to and be treated as existing renewable source, and if appropriate how corresponding portfolio standards of new and existing sources might be adjusted (VI)**

NEW HAMPSHIRE SPECIFIC RPS REVIEW JUNE 14TH STAKEHOLDER SESSION

RPS REC Procurement & Programs (RSA 362-F:5 VII-IX)

- **Evaluation of the benefits and risks of using multi-year purchase agreements for REC (with purchased power), in consideration of the restructuring policy principles of RSA 374-F:3 (VII)**
- **Alternative methods for renewable portfolio standard compliance, such as competitive procurement through a centralized entity (VIII)**
- **Distribution of the renewable energy fund (IX)**

Report Due: November 1, 2018

Submitted to: General Court

ADDITIONAL INFORMATION

Website:

<http://puc.nh.gov/Sustainable%20Energy/Review%20RPS%20Law.html>

Email:

rpsreview@puc.nh.gov
Insert “RPS Review
Stakeholder Distribution
List” in subject

Questions:
karen.cramton@puc.nh.gov



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2018 Review of Renewable Portfolio Standard Law, RSA 362-F

New Hampshire's Renewable Portfolio Standard (RPS) law required the PUC to conduct a review of the RPS program beginning in January 2011 and to make a report of its findings to the Legislature by November 1, 2018, pursuant to RSA 362-F:5.

If you have any questions about this report, or wish to be included on the 2018 RPS distribution list, please contact [Karen Cramton](#).

[National and New Hampshire Research Bibliography](#)
[Stakeholder Presentation Request Procedures and Guidelines](#)

2018 RPS Stakeholder Meeting Schedule

- Monday, 4/16/2018 - 1:00 – 4:00 PM at the Public Utilities Commission, Hearing Room A
- Thursday, 5/10/2018 - 9:00 AM – 1 PM at the Public Utilities Commission, Hearing Room A
- Thursday, 6/14/2018 - 9:00 AM – 1 PM at the Public Utilities Commission, Hearing Room A

Stakeholder Session #3 – RPS Compliance and Renewable Energy Fund (Thursday, 6/14/18, 9:00 A.M.):

[Agenda](#)

[2018 RPS Review](#) - From the Office of Strategic Initiatives, Presented by Alexis LaBrie and Chris Ellms

Stakeholder Session #2 – RPS Class Requirements (Thursday, 5/10/2018, 9 A.M.):

[Agenda](#)

[2018 RPS Review Discussion Points](#) by Lisa Linowes
[Thermal RECs for Air Source Heat Pumps](#) by Jack Bingham

Stakeholder Session #1 – Kick-Off Meeting (Monday, 4/16/2018):

[State Renewable Portfolio Standard \(RPS\) Efforts: Current Status and Trends](#)
Presentation provided by Warren Leon, Executive Director of Clean Energy States Alliance (CESA)

[New Hampshire's RPS: Overview and Status](#)
Presentation provided by Karen Cramton, Director of Sustainable Energy Division, New Hampshire Public Utilities Commission

Session Summary Notes

[Kick-Off Session Summary Notes](#)

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- Renewable Energy
- Renewable Energy Fund
- Renewable Energy Rebates
- Sustainable Energy - Request for Proposals (RFPs)
- Electric Renewable Portfolio Standard (RPS)
 - 2018 RPS Review
 - 2011 RPS Review
 - Class I Thermal Renewable Energy Certificate Program
- Net Metering
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