

New Hampshire Policies Supporting Distributed Generation

ISO-NE Distributed Generation Forecast Working Group
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Overview - Agenda

- New Hampshire Policies and Programs
 - Current
 - Possible Changes
- Net Metering
 - Data
 - Trend
 - Capacity Forecasts
- Non-Net Metered DG

State Policies and Programs Promoting Growth in DG

- New Hampshire's Net Metering & Group Net Metering - RSA 362-A:9
- New Hampshire's Renewable Portfolio Standard (RPS) - RSA 362-F
 - Rebates and Grants supported by the Renewable Energy Fund (REF)
 - Renewable energy certificates (RECs) awarded to eligible, certified, renewable generators

Net Metering

- Net metering statute enacted 1998 (RSA Section 362-A:9)
- Requires electric utilities to offer net metering to customers who own or operate renewable electric or CHP generating facilities
- Establishes 50 MW statewide cap
 - Individual utility caps calculated by multiplying statewide cap by utility's share of "total 2010 annual coincident peak energy demand."
- Establishes 4 MW statewide cap for CHP
- 1 MW cap on individual electric generators

Group Net Metering

- In 2013, net metering statute was amended to allow a customer-generator to become a group host for the purpose of lowering the bills of customers without their own generation
- Group members must be customers of the utility serving the group host
- KWh credits generated by host system are shared with group members. Value of credit varies depending on size of group host system (i.e., above or below 100 kW)
- Utility sends monthly check to group host for the value of electricity generated. Group host responsible for distributing cash to group members

Net Metering – Legislative Update

- Nearing 50 MW Net Metering Cap
- Possible Legislation
 - Increase net metering cap to 75 MW
 - Direct PUC to open a docket to design alternative tariff to net metering

NH RPS - Obligations

Renewable Portfolio Standard Obligations						
Calendar Year	Total Requirement	Total Class I	Thermal Class I	Class II	Class III	Class IV
2008	4.00%	0.00%	0.00%	0.00%	3.50%	0.50%
2009	6.00%	0.50%	0.00%	0.00%	4.50%	1.00%
2010	7.54%	1.00%	0.00%	0.04%	5.50%	1.00%
2011	9.58%	2.00%	0.00%	0.08%	6.50%	1.00%
2012	5.55%	3.00%	0.00%	0.15%	1.40%	1.00%
2013	5.80%	3.80%	0.00%	0.20%	0.50%	1.30%
2014	7.20%	5.00%	0.40%	0.30%	0.50%	1.40%
2015	8.30%	6.00%	0.60%	0.30%	0.50%	1.50%
2016	16.70%	6.90%	1.30%	0.30%	0.50%	1.50%
2017	17.60%	7.80%	1.40%	0.30%	8.00%	1.50%
2018	18.50%	8.70%	1.50%	0.30%	8.00%	1.50%
2019	19.40%	9.60%	1.60%	0.30%	8.00%	1.50%
2020	20.30%	10.50%	1.70%	0.30%	8.00%	1.50%
2021	21.20%	11.40%	1.80%	0.30%	8.00%	1.50%
2022	22.10%	12.30%	1.90%	0.30%	8.00%	1.50%
2023	23.00%	13.20%	2.00%	0.30%	8.00%	1.50%
2024	23.90%	14.10%	2.00%	0.30%	8.00%	1.50%
2025 and thereafter	24.80%	15.00%	2.00%	0.30%	8.00%	1.50%

Investment of ACP Revenues

Residential Sector

- PV/Wind Rebates
- Solar Water Heating Rebates
- Wood Pellet Furnace/Boiler Rebates

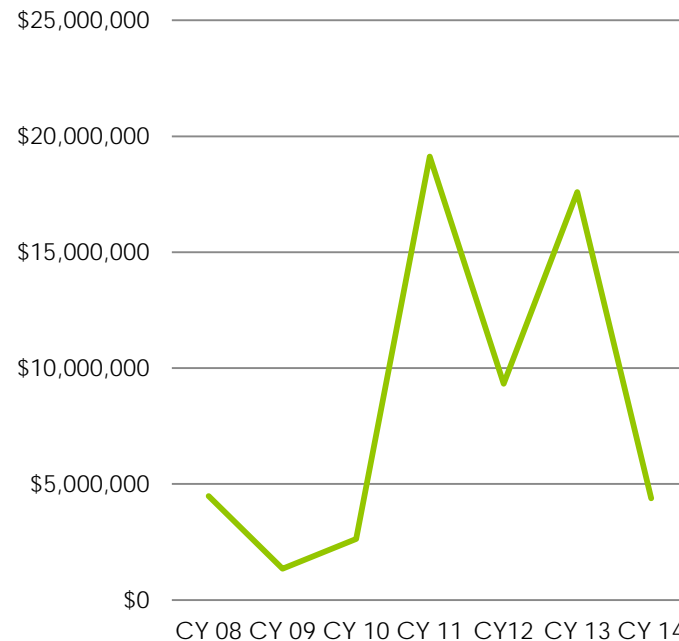
Non-residential Sector (C&I)

- Solar Technologies (PV and Thermal) Rebates
- Wood Pellet Furnace/Boiler Rebates
- Competitive Grant Program

Funding for Rebate and Grant Programs

- Programs are funded by NH's REF
- ACPs made by competitive electricity suppliers and electric distribution utilities are the sole source of funding to the REF
- Total ACPs fluctuate from year to year, depending on the price and availability of RECs in the regional market
- Since inception, annual ACPs have ranged from \$1.3 million to \$19.1 million

Revenue Trend by Calendar Year



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Rebate Programs – Cumulative Results

REF Rebate Program	Number of Applications Received	Number of Rebates Awarded	Rebate Funds Disbursed	Rebate Funds Reserved or In-Process	Average Rebate Award	Aggregate Applicant Investment
Residential Electrical Renewable Energy (PV and Wind)	2,166	1,772	\$7,227,013	\$1,864,882	\$4,155	\$48,036,063
Residential Solar Water Heating	497	462	\$984,800	\$9,200	\$2,145	\$3,711,743
Residential Wood Pellet Boiler/Furnace*	292	269	\$1,480,377	\$93,549	\$5,744	\$4,566,335
C & I Solar Technologies (Electric and Thermal)	398	188	\$2,661,062	\$5,525,272	\$14,155	\$12,149,411
C&I Wood Pellet Boiler/Furnace	49	23	\$476,735	\$632,013	\$20,245	\$3,258,980
Totals	3,402	2,664	\$12,829,987	\$7,492,903	n/a	\$71,722,532

RPS – Legislative Update

- Possible Legislation
 - Add hydroelectric sources to Class I

Net Metering

- Data
- Trend
- Forecasts

Net Metered Facilities – November 2015

Electric Utility		Total Installs to Date*	2014 Capacity Added (MW-DC)	Total Capacity to Date (MW)*		Allowed Net Metered Capacity (MW)**
Liberty Utilities		199		1.218		4.12
New Hampshire Electric Cooperative		533		3.458		3.16
Eversource Energy		2032		18.909		36.55
Unitil Energy Systems, Inc.		220		2.007		6.17
Total Net Metered Facilities		2,984		25.592		50

*Based on the utility reports to DOE (EIA Form 826) and includes system expansions.
(August EIA data and 11/16/15 Eversource website)

**Based on the share of 2010 peak load pursuant to Puc 900 and RSA 362-A:9

Net Metering Trends

Net Metered Capacity

Installed Statewide:

10.2 MW (December 2013)

➤ 11.2 MW (June 2014)

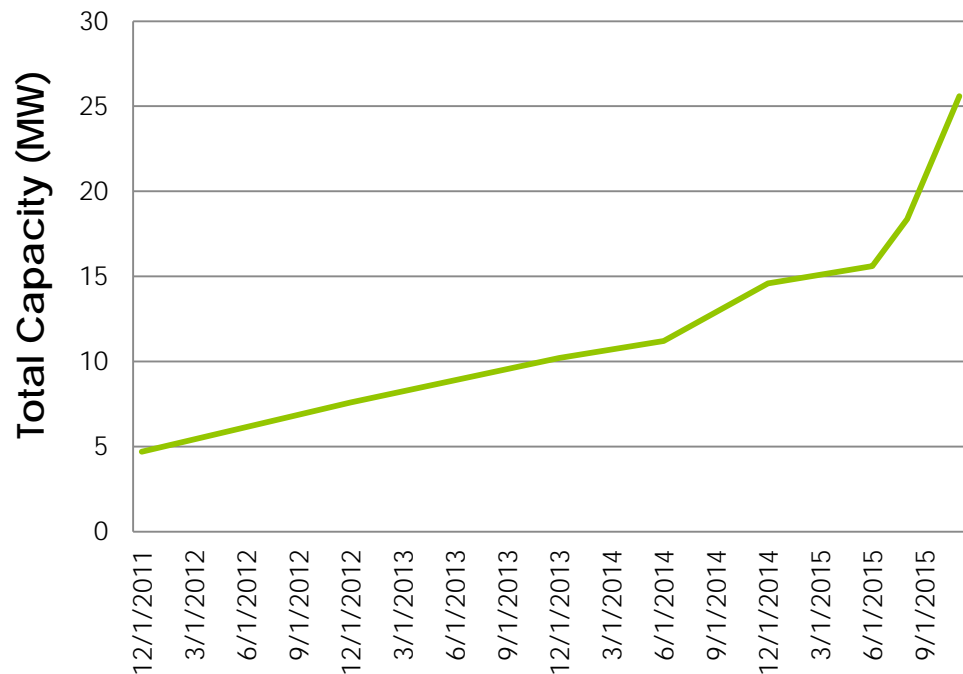
14.6 MW (December 2014)

➤ 15.6 MW (June 2015)

➤ 18.4 MW (August 2015)

➤ 25.6 MW (November 2015)

Net Metered Capacity in NH



Net Metering – Update & Projections

- Net Metered capacity under development is ~10 MW based on PUC rebate applications
- **NH Electric Cooperative**
 - Reached cap (~3 MW) and established “Net Metering Light” program
 - End of 2016 projected to have installed 6+ MW
- **Liberty Utilities**
 - Reached cap and established waiting list
- **Eversource**
 - If interconnection queue is considered, then nearing cap
 - ~ 2MW per month in applications
- **Unitil**
 - At ~50% of cap (~ 3MW)

Annual Capacity Forecast (50 MW Cap)

	Allowed Net Metered Capacity (50 MW)	Thru 2014 (MW)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
NH	50	14.6	17.0	21.4	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	66.00

Annual Capacity Forecast (75 MW Cap)

	Allowed Net Metered Capacity (75 MW)	Thru 2014 (MW)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
NH	75	14.6	17.0	21.4	10.00	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	75.00

Non-Net Metered DG

➤ **Unitil:**

PURPA Projects:

3.6 MW wood-fired QF

➤ **Eversource:**

PURPA Projects:

49.858 MW behind the meter generation

172.255 MW of merchant generation

Back-up Gen:

39.95 MW of back-up generation

➤ **NH Electric Cooperative:**

PURPA Projects:

0.09 MW - 2 small hydro generators

➤ **Liberty Utilities:**

None

Thank You

- Contact Information

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Reference Slides

New Hampshire RPS Classes

Resource Definitions*

Class I resources include generation facilities that began operation after January 1, 2006 and produce electricity from: wind energy; geothermal energy; hydrogen derived from biomass fuel or methane gas; ocean thermal, wave, current, or tidal energy; methane gas; or biomass. Solar not used to satisfy Class II. Certain Class III and IV production.

Class I Thermal includes a subcategory for useful thermal energy, pursuant RSA 362-F:3.

Class II sources include generation facilities that produce electricity from solar technologies and began operation after January 1, 2006.

Class III sources include generation facilities that began operation on or before January 1, 2006 and produce electricity from eligible biomass technologies having a gross nameplate capacity of 25 megawatts or less, or methane gas facilities.

Class IV sources include hydroelectric generation facilities that began operation on or before January 1, 2006 and meet specified requirements.

*refer to RSA 362-F for details

NH Alternative Compliance (ACP) Payment Rates

- 2015 Rates
 - Class I = \$55.75
 - Class I Thermal = \$25.34
 - Class II = \$55.75
 - Class III = \$45
 - Class IV = \$27.23

- In accordance with RSA 362-F:10, III. (a), the ACPs for Class IV are adjusted by the Consumer Price Index and for Classes I and II by $\frac{1}{2}$ of the Consumer Price Index. In accordance with RSA 362-F:10, III. (b), the Class III ACP is \$45 for 2015, 2016, and 2017.

Residential Renewable Electric Generation Systems Rebate Program

- Program offers rebates for solar PV, wind and other renewable electric generation systems up to 10kW
- Rebate levels are \$.50 per watt (DC) of panel rated power up to \$2,500 per individual system, or 30% of capital cost of individual system, whichever is less
- No MW cap on program.
- Number of customers receiving rebates limited only by program budgets

Commercial & Industrial Incentive Programs

- Two separate programs:
 - Rebates for solar PV generation systems up to and including 500 kW AC.
 - Competitive grant awards to customer projects not eligible for rebates.
- Rebate Program:
 - Rebate levels are:
 - \$0.65 or \$0.75 per watt AC, based on system size.
 - \$0.12/rated or modeled kBtu/year for solar thermal facilities fifteen collectors in size or fewer, and \$0.07/rated or modeled kBtu/year for solar thermal facilities greater than fifteen collectors in size
 - Rebate levels system expansions are \$0.50 or \$0.30 per watt AC, based on system size.
- Grant Program:
 - Typical annual funding \$750,000 to \$3 million
 - Rebates and grants available to non-profits, businesses, public entities, and other non-residential entities, and quantity is limited only by available funding.
 - No MW cap on programs
 - Currently considering changes to the program

Net Metering – Credits

- For systems up to 100 kW, customers receive a per kWh bill credit equal to the sum of all kWh charges in the applicable distribution utility tariff. Based on current rates, the credit for a residential customer ranges from 13 to 16 cents per kWh generated (depending on utility) up to customer's monthly load. If the customer belongs to the commercial class, the credits will be different.
- Generation in excess of monthly load is credited to customer's next bill as kWh credit and carried forward. Customer may elect to receive payment (at avoided-cost rate) for any excess generation remaining at the end of an annual period.
- Avoided cost rate is same for each utility and is calculated annually.

Net Metering – Credits

- For systems above 100 kW, the per kWh credit is equal to the utility's default service charge.
- Customers own the RECs associated with their electricity production. However, RECs associated with excess generation purchased by utility at end of annual period may be claimed by utility.

Net Metering – Utility Data

- Monthly updates are available in EIA Form 826, Schedule 3B. Electric utilities have more data on net metered installations than is provided to PUC. The following is available for each installation:
 - i. Customer class
 - ii. Fuel source
 - iii. Town located.
 - iv. Installed capacity (kW). For solar PV facilities, some utilities specify DC capacity of panels while others specify AC capacity of inverters.
 - v. Interconnection date

Net Metered Facilities - 2014

Electric Utility	2014 Number of Installs	Total Installs to Date*	2014 Capacity Added (MW-DC)	Total Capacity to Date	Peak Load (MW)**	Allowed Net Metered Capacity (MW)**
Liberty Utilities	78	141	0.552	0.783	189	4.12
New Hampshire Electric Cooperative	108	468	0.954	2.980	124	3.16
Eversource Energy	314	1226	2.494	9.493	1,588	36.55
Unitil Energy Systems, Inc.	41	150	0.408	1.305	268	6.17
Total Net Metered Facilities	541	1,985	4.408	14.561	2,169	50

*Based on the utility reports to DOE (EIA Form 826) and includes system expansions.

**Based on the share of 2010 peak load pursuant to Puc 900 and RSA 362-A:9