MEETING WITH THE RENEWABLE ENERGY COORDINATING BOARD

December 19, 2012

Nicholas Ucci
Principal Policy Analyst, Public Utilities Commission
Coordinator, Energy Facility Siting Board
(401) 780-2106
nucci@puc.state.ri.us

Disclaimer

The views presented here and any opinions expressed are those of the author alone and do not necessarily represent those of the Rhode Island Public Utilities Commission or its Commissioners.

Presentation Topics

- Status of Rhode Island's Renewable Energy Standard and Long-Term Renewable Contracting
- Regional View and System Challenges
- Coordinated Renewable Procurement

Status of Rhode Island's Renewable Energy Standard and Long-Term Renewable Contracting

Rhode Island's Renewable Energy Standard

- Each Obligated Entity required to procure 16.0% of total electricity sold at retail to end-use customers by 2019

- Of this, at least 14.0% must be from "New" Renewable Energy Resources – units which entered commercial operation or repowered since December 31, 1997

- Renewable resources primarily include:
  - Solar
  - Wind
  - Small hydro (less than 30 MW)
  - Biomass (including LFG, "clean" wood, and agricultural waste)

- Each Obligated Entity must file an Annual Compliance Report with the Public Utilities Commission ("PUC")

RI RES Targets by Compliance Year

Compliance Year	Total Target Percentage	Minimum Percentage from New Renewable Energy Resources	Percentage from either Existing or New Renewable Energy Resources
2007	3.0%	1.0%	2.0%
2008	3.5%	1.5%	2.0%
2009	4.0%	2.0%	2.0%
2010	4.5%	2.5%	2.0%
2011*	5.5%	3.5%	2.0%
2012*	6.5%	4.5%	2.0%
2013*	**7.5%**	**5.5%**	**2.0%**
2014*	8.5%	6.5%	2.0%
2015*	10.0%	8.0%	2.0%
2016*	11.5%	9.5%	2.0%
2017*	13.0%	11.0%	2.0%
2018*	14.5%	12.5%	2.0%
2019*	16.0%	14.0%	2.0%
2020 and thereafter**	16.0%	14.0%	2.0%

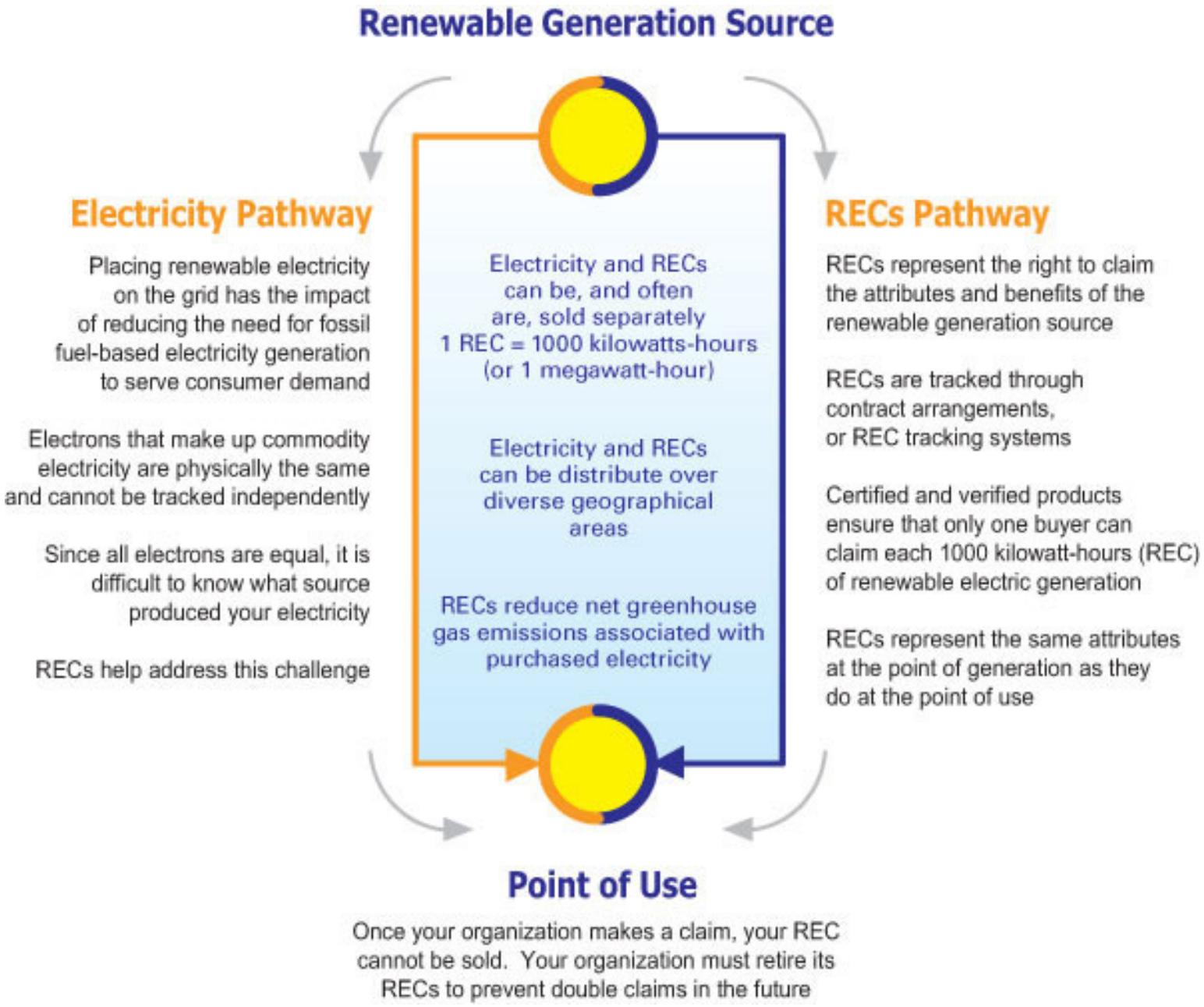
* Under §39-26-6(d), the Commission had to determine by January 1, 2010, and will again have to determine by January 1, 2014, the adequacy or potential adequacy of renewable energy supplies to meet the increase in the percentage requirements for 2011 and 2015, respectively. In Docket 4050, the Commission found that potential adequate supply did exist for 2011.

** Duration of continuation subject to Commission determination.

RES Compliance - RECs

- Compliance is demonstrated through the procurement of Renewable Energy Certificates ("RECs")
- Electrons fed into the grid are physically indistinguishable, so each REC represents the property rights to the environmental, social, and other non-power attributes of renewable generation
- 1 REC = 1 MWh of electricity placed on the grid
- Each REC can only be used once – when retired for a specific state's RES/RPS, it cannot be used in any other jurisdiction

Source: EPA, http://www.epa.gov/greenpower/gpmarket/rec.htm.



Source: EPA, http://www.epa.gov/greenpower/gpmarket/rec.htm.

RES Compliance - ACPs

- Compliance can also be demonstrated by making Alternative Compliance Payments ("ACPs") to the Rhode Island Economic Development Corporation ("EDC")
- 1 ACP = 1 REC
- The ACP rate is adjusted annually by the CPI
- Compliance Year 2012 ACP = $64.02
- ACPs flow into the Renewable Energy Development Fund, which should then be used to spur new renewable development
- The ACP mechanism is NOT a penalty or fine, but it does represent a market ceiling price

RES Compliance – Eligible Resources

- An Obligated Entity can utilize RECs from any PUC-certified Eligible Renewable Energy Resource and retire them for compliance

- Eligible resources may be located in Rhode Island, throughout New England, or even in adjacent control areas (i.e. New York)

- Each facility must be certified by the PUC in order for its RECs to be utilized within the state. Interested generation units must file an application with the PUC:
  - Applications are reviewed by Commission and its consultant
  - 30-day Public Comment
  - Commission has 90 days to issue a decision on a completed application

- Commission has authority to verify on-going eligibility and suspend/revoke eligibility. Certain facilities must also file regular reports (i.e. biomass facilities must submit quarterly fuel reports)

RES Compliance – Eligible Resources

- As of November 2012, there are 104 eligible New and Existing Renewable Resources certified by the Commission
- These facilities combine to represent 1,054.2 MW of renewable capacity
- There are an additional 29 resources pending, representing 752.2 MW of renewable capacity
- While a generation unit may be approved, it does not mean that any of that facility's RECs have been purchased and retired for Rhode Island obligations

As of November 8, 2012

RES Compliance – Eligible Resources

- Of all certified renewable generation units:
  - 50 New (or New/Existing) and 54 Existing Resources
  - 26 Biomass, LFG, and Biogas units, including those at Johnston Landfill
  - 13 Wind, including Portsmouth Town & Abbey and Sandywoods Farm
  - 2 units are solar, both located in Rhode Island – Toray & Save the Bay
  - 63 units are hydro, primarily certified as Existing units
  - 11 units are in RI (10.6%). More than half are located in MA & ME.

- Of the 50 New generation units certified:
  - 10 are located in Rhode Island (20%), representing approx. 47 MW of capacity
  - The bulk of this is represented by Rhode Island LFG Genco (Johnston)

As of November 8, 2012

Rhode Island Renewable Energy Resources Eligibility Applications Commission Approved - shading denotes change since last report				
Generation Unit	**Contact Information**	**Type**	**Application Date(s)**	**Status - As of 11/08/2012**
Ipswich Wind 1 Ipswich, MA GIS # MSS16659	Massachusetts Municipal Wholesale Electric Company Michael Lynch 321 Moody St. Ludlow, MA (413) 308-1331 MLynch@MMWEC.org	NEW Wind 1.6 MW	Rec'd 08/10/12 Open Meeting 10/04/12 Order 10/05/12	**Approved - 10/05/12 RI-4349-N12** Docket # 4349 Order # 20836
Exeter Agri-Energy Exeter, ME GIS # 411	Biogas Energy Partners Adam Wintle 226 Fogler Rd. Exeter, ME (207) 415-8965 adam@biogasenergypartners.com	NEW Biomass 0.98 MW	Rec'd 08/02/12 Open Meeting 10/04/12 Order 10/05/12	**Approved - 10/05/12 RI-4348-N12** Docket # 4348 Order # 20835
Orono B Hydroelectric Project Orono, ME GIS # TBD	Black Bear Development Holdings, LLC Scott D. Hall PO Box 276 Milford, ME 04461 (207) 827-5364 SHall@blackbearhydro.com	NEW Hydro 3.75 MW	Rec'd 05/25/12 Open Meeting 08/30/2012 Order 08/31/2012	**Conditionally Approved - 08/31/2012** Docket # 4331 Order # 20804
Sandywoods Farm 275kW Vergnet Turbine Tiverton, RI GIS # NON34052	Church Community Housing Corporation Stephen P. Ostiguy 50 Washington Square, Newport, RI (401) 846-5114 x13 sostiguy@cchcnewport.org	NEW Wind 0.275 MW	Rec'd 06/11/12 Open Meeting 08/08/2012 Order 08/08/2012	**Approved - 08/08/12 RI-4335-N12** Docket # 4335 Order # 20790
Granite Reliable Wind Project Coos County, NH GIS # 14595	Brookfield Renewable Power Sean Faulds 480 de la Cite Blvd. Gatineau, Quebec J8T 8R3 (819) 561-2722 x6718 Sean.Faulds@brookfieldrenewable.com	NEW Wind 99 MW	Rec'd 05/08/12 Open Meeting 07/26/2012 Order 07/26/2012	**Approved - 07/26/12 RI-4325-N12** Docket # 4325 Order # 20778
Record Hill Wind Roxbury, ME GIS # 14665	Record Hill Wind LLC Michael Novello - VP P.O. Box 160, 150 Orford Rd. Lyme, NH 03768 603-208-2003 MNovello@WagnerForest.com.com	NEW Wind 50.6 MW	Rec'd 04/13/12 Open Meeting 06/21/2012 Order 06/21/2012	**Approved - 06/22/12 RI-4322-N12** Docket # 4322 Order # 20760

The Commission posts an **RES Application Status Report** – updated monthly – on its website: http://www.ripuc.org/utilityinfo/res.html.

Update on REC Prices and Trends

- New REC prices had been relatively stable throughout the region up until 4Q 2011/1Q 2012 => $15-$30 range

- A combination of economic and supply factors led to a rapid increase in REC prices through the end of 2011 and throughout 2012, including:
  - Renewable generation units began to run less (particularly biomass) due to operational costs exceeding historically low energy prices driven by natural gas
  - New York-based renewable units which had previously exported their power and RECs into New England entered into long-term contracts with NYSERDA, supplying their own state's needs
  - Each New England state's RES/RPS mandates are steadily increasing
  - Economic recession, tight capital markets, etc. have impacted investment
  - Continued uncertainty over federal production tax credits

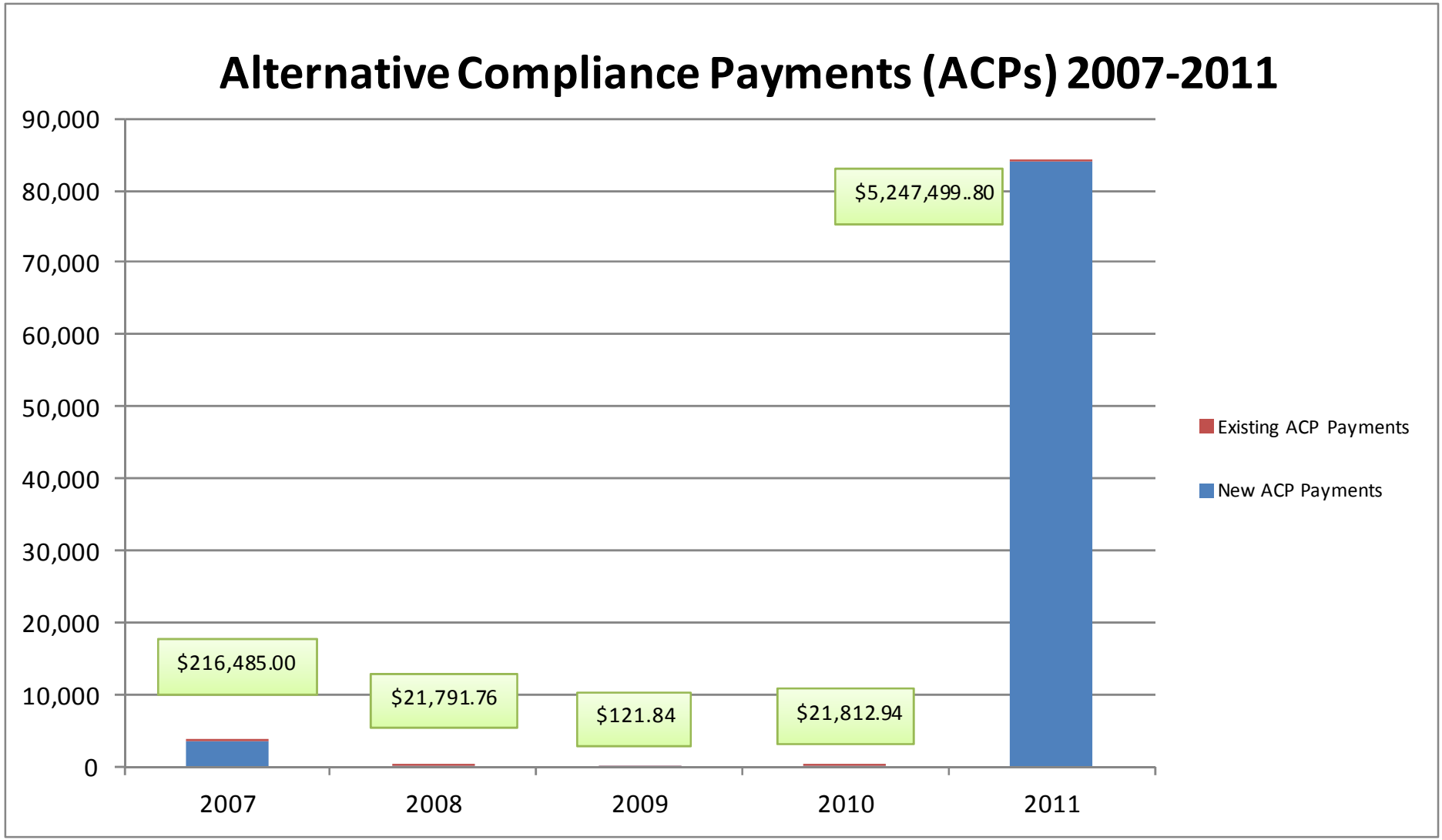
- Prices currently remain close to the ACP ceiling for both 2012 and 2013 vintage New RECs.

Preliminary 2011 Compliance Year Data

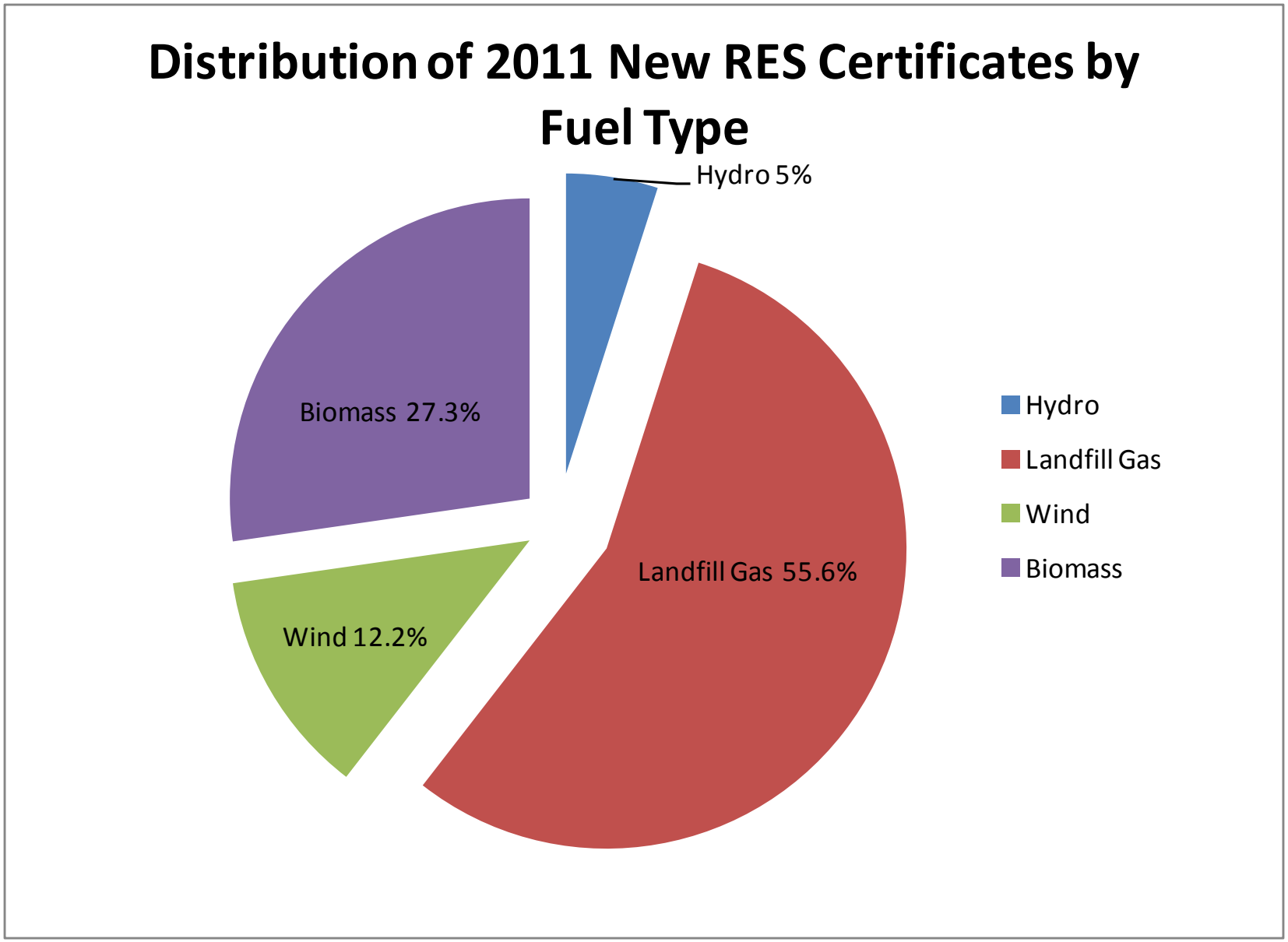
- 17 Obligated Entities served load in Rhode Island
  - 10 entities met their full obligations through RECs
  - 3 entities utilized ACPs for their entire New REC obligation

- Initial data* from 2011 RI RES Annual Compliance reports highlight the impact of tightening REC markets:
  - More than $5.2 million in ACPs made to EDC
  - National Grid's ACP accounted for roughly $4.5 million
  - Of total New obligations (285,531 RECs), there was a shortfall of roughly 84,000 RECs, or nearly 30% of total requirements
  - Previous compliance years had ACP use of less than one percent of total obligations
  - However, no notable increase in use of banked RECs for future compliance years.

* All Compliance Year 2011 data is preliminary and subject to change.



* All Compliance Year 2011 data is preliminary and subject to change.



* All Compliance Year 2011 data is preliminary and subject to change.

Long-term Contracting Update

- To date, National Grid has entered into 4 PPAs:
  - Deepwater Wind Block Island LLC. (offshore wind; 30 MW; New Shoreham)
  - Rhode Island LFG Genco, LLC. (landfill gas; 32.1 MW; Johnston)
  - Orbit Energy Rhode Island, LLC (biogas; 3.2 MW; Johnston)
  - Black Bear Hydro (river hydro; 4.1 MW; Orono, Maine)

- National Grid has also entered into 16 DG Standard Contracts
  - 1 wind (1.5 MW) and 15 solar (14.677 MW) – all in Rhode Island

- Total Contract Capacity = 48.02 MW (est.) or approx. 53% of mandate

- All projects (excluding Deepwater & Orbit) have expected operational dates in 2013

* Docket 4371, National Grid Responses to Commission Data Requests – Set 1 – Issued November 23, 2012, 12-4-12.

Long-term Contracting Update

- Cost recovery currently being addressed in Docket 4371
  - Proposed rate before the Commission includes previously approved expenses (design, engineering, legal, administrative, etc.) and recovery of estimated above-market costs associated with RI Genco PPA (estimated COD - January 2013)

- National Grid has re-estimated above-market costs of 20-year PPA with Deepwater Wind at $432 million (nominal) or $194 million NPV (@ 7%) (based upon August 2012 forecast)*
  - NPV above-market estimate has increased from $169.9 million in January 2010 and $188.6 in August 2011*

- Long-term contract with RI LFG Genco represents an estimated $54.4 million (nominal) or $30.1 million NPV (@ 7%) in above-market costs over its 15-year term (based upon August 2012 forecast)**

* Docket 4371, National Grid Responses to Commission Data Requests – Set 1 – Issued November 23, 2012, 12-4-12.
** Docket 4371, National Grid Response to Commission Record Request #5 – Issued December 10, 2012, 12-14-12.

Synergy between RES & Long-Term Contracting

- Under National Grid's 2013 RES Procurement Plan – approved by the Commission – New RECs obtained through Long-Term Renewable Contracts will be used to help satisfy their state RES obligations

- National Grid determined that retaining those RECs minimized transaction costs for consumers by reducing need for RFPs, broker fees, admin costs, etc.

- If sold back into market, transaction/admin fees essentially doubled – these costs can by avoided by retaining RECs

- Customers still charged market price for New RECs

See: Docket 4315, National Grid's 2013 SOS & RES Procurement Plans, February 28, 2012.

Synergy between RES & Long-Term Contracting

- As of February 2012, National Grid's analysis of RECs obtained under Long-Term Renewable Contracts determined that most of their 2013 obligations could be met by forecasted output of those facilities

- National Grid could utilize RES Banking Mechanism in years where REC production exceeded obligations
  - Law allows for 30% of New obligations in any year to be banked for use in the following two compliance years

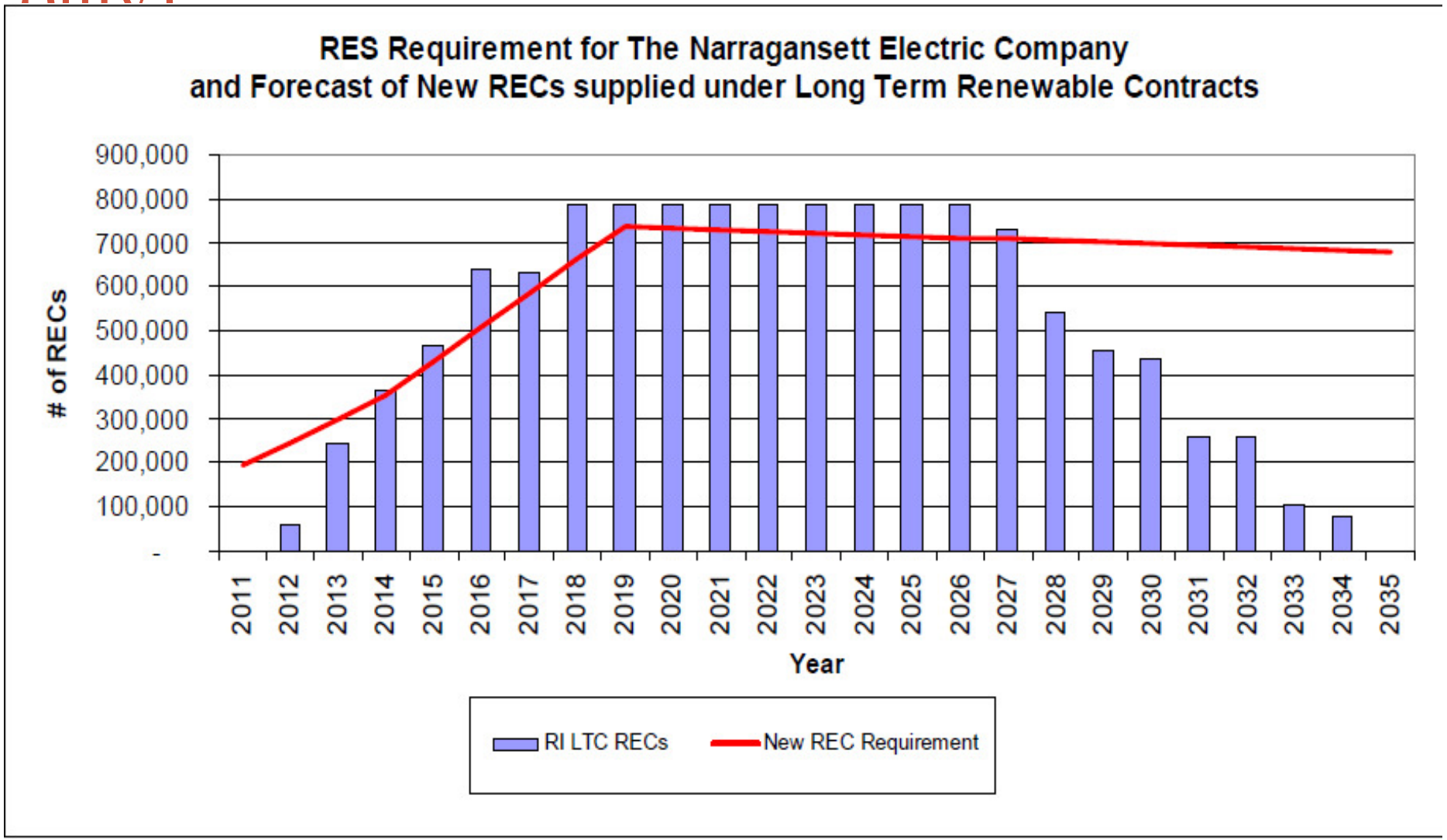
- "Based on current assumptions, in 2015 the Company anticipated that the New RECs…will exceed the RES obligation as well as the banking allowance"

- Any revenue from excess RECs sold back to market (through competitive solicitation) could be credited back to customers

- Changes in multiple variables/assumptions could impact this analysis

See: Docket 4315, National Grid's 2013 SOS & RES Procurement Plans, February 28, 2012.

Projected RES Requirement and New REC Supply under Long-Term Contracts (NGrid only)



Taken from National Grid's 2013 SOS & RES Procurement Plan, February 28, 2012. Docket 4315.

Regional View and System Challenges

New England's Renewable Requirements

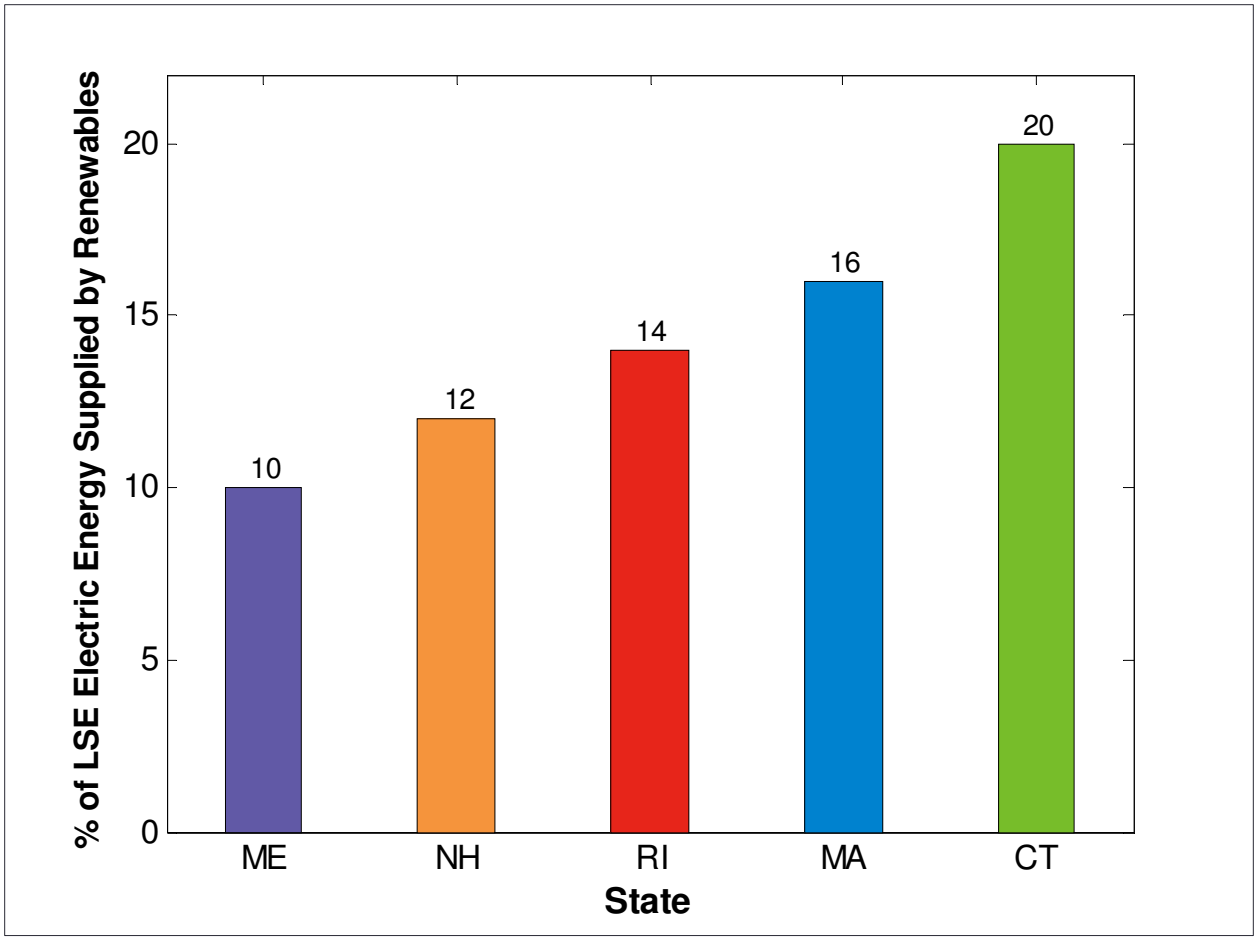
- RES/RPS obligations will continue to increase across New England:
  - RES/RPS mandates generally growing by one percentage point annually
  - Rhode Island – 5.5% New in 2013
  - Massachusetts – 8.00%
  - Connecticut – 10.00%
  - New Hampshire – 4.00%
  - Maine – 6.00%
  - Vermont has non-binding goals
- In 2015, New/Tier 1 obligations in RI & CT begin to increase by 1.5 percentage points annually
- The RI Public Utilities Commission will open a docket in 2013 to determine adequacy of renewable supplies to meet 2015 targets

New England Renewable Energy Targets, 2021

Today, MA accounts for 46% of the region's total electricity consumption; CT 25%; RI 6%

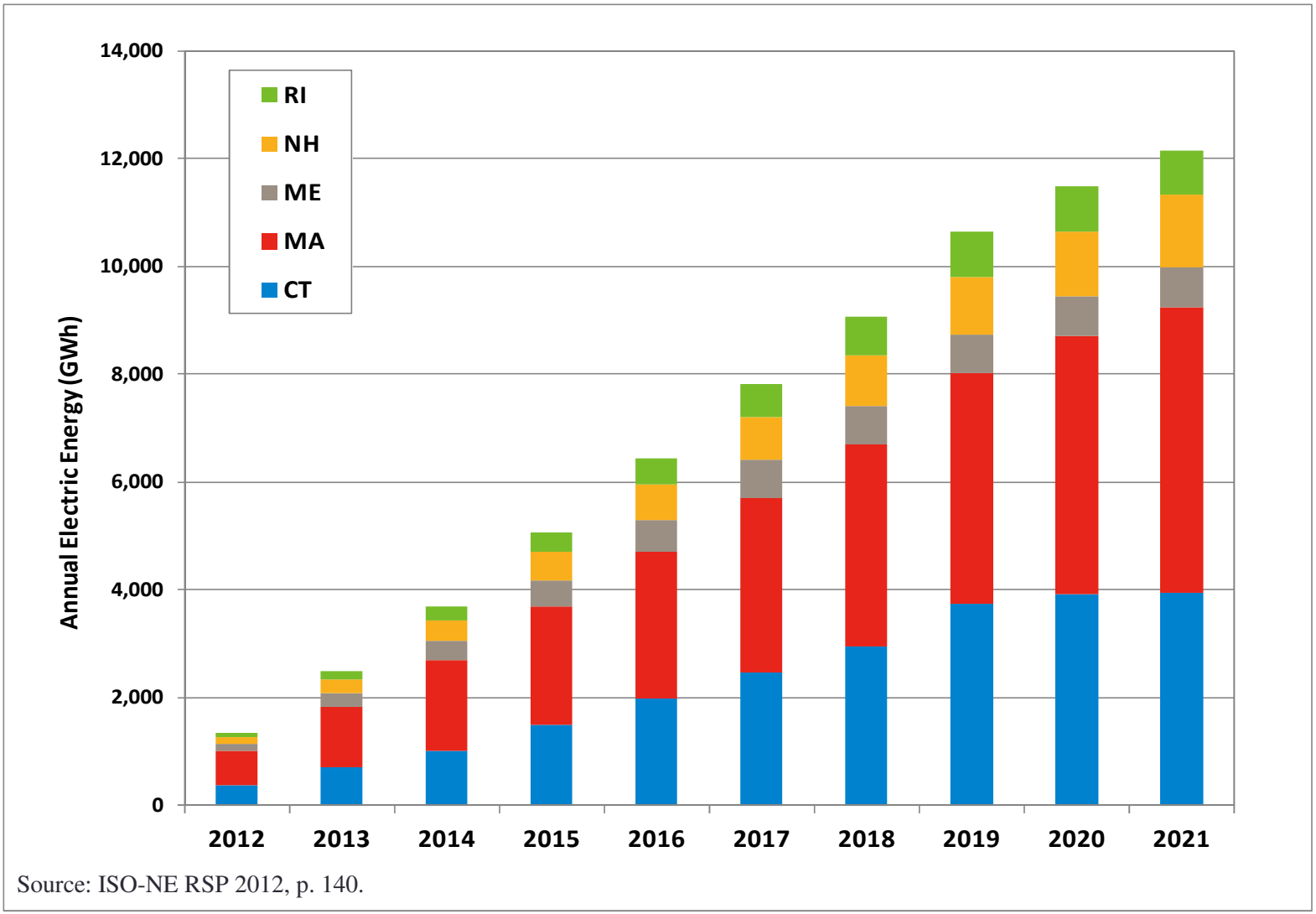
With passive demand response forecasts (11.6% energy reduction in 2021), LSEs would need renewables to provide 20.2% of projected electric energy use to meet existing targets.

By 2021, 31.8% of region's projected electric energy consumption could be met by EE, RPS targets, and related renewable goals.



Source: ISO-NE RSP 2012, p. 135, 138-139.

Incremental growth in RPS class targets for "new" renewables, 2012 to 2021 (GWh)



Source: ISO-NE RSP 2012, p. 140.

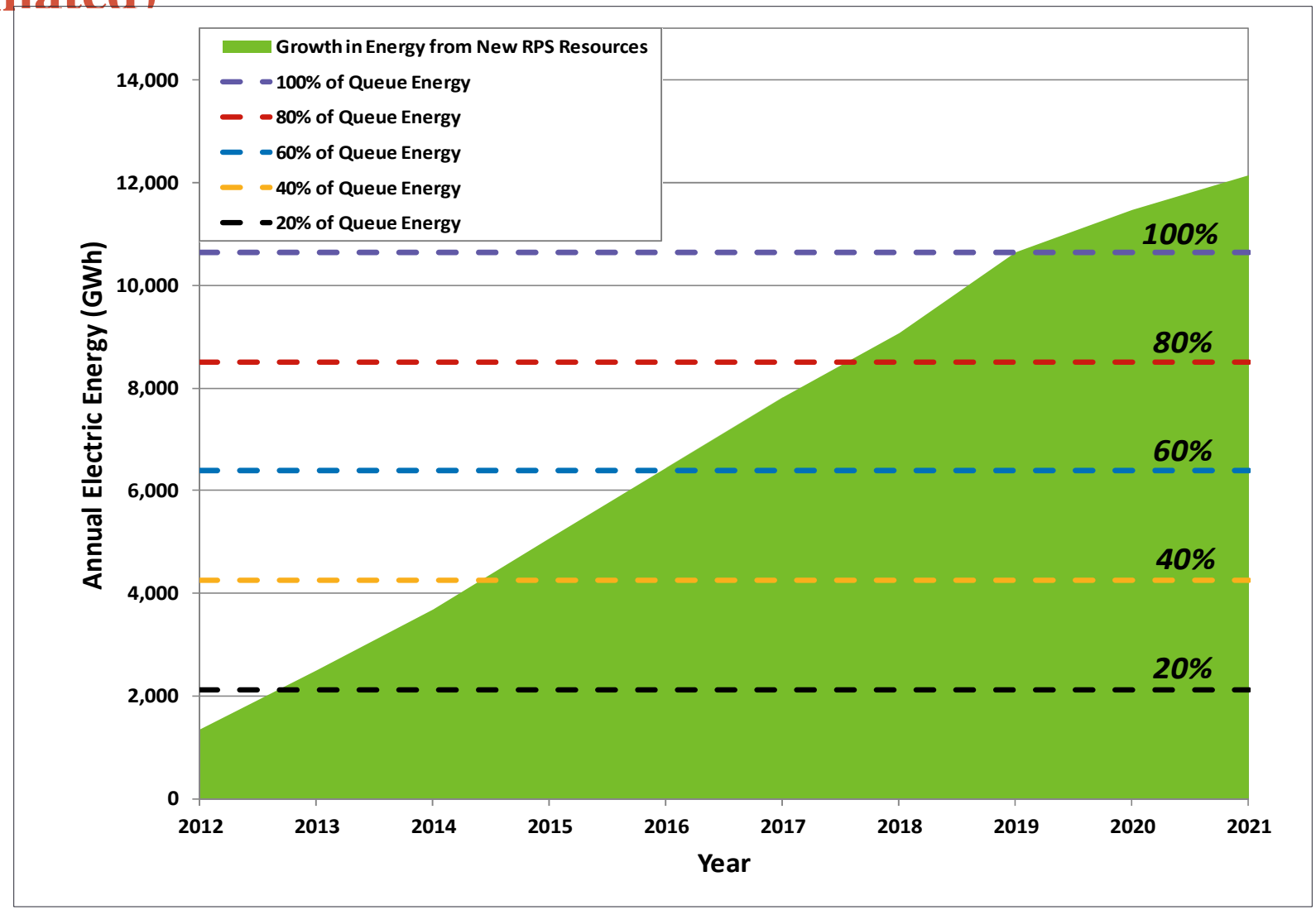
Project Development Uncertainty – Summary of Projects in the ISO Queue

Project Category	All Projects				Wind Projects[b]			
	No.	%	MW	%	No.	%	MW	%
Commercial	87	25	14,432	20	10	12	524	4
Active	72	21	6,974	10	34	42	2,579	22
Withdrawn	193	55	50,821	70	37	46	8,767	74
Total[c]	352	100	72,227	100	81	100	11,870	100

- Meeting robust renewable goals is a challenge – but development uncertainty and project attrition have made meeting long-term goals even tougher to achieve.
- 55% of all projects and 70% of potential capacity that have entered queue have withdrawn.
- While the percentage of wind projects withdrawn is less than all projects combined, the percentage of potential capacity has been higher.

Source: ISO-NE RSP 2012, p. 133. As of April 1, 2012.

Incremental energy from meeting new RPS targets compared with energy from new renewable projects in the ISO queue (estimated)



Source: ISO-NE RSP 2012, p. 141. As of April 1, 2012.

Challenges Posed by Greater Levels of Variable Resources

- Previous slides demonstrated the potential demand across the region for substantial levels of new renewable resources based upon existing mandates and policy preferences
- Along with their environmental attributes, renewable resources can provide greater fuel diversity across the system, but…
- Not all renewables are created equal – either among themselves or in comparison to fossil fuel based alternatives
- The integration of significant levels of variable resources poses significant challenges to grid operation…and potentially higher costs to the region's consumers

Example of Integration Costs

- ISO-NE's "New England 2030 Power System Study" (Feb. 2010) analyzed various potential scenarios for renewable development
- "Approximately 12,000 MW of potential wind resources in New England could be added to the system…"
- One scenario - 8,500 MW (5,500 MW offshore and inland wind + 3,000 MW Canadian) - could require $10 billion of new transmission
- 4,000 MWs (2,000 MW inland + 2,000 MW offshore) could meet more than 8% of region's energy needs, but at a cost of $10.7 - $14.3 billion in new transmission
- While energy prices could be lower, it "could lead to some generator retirements and a need for additional resources. Other sources of revenue may need to be considered to ensure the economic viability of resources."

Source: ISO-NE. "New England 2030 Power System Study – Report to the New England Governors," February 2010.

Challenges Posed by Greater Levels of Variable Resources

- The region's aging generation fleet and uncertain performance of demand response resources has increased the need for system operations flexibility – both system wide and locationally

- As traditional units retire or are too expensive to run, and variable resources increase on the system, the system operator will need more resources that have quick-start capability, fast ramp rates, and are dispatchable across seasons

- Wide spectrum of solutions available, some already underway, each with unique costs and complexities. For example:
  - Increase system reserves
  - Enhance performance incentives and penalties in wholesale markets
  - Negative pricing for energy market offers
  - Integrate wind forecasting into commitment and dispatch

Source: The Brattle Group, "ISO New England Strategic Planning Discussion – Considerations and Recommendations." 10-11-11.
ISO-NE, "Straw Proposal for Regional Discussion – Strategic Planning Initiative." 9-1-11.

Coordinated Renewable Procurement

Coordinated Renewable Energy Procurement

- In 2009, New England states began considering benefits of joint or separate but coordinated competitive renewable power procurement
- Goal has been to identify the lowest "all-in" cost resources available to meet state renewable mandates
- Several reports produced analyzing development potential, including Governors' Renewable Energy Blueprint, ISO Economic Studies, N.E. Wind Integration Study, and Report on Coordinated Procurement
- In 2011, NESCOE issued an RFI which identified approx. 4,700 MW of new renewable resources able to serve customers by 2016 – 90% was wind & 50% was located in Maine.

Why Coordinated Procurement?

- Analysis suggests that renewable resources located in and around New England could be developed at a lower "all-in" cost to consumers than the cost of building new transmission to "pipe in" from the Midwest and elsewhere
- New England Governors continue to express collective interest in potential
- Indications that it could "…aggregate demand for renewable power and enhance buying power; stimulate the market for renewable resources; and provide value to renewable project developers by creating larger revenue streams…"
- Fits regional preference for competitive market processes to identify what resources and where rather than central planning
- Necessary transmission development could be stimulated by effort

Recent Developments in Coordinated Procurement

- In February 2012, NESCOE produced a Supply Curve Analysis that provided directionally indicative information regarding availability of and potential cost for new wind resources in N.E. & N.Y.

- Since April 2012, NESCOE & state staff have developed a work plan on coordinated procurement and are working toward implementation

- NESCOE has hired a consultant with commercial experience and, along with staff, are now working toward developing draft documents, including RFP, scoring criteria, and PPA

- Goal of issuing an RFP by end of 2013

Questions?

Thank You!

Please contact me at:
(401) 780-2106, or
nucci@puc.state.ri.us

www.ripuc.org