Governors' Wind Energy Coalition

Governors' Staff Transmission Briefing

New England's Regional Renewable Resource Development Efforts

New England States Committee on Electricity
November 3, 2011

NESCOE

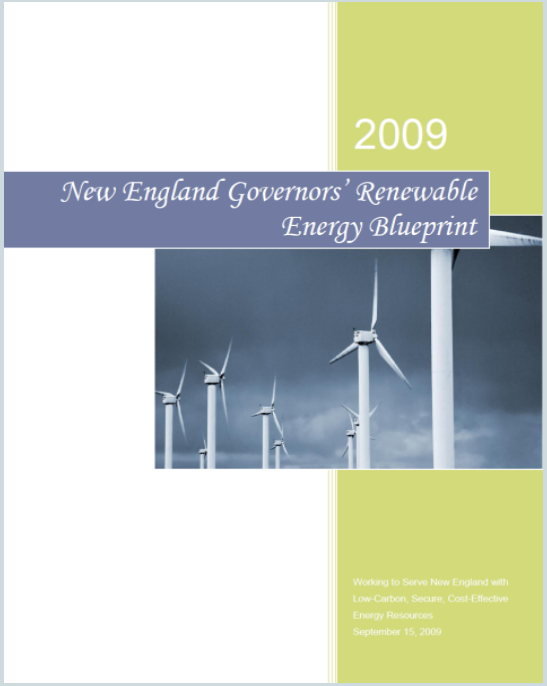
- New England's Regional State Committee
- Governed by a Board of Managers appointed by each of the New England Governors
- Focus: Resource Adequacy, System Planning & Expansion
- More information at www.nescoe.com & follow us on Facebook https://www.facebook.com/pages/New-England-States-Committee-on-Electricity/100576639985710

OVERVIEW

- **The Point:** Exploring means to help meet renewable goals at **lowest 'all-in' delivered cost**
- **Quick Look Back**: 2009 *New England Governors' Renewable Blueprint*, 2010 *Report on Coordinated Procurement, 2011 RFI*
- **Current:** Supply Curve Analysis

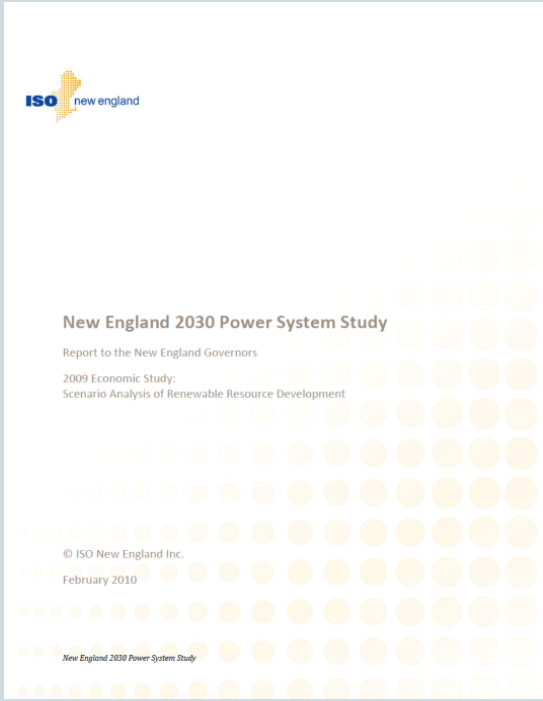
2009: Governors' Renewable Energy Blueprint

Policy



Governors' Renewable Energy Blueprint

Technical Analysis

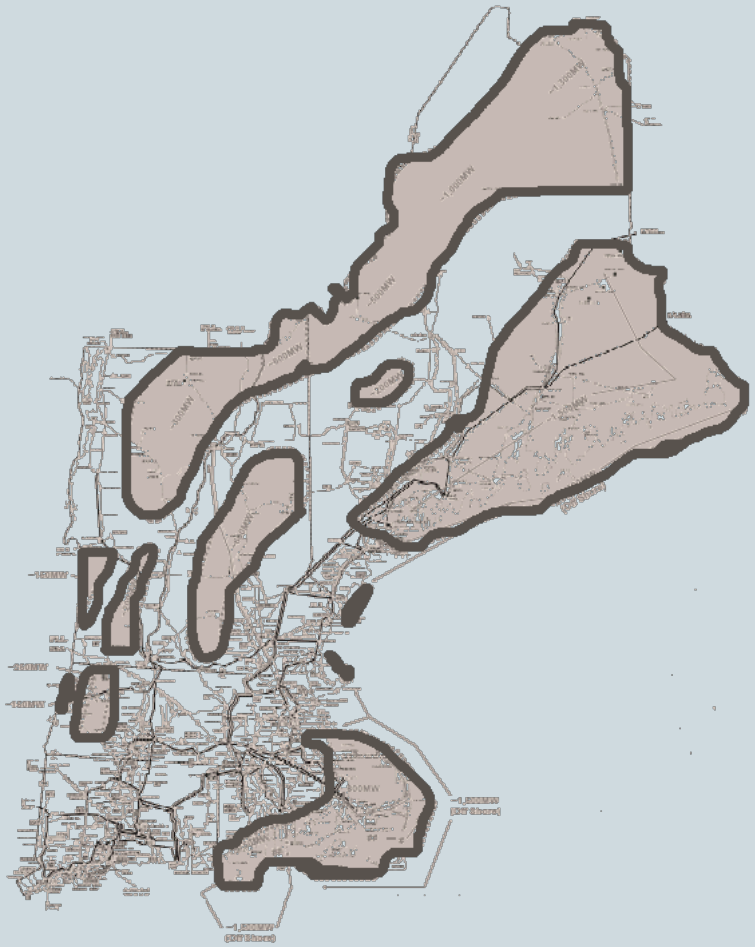


ISO-NE Renewable Development Scenario Analysis

Connecting Wind Energy to Load Centers

Slide Courtesy ISO-NE

- Population & electricity demand concentrated along coast
- ISO identified 12,000 MW of on & off-shore wind potential
  - Preliminary screening eliminated wind sites near urban & sensitive geographic locations
  - (renewables in queue at the time of the study approximately 3,700 MW)
- Transmission required to connect potential wind resources to load centers in New England



Scenario Examples

Slide, Courtesy ISO-NE

Description *Partial list of scenarios*	**New Capacity** (Megawatts)	**Percent of New England Energy** (%)	**Preliminary Transmission Cost Estimates**
From New England:			
4,000 MW of offshore wind *plus* 1,500 MW of inland wind	5,500 MW	12%	$6 B
12,000 MW of wind	12,000 MW	23%	$19 B to $25 B
From New England and Eastern Canada:			
5,500 MW of wind (from above) *plus* 3,000 MW of additional imports from Québec and New Brunswick*	8,500 MW	15%	$10 B
12,000 MW of New England wind *plus* 3,000 MW of additional imports from Québec and New Brunswick*	15,000 MW	26%	$23 B to $29 B

•Estimate does not include facilities in Québec and New Brunswick; only includes cost of potential transmission in New England.

Blueprint *Technical* Conclusions: Ample Resources, Choices

The New England Region has …	If developed conservatively…	If developed aggressively…
• **vast** quantity of **untapped renewable resources:** more than 10,000 MW on & off-shore wind power potential	• there are **ample** renewable resources to enable New England **to meet renewable energy goals**	• **New England could export** renewable power to neighboring regions

Blueprint *Policy* Conclusions: Facilitation Opportunities

New England states have…

Cooperative experience, inclination to do more

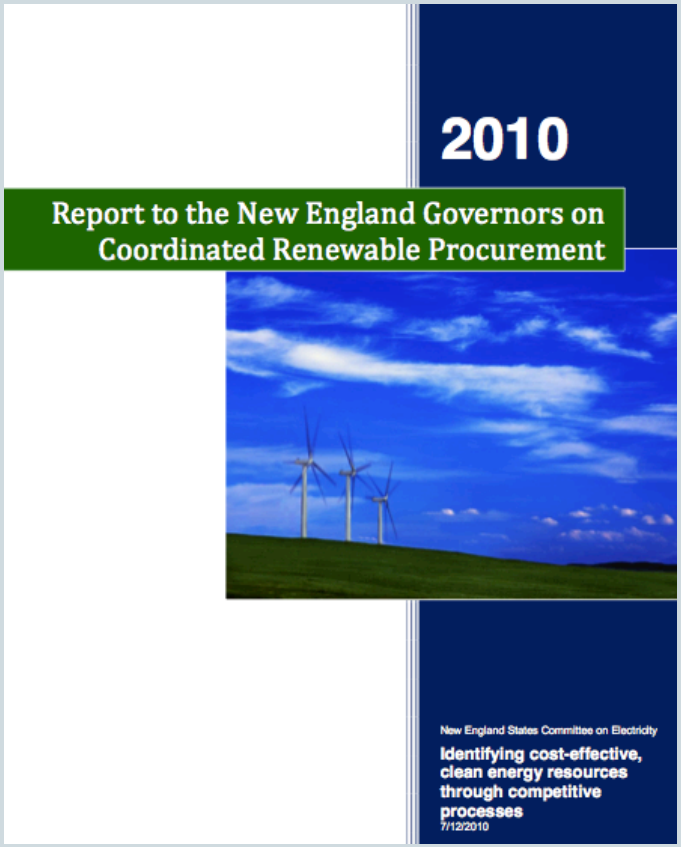
Siting processes that could accommodate some degree of coordination

Long-term contract approval mechanisms

Common Contract Themes:

Competitive Processes
&
Interest In Securing
Low Cost, Cost-effective, Or Cost Stabilizing Power

2010: Report to the New England Governors Coordinated Renewable Procurement



- Assessed New England states' power procurement practices, processes, looked for coordination opportunities
- Preliminary information about potential mechanisms to coordinate competitive procurement of renewable resources
- Identifies some potential terms & conditions & possible regulatory approval process approaches concerning renewable procurement
- http://www.nescoe.com/uploads/Report_to_the_Governors_July_2010.pdf

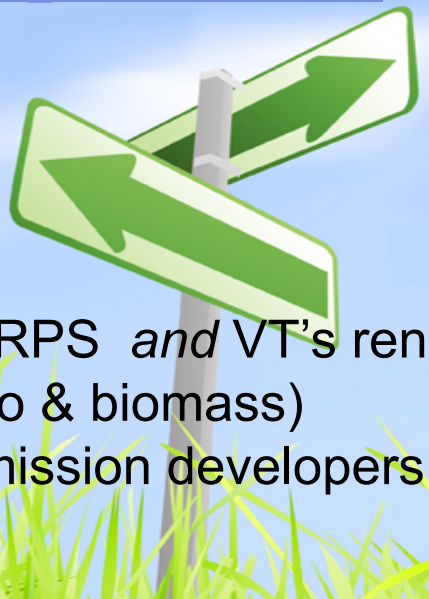
Coordinated Procurement Could …

"… ***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*** than might otherwise be possible. Using ***cooperative competitive processes*** may, therefore, ***facilitate development of cost-effective, low-carbon renewable electric generation in and around the region***." Report at 5.

And yes… "Large-scale renewable power procurement is complex and coordinating across EDC territories and state lines increases the complexity substantially." Report at 24.

Early 2011: Renewable *Request for Information*

RFI: Market inquiry about resources with potential to help meet renewable energy goals at ***lowest 'all-in' delivered cost*** & for which a coordinated competitive procurement process could facilitate commercial development http://www.nescoe.com/Coordinated_Procurement.html



Criteria:

- *New* resources
- *Deliverable* to New England loads
- Operational by *2016 and*
- *Eligible* for *all* 5 New England states' RPS *and* VT's renewable goals (wind, solar, landfill gas, small hydro & biomass)
- Other: sought information from transmission developers on transmission that could facilitate delivery
- No Cost Information Requested

Renewable RFI: Generation Responses

Highlights:

- 4,700 MW by 2016
- 90% wind on & off shore
- 50+% Maine on-shore wind

Technology	Within New England						Outside of New England	Total
	CT	MA	ME	NH	RI	VT		
Biomass	82.0	137.3	30.0					249.3
Landfill gas		1.6					1.6	3.2
Small Hydro			3.0					3.0
Solar	4.0	27.0						31.0
Wind - on-shore		4.0	2519.3	351.0			584.5	3458.8
Wind - off-shore			30.0		1000.0			1030.0
Total	86.0	169.9	2582.3	351.0	1000.0		586.1	4775.2

Technology	Year of initial commercial operation						Total
	2011	2012	2013	2014	2015	2016	
Biomass	46.4	0.9	77.0	30.0	55.0	40.0	249.3
Landfill gas	1.6		1.6				3.2
Small Hydro	3.0						3.0
Solar		17.0			14.0		31.0
Wind - on-shore	20.0	586.3	413.5	481.0	1643.0	315.0	3458.8
Wind - off-shore					1030.0		1030.0
Total	71.0	604.2	492.1	511.0	2742.0	355.0	4775.2

Renewable RFI: Transmission Responses

Highlights:

- 1 off-shore
- 1 NY-VT upgrade
- 5 Maine to load, generally consistent with generator submissions

Project Number	Description	Miles of New Transmission	Technology	Capacity (MWs)
1	Off-shore transmission system to deliver energy from off-shore wind turbines to loads in southern New England	Not specified	Not specified	Up to 4000 MW, in 1000 MW increments
2	Interconnection between upstate NY and northern VT	Not specified	230 or 345 kV interconnection points	600
3	Connection from Maine Public Service Company transmission system to CMP transmission system	~26	345 kV AC line within Maine	200+ (at least 200 MW of wind projects have been identified)
4	HVDC link between northern Maine and downtown Boston	~300	HVDC overhead line and submarine cable	800
5	Transmission upgrades in western Maine	Not specified	115 and/or 345 kV AC lines	Up to 1100
6	HVDC link between central Maine and northern Massachusetts	230	HVDC underground line	1100 (with potential for some additional increase on existing lines)
7	AC transmission upgrades between Maine and southern New England	Unknown	Unknown	1000-2000

Summer 2011: Governors' Continued Interest

In July 2011, New England Governors, by Resolution, expressed continued interest in exploring coordinated procurement

NESCOE set out to obtain broadly indicative cost analysis to inform Policymakers' decisions about next steps

$ Resources that could supply renewable energy to New England

PLUS

$ Transmission projects that could integrate projects

indicative cost information ≠ resource plan

Broadly Indicative Cost Information

Generation Analysis (By: Sustainable Energy Advantages)

- ✦Developing **resource potential & cost estimates for renewable resources – on & off shore wind -** that could supply energy to New England
- ✦ Independently estimate resource potential to yield "renewable supply curve" for **2016 & 2020**
- ✦ Focus on wind potential in **New England & NY** (Invited Canadian Electricity Assoc. to provide comparable analysis)

Transmission Analysis (By: RLC Engineering)

- ✦Developing **cost estimates for notional transmission buildouts** that could help integrate renewable energy
- ✦Initial focus on transmission options in **western Maine & northern New Hampshire**

Analysis Is Not A Plan

What analysis will not indicate:

- A best or preferred set of generation or transmission projects or the full range of clean resources available to New England

What analysis will indicate:

- Relative costs of various wind resources in New England, NY – on & off shore
- Cost of transmission to interconnect on-shore wind in northern New England

NEXT

- Evaluate SEA, RLC analysis
- Post final analysis – expect Q4 2011; welcome comment
- Consider Next Steps

Interstate Siting Collaborative

New England does not have a siting problem to solve

We've sited $4 B since 2002, with more than that on horizon

However, the Governors' Blueprint identified that coordinating siting could help facilitate development of renewable & other resources

Looking at coordination opportunities possible under **current law**

1st Step: **Listening** to New England's transmission owners & developers to identify **what the states could do better in the short & long term & Seeking near-term project(s) to focus early coordination efforts**

Thanks.

Questions?