

Transmission as a Facilitator of Alternative Energy Development

Renewable Energy Committee & Northeast Chapter -
Energy Bar Association

New England States Committee on Electricity

April 10, 2012

Presentation Overview

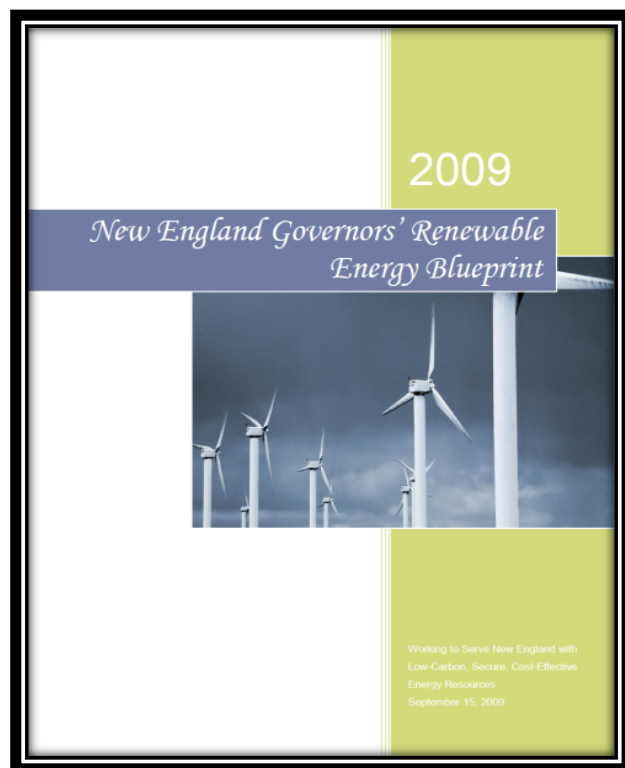
Coordinated Renewable Power Procurement

Objective: To consider identifying, through joint or separate but coordinated competitive processes, those resources that have the greatest potential to help meet the region's renewable energy goals at the lowest "all-in" delivered cost to consumers – the cost of generation & transmission combined

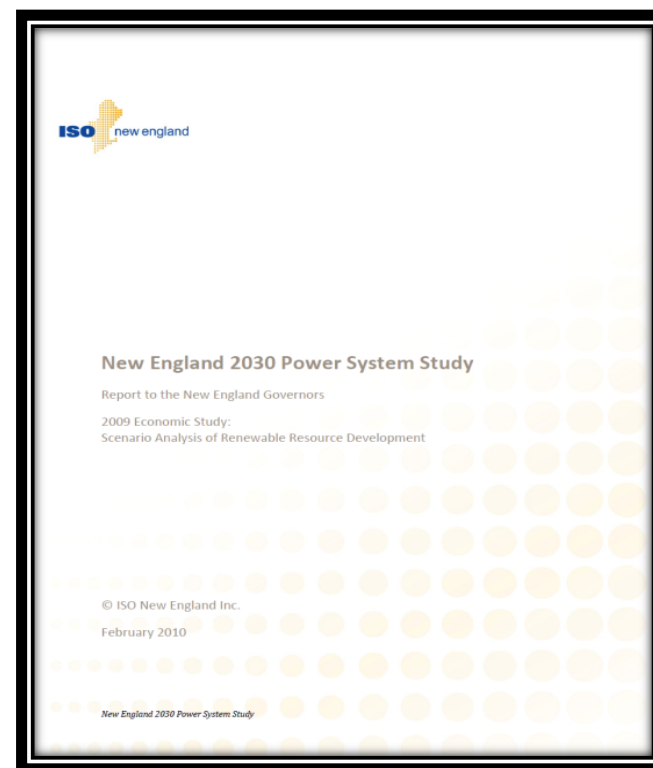
NESCOE Order 1000 Framework

In January, 2012, NESCOE advanced New England States' Consensus Draft *Framework for Public Policy Projects & Associated Cost Allocation* - one way, but not the only way, projects that further public policy objectives could move forward in New England

2009: Governors' Renewable Energy Blueprint

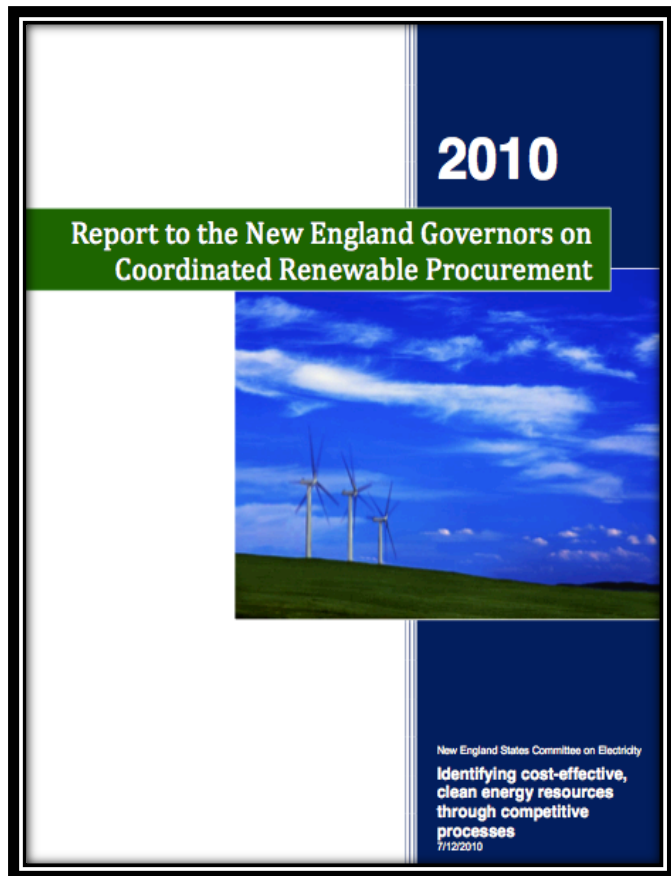


States' Policy Observations:
Interest in lowest all-in delivered cost,
potential opportunities through
coordinated contracting & siting



ISO Technical Analysis: New
England has more renewable
resources than it needs; could
export if developed aggressively

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

Early 2011: Renewable *Request for Information*

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

Criteria:

- New resources
- Deliverable to New England loads
- Operational by 2016 &
- Eligible for all 5 New England states' RPS & 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



RFI: Renewable 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

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

July 2011: Governors' Resolution Expressed Continued Interest in Exploring Coordinated Competitive Procurement



NESCOE undertook analysis to provide *directionally indicative* cost analysis in relation to new on- & off-shore wind resources to help inform policymakers' decisions about the potential for coordinated competitive renewable power procurement

Renewable Supply Curve Analysis

- Assessed **amount of wind** resources developable in New England (2016 & 2020) & New York (2020)
- Estimated **generation cost** for various wind resources in New England & New York
- Estimated **indicative transmission costs to integrate wind** into regional power supply

Resource Focus - Maine & NH Wind

- Corresponds to predominant resource responding to NESCOE's 2011 renewable RFI & resources in ISO-NE's *2009 New England Governors' Study*
- Does not indicate preference for wind relative to other renewable resources available to help New England meet clean energy objectives

The Transmission Factor

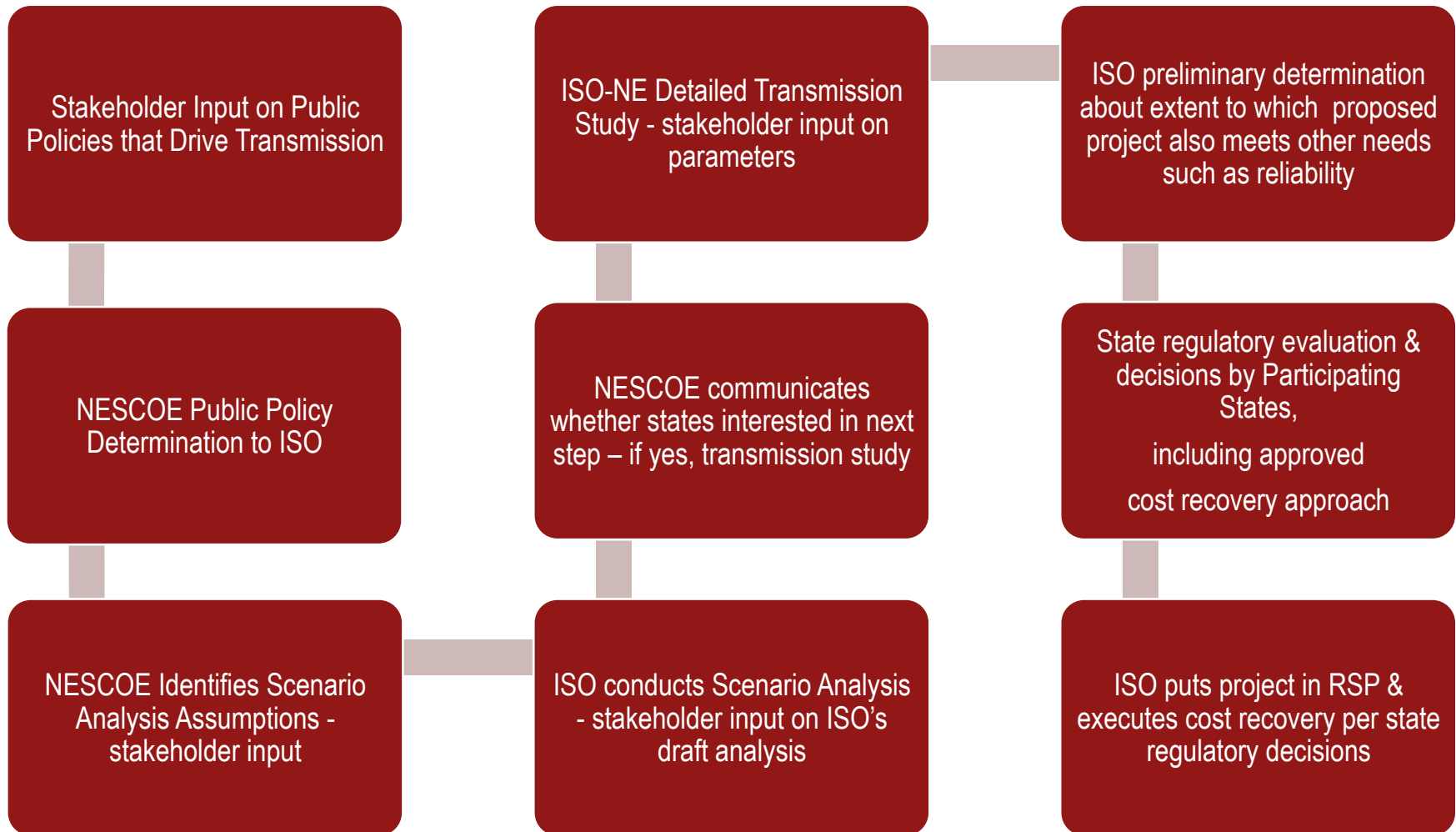
If *no* additional transmission was required to integrate wind

- In 2016, **72%** of incremental regional needs for renewables would be met by **on-shore wind in Maine**. Imports would supply 8%.
- In 2020, **47%** of incremental regional needs for renewables would be met by **on-shore wind in Maine**. Imports would supply 20%.

Including estimated transmission costs shifts to off-shore & imports

- In 2016, **44%** of incremental regional needs for renewables would be met by **off-shore wind & imports**. Maine on-shore wind would meet 36%.
- In 2020, **45%** of incremental regional needs for renewables would be met by **off-shore wind & imports**. Maine on-shore wind would meet 32%.

NESCOE Order 1000 Framework Process Overview



NESCOE Framework Highlights

- ✓ For efficiency & practicality, makes use of existing New England planning processes & mechanisms – economic study, Planning Advisory Committee, etc.
- ✓ Stakeholder input is central: stakeholder input opportunity at each step in the process
- ✓ Some Public Policy Projects may also meet other needs, such as reliability
- ✓ Transmission project cost estimates, control & assurance of benefits of central importance to states' cost/benefit analysis

Overview of States' Roles

- ✓ States seek to provide consensus views, following stakeholder input, through **NESCOE** on -
 1. public policies that drive transmission needs,
 2. parameters of Public Policy (Economic) Study, &
 3. if state interest, parameters of more detailed transmission analysis

- ✓ States decide whether to be **Participating States** in proposed project
 - no involuntary allocation

- ✓ Final state analysis & decisions by **Participating States' regulatory authorities**
 - Provides open, formal process for stakeholders & interested persons
 - Results in formal state decision upon which ISO-NE will base cost allocation

State Regulatory Evaluation & Decision

- ✓ Public Policy Project *only* moves forward if **Participating States** conclude expected **benefits outweigh expected costs**
- ✓ Evaluation requires mechanisms for cost control & assurance of delivery of benefits
 - Power purchase agreements or other contractual arrangements will ensure commitments in place
 - Such contractual agreement may provide, for example, for recovery of transmission costs through tariff
- ✓ To be a Public Policy Project, any contract or inclusion of transmission costs associated with public policy projects will be approved by state regulatory authority

Thanks.

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