



# Wind in New England

CPES Dinner June 12, 2013







# **New England Wind Development**



Source: U.S. Department of Energy, New England Wind Forum



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Note: FERC-jurisdictional wind project totals are bold-faced; non-FERC-jurisdictional totals are non-boldfaced; numbers may not add to 2,453 MW total due to rounding.

Source: ISO New England







# **New England Wind Development**



Proposed New England capacity from renewable resources in the ISO Generation Interconnection Queue. Source: ISO New England 2012 RSP.

#### •As of April 1, 2013:

Approximately 710 MW of commercial wind power in ISO-NE control area
Approximately 186 MW of wind power went commercial in last year
-2,453 MW of wind power in the Interconnection Queue (Includes non-FERC-jurisdictional projects requesting interconnection either to the lower voltage distribution system or areas external to ISO's service territory)



#### Wind Energy Lowers Wholesale Energy Prices



Generators bid in the cost of their next unit of production. The market price is set at the intersection of the supply stack and demand. Every generator is paid that price for each unit of energy. The marginal costs of wind power are essentially zero with wind incurring no fuel costs; wind generators bid their price accordingly. More wind added to the grid shifts the supply stack (dotted supply curve) to the right (solid supply curve) when wind power is being produced. The result is a lowering of the clearing price from Price A to Price B.



### Wind Energy Lowers Wholesale Energy Prices

According to ISO New England 2011 economic study updates this year, increasing wind from current 892 MW to 3926 MW of wind in the development queue (close to the collective 2021 New England RPS targets), LSE Energy Expense, roughly what load pays in the energy market, would decrease by \$1 Billion per year.





# Value of Wind in Hedging Energy Prices

Only renewable resources with their "free" fuel can provide an effective long term hedge against electricity price swings caused by the volatility in natural gas markets which generally set the price of electricity in New England.



\*Fuel cost projections are translated from \$/MMBtu into \$/MWh terms using average heat rates implied in the NEMS modeling output

Source: M. Bolinger, "Revisiting the Long-Term Hedge Value of Wind Power in an Era of Low Natural Gas Prices," Lawrence Berkeley National Laboratory, LBNL-6103E (March 2013).









Sustainable Energy Advantage, CT RPS Webinar 4/4/11

Additional long term contracting for Class I resources can significantly lower the cost of energy. Longer amortization period lowers risks, which lowers the cost of capital for these projects.



### Value of Long Term Contracts



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# Massachusetts Long Term Contracting Statutes





# Massachusetts Long Term Contracting Statutes



Source: Massachusetts DOER, June 2013



# Long-Term Contracting in Connecticut to Meet Class I RPS Goals



DEEP could use SB 1138 and ZREC/LREC procurements to match Massachusetts in having about half of 2016 RPS requirements met from projects under long term contract.



