



Synapse
Energy Economics, Inc.

Vermont and the New England Electric Grid

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Vermont Legislators, Montpelier, VT

Agenda

- Independent System Operator (ISO-NE)
- Regional and State Transmission System
- Estimates of Peak Load
- New England Resource Options
- Impact on CO₂ Issues

ISO New England

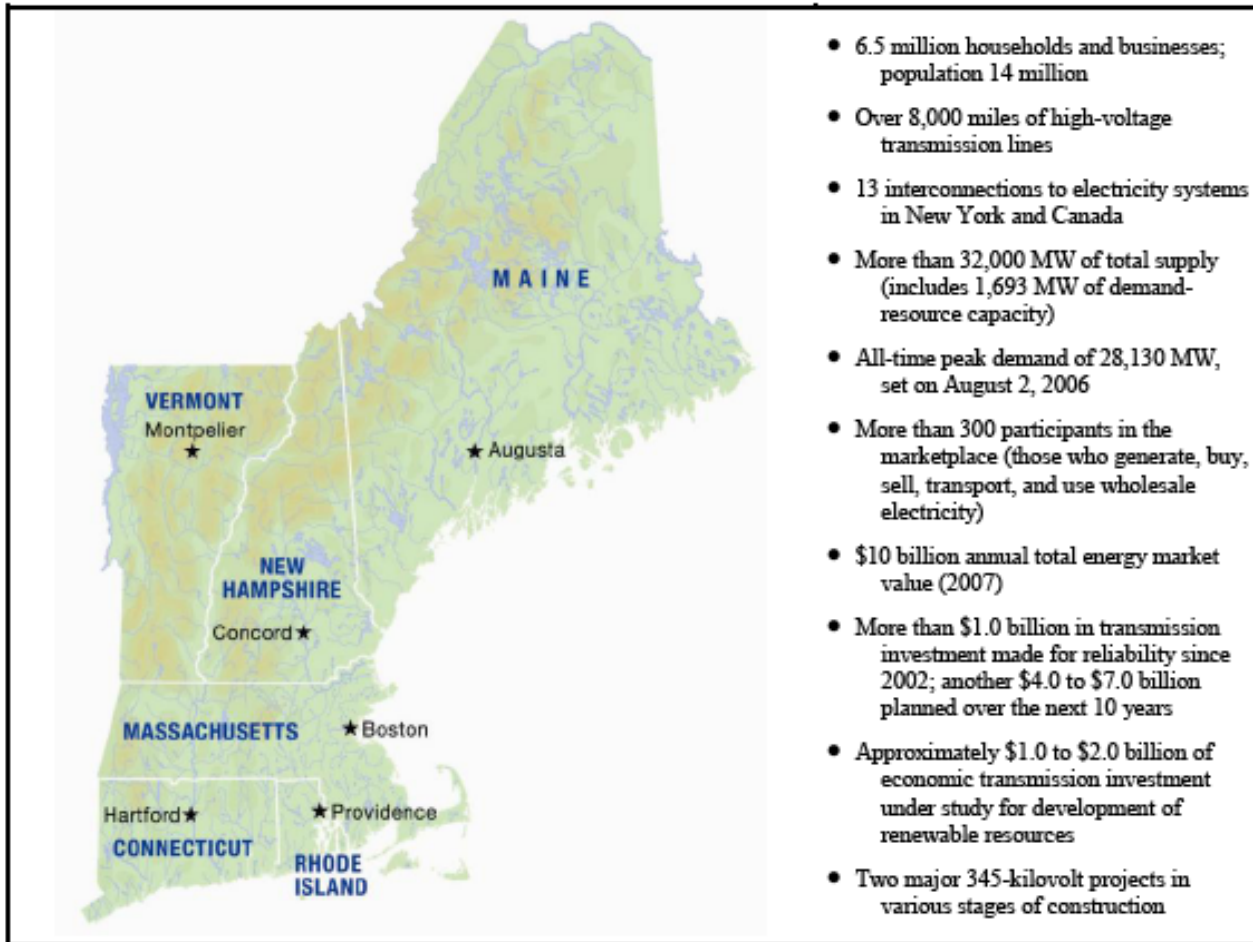


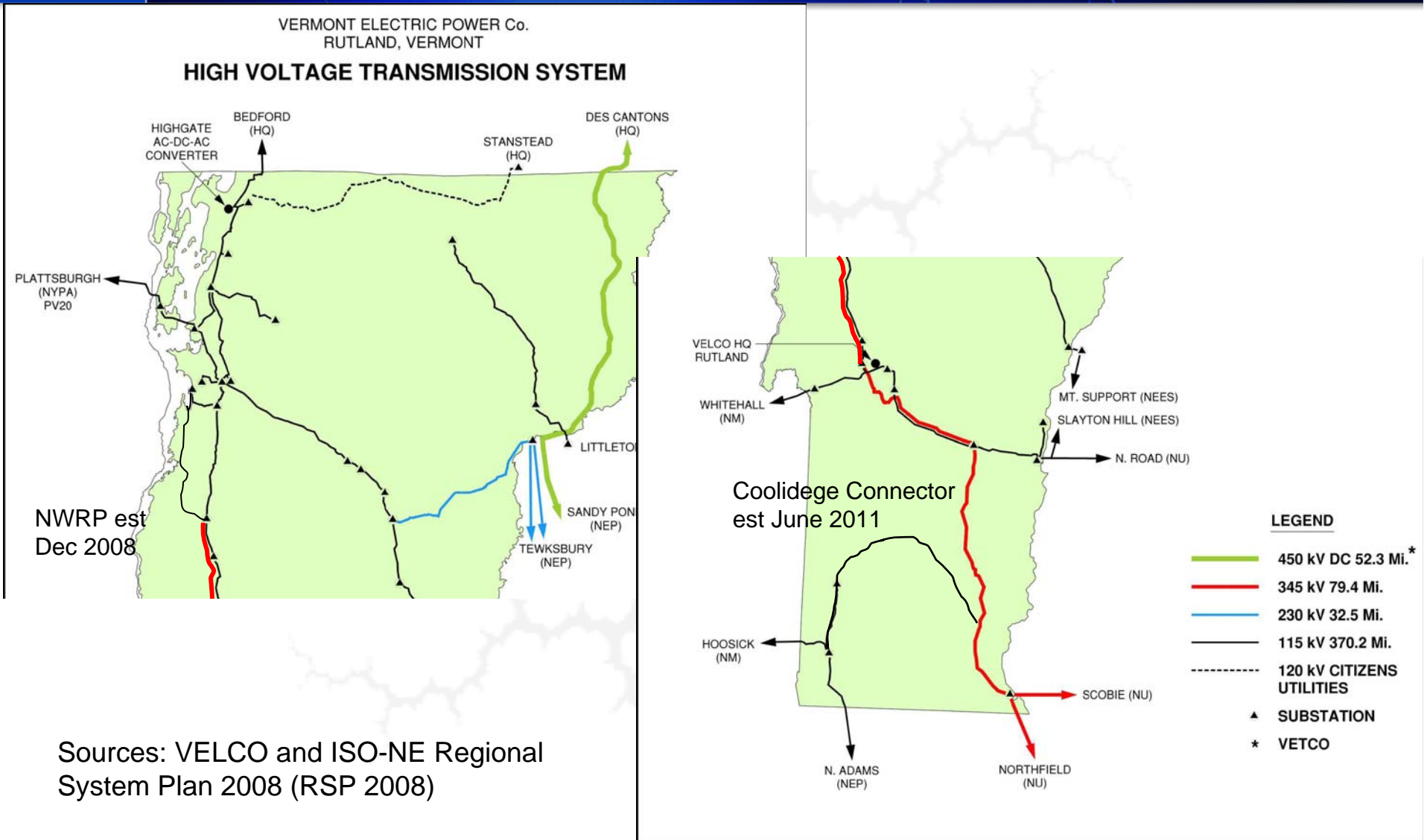
Figure 2-1: Key facts about New England's bulk electric power system and wholesale electricity market.

From ISO New England 2008 Regional System Plan

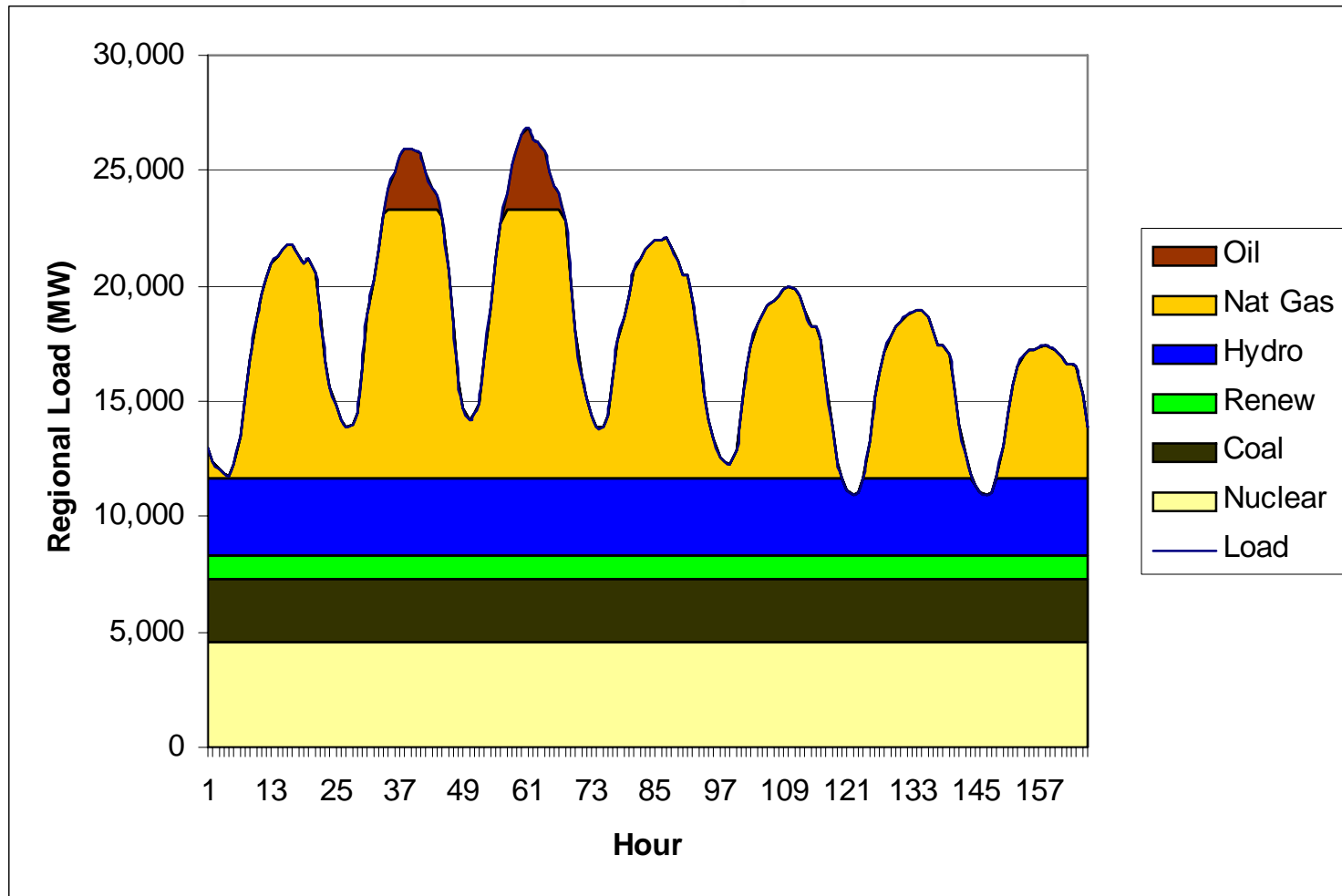
MISSION

- Reliable Operation of Grid
 - System Planning and Forecasting
 - Administration of Wholesale Markets
- ## FOR
- 14 million people in 6.5 million homes and businesses
 - 350+ generating stations
 - 8,000+ miles of high voltage transmission lines

Vermont Transmission



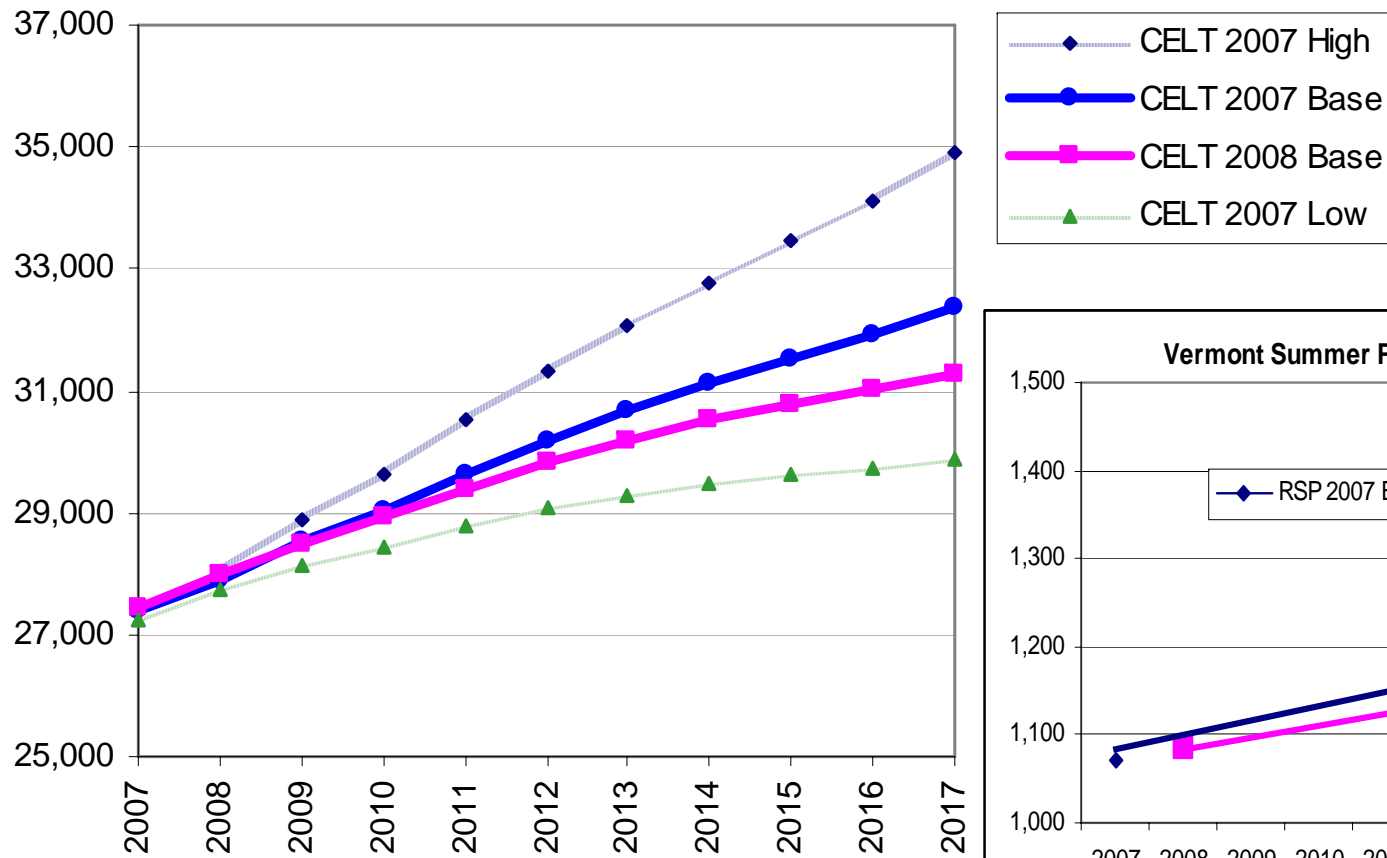
Typical Summer Week for New England



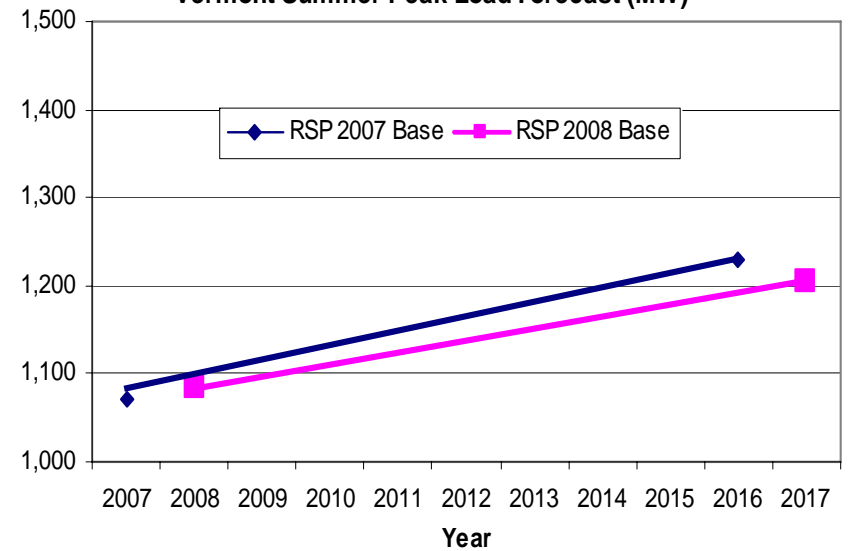
New England load and resources on a typical summer week (8-14 June 2008).
Supply must equal demand, so economics determines dispatch order.

Load Forecast

New England Summer Peak Load Forecasts (MW)



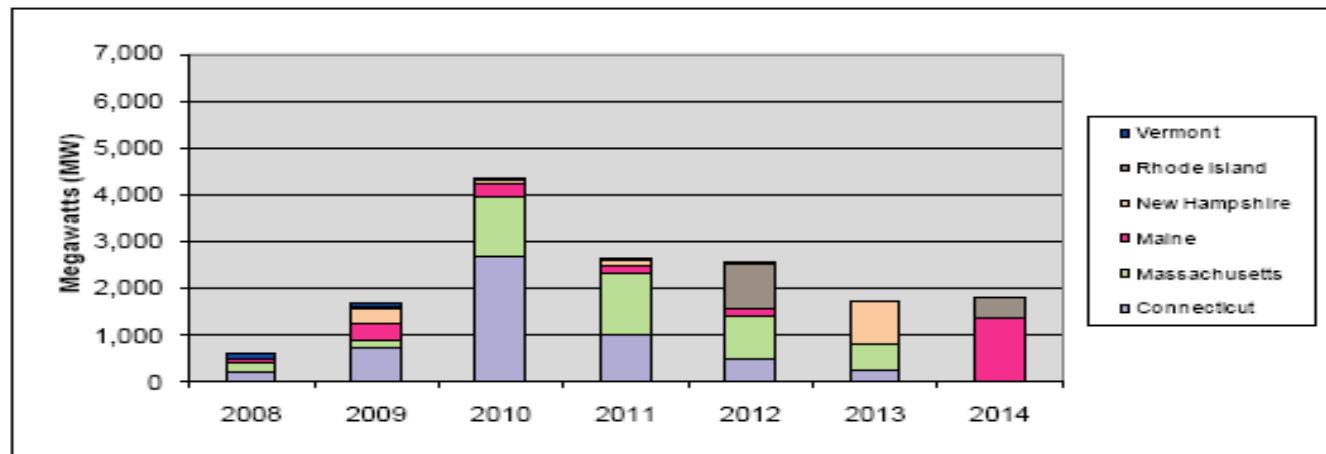
Vermont Summer Peak Load Forecast (MW)



CELT is the ISO-NE annual report on Capacity, Energy, Loads, and Transmission

New Generation

Actual and Projected Annual Generator Capacity Additions By State

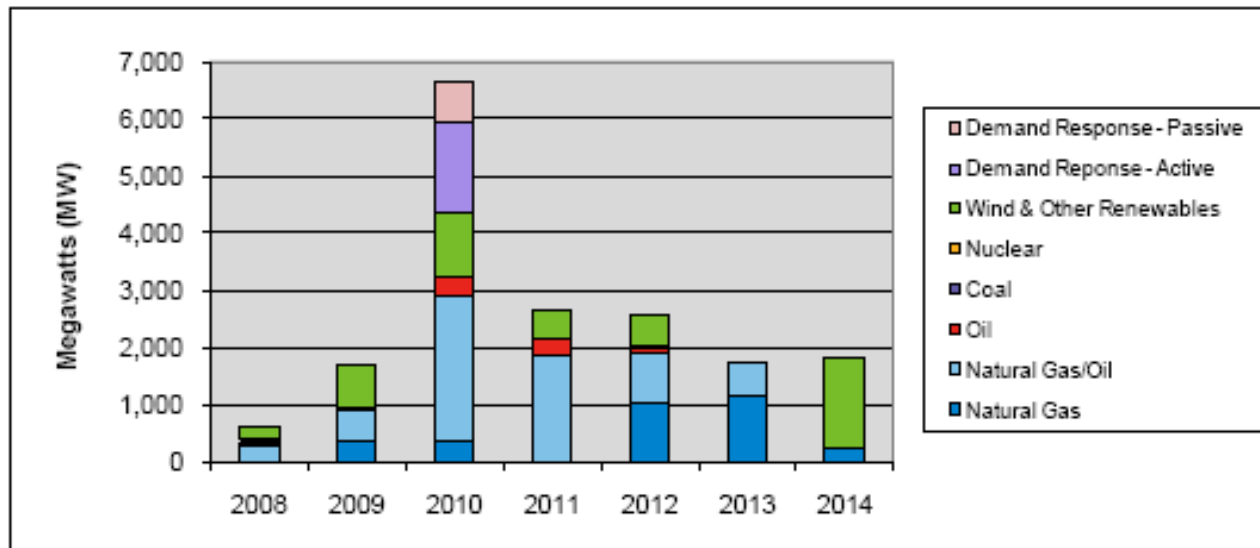


	2008	2009	2010	2011	2012	2013	2014	Total	% of Total
Vermont	91	92	6	60	43	0	0	292	1.9
Rhode Island	0	27	34	0	952	0	450	1,463	9.5
New Hampshire	29	355	72	141	0	904	0	1,501	9.8
Maine	60	335	300	150	159	0	1,350	2,354	15.3
Massachusetts	228	165	1,252	1,277	913	578	0	4,413	28.8
Connecticut	188	714	2,681	1,019	496	223	0	5,321	34.7
Totals	596	1,688	4,345	2,647	2,563	1,705	1,800	15,344	100.0

- 2008 values include the 65 MW of generation that has gone commercial in 2008

New Demand Resources

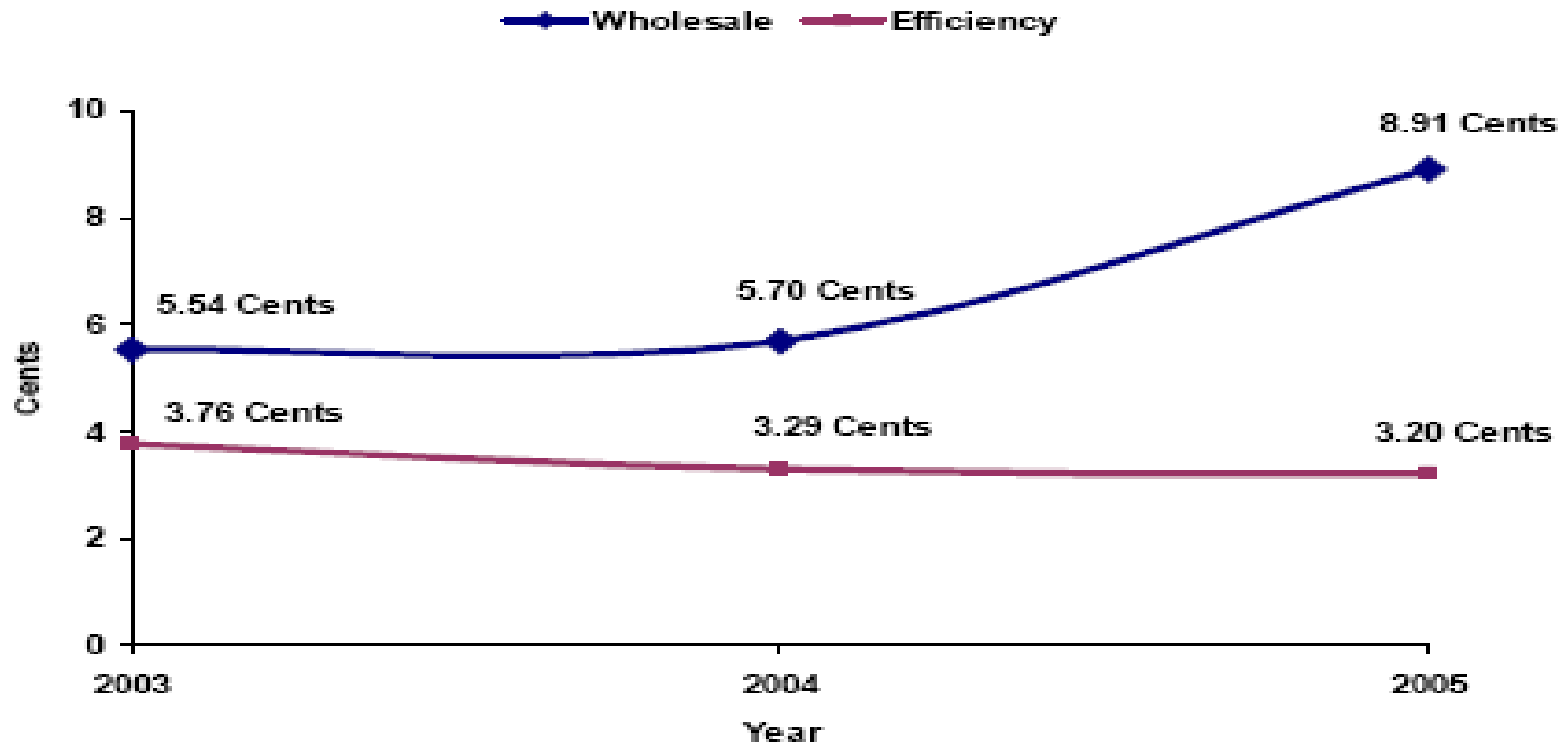
Actual and Projected Annual Capacity Additions By Supply Fuel Type and Demand Resource Type



	2008	2009	2010	2011	2012	2013	2014	Total	% of Total
Demand Response - Passive	0	0	700	0	0	0	0	700	4.0
Demand Response - Active	0	0	1,579	0	0	0	0	1,579	9.0
Wind & Other Renewables	222	745	1,128	497	549	0	1,578	4,719	26.8
Nuclear	70	0	0	0	0	0	0	70	0.4
Coal	5	0	0	0	36	0	0	41	0.2
Oil	36	28	323	312	85	0	0	784	4.4
Natural Gas/Oil	220	576	2,547	1,838	877	578	0	6,636	37.7
Natural Gas	43	339	347	0	1,016	1,127	222	3,094	17.8
Totals	596	1,688	6,624	2,647	2,563	1,705	1,800	17,623	100.0

Cost of Supply vs. Demand Reduction

Chart 1
Costs of Electricity Generation and Energy Efficiency
2003 - 2005



Source: *Massachusetts Savings Electricity: A Summary of the Performance of Electric Efficiency Programs Funded by Ratepayers Between 2003 and 2005*. Massachusetts Department of Energy Resources (MA DOER). April 2007.

Possible future: NY to 2015

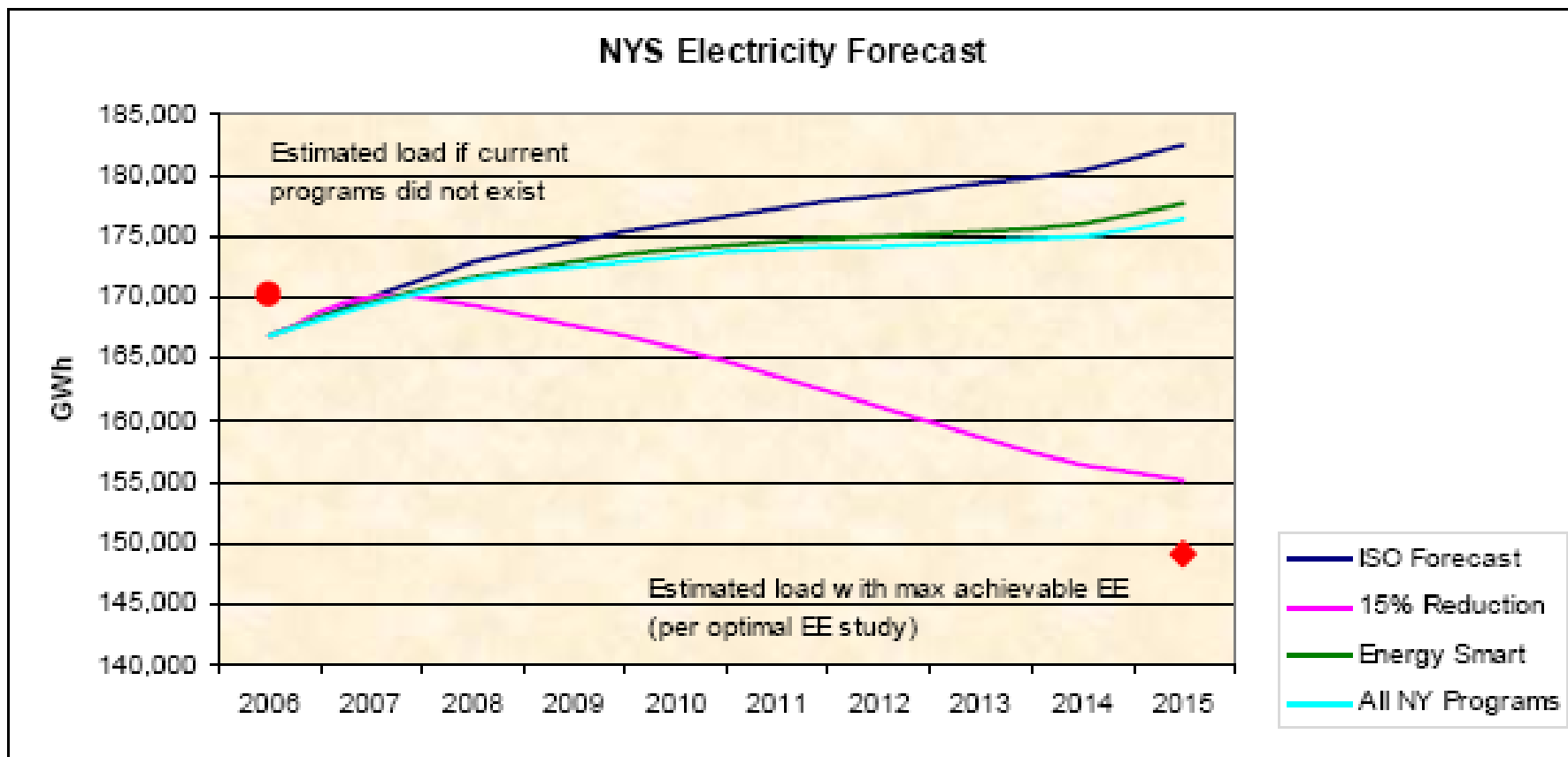
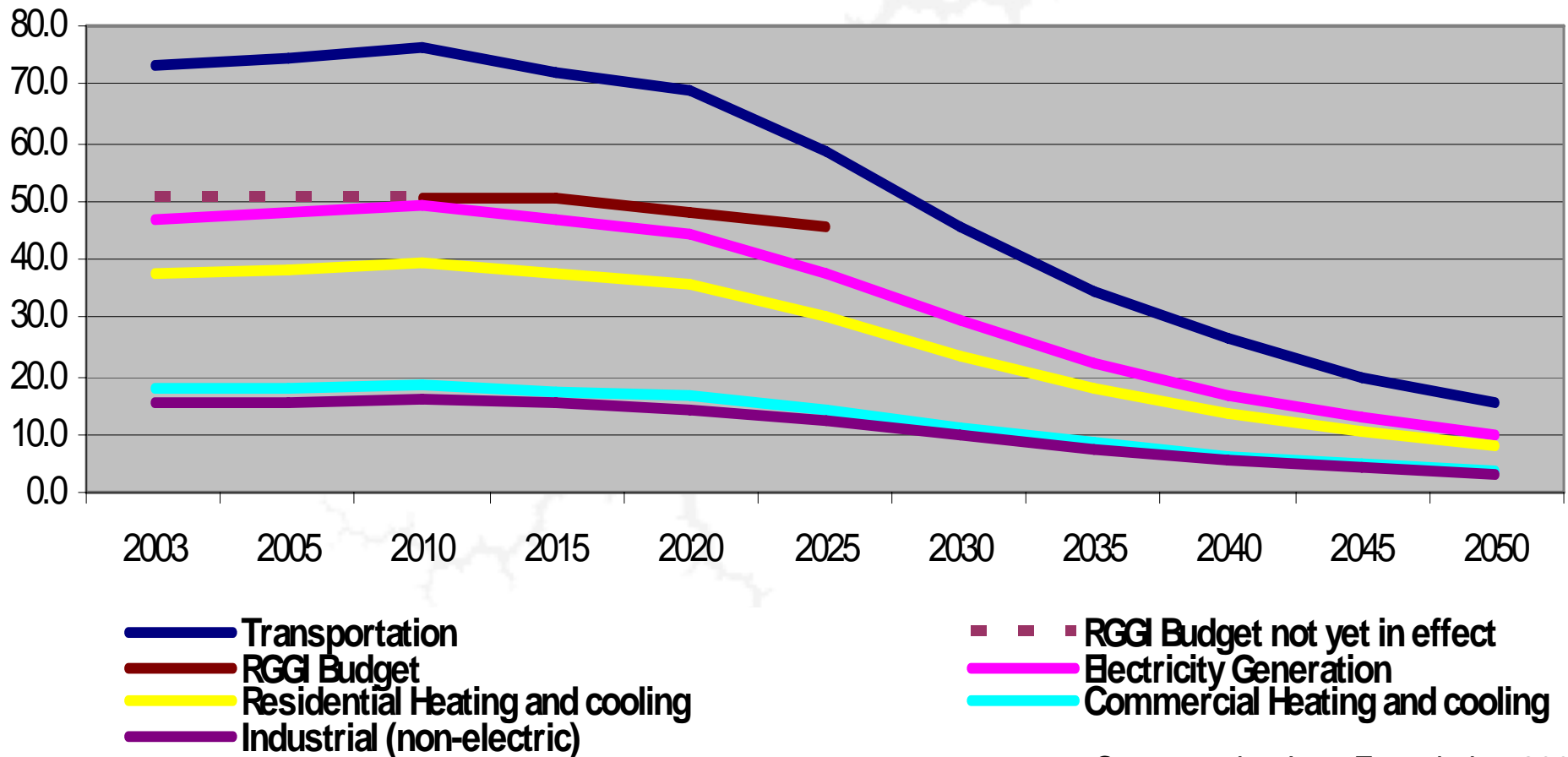


Figure 8: A graph showing the energy impacts of New York's "15 By 15" approach (15% energy reduction by 2015).

The Big Future Issue: Climate

New England Greenhouse Gas Emissions by Sector (Million Metric Tons CO₂ eqv.) - EA Inventory for 2003, CLF 2005 & 2010 projections based on "business as usual" and post 2010 decreases to reach 80% reductions by 2050





QUESTIONS?

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