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# Avoided Energy Supply Costs in New England: 2013 Report

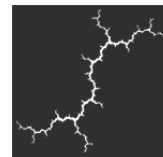
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Prepared for the Avoided-Energy-Supply-Component  
(AESC) Study Group

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**Exhibit 7-2. Hedged Capacity Requirement by State (MW)**

	IOU Contracts						Owned	Hedged Public Utilities Capacity						Capacity Hedged						
	CT	MA	ME	NH	RI	VT	PSNH	CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT	
Percent sales by public utilities								4.03%	9.73%	2.69%	1.27%	0.53%								
2014	1,296	230		92	87	961	1,131	232	1,004	44	26	8		1,304	1,053	37	100	81	820	
2015	1,296	230		89	87	822	1,131	199	864	37	22	7		1,276	933	32	95	80	701	
2016	1,296	244		89	87	800	1,131	195	849	37	22	7		1,272	933	31	94	80	683	
2017	1,296	263		88	87	777	1,131	190	828	36	21	7		1,268	931	30	93	80	663	
2018	1,296	194		88	87	777	1,131	189	826	35	21	7		1,267	871	30	93	80	663	
2019	1,296	194		79	87	790	1,131	193	846	36	22	7		1,270	887	31	86	80	674	
2020	1,196	147		75	87	785	1,131	191	841	36	22	7		1,183	843	31	82	80	670	
2021	1,196	147		75	87	754	1,035	183	808	34	21	6		1,176	815	29	82	80	643	
2022	1,196	147		72	87	733	1,035	177	787	33	20	6		1,172	797	29	79	79	626	
2023	1,196	147		68	87	733	1,035	177	788	33	20	6		1,171	798	29	75	79	626	
2024	1,196	140		59	87	733	1,035	176	789	33	20	6		1,171	793	29	67	79	626	
2025	1,136	140		59	87	733	1,035	176	790	33	20	6		1,119	794	28	67	79	626	

- Notes:
1. Connecticut IOU contracts from spreadsheet provided by Brian Rice (4/24/2013)
  2. Massachusetts IOU contracts from AESC 2011 (NGrid) and spreadsheet provided by Brian Rice (4/24/2013) (WMECo and NStar)
  3. New Hampshire IOU (PSNH) contracts from spreadsheet provided by Brian Rice (4/24/2013)
  4. Rhode Island IOU contracts from AESC 2011
  5. Vermont contracts from spreadsheet provided by Sean Foley, VT PSD (4/30/2013)
  6. PSNH owned capacity from CELT 2013.
  7. Share of load served by public utilities (municipal and cooperative) from 2011 EIA 861 data, adjusted per SEA.
  8. Capacity hedged = sum of contracts, owned and public utilities.

Exhibit 7-3 shows the results from subtracting the hedged load from total load by state, to derive the load subject to the market. As noted above, DRIPE values are zero for 2014 through 2016, so the loads in those years do not matter for this analysis.

**Exhibit 7-3. Load Subject to Market Capacity Prices by State (MW)**

Capacity Hedged						Peak Load 2013 AESC						Peak Load Subject to FCM Price					
CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT
1,304	1,053	37	100	81	820	7,049	12,626	1,991	2,471	1,870	1,003	5,745	11,572	1,954	2,371	1,789	183
1,276	933	32	95	80	701	7,192	12,947	2,032	2,544	1,903	1,022	5,917	12,014	2,000	2,450	1,823	321
1,272	933	31	94	80	683	7,331	13,264	2,068	2,613	1,942	1,037	6,059	12,331	2,037	2,519	1,862	355
1,268	931	30	93	80	663	7,489	13,521	2,105	2,661	1,981	1,052	6,221	12,590	2,074	2,568	1,901	389
1,267	871	30	93	80	663	7,592	13,742	2,136	2,705	2,015	1,072	6,325	12,872	2,106	2,612	1,935	409
1,270	887	31	86	80	674	7,671	13,949	2,162	2,748	2,043	1,082	6,400	13,062	2,131	2,662	1,964	408
1,183	843	31	82	80	670	7,749	14,151	2,188	2,787	2,072	1,097	6,565	13,308	2,158	2,704	1,992	427
1,176	815	29	82	80	643	7,822	14,353	2,214	2,825	2,101	1,112	6,646	13,538	2,185	2,743	2,021	468
1,172	797	29	79	79	626	7,907	14,566	2,242	2,867	2,132	1,127	6,735	13,769	2,214	2,788	2,052	501
1,171	798	29	75	79	626	7,992	14,783	2,271	2,910	2,163	1,142	6,821	13,985	2,242	2,835	2,084	516
1,171	793	29	67	79	626	8,078	15,001	2,299	2,953	2,195	1,157	6,907	14,208	2,270	2,886	2,115	532
1,119	794	28	67	79	626	8,164	15,222	2,327	2,997	2,226	1,173	7,045	14,429	2,299	2,930	2,147	547

Load subject to market price = peak – Hedged capacity ÷ 1.172



### Exhibit 7-5. Energy DRIPE Coefficients by State

	Off Peak (18,711 hours)						On Peak (16,352 hours)					
<b>Normalized LMP vs. Normalized (State Load, Rest-of-Pool)</b>												
	CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT
<b>Adjusted R<sup>2</sup></b>	51.1%	50.2%	47.5%	50.9%	43.5%	51.1%	44.0%	42.6%	42.4%	43.8%	43.2%	47.2%
<b>Intercept</b>	-0.202	-0.181	-0.203	-0.099	-0.109	-0.108	-1.288	-1.253	-1.189	-1.185	-1.163	-0.913
<b>State Load</b>	<b>0.788</b>	<b>0.809</b>	-0.207	<b>0.488</b>	<b>0.245</b>	-0.263	0.473	<b>1.818</b>	-0.299	<b>0.653</b>	<b>0.713</b>	-0.594
<b>Rest-of-Pool Load</b>	<b>0.414</b>	<b>0.372</b>	1.411	<b>0.611</b>	<b>0.864</b>	1.371	1.815	<b>0.435</b>	2.489	<b>1.532</b>	<b>1.450</b>	2.507
<b>t-stat State load</b>	23.23	18.96	-19.10	23.22	10.78	-17.82	11.81	32.19	-18.62	22.53	23.67	-32.42
<b>t-stat ROP load</b>	11.3	9.7	92.1	24.8	35.4	89.8	40.2	7.9	99.7	44.1	37.4	118.0
<b>Normalized LMP vs. Normalized ISO Load</b>												
	CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT
<b>Adjusted R<sup>2</sup></b>	50.6%	50.1%	45.5%	50.0%	43.3%	50.0%	44.0%	42.0%	39.5%	43.0%	42.0%	42.8%
<b>Intercept</b>	0.234	-0.153	-0.151	-0.143	-0.110	-0.144	-1.282	-1.235	-1.195	-1.199	-1.232	-1.191
<b>ISO Pool Load</b>	1.234	1.152	<b>1.151</b>	1.143	1.110	<b>1.144</b>	<b>2.282</b>	2.235	<b>2.195</b>	2.199	2.232	<b>2.191</b>
<b>t-stat ISO load</b>	138.6	137.2	125.0	136.9	119.6	136.7	113.4	108.7	103.4	111.0	108.9	110.7

The results are remarkably stable across states. A 1.0 percent reduction in load throughout New England results in a 1.1 to 1.2 percent reduction in off-peak price, and a 1.9 to 2.2 percent reduction in peak price.

As is true for capacity DRIPE, energy DRIPE is applicable only to energy purchased at market prices, and the effect of DRIPE decays over time. In addition, while energy DRIPE starts immediately (there is no floor price in the energy market), most energy purchased at market price for retail load is priced months or a couple years in advance of delivery, through utility contracting for standard service or a third-party contract. Hence, the magnitude of energy DRIPE is reduced in the early years following measure implementation.

Exhibit 7-6 summarizes the hedged (not subject to changes in market prices) energy obligation in each state, including the following:<sup>232</sup>

- IOU contracts (pre-restructuring legacy contracts, post-restructuring reliability contracts in Connecticut, renewables purchases, and utility-owned resources in Vermont);<sup>233</sup>

<sup>232</sup> These factors are the energy equivalents of the factors discussed in the Capacity DRIPE section.

<sup>233</sup> Based on the energy-modeling runs, we assume that the Connecticut peaker contracts would operate at a 6 percent capacity factor through 2019 and at 4 percent thereafter. The Vermont resources include a large purchase from HQ that is partially tied to market prices, with lags and fixed components. Since the pricing terms are not public, we assumed that 50 percent of the Vermont HQ contract price is tied to current market prices.

**Exhibit 7-7. Load Subject to Market Energy Prices, by State, 2014 installations, GWh**

	Energy Hedged						Energy 2013 AESC						Short-term Contract	Energy Subject to LMP, 2014 EE					
	CT	MA	ME	NH	RI	VT	CT	MA	ME	NH	RI	VT		CT	MA	ME	NH	RI	VT
<b>2014</b>	1,510	6,935	294	3,885	802	4,135	32,966	61,791	11,695	12,248	8,405	6,091	80%	6,291	10,971	2,280	1,673	1,521	391
<b>2015</b>	1,167	6,399	214	3,832	790	3,612	33,428	62,776	11,901	12,458	8,526	6,166	20%	25,808	45,102	9,350	6,901	6,189	2,044
<b>2016</b>	1,098	6,573	198	3,823	788	3,524	33,869	63,737	12,082	12,644	8,658	6,232	10%	29,494	51,447	10,696	7,939	7,083	2,437
<b>2017</b>	1,034	6,293	183	3,815	786	3,500	34,261	64,642	12,233	12,804	8,780	6,297		33,227	58,350	12,051	8,990	7,994	2,797
<b>2018</b>	1,033	6,298	183	3,813	786	3,500	34,623	65,513	12,375	12,950	8,897	6,373		33,590	59,215	12,192	9,137	8,111	2,872
<b>2019</b>	1,058	6,422	189	3,748	787	3,618	34,975	66,358	12,506	13,101	9,003	6,443		33,917	59,936	12,317	9,352	8,217	2,825
<b>2020</b>	964	6,359	187	3,485	787	3,600	35,321	67,189	12,627	13,251	9,095	6,519		34,357	60,830	12,440	9,766	8,309	2,919
<b>2021</b>	929	6,070	179	3,481	785	3,444	35,673	68,004	12,758	13,402	9,182	6,594		34,744	61,934	12,579	9,921	8,397	3,151
<b>2022</b>	928	6,074	179	3,464	785	3,443	36,030	68,862	12,891	13,554	9,284	6,669		35,102	62,788	12,713	10,091	8,499	3,226
<b>2023</b>	892	5,689	170	3,430	784	3,283	36,389	69,727	13,025	13,708	9,387	6,744		35,497	64,039	12,855	10,279	8,603	3,461
<b>2024</b>	891	5,693	170	3,356	784	3,283	36,749	70,600	13,160	13,863	9,491	6,820		35,859	64,907	12,989	10,507	8,706	3,536
<b>2025</b>	881	5,656	168	3,355	784	3,242	37,112	71,479	13,295	14,020	9,595	6,895		36,231	65,823	13,127	10,664	8,811	3,653

