



Draft Final 2018 CELT ISO-NE and States Annual Energy and Seasonal Peak Forecasts

*NEPOOL Load Forecast Committee
Teleconference*

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Outline

- Introduction / Overview
- Energy Forecast (Region and States)
- Summer Peak Demand Forecast (Region and States)
- Winter Peak Demand Forecast (Region and States)
- Next Steps
- Appendix (State Energy and Demand Tables)



Introduction

Explanation of Gross and Net Load Forecasts

- The ISO annually develops 10-year forecasts of load that are published as part of the [Capacity, Energy, Loads, and Transmission \(CELT\) report](#); the ISO also publishes additional forecast information as part of the annual forecast process, which is made available at: <https://www.iso-ne.com/system-planning/system-forecasting/load-forecast/>
- ISO first develops “gross” load forecasts that reflect a forecast of load without reductions from passive demand resources (PDR) and behind-the-meter PV (BTM PV)
 - PDR and BTM PV are reconstituted into historical hourly loads used to estimate gross load forecast models
 - This ensures the proper accounting of PDR and BTM PV, which are both forecast separately
 - Reconstitution also includes load reductions from active demand resources
- In this presentation, PDR will be referred to as energy efficiency (EE)
- “Net” load forecasts are developed by subtracting EE and BTM PV from the gross forecasts
 - Historical net loads include reconstitution of load reductions from active demand resources only
 - Net loads are intended to be representative of energy and loads observed in New England in real-time



Introduction

Categorization of Forecast Changes

- In general, changes reflected in the draft 2018 load forecast relative to the 2017 CELT can be divided into the following three components:
 1. Gross load forecast updates:
 - a) Updated macroeconomic forecast from Moody's
 - b) Updated historical data used to estimate gross load forecasts
 2. Changes to the EE forecast
 3. Changes to the BTM PV forecast

2018 Load Forecast Development Timeline

- Activities completed to date:
 - October 2017 – Received Moody’s Macroeconomic Forecast
 - November 2017 – Published Moody’s forecast to LFC website
 - https://www.iso-ne.com/static-assets/documents/2017/11/econ_variable_comp_2017fcst_vs_2016fcst.xlsx
 - November 16, 2017 – Moody’s presentation at Planning Advisory Committee (PAC)
 - https://www.iso-ne.com/static-assets/documents/2017/11/a3_moody_2017_economic_update.pdf
 - December 13, 2017 – Moody’s forecast, draft energy forecast, 2017 summer peak review
 - https://www.iso-ne.com/static-assets/documents/2017/12/2018_prelim_energy.pdf
 - February 7, 2018 – Draft of 2018 Annual Energy and Summer Peak Forecast presented to LFC
 - <https://www.iso-ne.com/static-assets/documents/2018/02/02.07.18.lfc.mtg.exhibit.pdf>
 - March 15, 2018 – Draft 2018 CELT ISO-NE Annual Energy and Summer Peak Forecast presented to PAC
 - https://www.iso-ne.com/static-assets/documents/2018/03/a3_draft_2018_celt_iso_ne_annual_energy_and_summer_peak_forecast.pdf
- LFC meetings
 - **TODAY** – 2018 CELT ISO-NE Annual Energy and Summer/Winter Peak Forecast, ISO-NE and states
 - July 2018 – Summer LFC meeting (date TBD)
- PAC meetings
 - April 26, 2018
- May 1, 2018 – Final forecast published in 2018 CELT report



2018 Gross Energy Forecast

- Energy models were estimated using annual energy from 1990-2017 (28 years)
- Energy models use the updated Moody's macroeconomic forecast published in October 2017
- The energy forecast is an input into the peak demand forecast
- Regional forecast model details and statistics will be posted on the Load Forecast website
 - File will be named “2018 Regional and State Energy & Peak Model Details.xlsx” and will be available at: <https://www.iso-ne.com/system-planning/system-forecasting/load-forecast>



2018 Draft Peak Demand Forecast

- Same peak demand model structure as 2017 CELT forecast
- Regional peak demand model was estimated with daily peaks from January 1, 2003 to January 31, 2018 (15 years)
 - July and August are combined for summer seasonal peak models
 - December and January are combined for winter seasonal peak models
- Regional forecast model details and statistics will be posted on the Load Forecast website
 - Refer to slide 6 for link & filename

Draft 2018 CELT Forecast Highlights

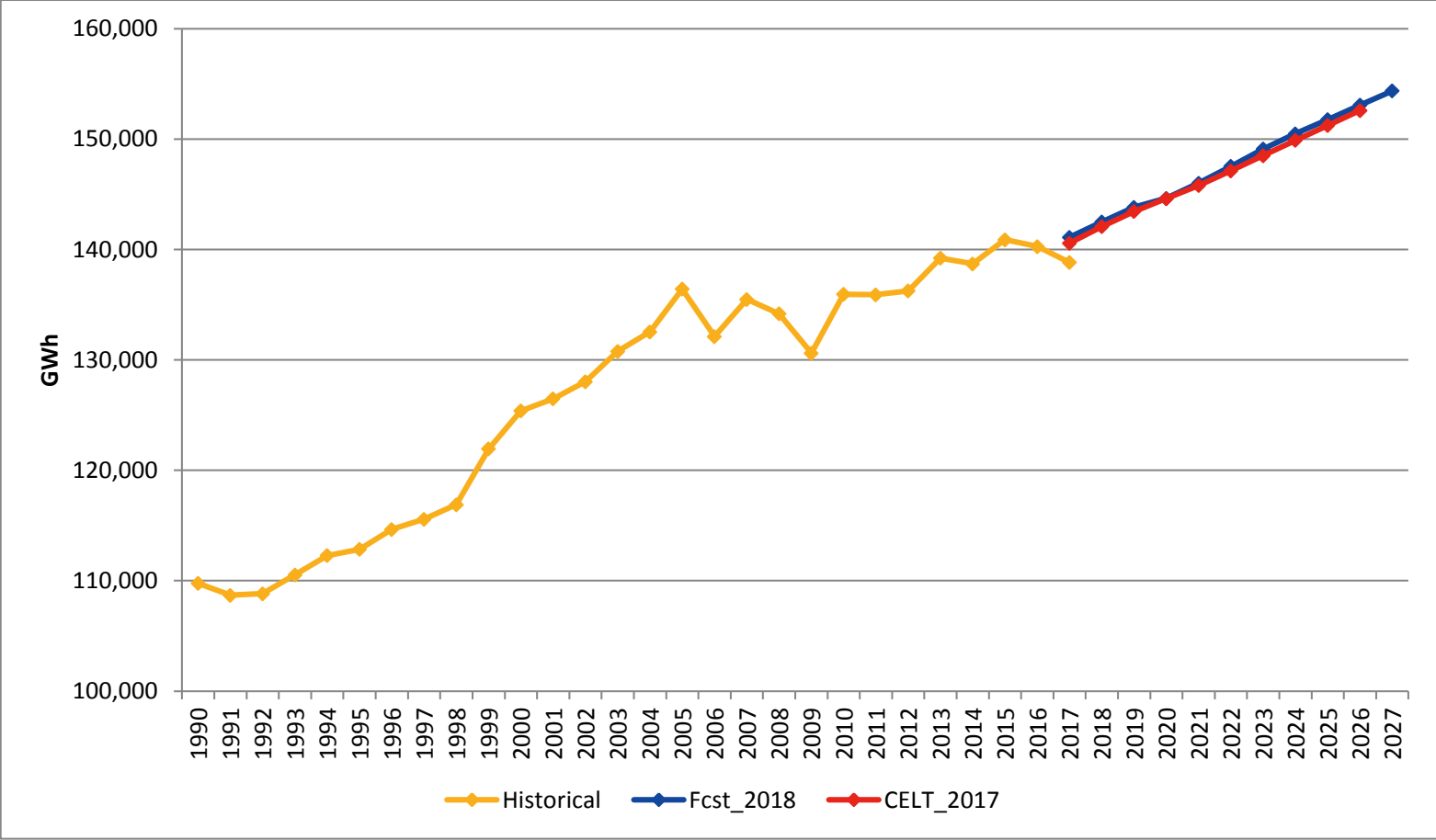
- Compared to 2017 CELT forecasts, changes reflected in the draft 2018 CELT include:
 - Macroeconomic outlook forecasts approximately the same economic growth in New England as last year
 - Gross load forecasts:
 - Annual energy is approximately 0.3% higher in 2026
 - Summer 50/50 is approximately 2.7% lower in 2026
 - Summer 90/10 is approximately 2.8% lower in 2026
 - The BTM PV forecast is approximately 0.4% lower in 2026
 - The EE summer forecast is approximately 12.9% higher in 2026
 - Net load forecasts
 - Annual energy forecast is approximately 3.7% lower in 2026
 - Summer 50/50 forecast is approximately 5.4% lower in 2026
 - Summer 90/10 forecast is approximately 5.3% lower in 2026



GROSS AND NET ENERGY FORECASTS

New England and States

ISO-NE Gross Energy - Historical and Forecast

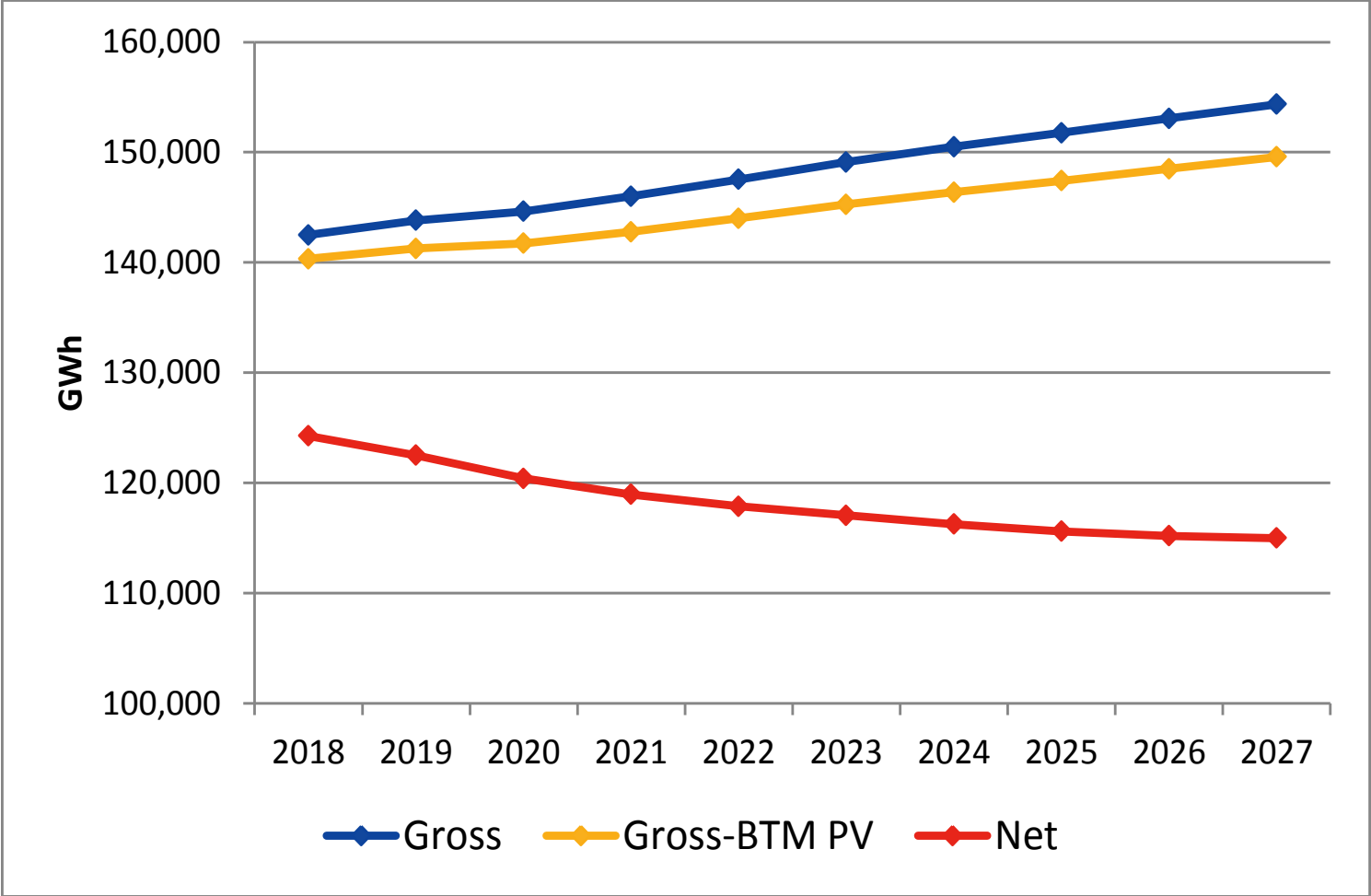


2018 (+0.3%, +410 GWh)

2022 (+0.3%, +411 GWh)

2026 (+0.3%, +479 GWh)

Draft 2018 CELT ISO-NE Energy Forecast



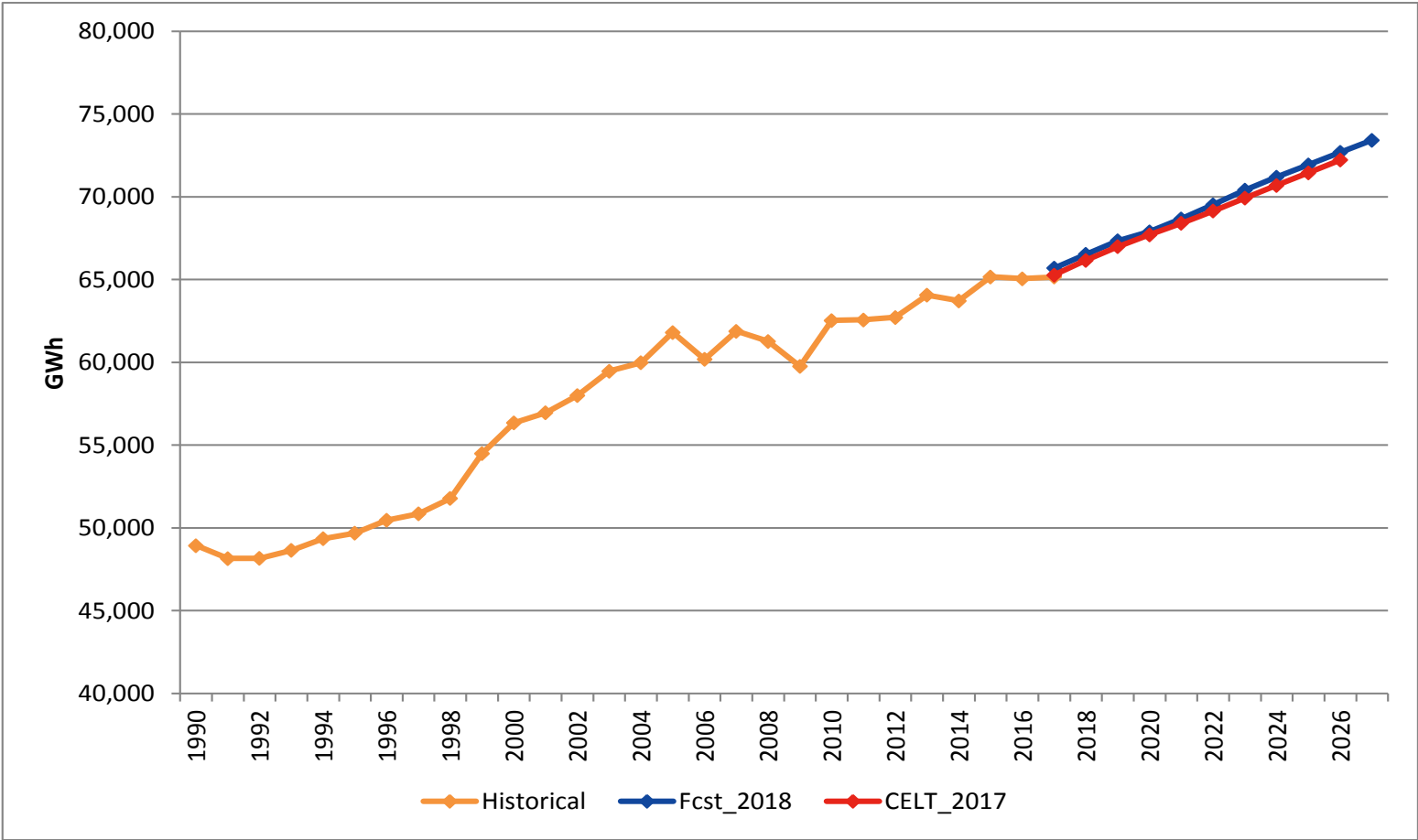
New England Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)				Change (GWh)			
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net
2018	142,488	2,162	16,074	124,252	142,078	2,373	13,279	126,426	410	-211	2,795	-2,174
2019	143,820	2,558	18,764	122,498	143,447	2,800	14,911	125,736	373	-242	3,853	-3,238
2020	144,634	2,906	21,332	120,395	144,611	3,133	17,038	124,440	23	-227	4,294	-4,045
2021	146,009	3,233	23,827	118,949	145,799	3,381	19,441	122,977	210	-148	4,386	-4,028
2022	147,538	3,540	26,128	117,870	147,127	3,609	21,659	121,859	411	-69	4,469	-3,989
2023	149,100	3,834	28,228	117,039	148,507	3,830	23,683	120,994	593	4	4,545	-3,955
2024	150,485	4,115	30,121	116,249	149,884	4,027	25,508	120,349	601	88	4,613	-4,100
2025	151,766	4,361	31,811	115,594	151,233	4,185	27,137	119,911	533	176	4,674	-4,317
2026	153,072	4,575	33,302	115,196	152,593	4,338	28,575	119,680	479	237	4,727	-4,484
2027	154,364	4,783	34,601	114,981								

Gross Energy - Historical and Forecast

Massachusetts



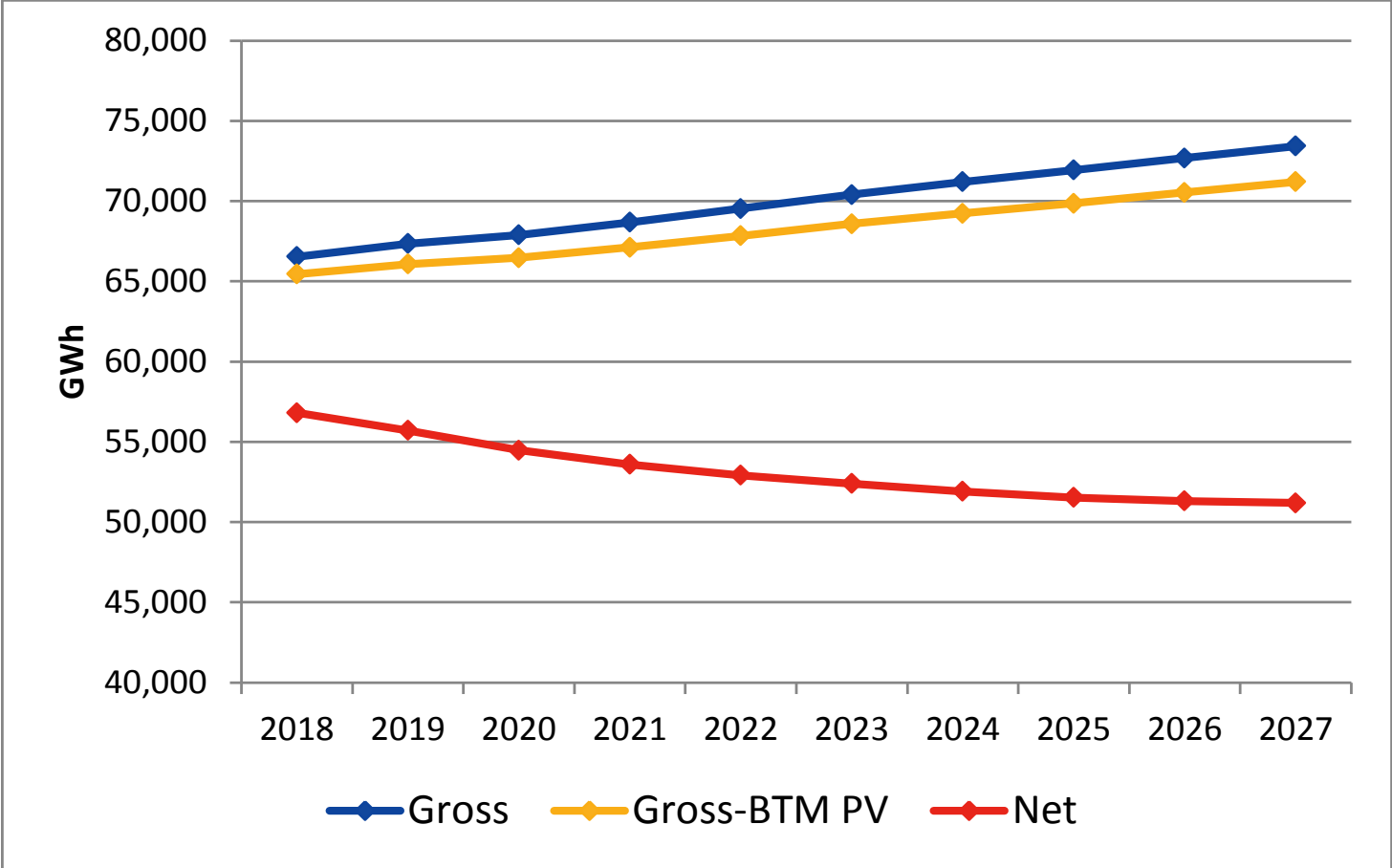
2018 (+0.6%, +369 GWh)

2022 (+0.5%, +380 GWh)

2026 (+0.6%, +458 GWh)

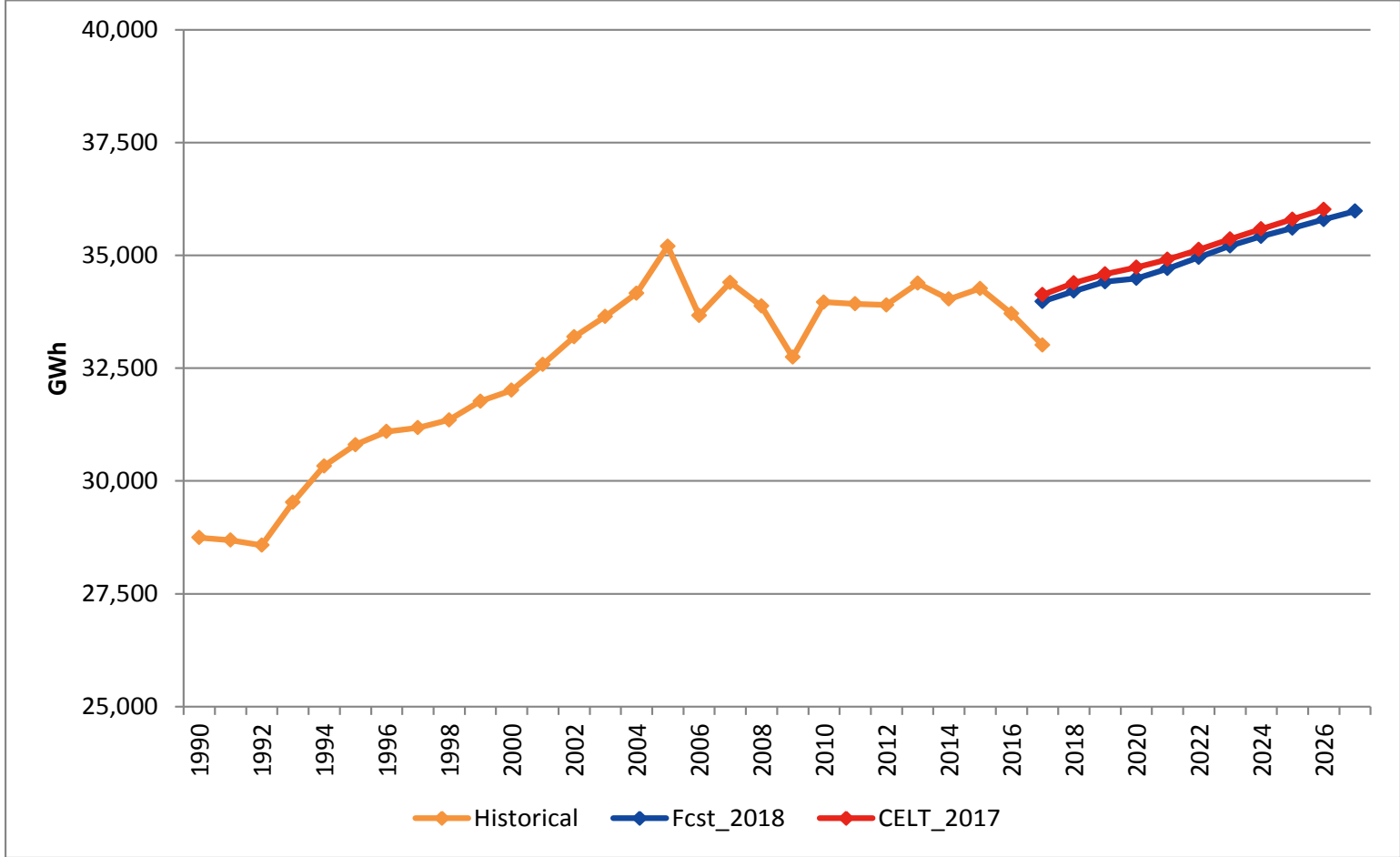
Draft 2018 CELT Energy Forecast

Massachusetts



Gross Energy - Historical and Forecast

Connecticut



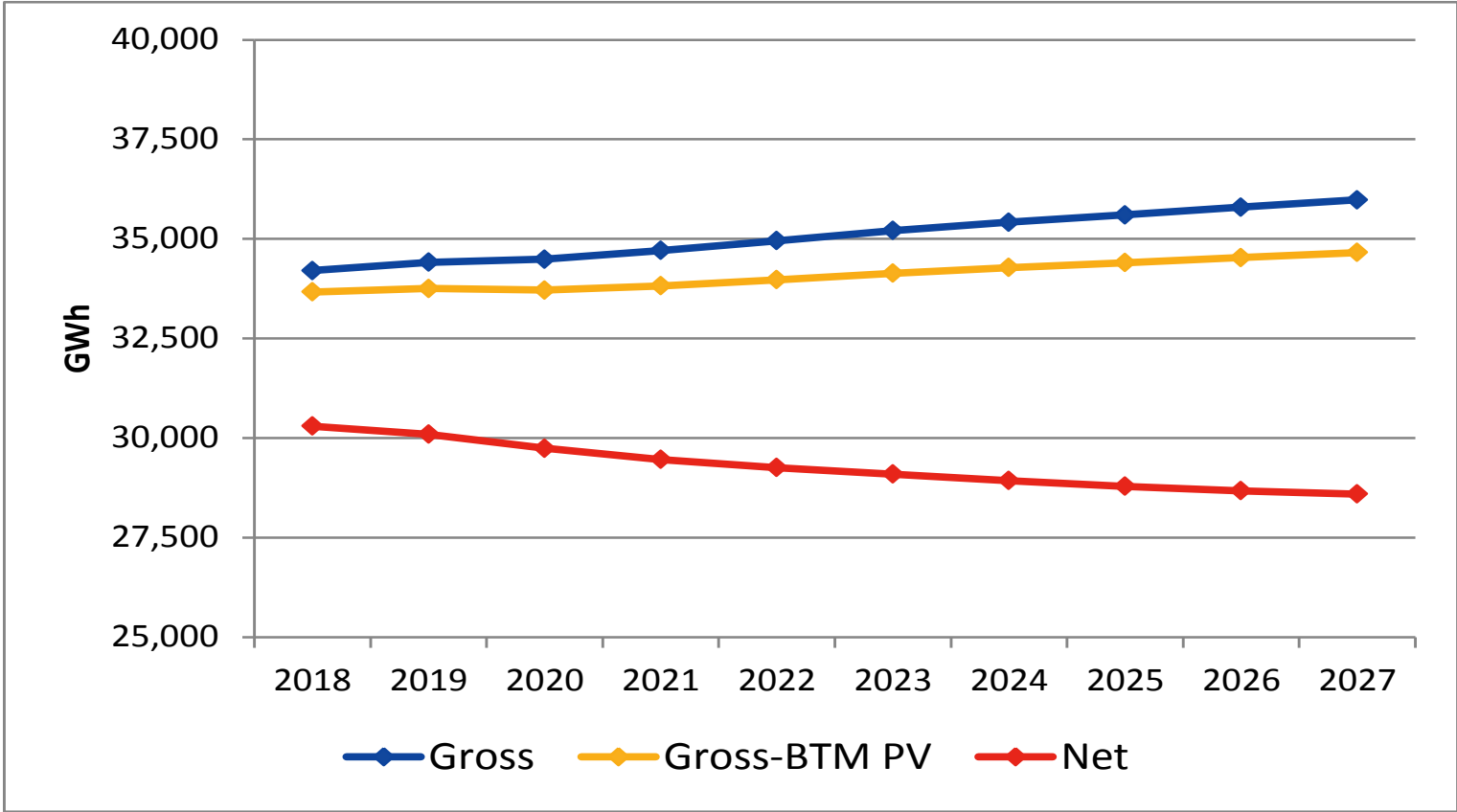
2018 (-0.5%, -185 GWh)

2022 (-0.5%, -173 GWh)

2026 (-0.6%, -223 GWh)

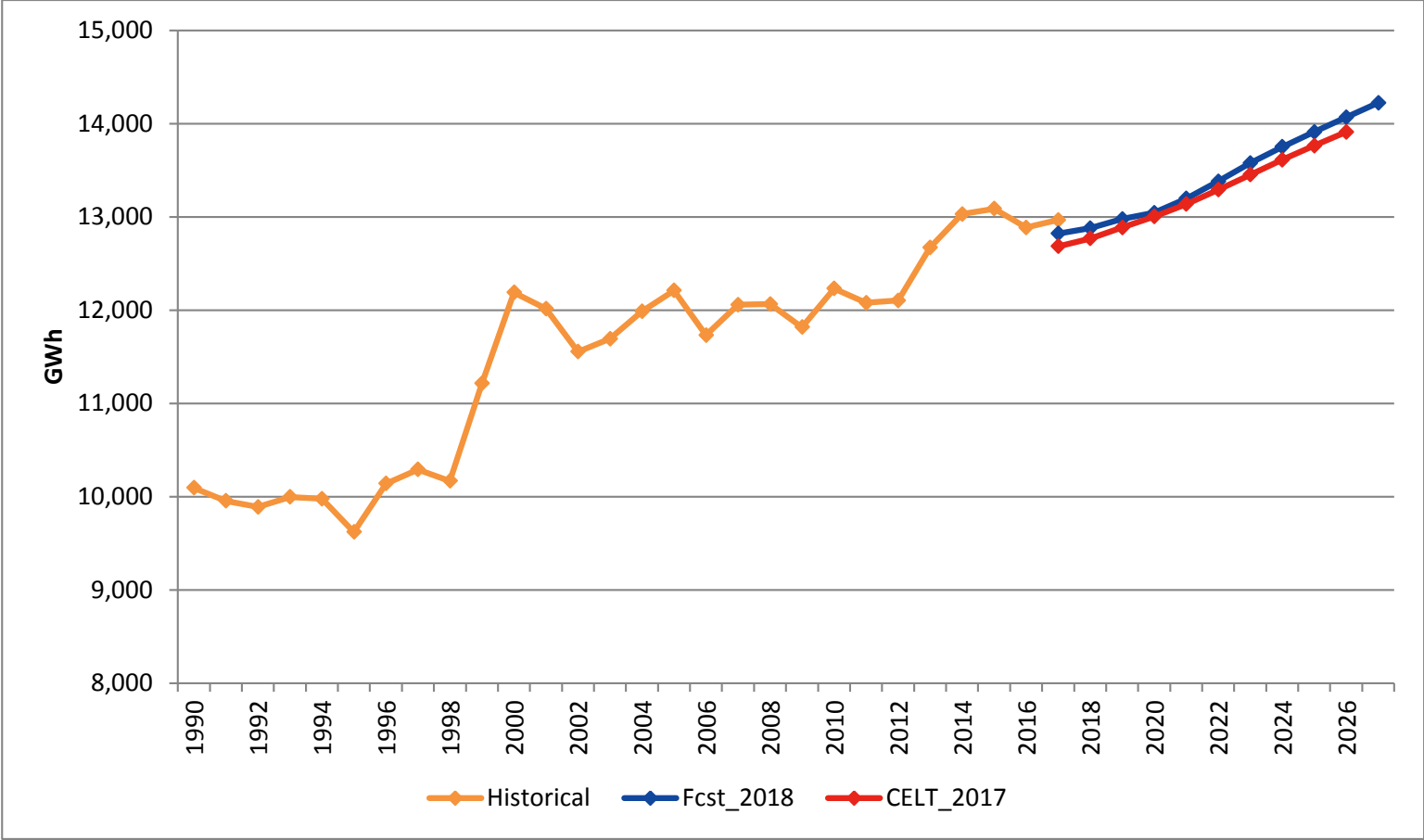
Draft 2018 CELT Energy Forecast

Connecticut



Gross Energy - Historical and Forecast

Maine



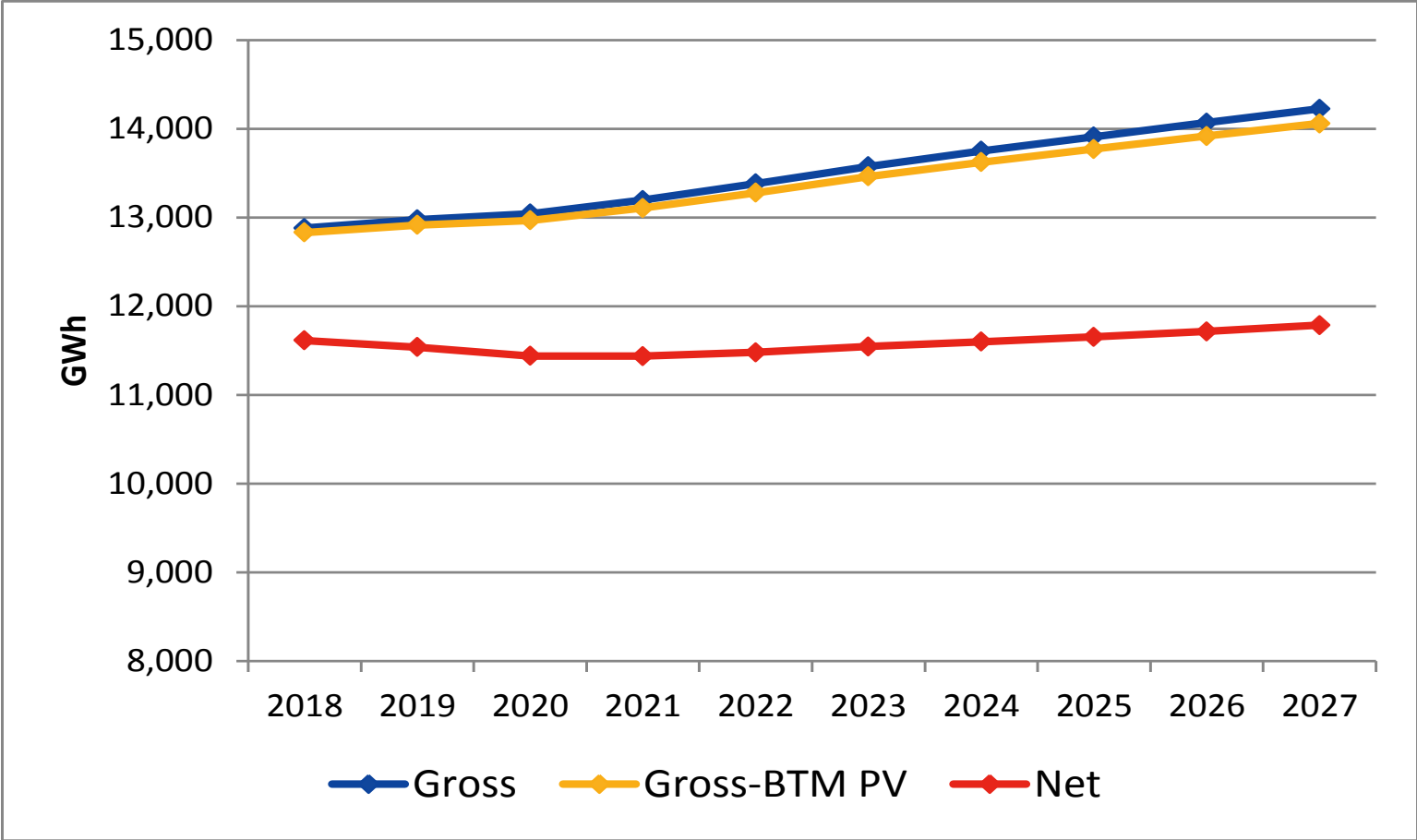
2018 (+0.9%, +110 GWh)

2022 (+0.7%, +90 GWh)

2026 (+1.1%, +157 GWh)

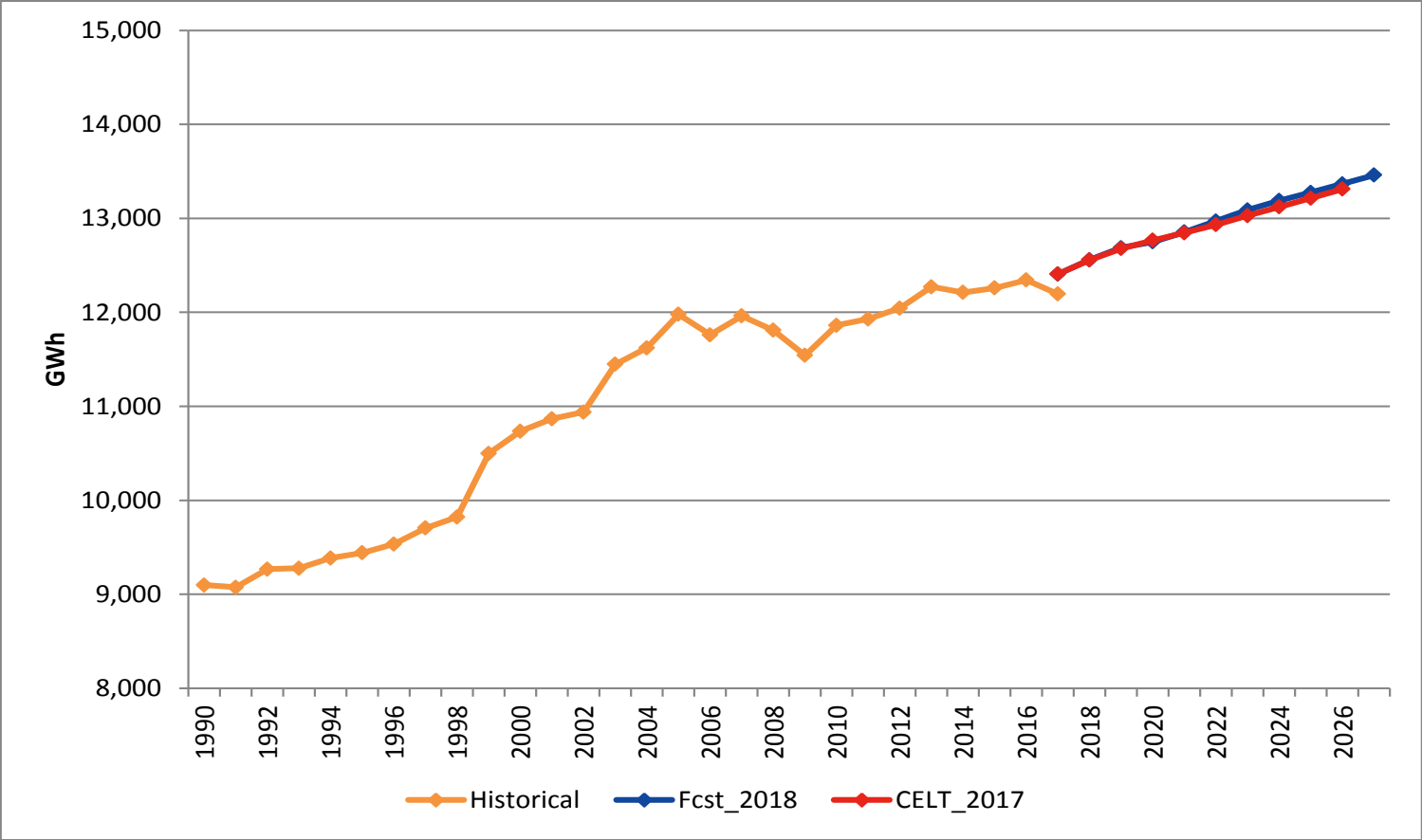
Draft 2018 CELT Energy Forecast

Maine



Gross Energy - Historical and Forecast

New Hampshire



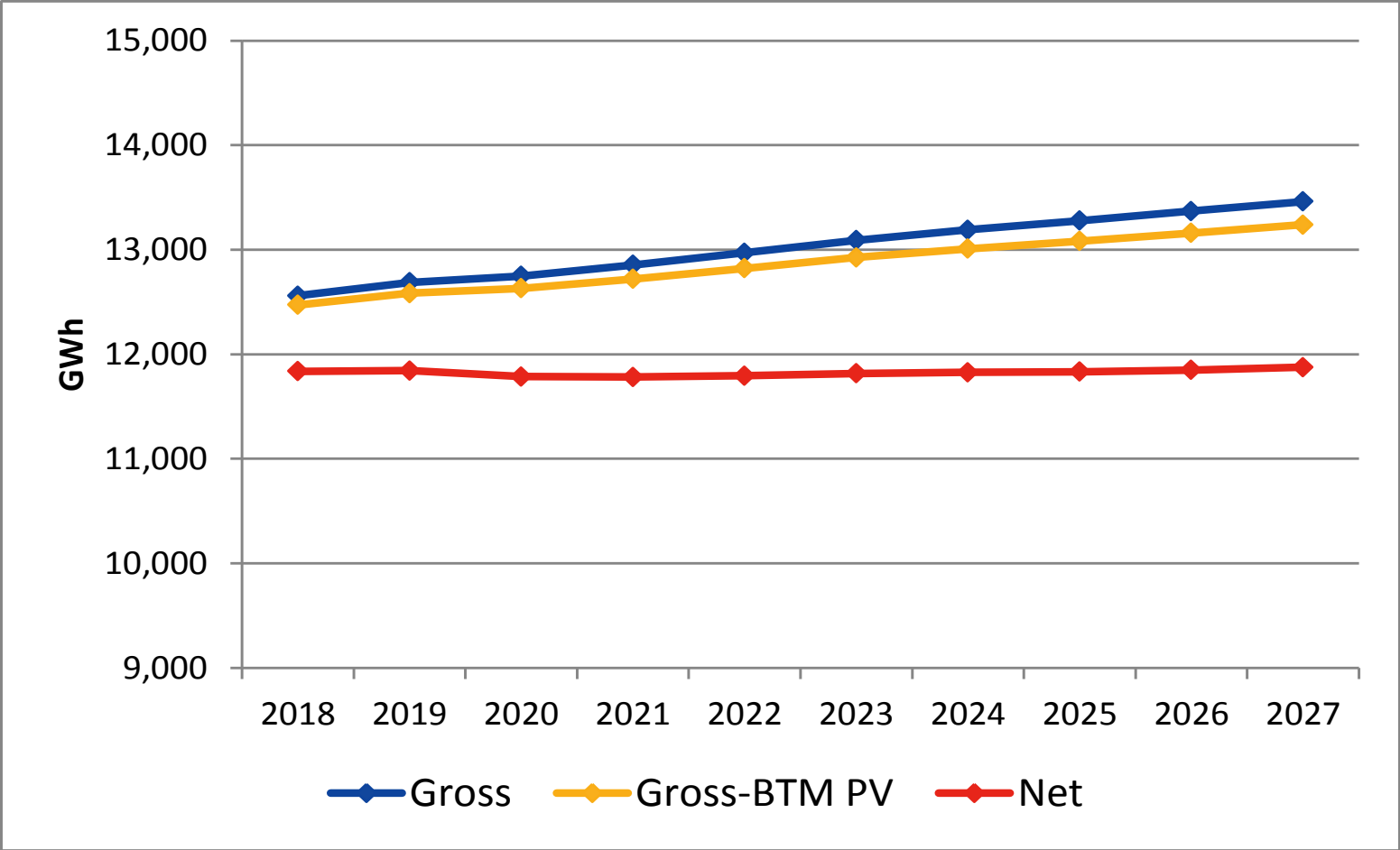
2018 (+0.0%, +2 GWh)

2022 (+0.3%, +38 GWh)

2026 (+0.4%, +57 GWh)

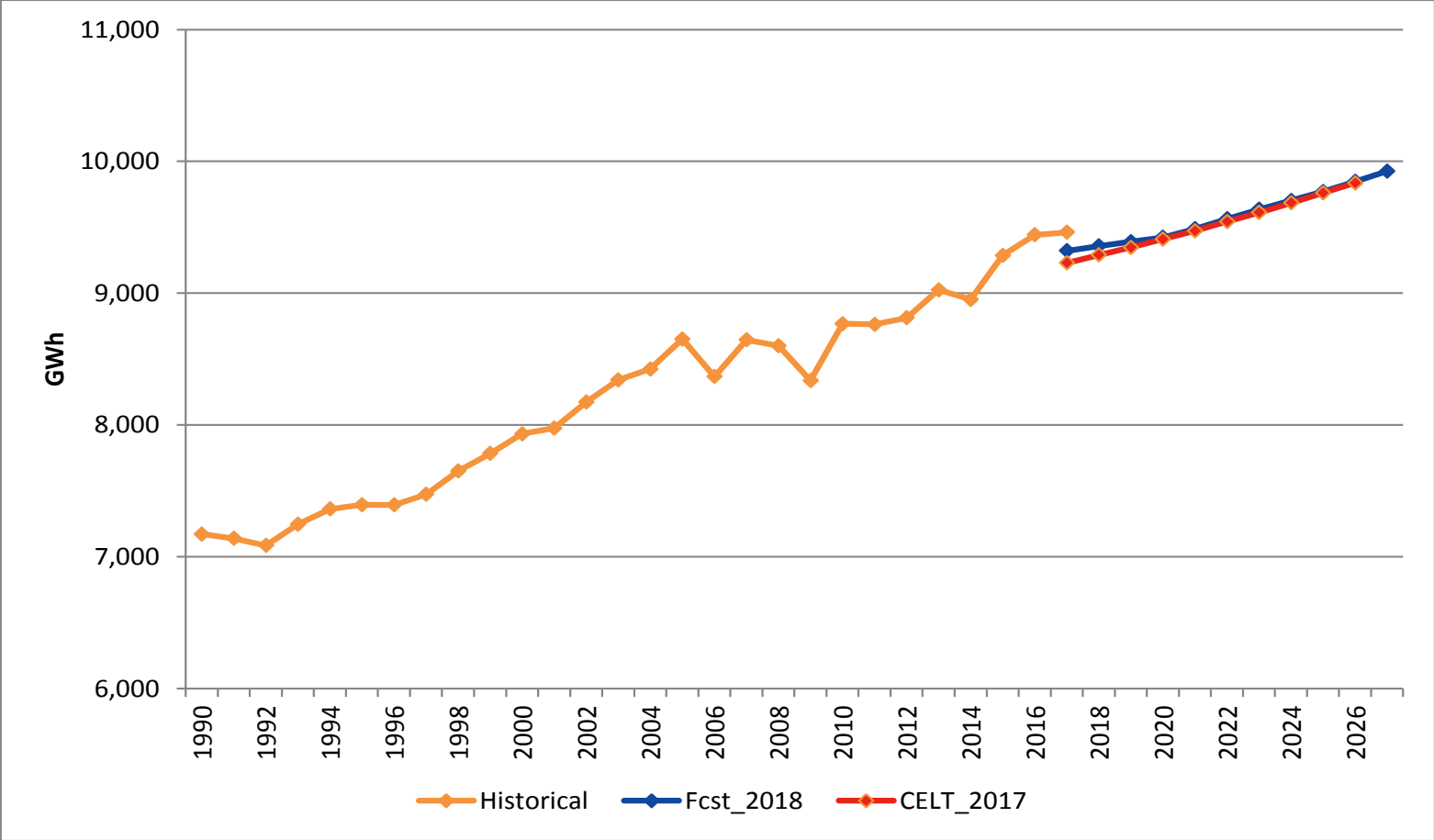
Draft 2018 CELT Energy Forecast

New Hampshire



Gross Energy - Historical and Forecast

Rhode Island



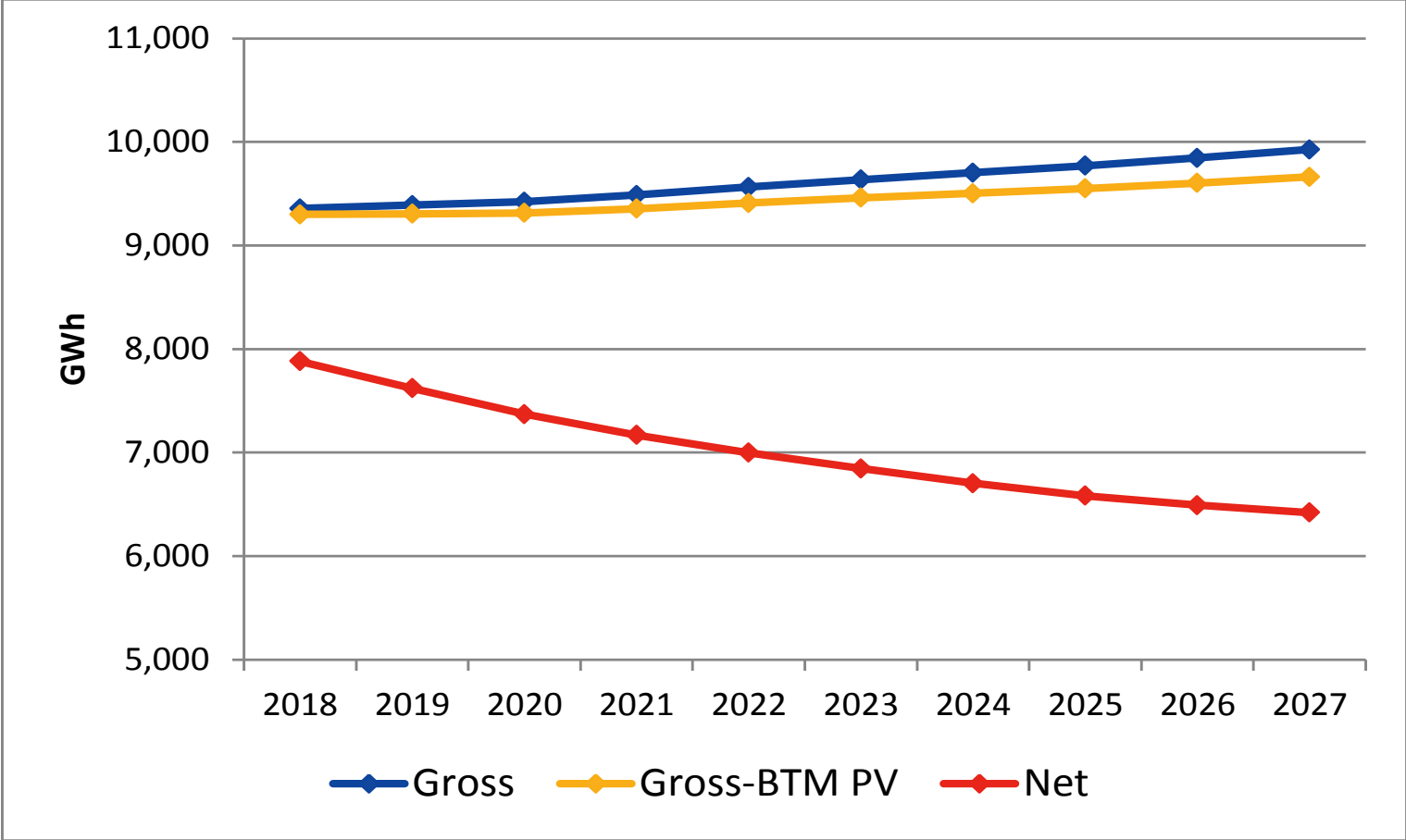
2018 (+0.7%, +682 GWh)

2022 (+0.2%, +21 GWh)

2026 (+0.1%, +10 GWh)

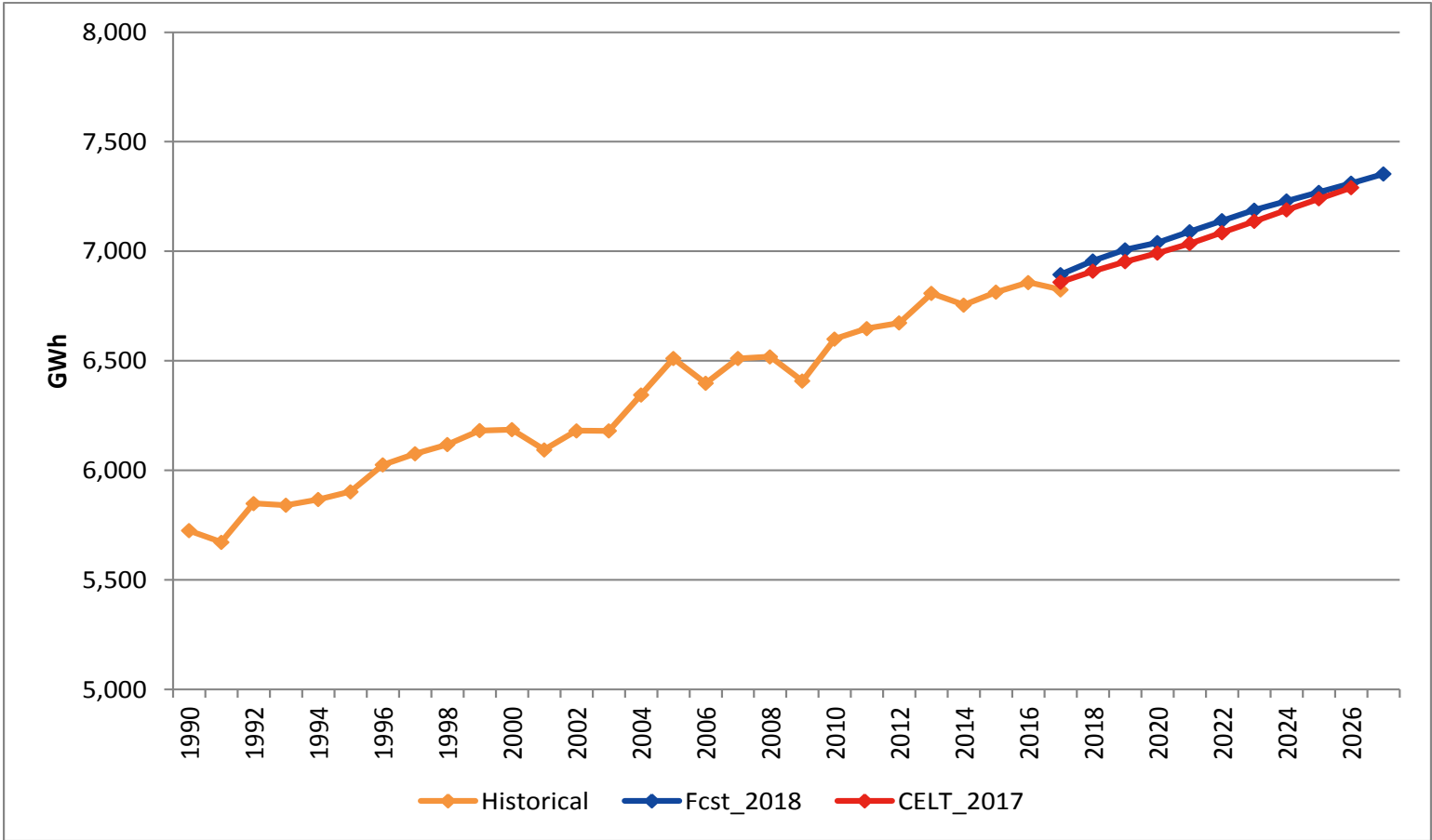
Draft 2018 CELT Energy Forecast

Rhode Island



Gross Energy - Historical and Forecast

Vermont



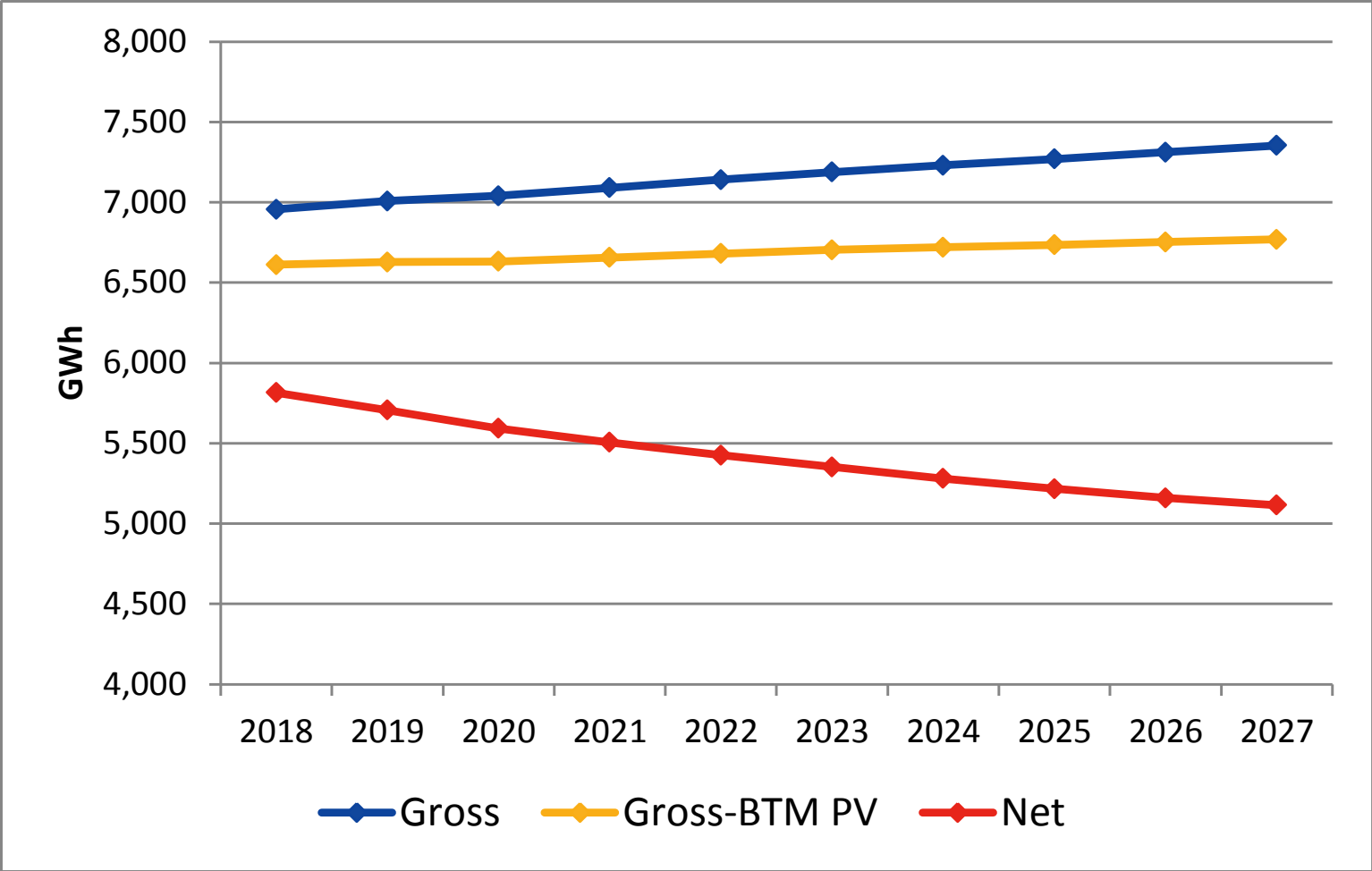
2018 (+0.7%, +47 GWh)

2022 (+0.8%, +55 GWh)

2026 (+0.3%, +20 GWh)

Draft 2018 CELT Energy Forecast

Vermont

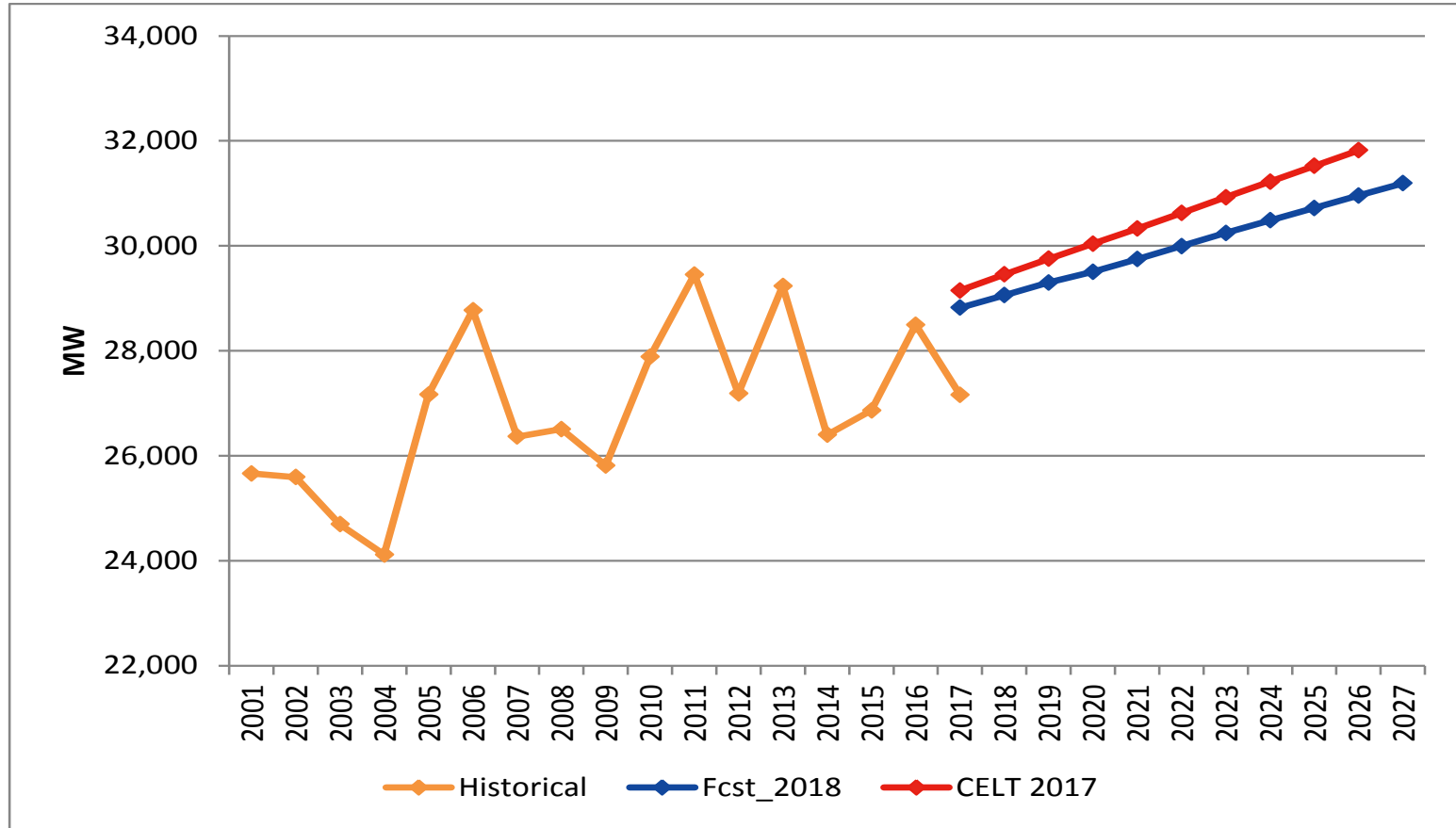


2018 SUMMER PEAK DEMAND FORECAST

New England and States

Draft 2018 CELT Gross Summer 50/50 Peak Demand Forecast

New England



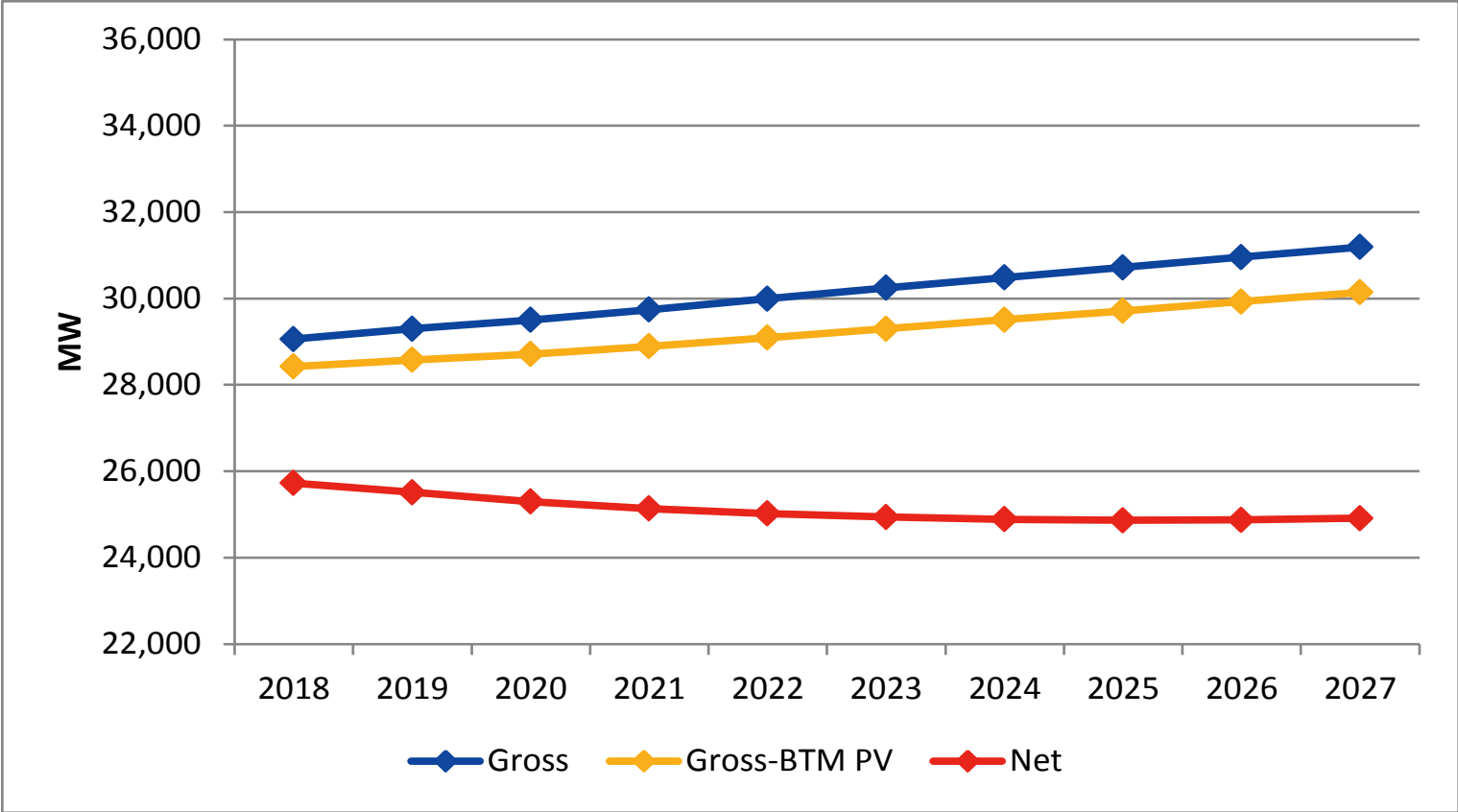
2018 (-1.3%, -394 MW)

2022 (-2.1%, -629 MW)

2026 (-2.7%, -863 MW)

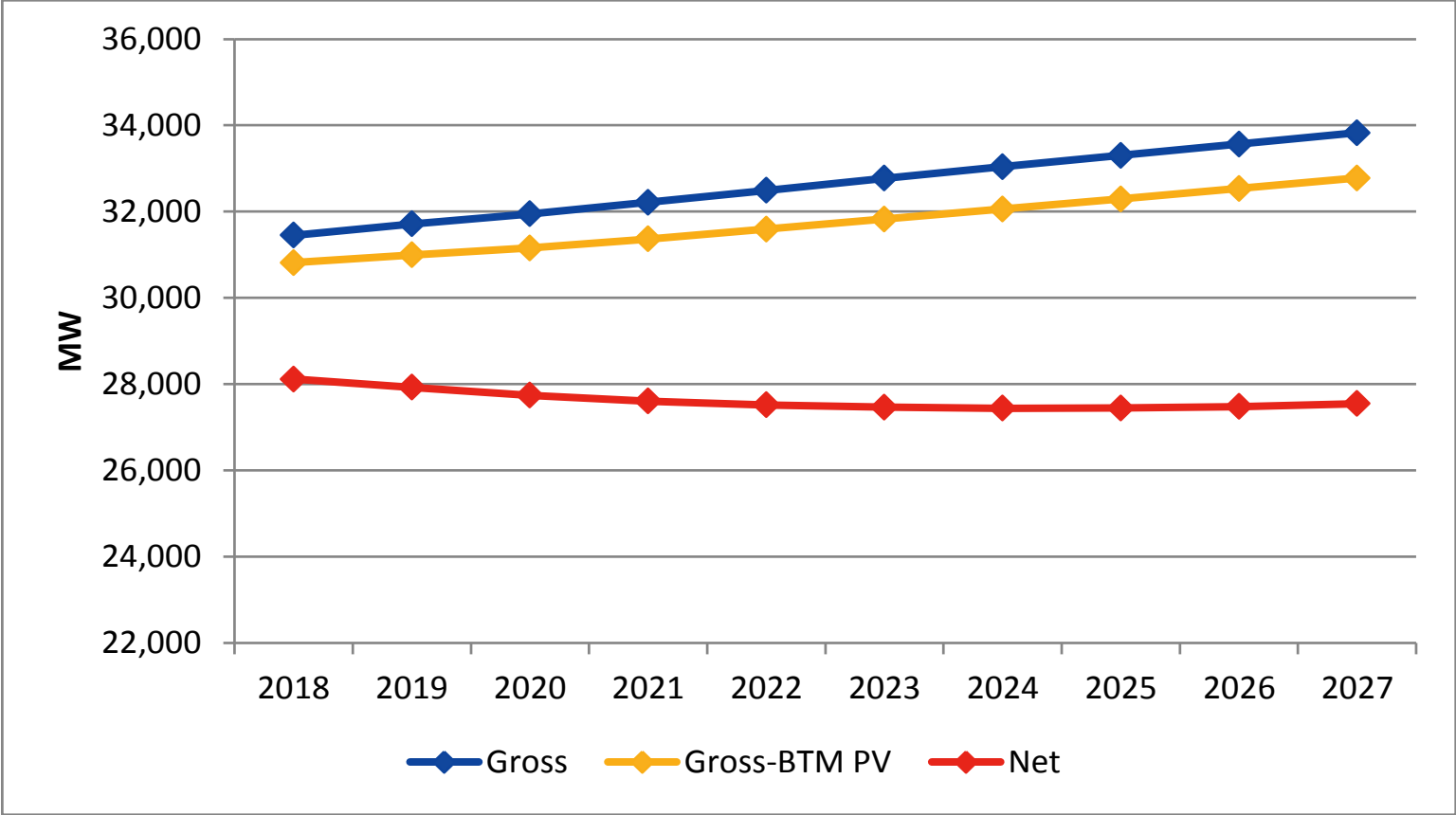
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

New England



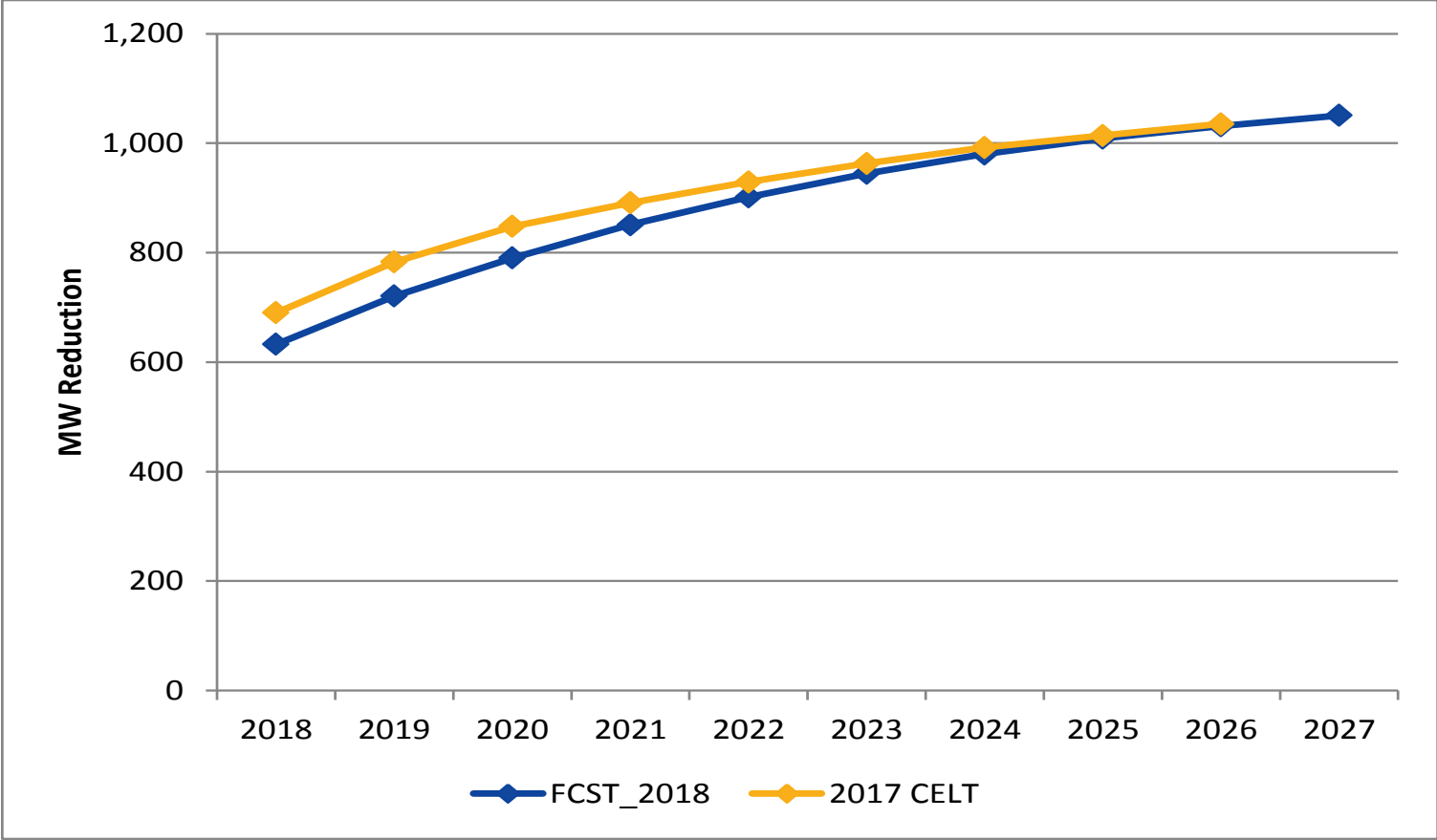
Draft 2018 CELT Summer 90/10 Peak Demand Forecast

New England



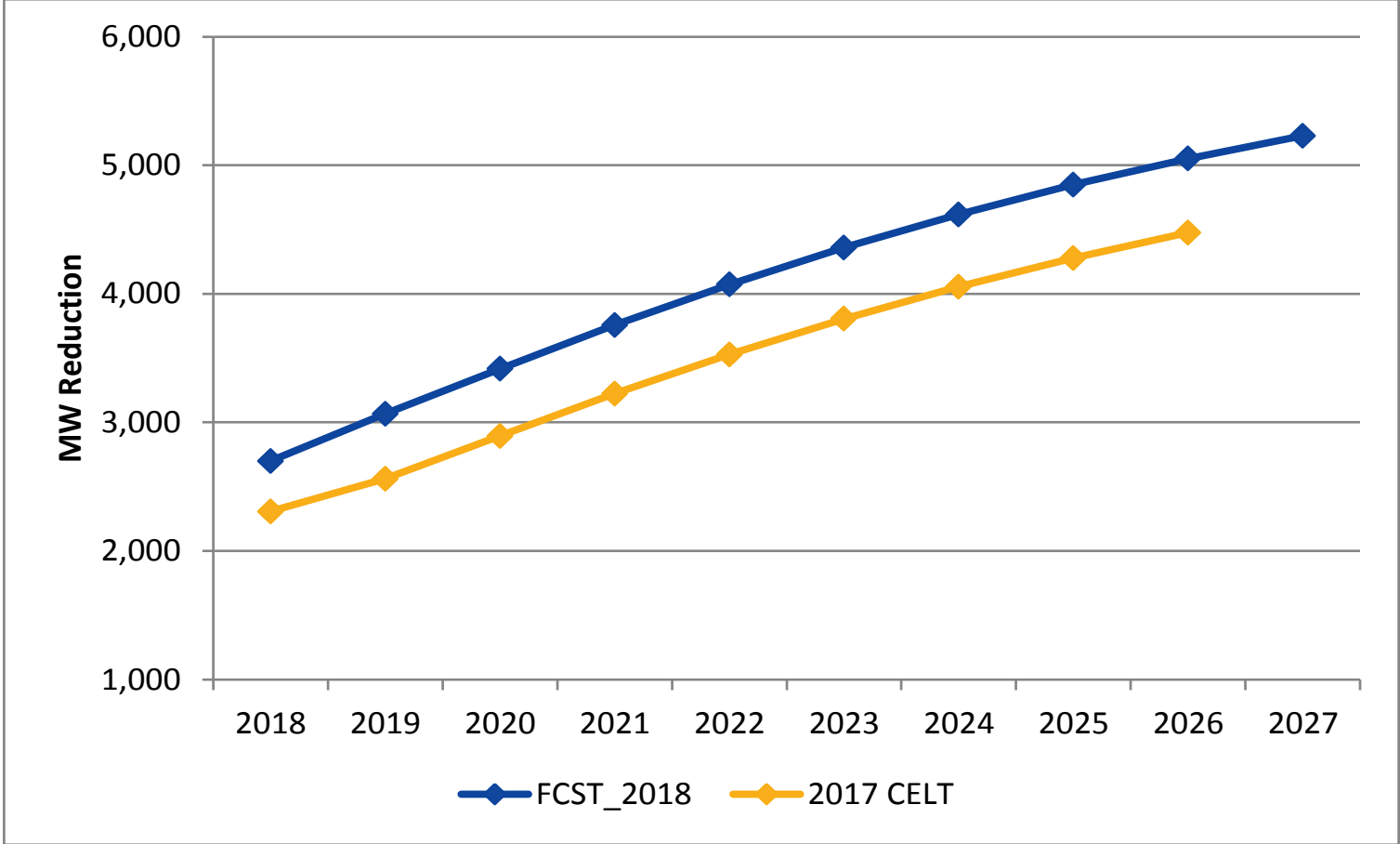
Draft 2018 CELT Summer BTM PV Forecast

New England



Draft 2018 CELT Summer EE Forecast

New England



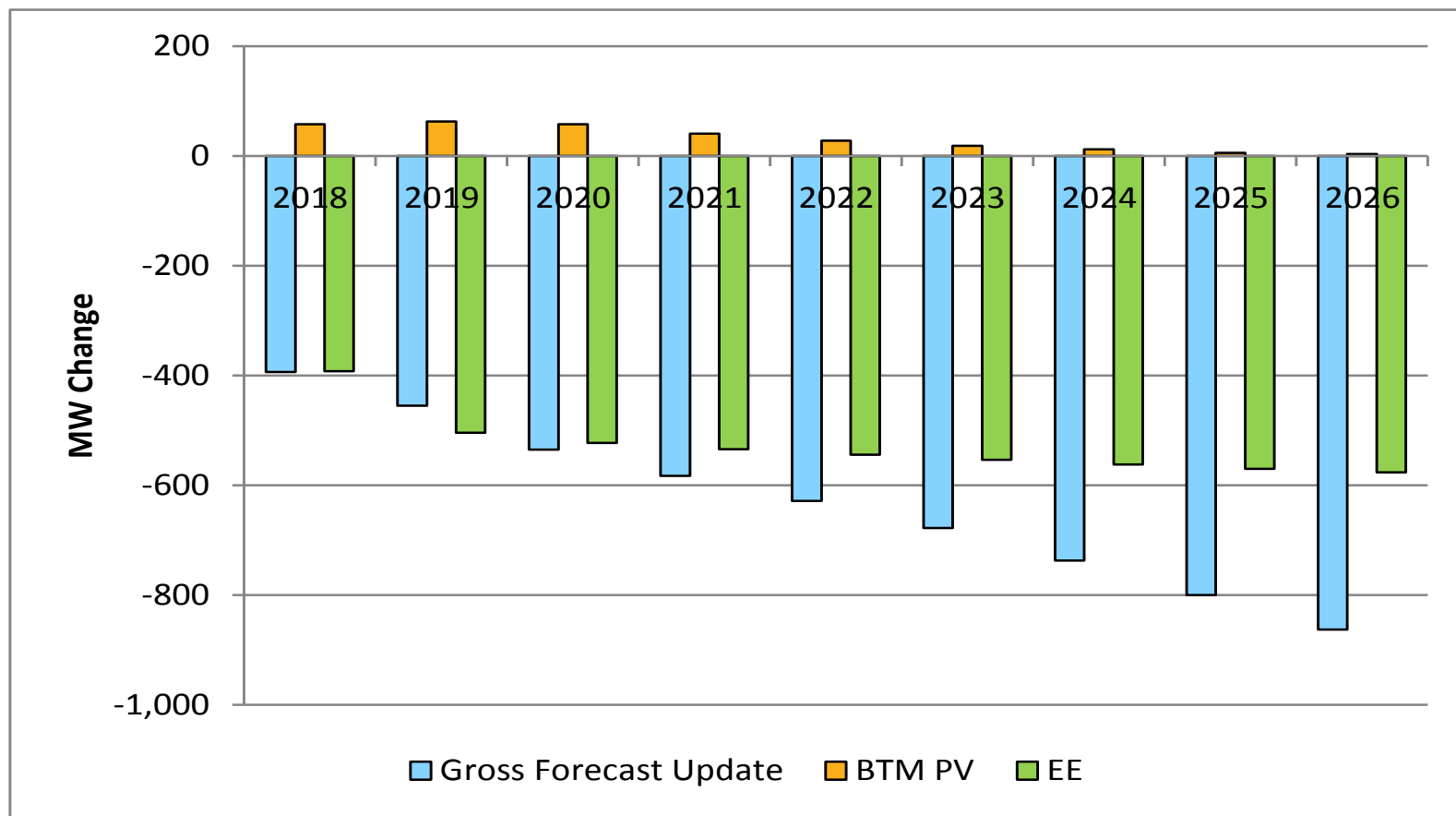
New England Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

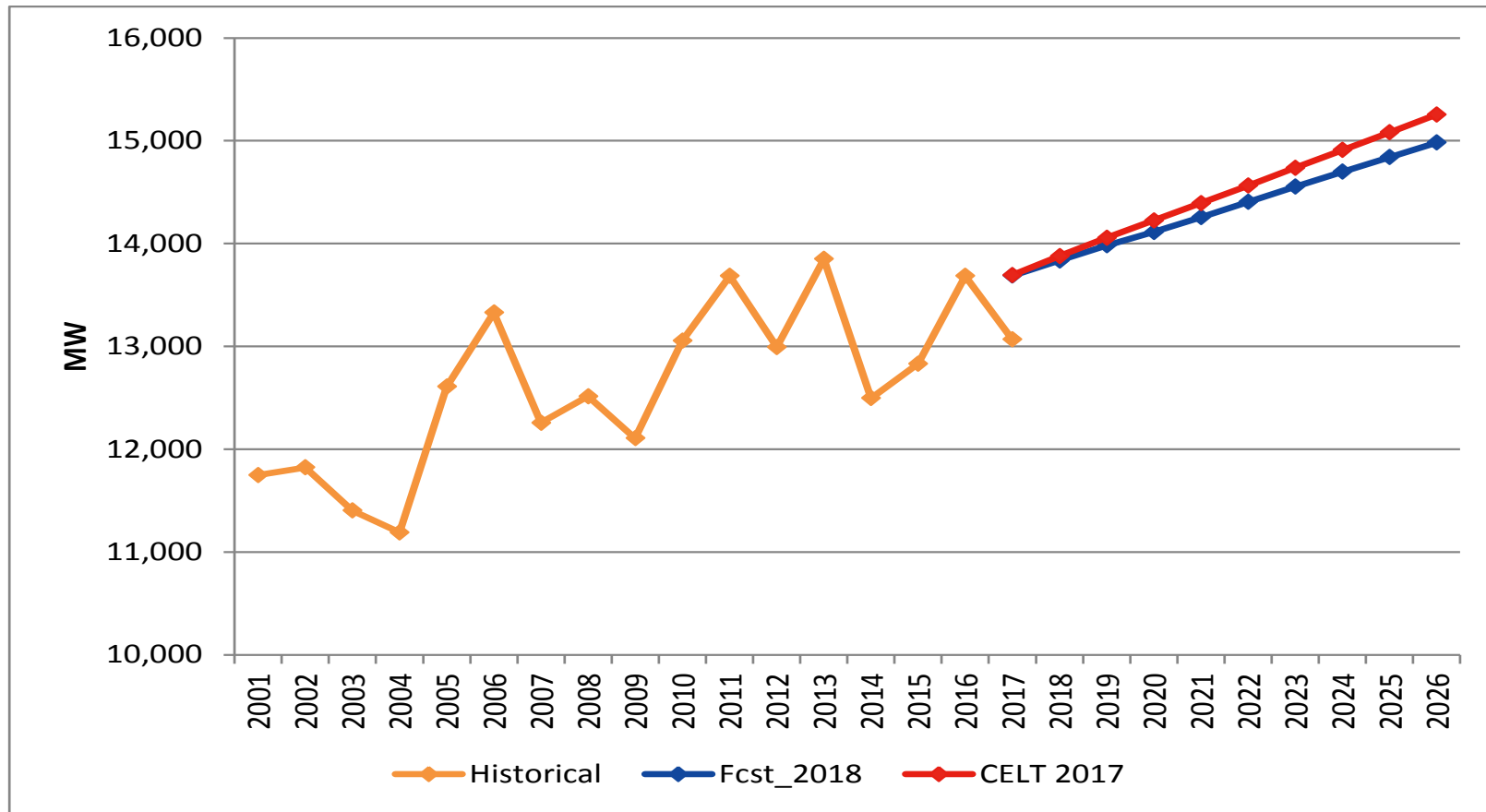
Year	2018 CELT (MW)						2017 CELT (MW)						Change (MW)					
	Gross		BTM PV	EE	Net		Gross		BTM PV	EE	Net		Gross		BTM PV	EE	Net	
	50/50	90/10			50/50	90/10	50/50	90/10			50/50	90/10	50/50	90/10			50/50	90/10
2018	29,060	31,451	633	2699	25,729	28,120	29,454	31,873	690	2,306	26,458	28,877	-394	-422	-57	393	-729	-757
2019	29,298	31,716	721	3066	25,512	27,930	29,753	32,209	783	2,561	26,409	28,865	-455	-493	-62	505	-897	-935
2020	29,504	31,950	790	3416	25,298	27,743	30,039	32,531	848	2,893	26,298	28,790	-535	-581	-58	523	-1,000	-1,047
2021	29,744	32,217	851	3757	25,136	27,609	30,327	32,855	891	3,223	26,213	28,741	-583	-638	-40	534	-1,077	-1,132
2022	29,994	32,494	901	4072	25,021	27,521	30,623	33,188	929	3,527	26,167	28,732	-629	-694	-28	545	-1,146	-1,211
2023	30,245	32,773	945	4359	24,942	27,469	30,923	33,525	963	3,805	26,155	28,757	-678	-752	-18	554	-1,213	-1,288
2024	30,486	33,041	980	4617	24,889	27,443	31,223	33,861	992	4,055	26,176	28,814	-737	-820	-12	562	-1,287	-1,371
2025	30,721	33,303	1009	4848	24,864	27,446	31,521	34,196	1,014	4,278	26,229	28,904	-800	-893	-5	570	-1,365	-1,458
2026	30,957	33,566	1031	5052	24,874	27,483	31,820	34,531	1,035	4,475	26,310	29,021	-863	-965	-4	577	-1,436	-1,538
2027	31,192	33,828	1051	5229	24,912	27,548												

Change in Summer Peak Net Load by Component

Draft 2018 CELT and 2017 CELT



2018 CELT Gross Summer 50/50 Peak Demand Forecast *Massachusetts*



2018 (-0.3%, -42 MW)

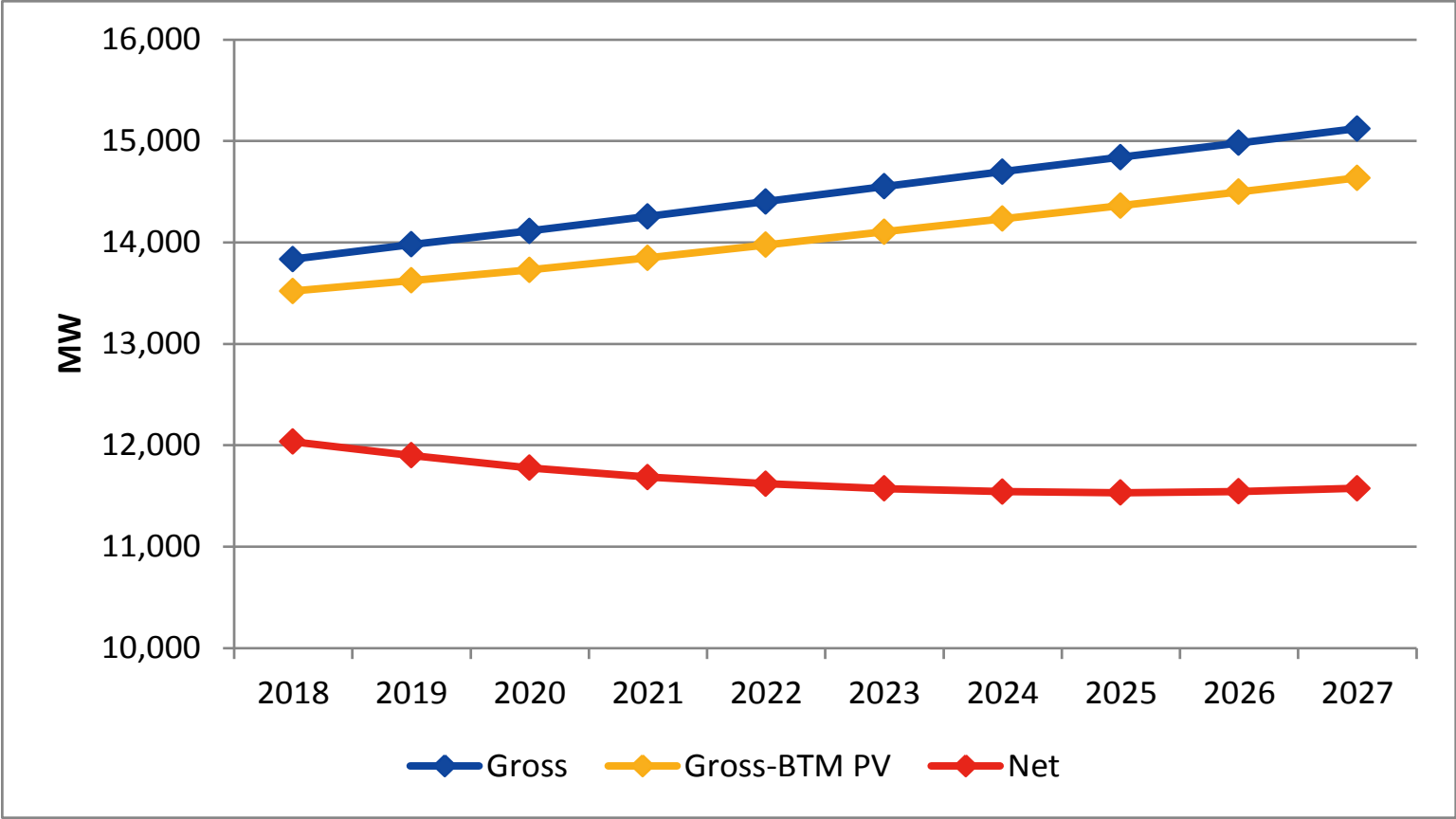
2022 (-1.1%, -159 MW)

2026 (-1.8%, -273 MW)



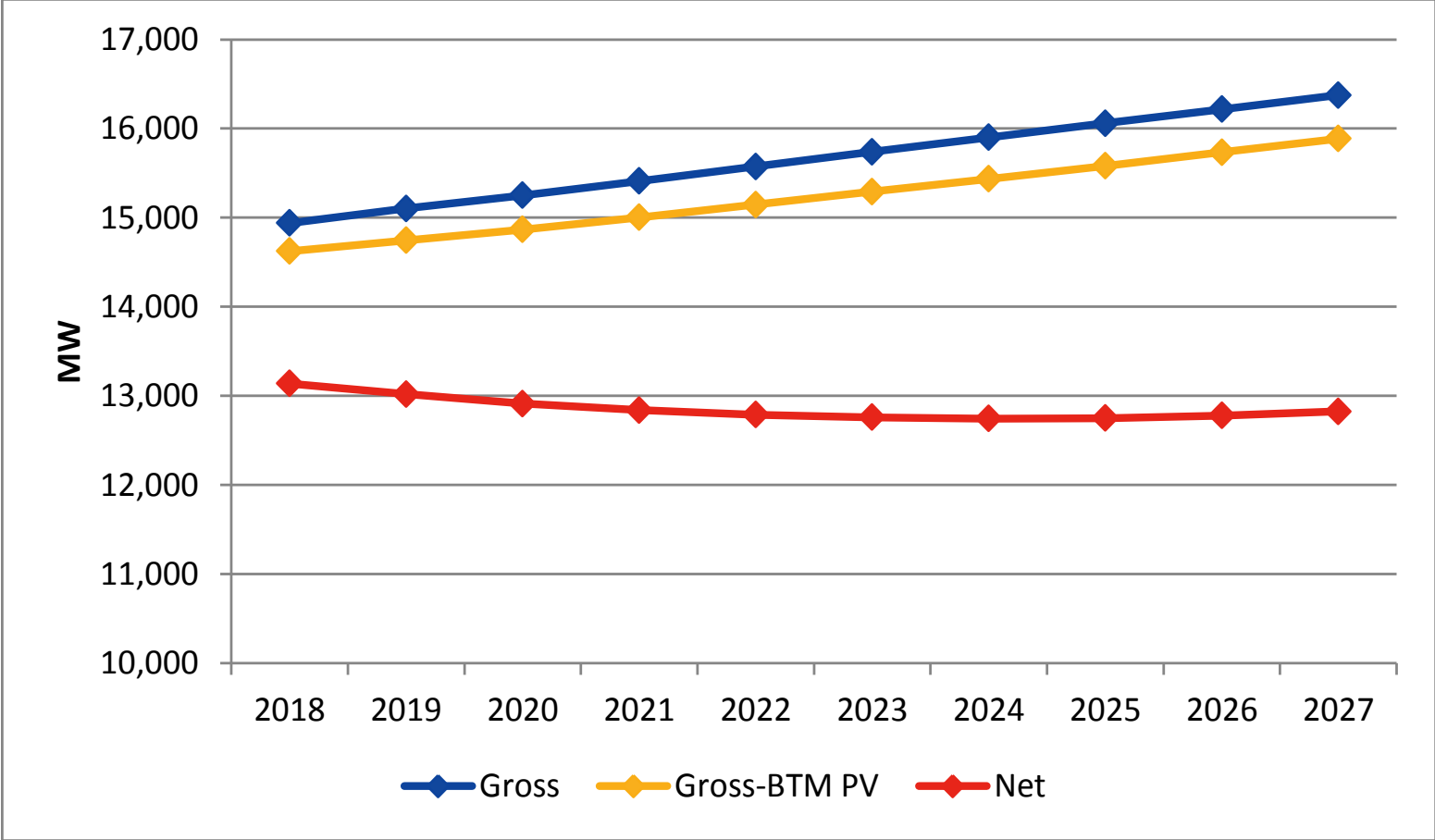
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

Massachusetts

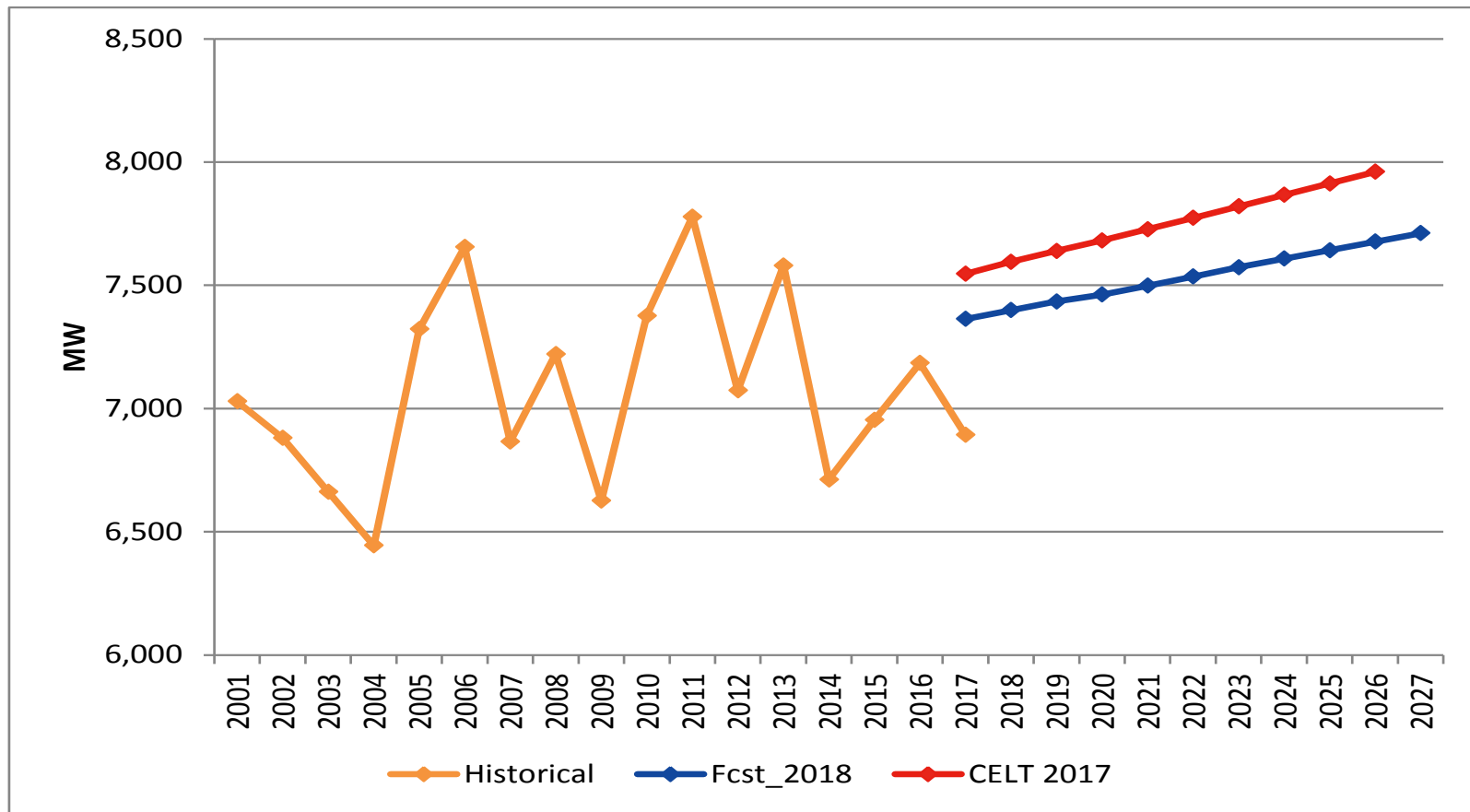


Draft 2018 CELT Summer 90/10 Peak Demand Forecast

Massachusetts



2017 CELT Gross Summer 50/50 Peak Demand Forecast Connecticut



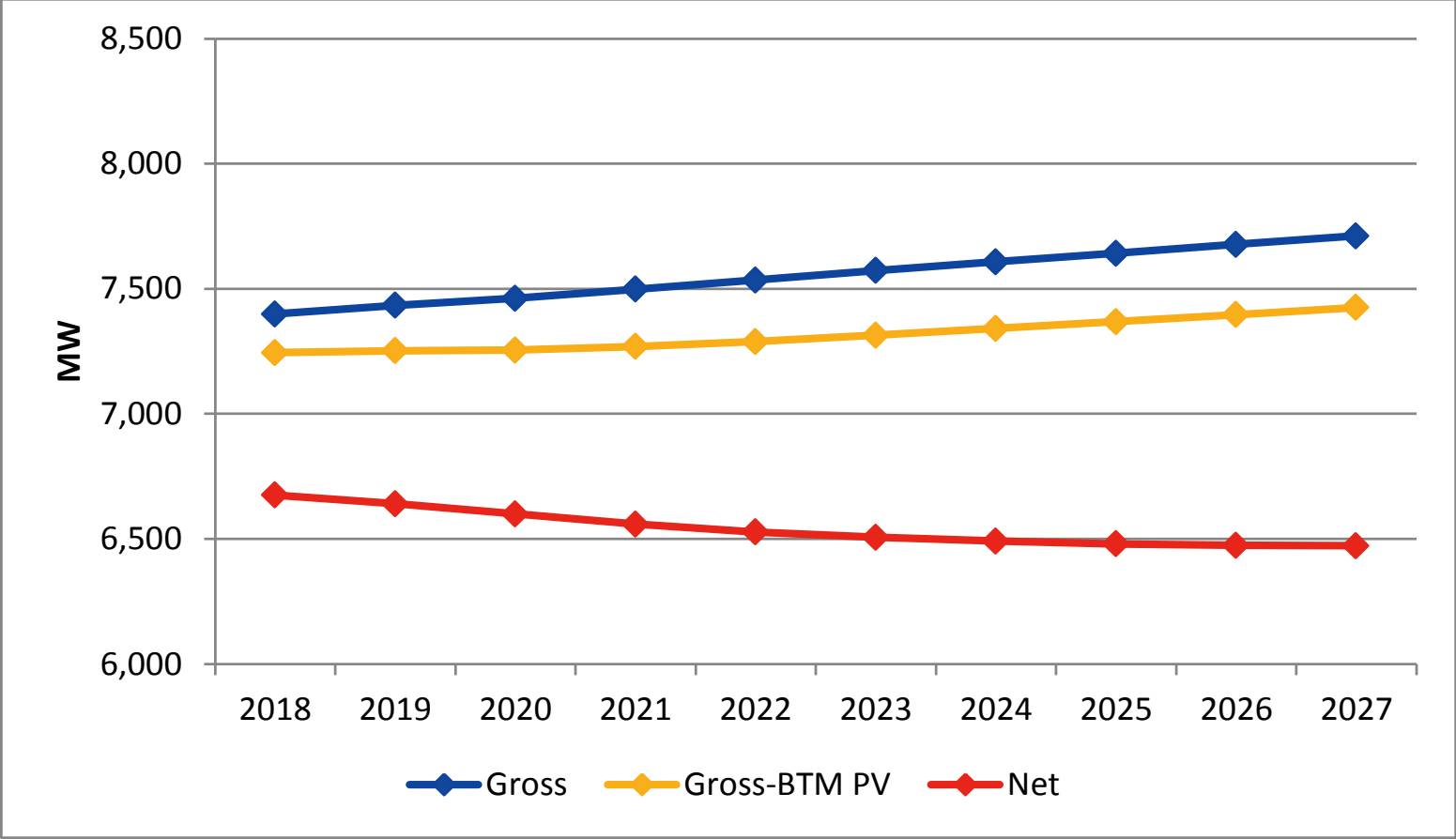
2018 (-2.6%, -196 MW)

2022 (-3.1%, -238 MW)

2026 (-3.6%, -283 MW)

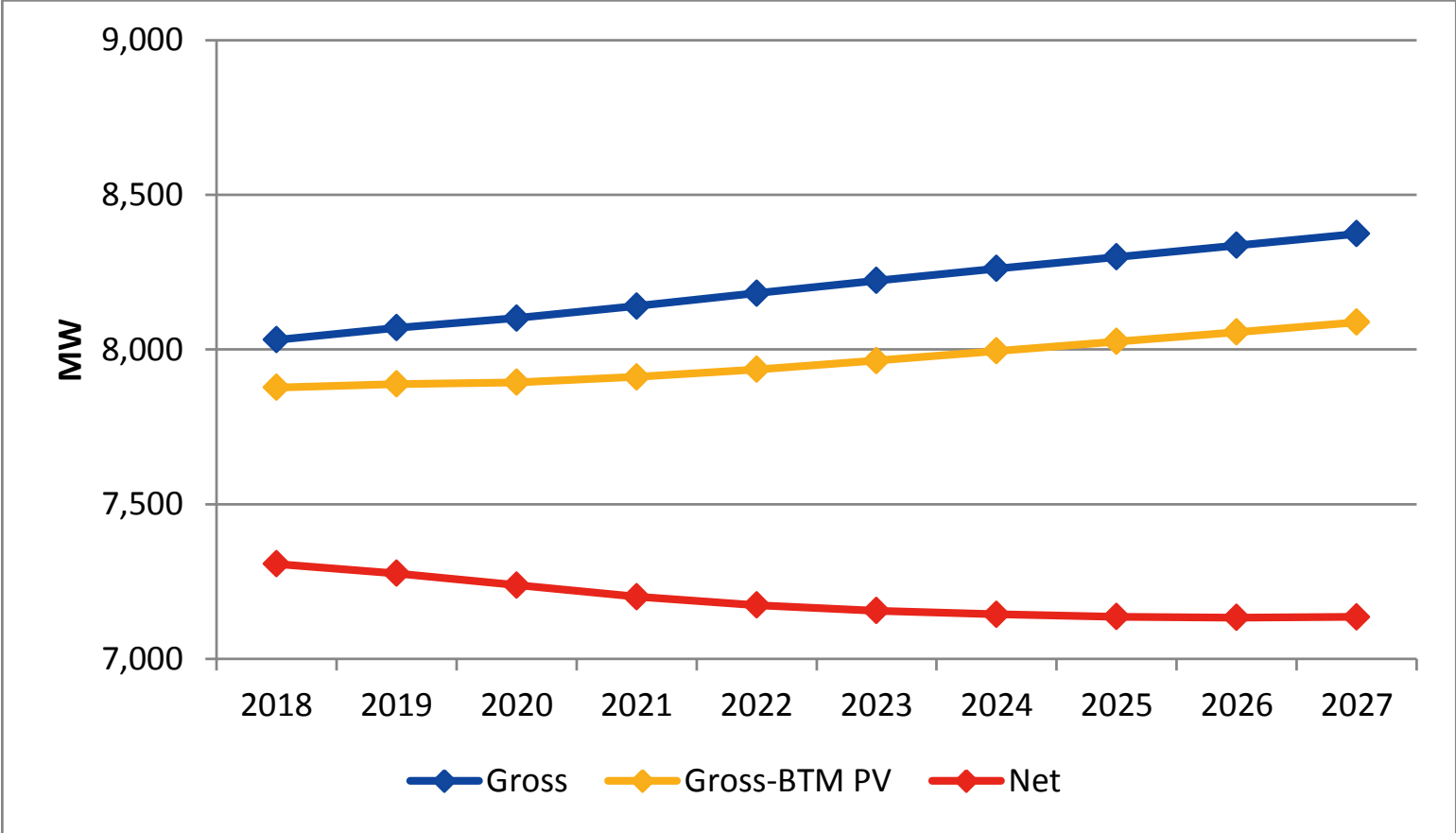
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

Connecticut

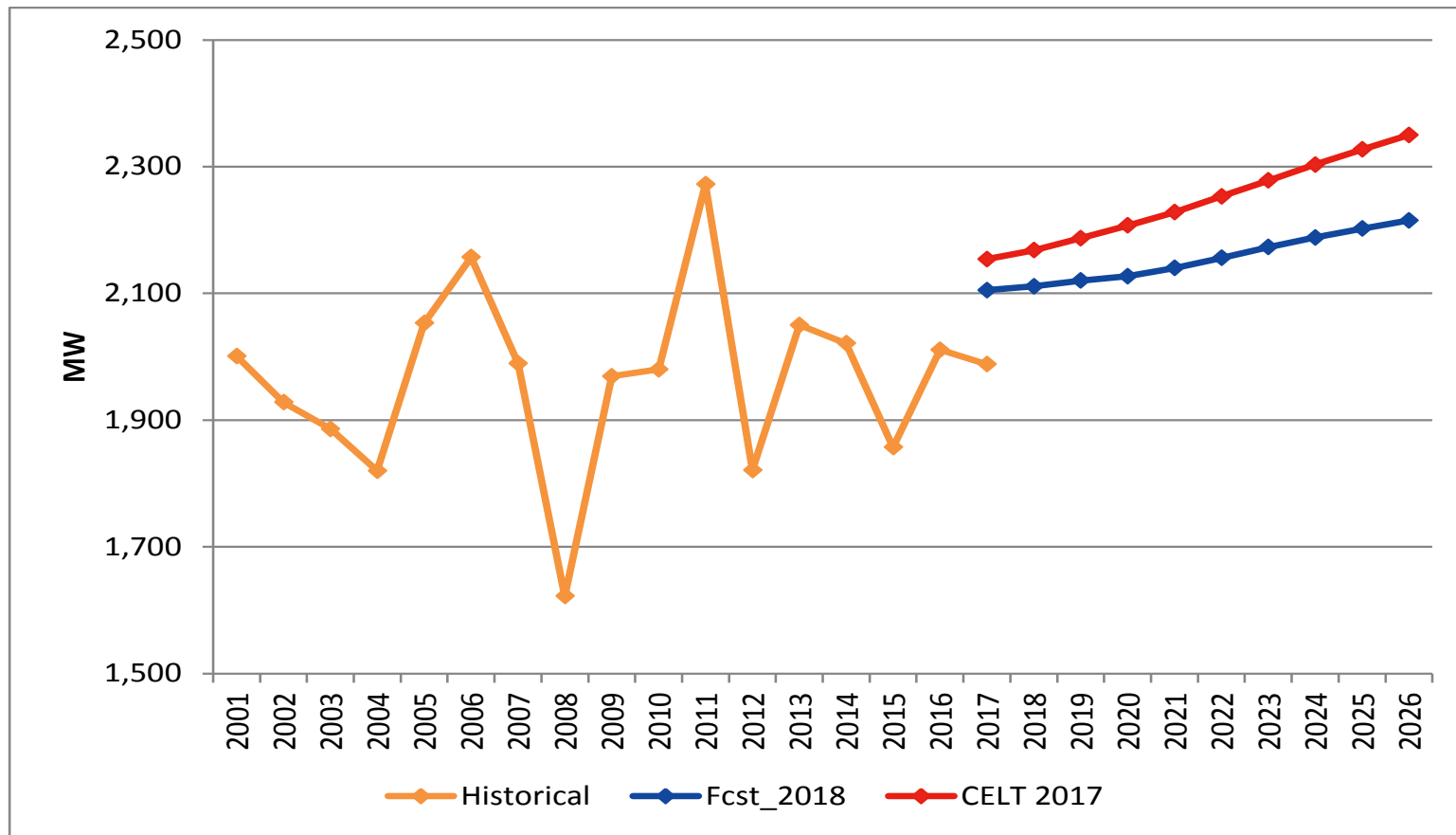


Draft 2018 CELT Summer 90/10 Peak Demand Forecast

Connecticut



2018 CELT Gross Summer 50/50 Peak Demand Forecast Maine



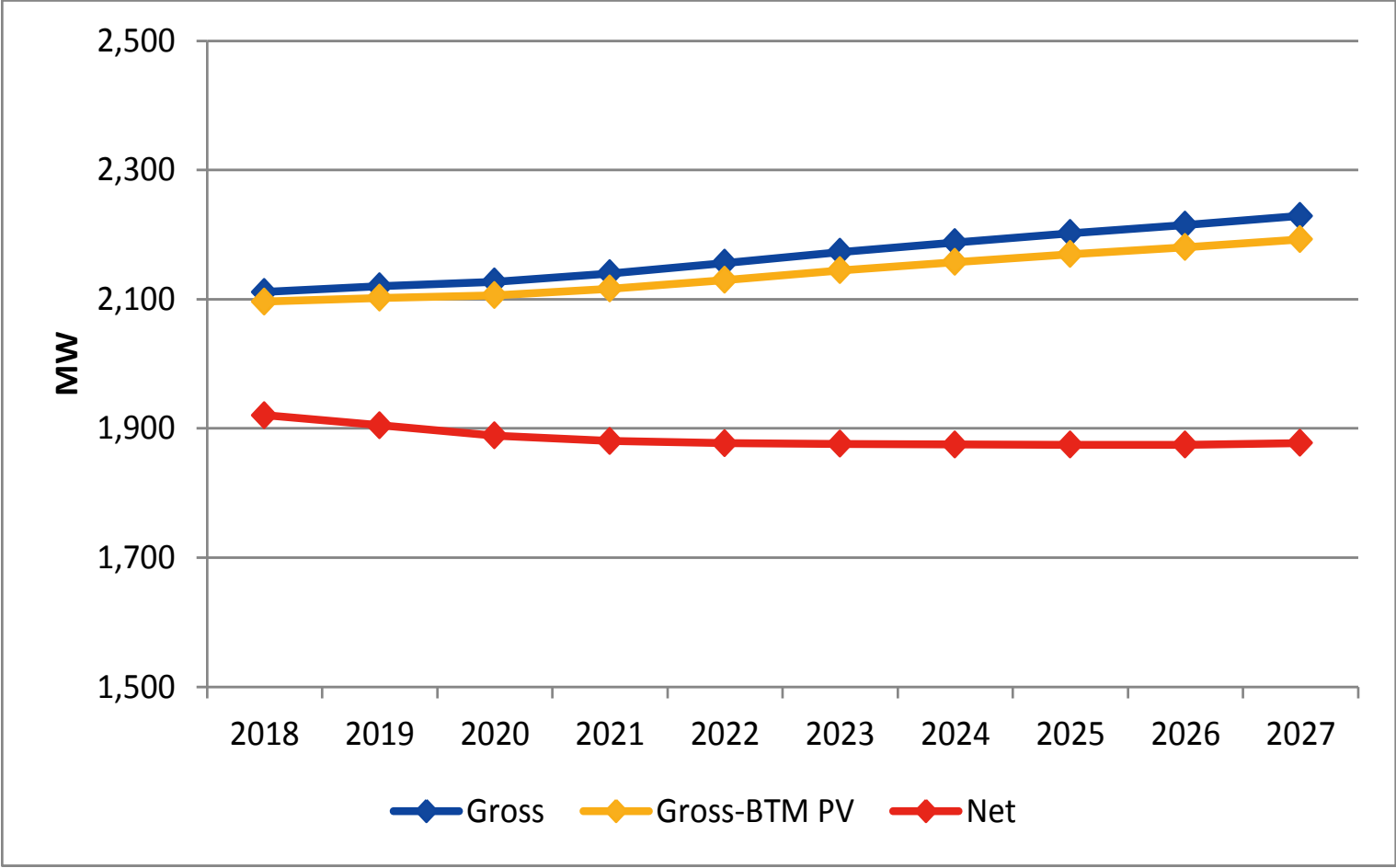
2018 (-2.6%, -57 MW)

2022 (-4.3%, -97 MW)

2026 (-5.7%, -135 MW)

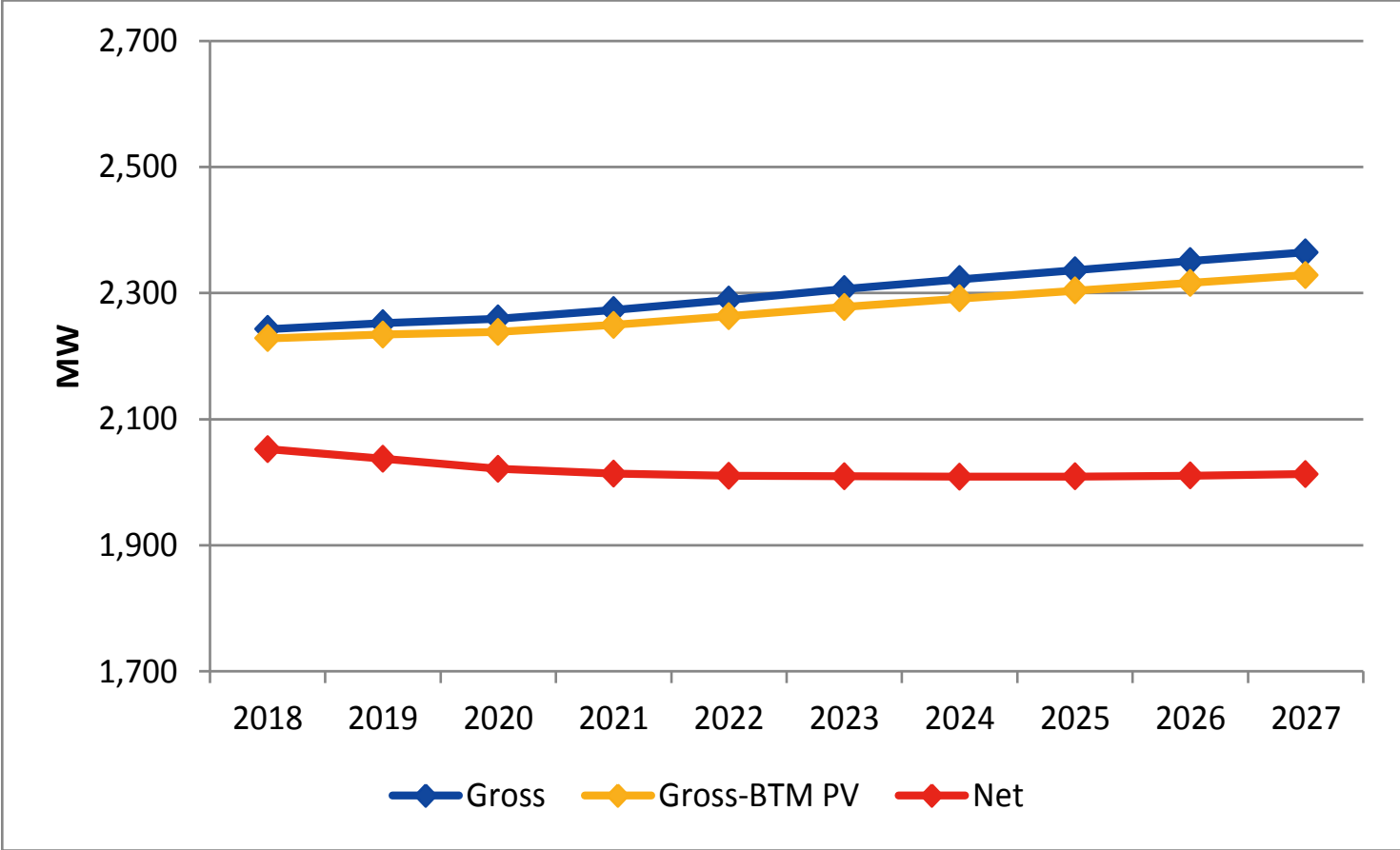
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

Maine



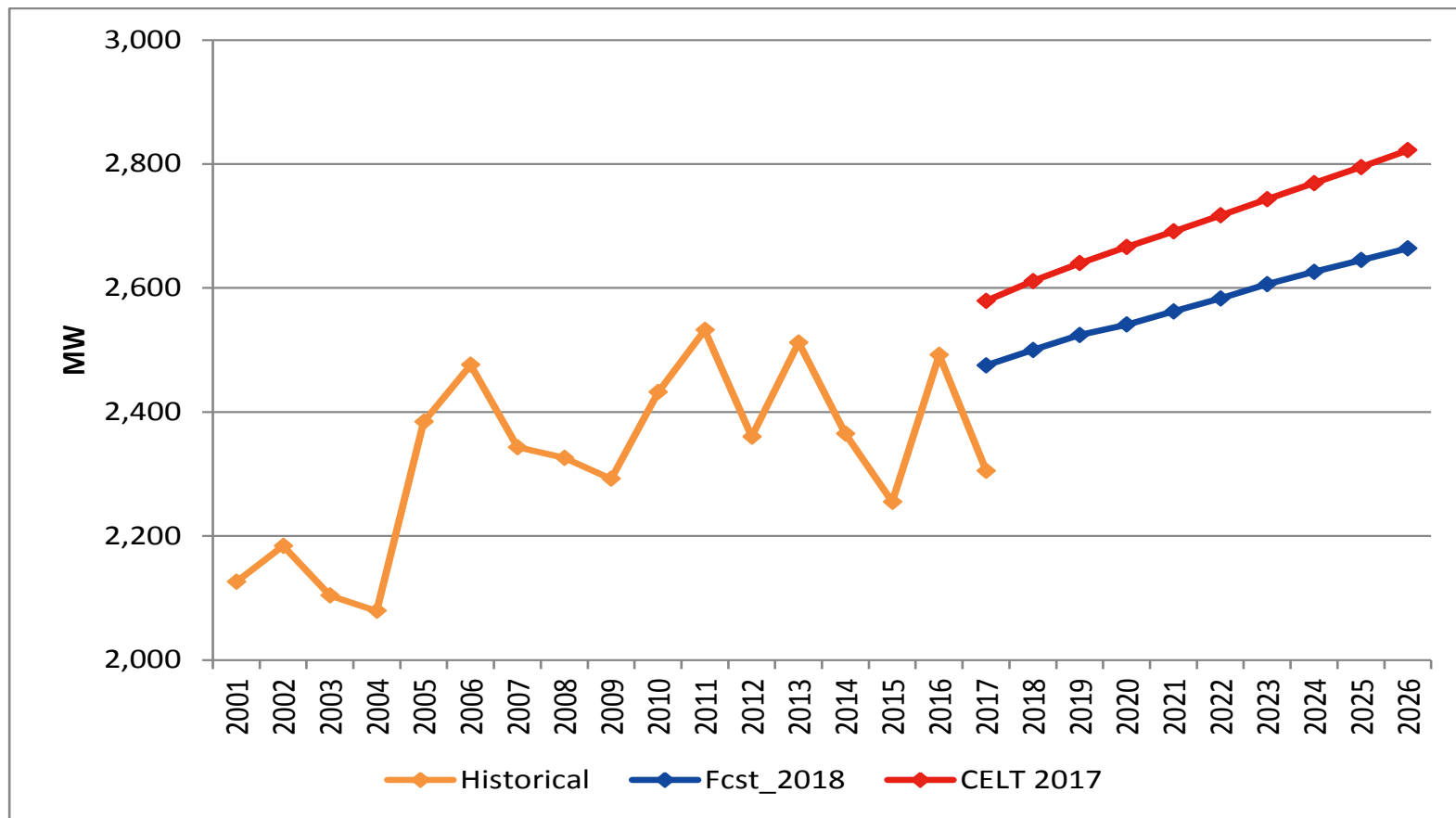
Draft 2018 CELT Summer 90/10 Peak Demand Forecast

Maine



2018 CELT Gross Summer 50/50 Peak Demand Forecast

New Hampshire



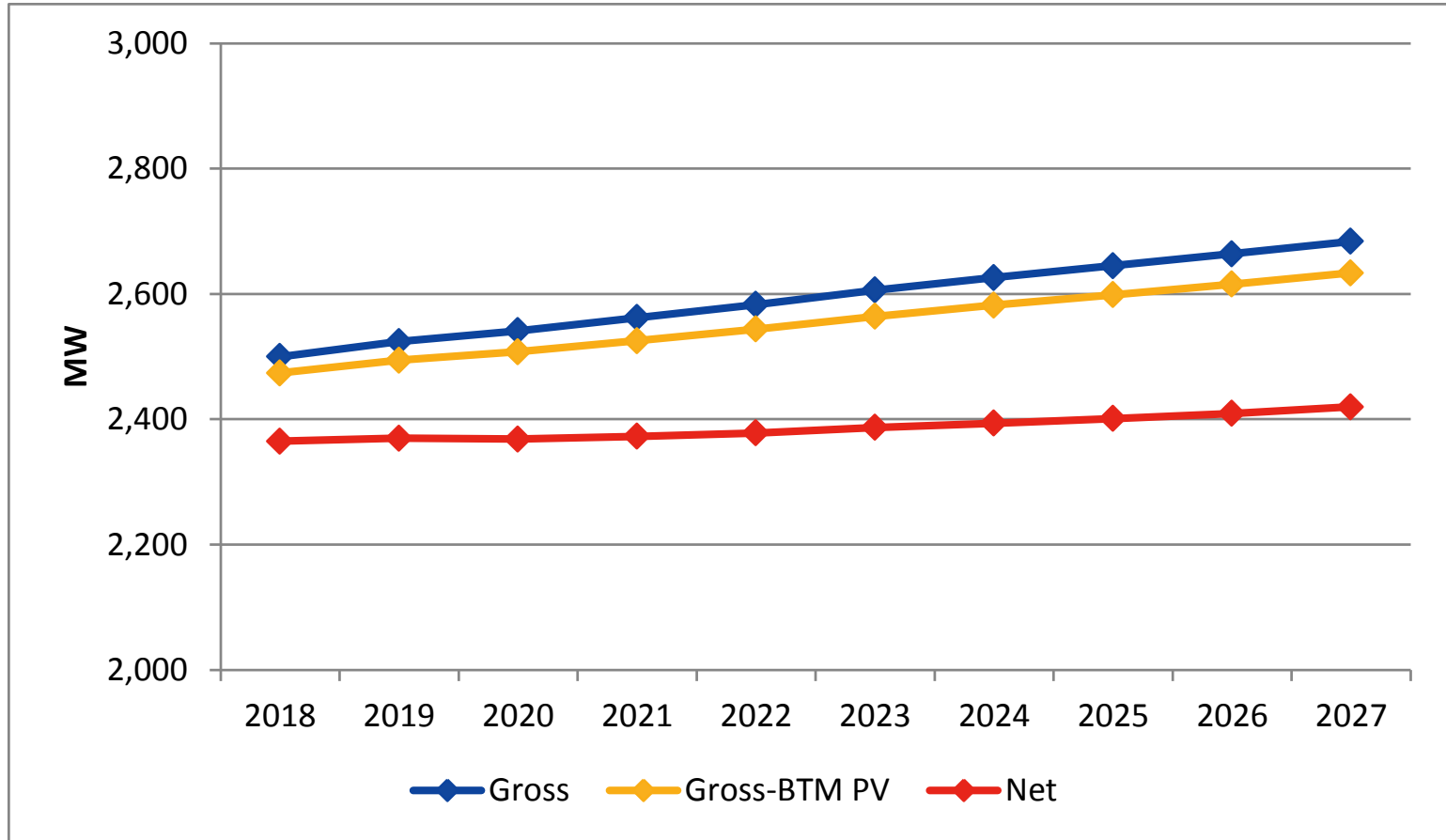
2018 (-4.2%, -110 MW)

2022 (-4.9%, -134 MW)

2026 (-5.6%, -158 MW)

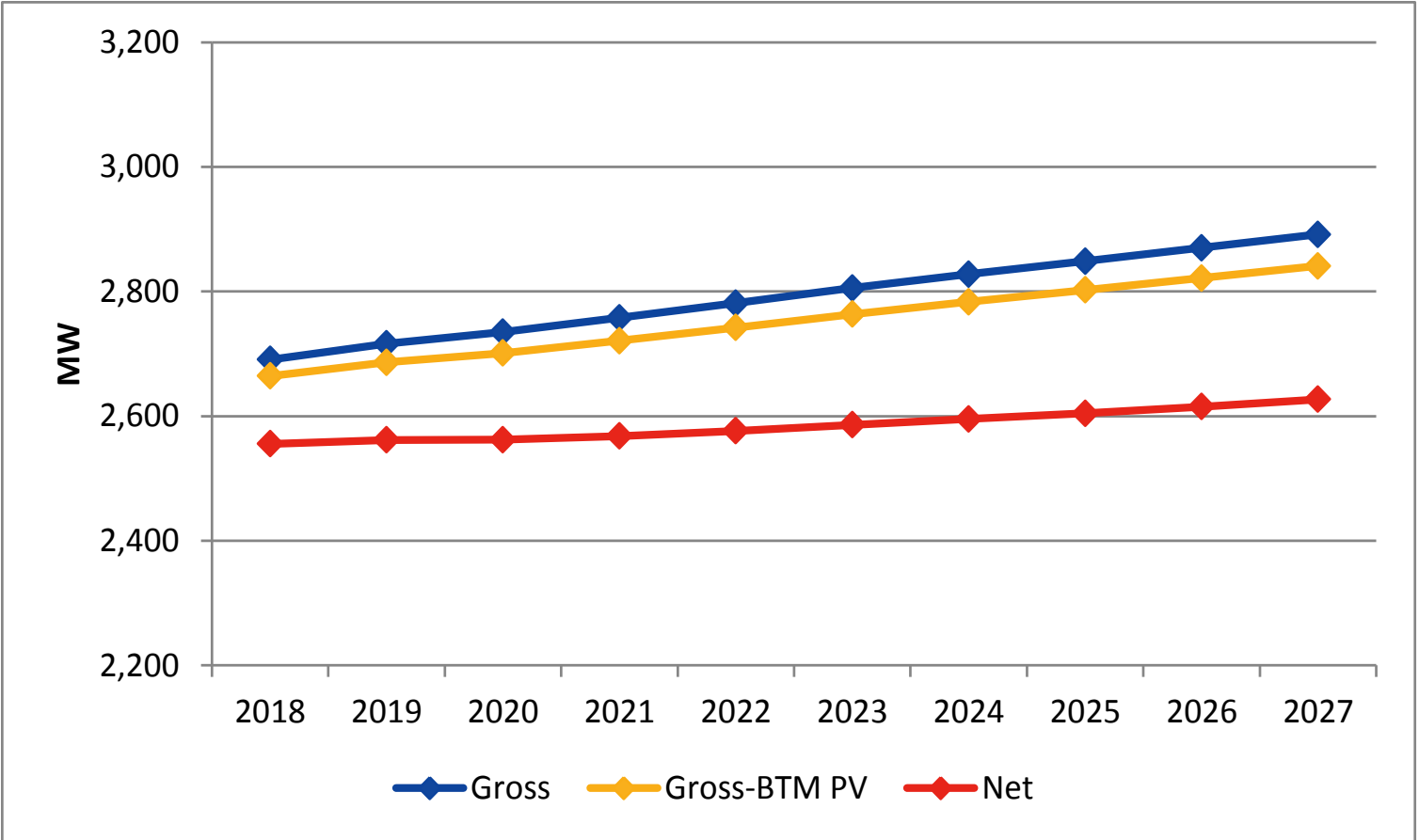
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

New Hampshire

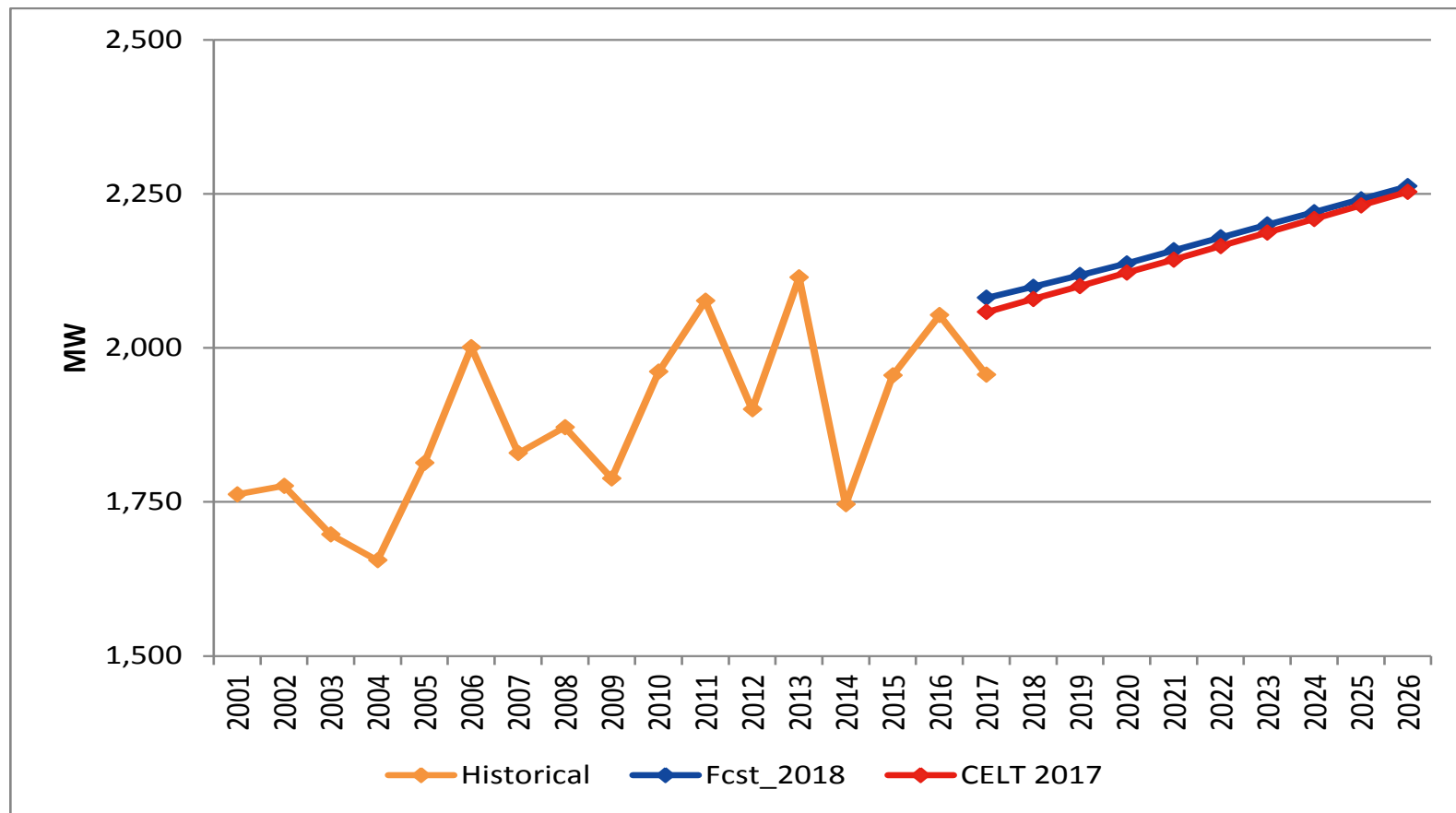


Draft 2018 CELT Summer 90/10 Peak Demand Forecast

New Hampshire



2018 CELT Gross Summer 50/50 Peak Demand Forecast Rhode Island



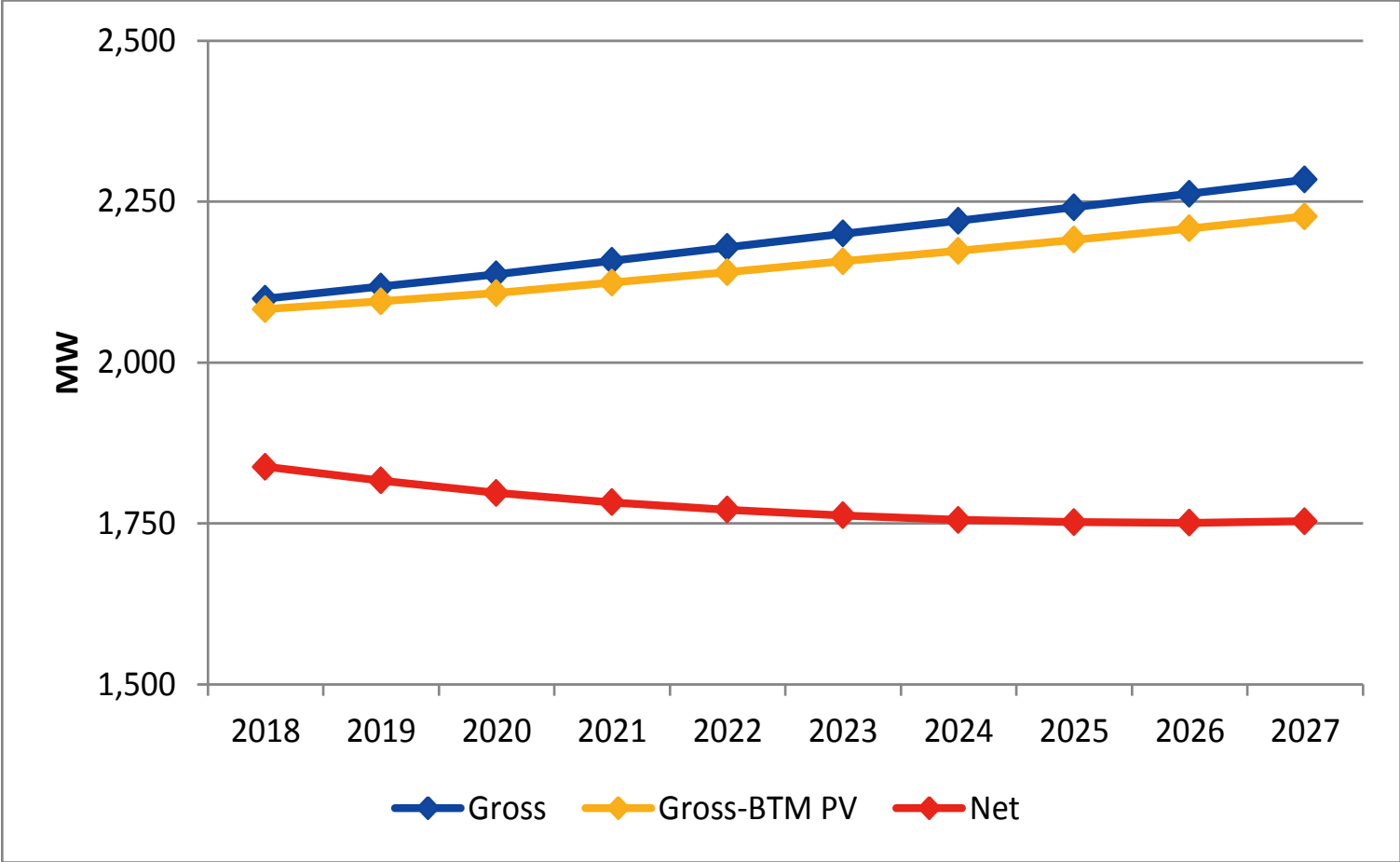
2018 (1.0%, 20 MW)

2022 (0.6%, 14 MW)

2026 (0.4%, 9 MW)

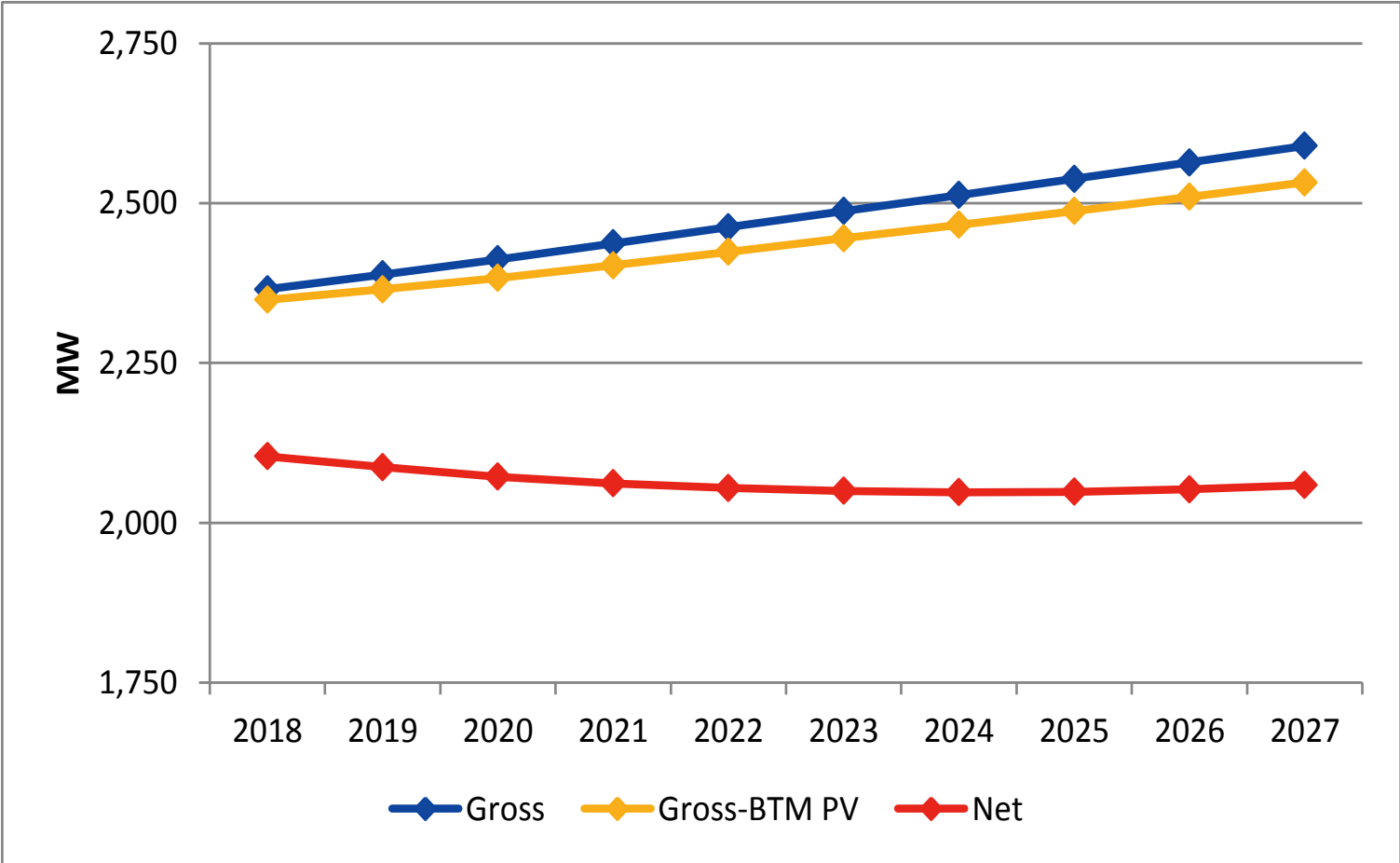
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

Rhode Island

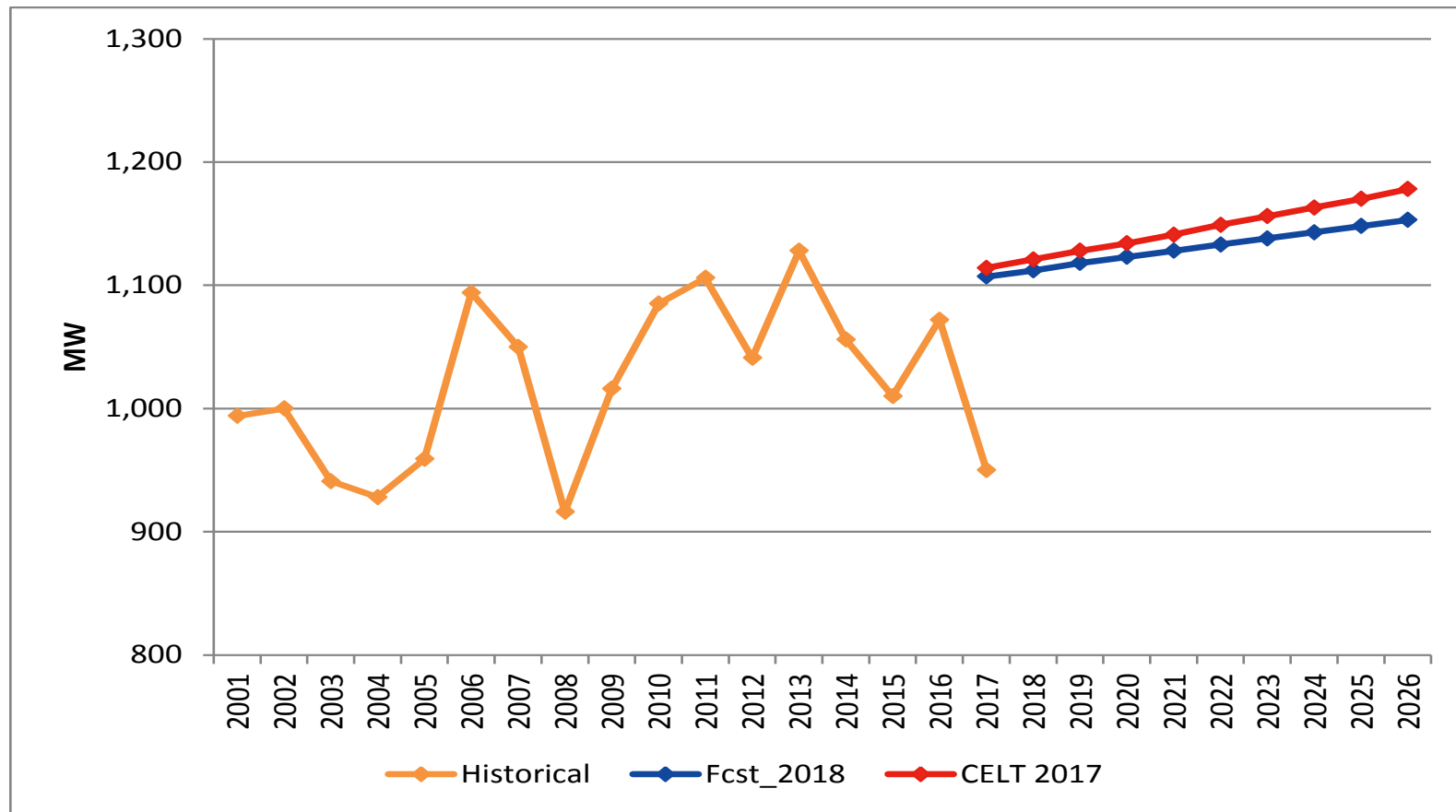


Draft 2018 CELT Summer 90/10 Peak Demand Forecast

Rhode Island



2018 CELT Gross Summer 50/50 Peak Demand Forecast Vermont



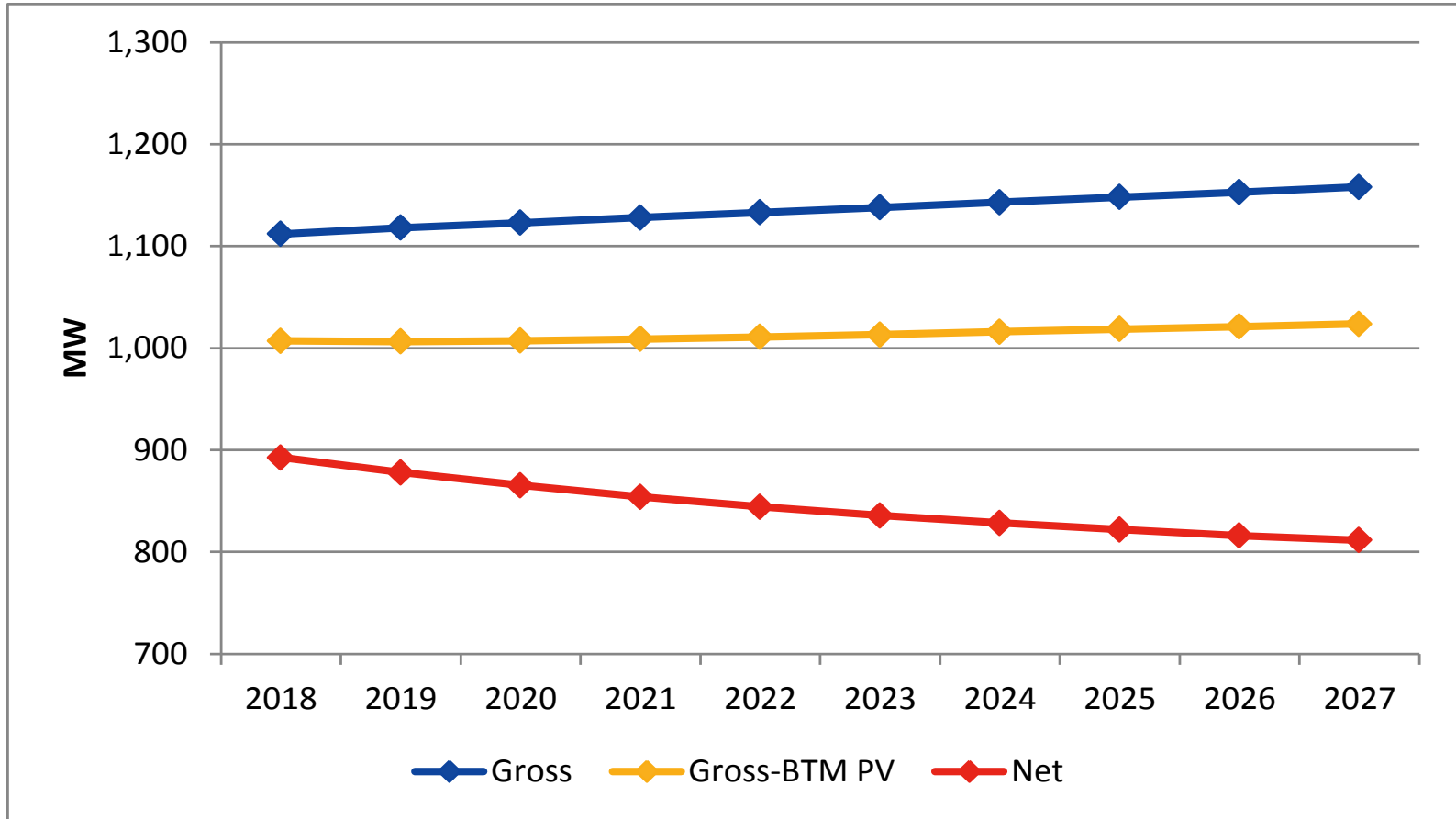
2018 (-0.8%, -9 MW)

2022 (-1.4%, -16 MW)

2026 (-2.1%, -25 MW)

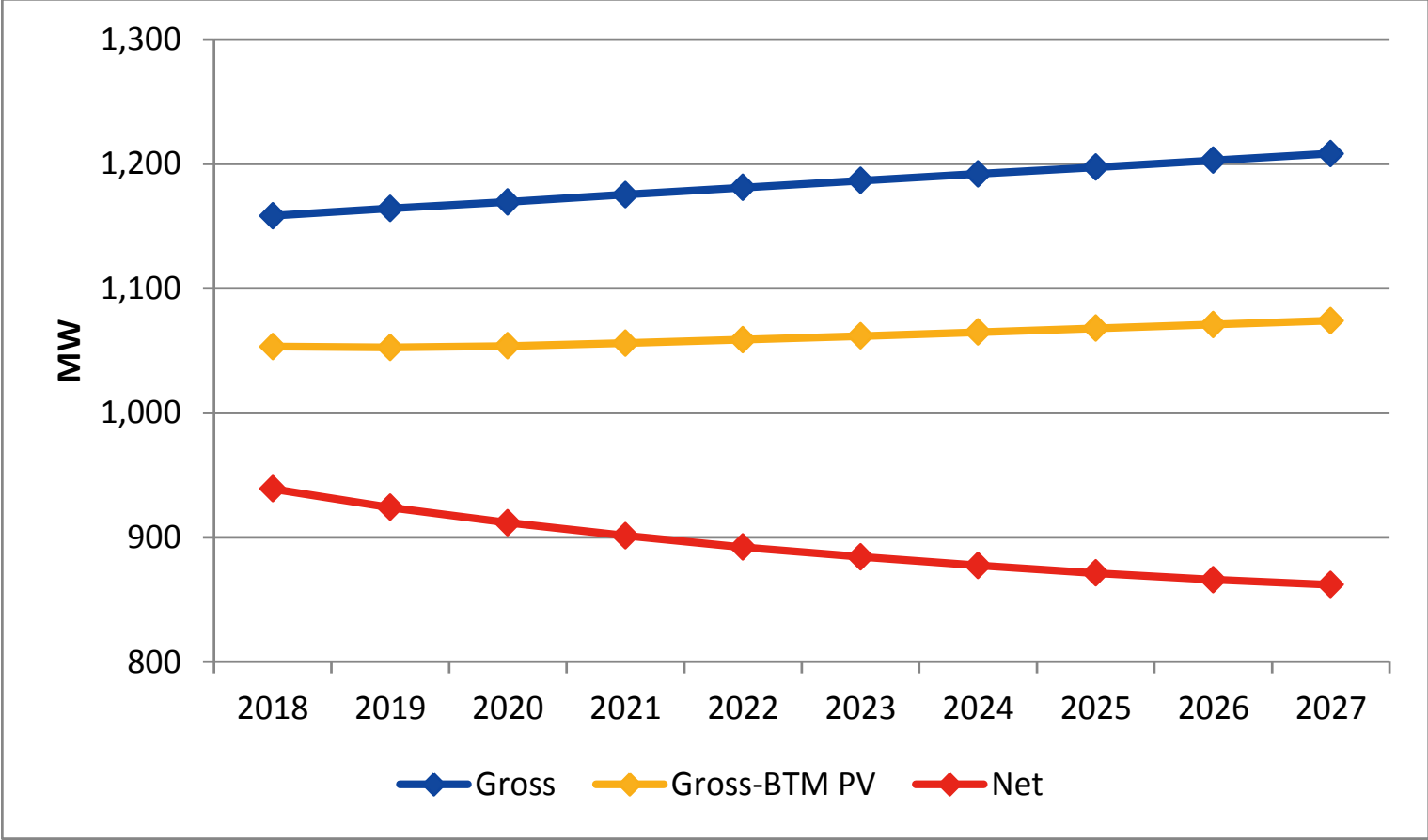
Draft 2018 CELT Summer 50/50 Peak Demand Forecast

Vermont



Draft 2018 CELT Summer 90/10 Peak Demand Forecast

Vermont

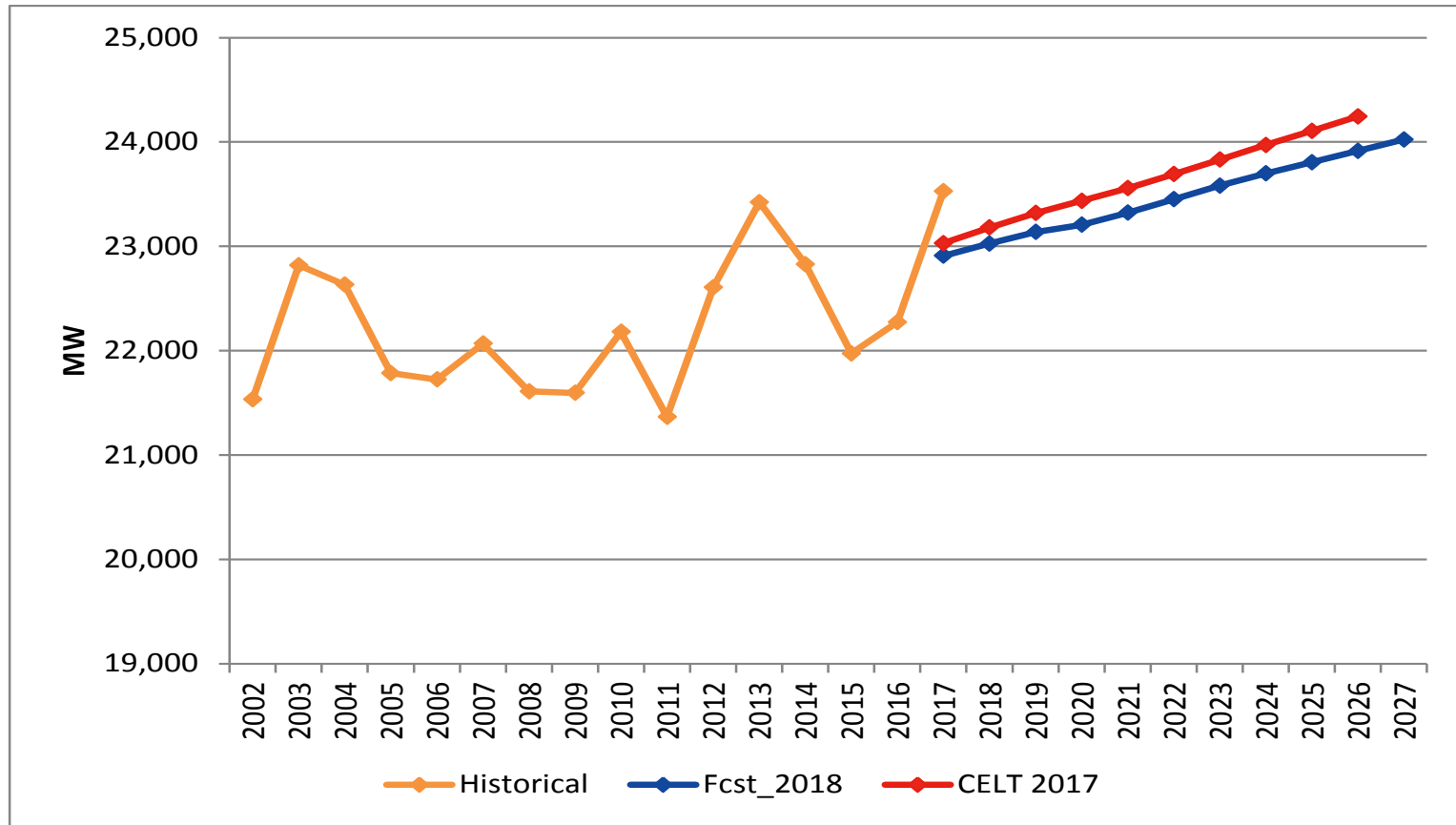


2018 WINTER PEAK DEMAND FORECAST

New England and States

2017 CELT Gross Winter 50/50 Peak Demand Forecast

New England



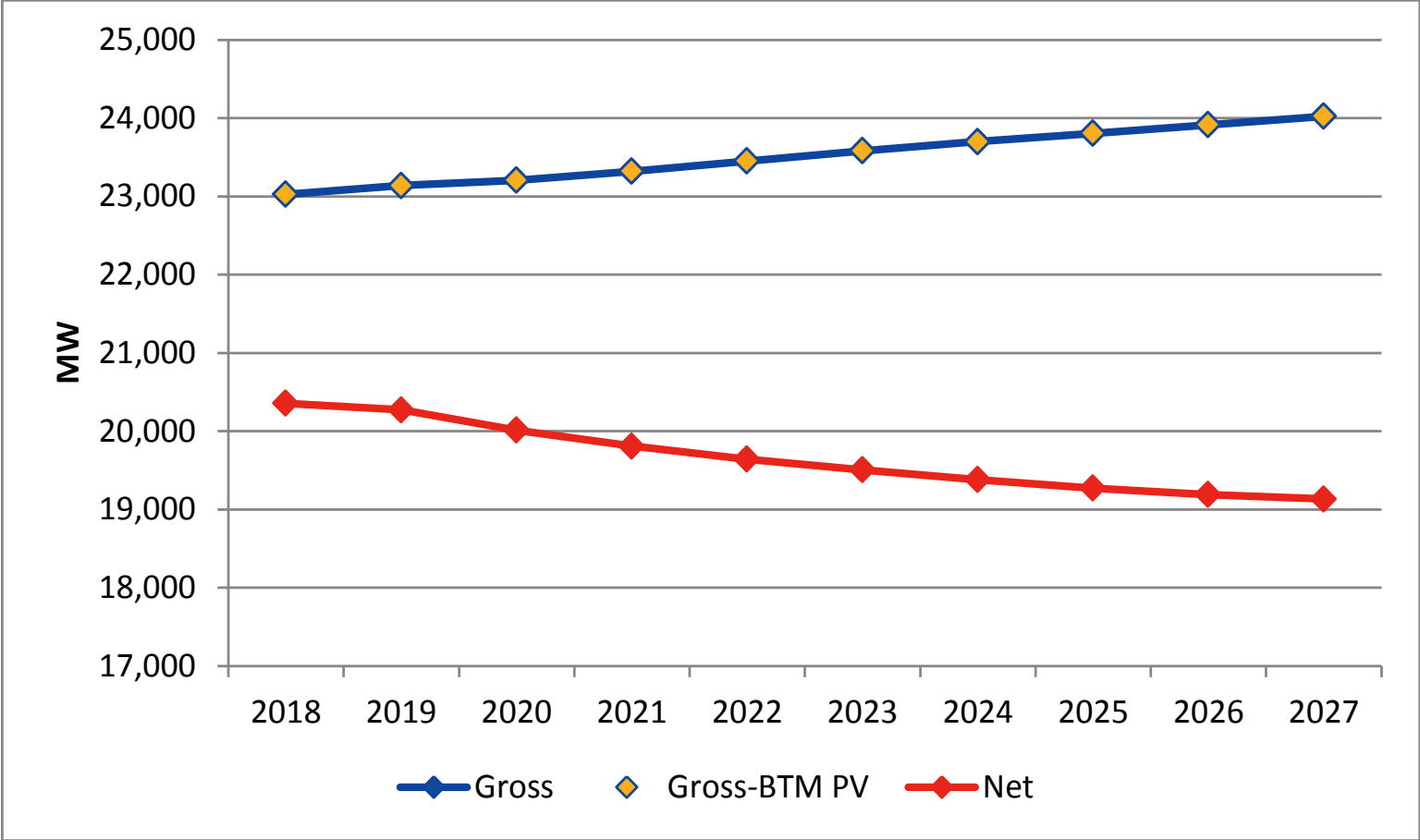
2018 (-0.7%, -154 MW)

2022 (-1.0%, -241 MW)

2026 (-1.4%, -329 MW)

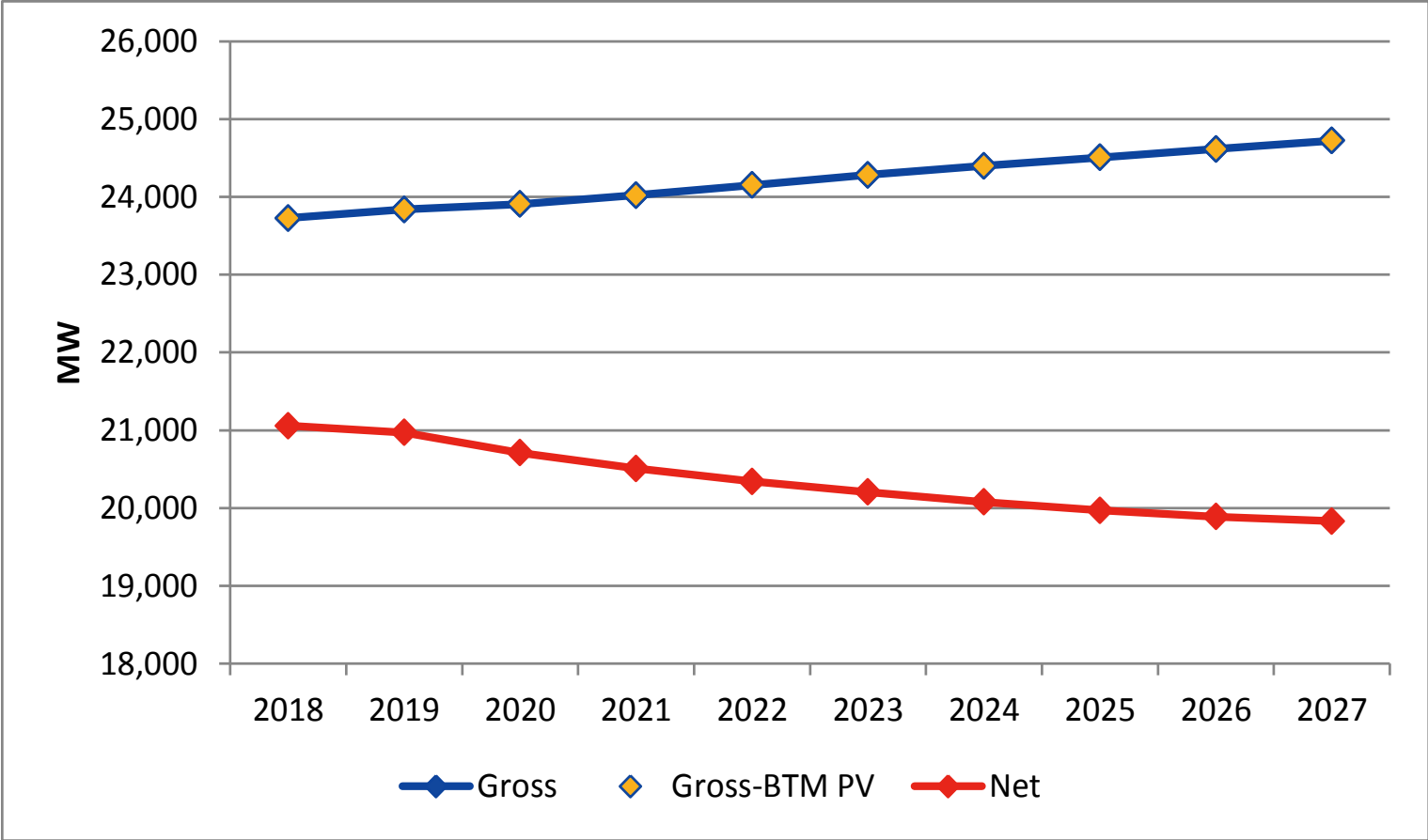
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

New England



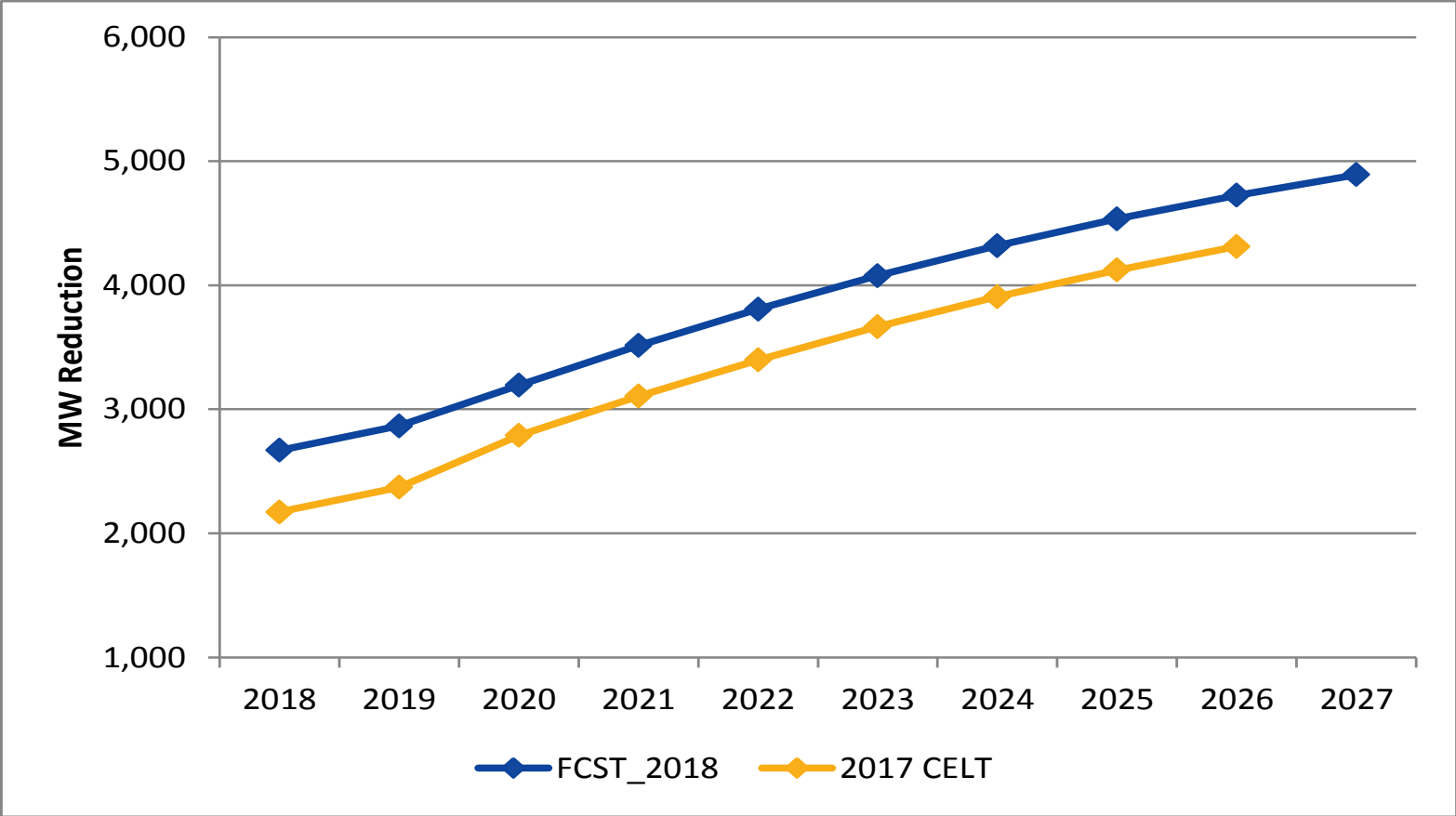
Draft 2018 CELT Winter 90/10 Peak Demand Forecast

New England



Draft 2018 CELT Winter EE Forecast

New England



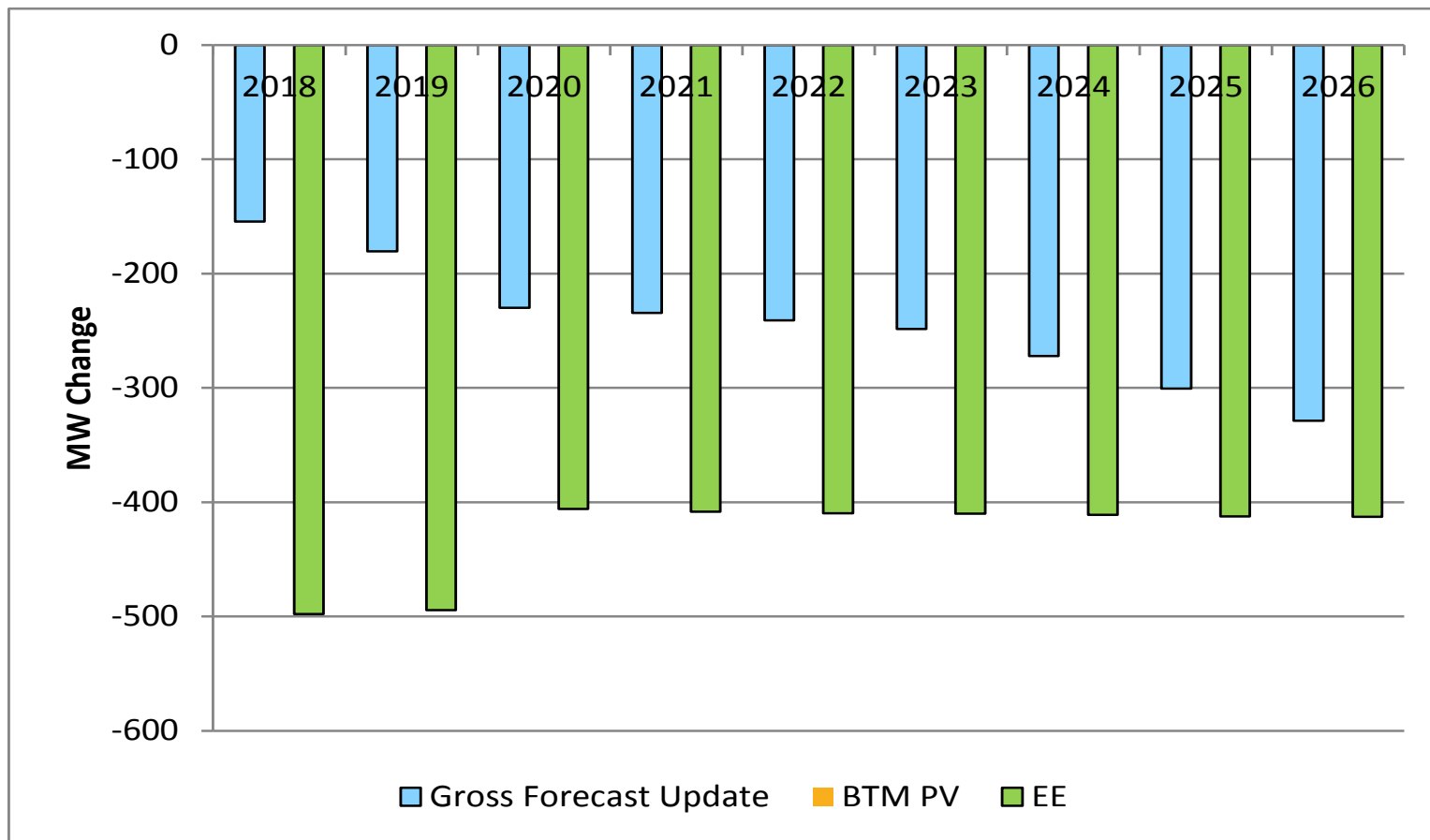
New England Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

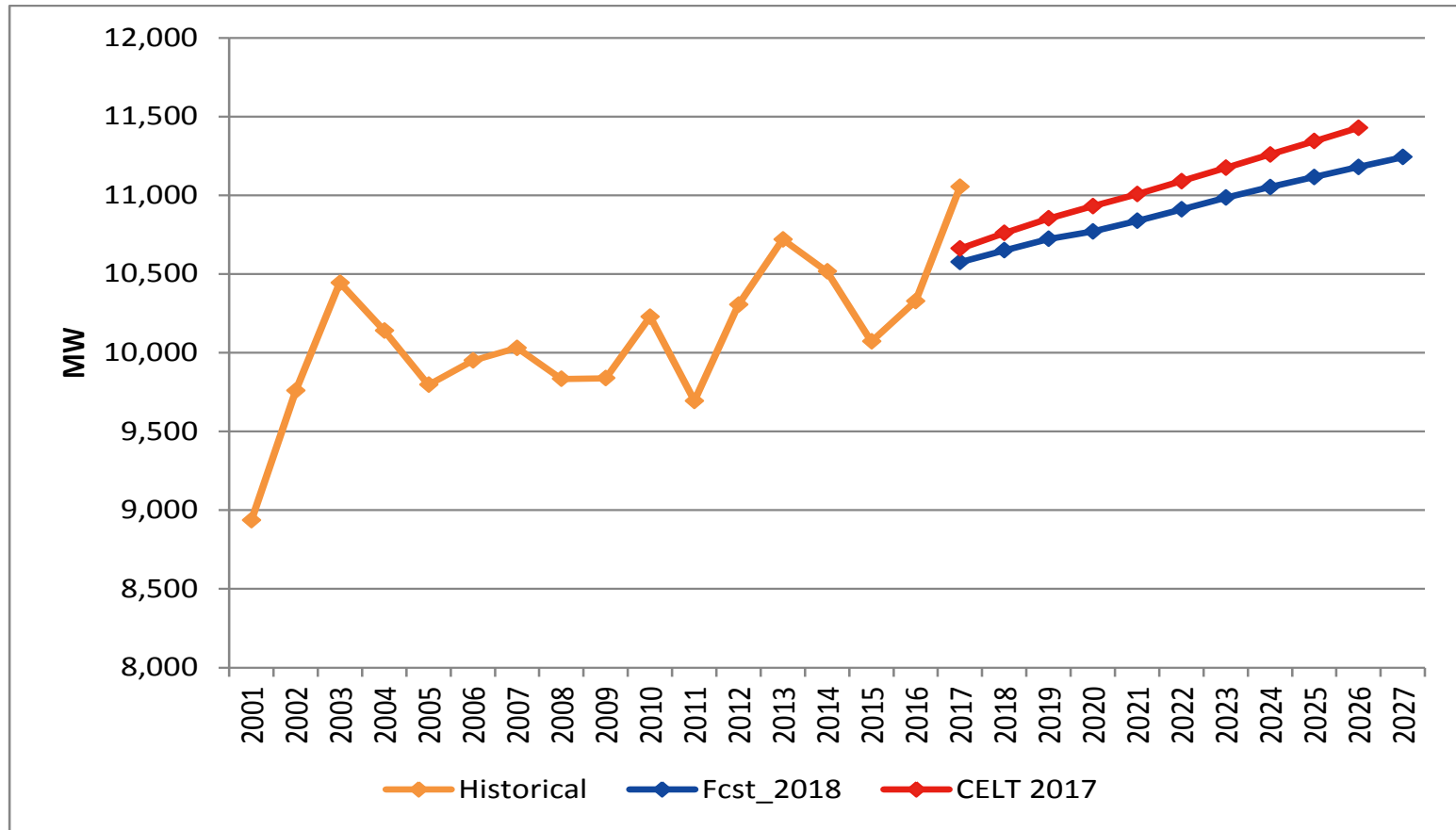
Year	2018 CELT (MW)						2017 CELT (MW)						Change (MW)					
	Gross		BTM PV	EE	Net		Gross		BTM PV	EE	Net		Gross		BTM PV	EE	Net	
	50/50	90/10			50/50	90/10	50/50	90/10			50/50	90/10	50/50	90/10			50/50	90/10
2018	23,026	23,725	0	2669	20,357	21,057	23,180	23,878	0	2,171	21,009	21,707	-154	-153	0	498	-652	-650
2019	23,138	23,837	0	2865	20,272	20,972	23,318	24,017	0	2,371	20,947	21,646	-180	-180	0	494	-675	-674
2020	23,206	23,906	0	3194	20,012	20,712	23,436	24,135	0	2,788	20,648	21,347	-230	-229	0	406	-636	-635
2021	23,322	24,021	0	3513	19,808	20,508	23,556	24,255	0	3,105	20,451	21,150	-234	-234	0	408	-643	-642
2022	23,450	24,150	0	3808	19,642	20,342	23,691	24,389	0	3,398	20,293	20,991	-241	-239	0	410	-651	-649
2023	23,581	24,281	0	4076	19,505	20,205	23,830	24,529	0	3,666	20,164	20,863	-249	-248	0	410	-659	-658
2024	23,698	24,397	0	4318	19,380	20,079	23,970	24,668	0	3,907	20,063	20,761	-272	-271	0	411	-683	-682
2025	23,805	24,505	0	4534	19,271	19,971	24,106	24,805	0	4,122	19,984	20,683	-301	-300	0	412	-713	-712
2026	23,915	24,615	0	4725	19,190	19,890	24,244	24,942	0	4,312	19,932	20,630	-329	-327	0	413	-742	-740
2027	24,024	24,723	0	4891	19,133	19,833												

Change in Winter Peak Net Load by Component

Draft 2018 CELT and 2017 CELT



2018 CELT Gross Winter 50/50 Peak Demand Forecast Massachusetts



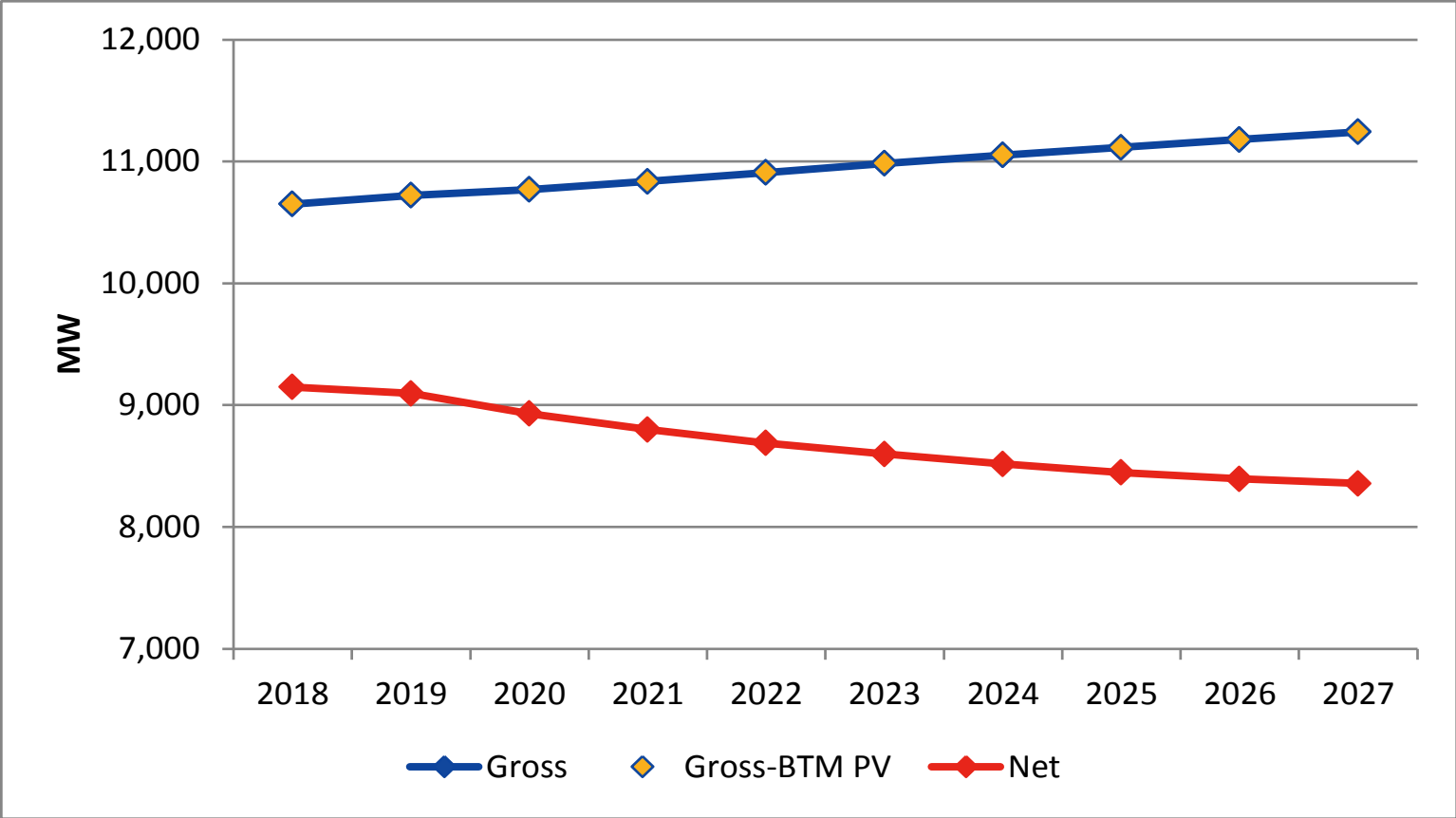
2018 (-1.0%, -109 MW)

2022 (-1.6%, -179 MW)

2026 (-2.2%, -249 MW)

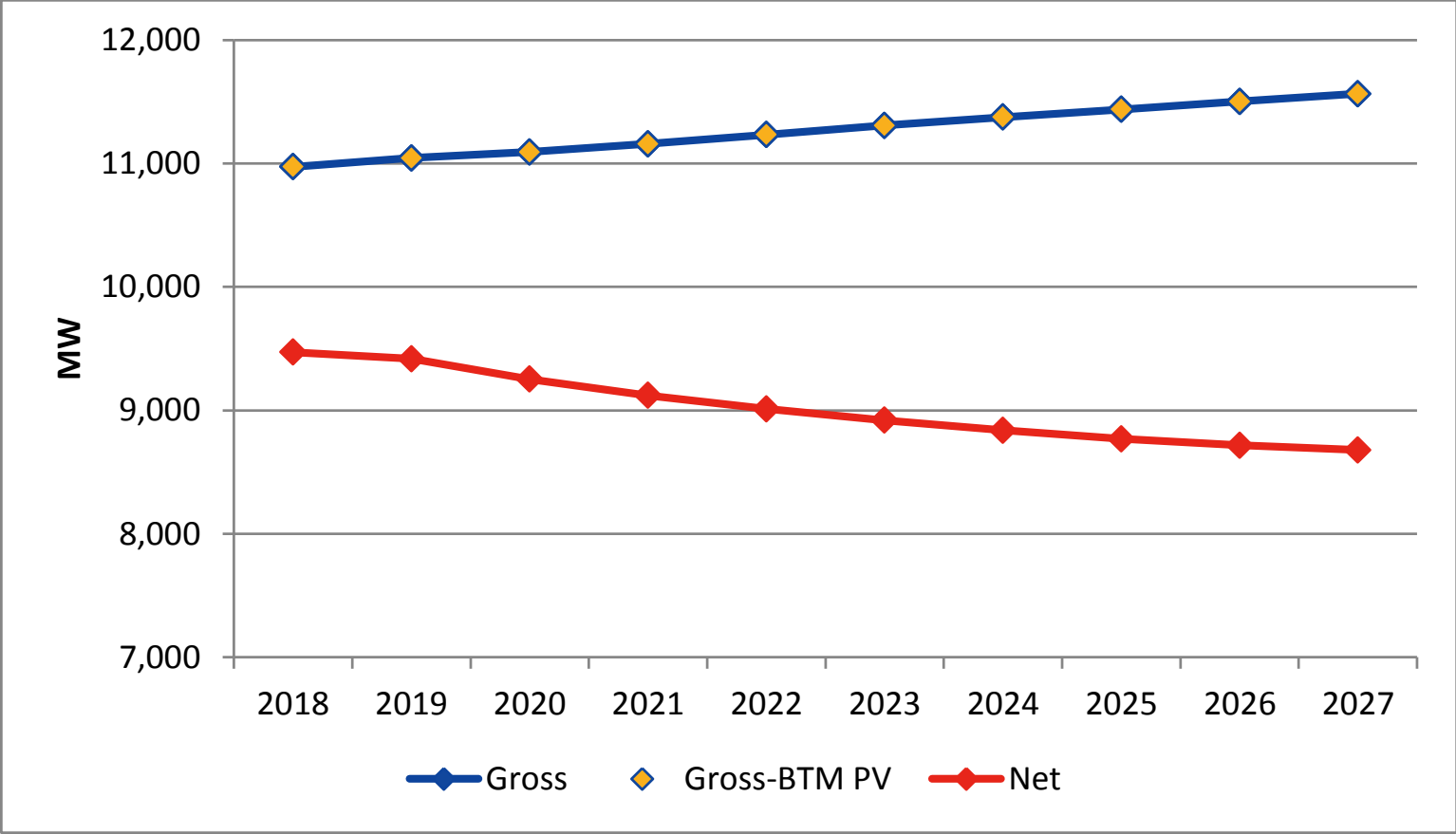
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

Massachusetts

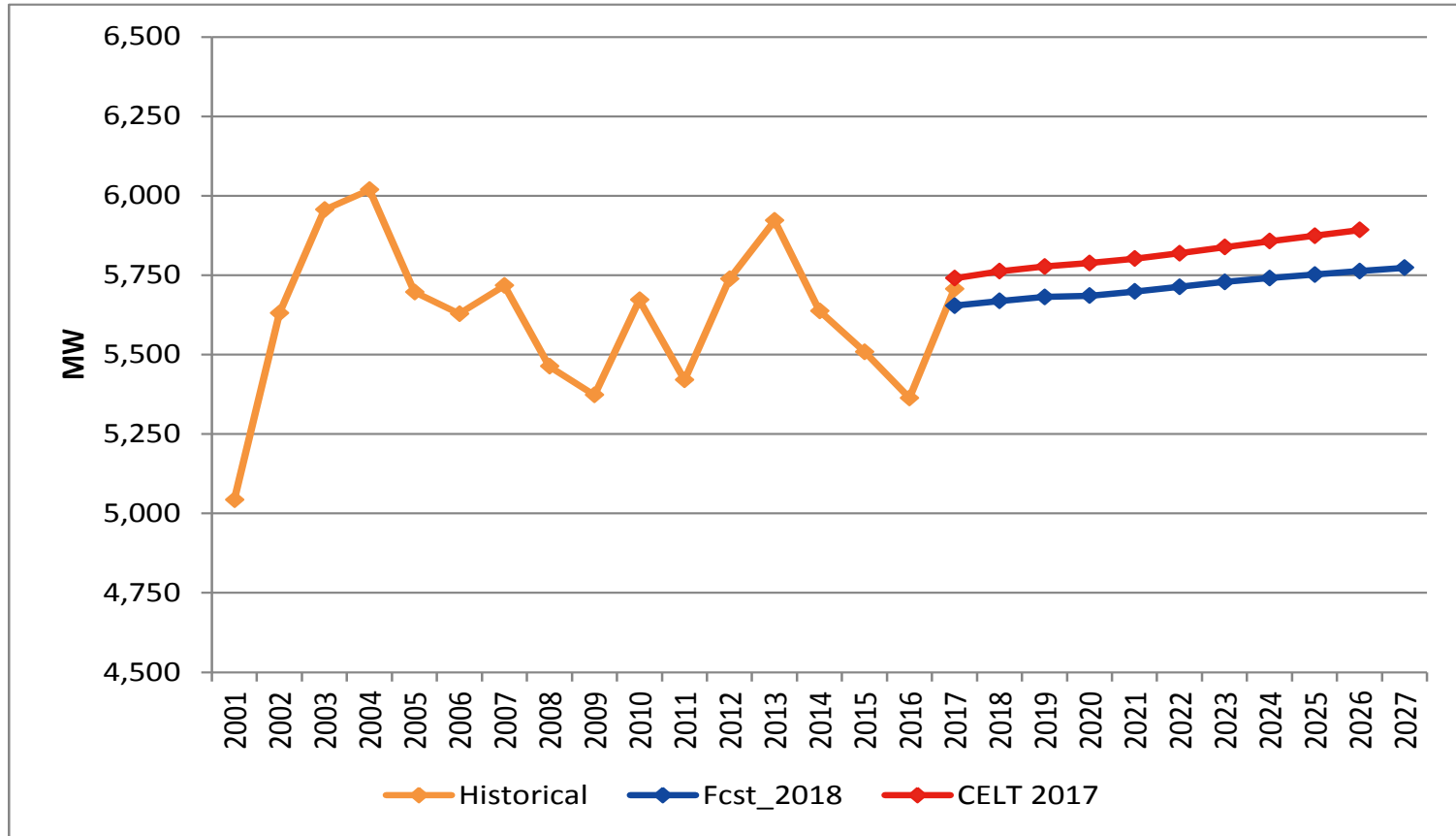


Draft 2018 CELT Winter 90/10 Peak Demand Forecast

Massachusetts



2018 CELT Gross Winter 50/50 Peak Demand Forecast Connecticut



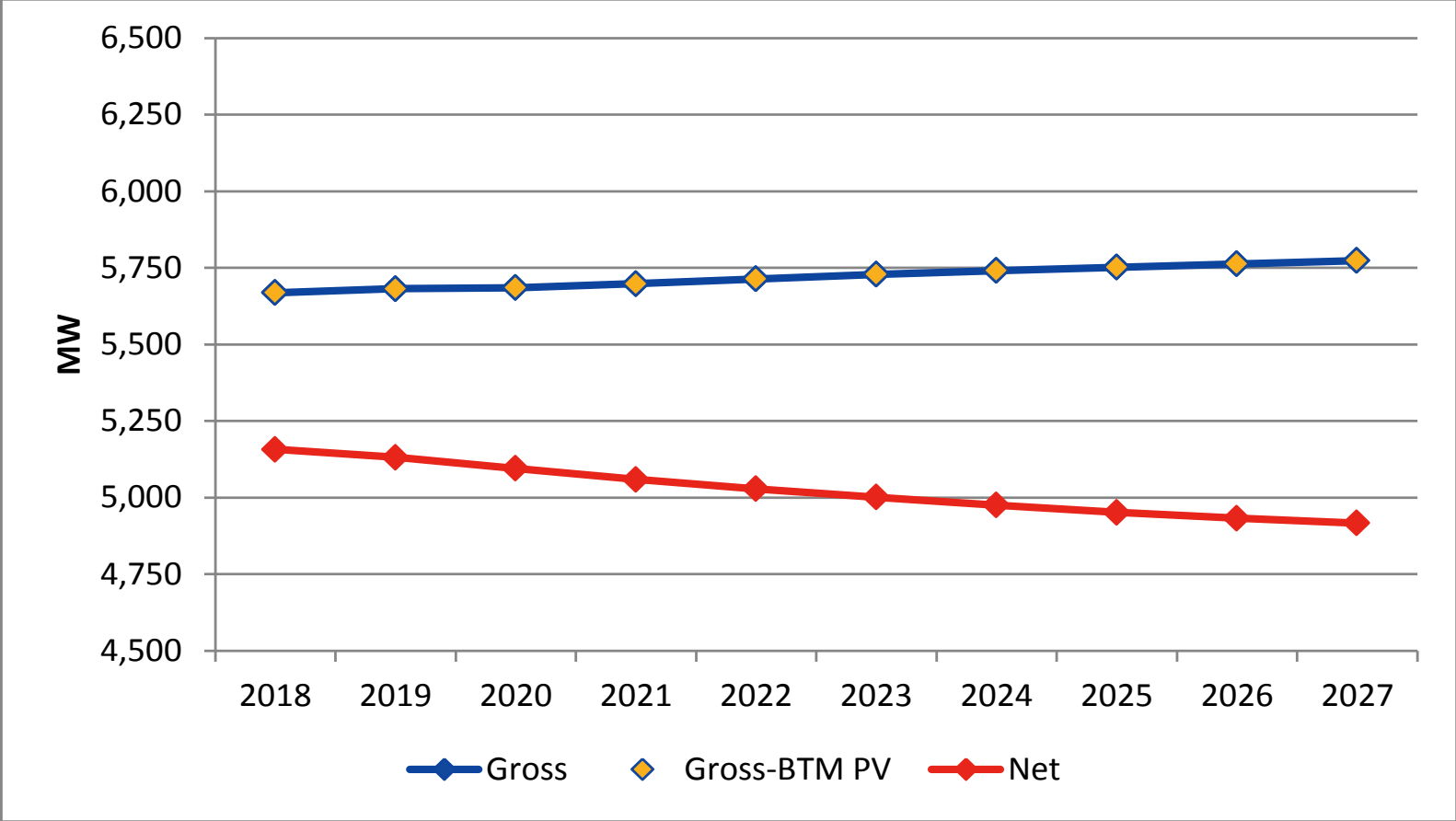
2018 (-1.6%, -93 MW)

2022 (-1.8%, -106 MW)

2026 (-2.2%, -129 MW)

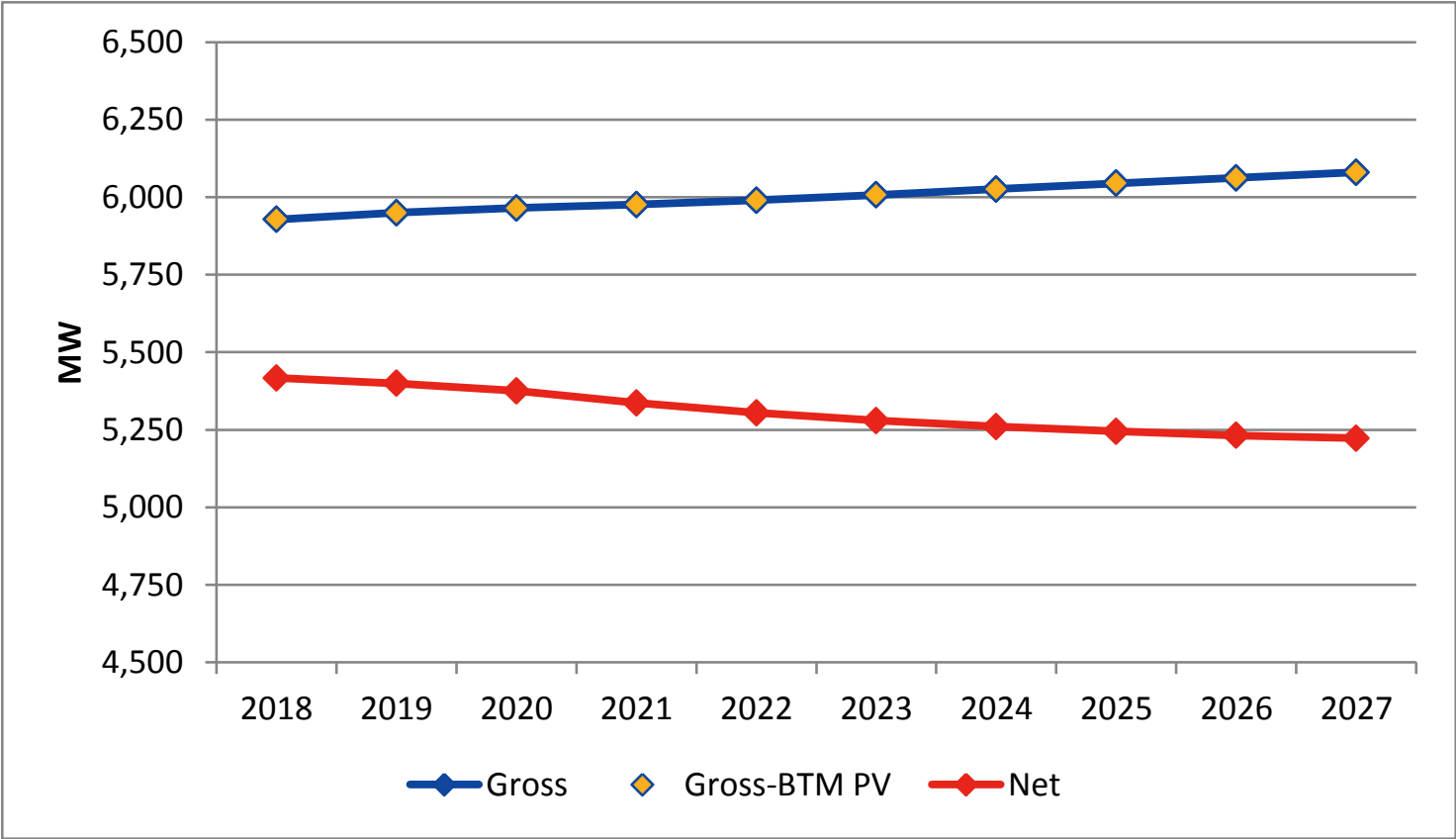
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

Connecticut



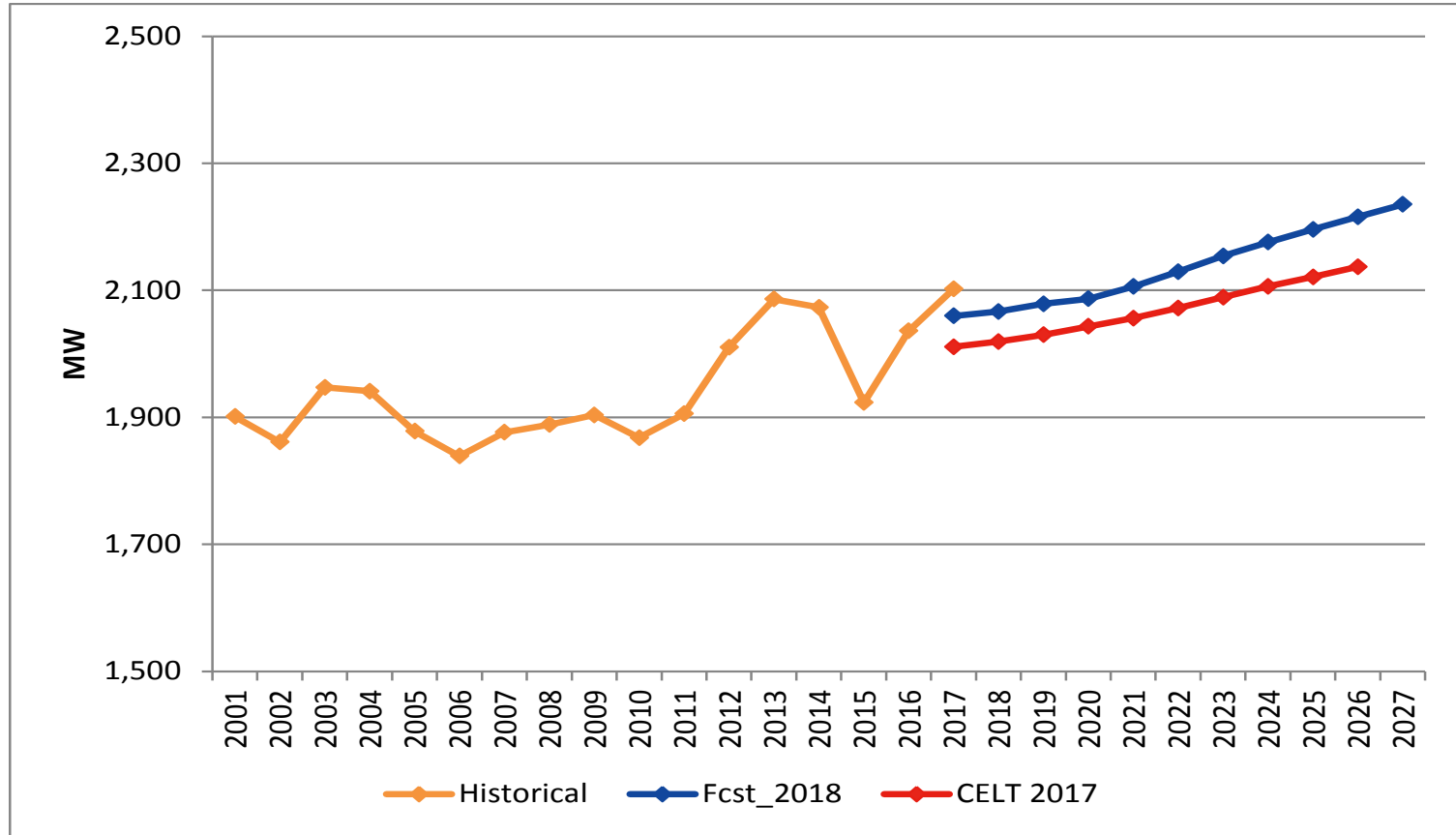
Draft 2018 CELT Winter 90/10 Peak Demand Forecast

Connecticut



2018 CELT Gross Winter 50/50 Peak Demand Forecast

Maine



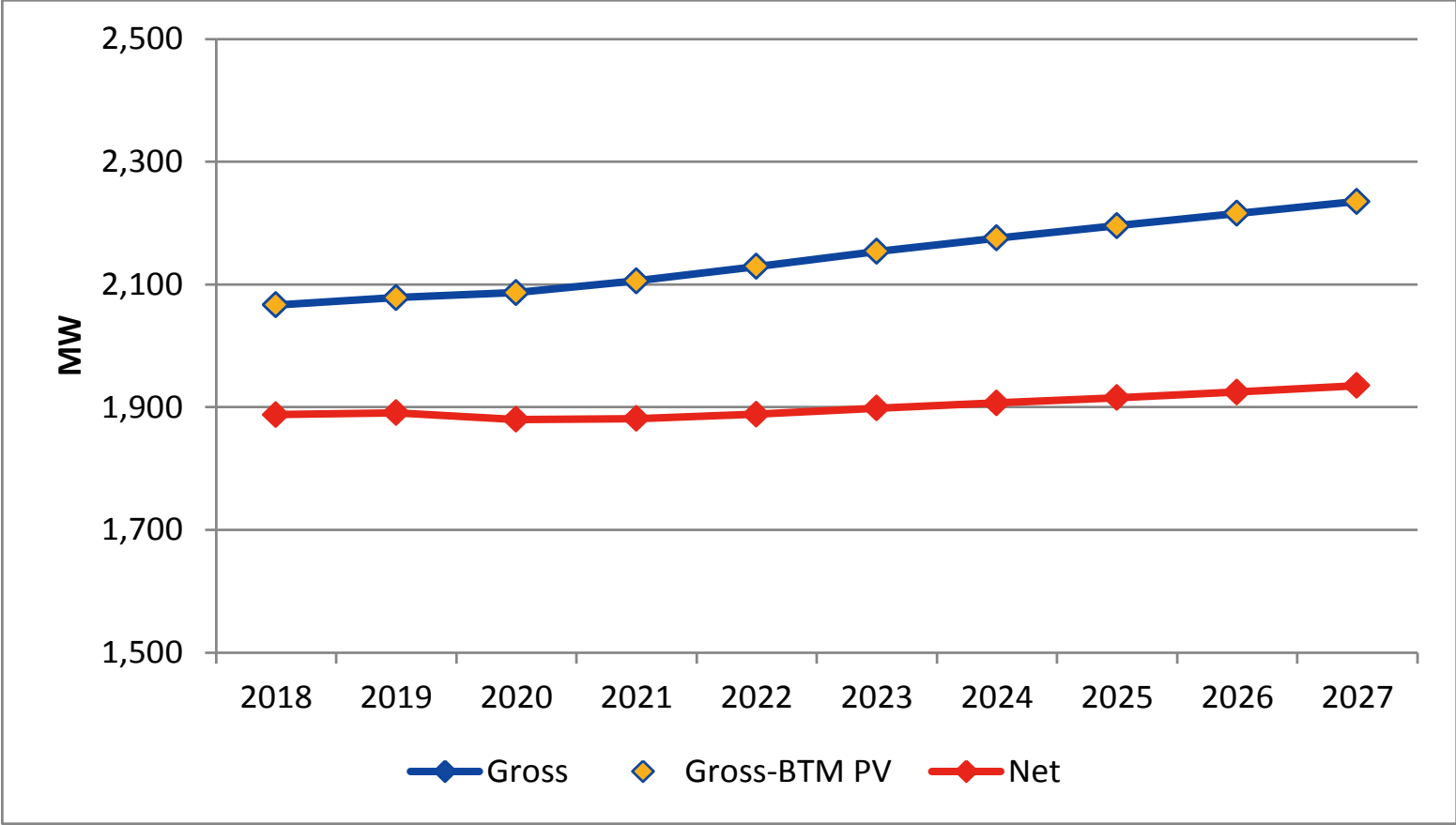
2018 (+2.4%, +48 MW)

2022 (+2.8%, +57 MW)

2026 (+3.7%, +79 MW)

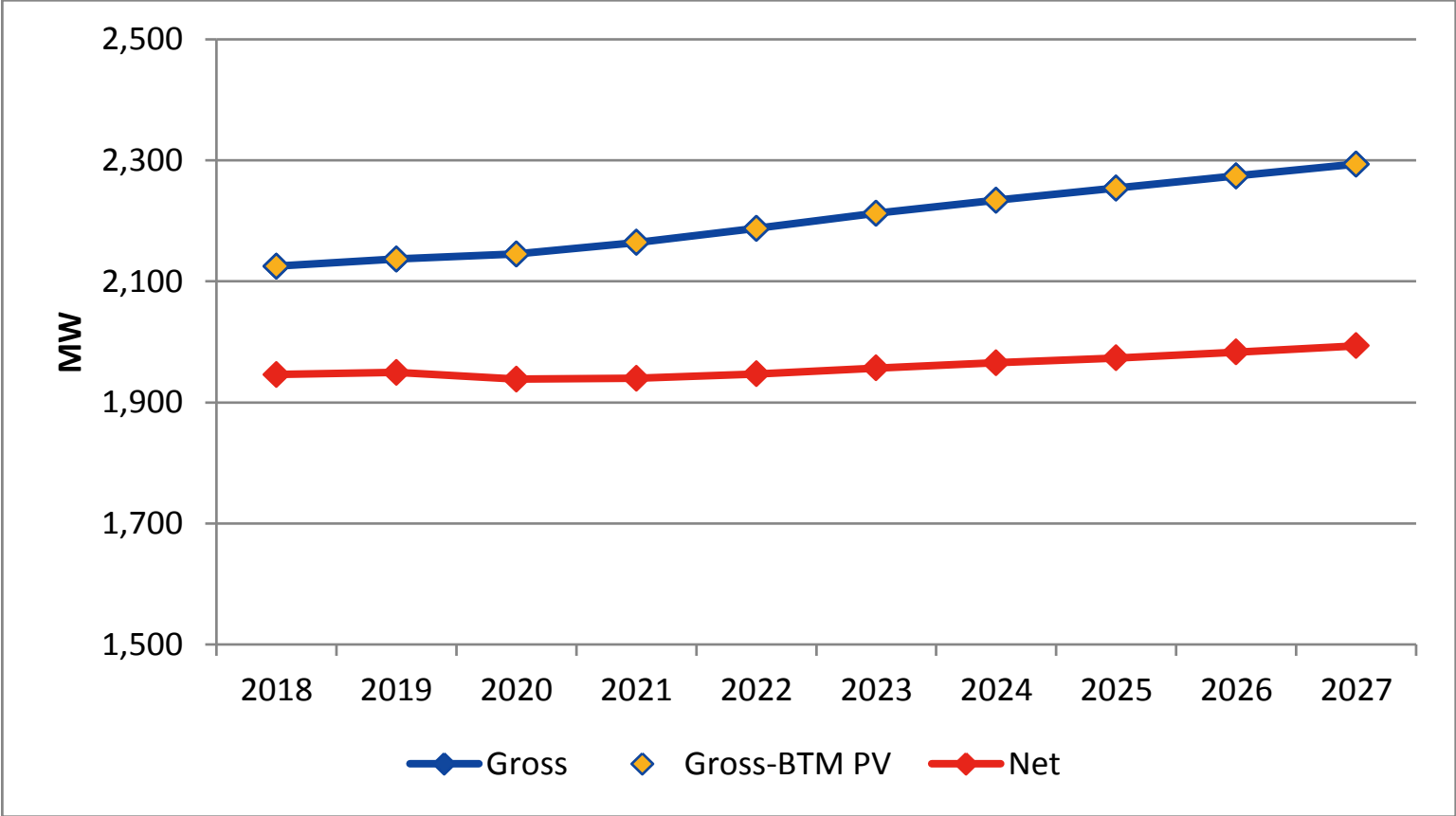
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

Maine



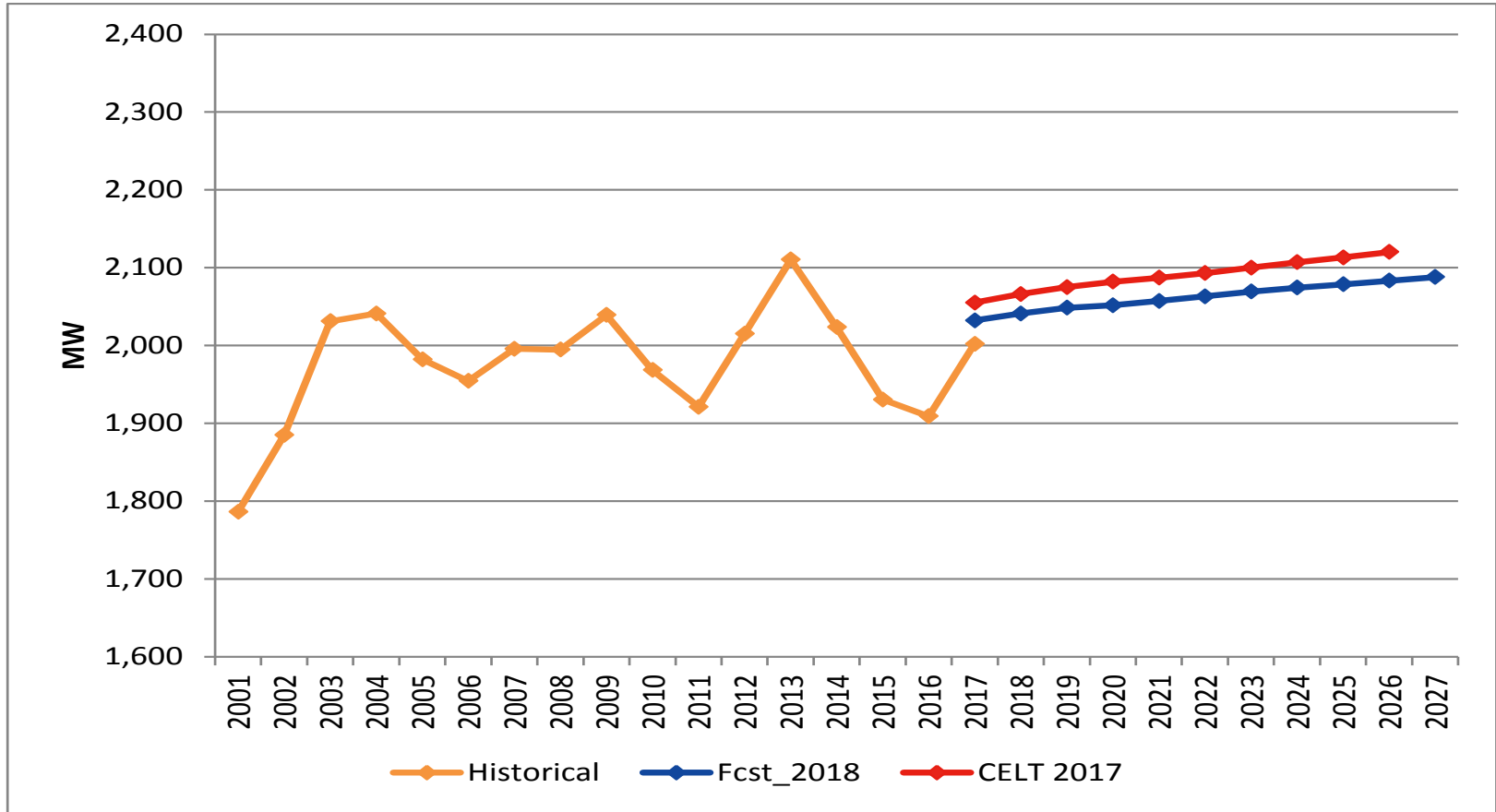
Draft 2018 CELT Winter 90/10 Peak Demand Forecast

Maine



2018 CELT Gross Winter 50/50 Peak Demand Forecast

New Hampshire



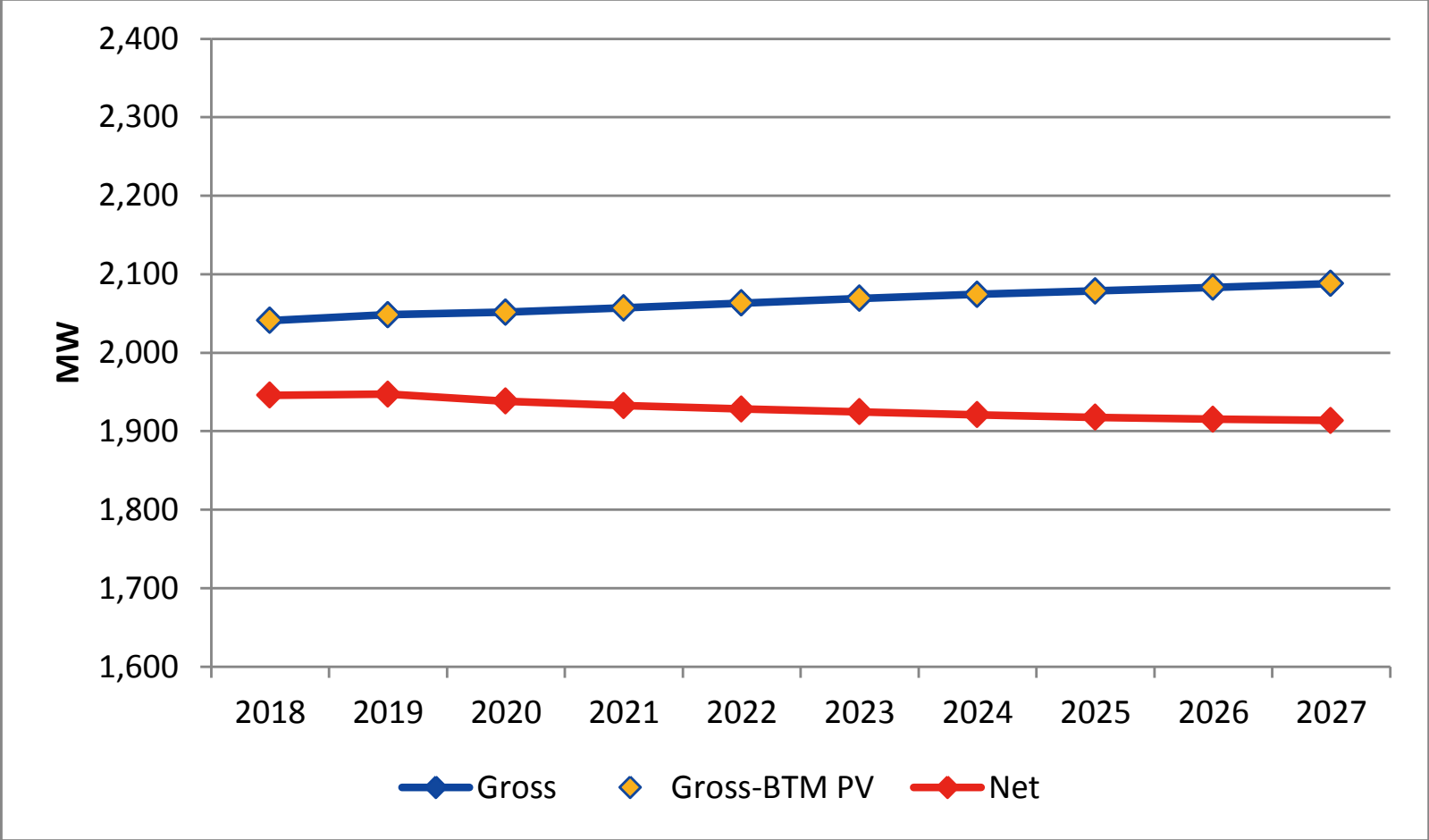
2018 (-1.2%, -25 MW)

2022 (-1.4%, -30 MW)

2026 (-1.7%, -37 MW)

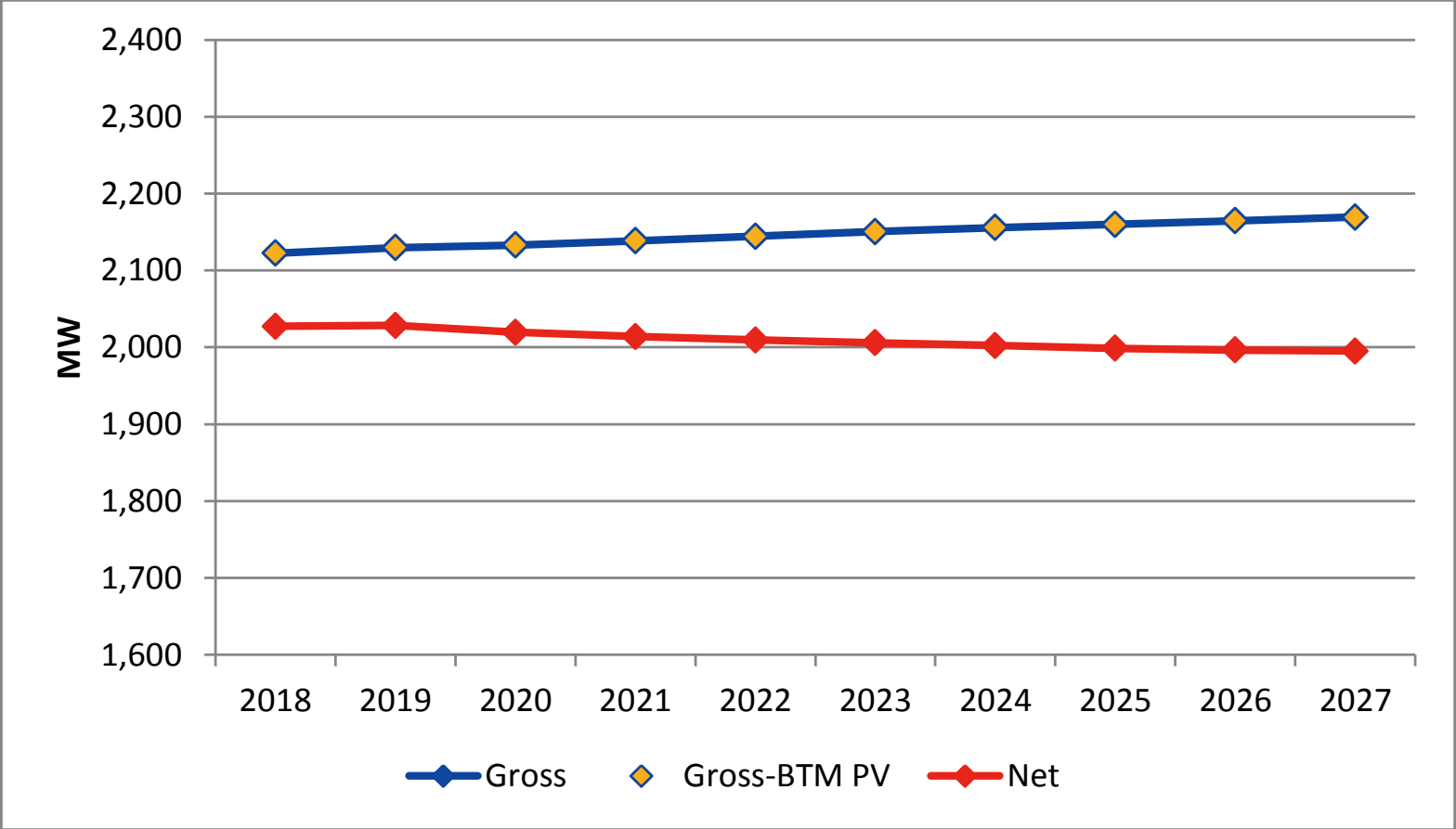
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

New Hampshire

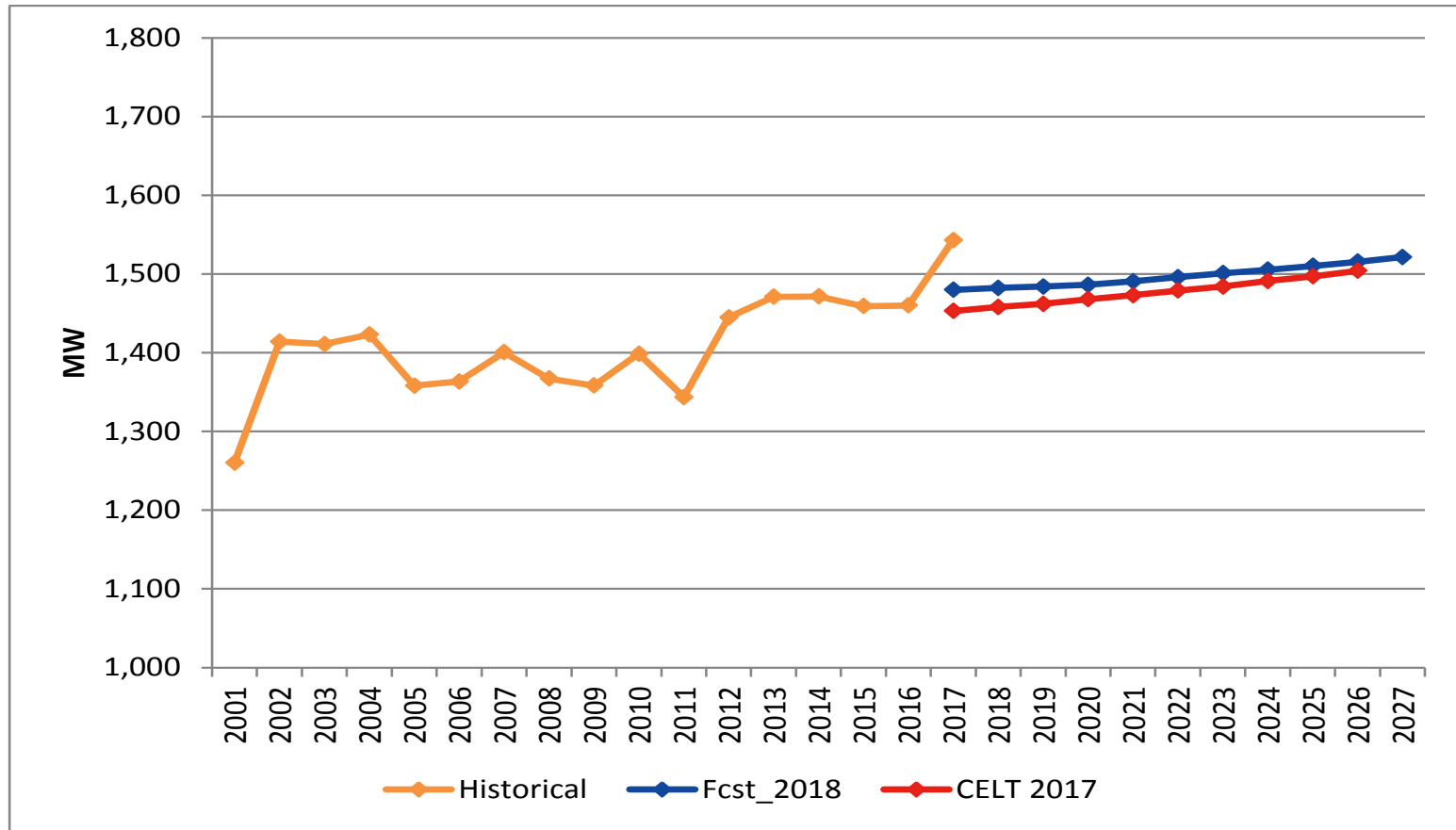


Draft 2018 CELT Winter 90/10 Peak Demand Forecast

New Hampshire



2018 CELT Gross Winter 50/50 Peak Demand Forecast Rhode Island



2018 (+1.7%, +24 MW)

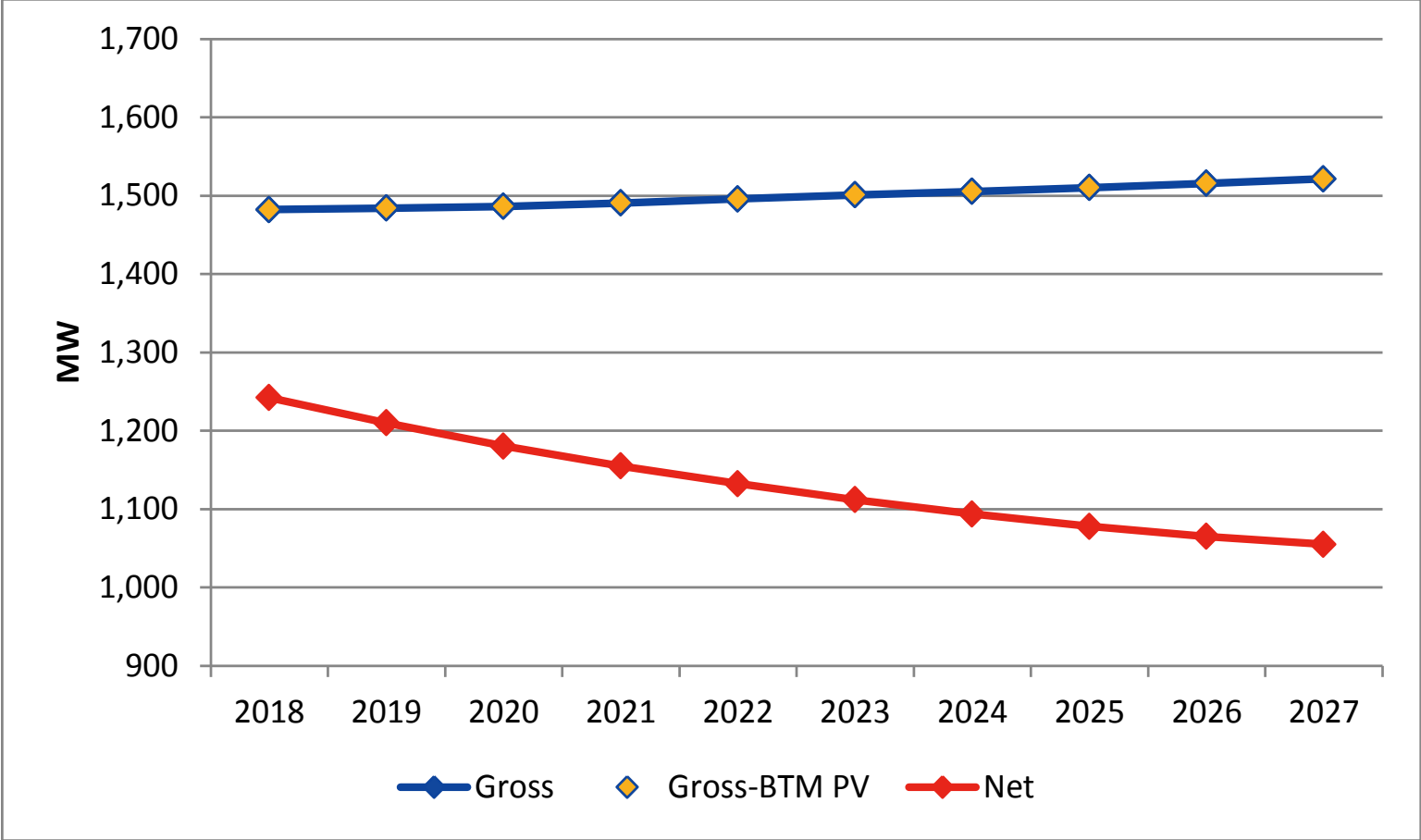
2022 (+1.1%, +17 MW)

2026 (+0.8%, +12 MW)



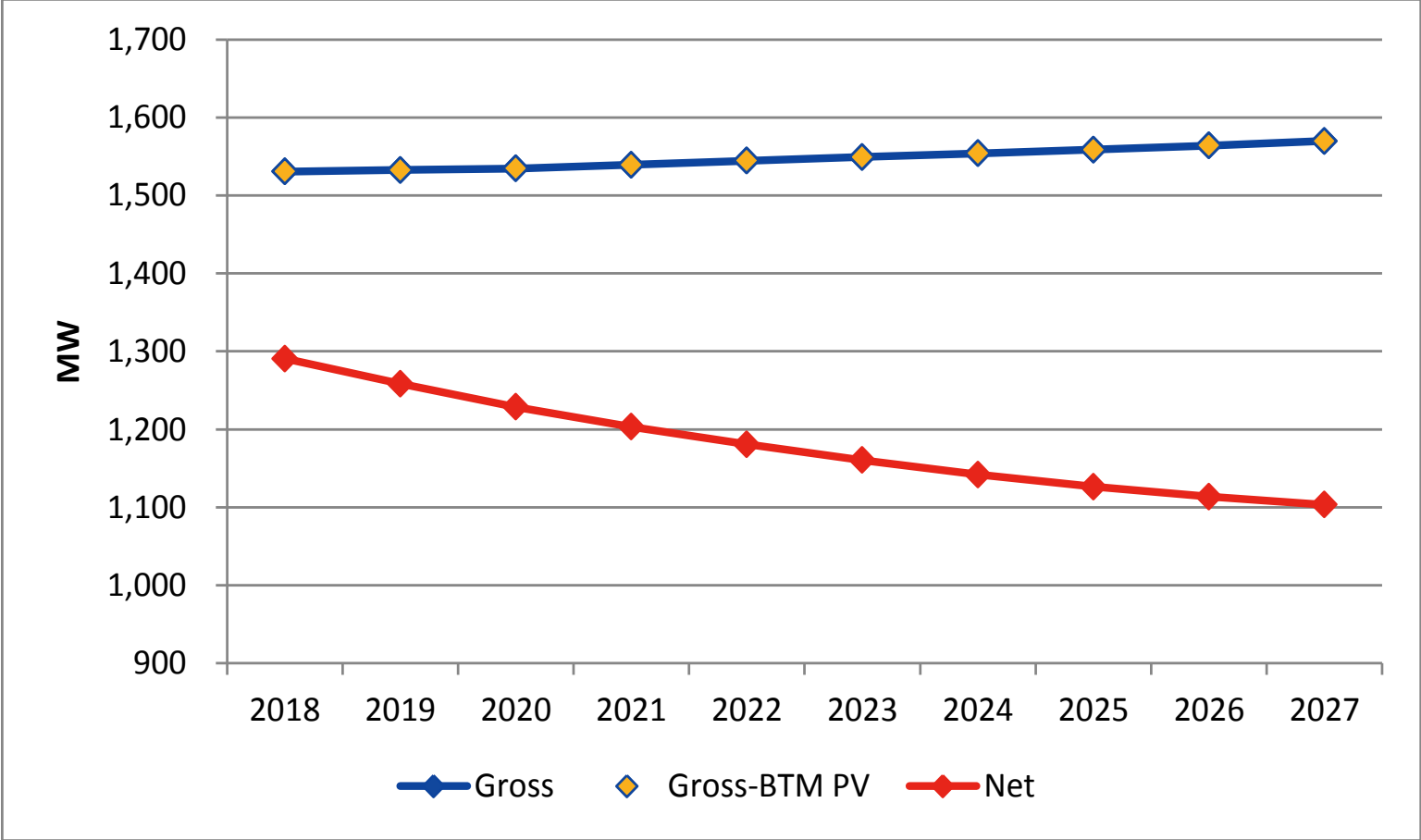
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

Rhode Island

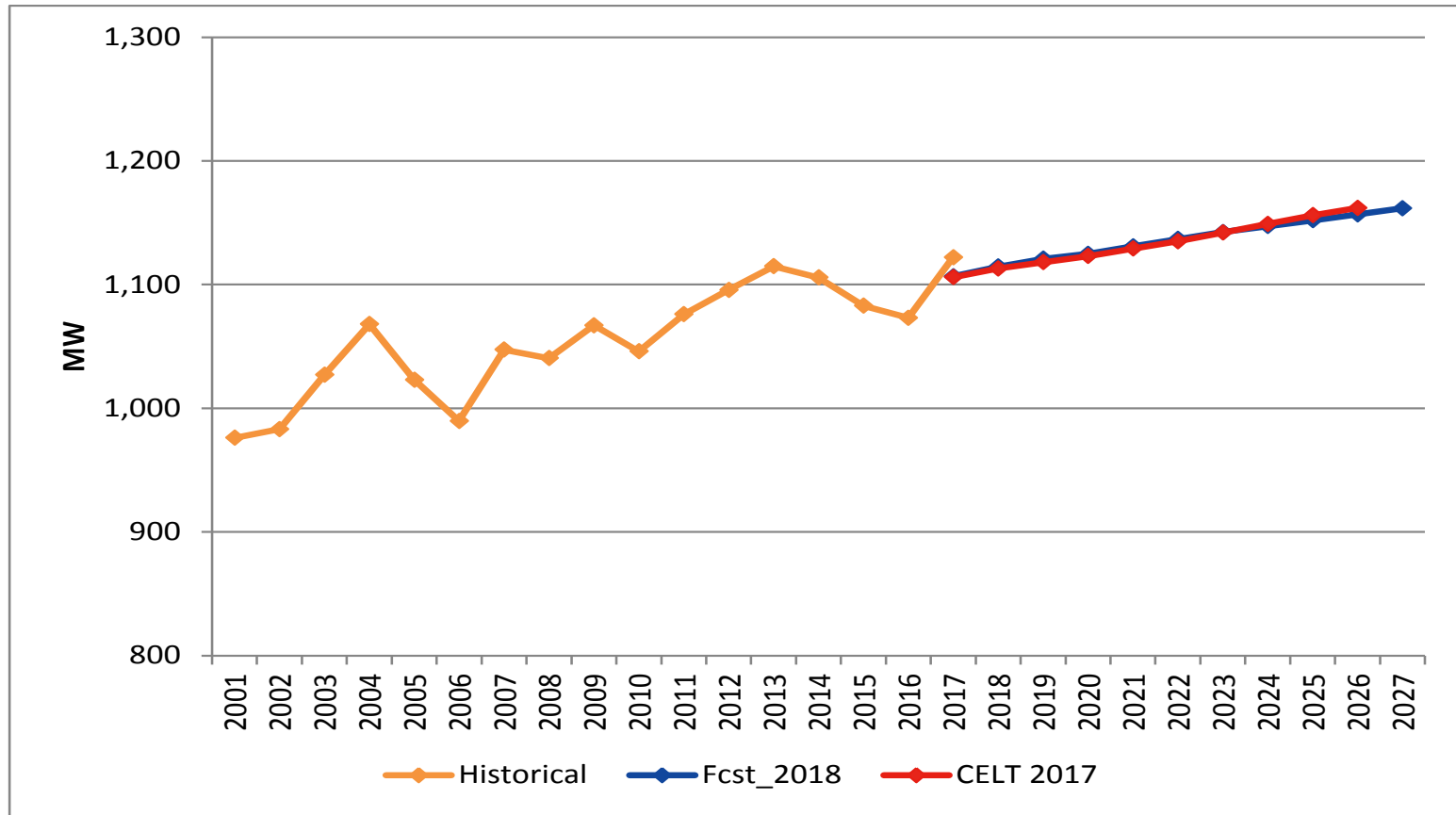


Draft 2018 CELT Winter 90/10 Peak Demand Forecast

Rhode Island



2018 CELT Gross Winter 50/50 Peak Demand Forecast Vermont



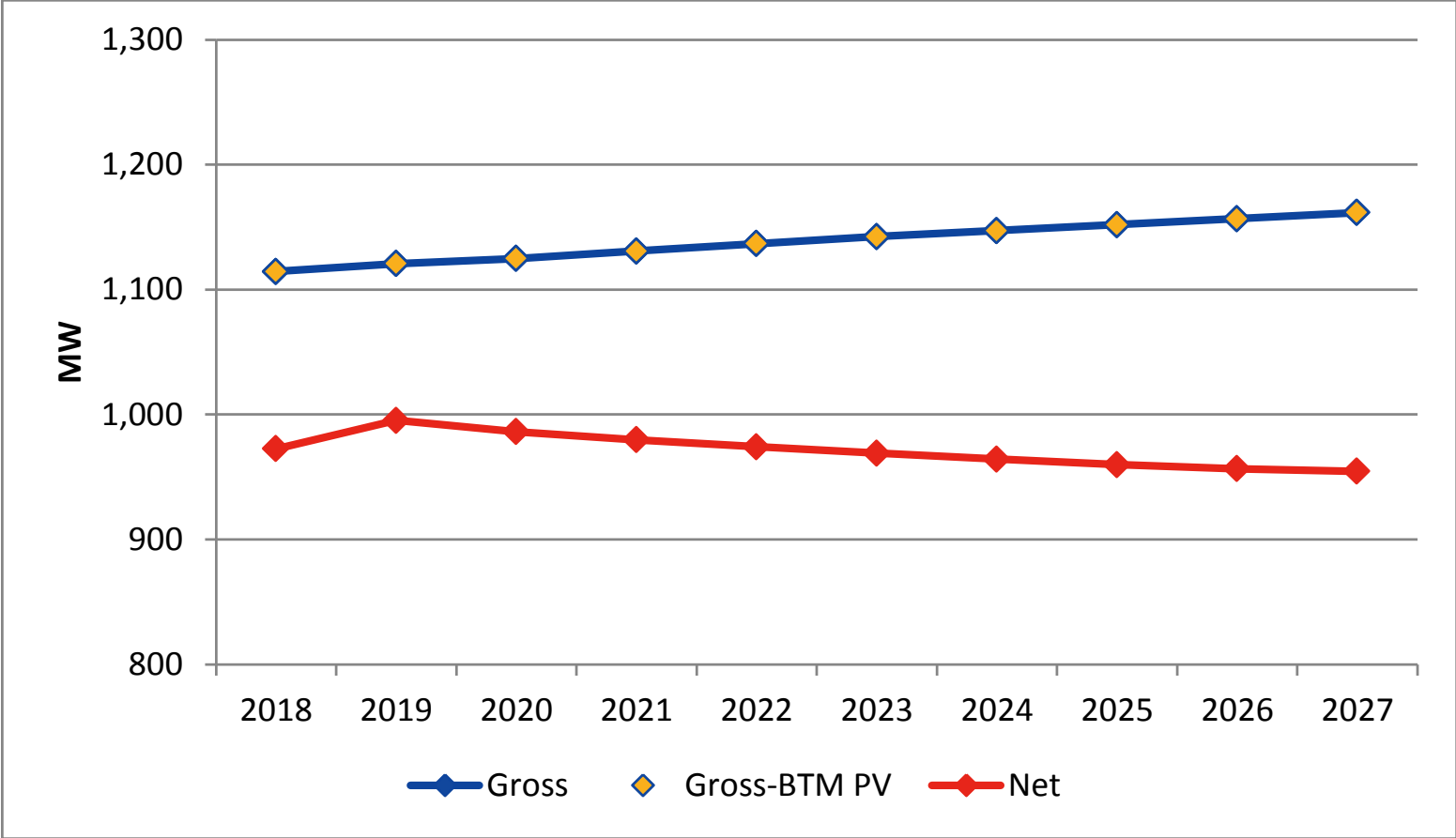
2018 (+0.1%, +1 MW)

2022 (+0.2%, +2 MW)

2026 (-0.5%, -5 MW)

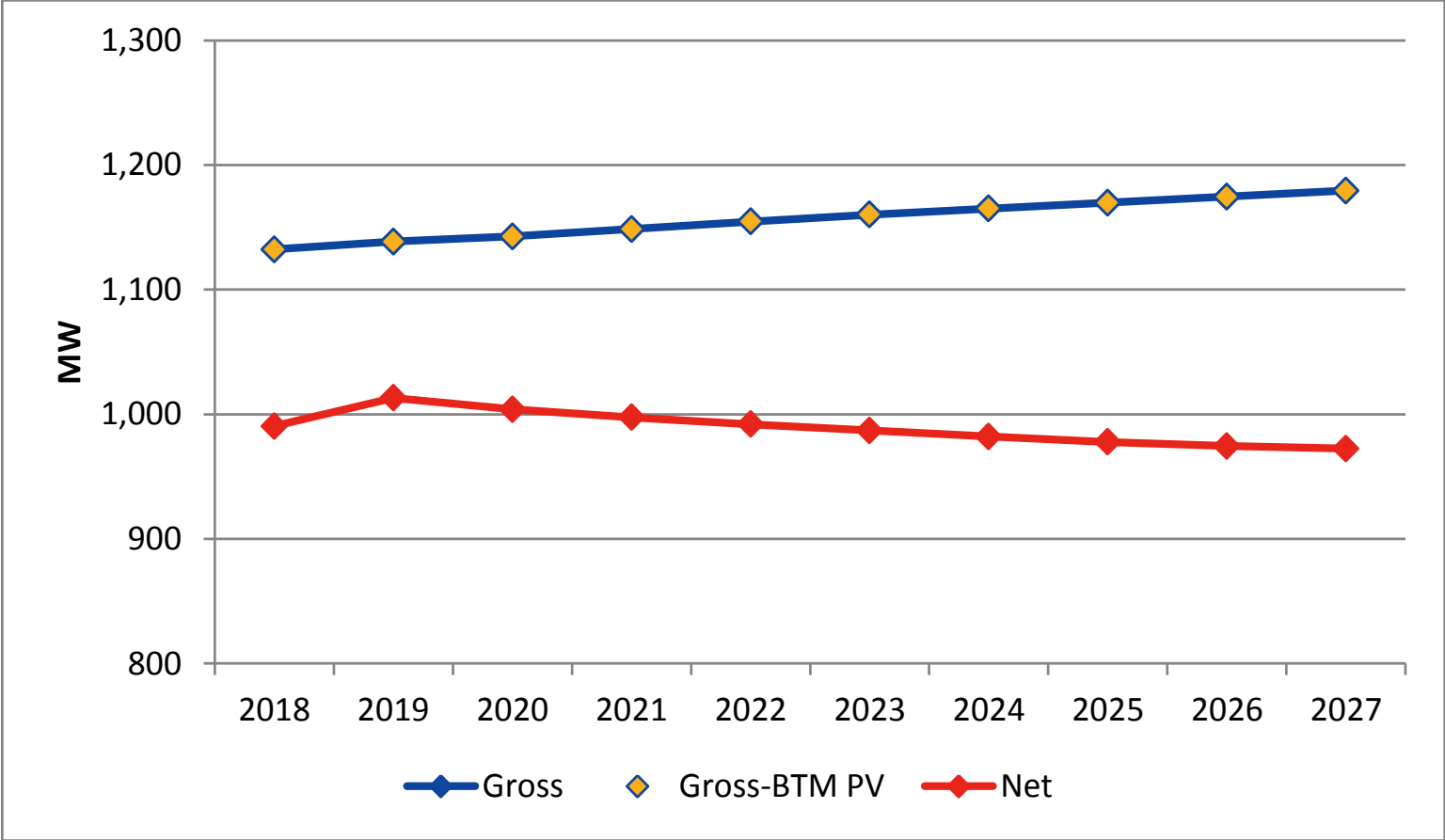
Draft 2018 CELT Winter 50/50 Peak Demand Forecast

Vermont



Draft 2018 CELT Winter 90/10 Peak Demand Forecast

Vermont



Next Steps

- The final forecast will be published as part of the 2018 CELT by May 1st
- ISO encourages LFC members to suggest topics of interest for the summer LFC meeting in July

Questions



APPENDIX

Energy and Demand Tables by State

Massachusetts Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)					Change (GWh)				
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net		
2018	66,532	1,085	8,640	56,807	66,163	1,262	7,017	57,884	369	-177	1,623	-1,077		
2019	67,347	1,272	10,374	55,701	66,996	1,434	7,941	57,621	351	-162	2,433	-1,920		
2020	67,891	1,418	12,005	54,468	67,706	1,557	9,269	56,880	185	-139	2,736	-2,412		
2021	68,675	1,556	13,522	53,596	68,400	1,677	10,716	56,007	274	-121	2,806	-2,411		
2022	69,527	1,691	14,918	52,919	69,147	1,793	12,046	55,308	380	-102	2,872	-2,390		
2023	70,401	1,824	16,186	52,391	69,919	1,906	13,255	54,758	482	-82	2,931	-2,367		
2024	71,196	1,960	17,327	51,909	70,691	1,997	14,342	54,352	505	-37	2,985	-2,443		
2025	71,935	2,070	18,340	51,525	71,453	2,051	15,308	54,094	483	19	3,032	-2,569		
2026	72,685	2,148	19,231	51,306	72,227	2,102	16,158	53,967	458	46	3,073	-2,662		
2027	73,422	2,222	20,006	51,193										

Massachusetts Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	13,835	14,941	316	1485	12,034	13,140	13,877	14,936	367	1,077	12,433	13,492	-42	5	-51	408	-399	-352
2019	13,981	15,103	356	1726	11,899	13,021	14,056	15,133	400	1,233	12,423	13,500	-75	-30	-44	493	-524	-479
2020	14,112	15,250	384	1952	11,776	12,914	14,225	15,321	421	1,388	12,416	13,512	-113	-71	-37	564	-640	-598
2021	14,256	15,410	408	2163	11,685	12,840	14,392	15,506	442	1,533	12,417	13,531	-136	-96	-34	630	-732	-691
2022	14,404	15,575	429	2356	11,619	12,790	14,563	15,696	462	1,669	12,432	13,565	-159	-121	-33	687	-813	-775
2023	14,553	15,740	448	2532	11,573	12,760	14,736	15,887	480	1,795	12,461	13,612	-183	-147	-32	737	-888	-852
2024	14,698	15,901	465	2690	11,542	12,745	14,909	16,079	492	1,913	12,504	13,674	-211	-178	-27	777	-962	-929
2025	14,840	16,059	477	2831	11,532	12,750	15,081	16,269	497	2,022	12,562	13,750	-241	-210	-20	809	-1,030	-1,000
2026	14,982	16,217	483	2955	11,545	12,780	15,255	16,462	501	2,123	12,631	13,838	-273	-245	-18	832	-1,086	-1,058
2027	15,123	16,375	487	3062	11,574	12,826												



Massachusetts Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	10,651	10,973	0	1,502	9,149	9,471	10,760	11,086	0	1,153	9,607	9,933	-109	-113	0	349	-458	-462
2019	10,722	11,044	0	1,626	9,096	9,418	10,853	11,178	0	1,272	9,581	9,906	-131	-134	0	354	-485	-488
2020	10,770	11,092	0	1,840	8,930	9,252	10,931	11,257	0	1,547	9,384	9,710	-161	-165	0	293	-454	-458
2021	10,837	11,159	0	2,038	8,799	9,121	11,007	11,333	0	1,742	9,265	9,591	-170	-174	0	296	-466	-470
2022	10,910	11,232	0	2,221	8,689	9,011	11,089	11,415	0	1,921	9,168	9,494	-179	-183	0	300	-479	-483
2023	10,984	11,307	0	2,387	8,598	8,920	11,174	11,500	0	2,084	9,090	9,416	-190	-193	0	303	-492	-496
2024	11,052	11,374	0	2,536	8,516	8,839	11,259	11,585	0	2,231	9,028	9,354	-207	-211	0	305	-512	-515
2025	11,115	11,437	0	2,668	8,447	8,769	11,343	11,668	0	2,361	8,982	9,307	-228	-231	0	307	-535	-538
2026	11,179	11,502	0	2,785	8,395	8,717	11,428	11,753	0	2,475	8,953	9,278	-249	-251	0	310	-558	-561
2027	11,242	11,564	0	2,886	8,356	8,678												

Connecticut Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)					Change (GWh)			
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	
2018	34,206	539	3,367	30,300	34,390	612	2,428	31,350	-185	-73	939	-1,050	
2019	34,412	657	3,663	30,093	34,587	789	2,970	30,828	-175	-132	693	-735	
2020	34,489	775	3,971	29,743	34,733	928	3,607	30,198	-244	-153	364	-455	
2021	34,707	886	4,358	29,462	34,909	995	4,038	29,876	-203	-109	320	-414	
2022	34,956	984	4,718	29,254	35,128	1,054	4,439	29,635	-173	-70	279	-381	
2023	35,209	1,069	5,048	29,091	35,359	1,112	4,807	29,440	-150	-43	241	-349	
2024	35,419	1,139	5,348	28,932	35,586	1,167	5,141	29,278	-167	-28	207	-346	
2025	35,604	1,202	5,616	28,786	35,802	1,221	5,440	29,141	-197	-19	176	-355	
2026	35,794	1,265	5,854	28,675	36,018	1,273	5,705	29,040	-223	-8	149	-365	
2027	35,981	1,325	6,063	28,593									

Connecticut Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	7,399	8,032	155	570	6,675	7,307	7,595	8,276	178	459	6,958	7,639	-196	-244	-23	111	-283	-332
2019	7,434	8,070	182	612	6,641	7,277	7,639	8,327	221	533	6,885	7,573	-205	-257	-39	79	-244	-296
2020	7,462	8,101	207	655	6,600	7,239	7,682	8,377	251	643	6,788	7,483	-220	-276	-44	12	-188	-244
2021	7,498	8,141	229	710	6,559	7,201	7,727	8,429	262	702	6,763	7,465	-229	-288	-33	8	-204	-264
2022	7,535	8,182	246	761	6,528	7,174	7,773	8,482	271	756	6,746	7,455	-238	-300	-25	5	-218	-281
2023	7,573	8,223	259	808	6,506	7,156	7,820	8,536	280	807	6,733	7,449	-247	-313	-21	1	-227	-293
2024	7,608	8,262	266	851	6,491	7,144	7,867	8,590	287	853	6,727	7,450	-259	-328	-21	-2	-236	-306
2025	7,642	8,299	273	889	6,480	7,137	7,913	8,643	296	894	6,723	7,453	-271	-344	-23	-5	-243	-316
2026	7,677	8,337	280	923	6,474	7,134	7,960	8,696	304	930	6,726	7,462	-283	-359	-24	-7	-252	-328
2027	7,711	8,374	286	952	6,473	7,136												

Connecticut Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
	Gross	Gross			Net	Net	Gross	Gross			Net	Net	Gross	Gross			Net	Net
Year	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10
2018	5,669	5,928	0	511	5,157	5,417	5,762	5,950	0	423	5,339	5,527	-93	-22	0	88	-182	-110
2019	5,681	5,950	0	550	5,131	5,400	5,777	5,965	0	495	5,282	5,470	-96	-15	0	55	-151	-70
2020	5,685	5,965	0	590	5,095	5,375	5,788	5,976	0	634	5,154	5,342	-103	-11	0	-44	-59	33
2021	5,698	5,976	0	639	5,059	5,337	5,802	5,990	0	692	5,110	5,298	-104	-14	0	-53	-51	39
2022	5,713	5,990	0	685	5,028	5,305	5,819	6,007	0	746	5,073	5,261	-106	-17	0	-61	-45	44
2023	5,729	6,007	0	727	5,001	5,280	5,838	6,026	0	796	5,042	5,230	-109	-19	0	-69	-41	50
2024	5,741	6,026	0	766	4,975	5,260	5,857	6,045	0	841	5,016	5,204	-116	-19	0	-75	-41	56
2025	5,752	6,045	0	800	4,952	5,245	5,874	6,062	0	881	4,993	5,181	-122	-17	0	-81	-41	64
2026	5,763	6,062	0	830	4,932	5,232	5,892	6,080	0	917	4,975	5,163	-129	-18	0	-87	-43	69
2027	5,774	6,080	0	857	4,917	5,223												

Maine Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)					Change (GWh)			
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	
2018	12,878	50	1,216	11,613	12,768	42	1,226	11,500	110	8	-10	113	
2019	12,976	63	1,377	11,536	12,885	51	1,263	11,571	91	12	114	-35	
2020	13,042	77	1,529	11,437	13,003	60	1,178	11,765	40	17	351	-328	
2021	13,195	90	1,670	11,436	13,137	68	1,330	11,739	59	22	340	-303	
2022	13,380	102	1,800	11,478	13,291	76	1,469	11,746	90	26	331	-267	
2023	13,576	115	1,918	11,543	13,453	84	1,596	11,773	123	31	322	-229	
2024	13,749	127	2,024	11,598	13,611	92	1,710	11,809	138	35	314	-211	
2025	13,909	139	2,118	11,651	13,763	99	1,812	11,852	146	40	306	-201	
2026	14,067	152	2,201	11,715	13,910	107	1,901	11,902	157	45	300	-188	
2027	14,222	164	2,273	11,785									

Maine Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
	Gross	Gross			Net	Net	Gross	Gross			Net	Net	Gross	Gross			Net	Net
Year	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10
2018	2,111	2,243	15	176	1,921	2,052	2,168	2,308	12	181	1,975	2,115	-57	-65	3	-5	-54	-63
2019	2,120	2,252	18	197	1,905	2,037	2,187	2,328	14	183	1,990	2,131	-67	-76	4	14	-85	-94
2020	2,127	2,259	21	217	1,889	2,021	2,207	2,349	16	155	2,036	2,178	-80	-90	5	62	-147	-157
2021	2,140	2,273	24	236	1,880	2,014	2,228	2,371	18	172	2,038	2,181	-88	-98	6	64	-158	-167
2022	2,156	2,289	26	253	1,877	2,010	2,253	2,397	20	189	2,044	2,188	-97	-108	6	64	-167	-178
2023	2,173	2,306	28	268	1,876	2,009	2,278	2,423	21	204	2,053	2,198	-105	-117	7	64	-177	-189
2024	2,188	2,322	31	282	1,875	2,009	2,303	2,449	23	217	2,063	2,209	-115	-127	8	65	-188	-200
2025	2,202	2,336	32	295	1,875	2,009	2,327	2,473	24	229	2,074	2,220	-125	-137	8	66	-199	-211
2026	2,215	2,350	34	306	1,875	2,010	2,350	2,498	26	240	2,084	2,232	-135	-148	8	66	-209	-222
2027	2,229	2,365	36	315	1,877	2,013												

Maine Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	2,067	2,125	0	179	1,888	1,946	2,019	2,075	0	171	1,848	1,904	48	50	0	8	40	42
2019	2,079	2,137	0	188	1,891	1,949	2,030	2,087	0	194	1,836	1,893	49	50	0	-6	55	56
2020	2,087	2,145	0	207	1,880	1,938	2,043	2,099	0	183	1,860	1,916	44	46	0	24	20	22
2021	2,106	2,164	0	224	1,881	1,940	2,056	2,113	0	198	1,858	1,915	50	51	0	26	23	25
2022	2,129	2,187	0	241	1,889	1,947	2,072	2,129	0	211	1,861	1,918	57	58	0	30	28	29
2023	2,154	2,212	0	255	1,898	1,957	2,089	2,146	0	224	1,865	1,922	65	66	0	31	33	35
2024	2,176	2,234	0	269	1,907	1,965	2,106	2,162	0	235	1,871	1,927	70	72	0	34	36	38
2025	2,196	2,254	0	281	1,915	1,974	2,121	2,178	0	246	1,875	1,932	75	76	0	35	40	42
2026	2,216	2,274	0	291	1,925	1,983	2,137	2,193	0	256	1,881	1,937	79	81	0	35	44	46
2027	2,235	2,293	0	300	1,935	1,993												

New Hampshire Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)					Change (GWh)				
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net		
2018	12,559	88	634	11,837	12,557	93	583	11,881	1	-5	51	-44		
2019	12,688	104	742	11,842	12,679	106	620	11,953	9	-2	122	-111		
2020	12,749	120	844	11,785	12,767	115	706	11,946	-18	5	138	-161		
2021	12,855	135	939	11,781	12,845	124	774	11,947	9	11	165	-167		
2022	12,971	150	1,027	11,794	12,933	132	839	11,962	38	18	188	-168		
2023	13,089	165	1,109	11,816	13,028	141	899	11,988	62	24	210	-172		
2024	13,189	180	1,183	11,826	13,122	149	953	12,020	67	31	230	-194		
2025	13,277	194	1,251	11,832	13,215	156	1,002	12,057	61	38	249	-225		
2026	13,368	208	1,310	11,849	13,311	164	1,046	12,101	57	44	264	-251		
2027	13,461	223	1,363	11,875										

New Hampshire Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
	Gross	Gross			Net	Net	Gross	Gross			Net	Net	Gross	Gross			Net	Net
Year	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10
2018	2,500	2,691	26	109	2,365	2,556	2,611	2,830	27	102	2,482	2,701	-111	-139	-1	7	-117	-145
2019	2,524	2,716	30	124	2,370	2,562	2,640	2,863	30	109	2,501	2,724	-116	-147	0	15	-131	-162
2020	2,541	2,735	34	139	2,368	2,562	2,666	2,892	31	127	2,508	2,734	-125	-157	3	12	-140	-172
2021	2,562	2,758	37	153	2,373	2,568	2,691	2,921	33	137	2,521	2,751	-129	-163	4	16	-148	-183
2022	2,583	2,781	39	166	2,378	2,576	2,717	2,951	34	146	2,537	2,771	-134	-170	5	20	-159	-195
2023	2,606	2,805	42	177	2,387	2,586	2,743	2,980	35	155	2,553	2,790	-137	-175	7	22	-166	-204
2024	2,626	2,828	44	188	2,394	2,595	2,769	3,010	37	163	2,569	2,810	-143	-182	7	25	-175	-215
2025	2,645	2,849	46	198	2,401	2,605	2,795	3,040	38	171	2,586	2,831	-150	-191	8	27	-185	-226
2026	2,664	2,870	48	206	2,409	2,615	2,822	3,070	39	177	2,606	2,854	-158	-200	9	29	-197	-239
2027	2,684	2,892	50	214	2,420	2,627												

New Hampshire Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	2,041	2,123	0	95	1,946	2,027	2,066	2,153	0	83	1,983	2,070	-25	-30	0	12	-37	-43
2019	2,048	2,130	0	101	1,947	2,028	2,075	2,162	0	89	1,986	2,073	-27	-32	0	12	-39	-45
2020	2,052	2,133	0	113	1,938	2,020	2,082	2,168	0	102	1,980	2,066	-30	-35	0	11	-42	-46
2021	2,057	2,138	0	125	1,933	2,014	2,087	2,174	0	110	1,977	2,064	-30	-36	0	15	-44	-50
2022	2,063	2,144	0	135	1,928	2,010	2,093	2,180	0	118	1,975	2,062	-30	-36	0	17	-47	-52
2023	2,069	2,151	0	145	1,925	2,006	2,100	2,187	0	125	1,975	2,062	-31	-36	0	20	-50	-56
2024	2,074	2,156	0	153	1,921	2,002	2,107	2,193	0	132	1,975	2,061	-33	-37	0	21	-54	-59
2025	2,079	2,160	0	161	1,917	1,999	2,113	2,200	0	138	1,975	2,062	-34	-40	0	23	-58	-63
2026	2,083	2,165	0	168	1,915	1,996	2,120	2,207	0	143	1,977	2,064	-37	-42	0	25	-62	-68
2027	2,088	2,169	0	174	1,914	1,995												



Rhode Island Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)				Change (GWh)			
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net
2018	9,357	57	1,420	7,881	9,290	53	1,170	8,067	68	4	250	-186
2019	9,390	83	1,687	7,620	9,347	75	1,311	7,961	43	8	376	-341
2020	9,422	109	1,943	7,370	9,410	95	1,549	7,766	13	14	394	-396
2021	9,488	132	2,186	7,170	9,472	110	1,737	7,625	15	22	449	-456
2022	9,563	154	2,410	6,999	9,542	118	1,909	7,515	21	36	501	-516
2023	9,636	177	2,615	6,845	9,611	124	2,064	7,423	25	53	551	-579
2024	9,702	199	2,800	6,703	9,685	130	2,204	7,351	18	69	596	-648
2025	9,771	221	2,966	6,584	9,760	137	2,327	7,296	11	84	639	-712
2026	9,846	243	3,113	6,490	9,836	143	2,436	7,257	10	100	677	-766
2027	9,926	264	3,241	6,420								

Rhode Island Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross		BTM PV	EE	Net		Gross	Gross	BTM PV	EE	Net		Gross	Gross	BTM PV	EE	Net	
	50/50	90/10			50/50	90/10					50/50	90/10					50/50	90/10
2018	2,099	2,365	16	245	1,838	2,104	2,079	2,338	15	204	1,860	2,119	20	27	1	41	-22	-15
2019	2,118	2,388	23	278	1,817	2,087	2,100	2,364	21	227	1,852	2,116	18	24	2	51	-35	-29
2020	2,137	2,412	29	311	1,797	2,072	2,122	2,391	26	267	1,829	2,098	15	21	3	44	-32	-26
2021	2,158	2,437	34	341	1,783	2,062	2,143	2,418	29	293	1,821	2,096	15	19	5	48	-38	-34
2022	2,179	2,462	39	369	1,771	2,055	2,165	2,445	30	317	1,818	2,098	14	17	9	52	-47	-43
2023	2,200	2,488	43	395	1,762	2,050	2,187	2,472	31	339	1,817	2,102	13	16	12	56	-55	-52
2024	2,220	2,513	47	418	1,755	2,048	2,209	2,499	32	358	1,819	2,109	11	14	15	60	-64	-61
2025	2,241	2,538	50	439	1,752	2,049	2,231	2,526	33	375	1,823	2,118	10	12	17	64	-71	-69
2026	2,262	2,564	54	457	1,751	2,052	2,253	2,553	34	391	1,828	2,128	9	11	20	66	-77	-76
2027	2,284	2,590	57	474	1,753	2,059												

Rhode Island Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	1,482	1,531	0	240	1,242	1,291	1,458	1,484	0	198	1,260	1,286	24	47	0	42	-18	5
2019	1,484	1,533	0	274	1,210	1,258	1,462	1,489	0	218	1,244	1,271	22	44	0	56	-34	-13
2020	1,486	1,535	0	306	1,180	1,229	1,468	1,494	0	268	1,200	1,226	18	41	0	38	-20	3
2021	1,491	1,539	0	336	1,155	1,203	1,473	1,499	0	295	1,178	1,204	18	40	0	41	-23	-1
2022	1,496	1,544	0	364	1,132	1,181	1,479	1,505	0	319	1,160	1,186	17	39	0	45	-28	-5
2023	1,501	1,549	0	389	1,112	1,160	1,484	1,511	0	341	1,143	1,170	17	38	0	48	-31	-10
2024	1,505	1,554	0	412	1,094	1,142	1,491	1,517	0	360	1,131	1,157	14	37	0	52	-37	-15
2025	1,510	1,559	0	432	1,078	1,126	1,497	1,523	0	378	1,119	1,145	13	36	0	54	-41	-19
2026	1,516	1,564	0	450	1,065	1,114	1,504	1,530	0	393	1,111	1,137	12	34	0	57	-46	-23
2027	1,521	1,570	0	466	1,055	1,103												

Vermont Forecast Comparison: Annual Energy

Draft 2018 CELT and 2017 CELT

Draft 2018 CELT (GWh)					2017 CELT (GWh)					Change (GWh)			
Year	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	Gross	BTM PV	EE	Net	
2018	6,956	345	797	5,815	6,910	311	855	5,744	47	34	-58	71	
2019	7,007	380	922	5,706	6,953	345	806	5,802	55	35	116	-96	
2020	7,040	408	1,040	5,593	6,992	377	729	5,886	48	31	311	-293	
2021	7,090	434	1,151	5,505	7,035	407	847	5,781	55	27	304	-276	
2022	7,140	459	1,255	5,426	7,085	435	958	5,692	55	24	297	-267	
2023	7,188	484	1,351	5,353	7,137	464	1,062	5,611	51	20	289	-258	
2024	7,230	510	1,439	5,281	7,189	492	1,158	5,539	40	18	281	-258	
2025	7,270	535	1,519	5,216	7,240	521	1,248	5,471	30	14	271	-255	
2026	7,311	559	1,592	5,160	7,291	549	1,330	5,412	20	10	262	-252	
2027	7,353	584	1,654	5,115									

Vermont Forecast Comparison: Summer Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
Year	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10	Gross 50/50	Gross 90/10	BTM PV	EE	Net 50/50	Net 90/10
2018	1,112	1,158	105	114	893	939	1,121	1,166	90	126	905	950	-9	-8	15	-12	-12	-11
2019	1,118	1,164	112	129	878	924	1,128	1,174	96	120	912	958	-10	-10	16	9	-34	-34
2020	1,123	1,169	116	142	865	912	1,134	1,182	102	98	934	982	-11	-13	14	44	-69	-70
2021	1,128	1,175	119	155	854	901	1,141	1,190	107	112	922	971	-13	-15	12	43	-68	-70
2022	1,133	1,181	122	167	844	892	1,149	1,198	112	125	912	961	-16	-17	10	42	-68	-69
2023	1,138	1,187	125	178	836	884	1,156	1,206	117	137	902	952	-18	-19	8	41	-66	-68
2024	1,143	1,192	127	187	828	877	1,163	1,214	121	149	893	944	-20	-22	6	38	-65	-67
2025	1,148	1,197	129	197	822	871	1,170	1,223	126	160	884	937	-22	-26	3	37	-62	-66
2026	1,153	1,203	132	205	816	866	1,178	1,231	131	169	878	931	-25	-28	1	36	-62	-65
2027	1,158	1,208	134	212	812	862												



Vermont Forecast Comparison: Winter Demand

Draft 2018 CELT and 2017 CELT

2018 CELT (MW)							2017 CELT (MW)						Change (MW)					
	Gross	Gross			Net	Net	Gross	Gross			Net	Net	Gross	Gross			Net	Net
Year	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10	50/50	90/10	BTM PV	EE	50/50	90/10
2018	1,114	1,132	0	142	973	990	1,113	1,130	0	119	994	1,011	1	2	0	23	-21	-21
2019	1,121	1,139	0	160	961	979	1,118	1,136	0	114	1,004	1,022	3	3	0	46	-43	-43
2020	1,125	1,143	0	176	949	966	1,123	1,141	0	98	1,025	1,043	2	2	0	78	-76	-77
2021	1,131	1,149	0	192	939	957	1,129	1,146	0	112	1,017	1,034	2	3	0	80	-78	-77
2022	1,137	1,155	0	207	930	948	1,135	1,153	0	125	1,010	1,028	2	2	0	82	-80	-80
2023	1,142	1,160	0	220	922	940	1,142	1,160	0	137	1,005	1,023	0	0	0	83	-83	-83
2024	1,147	1,165	0	233	914	932	1,149	1,166	0	149	1,000	1,017	-2	-1	0	84	-86	-85
2025	1,152	1,170	0	244	908	926	1,156	1,173	0	160	996	1,013	-4	-3	0	84	-88	-87
2026	1,157	1,175	0	254	902	920	1,162	1,180	0	169	993	1,011	-5	-5	0	85	-91	-91
2027	1,162	1,179	0	263	898	916												

