



CONNECT ENERGY
RESOURCES

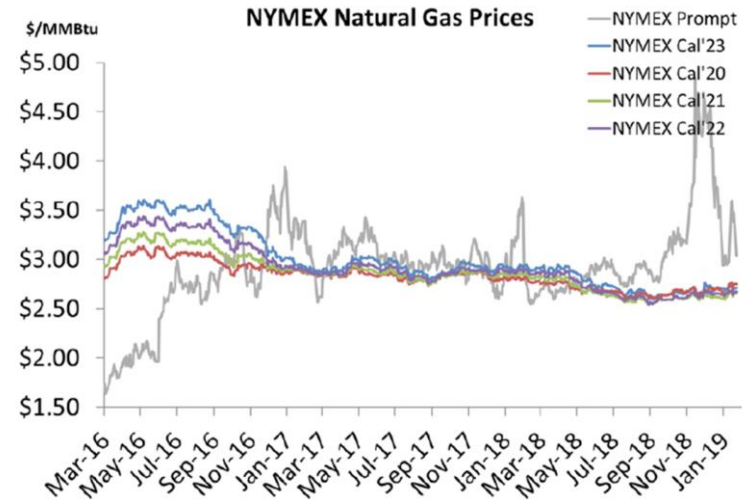
Energy Market Report

FEBRUARY 2019

February Energy News

Natural Gas Deliveries for 2020 through 2023 Near All Time Lows

Deferred NYMEX natural gas prices have held steady despite the run-up in the near-term winter. Calendar years 2020, 2021, 2022 and 2023 are all trading near \$2.65 per MMBtu, very close to their historic all-time lows. The weather will play a major role on futures pricing as a warm February start will yield to colder temps. This is impacting electricity rates as more and more power generation is fueled by natural gas. According to the EIA, the US is on track to export more energy than it imports by 2020, which hasn't occurred since the 1950s. The US has imported more energy than it exported every year since 1953, however, increases in crude oil, natural gas, and natural gas plant liquids production are on track to outpace consumption by 2020. This trend is expected to continue to 2040- 2050 and then once again return to importing more than exporting.



Eversource Seeks Rate Hike to Cover Storm Damage Costs in Connecticut

Connecticut's largest electric utility has asked the state for permission to charge ratepayers for the more than \$150 million it has spent to repair damage caused by five major storms over the past two years. Eversource spokesman Mitch Gross told the Hartford Courant the storms required the utility to hire out-of-state repair crews, replace damaged equipment and poles, and pay additional fuel and police costs. A final decision is tentatively expected April 4. If approved, they would take effect May 1. Gross says if approved, the average customer's bill would increase by about \$1.85 per month for six years. Eversource serves about 1.2 million electric customers in 149 Connecticut cities and towns.

Capacity Price For 2022-23 Term In ISO-New England Decreases Versus Year-Ago Auction

Forward Capacity Market (FCM) primary auction (FCA #13), for the delivery year 2022-2023, closed at a preliminary clearing price of \$3.80 per kilowatt-month (kW-month) across New England, compared to \$4.63/kW-month in last year's auction. The primary auction closed for most resources at \$3.80/kW-month after four rounds of competitive bidding. Resources within New England's three capacity zones, as well as imports over three of the external ties closed at that price. Imports over one other interconnection from New Brunswick continued into a fifth round, which closed at \$2.68/kW-month. At the primary auction clearing price of \$3.80/kW-month, the total value of the capacity market in 2022-2023 will be approximately \$1.6 billion (preliminary estimate). The substitution auction closed with Vineyard Wind, an offshore wind project in development off the coast of Massachusetts, assuming an obligation of 54 megawatts from an existing resource that will retire in 2022-2023. Following procedures approved by the Federal Energy Regulatory Commission (FERC), ISO New England retained two units, Mystic 8 and 9, needed for fuel security in the 2022-2023 capacity year. The primary auction concluded with commitments from 34,839 MW to be available in 2022-2023, while the regional capacity target for 2022-2023 is 33,750 MW.

Short Term Energy Drivers

Bear Drivers

Factors that push Natural Gas pricing down

- A warmer-than-normal February.
- Higher crude oil prices – i.e., prices for WTI move above \$60 per bbl.
- Below-average withdrawals from natural gas storage.

Bull Drivers

Factors that push Natural Gas pricing up

- Cold winter temperatures in the eastern half of the U.S.
- Above-average withdrawals from natural gas storage.
- Natural Gas Storage inventories falling below 1.3 Tcf at the end of the season.
- Oil prices below \$50 per barrel.

Natural Gas Storage Weekly Report

EIA Reports Massive Draw from Storage

Arctic Cold in Midwest Drives Withdrawal

On Thursday, February 7th, the U.S. Energy Information Administration (EIA) reported an 237 Billion Cubic Feet (Bcf) withdrawal from natural gas storage inventories in their weekly storage report for the week ending February 1, 2019. The consensus of market estimates was a 241 Bcf pull from storage. The gas withdrawal was much smaller than the 102 Bcf injection seen last year for the corresponding week and it was also well below the 415 Bcf five-year average injection. Natural gas storage inventories now stand 6.4% below where they were last year at this time, and 17.5% below the five-year average.

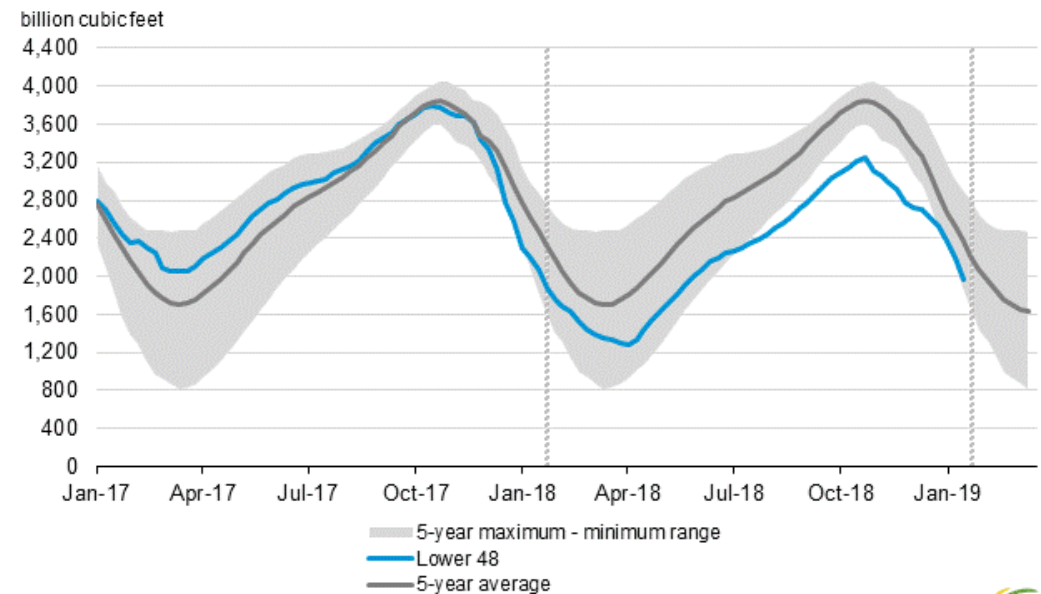
- Natural gas storage inventory as of 2/1/2019: **1,960 Bcf**
- Natural gas storage inventory for same week last year: **2,095 Bcf**
- 5-year Average Natural gas storage inventory: **2,375 Bcf**

What this means – Energy prices react to the weekly natural gas storage report. During the injection season (April-October) natural gas is sent into storage to be used during the heating/withdrawal season (November-March). During the heating season gas is withdrawn from storage to meet demand. Prices typically rise and fall based on the injection or withdrawal figures as compared to the expert projections, previous year inventories for the same week and the 5-year rolling average inventory.

The Natural Gas storage target by the end of October each year is 3,500 – 4,000 Bcf entering winter. Storage at end of October 2018 was 3,200 Bcf.



Working gas in underground storage compared with the 5-year maximum and minimum



Source: U.S. Energy Information Administration

Note: The shaded area indicates the range between the historical minimum and maximum values for the weekly series from 2013 through 2018. The dashed vertical lines indicate current and year-ago weekly periods.



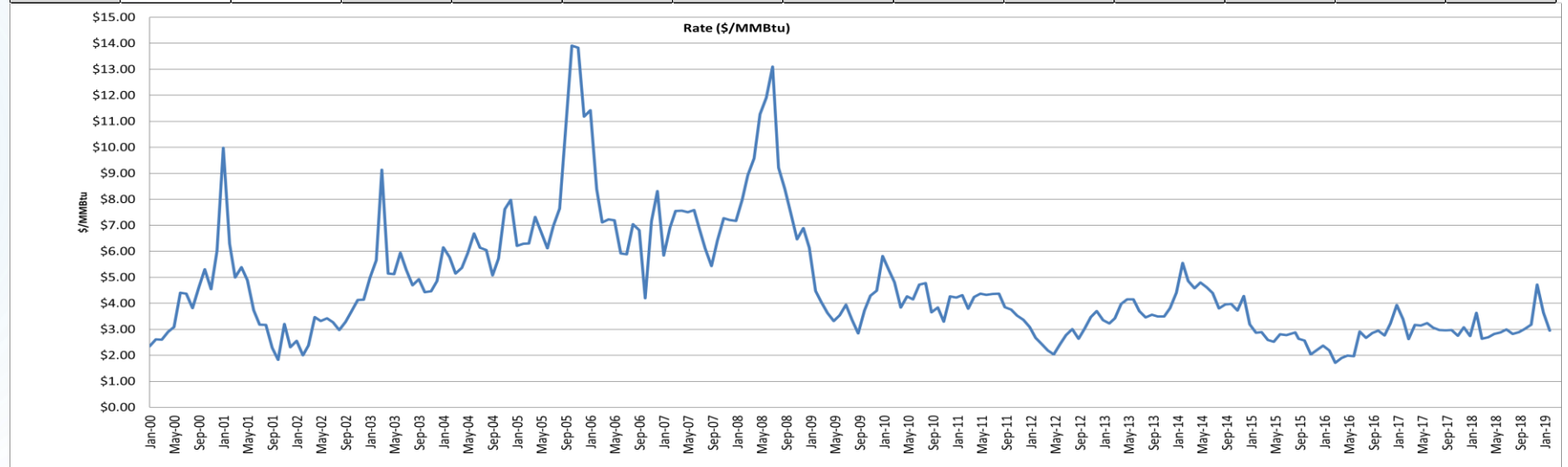
Historical Market Update – Natural Gas

NYMEX MONTHLY NATURAL GAS CONTRACT EXPIRATION - \$/MMBtu (Henry Hub, LA)

Pricing activity at Henry Hub (Louisiana) is the benchmark for natural gas prices in markets across the country, including the NYMEX. Regional prices will vary based off the NYMEX rates.

Northeast Electricity pricing is directly correlated to NYMEX Natural Gas Futures since there is a heavy dependence on natural gas fueled power plants in the region.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
2000	\$2.349	\$2.610	\$2.603	\$2.900	\$3.089	\$4.406	\$4.369	\$3.820	\$4.618	\$5.312	\$4.541	\$6.016	\$3.886
2001	\$9.980	\$6.293	\$4.998	\$5.384	\$4.891	\$3.738	\$3.182	\$3.167	\$2.295	\$1.830	\$3.202	\$2.316	\$4.273
2002	\$2.555	\$2.006	\$2.388	\$3.472	\$3.319	\$3.420	\$3.278	\$2.976	\$3.288	\$3.686	\$4.126	\$4.140	\$3.221
2003	\$4.988	\$5.660	\$9.133	\$5.146	\$5.123	\$5.945	\$5.291	\$4.693	\$4.927	\$4.430	\$4.459	\$4.860	\$5.388
2004	\$6.150	\$5.775	\$5.150	\$5.365	\$5.935	\$6.680	\$6.141	\$6.048	\$5.082	\$5.723	\$7.626	\$7.976	\$6.138
2005	\$6.213	\$6.288	\$6.304	\$7.323	\$6.748	\$6.123	\$6.976	\$7.647	\$10.847	\$13.907	\$13.832	\$11.180	\$8.616
2006	\$11.431	\$8.400	\$7.112	\$7.233	\$7.198	\$5.925	\$5.887	\$7.042	\$6.816	\$4.201	\$7.153	\$8.318	\$7.226
2007	\$5.838	\$6.917	\$7.547	\$7.558	\$7.508	\$7.591	\$6.929	\$6.110	\$5.430	\$6.423	\$7.269	\$7.203	\$6.860
2008	\$7.172	\$7.996	\$8.930	\$9.578	\$11.280	\$11.916	\$13.105	\$9.217	\$8.394	\$7.472	\$6.469	\$6.888	\$9.035
2009	\$6.136	\$4.476	\$4.056	\$3.631	\$3.321	\$3.538	\$3.949	\$3.379	\$2.843	\$3.729	\$4.289	\$4.486	\$3.986
2010	\$5.814	\$5.274	\$4.816	\$3.842	\$4.271	\$4.155	\$4.717	\$4.774	\$3.651	\$3.837	\$3.292	\$4.267	\$4.393
2011	\$4.216	\$4.316	\$3.793	\$4.240	\$4.377	\$4.326	\$4.357	\$4.370	\$3.857	\$3.759	\$3.524	\$3.364	\$4.042
2012	\$3.084	\$2.678	\$2.446	\$2.191	\$2.036	\$2.429	\$2.774	\$3.010	\$2.634	\$3.023	\$3.471	\$3.696	\$2.789
2013	\$3.354	\$3.226	\$3.427	\$3.976	\$4.152	\$4.148	\$3.707	\$3.459	\$3.567	\$3.498	\$3.496	\$3.818	\$3.652
2014	\$4.407	\$5.557	\$4.855	\$4.584	\$4.795	\$4.619	\$4.400	\$3.808	\$3.957	\$3.984	\$3.728	\$4.282	\$4.415
2015	\$3.189	\$2.866	\$2.894	\$2.590	\$2.517	\$2.815	\$2.773	\$2.886	\$2.638	\$2.563	\$2.033	\$2.206	\$2.664
2016	\$2.372	\$2.189	\$1.711	\$1.903	\$1.995	\$1.963	\$2.917	\$2.672	\$2.853	\$2.952	\$2.764	\$3.232	\$2.460
2017	\$3.930	\$3.391	\$2.627	\$3.175	\$3.142	\$3.236	\$3.067	\$2.969	\$2.961	\$2.974	\$2.752	\$3.074	\$3.108
2018	\$2.738	\$3.631	\$2.639	\$2.691	\$2.821	\$2.875	\$2.996	\$2.822	\$2.895	\$3.021	\$3.185	\$4.715	\$3.116
2019	\$3.642	\$2.950											\$3.296



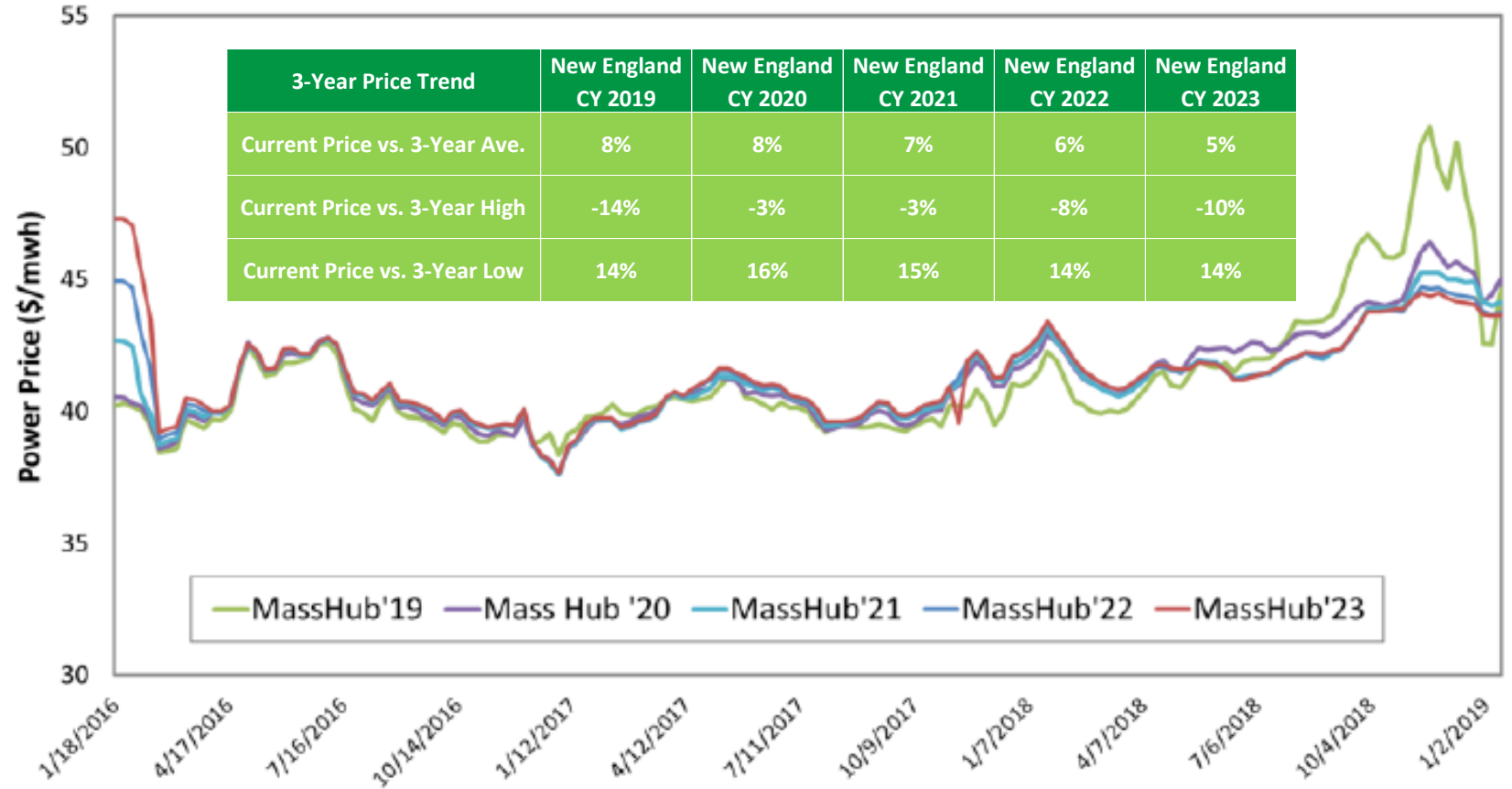
Futures Market Update – Electricity

The futures market tracks forward wholesale electricity prices. There is a cost per mWh for each month.

This chart shows the 3-year track record of wholesale electricity that will be delivered in New England (MassHub) by Calendar Year (CY) through 2023.

Key Takeaway: New England forward prices are below the five-year averages. The price trajectory has dropped since November 2018 after rising for much of 2018. Wholesale power trading in the \$44/mWh range.

Wholesale Power Price Trends Mass Hub (3 year Lookback)



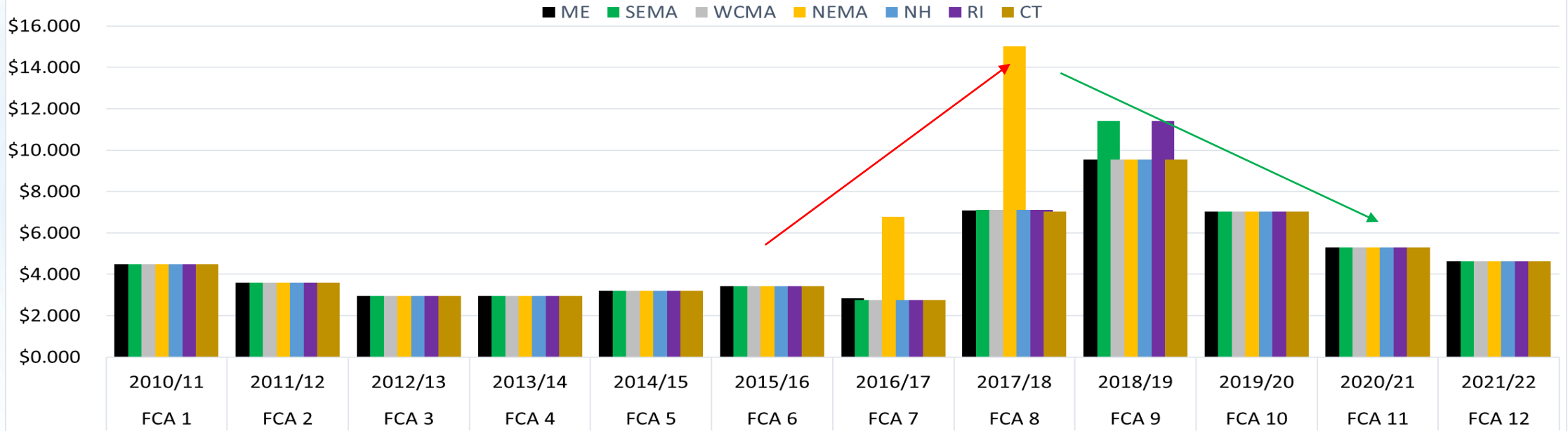
ISO-New England Forward Capacity Update

- **What is the Capacity Charge?** The *Capacity Charge (aka demand charge)* is a cost component of electricity supply and is the second largest charge besides the actual electric commodity charge. The capacity charge can be included (“All-Inclusive” Product) or excluded (“Pass Through” Product) in a customer's third party supply contract. Most customers bundle their capacity charge with the electric commodity charge, known as “All-Inclusive”. A customer's capacity tag, or obligation, is measured by how much power (kW) their meter demands during the peak power demand hour of the year, usually in the mid-afternoon in July or August. The meter's peak demand is then used to calculate the capacity charge for that account which is paid to ISO-New England - the independent system operator for New England's power pool.
- **ISO-New England Capacity Charges have Increased and Will Remain High Through May 2022.** The capacity charges doubled in the 2017/18 power year as compared to 2016/17, which had the lowest capacity costs for all of New England except for the Northeastern MA (NEMA) zone. Capacity costs increased again in June 2018 through May 2019 before dropping annually through May 2022. The drops, however, do not come back down to 2010 – 2016 levels. *Please see the chart on the next page.*
- The **Forward Capacity Market (FCM)** ensures that the New England power system will have sufficient resources to meet the future demand for electricity and avoid the potential for blackouts. *Forward Capacity Auctions (FCAs)* are held annually, three years in advance of the operating period by ISO-New England. Resources (Power Plants, Demand Response, etc) compete in the auctions to obtain a commitment to supply capacity in exchange for a market-priced capacity payments which are funded by end-user capacity charges. These payments help support the development of new resources. Capacity payments also help retain existing resources. For example, they incentivize investment in technology or practices that help ensure strong performance. They also serve as a stable revenue stream for resources that help meet peak demand, but don't run often the rest of the year. FCA 13 was completed in February 2019 for power delivered from June 2022 to May 2023.

ISO-NE Forward Capacity Auction Results

\$/kW-month	Capacity Price (kW-month)												
	Zone	FCA 1	FCA 2	FCA 3	FCA 4	FCA 5	FCA 6	FCA 7	FCA 8	FCA 9	FCA 10	FCA 11	FCA 12
		2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
ME		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.831	\$7.086	\$9.551	\$7.030	\$5.300	\$4.631
SEMA		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.749	\$7.117	\$11.404	\$7.030	\$5.300	\$4.631
WCMA		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.749	\$7.117	\$9.551	\$7.030	\$5.300	\$4.631
NEMA		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$6.790	\$15.000	\$9.551	\$7.030	\$5.300	\$4.631
NH		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.749	\$7.117	\$9.551	\$7.030	\$5.300	\$4.631
RI		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.749	\$7.117	\$11.404	\$7.030	\$5.300	\$4.631
CT		\$4.500	\$3.600	\$2.951	\$2.951	\$3.209	\$3.434	\$2.747	\$7.030	\$9.551	\$7.030	\$5.300	\$4.631

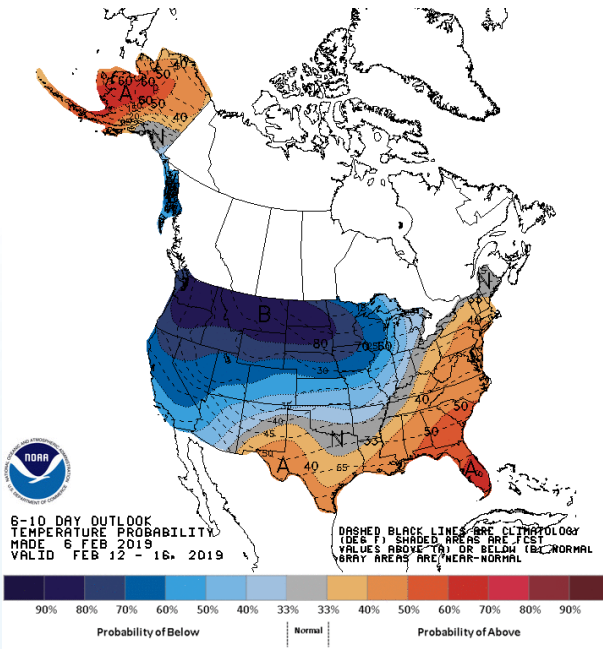
ISO-New England Forward Capacity Auction Prices



Weather Outlook

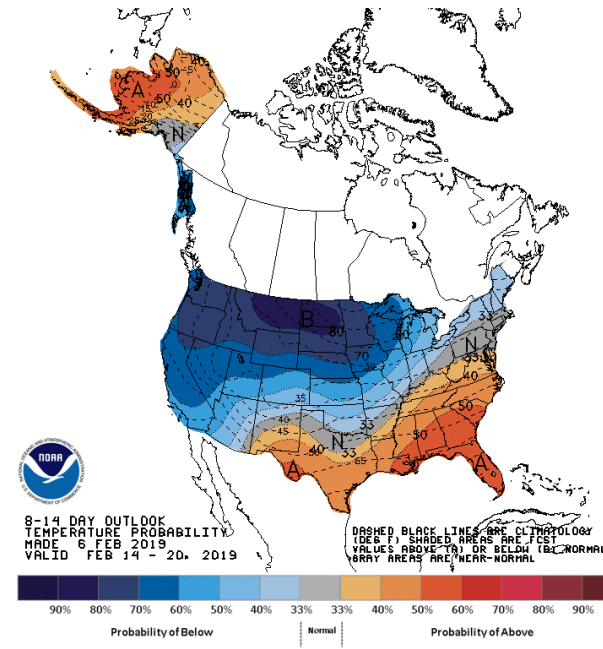
6-10 Day Forecast

2/12 – 2/16



8-14 Day Forecast

2/14 – 2/20



- A brief warm-up to start the month of February quickly gives way to another round of winter cold, this time not nearly as severe as the last week of January but still a sufficient arctic air mass likely to drive well below normal temperatures across most of the western US. The Pacific Northwest is expected to see the strongest cold anomalies.
- Cold temperatures will return to the Northeast as well, though this will be more of a return to typical February temperatures. Further south along the Atlantic coast, temperatures trend warmer relative to seasonal norms.

Thank you!

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