

# Constellation's MARKET INTEL NEWSLETTER

Energy Market Update for Commercial & Industrial Customers

June 2018

## Fuels

### Natural Gas

- During the past month, prompt-month NYMEX natural gas prices traded in a very tight range of \$2.85 to \$3.02 per MMBtu.
- May and June are shaping up to be one of the warmest and second warmest on record for their respective months providing a strong boost to the summer air-conditioning season.
- Year-over-year demand for natural gas-fired electric power is up 14% or 3.2 Bcf per day.
- Exports of natural gas are up 8% over the same period last year and have increased 66% since 2016.
- Natural gas production is holding steady at 79 BCF per day, an increase of 7 Bcf per day from the same period one year ago.
- As of June 15, natural gas storage inventory is 2,004 BCF, or 757 Bcf (-27%) lower than the same period last year.

### Coal

- PRB coal for Q3 2018 is trading at \$12.47 per ton and 2019 is unchanged at \$12.35 per ton.
- Q3 2018 Central Appalachian Coal-for-rail (CAPP) is unchanged from May at \$61.47 per ton.
- CAPP coal for 2019 is trading at \$59.91 per ton, unchanged from a month ago.

### Oil

- During the past month, prompt month WTI crude oil prices declined from \$72.50 per bbl to their settlement price of June 20 at \$65.36 per bbl. Both Saudi Arabia and Russia agreed to production increases at the OPEC meeting, and prices have rallied on strong global demand.
- U.S. crude oil production reached a new all-time high of 10.5 million barrels per day, EIA reported.
- Permian basin oil production will be limited through the remainder of 2018 because of limited pipeline capacity to get the oil to market.

### Power

- While it has been the warmest start to summer on a May-June MTD basis and temperatures are above average, they have only been in the upper 90s and not the 100's F.
- NJ passed new RPS legislation increasing solar RECS, mandating additional offshore wind capacity as well as additional energy efficiency projects.
- ERCOT has benefited from strong wind output in June, but that could fade in July-August.

### Economy

- Housing starts for May 2018 were up 5% over the previous month to a seasonally-adjusted 1,350,000 units, the Commerce Department reported.
- The U.S. unemployment rate was 3.9% for April 2018, the Bureau of Labor Statistics reported.
- President Trump has announced a series of tariffs over the past several weeks sparking concerns in broader markets over the possibility of a "trade war" developing globally, rattling global equity markets.

### Weather

- The drought in the Southwest continues to persist and is driving a lot of the heat in that region. The current 8-14 day outlook is calling for a much-above-normal pattern for the Great Lakes and Mississippi valley through the week of July 4th.
- This summer is seeing a transition from a La Nina to El Nino pattern, and that could cool off the Midwest and TX later this summer but heat up the West Coast.

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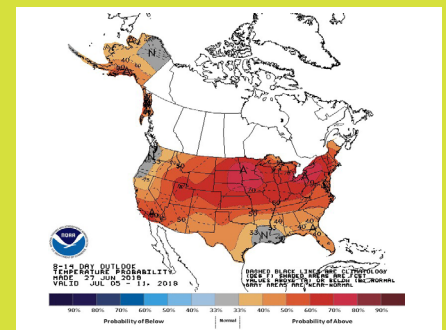
## Prompt Month Settlements

	June '18	30-Day Change
Nat Gas \$/mmBTU	\$2.923	+\$0.13/MMBTU
Crude Oil \$/bbl	\$68.08	+\$3.08/BBL

As of 6/25/2018.

## Temperature Outlook

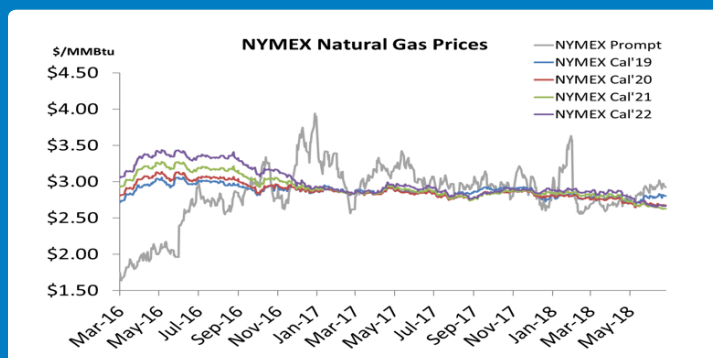
Source: NOAA



## Gas Report



- NYMEX prompt month gas futures have been pushing \$3/MMBtu since the end of May following a cold April, and record warmth in May delayed the injection season.
- NYMEX Cal'19 strip gained roughly \$0.15/MMBtu to \$2.80 following the delay in the spring injection season. Continued new highs in gas production ~80 Bcf/day have a ceiling on movement higher in NYMEX Cal'20-22 strips.
- Storage inventories stand at 2,004 Bcf, a 499 Bcf (-20%) deficit to the five-year average and 757 Bcf (-27%) lower than year-ago levels. A warm start to summer has limited injections in May and June to near the five-year average despite production near record-high levels.
- Strong power burns this summer have been driven by weather and natural gas prices under the eastern "coal floor" of ~\$3.25/MMBtu.
- Per EIA, total exports of natural gas—which includes both LNG & pipeline exports—averaged 9.6 Bcf/day in Q1 2018 or 0.7 Bcf/d (8%) higher than Q1 '17 and 66% higher than 2016.
- LNG exports averaged 2.6 Bcf/day in the first quarter of 2018, 62% more than the previous year. Total liquefaction capacity is expected to be 9.5 Bcf/day by end of 2020.



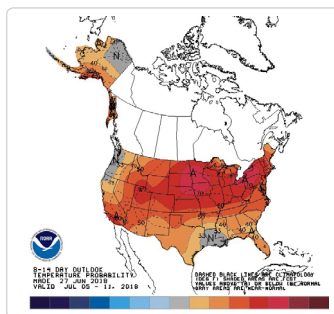
NYMEX Futures Pricing	Current Price as of 6/25/18	Last Month	M/M	Last Year	Y/Y Change
Prompt (Jul '18)	\$2.923	\$2.914	\$0.009	\$2.929	(\$0.006)
Winter (Nov 18-May 19)	\$0.000	\$0.000	\$0.000	\$3.207	(\$3.207)
12 Month Strip	\$2.907	\$2.995	(\$0.049)	\$3.030	(\$0.124)
2019	\$2.802	\$2.801	\$0.001	\$2.876	(\$0.074)
2020	\$2.675	\$2.718	(\$0.043)	\$2.862	(\$0.187)
2021	\$2.630	\$2.701	(\$0.071)	\$2.895	(\$0.266)
2022	\$2.663	\$2.736	(\$0.073)	\$2.941	(\$0.278)

## NOAA Temperature Outlook for 8-14 Day Outlook

Source: NOAA



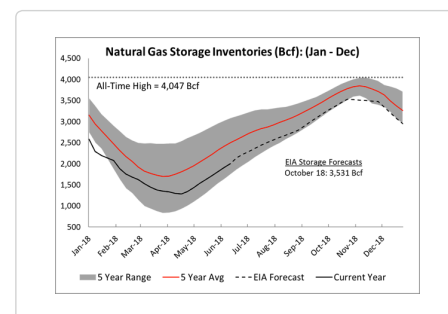
- Broad warmth has been seen for most of June across the interior Southwest, Texas, Plains and Midwest. Near-normal temperatures have been seen across the Northeast.
- Realized temperatures to date and the forecast show national cooling degree days (CDDs) are expected to come in around 281, which would rank as the second hottest since 1950. Our internal summer outlook had June as the hottest of the three summer months (relative to normal).
- A strong heat spike is expected across the Midwest, Mid-Atlantic and Northeast for the beginning of July, with mid- to upper 90s expected on the hottest days, along with a good dose of humidity. Extreme temperatures are expected to back off by mid-July, however above-normal temperatures are still expected across most of the East.
- The current Drought Monitor shows most of the extensive drought over the interior Southwest and into parts of West Texas. No drought areas are seen across the East, however New England needs to be watched as it has been abnormally dry over the past 45 days.



## Natural Gas Storage Source: NOAA



- EIA reported an injection of 91 Bcf for the week ending June 15th, coming in higher than the estimate of 85 Bcf but right at the upper range of estimates of 79-91 Bcf.
- The 91 Bcf injection narrows the storage deficits by a small amount when compared to last year's 63 Bcf injection, but less so when compared to the five-year average of 83 Bcf.
- As of June 15th, storage stands at 2,004 Bcf or 757 Bcf (-27%) below a year ago and 499 Bcf (-20%) below the five-year average.
- With 19 weeks left in injection season (as of 6/15), 5.6 Bcf/d additional injections are required to eliminate the deficit.
- The deficit versus the five-year average narrowed slightly, but the EIA's latest Short-Term Energy Report (STEO) has forecasted the ending storage balance to be only 3,531 Bcf by the end of October, 6% below last year (3,784 Bcf).
- The storage balance versus the five-year average and last year's have been supportive of prices, partly due to increased power burns. If the summer turns out to be hotter than normal, there could be additional pressure on storage in the winter.



## Bulls vs. Bears



### Bulls

#### Natural Gas

- Above-normal summer temperatures persist in key population centers.
- Storage inventories remain at four-year low through September.
- Crude oil prices move downward from current levels (near \$65 per bbl.) as OPEC discusses easing restrictions.
- Natural gas production flattens through Q3.

#### Crude Oil

- OPEC Announces current production cuts effective through 2019.
- Russia remains aligned with OPEC on production cuts into 2019.
- U.S. dollar weakness.
- Global economic indicators move upward.
- Inflation indicators turn upward.



### Bears

#### Natural Gas

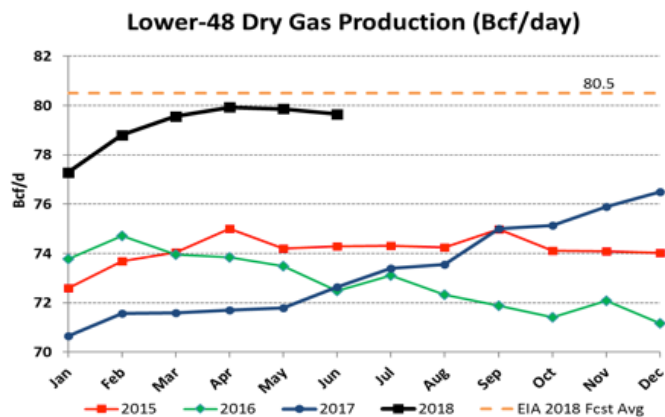
- Production ramps up significantly in the second half of the year.
- Higher crude oil prices – e.g., prices for WTI move above \$70 per bbl.
- A significant shift in the summer weather pattern to a cooler-than-expected solution

#### Crude Oil

- OPEC and Russia agree to increase production at the upcoming OPEC meeting.
- U.S. dollar strengthens.
- Global economic indicators move downward.
- Inflation indicators turn downward.
- Natural gas production flattens through Q3.

## Production Growth Flattens Out in May/June

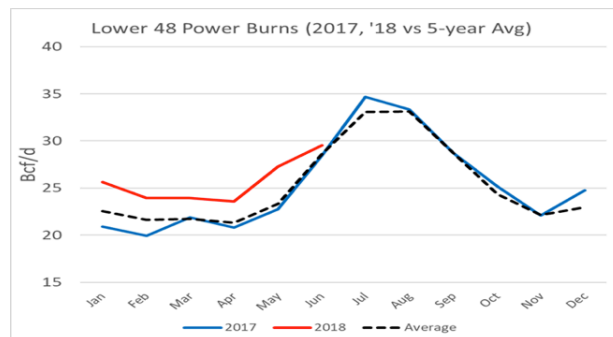
- Production has been flat at 78-79 Bcf/d since May, and production in two key regions—the Northeast and Texas—has been a big contributor to that slowdown.
- Production was 72 Bcf/d this time a year ago and is 6-7 Bcf/d higher on a year-over-year basis, but a storage deficit of 785 Bcf will require 5.6 Bcf/d to eliminate the storage deficit by the end of October.
- Northeast production could increase as additional pipeline takeaway capacity comes online later this year, while Texas could see slower gas production until 2019/'20 when new pipelines are constructed from the Permian basin (Waha) eastward to the Gulf Coast or South into Mexico.



Source: EIA

## Power Burns Higher Y-o-Y

- For year to date through mid-June, gas-fired generation is higher by 3.2 Bcf/d or 14% higher versus the same period of 2017.
- May saw robust gains of 4.5 Bcf/d y-o-y driven by strong cooling load from the warmest May on record since 1950 y-o-y gains carrying into June.
- Look for power burns to peak somewhere at or above 35 Bcf/d in July/August, but cooling load in the Midwest, Texas and East will be key drivers of power burn demand.



Source: EIA

## Great Lakes Electric Summary: Customer Takeaways

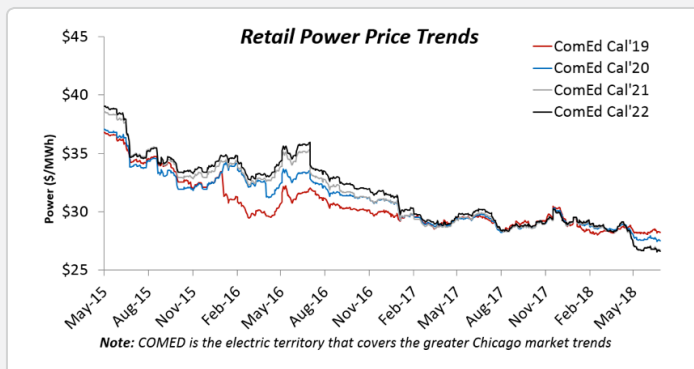


- Much above-average temperatures for early July will support balance of 2018 prices in short term.
- Forward power prices in the Midwest markets are currently backwardated with 2021 and 2022 strips trading at a discount to 2019 and 2020, making longer-term contracts more favorable for energy buyers.
- Forward power prices in ComEd, Michigan and Ameren are within 2% of all-time contract lows as we approach July. Prices in the Ohio market remain elevated after rallying since last August, but the forward curve has eased recently, especially in the outer years.

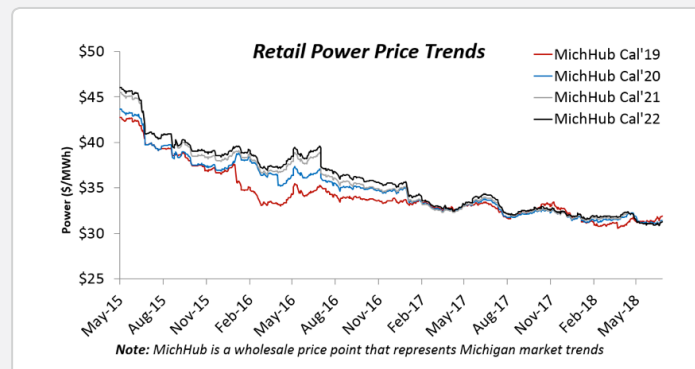
### Great Lakes Retail Power Price Trends

% Change in Forward Power	ComEd 2019-2020	ComEd 2021-2022	Mich Hub 2019-2020	Mich Hub 2021-2022	AEP-Day 2019-2020	AEP-Day 2021-2022	Ameren 2019-2020	Ameren DAY 2021-2022
Year-over-Year	-6%	-10%	-7%	-9%	3%	-1%	-5%	-10%
Month-over-Month	0%	0%	0%	0%	0%	0%	0%	0%
Year-to-Date	-5%	-9%	-2%	-3%	0%	-3%	-1%	-3%
vs All-Time Low	0%	1%	1%	0%	7%	4%	3%	1%

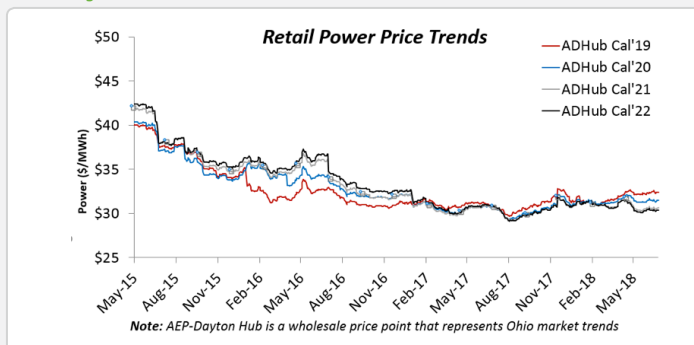
#### ComEd



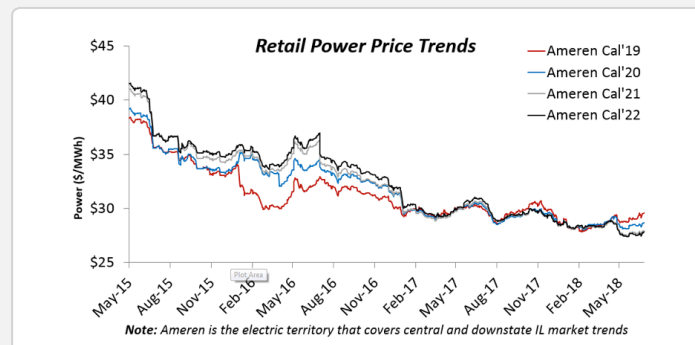
#### Mich Hub



#### AEP-Dayton Hub



#### Ameren





## Mid-Atlantic Electric Summary: Customer Takeaways



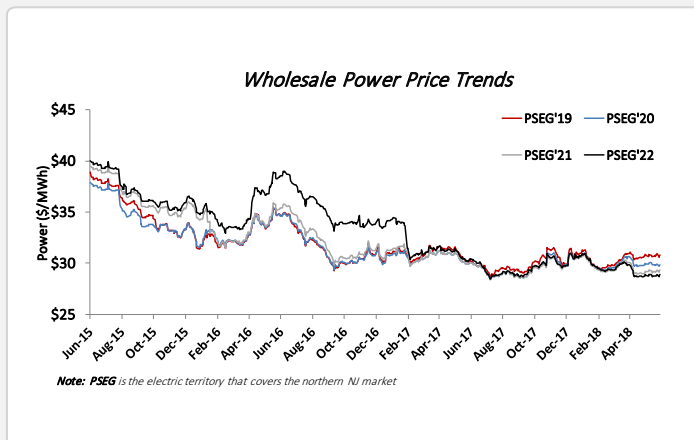
- Forward energy prices in PJM have consolidated since May and have even trended down a bit through most of June. Range-bound NYMEX forward 12-month prices are still hovering just under the \$3.00/MMBtu mark which is where the current resistance level is.
- PJM forward energy prices, through 2022, are unchanged over the past month and are on average about 5% off the historical low prices established at the end of last summer in 2017. The front of the curve through 2020 is about 5% off those lows, while the 2021-2022 portion is lower, around 2% of those lows.
- Compared to the Day-Ahead index prices in eastern PJM for May of 2017, this past May's (2018) index prices settled 5% higher, while BGE and PEPCO together averaged 36% higher than last year at the beginning of the summer.

### Mid-Atlantic Retail Power Price Trends

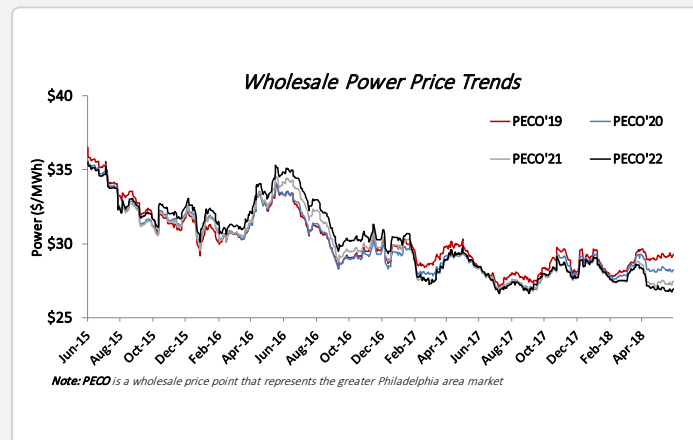
24-Month Fwd Trading Range	PSEG 2019-2020	PSEG 2021-2022	PECO 2019-2020	PECO 2021-2022	APS 2019-2020	APS 2021-2022	BGE 2019-2020	BGE 2021-2022	PPL 2019-2020	PPL 2021-2022
vs High (\$/MWh)	-\$4.60	-\$8.28	-\$4.77	-\$7.59	-\$1.17	-\$3.06	-\$3.90	-\$5.97	-\$5.26	-\$4.63
vs Low (\$/MWh)	\$1.77	\$0.64	\$1.86	\$0.50	\$2.88	\$1.69	\$2.64	\$1.27	\$1.56	\$1.70
vs High (%)	-13%	-22%	-14%	-22%	-4%	-9%	-10%	-15%	-14%	-14%
vs Low (%)	6%	2%	7%	2%	10%	6%	8%	4%	5%	6%

Index Pricing	AECO	APS	BGE	DPL	DUQ	JCPL	PEPCO	PPL	PSEG	MetEd	PECO	Penelec
May '17	\$28.07	\$29.61	\$30.29	\$28.09	\$29.91	\$27.90	\$30.40	\$27.75	\$28.34	\$28.61	\$28.36	\$29.18
May '18	\$24.83	\$35.41	\$42.15	\$27.22	\$37.84	\$26.00	\$40.67	\$24.59	\$26.84	\$24.62	\$24.89	\$32.02
% Change	-12%	20%	39%	-3%	27%	-7%	34%	-11%	-5%	-14%	-12%	10%

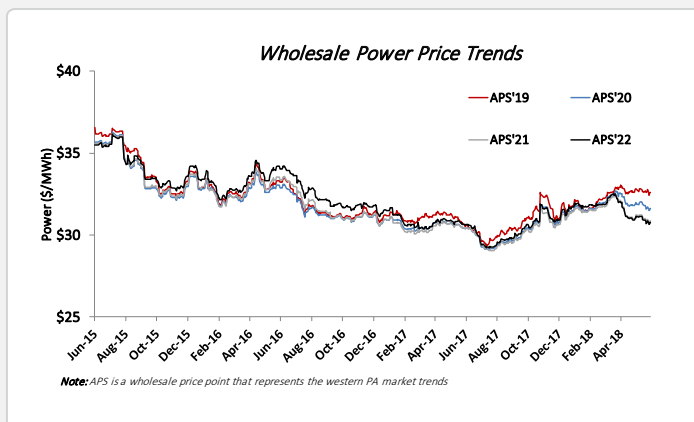
#### PSEG



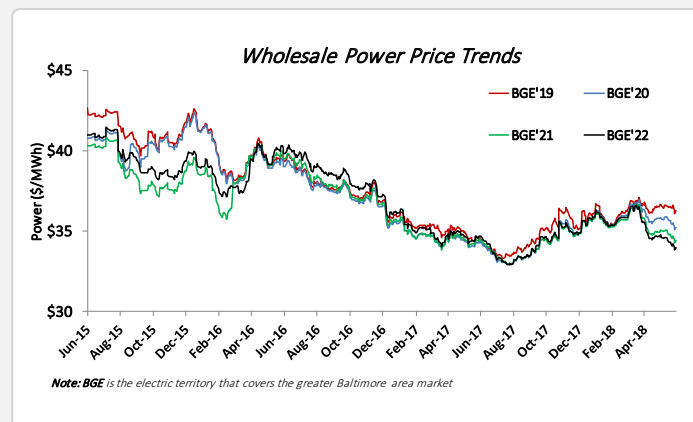
#### PECO



#### APS



#### BGE

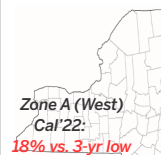


## Northeast Electric Summary: Customer Takeaways



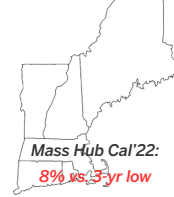
- On May 10th, the New York ISO released its five-year market design “master plan” outlining numerous market changes the NYISO is currently in the process of changing/adding or predicts to change or add in the future.
  - Specifically, the report lists a 2022 deployment of its carbon pricing initiative, though the NYISO CEO Brad Jones has committed to a three-year timeline for implementation.
  - Carbon pricing would contribute to price formation by realizing the social cost of high carbon-emitting resources and incentivizing the development of lower-emitting resources.
- The zonal wholesale power markets in New York have responded to the NYISO announcement, with calendar strips in 2021 and 2022 up 10-25% month-over-month depending on zone.
- New England forward prices have maintained levels around 7-11% above three-year lows. The shape remains flat out the curve with prices beyond Cal 2019 in the ~\$42/MWh range.
- Cooling demand in New York for June has come in right at the warm-leaning 10-year normal, which has created a minor uptick in LMPs for most zones vs. May averages.
- May saw low LMPs as heating demand in New England was at its third-lowest since 1950. June’s cooling demand in the region is right around the median in 68 years, which has yielded an average index price below 2016 and 2017 annual averages.
- 1,569 MW of gas-fired generation came online in New England which should push down LMPs overall, though during cold winter months when delivered natural gas is at a premium the increased reliance on natural gas could further spike prices.

### New York



Zone J (NYC) Cal'22:  
22% vs. 3-yr low

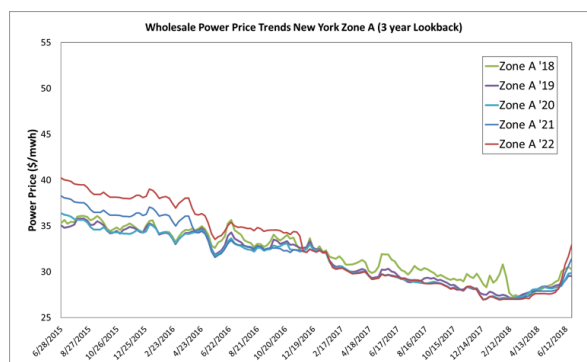
### New England



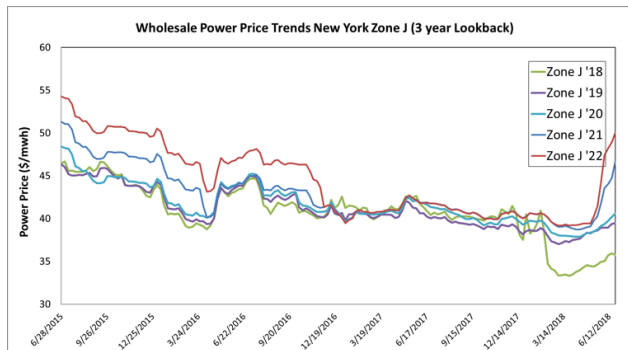
## Northeast Retail Power Price Trends

3-Year Price Trend	New England Mass Hub 2018	New England Mass Hub 2019	New England Mass Hub 2020	New England Mass Hub 2021	New England Mass Hub 2022	New York Zone J 2018	New York Zone J 2019	New York Zone J 2020	New York Zone J 2021	New York Zone J 2022
Current Price vs 3-Year Average	-10%	1%	2%	-2%	-3%	-14%	-4%	-3%	8%	11%
Current Price vs 3-Year Maximum	-31%	-14%	-13%	-21%	-26%	-30%	-17%	-19%	-10%	-9%
Current Price vs 3-Year Minimum	11%	7%	11%	9%	8%	7%	6%	7%	17%	22%

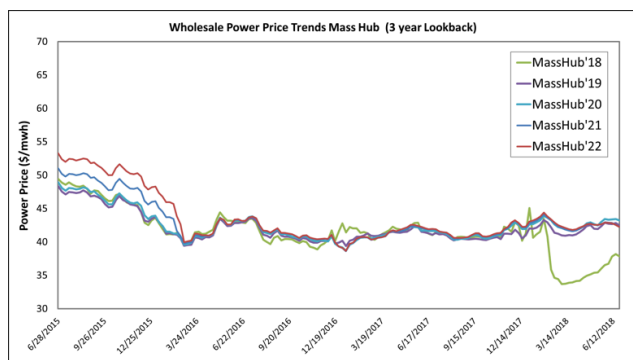
### New York Zone A



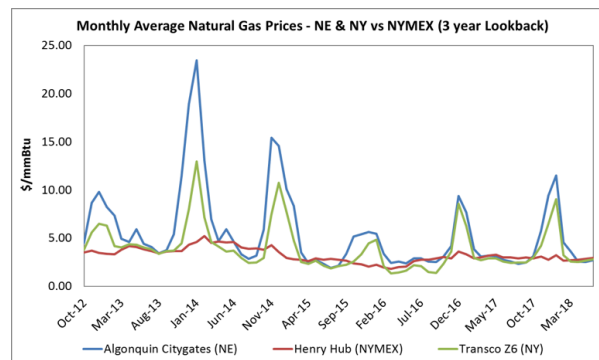
### New York Zone J



### Mass Hub



### NE & NY v.s. NYMEX



## Texas Electric Summary: Customer Takeaways

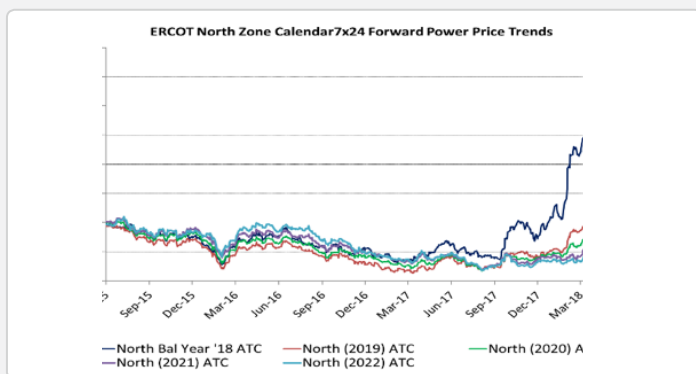


- While wind output has been strong overall in June, ERCOT real time prices spiked in HE 16 on June 5th to \$3,100/MWh on wind generation, coming in below 2 GW (lower than expected) and higher-than-forecasted load that reduced reserve margins below 3,000 MW.
- Forward summer prices for Bal '18 have continued pulling back in June as temps have been warmer than normal in upper 90's but not above 100F yet.

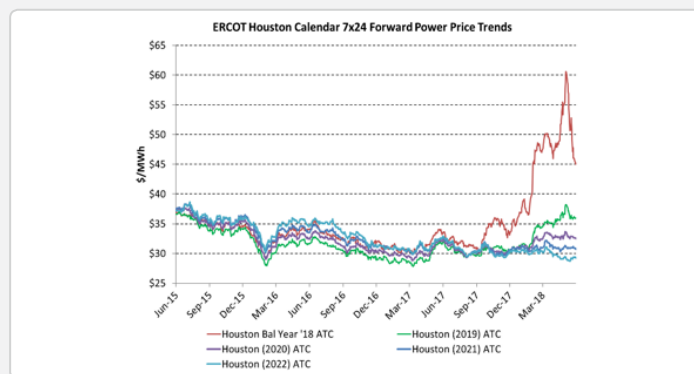
### Texas Retail Power Price Trends

% Change in Forward Power	Houston 2019-2020	Houston 2021-2022	North Zone 2019-2020	North Zone 2021-2022	South Zone 2019-2020	South Zone 2021-2022	West Zone 2019-2020	West Zone 2021-2022
Year-over-Year	10%	-8%	19%	-3%	17%	-4%	22%	-5%
Month-over-Month	-3%	-1%	-2%	-1%	-2%	-1%	-2%	-1%
Year-to-Date	17%	-5%	20%	-5%	21%	-3%	16%	-12%
Compared to All-Time Low	23%	2%	29%	6%	27%	4%	29%	4%

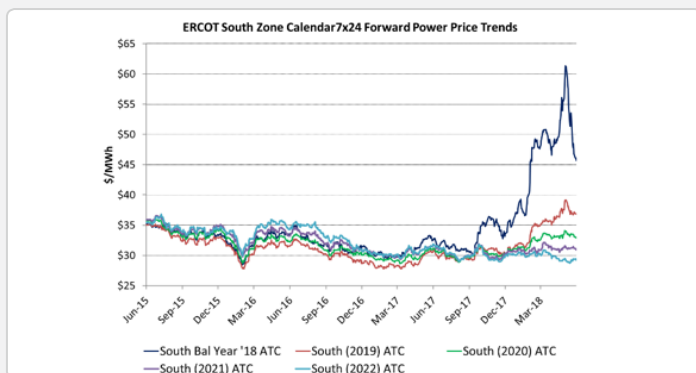
### ERCOT North Zone



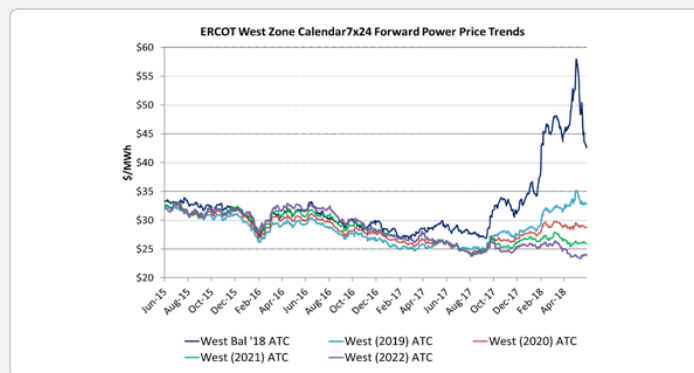
### ERCOT Houston Zone



### ERCOT South Zone



### ERCOT West Zone



## California Electric Summary: Customer Takeaways

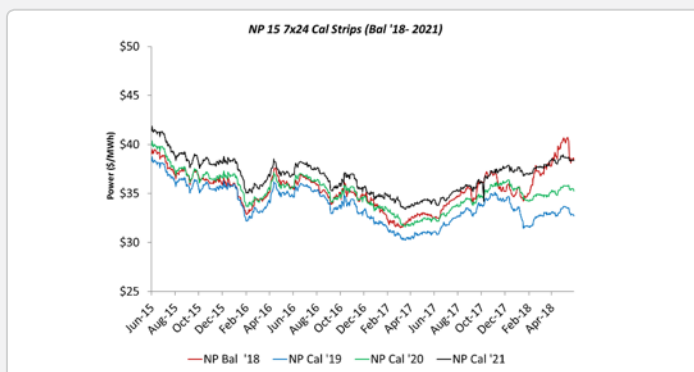


- Strong above-normal temps in the PacNW have accelerated the snowpack melt in June.
- The CA PUC has proposed increasing the storage capacity of Aliso Canyon from 25 Bcf to 34 Bcf, and asked SoCal gas to provide an update on pipeline maintenance work.
- SoCal storage sits at 60 Bcf, above the 50 Bcf for the same point last year but subject to drawdowns if cooling load increases system load demand above 3.0 Bcf/d.

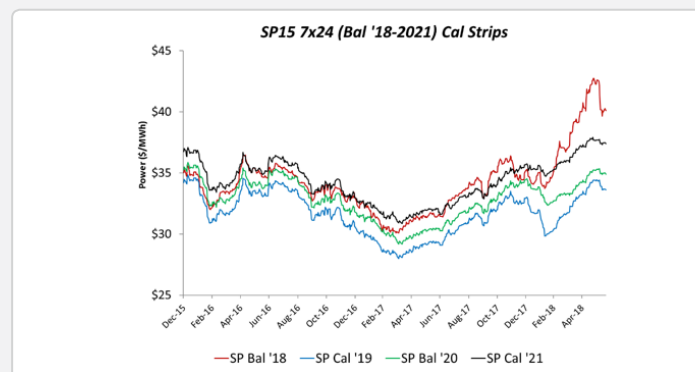
### California Retail Power Price Trends

% Change in Forward Power	NP Cal 2018	NP Cal 2019	NP Cal 2020	NP Cal 2021	SP Bal 2018	SP Cal 2019	SP Bal 2020	SP Cal 2021	Mid Cal 2019	Mid Cal 2020	Mid Cal 2021
Year-over-Year	20%	4%	7%	12%	29%	13%	13%	17%	-2%	-3%	5%
Month-over-Month	-4%	-4%	-3%	-2%	-5%	-4%	-2%	-1%	0%	-2%	0%
Year-to-Date	9%	-7%	-5%	1%	15%	0%	0%	4%	-4%	-6%	0%
Compared to All-Time Low	24%	6%	10%	14%	35%	18%	18%	21%	7%	2%	6%

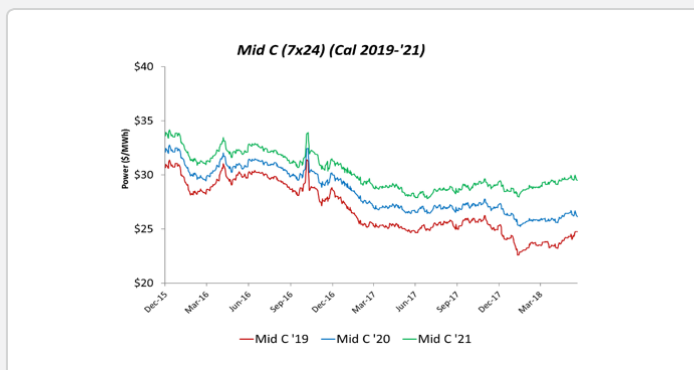
#### NP 15 7x24



#### SP 15 7x24



#### Mid C 7x24



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Electricity



Natural Gas



CPower LR/DR



Renewable Energy



Energy Efficiency



Onsite Generation



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