Constellation
An Exelon Company

America's energy choice®

Constellation's
MARKET INTEL NEWSLETTER
Energy Market Update for Commercial & Industrial Customers

February 2019

Fuels

- Winter is winding down, and the outlook for March is for a colder-than-normal first half of the month, which would be supportive of current pricing but not enough to significantly drive prices to the upside.

Natural Gas

- The Energy Information Administration (EIA) reported a withdrawal from storage of -177 Bcf for the week ending February 15.
- Storage inventories are at 1,705 Bcf, down 4% from one year ago, and 18% below the five-year average.
- Natural gas production is steady at 87 Bcf per day.
- The EIA forecasts that natural gas production will average 90 Bcf per day in 2019.
- The EIA forecasts that U.S. liquefied natural gas (LNG) export capacity will nearly double in 2019.
- The EIA forecasts that U.S. exports of propane will be greater than one million barrels per day, exceeding domestic demand for the first time.
- SoCal Citygate prices hit $18.34 per MMbtu this week as cold weather in California coupled with major pipeline maintenance and limited access to local storage to drive prices upward.
- Deferred NYMEX natural gas strip prices (i.e., 2020, 2021, 2022, 2023) continue to trade near all-time lows.
- NBP (European LNG) gas for prompt month delivery is trading at $6.27 per MMbtu.
- JKM (Japan Korea Marker – Asian LNG) prompt-month gas is trading at $7.31 per MMbtu.

Coal

- Powder River Basin (PRB) coal for 2020 is unchanged at $12.35; 2021 was at $12.30 unchanged; Central Appalachian (CAPP) for Rail was $70.25 for 2020, up $0.10; and 2021 was up $0.25 at $68.00.
- API #2 (Rotterdam-delivered coal) was $78.75 for 2020, down $2.85. API #4 (South Africa delivery) was down $3.45 to $84.75 for 2020.
- Newcastle coal (Australian coal) for 2020 was down $1.75 to $90.35.
- Ocean freight rates for the C4 route (vessels from Richards Bay South Africa to Rotterdam) was $8.38 per ton in 2020 and 2021.

Oil

- Crude prices are mixed (WTI April $52.85, -$0.15; Brent April $61.89, +$0.26).
- The prompt March Brent/WTI spread is a $9.04 premium to Brent. U.S. lower 48 production is currently 11.4 million bbls per day.
- March gasoline is $1.4255, heating oil for March delivery is $1.9032,and ethanol is trading $1.29 per gallon. March crack spreads to WTI are $7.24 for gasoline and $27.18 for heating oil; for Brent crude, it's $1.99 for gasoline and $17.93 for heating oil.
- Cal '21 WTI is $53.80, Cal '23 WTI is $52.96, while Cal '21 Brent is $60.33 and Cal '23 Brent is $60.16.

Power

- CAISO remains one of the most volatile index (locational marginal pricing [LMP]) markets due to tight gas supply driving up day-ahead gas prices and corresponding power prices. Pipeline maintenance in SoCal Gas has reduced available gas imports.
- Forward capacity prices in ISO-NE declined for fourth consecutive year to $3.80/kW month, the lowest level since 2011.
- Forward prices remain elevated for 2020 in most markets and declining in outer years (2021–2023).

Economy

- The U.S. economy created 304,000 new non-farm jobs in January, nearly double the amount expected.
- Inflation remained in check, coming in at an annually adjusted rate of 1.8% the Commerce Department reported.
- U.S. equities have been on a strong upward trajectory since the beginning of the year, nearing all-time highs set in the third quarter of last year.
- The European Union Economy continues to appear weak.
- The outlook for 2019 economic growth in China has been tweaked downward during the past several months by various sources.

Weather

- The overnight models came into better agreement with the European still slightly colder than the American. Both models agree on a ridge spiking up into Alaska and releasing cold air down from Canada into the central and eastern United States. However, the models are struggling to handle the amount of storminess in the pattern. This storminess caused us to warm up the 6-10 day forecast across the South, Texas and the interior West. It still looks like the best bet for cold air heading from late February into early March is from Calgary, into the Plains and across the north with a tight gradient between very cold in the north and a mixed chill in the South.

Inside This Issue

Gas Report 2
Bulls and Bears 3
Natural Gas Specific Topics and Updates 3
Coal-Fired Generation Retirements Lift Gas Demand 3
Summary and Regional Trends . . . . . 4 – 8

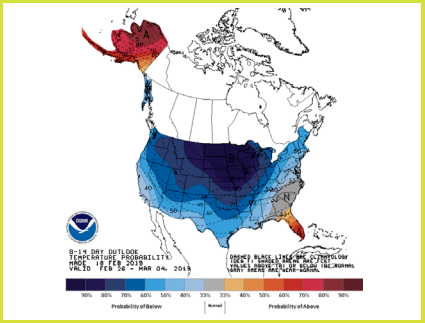
Prompt Month Settlements

As of 2/21/19.

	Mar. '19	30-Day Change
Nat Gas $/mmBTU	$2.705	-$0.78/MMBTU
Crude Oil $/bbl	$56.79	+$2.99/BBL

Temperature Outlook

Source: NOAA

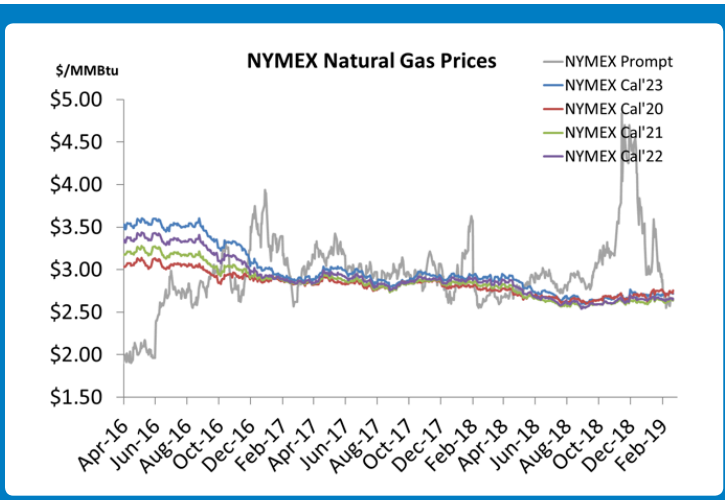


NYMEX 12-Month Rolling Strip

© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

Gas Report

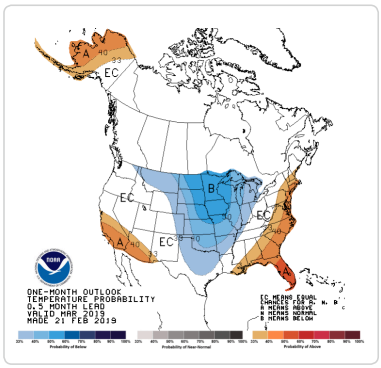
- After three extremely volatile months from November to January for the NYMEX prompt month gas futures, the March contract during the month of February traded within a tight band and lost $.11/MMBtu during the month as the end of the heating season is winding down.
- The 12-month strip decreased $.01/MMBtu; Cal '20 increased $.03/MMBtu to $2.73/MMBtu; and Cal '20-22 are still trading in the $2.65's as the market is still valuing rising production as a major factor keeping a lid on prices.
- Storage inventories are 1,705 Bcf. The EIA reported a withdrawal of -177 Bcf for the week ending February 15, which was above the estimate of -166 Bcf, and larger than the five-year average of -148 Bcf and last year's -134 Bcf.
- Natural gas stocks are now 362 Bcf (-17.5%) lower than the five-year average, but the year-over-year deficit closed to -4%. The deficit is still significant, and there is still a chance for the prompt month to increase.
- Natural gas production for the week ended February 13 averaged 88 Bcf/day. Gas production increased year over year 11.1 Bcf/d.
- Natural gas consumption the gas week February 7–13, 2019 was 111 Bcf/day, a 5 Bcf/day increase over last year, changes mostly made up of an increase in power consumption of 2.4 Bcf/day, and residential and commercial increases of 1.2 Bcf/day.



NYMEX Futures Pricing	Current Price as of 1/22/19	Last Month	M/M Change	Last Year	Y/Y Change
Prompt (Mar 19)	$2.636	$3.480	($0.844)	$2.558	$0.075
Winter (Mar19-Apr19)	$2.653	$3.361	($0.708)	$2.910	($0.258)
12 Month Strip	$2.826	$3.033	($0.207)	$2.751	$0.075
2020	$2.729	$2.750	($0.020)	$2.768	($0.039)
2021	$2.635	$2.648	($0.012)	$2.811	($0.175)
2022	$2.645	$2.662	($0.017)	$2.848	($0.203)

Temperature Outlook

- Strong cold is still focused across the West and into the Upper Midwest for the remainder of February.
- The Northeast will see some brief pushes of cold, however the cold may struggle to push into the Southeast for long periods of time. A stronger cold shot is possible in the first week of March from the Midwest into the East. Winter storm track remains active.

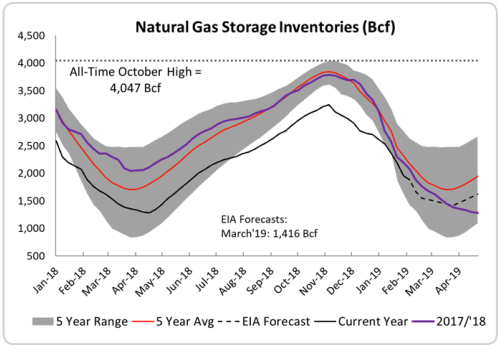


Source: NOAA

- There are some similarities to the temperature pattern when comparing this February versus March. Weak El Niño correlations suggest some cold connection, but factoring in recent model bias and actual results may yield an outcome similar to the National Oceanic and Atmospheric Administration (NOAA).
- The risk in March is colder overall, especially South and East with a warmer West. Mean weak El Niño analog Population-Weighted Gas Heating Degree Days (PWGHDD) is around 680, colder than the 10-year (599) and the 30-year (631).

Storage Report

- The Energy Information Administration reported an injection of -177 Bcf for the week ending February 15, the -177 Bcf draw was larger than year-ago draw of -134 Bcf and the five-year average of -148 Bcf.
- Storage stands at 1,705 Bcf or -73 Bcf (-4%) below year-ago levels, but -362 Bcf (18%) below the five-year average.
- The largest withdrawal this winter to date was -237 Bcf for the week ending February 1, the result of very strong demand from a polar vortex pattern that in the Midwest exceeded the polar vortex of 2014 in its intensity but for a shorter duration.
- The continued below-normal temperatures through the third week of February will continue to draw down storage across the West and Rocky Mountain regions; EIA projects will end the season with 1.4 Tcf underground.
- Mother Nature has given the storage deficit a reprieve this winter, but if new demand (i.e., exports and power generation) absorbs the expected growth in production, storage could remain tighter if summer temperatures are strong.



© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

Bulls vs. Bears

Bulls

Natural Gas

- A significantly below-normal temperature outcome for the entire month of March.
- Above-average withdrawals from natural gas storage.
- Storage inventories falling below 1.3 Tcf at the end of the season.
- Oil prices below $50 per barrel.

Crude Oil

- Trade deal is struck with China.
- OPEC announces further production cuts.
- Venezuela output collapses to zero.

Bears

Natural Gas

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

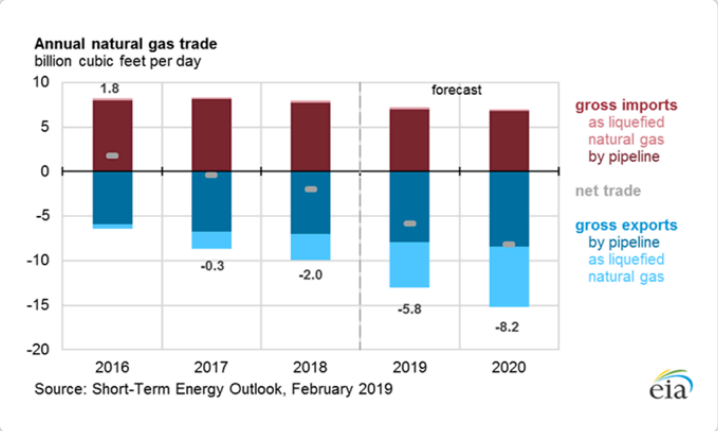
Crude Oil

- OPEC fails to cut production.
- Continued and increasing trade concerns with China.
- Global GDP shows growing weakness.

Natural Gas Specific Topics and Updates

The Storage Deficit Flips to Small Surplus in January

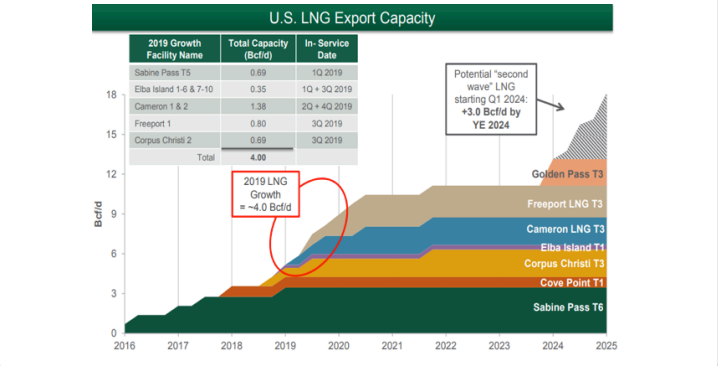
- The U.S. will continue expanding its net export capacity in 2019 through expanded liquefied natural gas (LNG) exports (+4.5 Bcf/day) and pipeline exports to Mexico and Canada (about 0.5 – 1.0 Bcf/day). The U.S. imports about 5.5 Bcf/day of gas from Canada, primarily through Washington state to serve California and the Pacific Northwest, and in Minnesota and Wisconsin to serve the Midwest markets.
- Offsetting those imports will be increased pipeline exports through Michigan into Ontario that will be supplied by Marcellus gas and well as through Niagara Falls in New York. Pipeline exports to Mexico will increase in 2019 as pipelines in Mexico come online to receive U.S. natural gas via Texas.



Source: The Energy Information Administration (EIA)

Golden Pass LNG to be Start of Second Wave LNG?

- On February 5, Exxon Mobil and Qatar Petroleum announced they had reached a Final Investment Decision (FID) to proceed with the 2.1 Bcf/day Golden Pass Liquefied Natural Gas (LNG) export facility. It will consist of three 0.7 Bcf/day facilities that will come online in Q4 2023 and by Q4 2024.
- Golden Pass represents the seventh U.S. LNG export facility that will be constructed; the original six (listed above) are either online or under construction. Golden Pass represents the potential for a second wave of capacity (about 3 Bcf/day) to come online post-2023.



Source: Antero Resources

© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

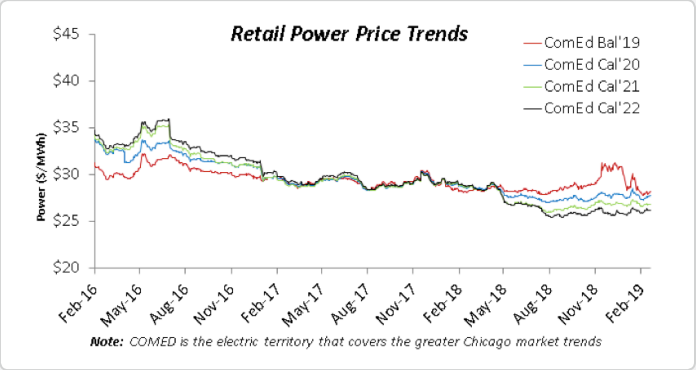
Great Lakes Electric Summary: Customer Takeaways

- After a brief polar vortex event in late January, milder temperatures have caused near-term forward power prices to retreat in February as the market has begun to discount winter risk. With the height of winter in the rearview, energy buyers should look for seasonal buying opportunities to emerge.
- Longer-term power prices for 2020 and beyond have been edging modestly higher since late summer in sympathy with natural gas prices, but remain within 6% of all-time contract lows on average.
- Day-ahead index power prices in the Midwest markets are down 12% month-over-month due to generally milder temperatures. Compared to year-ago levels, day-ahead prices have risen 5% as a result of cooler temperatures compared to abnormally-warm weather last February.
- The PJM grid reported reliable operations and experienced limited price volatility during the late January cold snap, despite facing some of the coldest temperatures in over a decade across the Midwest. At the height of the cold, only 11% of PJM's generation was forced offline due to weather-related issues, compared to 22% during the infamous polar vortex of 2014.

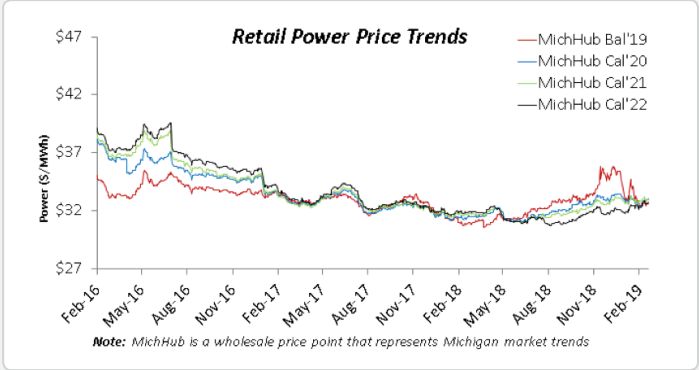
Great Lakes Retail Power Price Trends

% 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	-1%	-8%	6%	3%	7%	1%	7%	2%
Month-over-Month	-3%	-1%	-2%	0%	-4%	0%	-2%	0%
Year-to-Date	-1%	1%	-1%	1%	-1%	2%	0%	2%
Compared to All-Time Low	2%	3%	7%	6%	12%	7%	7%	6%

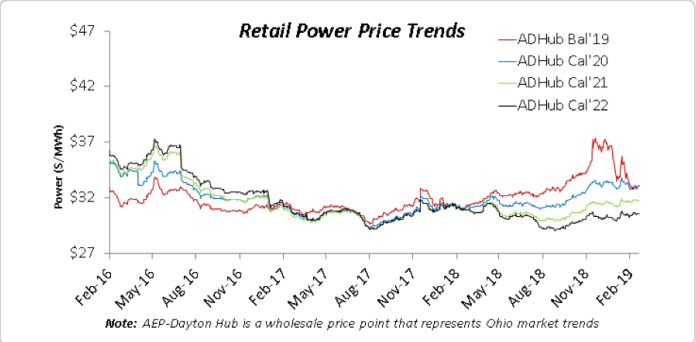
ComEd



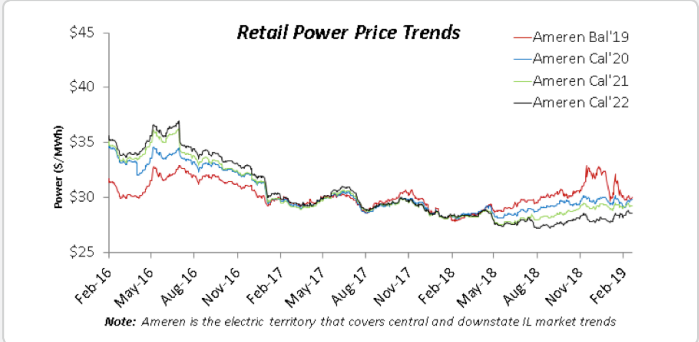
Mich Hub



AEP-Dayton Hub



Ameren



© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

Mid-Atlantic Electric Summary: Customer Takeaways

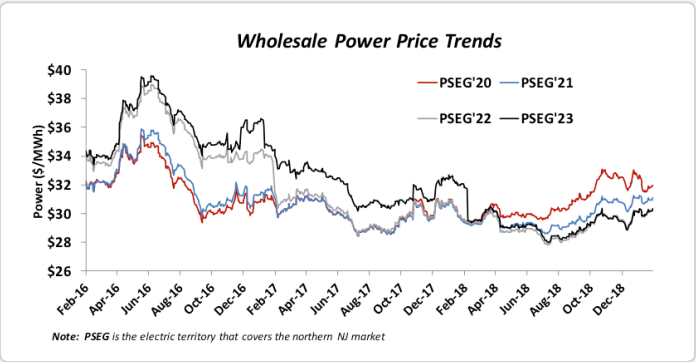
- The NYMEX natural gas prompt-month futures price has fallen over a dollar over the past month and is currently sitting at $2.70/MMBtu on February 21. Since hitting an intraday high of $3.722 back on January 15, concerns of a gas shortage during the winter have dissipated considerably along with the price volatility seen earlier in the winter. The market has seemed to shrug off the significant storage deficit and colder temperature forecasts for the balance of the winter in favor of historically high gas production along with the nearing end of winter.
- PJM forward prices have followed suit and have vacillated considerably over the past month, particularly on the front part of the curve for 2019 and 2020 electricity delivery. Electricity prices, through 2023, are down about -3% over the past month for the 2020 calendar strip, while 2021-2023 are down about -1%. Compared to historical lows for each calendar year, the current prices for 2020/2021 are +12% higher, while the average percentage increase above those lows for 2022/2023 is about +9%.
- Day-ahead index prices in PJM have been fairly stable throughout the winter since November 2018 despite some early volatility in gas prices and various periods of significantly cold weather. The average winter index price across all the zones in the table below (from November 2018 to January 2019) is $35.12. Compared to the five-year average price of $68.19 for all Januarys between 2014-2018, this past January 2019 index average price of $34.46 is -49% lower than that average.

Mid-Atlantic Retail Power Price Trends

24-Month Fwd Trading Range	PSEG 2020-2021	PSEG 2022-2023	PECO 2020-2021	PECO 2022-2023	APS 2020-2021	APS 2022-2023	BGE 2020-2021	BGE 2022-2023	PPL 2020-2021	PPL 2022-2023
vs High ($/MWh)	-$0.99	-$4.08	-$1.05	-$2.57	-$0.79	-$0.45	-$0.96	-$1.67	-$1.56	-$1.08
vs Low ($/MWh)	$3.08	$2.40	$3.13	$2.12	$4.32	$2.97	$3.74	$2.08	$2.68	$2.93
vs High (%)	-3%	-12%	-3%	-8%	-2%	-1%	-3%	-5%	-5%	-4%
vs Low (%)	11%	9%	12%	8%	15%	10%	11%	6%	9%	11%

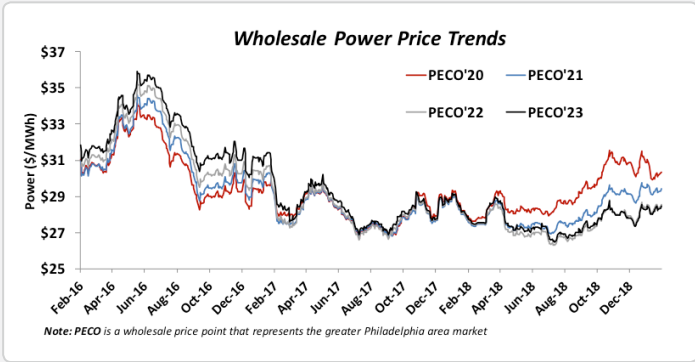
Index Pricing	AECO	APS	BGE	DPL	DUQ	JCPL	PEPCO	PPL	PSEG	MetEd	PECO	Penelec
Jan 5-Year Avg	$71.23	$55.89	$76.89	$76.78	$47.35	$73.29	$74.12	$69.90	$76.03	$70.31	$70.45	$56.08
Jan '19	$35.52	$35.40	$34.68	$36.20	$31.46	$35.07	$34.64	$31.68	$37.82	$33.89	$34.20	$32.93
5-Year Avg Comparison	-50%	-37%	-55%	-53%	-34%	-52%	-53%	-55%	-50%	-52%	-51%	-41%

PSEG



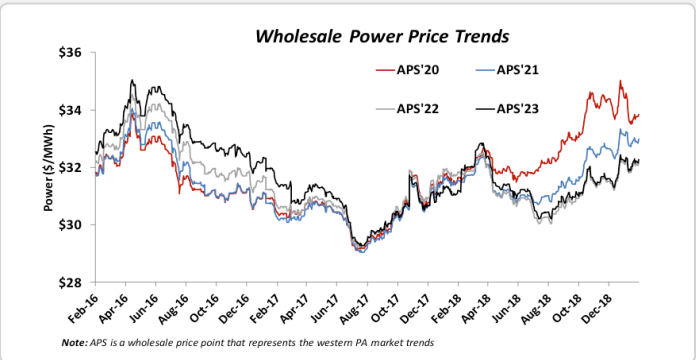
Note: PSEG is the electric territory that covers the northern NJ market

PECO



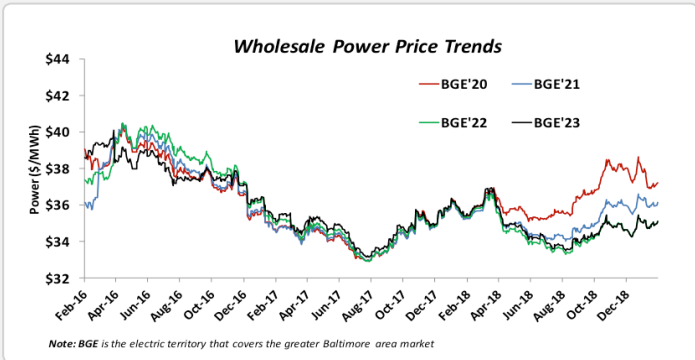
Note: PECO is a wholesale price point that represents the greater Philadelphia area market

APS



Note: APS is a wholesale price point that represents the western PA market trends

BGE



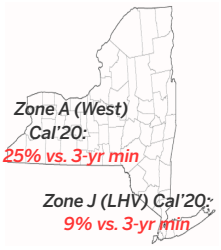
Note: BGE is the electric territory that covers the greater Baltimore area market

© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

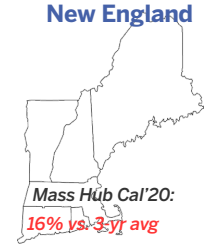
Northeast Electric Summary: Customer Takeaways

- ISO-NE's 13th capacity auction cleared below expectations; all zones cleared at $3.80/kW-month, which was 83 cents/kW-month lower than Forward Capacity Auction FCA 12's clearing price (i.e., a 17.93% decrease).
  - Market consensus heading into the auction was $4.00-4.75/kW-month.
  - A total of 34,839 MW was secured, a 1,089 MW surplus to the 33,750 MW capacity requirement set.
- A late January cold snap resulted in a brief uptick in volatility for power prices in the Northeast.
  - In New England, early January Mass Hub index prices started off in the $30s due to milder temperatures, but a colder-than-average second half of January pushed the overall monthly average north of $55/MWh.
  - Average Zone A January Locational Marginal Pricing (LMP) came in $5.36/MWh higher than in December, at $36.39/MWh; Zone J average LMP for the month was $55.65/MWh, almost ~$10/MWh above December prices.
- In the forward markets, Mass Hub Cal strips are backwardated with Cal 2023 trading only 13% off three-year lows.
- In New York, uncertainty around details and timing of a carbon proposal have propelled Zone J Cal 2023 prices up over $10/MWh since before the ISO announced its plan to implement a carbon policy.

New York



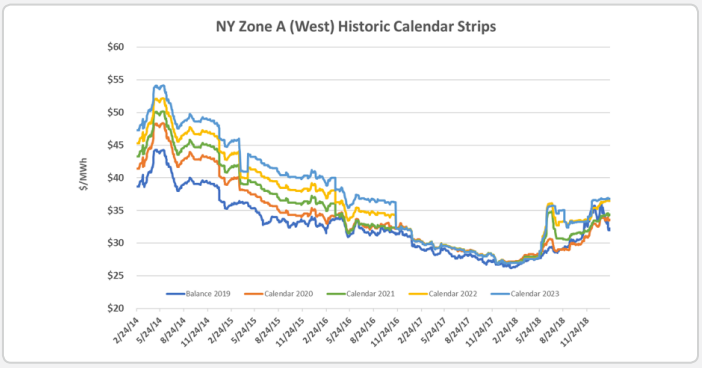
New England



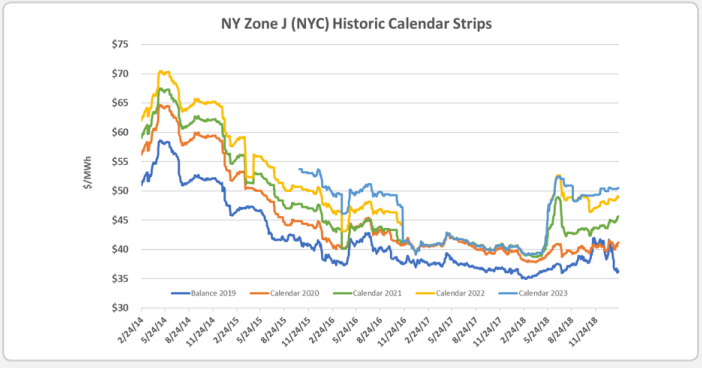
Northeast Retail Power Price Trends

3-Year Price Trend	New England Mass Hub 2019	New England Mass Hub 2020	New England Mass Hub 2021	New England Mass Hub 2022	New England Mass Hub 2023	New York Zone J 2019	New York Zone J 2020	New York Zone J 2021	New York Zone J 2022	New York Zone J 2023
Current Price vs 3-Year Average	-9%	-4%	-8%	-10%	-12%	-14%	-10%	-4%	-2%	10%
Current Price vs 3-Yeat Maximum	-33%	-32%	-36%	-38%	-40%	-38%	-36%	-32%	-30%	-6%
Current Price vs 3-Year Minimum	7%	16%	13%	13%	13%	4%	9%	18%	25%	29%

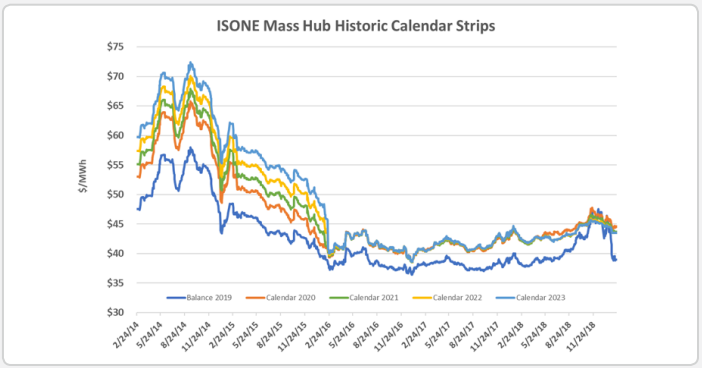
New York Zone A



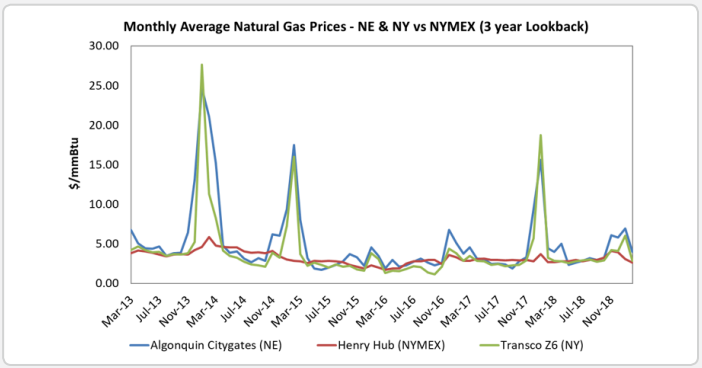
New York Zone J



Mass Hub



NE & NY v.s. NYMEX



© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

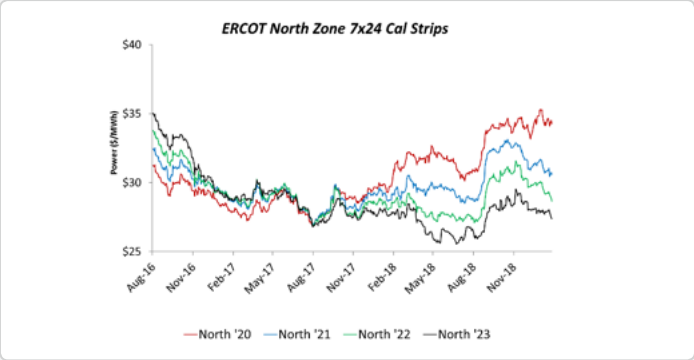
Texas Electric Summary: Customer Takeaways

- ERCOT confirmed that the reserve margin for this summer went from 8.1% to 7.4%, well below the NERC recommended target of 13.75% for reserve margins.
- The Public Utility Commission of Texas (PUCT) reached a decision on January 17 to amend the Operational Reserve Demand Curve (ORDC) calculation for summer 2019 by increasing it 0.25 standard deviation, and then will increase it by another 0.25 in 2020.
- The PUCT also approved the consolidation of ERCOT ORDC curves from 24 (based on season and time of day) to one single curve that is more reflective of late afternoon on peak pricing in Summer months. This will likely raise the ORDC price adder for non-summer months.

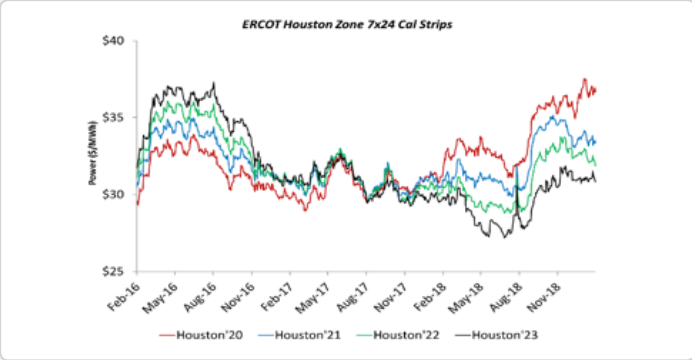
Texas Retail Power Price Trends

% Change in Forward Power	Houston 2020-2021	Houston 2022-2023	North Zone 2020-2021	North Zone 2022-2023	South Zone 2020-2021	South Zone 2022-2023	West Zone 2020-2021	West Zone 2022-2023
Year-over-Year	14%	5%	11%	0%	9%	-1%	9%	-4%
Month-over-Month	-1%	-1%	-2%	-3%	-1%	-3%	-2%	-2%
Year-to-Date	13%	-1%	10%	-7%	10%	-5%	5%	-15%
Compared to All-Time Low	20%	12%	21%	7%	16%	5%	22%	8%

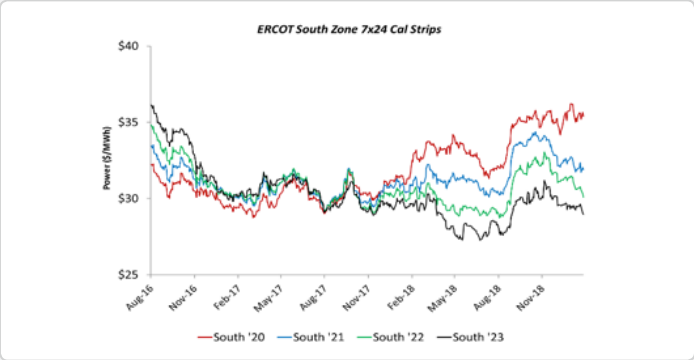
ERCOT North Zone



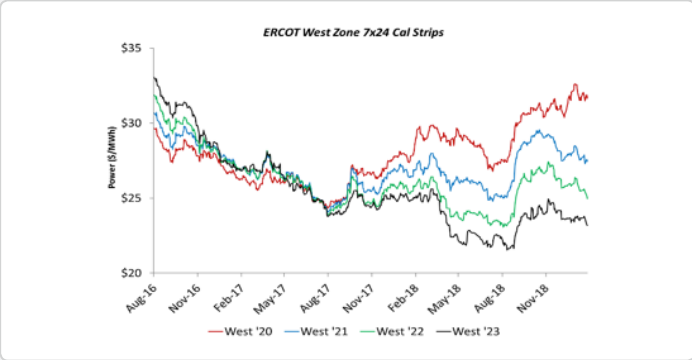
ERCOT Houston Zone



ERCOT South Zone



ERCOT West Zone



© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

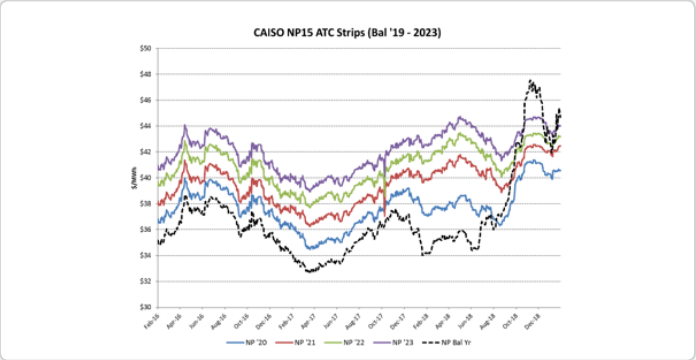
California Electric Summary: Customer Takeaways

- Enbridge's 36-inch BC Pipeline in British Columbia was repaired two weeks ahead of schedule, bringing flows back up to 0.9 Bcf/day. Flows at Sumas into Washington state should rise to ~1.3 Bcf/day by early December 3rd-7th.
- SoCal Gas system pipeline capacity will face its first test of cold weather the week of December 3rd -7th but there is 0.05 Bcf/day of scheduled maintenance that week, further straining available supplies.
- CA Reservoirs are entering Winter 2018/2019 either at or below historical averages, but precipitation levels are now forecast to be above normal.

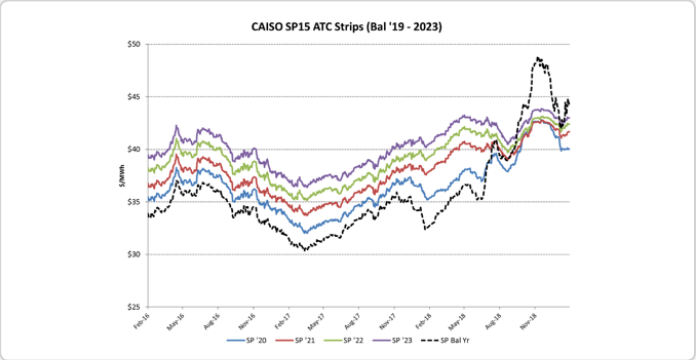
California Retail Power Price Trends

% Change in Forward Power	NP Cal 2020	NP Cal 2021	NP Cal 2022	NP Cal 2023	NP Bal Yr	SP Cal 2020	SP Bal 2021	SP Cal 2022	SP Cal 2023	SP Bal Year
Year-over-Year	9%	7%	5%	3%	31%	13%	10%	8%	6%	35%
Month-over-Month	1%	1%	1%	1%	4%	-3%	-1%	0%	0%	1%
Year-to-Date	0%	1%	1%	1%	3%	0%	1%	1%	1%	3%
Compared to All-Time Low	18%	17%	15%	13%	37%	25%	24%	21%	18%	45%

NP 15 7X24



SP 15 7X24



© 2019 Constellation Energy Resources, LLC. The offerings described herein are those of Constellation NewEnergy-Gas Division, LLC or Constellation NewEnergy, Inc., affiliates of each other and ultimate subsidiaries of Exelon Corporation. Brand names and product names are trademarks or service marks of their respective holders. All rights reserved. Errors and omissions excepted.

The information contained herein has been obtained from sources which Constellation NewEnergy, Inc Constellation NewEnergy-Gas Division, LLC (collectively, "Constellation") believes to be reliable. Constellation does not represent or warrant as to its accuracy or completeness. All representations and estimates included herein constitute Constellation's judgment as of the date of the presentation and may be subject to change without notice. This material has been prepared solely for informational purposes relating to our business as a physical energy provider. We are not providing advice regarding the value or advisability of trading in "commodity interests" as defined in the Commodity Exchange Act, 7 U.S.C. §§ 1-25, et seq., as amended (the "CEA"), including futures contracts, swaps or any other activity which would cause us or any of our affiliates to be considered a commodity trading advisor under the CEA. Constellation does not make and expressly disclaims, any express or implied guaranty, representation or warranty regarding any opinions or statements set forth herein. Constellation shall not be responsible for any reliance upon any information, opinions, or statements contained herein or for any omission or error of fact. All prices referenced herein are indicative and informational and do not connote the prices at which Constellation may be willing to transact, and the possible performance results of any product discussed herein are not necessarily indicative of future results. This material shall not be reproduced (in whole or in part) to any other person without the prior written approval of Constellation.