

Energy Market Insights

March 2022

New England

Mid-Atlantic

California

Mexico

New York

Midwest

Texas

Natural Gas

New England

March 2022

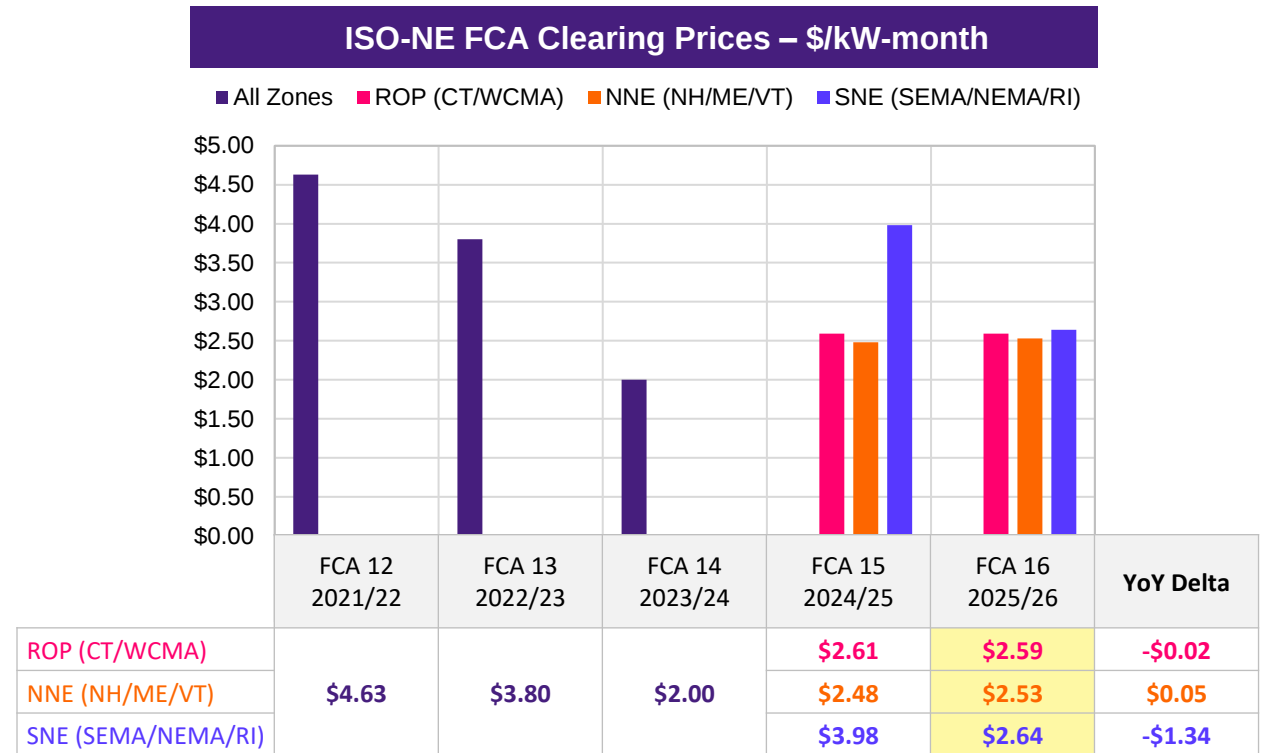
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Insight of the Month

Zonal price convergence in FCA 16 results



- New England recently published the results from Forward Capacity Auction 16 (FCA 16) on March 9th.
- Compared to last year's FCA 15, prices are flat for ROP and North New England, while Southeast New England came in lower by about \$1.34/kW-month.
- All 311 MW of new generating resources that cleared the auction were solar, battery storage or a solar/storage combination.
- The convergence of the SNE zone with the other two capacity zones signals that there is adequate generation in the Boston area to meet local demand.
 - The Boston area has historically had more expensive capacity prices as compared to the rest of New England.
- Despite 779MW bidding into the CASPR substitution auction for state-subsidized resources, no resources cleared the auction.



KEY TAKEAWAY: A customer with a 1MW capacity tag in Boston should expect to pay ~\$44,300 for the June 2025-May 2026 capacity year based on the FCA 16 clearing price and an estimated 40% reserve margin. This is a decrease of about \$22k year-over-year in total capacity costs for a Boston customer. Customers that are in ROP or NNE zones will not see a significant change in capacity costs between the 2024/26 and 2025/26 capacity years.

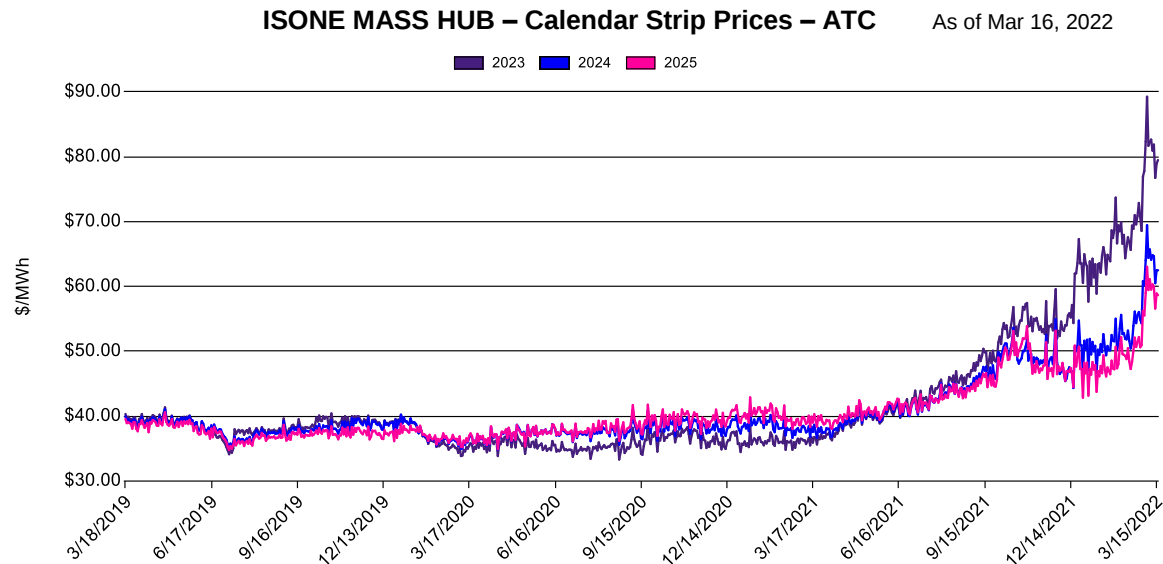
New England – Power Prices

Forward curves off their highs, Feb 2022 spot pricing remains elevated



Where are forwards trending?

- CY2023 is trading just south of \$80/MWh, down about \$10/MWh from its peak in mid-February.
- CY2023 has broken out from the CY24-25 strips, which are now trading between \$58-\$64/MWh.
- The CY2023 strip's widening premium to CY2024/25 is largely due to rising natural gas prices for the winter 2023.



Where are index prices trending?

- The average daily spot price for February 2022 was \$117.46/MWh, down over \$32/MWh month-over-month.
- February spot pricing is the highest spot price on record for the month since 2015. February 2022 spot is up 60% compared to February 2021.

Average Monthly Day Ahead LMP - MaHub									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$168.81	\$71.14	\$38.60	\$40.30	\$108.75	\$56.76	\$26.45	\$42.73	\$149.46
Feb	\$156.02	\$122.77	\$29.90	\$30.02	\$39.58	\$35.62	\$23.06	\$73.12	\$117.08
Mar	\$111.16	\$64.25	\$20.63	\$35.75	\$35.38	\$38.07	\$17.18	\$34.88	
Apr	\$44.98	\$28.43	\$28.36	\$29.23	\$45.00	\$26.97	\$18.36	\$26.14	
May	\$36.95	\$24.92	\$21.24	\$27.31	\$24.04	\$24.21	\$16.48	\$24.98	
Jun	\$37.92	\$21.16	\$22.61	\$25.48	\$26.82	\$22.09	\$19.84	\$37.10	
Jul	\$37.50	\$26.44	\$31.12	\$27.60	\$32.89	\$29.78	\$23.78	\$37.16	
Aug	\$30.35	\$30.06	\$35.54	\$24.90	\$39.16	\$25.69	\$23.79	\$49.47	
Sep	\$34.10	\$30.82	\$28.62	\$23.57	\$33.89	\$21.14	\$20.46	\$48.01	
Oct	\$32.19	\$37.01	\$21.98	\$29.74	\$38.46	\$20.75	\$24.78	\$57.71	
Nov	\$47.71	\$29.42	\$24.98	\$33.98	\$57.43	\$32.29	\$25.12	\$56.69	
Dec	\$43.00	\$22.42	\$53.28	\$71.31	\$47.31	\$40.98	\$40.15	\$65.14	
Avg.	\$65.06	\$42.40	\$29.74	\$33.27	\$44.06	\$31.20	\$23.29	\$46.09	\$133.27

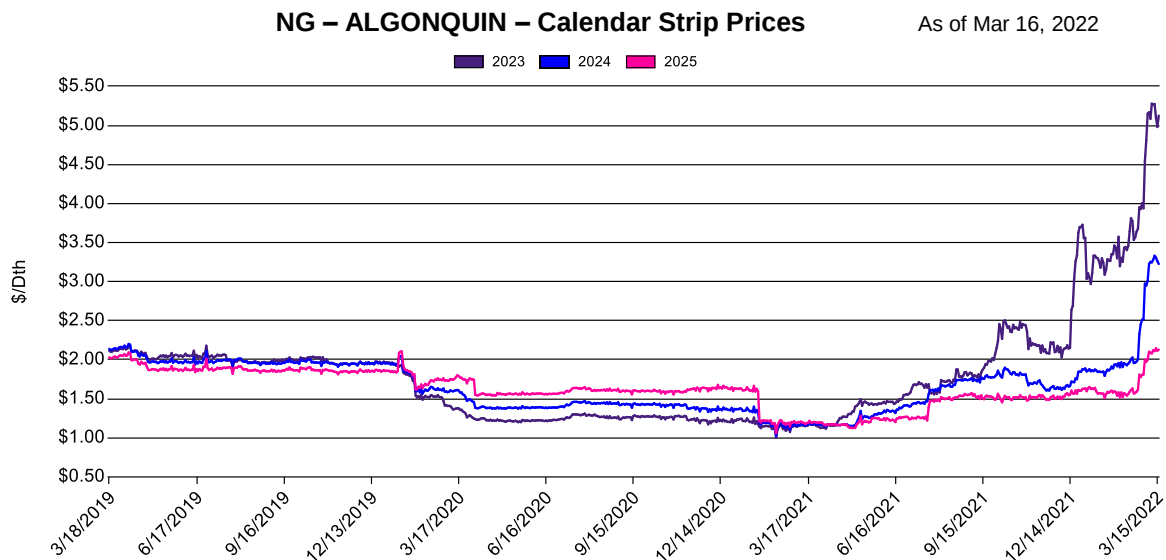
New England – Gas Prices

2023 Algonquin basis contracts trading at a \$5.00



Where are forwards trending?

- Algonquin Basis prices for CY23 continued to rise in February and is trading at \$5.00/MMBtu, running a ~\$1.75/MMBtu premium to the CY24 strip.
- The CY24 and CY25 strips are also slightly up – trading around \$3.25/MMBtu and \$2.05/MMBtu, respectively.



*This is a generic wholesale curve to New England. Pricing does not reflect locational adjustments, utility tariff designations or rate class adjustments specific to your facility. For more detailed pricing please contact your Enel X representative.

Where are index prices trending?

- Algonquin City-Gate daily prices averaged \$14.56/MMBtu in February 2022—the most expensive February since 2015.
- February 2022 spot was 74% higher than February 2021 and 217% above the five-year average for February.

Average of Daily Prices - Algonquin City-Gate									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$ 24.69	\$ 9.34	\$ 4.54	\$ 5.09	\$ 15.62	\$ 6.95	\$2.83	\$ 4.92	\$20.00
Feb	\$ 21.05	\$ 17.50	\$ 3.46	\$ 3.73	\$ 4.40	\$ 4.20	\$2.27	\$ 8.37	\$14.56
Mar	\$ 15.19	\$ 7.99	\$ 1.87	\$ 4.52	\$ 3.97	\$ 4.04	\$1.58	\$ 3.40	
Apr	\$ 4.80	\$ 3.16	\$ 2.93	\$ 3.11	\$ 4.98	\$ 2.56	\$1.63	\$ 2.33	
May	\$ 3.85	\$ 1.87	\$ 2.12	\$ 3.06	\$ 2.35	\$ 2.32	\$1.39	\$ 2.31	
Jun	\$ 4.05	\$ 1.69	\$ 2.28	\$ 2.45	\$ 2.62	\$ 2.12	\$1.52	\$ 2.84	
Jul	\$ 3.10	\$ 1.99	\$ 2.75	\$ 2.50	\$ 2.83	\$ 2.28	\$1.63	\$ 3.22	
Aug	\$ 2.71	\$ 2.34	\$ 3.11	\$ 2.36	\$ 3.17	\$ 2.02	\$1.49	\$ 3.93	
Sep	\$ 3.16	\$ 2.80	\$ 2.59	\$ 1.90	\$ 2.94	\$ 1.95	\$1.42	\$ 4.44	
Oct	\$ 2.83	\$ 3.69	\$ 2.26	\$ 2.78	\$ 3.23	\$ 1.66	\$2.00	\$ 4.78	
Nov	\$ 6.18	\$ 3.29	\$ 2.54	\$ 3.27	\$ 6.08	\$ 3.31	\$1.95	\$ 5.63	
Dec	\$ 6.01	\$ 2.19	\$ 6.74	\$ 9.35	\$ 5.77	\$ 4.61	\$4.24	\$ 8.27	
Avg	\$8.13	\$4.82	\$3.10	\$3.68	\$4.83	\$3.17	\$2.00	\$4.54	

New York

March 2022

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Insight of the Month

NYC capacity trades lower, ROS remains elevated

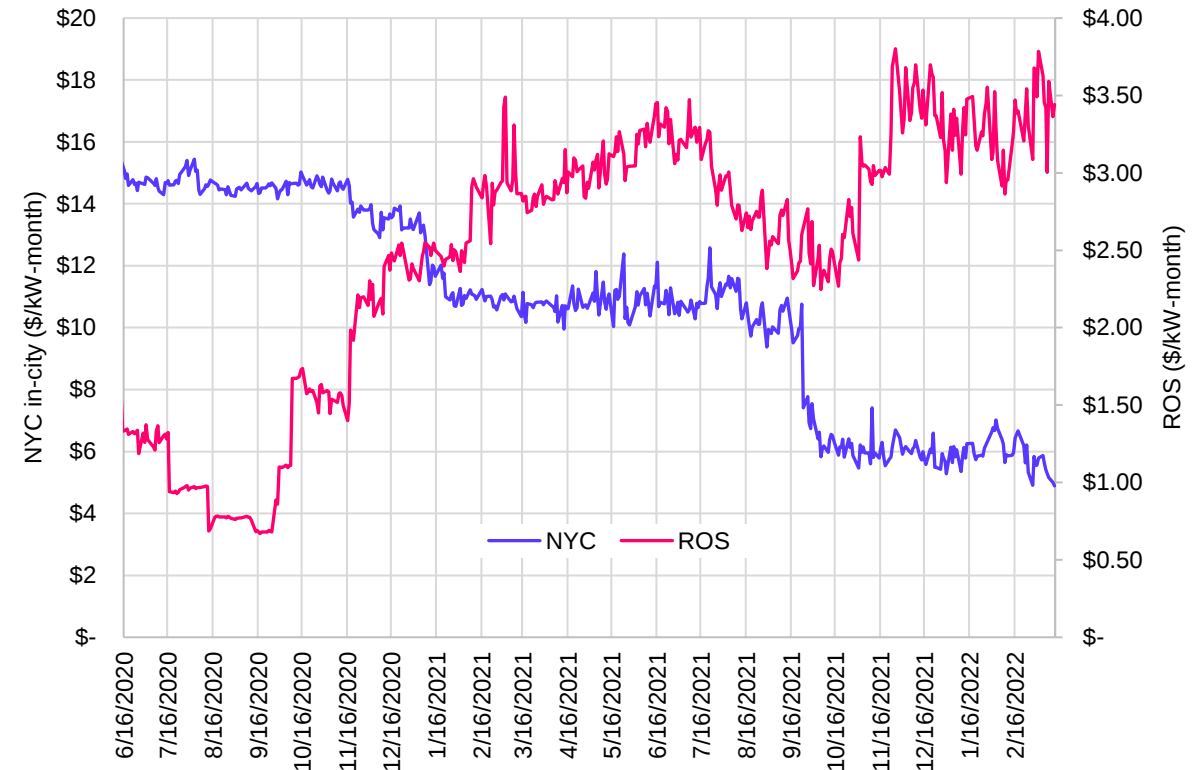


NYC capacity prices have steadily fallen since the beginning of the pandemic, while rest-of-state (ROS) prices followed an inverse trend – going from under \$1.00/kW-month in 2020 to \$3.50/kW-month in Spring 2022.

The main drivers for these trends:

- The 2022/23 NYC local minimum installed capacity requirements (LCRs) is slightly higher YoY.
- Partial outage of the Neptune Cable transmission line that delivers power from NJ to NY.
- Because of lower NYC peak demand values due to continued work from home, less resources need to clear auction.
- The second reactor at Indian Point Nuclear shut down fully in Spring 2021, driving up ROS prices.
- The 2022/23 installed reserve margin (IRM) of 19.6%, down from 2020's IRM of 20.7% has also impacted ROS prices.

NYC in-city and ROS Capacity - 2022 Summer Strip Pricing



KEY TAKEAWAY: NYC capacity prices are trading \$10/kW-month lower than this time two year's ago, whereas ROS prices have rebounded from \$1.00/kW-month to \$3.50/kW-month. NYC customers should expect to see a continuation of the lower capacity prices that were seen in summer 2021. The summer 2022 strip auction will be held in late March 2022.

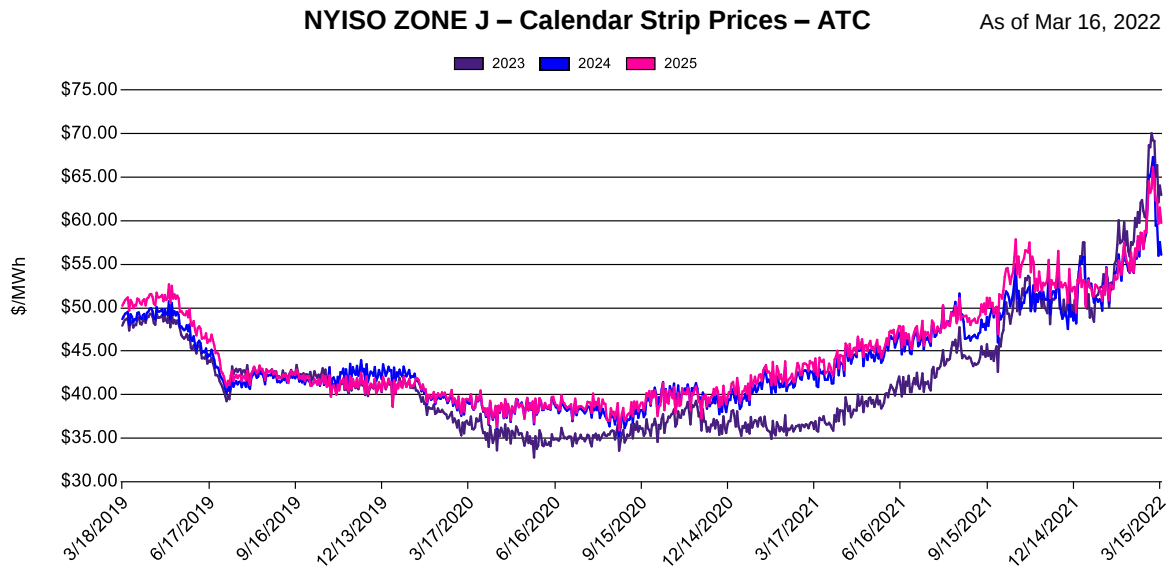
NYC – Power Prices

CY23 at \$64/MWh, spot backs down slightly from January



Where are forwards trending?

- The CY2023-2025 strips are trading in tandem between ~\$56/MWh-\$64/MWh, with the CY2023 trading at the higher end of that range.
- The CY2023 strip peaked to \$70/MWh in mid-February alongside rising natural gas prices.
- Prices have almost doubled from mid-2020, when the CY2023 strip was trading around \$35/MWh.



Where are index prices trending?

- Average DA monthly prices for NYISO Zone J dropped about \$40/MWh month-over-month to \$94.62/MWh in February 2022.
- February 2022 spot pricing was about 157% above the five-year average for January and 46% above the average spot price from February 2021.

Average Monthly Day Ahead LMP - NYISO - Zone J									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$175.92	\$57.34	\$35.04	\$40.64	\$96.58	\$49.20	\$25.12	\$36.35	\$138.44
Feb	\$122.84	\$112.33	\$29.61	\$30.55	\$34.05	\$33.07	\$21.26	\$64.78	\$94.62
Mar	\$102.52	\$51.26	\$20.75	\$36.04	\$31.98	\$35.00	\$16.81	\$29.40	
Apr	\$46.49	\$27.53	\$28.62	\$32.27	\$34.77	\$28.82	\$15.53	\$24.55	
May	\$37.31	\$30.35	\$23.45	\$31.61	\$26.96	\$23.39	\$14.95	\$26.11	
Jun	\$39.95	\$24.95	\$25.47	\$30.17	\$29.79	\$23.41	\$19.78	\$34.84	
Jul	\$39.79	\$30.01	\$35.43	\$33.57	\$36.94	\$31.23	\$25.50	\$42.00	
Aug	\$32.10	\$31.10	\$35.64	\$28.66	\$39.36	\$26.59	\$23.45	\$46.90	
Sep	\$32.91	\$32.45	\$27.01	\$26.26	\$35.52	\$21.49	\$19.33	\$48.41	
Oct	\$32.09	\$27.68	\$20.84	\$27.88	\$34.70	\$19.86	\$19.59	\$54.47	
Nov	\$41.29	\$23.34	\$25.62	\$29.97	\$38.60	\$26.55	\$22.04	\$57.10	
Dec	\$36.23	\$20.24	\$46.06	\$49.54	\$38.63	\$28.53	\$33.09	\$47.29	
Avg	\$61.62	\$39.05	\$29.46	\$33.10	\$39.82	\$28.93	\$21.37	\$42.68	\$116.53

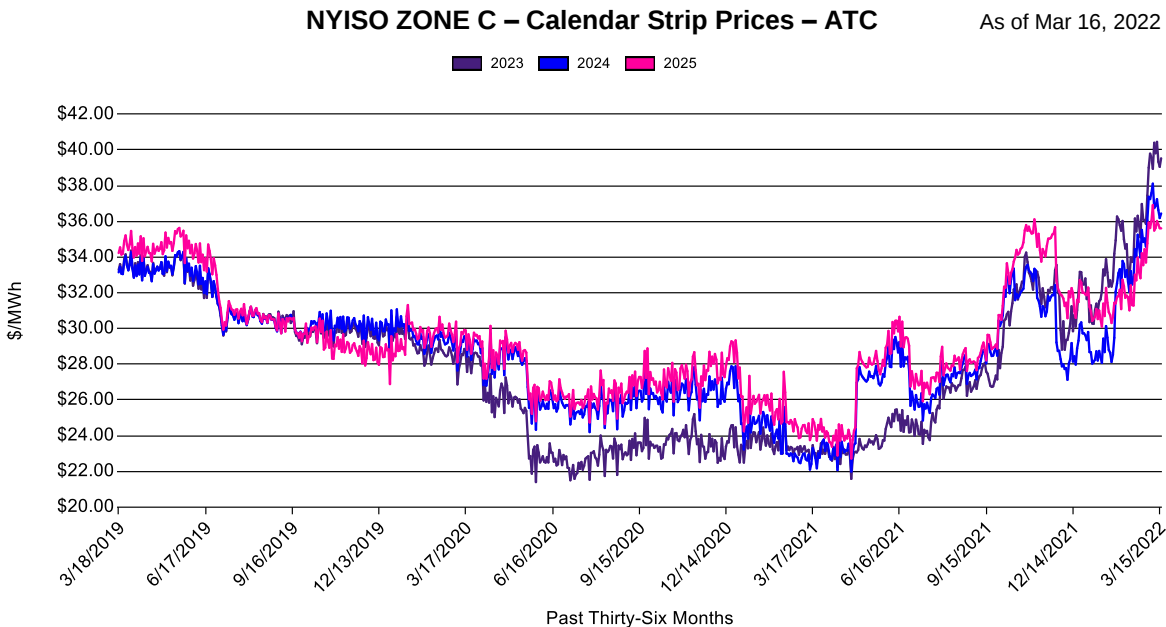
Upstate NY – Power Prices

CY2023 rises, February spot averages \$66/MWh



Where are forwards trending?

- CY2023, 24 and 25 are all trading between \$36/MWh – \$39/MWh, with CY2023 up \$8/MWh year-to-date.
- The CY2023 strip briefly reached the \$40/MWh mark in February 2022, however it was unable to break through.



Where are index prices trending?

- Cold weather and rising natural gas prices caused the average DA settlement in February to settle at \$66.26/MWh.
- February 2022 spot pricing was ~71% above the average spot price from February 2021 and is ~155% above the five-year average for February.

Average Monthly Day Ahead LMP - NYISO - Zone C									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$121.65	\$37.81	\$21.50	\$29.68	\$62.19	\$35.02	\$16.57	\$23.96	\$96.30
Feb	\$80.31	\$75.58	\$17.63	\$24.98	\$23.91	\$25.74	\$16.36	\$38.58	\$66.26
Mar	\$85.79	\$37.35	\$12.58	\$24.47	\$22.14	\$27.67	\$13.99	\$14.43	
Apr	\$40.38	\$22.80	\$22.01	\$20.86	\$28.14	\$21.82	\$11.87	\$10.15	
May	\$32.23	\$25.66	\$16.11	\$20.28	\$22.94	\$15.11	\$13.08	\$15.97	
Jun	\$35.71	\$20.24	\$21.06	\$20.86	\$25.51	\$15.67	\$16.46	\$28.27	
Jul	\$34.52	\$24.94	\$29.31	\$25.74	\$31.54	\$25.27	\$22.18	\$32.81	
Aug	\$29.40	\$25.43	\$30.40	\$22.71	\$32.87	\$22.40	\$19.94	\$40.97	
Sep	\$28.79	\$25.14	\$22.75	\$21.72	\$29.40	\$16.90	\$16.36	\$35.01	
Oct	\$29.30	\$24.02	\$18.27	\$20.67	\$29.50	\$16.49	\$16.10	\$43.23	
Nov	\$34.18	\$16.32	\$21.58	\$23.18	\$31.86	\$19.75	\$13.45	\$41.57	
Dec	\$31.50	\$13.65	\$25.79	\$33.62	\$31.12	\$19.76	\$19.69	\$34.51	
Avg	\$48.65	\$29.08	\$21.58	\$24.06	\$30.93	\$21.80	\$16.34	\$29.95	\$81.28

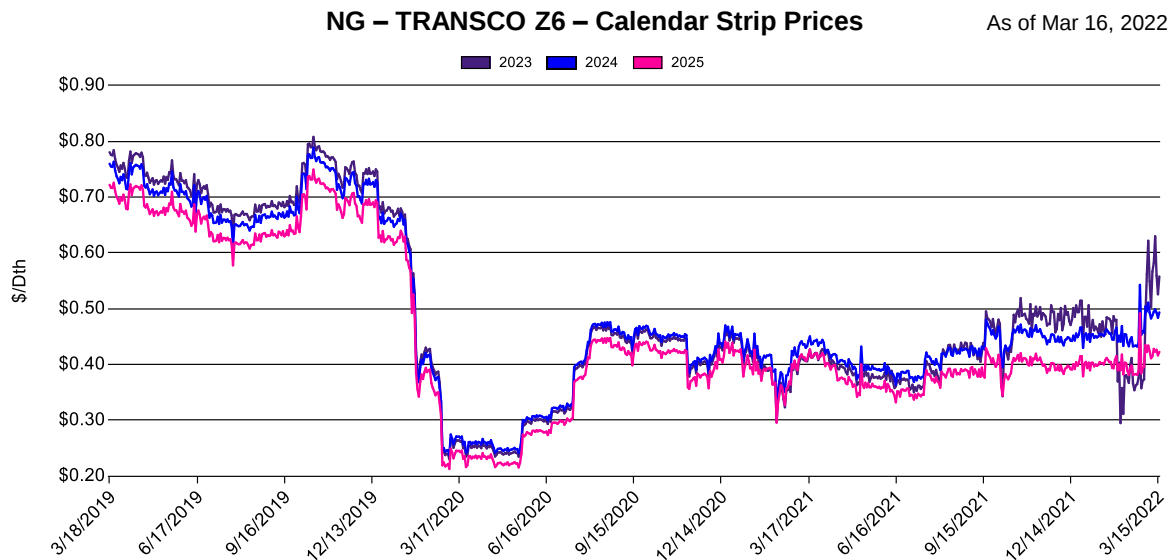
New York – Gas Prices

Transco Z6 NY basis forwards jump to \$0.53/MMBtu



Where are forwards trending?

- Transco Z6 NY basis-only CY2023 strip jumped significantly in late February from \$0.38/MMBtu to \$0.053/MMBtu.
- The CY2024 and CY 2025 strips are trading slightly lower around \$0.50/MMBtu and \$0.43/MMBtu, respectively.
- The CY2023 strip historically had technical resistance at \$0.50, which now acts as support as prices have broken through.



Where are index prices trending?

- Daily prices averaged \$6.17/MMBtu in February 2022, equivalent to a ~\$5/MMBtu decrease month-over-month.
- February 2022 spot pricing is 92% above the five-year average for February and 18% higher than the same month a year prior.

Average of Daily Prices - Transco Z6 NY Full Value									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$27.66	\$7.24	\$3.82	\$3.82	\$18.73	\$6.02	\$2.20	\$3.13	\$11.15
Feb	\$11.27	\$16.01	\$3.09	\$2.85	\$3.21	\$2.85	\$1.87	\$5.21	\$6.17
Mar	\$8.24	\$3.67	\$1.29	\$3.44	\$2.83	\$2.91	\$1.49	\$2.24	
Apr	\$4.13	\$2.22	\$1.57	\$2.81	\$2.79	\$2.37	\$1.51	\$2.13	
May	\$3.49	\$2.60	\$1.56	\$2.80	\$2.56	\$2.28	\$1.35	\$2.36	
Jun	\$3.22	\$2.35	\$1.83	\$2.34	\$2.78	\$2.11	\$1.43	\$2.61	
Jul	\$2.72	\$1.98	\$2.14	\$2.44	\$2.88	\$2.17	\$1.69	\$3.32	
Aug	\$2.38	\$2.37	\$2.03	\$2.17	\$3.00	\$1.87	\$1.47	\$3.75	
Sep	\$2.25	\$2.09	\$1.34	\$2.29	\$2.74	\$1.75	\$1.25	\$4.27	
Oct	\$2.09	\$2.22	\$1.12	\$2.32	\$2.89	\$1.53	\$1.22	\$4.56	
Nov	\$3.88	\$1.77	\$2.10	\$2.91	\$4.18	\$2.62	\$1.47	\$4.92	
Dec	\$3.25	\$1.58	\$4.37	\$5.67	\$4.12	\$2.56	\$2.78	\$3.44	
Avg	\$6.21	\$3.84	\$2.19	\$2.99	\$4.39	\$2.59	\$1.64	\$3.49	\$8.66

Mid-Atlantic

March 2022

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Insight of the Month

PJM renewable review process to be reconsidered amid project backlog



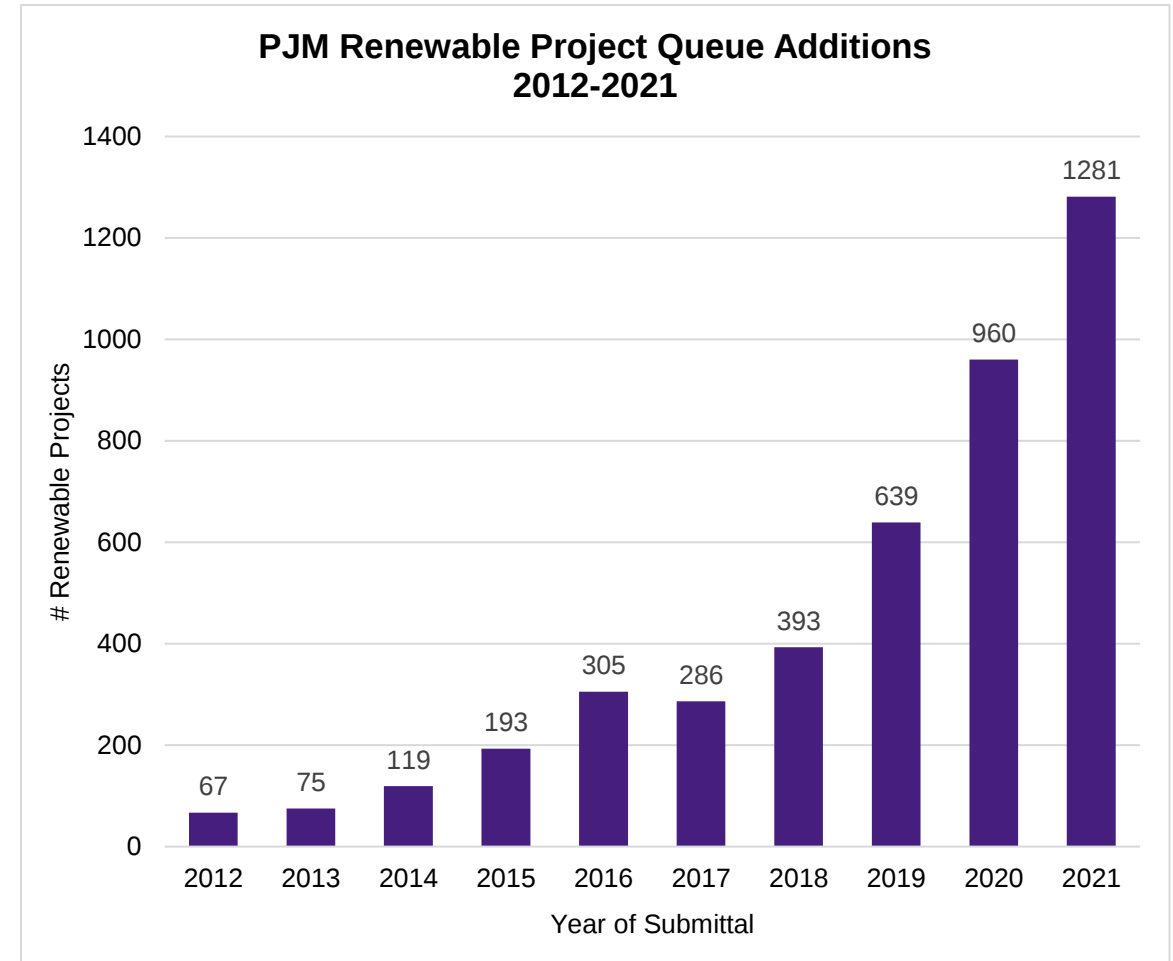
An influx of proposed renewable generation, along with an outdated PJM review process, is leading to delays in interconnection approvals in the region.

- Since 2012, 5,055 projects have been added to the interconnection queue and await review and approval by PJM representatives before construction can proceed. **Of those, 85% are renewable projects.**
- To date, only 59% of those renewable projects are actively generating power. 33% of the original submittals have been canceled due to financing, long waits or lack of intention to follow through, using up limited review resources at PJM.

The current review process does not have a method for ranking generation projects based on readiness to move forward, meaning larger, well-financed projects don't get approval in a timely manner.

There are a few issues that exist today:

- First, there are a significant amount of very small projects (5 MW or less) which still require review resources.
- Also, some of these projects are more speculative in nature, meaning there could be less of an intention to proceed based on financing or price advantageousness.



Source: PJM

Insight of the Month (continued)

PJM renewable review process to be reconsidered amid project backlog



New proposal put forth by PJM is composed of two items:

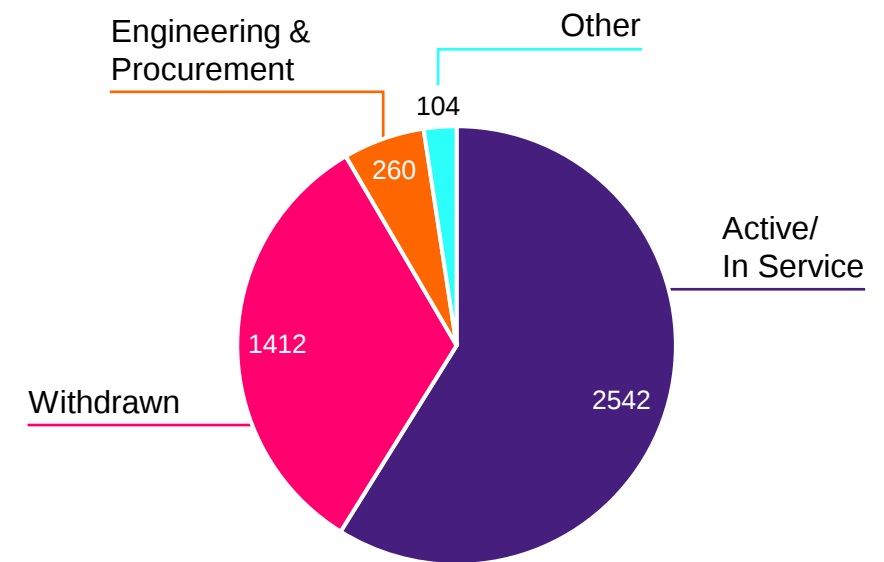
1. It will place projects in a "fast lane" if they have obtained most or all the necessary financing and completed specified prior requirements (obtaining of permits, clearing state requirements). Smaller, more speculative projects could be relegated to a lower priority, where they will undergo additional steps and will face a lengthier wait period.
2. In order to implement the new proposed review plan and clear up the current queue, officials are asking for a two-year pause on decisions for over 1,200 projects currently in line. They expect to be able to process ~300 per year after the new plan is in place.

The proposal will receive a final vote in late-April 2022, but support for reform was almost unanimous.

What does this mean for future projects?

- Once the transition plan is in place, new project applications will not be accepted until mid-2023, and will won't be reviewed until mid-2025. **This means that new generation projects may not receive interconnection approval until late 2027.**
- While this is expected to drastically improve the process, it could have a significant effect on potential renewable projects due to the large delay they would face.

**PJM Renewable Project Status
2012-2021**



Source: PJM

KEY TAKEAWAY: PJM, with overwhelming stakeholder support, is taking action to improve the approval process for joining the PJM grid as a new generation facility. While this is a positive development for the future of renewable generation, it may cause a short-term delay in project implementation, limiting supply for customers looking to enter renewable PPA or vPPA agreements.

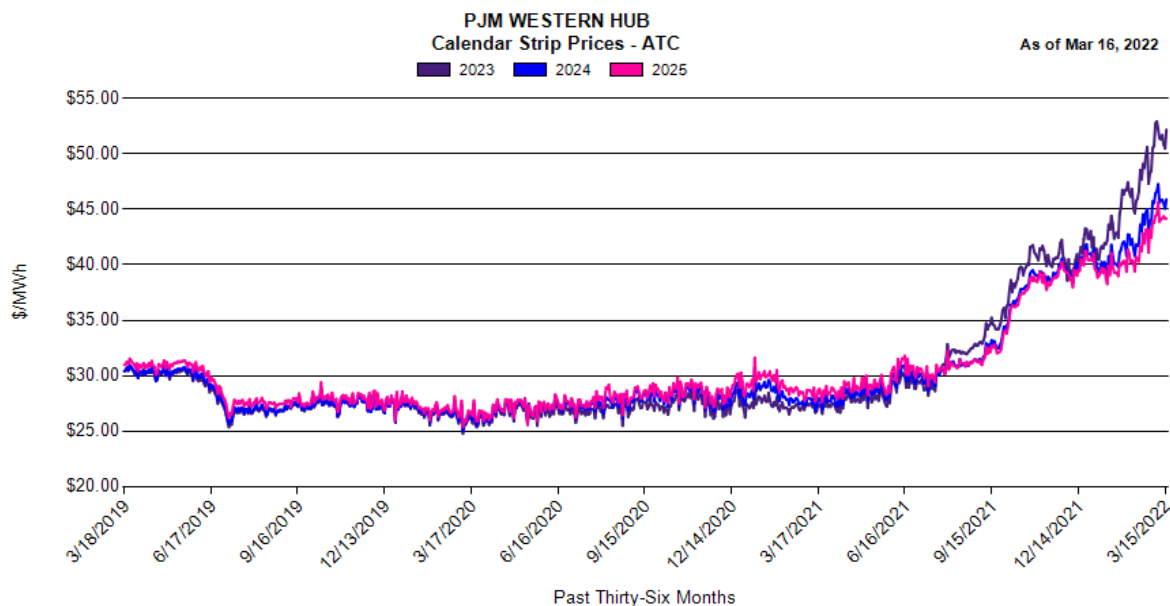
PJM – Power Price

Power forwards increased as a reaction to gas volatility from geopolitical conflict



Where are forwards trending?

- PJM West Hub forwards saw more volatility in February in reaction to gas supply concerns around the Ukraine/Russia conflict as well as a significant deficit in US storage compared to the 5-year average.
- February trended much warmer, and the beginning of the shoulder month of March has signaled that a relief is on the way.



Where are index prices trending?

- Average Day Ahead monthly prices at PJM West Hub settled at \$51.25/MWh for February 2022, trending the highest in 7 years.
- Continued high gas prices and were the main driver of elevated LMPs, although February saw a sharp decline from January due to a warmer than normal weather pattern.

Average Monthly Day Ahead LMP - West Hub										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$36.01	\$132.05	\$38.62	\$30.99	\$31.24	\$72.91	\$33.57	\$22.03	\$25.76	\$68.75
Feb	\$36.23	\$71.44	\$75.79	\$28.48	\$26.51	\$27.61	\$27.28	\$19.89	\$42.32	\$51.25
Mar	\$40.19	\$69.56	\$39.94	\$25.49	\$31.66	\$33.69	\$29.82	\$18.63	\$24.85	\$45.93
Apr	\$39.76	\$41.45	\$32.99	\$30.00	\$29.41	\$35.25	\$25.76	\$17.38	\$26.95	
May	\$39.37	\$42.04	\$34.74	\$24.30	\$29.14	\$35.50	\$25.30	\$17.38	\$28.00	
Jun	\$37.27	\$40.79	\$31.57	\$26.34	\$26.16	\$29.64	\$22.61	\$18.53	\$30.86	
Jul	\$47.37	\$37.23	\$34.07	\$32.38	\$28.88	\$32.27	\$27.64	\$25.42	\$36.63	
Aug	\$34.66	\$34.46	\$30.45	\$32.60	\$27.08	\$32.23	\$24.30	\$23.18	\$43.54	
Sep	\$36.31	\$35.63	\$30.25	\$30.76	\$29.99	\$32.71	\$26.15	\$19.56	\$45.27	
Oct	\$35.83	\$35.34	\$31.46	\$30.20	\$29.34	\$33.21	\$25.02	\$21.75	\$59.23	
Nov	\$36.48	\$39.43	\$27.71	\$26.81	\$30.23	\$37.34	\$29.22	\$21.32	\$65.47	
Dec	\$41.20	\$33.31	\$25.42	\$32.13	\$36.70	\$33.79	\$23.63	\$26.03	\$38.81	
Avg	\$38.39	\$51.06	\$36.08	\$29.21	\$29.70	\$36.34	\$26.69	\$20.92	\$38.97	\$55.31

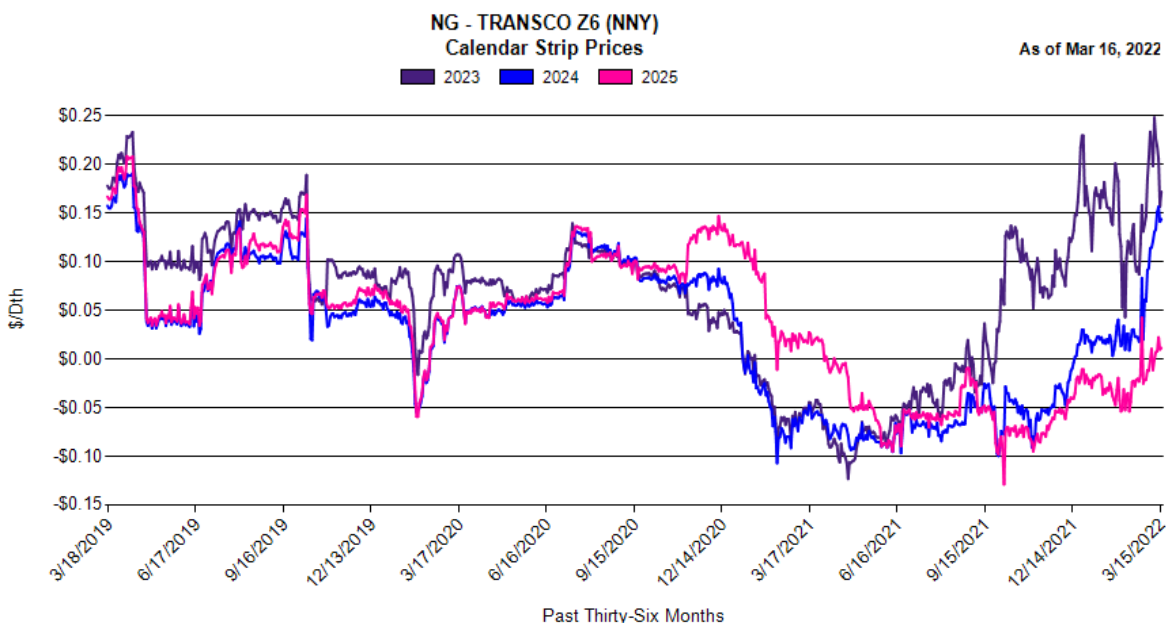
PJM – Gas Price

Transco Zone 6 basis price spike begins to be spread to outer years



Where are forwards trending?

- Transco z6 xNY calendar forward basis strips have seen a slight bullish uptick in the outer years with continued volatility in the near term 2023 strip.
- 2025 strip is remaining low compared to historical prices, but 2024 has seen a recent spike driven by continued storage concerns



Where are index prices trending?

- Transco Zone 6 xNY prices dropped substantially from its recent record high in January.
- Basis dropped off from \$5.33 in January to \$0.73 in February, contributing to the decline. This trend continues in March as the shoulder month weather has begun in earnest.

Average of Daily Prices - Transco Zone 6 xNY										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$4.77	\$25.21	\$5.12	\$3.19	\$3.56	\$16.78	\$4.16	\$2.16	\$2.82	\$9.60
Feb	\$3.96	\$8.47	\$14.03	\$2.66	\$2.72	\$3.07	\$2.74	\$1.85	\$4.88	\$5.40
Mar	\$4.09	\$5.96	\$3.53	\$1.31	\$3.15	\$2.78	\$2.88	\$1.48	\$2.23	\$4.40
Apr	\$4.33	\$4.27	\$2.22	\$1.57	\$2.84	\$2.77	\$2.35	\$1.50	\$2.12	
May	\$4.13	\$3.52	\$2.62	\$1.60	\$2.83	\$2.55	\$2.26	\$1.36	\$2.34	
Jun	\$3.88	\$3.22	\$2.41	\$1.92	\$2.38	\$2.77	\$2.09	\$1.42	\$2.59	
Jul	\$3.74	\$2.70	\$2.11	\$2.18	\$2.47	\$2.87	\$2.16	\$1.67	\$3.31	
Aug	\$3.49	\$2.38	\$2.41	\$2.12	\$2.25	\$3.01	\$1.87	\$1.46	\$3.73	
Sep	\$3.71	\$2.22	\$2.17	\$1.53	\$2.31	\$2.73	\$1.74	\$1.23	\$4.25	
Oct	\$3.65	\$2.15	\$2.22	\$1.36	\$2.31	\$2.86	\$1.52	\$1.20	\$4.54	
Nov	\$3.90	\$3.87	\$1.81	\$2.16	\$2.83	\$4.10	\$2.59	\$1.46	\$4.88	
Dec	\$4.77	\$3.37	\$1.58	\$3.69	\$4.93	\$4.01	\$2.43	\$2.78	\$3.36	
Avg	\$4.03	\$5.61	\$3.52	\$2.11	\$2.88	\$4.19	\$2.40	\$1.63	\$3.42	\$6.47

Midwest

March 2022

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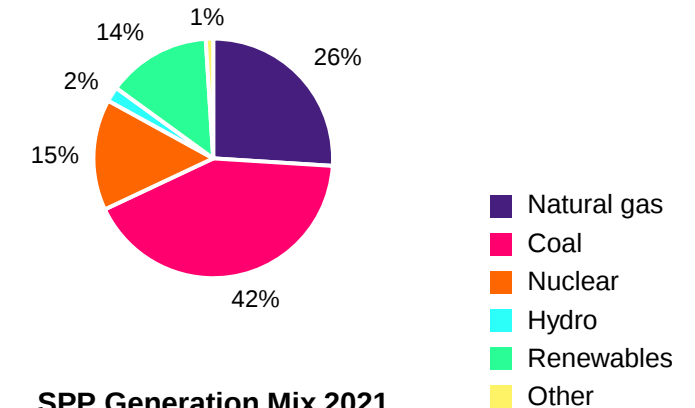
Insight of the Month



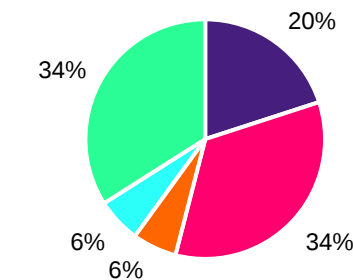
Promising study shows up to 53 GW of new, mainly renewable generation potential in the Midwest and Southeast power pool

- A recently completed initiative between the Midcontinent Independent Service Operator (MISO) and the Southeast Power Pool (SPP) concluded that 7 transmission addition projects have the potential to make up to 53 GW of new renewable generation capacity available to the markets.
- Transmission projects would allow for power to be transferred to and from MISO and SPP, allowing customers to receive energy from projects outside of their region.
- Potential savings for customers in the Midwest could be up to \$725M annually, which means that transmission project costs would be covered by energy savings in only a short period.
- Transmission project sites are in a prime location for wind generation, which would likely take up most of the new capacity.
- MISO and SPP have made progress in renewables, but high-emitting coal powered generation continues to dominate in both regions (see charts).
- Other ISOs are already looking to the project as a model of cooperation between bordering regions to build out the US transmission system.

MISO Generation Mix 2021



SPP Generation Mix 2021



KEY TAKEAWAY: Transmission additions in the US are the least mentioned but most effective way of quickly converting electricity generation to a carbon-free future. Projects like the MISO/SPP initiative provide opportunities for a massive influx of renewable capacity, which will fulfill demand from consumers in the form of PPAs, vPPAs and Renewable Energy Credits.

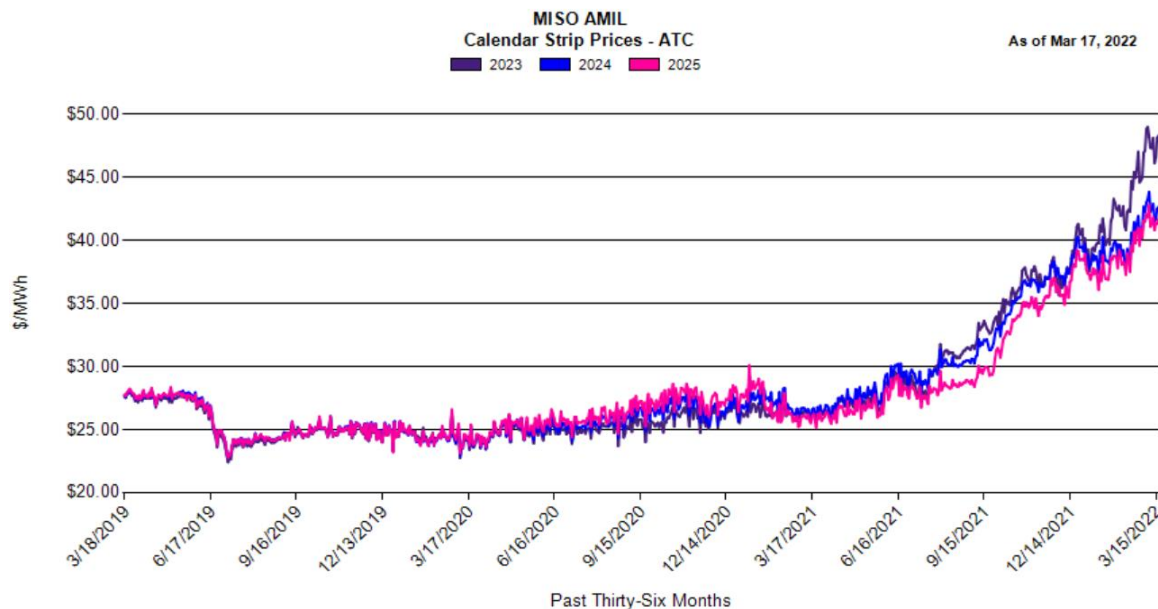
MISO – Power Price

Prices remain high in the region, with hope for some relief on the horizon



Where are forwards trending?

- 2023 Calendar strip price has shown greater separation from the outer years due to the perceived near-term risk to natural gas volatility which has impacted power prices throughout the region.
- Recent prices have shown some signs of a relief as warmer temperatures slow demand



Where are index prices trending?

- February prices continued the abnormally high trend seen since the summer.
- Early March prices have continued in a similar range, but are expected to fall by month end.

Average Monthly Day Ahead LMP - Illinois Hub									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$51.83	\$27.04	\$22.84	\$28.17	\$34.55	\$30.25	\$23.52	\$24.91	\$ 44.81
Feb	\$54.44	\$30.18	\$22.76	\$24.05	\$23.73	\$25.80	\$21.60	\$61.94	\$ 44.85
Mar	\$41.18	\$27.83	\$22.16	\$25.20	\$23.66	\$27.08	\$19.24	\$23.04	\$ 41.24
Apr	\$34.38	\$25.86	\$24.84	\$25.51	\$30.26	\$25.77	\$18.29	\$26.78	
May	\$40.86	\$27.60	\$25.32	\$29.11	\$31.36	\$24.28	\$19.35	\$26.77	
Jun	\$34.83	\$25.43	\$26.49	\$29.01	\$29.76	\$22.98	\$21.61	\$32.88	
Jul	\$31.68	\$28.11	\$30.91	\$29.57	\$30.38	\$27.69	\$26.90	\$36.81	
Aug	\$31.33	\$27.30	\$32.33	\$26.65	\$31.38	\$24.35	\$25.65	\$42.72	
Sep	\$30.96	\$28.82	\$29.20	\$29.39	\$30.65	\$25.29	\$20.47	\$44.17	
Oct	\$31.51	\$27.19	\$28.71	\$25.53	\$33.08	\$23.60	\$22.50	\$57.87	
Nov	\$34.06	\$23.07	\$23.71	\$25.51	\$34.11	\$25.67	\$18.16	\$55.06	
Dec	\$28.56	\$21.80	\$30.34	\$25.28	\$31.56	\$23.40	\$24.60	\$35.29	
Avg	\$37.13	\$26.69	\$26.63	\$26.92	\$30.37	\$25.51	\$21.82	\$39.02	\$43.63

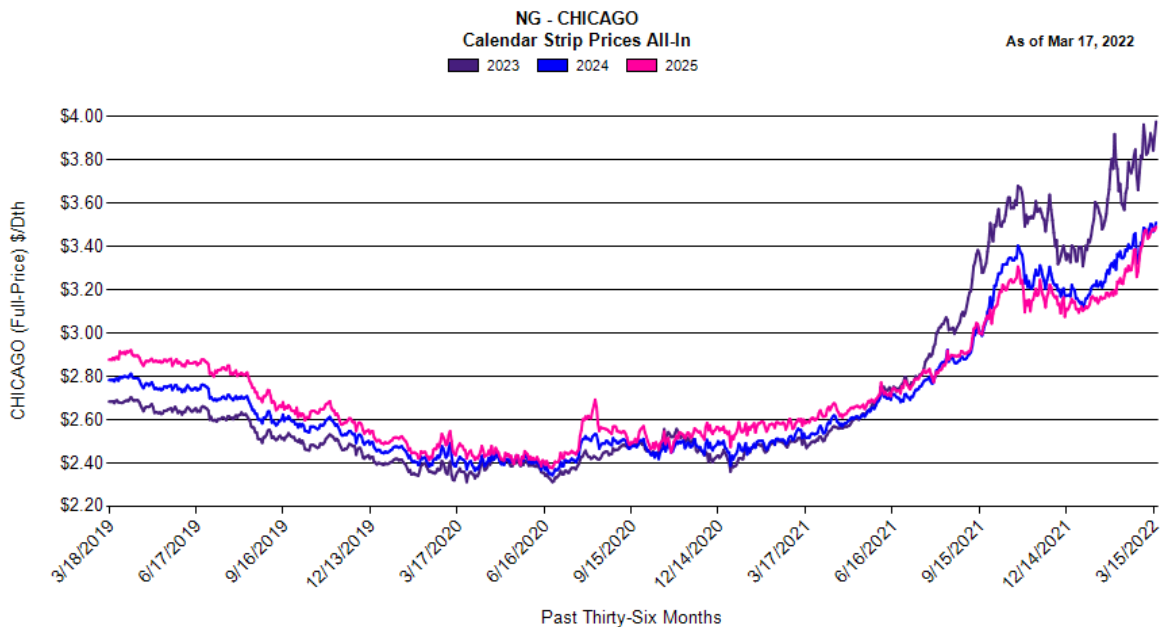
Chicago – Gas Prices

Midwest gas prices have steadied at a new elevated level



Where are forwards trending?

- Prices have remained elevated as geopolitical factors and a lagging storage level add upward pressure.
- Most recent storage report shows a 17% deficit to the 5 year average.



Where are index prices trending?

- Chicago CG index prices have remained above \$4 so far in 2022 and expectations are that they will continue to settle at a premium to 2021.

Average of Daily Prices - Chicago City Gate									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$7.93	\$3.04	\$2.34	\$3.29	\$3.79	\$3.22	\$1.92	\$2.53	\$4.17
Feb	\$11.95	\$3.98	\$1.99	\$2.81	\$2.57	\$2.64	\$1.74	\$22.75	\$4.48
Mar	\$9.35	\$2.90	\$1.79	\$2.84	\$2.48	\$3.39	\$1.57	\$2.47	\$4.44
Apr	\$4.72	\$2.59	\$1.90	\$2.96	\$2.77	\$2.45	\$1.66	\$2.54	
May	\$4.59	\$2.81	\$1.91	\$3.01	\$2.49	\$2.36	\$1.67	\$2.75	
Jun	\$4.64	\$2.70	\$2.46	\$2.79	\$2.75	\$2.11	\$1.55	\$3.12	
Jul	\$4.11	\$2.83	\$2.72	\$2.80	\$2.69	\$2.12	\$1.67	\$3.61	
Aug	\$3.92	\$2.85	\$2.74	\$2.81	\$2.86	\$1.98	\$2.05	\$3.91	
Sep	\$3.94	\$2.69	\$2.89	\$2.87	\$2.81	\$2.13	\$1.80	\$4.80	
Oct	\$3.84	\$2.39	\$2.86	\$2.78	\$3.21	\$1.94	\$2.08	\$5.26	
Nov	\$4.37	\$2.14	\$2.41	\$2.97	\$4.06	\$2.51	\$2.41	\$4.89	
Dec	\$3.49	\$1.94	\$3.63	\$2.84	\$3.75	\$2.10	\$2.44	\$3.60	
Avg	\$5.57	\$2.74	\$2.47	\$2.90	\$3.02	\$2.41	\$1.88	\$5.19	\$4.36

California

March 2022

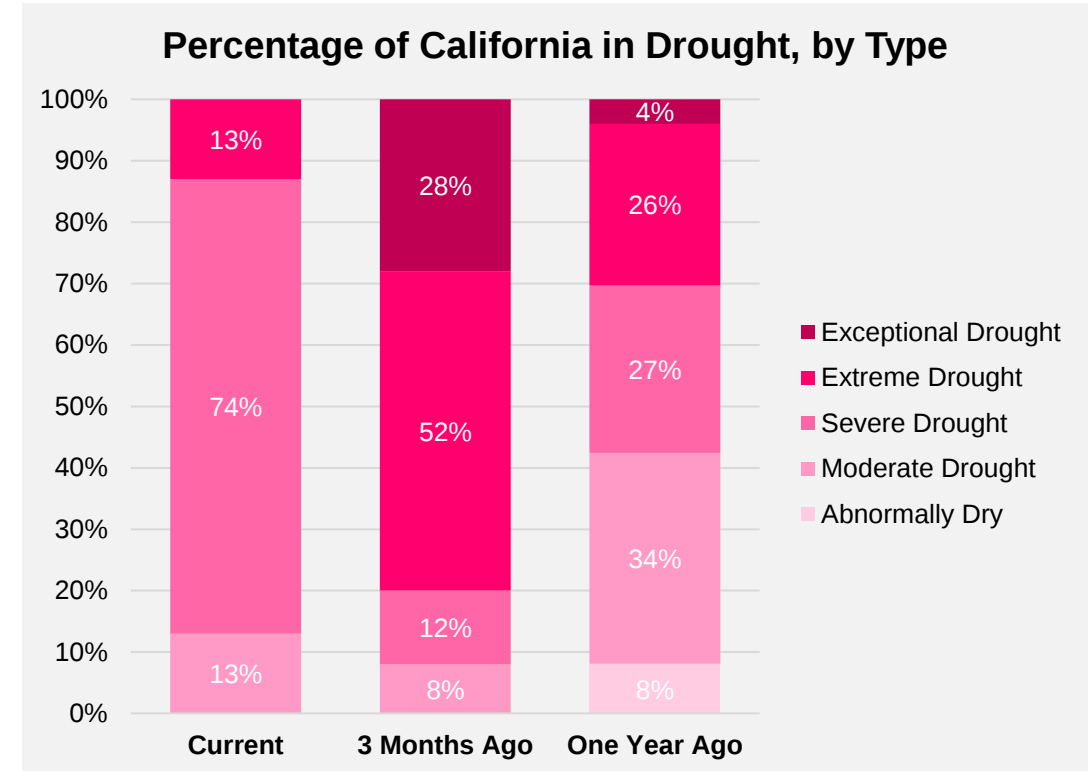
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Insight of the Month

California's wet season fails to settle state's drought



- Following above average precipitation to end 2021 there was optimism that California's wet season (winter) would bring much needed relief to the drought-stricken state. The December gains have been reversed as January and February of 2022 have been the driest on state record, according to the California Department of Water Resources (DWR).
- The data presented to the right shows the percentage of the state in varying drought conditions. The current situation has evolved compared to one year ago, with reduced extreme and exceptional drought but a greater percentage of the state is in severe drought. The persistent drought conditions that encompass the entire state are a troubling indicator of increased wildfire risk and decreased hydropower generation availability.
- **As of March 1, snowpack levels in the state are roughly 68% of the 40-year average for the same time period (CA DWR).** Depleted reservoirs are unlikely to be meaningfully refilled by peak demand season putting upward pressure on forward prices for the summer of 2022.



Source: University of Nebraska Lincoln, U.S. Drought Monitor ([Link](#))

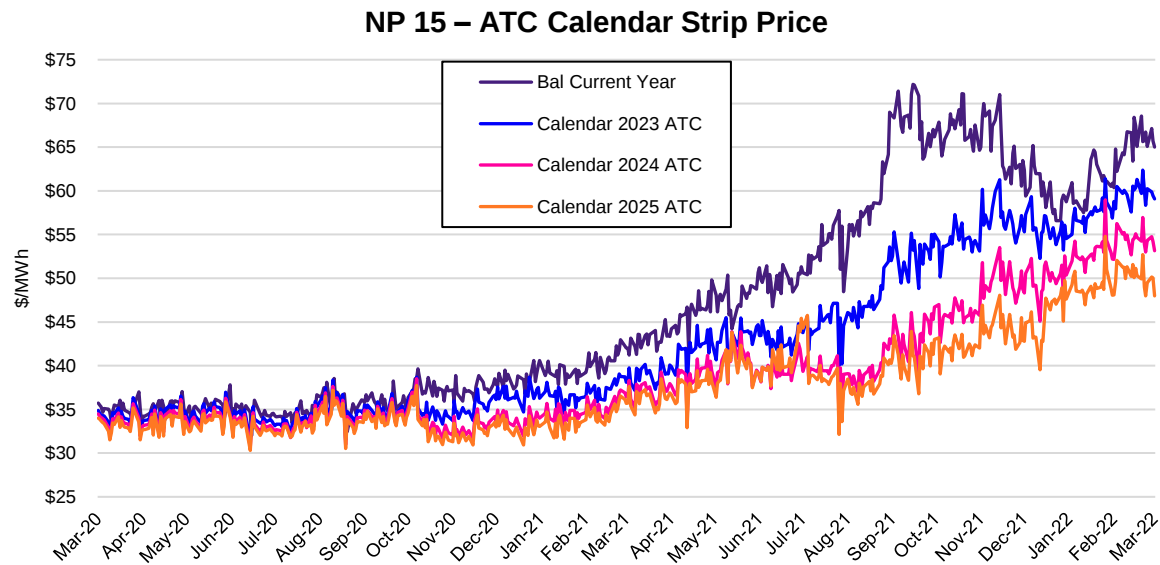
KEY TAKEAWAY: Despite a strong start to winter, record low precipitation in January and February this year have heightened drought concerns for the remainder of 2022. Along with increased wildfire risk, reduced hydropower availability adds upward pressure to forward electric prices in the state while increasing volatility on the spot market. California electric customer should expect prices to remain elevated in 2022.

Northern CA – Power Prices



Where are forwards trending?

- Prices for the NP-15 2023 strip price have continued to climb since August and are now up 53% compared to this time last year.
- Since the State's energy emergency in August 2020, backwardation between calendar year terms has been exacerbated, with the 2025 strip price trading at a \$11/MWh (23%) discount compared to the 2023 calendar year price.



Where are index prices trending?

- Seasonally above average temperatures throughout the state have resulted in decreased demand for natural gas in late-January and early-February. The lack of demand for natural gas to meet heating needs has resulted in spot price decline compared to late-2021.
- February 2022 Day Ahead spot prices averaged roughly \$48/MWh, the lowest since June 2021. Due to the fall in average monthly spot prices in February, the winter average for 21/22 came in below the 10-year high in 2019 but was still 35% above the 5-year average. Prices are expected to remain close to \$40/MWh for the remainder of March.

Average Daily Price - NP 15									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$ 46.07	\$ 33.40	\$ 28.54	\$ 34.90	\$ 32.94	\$ 41.09	\$ 31.19	\$ 33.61	\$ 52.71
Feb	\$ 61.99	\$ 30.71	\$ 24.01	\$ 29.23	\$ 30.47	\$ 75.58	\$ 26.34	\$ 59.48	\$ 47.63
Mar	\$ 47.63	\$ 30.72	\$ 19.60	\$ 22.12	\$ 30.06	\$ 36.63	\$ 26.58	\$ 33.04	\$ 43.90
Apr	\$ 47.48	\$ 32.27	\$ 21.23	\$ 22.13	\$ 24.91	\$ 22.25	\$ 21.61	\$ 35.58	
May	\$ 46.67	\$ 32.69	\$ 20.76	\$ 29.28	\$ 20.75	\$ 18.46	\$ 18.43	\$ 35.95	
Jun	\$ 45.42	\$ 34.64	\$ 28.09	\$ 33.12	\$ 28.14	\$ 22.94	\$ 23.49	\$ 50.31	
Jul	\$ 47.23	\$ 35.54	\$ 32.80	\$ 35.84	\$ 54.89	\$ 30.28	\$ 25.70	\$ 67.21	
Aug	\$ 46.49	\$ 34.32	\$ 34.85	\$ 45.20	\$ 49.84	\$ 31.82	\$ 49.66	\$ 60.30	
Sep	\$ 45.45	\$ 34.46	\$ 34.66	\$ 39.72	\$ 33.42	\$ 34.55	\$ 41.66	\$ 66.53	
Oct	\$ 44.73	\$ 32.49	\$ 34.03	\$ 41.19	\$ 43.74	\$ 36.32	\$ 42.90	\$ 66.29	
Nov	\$ 45.12	\$ 29.41	\$ 30.17	\$ 36.27	\$ 52.40	\$ 41.51	\$ 38.58	\$ 58.84	
Dec	\$ 37.52	\$ 28.65	\$ 36.60	\$ 34.22	\$ 54.17	\$ 39.82	\$ 40.06	\$ 61.88	
Avg	\$ 46.81	\$ 32.44	\$ 28.78	\$ 33.60	\$ 37.98	\$ 35.94	\$ 32.18	\$ 52.42	\$ 48.08

Southern CA – Power Prices

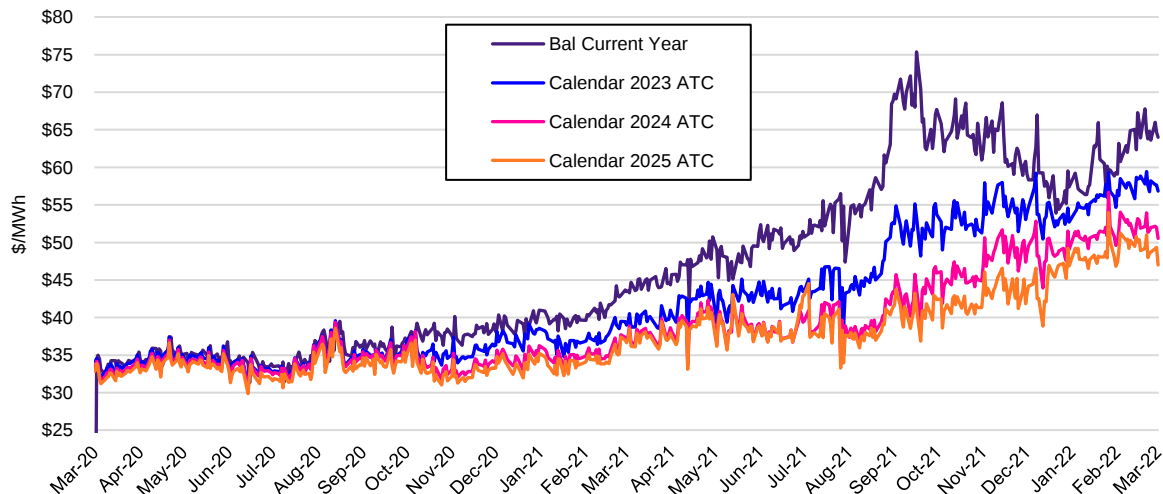


Where are forwards trending?

SP-15 forward prices have continued to trend upwards through the first half of March. Prices for the CY 2023 strip are now 44% higher than last year and 13% higher from the last market dip in late December.

Forward prices across all years have continued to increase amid rising national natural gas prices. Longer term future contracts present backwardation with the CY 2025 strip price trading at a 7% discount compared to 2024.

SP 15 – ATC Calendar Strip Price



Where are index prices trending?

Southern California DA average spot prices for winter 21/22 (Dec – Feb) averaged \$51/MWh, 7% lower than the 5-year high in 2019. Above average temperatures and a surplus of regional natural gas storage pushed spot prices lower in February, March continues to trend higher compared to the 5-year average. DA spot prices are expected to remain higher compared to historical averages as drought conditions in the state continue to worsen ahead of summer peak demand season.

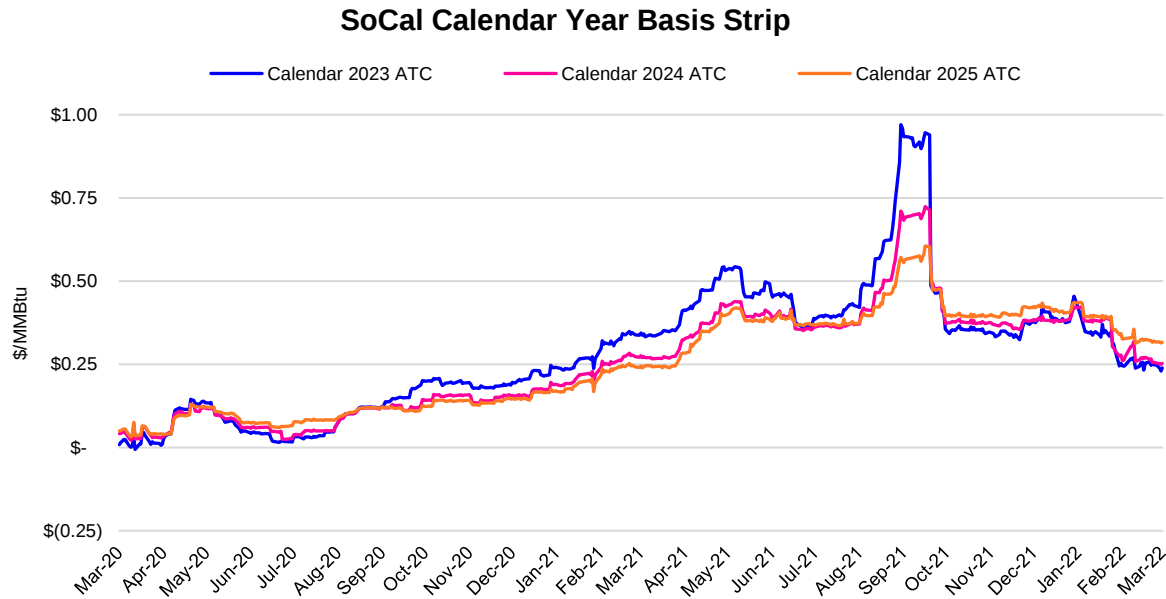
Average Daily Price - SP 15									
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$ 46.47	\$ 33.51	\$ 28.18	\$ 33.55	\$ 34.37	\$ 39.96	\$ 31.22	\$ 31.73	\$ 50.69
Feb	\$ 61.70	\$ 30.05	\$ 22.99	\$ 26.39	\$ 34.24	\$ 70.89	\$ 25.67	\$ 64.01	\$ 43.17
Mar	\$ 47.60	\$ 29.00	\$ 18.05	\$ 21.75	\$ 30.53	\$ 36.02	\$ 24.99	\$ 30.48	\$ 38.89
Apr	\$ 44.71	\$ 27.93	\$ 18.44	\$ 24.80	\$ 24.88	\$ 23.52	\$ 18.53	\$ 30.30	
May	\$ 45.85	\$ 27.21	\$ 21.01	\$ 28.35	\$ 21.65	\$ 18.43	\$ 17.26	\$ 28.13	
Jun	\$ 45.25	\$ 33.94	\$ 29.95	\$ 32.80	\$ 28.17	\$ 23.07	\$ 22.20	\$ 49.85	
Jul	\$ 47.75	\$ 36.02	\$ 34.29	\$ 36.70	\$ 75.43	\$ 31.52	\$ 27.99	\$ 67.94	
Aug	\$ 45.89	\$ 35.69	\$ 34.93	\$ 45.35	\$ 69.73	\$ 32.84	\$ 77.05	\$ 59.05	
Sep	\$ 46.65	\$ 34.76	\$ 32.89	\$ 38.43	\$ 35.33	\$ 36.08	\$ 44.22	\$ 66.09	
Oct	\$ 45.17	\$ 32.62	\$ 33.06	\$ 41.09	\$ 38.88	\$ 34.36	\$ 42.23	\$ 56.90	
Nov	\$ 44.98	\$ 28.86	\$ 27.79	\$ 39.51	\$ 51.59	\$ 42.03	\$ 36.74	\$ 56.35	
Dec	\$ 37.87	\$ 28.09	\$ 33.95	\$ 39.12	\$ 52.93	\$ 40.24	\$ 38.68	\$ 59.17	
Avg	\$ 46.66	\$ 31.47	\$ 27.96	\$ 33.99	\$ 41.48	\$ 35.75	\$ 33.90	\$ 50.00	\$ 44.25

California – Gas Prices



Where are forwards trending?

Calendar Year 2023 strip prices for SoCal gas basis fell at the end of February as warm weather and a surplus of natural gas at the state's largest storage facility have resulted in a more secure outlook for the coming two years. Prices are now in line with the same time last year, but are in the 63rd percentile compared to the 3-year trading history.



Where are index prices trending?

Aliso Canyon, CA's largest natural gas storage facility, has strict injection and withdrawal protocol due to failures historically. State regulators enabled the storage facility to inject greater than normal volumes of natural gas in advance of the 21/22 winter. With winter now over in Southern California, SoCal is now attempting to lower total gas in storage. The result of forced withdrawals is an increased supply of natural gas to consumers. Current temperature forecasts indicate above average temperatures through the remainder of March. An early return of cooling demand has the potential to mitigate the supply surplus, though spot basis prices are expected to remain below average through the remainder of March.

Average Daily Price - PG&E City Gate Basis Only				
	2019	2020	2021	2022
Jan	\$ 0.61	\$0.95	\$0.92	\$0.97
Feb	\$4.88	\$0.76	(\$0.56)	\$0.43
Mar	\$1.12	\$0.80	\$1.02	\$0.46
Apr	\$0.63	\$0.64	\$1.17	
May	\$0.65	\$0.83	\$0.96	
Jun	\$0.18	\$0.81	\$1.17	
Jul	\$0.24	\$0.74	\$1.28	
Aug	\$0.44	\$0.85	\$1.32	
Sep	\$0.51	\$1.67	\$1.61	
Oct	\$0.92	\$1.70	\$1.51	
Nov	\$0.76	\$1.26	\$1.05	
Dec	\$1.19	\$1.03	\$2.02	

Average Daily Price - SoCal Basis Only				
	2019	2020	2021	2022
Jan	\$0.45	\$0.26	\$0.25	\$0.87
Feb	\$4.11	(\$0.01)	\$17.93	\$0.04
Mar	\$0.34	(\$0.21)	\$0.37	(\$0.42)
Apr	(\$0.61)	(\$0.30)	\$0.23	
May	(\$0.82)	(\$0.06)	\$0.26	
Jun	(\$0.58)	\$0.03	\$1.67	
Jul	\$0.05	\$0.02	\$2.49	
Aug	\$0.23	\$0.99	\$1.73	
Sep	\$0.14	\$0.70	\$1.48	
Oct	\$0.21	\$0.49	\$0.25	
Nov	\$0.11	\$0.42	\$0.11	
Dec	\$0.79	\$0.86	\$2.08	

Texas

March 2022

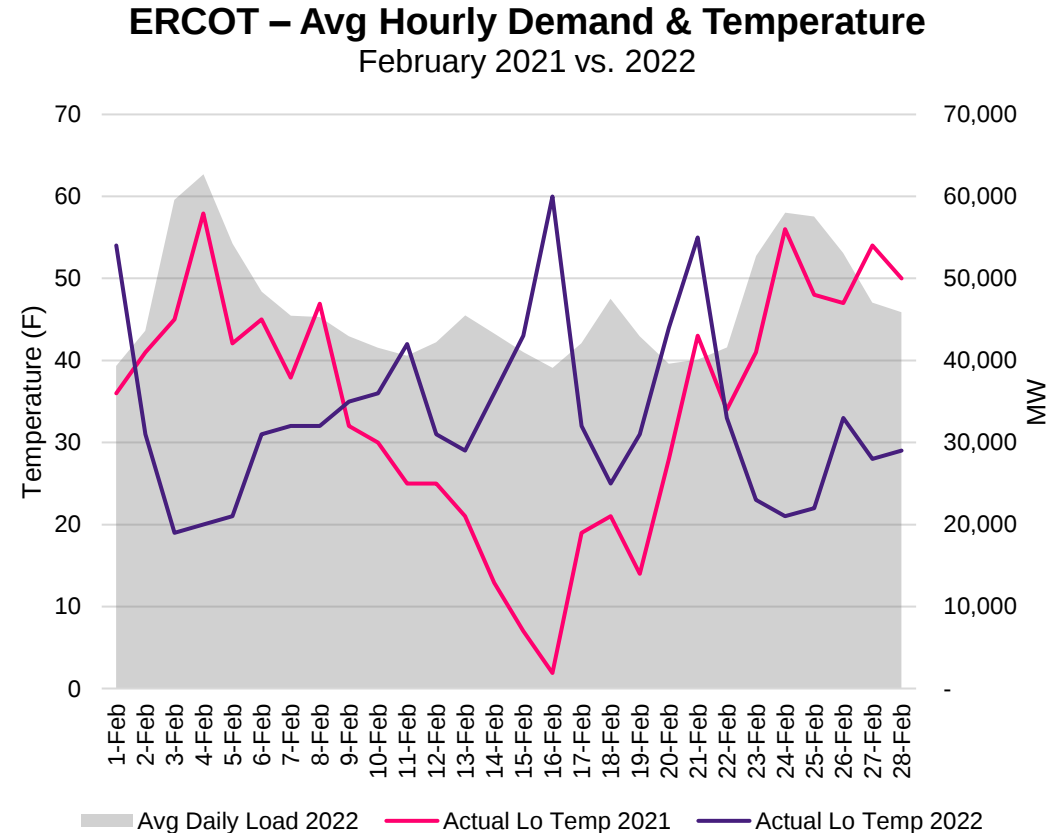
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Insight of the Month

North Hub remained below \$100 during most days of February despite the cold



- Temperatures across Texas were below-average this February. However, the lowest temperature of 19°F recorded in Dallas on Feb 3rd was nowhere near the lowest freezing temperature of 2°F recorded during February 2021 as shown in the chart.
- The highest winter peak demand this month totaled 68 GW on Feb 4th, which is only 1 GW below the demand recorded during storm Uri in 2021. Although temperatures were milder in 2022, peak demand remained relatively constant during cold days.
- ERCOT has taken a more conservative operating approach. It is bringing more generation online sooner if needed and sending emergency alerts prior to days of cold weather. In addition, generating and transmission units are compliant with weatherization standards.
- As a result of these measures, LMP real-time prices in North Hub remained in the 2-digit range throughout the month. February 24th was the only day where prices traded in the 3–4-digit range for a couple of hours due to a combination of below-average temperatures and low wind generation output.



KEY TAKEAWAYS: Although the ERCOT grid has performed better this winter, it is still vulnerable to extreme weather events. A combination of below-average temperatures, low wind output, and high peak demand in the region could result in high energy costs for customers on indexed products.

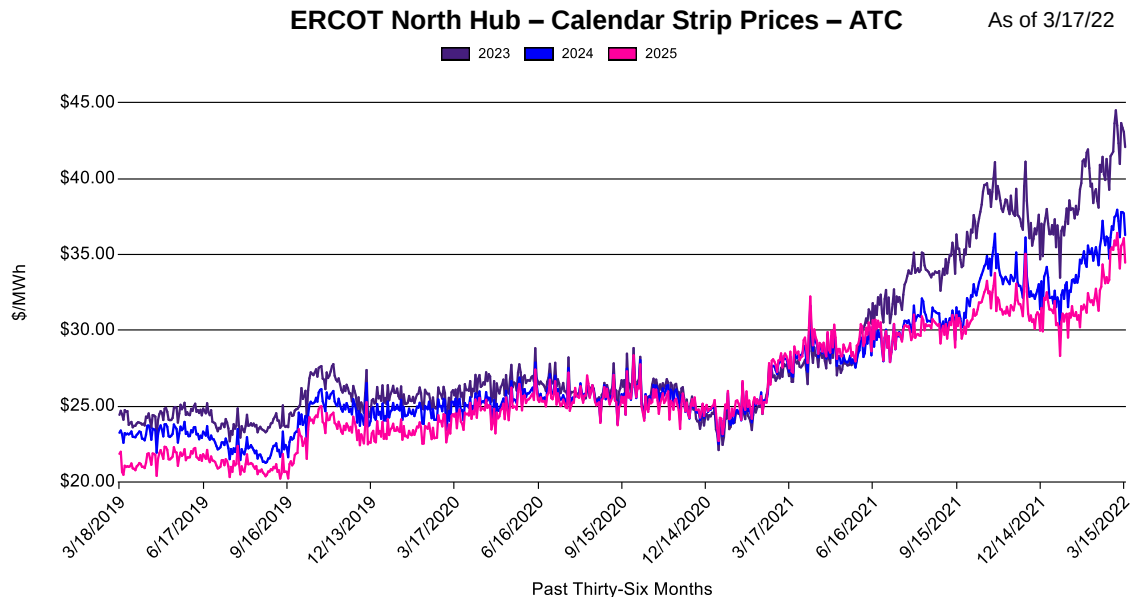
ERCOT – Power Price Update

The Feb-22 average DA LMP was \$1,446/MWh lower compared to the average in 2021



Where are forwards trending?

- CY 2023 forwards reached \$44/MWh the first week of March, the highest level in the last 3 years as a result of geopolitical uncertainty and bullish bias near-term.
- CY 2024 & 2025 were most recently seen trading close to \$35/MWh.
- The discount between CY2025 & 2023 is almost \$8/MWh.



Where are index prices trending?

- North Hub Day-Ahead prices averaged \$39.39/MWh in February, up ~17% month-over-month.
- Year-to-date, 2022 North Hub spot prices have averaged \$37.09/MWh.
- Despite lower-than-average temperatures in Texas during the first and last week of February, the monthly average price did not skyrocket to 4-digit numbers as it did last year.

Average Monthly Day Ahead LMP - North Hub										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	\$26.19	\$36.71	\$25.00	\$19.13	\$22.99	\$37.59	\$24.32	\$16.96	\$21.54	\$33.65
Feb	\$25.12	\$51.30	\$23.93	\$15.29	\$19.45	\$21.77	\$20.86	\$17.72	\$1,485.49	\$39.39
Mar	\$30.73	\$49.91	\$26.24	\$16.86	\$21.23	\$22.61	\$28.10	\$23.34	\$20.87	\$39.58
Apr	\$33.81	\$40.29	\$23.62	\$18.35	\$21.41	\$23.52	\$22.99	\$19.91	\$29.63	
May	\$33.05	\$35.77	\$23.79	\$17.91	\$23.42	\$35.31	\$23.98	\$18.23	\$24.23	
Jun	\$34.96	\$39.73	\$24.32	\$23.16	\$25.89	\$30.21	\$25.18	\$18.92	\$42.23	
Jul	\$33.06	\$36.02	\$29.46	\$26.80	\$30.65	\$78.97	\$29.78	\$22.99	\$41.48	
Aug	\$35.84	\$39.33	\$45.30	\$29.83	\$26.83	\$31.60	\$126.52	\$39.21	\$41.36	
Sep	\$33.44	\$33.87	\$24.58	\$26.25	\$23.35	\$27.30	\$79.88	\$18.99	\$45.25	
Oct	\$29.73	\$34.69	\$20.82	\$24.01	\$21.41	\$30.03	\$28.00	\$23.36	\$53.70	
Nov	\$30.46	\$34.53	\$19.20	\$18.66	\$21.58	\$31.22	\$23.62	\$23.73	\$39.78	
Dec	\$35.42	\$26.57	\$17.44	\$25.15	\$20.95	\$30.40	\$18.73	\$20.89	\$29.70	
Avg	\$31.82	\$38.23	\$25.31	\$21.78	\$23.26	\$33.38	\$37.66	\$22.02	\$156.27	\$37.09

ERCOT – Gas Price Update

HSC basis is trading at ~\$(0.13)/Dth, lowest level in the last 3 years



Where are forwards trending?

- HSC basis for CY 2023 continues to show a declining trend. Prices have fallen for six consecutive months since September 2021.
- CY 2023-2025 strips traded all in tandem during February and reached the lowest level in the last 3 years. Price were most recently seen trading at around ~\$(0.13)/Dth.



Where are index prices trending?

- February 2022 HSC basis averaged \$(0.33)/Dth, the deepest discount relative to Henry Hub seen since 2013.
- This time last year, HSC City Gates traded above Henry Hub, with a basis value of \$50 for the calendar month of February.
- HSC basis is down 10% month-over-month.

Average of Daily Prices - Houston Ship Channel Basis Only										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Jan	(\$0.06)	(\$0.08)	(\$0.07)	(\$0.06)	(\$0.10)	\$0.35	(\$0.06)	(\$0.09)	\$ (0.00)	\$ (0.30)
Feb	(\$0.06)	\$0.21	(\$0.15)	(\$0.08)	(\$0.03)	(\$0.02)	\$0.00	(\$0.03)	\$ 50.19	\$ (0.33)
Mar	(\$0.04)	(\$0.02)	(\$0.11)	(\$0.01)	\$0.04	\$0.03	(\$0.01)	(\$0.06)	\$ (0.20)	
Apr	(\$0.02)	(\$0.03)	(\$0.02)	(\$0.03)	\$0.04	\$0.07	(\$0.04)	(\$0.03)	\$ (0.04)	
May	\$0.02	(\$0.10)	(\$0.03)	(\$0.04)	\$0.11	\$0.04	(\$0.06)	\$0.00	\$ (0.00)	
Jun	(\$0.04)	\$0.04	(\$0.05)	(\$0.07)	\$0.12	\$0.07	(\$0.04)	(\$0.00)	\$ (0.12)	
Jul	(\$0.01)	\$0.01	(\$0.00)	(\$0.08)	\$0.01	\$0.09	(\$0.06)	\$0.00	\$ (0.15)	
Aug	(\$0.01)	\$0.06	(\$0.03)	(\$0.05)	(\$0.01)	\$0.08	(\$0.07)	\$0.01	\$ (0.09)	
Sep	\$0.02	\$0.02	(\$0.03)	(\$0.03)	(\$0.01)	\$0.04	(\$0.07)	\$0.07	\$ (0.05)	
Oct	(\$0.04)	(\$0.06)	\$0.02	\$0.15	\$0.05	\$0.25	(\$0.05)	\$0.14	\$ (0.20)	
Nov	(\$0.07)	(\$0.07)	(\$0.02)	\$0.00	(\$0.04)	\$0.05	(\$0.14)	\$0.04	\$ (0.25)	
Dec	\$0.09	(\$0.12)	\$0.06	(\$0.09)	(\$0.00)	(\$0.01)	(\$0.11)	(\$0.03)	\$ (0.20)	
Avg	(\$0.02)	(\$0.01)	(\$0.04)	(\$0.03)	\$0.01	\$0.09	(\$0.06)	\$0.00	\$4.07	\$ (0.32)

Mexico

March 2022

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Insight of the Month

The impact of the Russian – Ukraine conflict on the Mexican energy market



- On February 24th an armed conflict broke out with Russia's invasion of Ukraine.
- Russia is one of the biggest producers of natural gas and oil. Even though Mexico is not dependent on Russian gas, Europe imports a significant percentage from Russian producers. As a result of the loss of flows from Russia, Europe will look to Liquefied Natural Gas (LNG) as a replacement.
- New LNG imports will be supplied primarily by the United States which will represent a significant increase in demand for European natural gas consumers and will exert upward pressure on LNG prices.
- Mexico imports substantially more dry natural gas (NG) from the United States by pipeline, so LNG consumption is minimal (~1%). However, an increase in production and exports from the US to Europe will affect the local market due to the increase in demand.
- Approximately 70% of the total demand of the NG in Mexico comes from the United States.

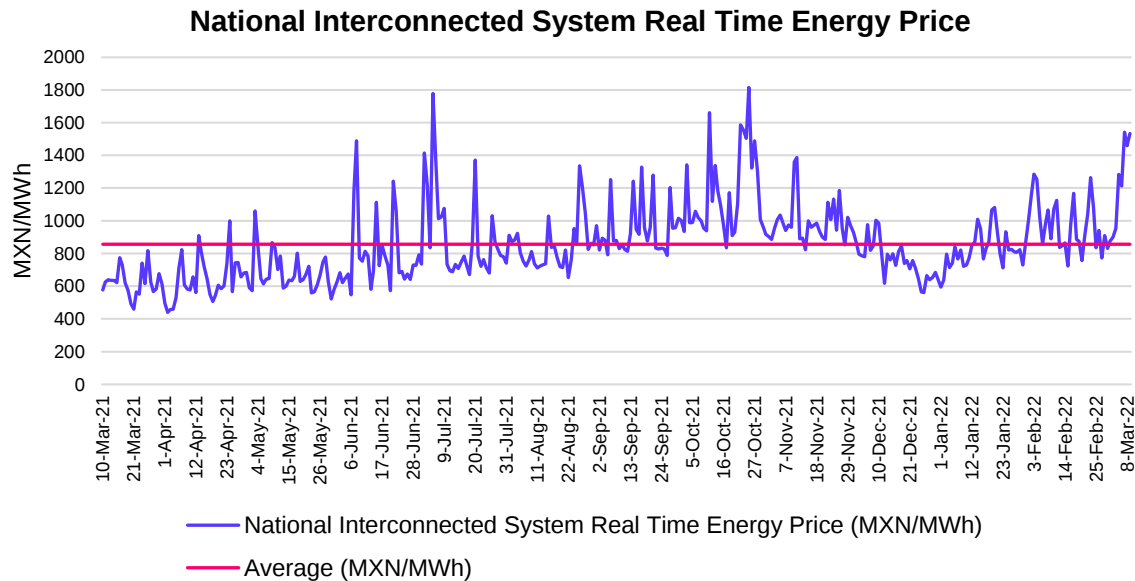


Insight of the Month

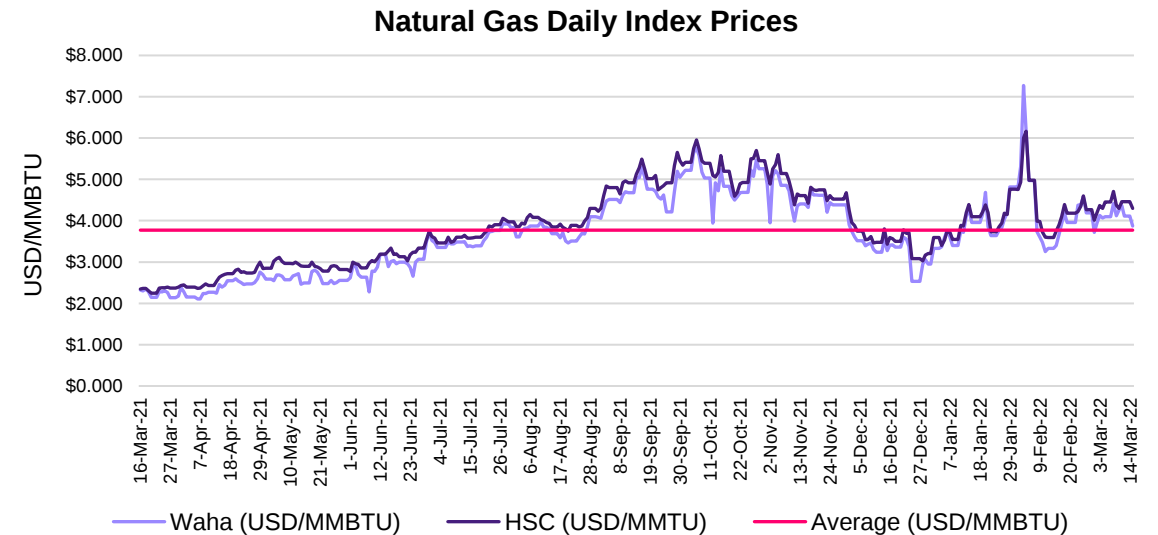
Mexican Energy Market impact of the Russian – Ukraine conflict



A large portion of the energy in Mexico is produced by NG, so the energy prices are directly correlated with the NG prices. The chart below shows a previous demonstration of this correlation—in Feb 2021 when the energy prices went up (Avg ~1345 MXN/MWh) (Avg~45 USD/MMBTU) due to the Texas winter situation and the higher NG prices (Avg~45 USD/MMBTU).



Even so, in the time since the Russia-Ukraine conflict started, the Mexican Energy prices and Natural Gas prices have not been affected. In the chart below, no unusual increase in the prices have been noticed so far.



KEY TAKEAWAY: Since Mexican energy prices are related to natural gas imports from United States, there are questions about how Mexican gas prices could be affected as a result of the Russia-Ukraine conflict. But at least thus far, no effect on Mexican energy prices has been seen.

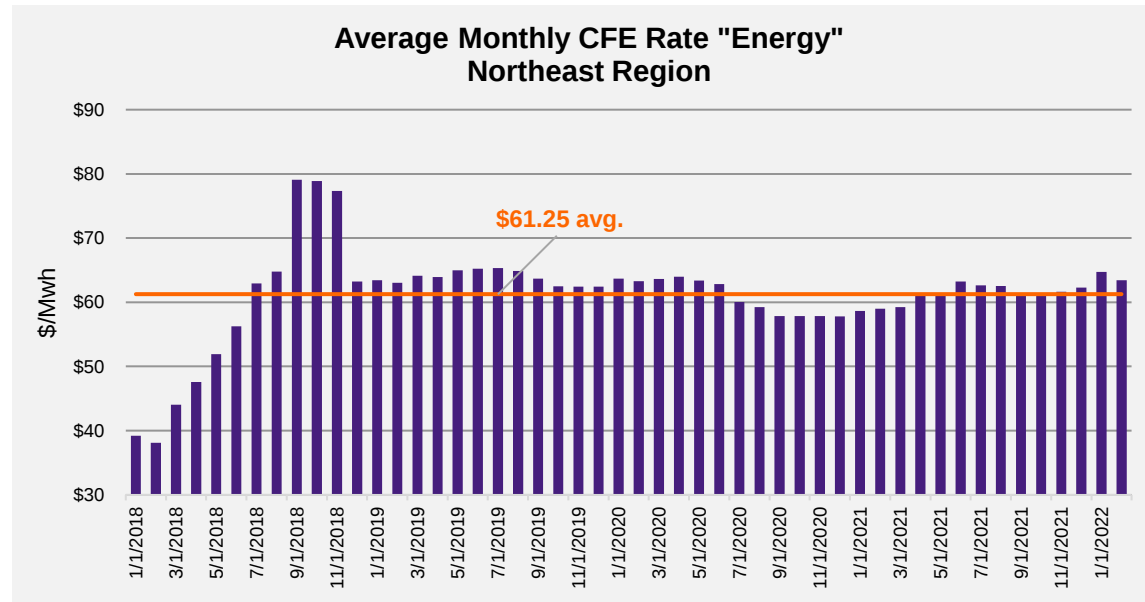
Monthly CFE¹ Rates

CFE rates increase in February, both month-over-month & year-over-year



Where are index prices trending?

In February 2022, Northeast² region GDMTH³ energy prices rose ~2% month-over-month and 7.49% year-over-year.



Where are capacity prices trending?

Monthly GDMTH capacity prices increased 0.86% month-over-month and ~8.7% year-over-year in the West⁴ region.

Average Monthly CFE GDMTH Capacity – West USD/MW					
	2018	2019	2020	2021	2022
Jan	\$ 9,075	\$ 16,832	\$ 16,881	\$ 15,696	\$ 17,036
Feb	\$ 9,578	\$ 16,717	\$ 16,755	\$ 15,801	\$ 17,183
Mar	\$ 11,004	\$ 17,045	\$ 16,863	\$ 15,839	
Apr	\$ 12,100	\$ 16,983	\$ 16,970	\$ 16,432	
May	\$ 13,429	\$ 17,317	\$ 16,786	\$ 16,518	
Jun	\$ 14,769	\$ 17,384	\$ 16,626	\$ 17,151	
Jul	\$ 16,832	\$ 17,419	\$ 16,230	\$ 16,949	
Aug	\$ 19,156	\$ 17,282	\$ 15,983	\$ 16,916	
Sep	\$ 21,748	\$ 16,911	\$ 15,529	\$ 16,528	
Oct	\$ 21,697	\$ 16,547	\$ 15,531	\$ 16,484	
Nov	\$ 21,212	\$ 16,531	\$ 15,536	\$ 16,638	
Dec	\$ 16,867	\$ 16,524	\$ 15,516	\$ 16,849	
Avg	\$ 15,622	\$ 16,958	\$ 16,267	\$ 16,483	\$ 17,110

1. CFE: Federal electricity commission, Utility Company. CFE prices are issued in MXN/kWh. For publication this chart is presented in USD/MWh, for which an exchange rate of \$20.45 MXN is used. This rate can change monthly.

2. The Northeast region includes the states of Nuevo Leon and Tamaulipas.

3. GDMTH: Rate classification most used in medium voltage.

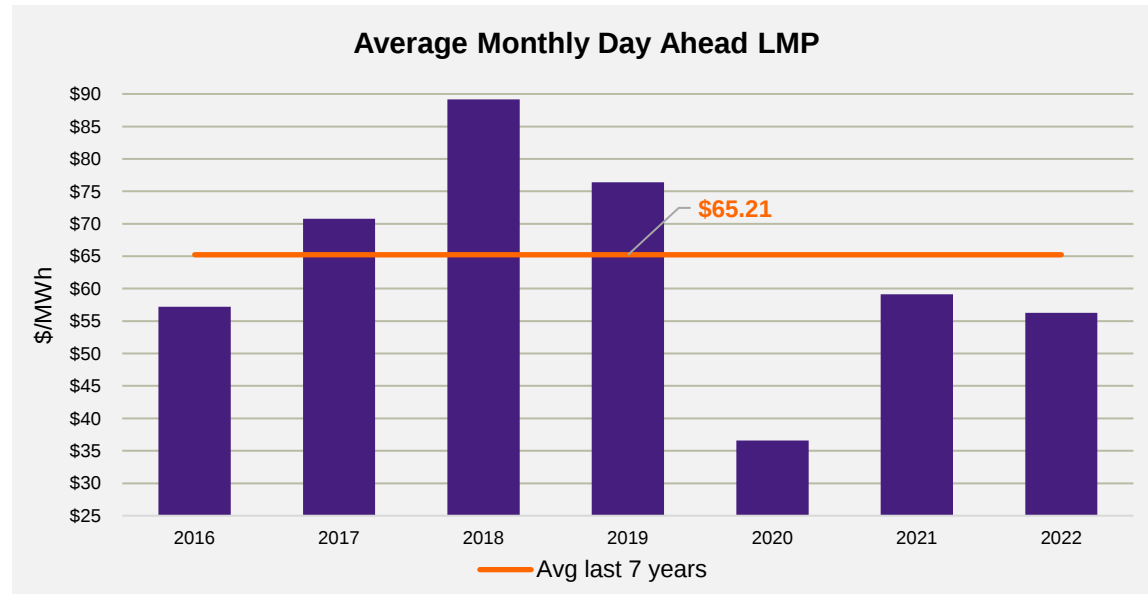
4. The West region includes the states of Nayarit, Jalisco, Zacatecas, Aguascalientes, Colima, Michoacan, San Luis Potosí, Queretaro.

Average Monthly Day Ahead LMP



Where are index prices trending?

- Day Ahead LMPs averaged \$56.30/MWh in January, which is 13% higher month-over-month and 49% higher year-over-year.
- Since the start of 2022, LMPs have averaged \$56.30/MWh -- 5% lower than the same period a year ago, when prices averaged \$59.16/MWh.
- This decrease year-over-year is largely the result of warmer temperatures this winter



Average Monthly Day Ahead LMP USD/MWh							
	2016	2017	2018	2019	2020	2021	2022
Jan		\$ 46.36	\$ 60.47	\$ 61.59	\$ 29.62	\$ 37.85	\$ 56.30
Feb		\$ 47.03	\$ 67.99	\$ 78.43	\$ 31.70	\$ 71.62	
Mar		\$ 53.59	\$ 64.59	\$ 81.47	\$ 27.04	\$ 38.62	
Apr		\$ 72.16	\$ 78.05	\$ 92.96	\$ 21.69	\$ 47.47	
May	\$ 56.49	\$ 77.63	\$ 108.53	\$ 96.22	\$ 28.85	\$ 55.10	
Jun	\$ 64.42	\$ 103.41	\$ 116.31	\$ 84.62	\$ 36.24	\$ 59.96	
Jul	\$ 68.73	\$ 76.93	\$ 125.08	\$ 83.11	\$ 41.14	\$ 71.41	
Aug	\$ 58.22	\$ 91.57	\$ 137.61	\$ 92.77	\$ 51.49	\$ 71.62	
Sep	\$ 63.43	\$ 73.22	\$ 103.18	\$ 87.93	\$ 43.06	\$ 69.30	
Oct	\$ 63.24	\$ 74.94	\$ 78.63	\$ 66.80	\$ 44.84	\$ 75.37	
Nov	\$ 40.17	\$ 74.19	\$ 69.15	\$ 54.97	\$ 47.02	\$ 61.57	
Dec	\$ 42.90	\$ 58.09	\$ 60.69	\$ 36.12	\$ 36.29	\$ 50.03	
Avg	\$57.20	\$70.76	\$89.19	\$76.42	\$ 36.58	\$ 59.16	\$ 56.30

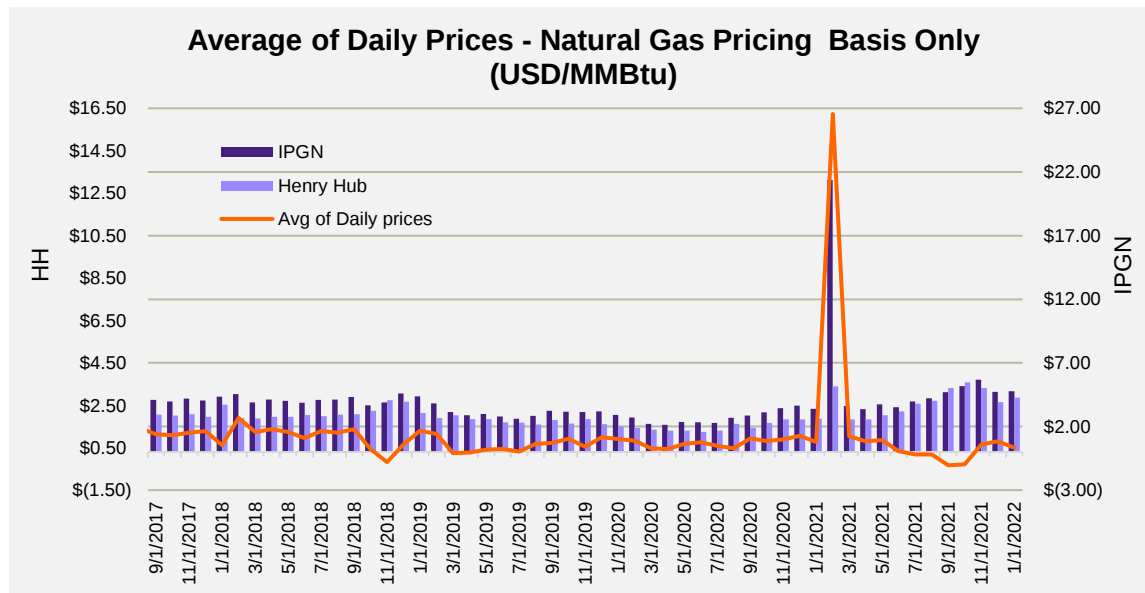
Sources: S&P Global Platt and CENACE. The published average price considers the 9 regions of the country. In turn, the misalignment of information is due to its publication by CENACE.

Natural Gas Price Index (IPGN)



Where are index prices trending?

- NGPI daily prices averaged \$0.50/MMBtu in January—down ~35% year-over-year.
- In Q1 2022, prices averaged \$0.50 USD/MMBtu, 72% less than the average prices of the previous year, which sat at \$1.77 USD/MMBtu.
- These changes are due to the reduction in IPGN and the increase in HH.



Average of Daily Prices – Natural Gas Pricing Basis Only USD/Mmbtu						
	2017	2018	2019	2020	2021	2022
Jan		\$ 0.63	\$ 1.30	\$ 0.91	\$ 0.78	\$ 0.50
Feb		\$ 1.90	\$ 1.15	\$ 0.84	\$ 16.23	
Mar		\$ 1.24	\$ 0.25	\$ 0.47	\$ 1.05	
Apr		\$ 1.37	\$ 0.28	\$ 0.44	\$ 0.81	
May		\$ 1.25	\$ 0.41	\$ 0.68	\$ 0.86	
Jun		\$ 0.96	\$ 0.45	\$ 0.76	\$ 0.33	
Jul	\$ 1.15	\$ 1.29	\$ 0.32	\$ 0.60	\$ 0.19	
Aug	\$ 1.44	\$ 1.20	\$ 0.68	\$ 0.47	\$ 0.18	
Sep	\$ 1.14	\$ 1.37	\$ 0.73	\$ 0.94	\$ (0.32)	
Oct	\$ 1.10	\$ 0.43	\$ 0.92	\$ 0.81	\$ (0.29)	
Nov	\$ 1.21	\$ (0.18)	\$ 0.55	\$ 0.89	\$ 0.65	
Dec	\$ 1.29	\$ 0.67	\$ 1.00	\$ 1.07	\$ 0.81	
Avg	\$1.22	\$1.01	\$0.67	\$ 0.74	\$ 1.77	\$ 0.50

Sources: NGL, S&P Global Platt

Natural Gas

March 2022

[< back to beginning](#)

International Price Shocks



The Russian invasion of Ukraine has caused some major price volatility with oil and gas within the last month such as:

On a broad international level:

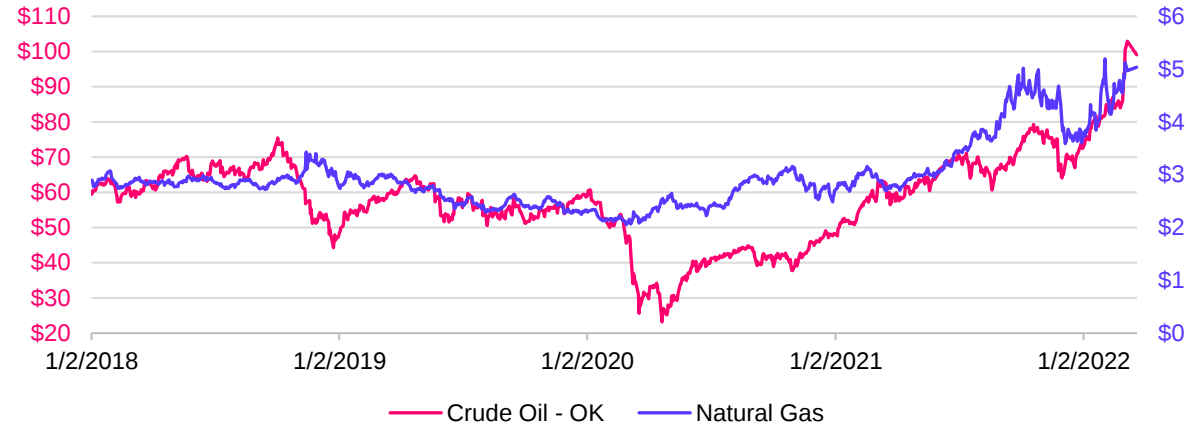
- Crude oil prices have reached 13-year highs
- API2 Coal increased over **100%** on its prompt-month
- TTF (European natural gas) increased over **20%** on its prompt-month
- 1 year Henry Hub contracts are up 10% since before the invasion

The increased international pricing was driven by the sanctions and other actions on Russia which include:

- Canada/US banning Russian oil imports
- Freeze on Nordstream 2 pipeline approvals
- Increased demand for coal internationally
- Blockage on some Russian banks from SWIFT international payment system
- Select countries that have frozen Russian assets
- Policies targeting Russian central bank and restrictions on trade with Russia

An even further increase to European gas and Brent Crude Oil prices can be expected if Europe places any sort of restrictions on energy imports from Russia.

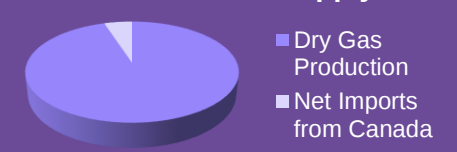
Natural Gas vs Crude Oil



Key Takeaways on Pricing Impacts:

- Coal and Oil prices are vulnerable to international and geopolitical events (such as current events in Ukraine) due to the global shock on the supply/demand relationship of major contributing countries
- The US Natural gas (Henry Hub) prices are less susceptible to these sorts of events, because we rely very little on imports for our gas supply and are limited in our export capacity

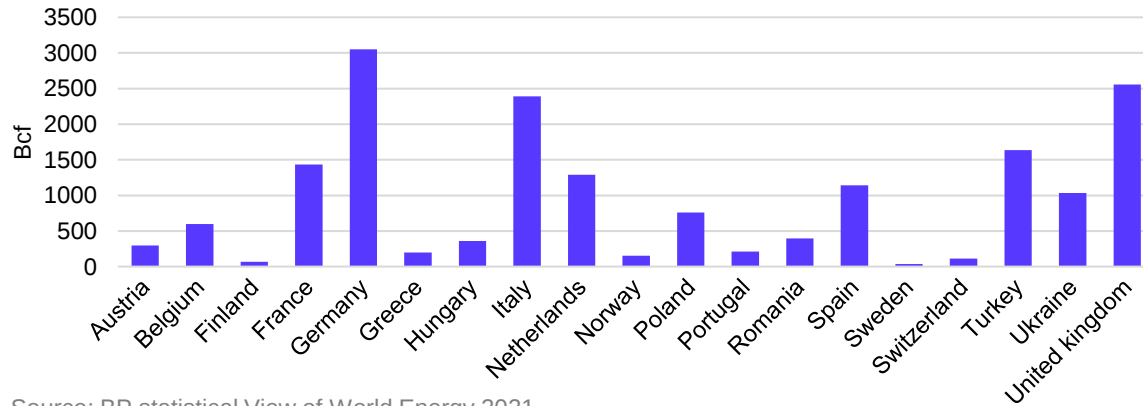
US Natural Gas Supply



International Price Shocks



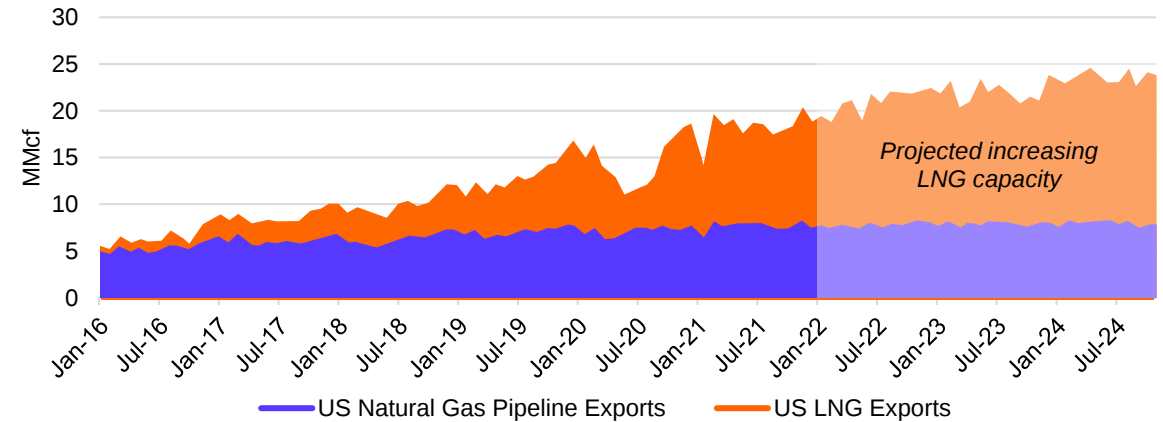
European Consumption of Natural Gas in 2020



Source: BP statistical View of World Energy 2021

- The chart above shows just how dependent some European nations are on natural gas.
- In 2021, Europe imported 15 Bcf/d from Russia thru pipeline and LNG—about 1/3 of its gas supply.
 - 32% of Germany’s gas supply came from Russia.
 - 40% of Italy’s gas supply came from Russia.
- Europe has limited LNG import capacity and even more limited within gas dependent countries, such as Italy.
 - Approx. 24 Bcf/d total import capacity currently exists in Europe.
- Europe’s largest gas users utilize the majority of their supply for power generation.
 - Europe can switch to coal but must factor in rising coal prices, and the price of carbon in calculating switching costs.

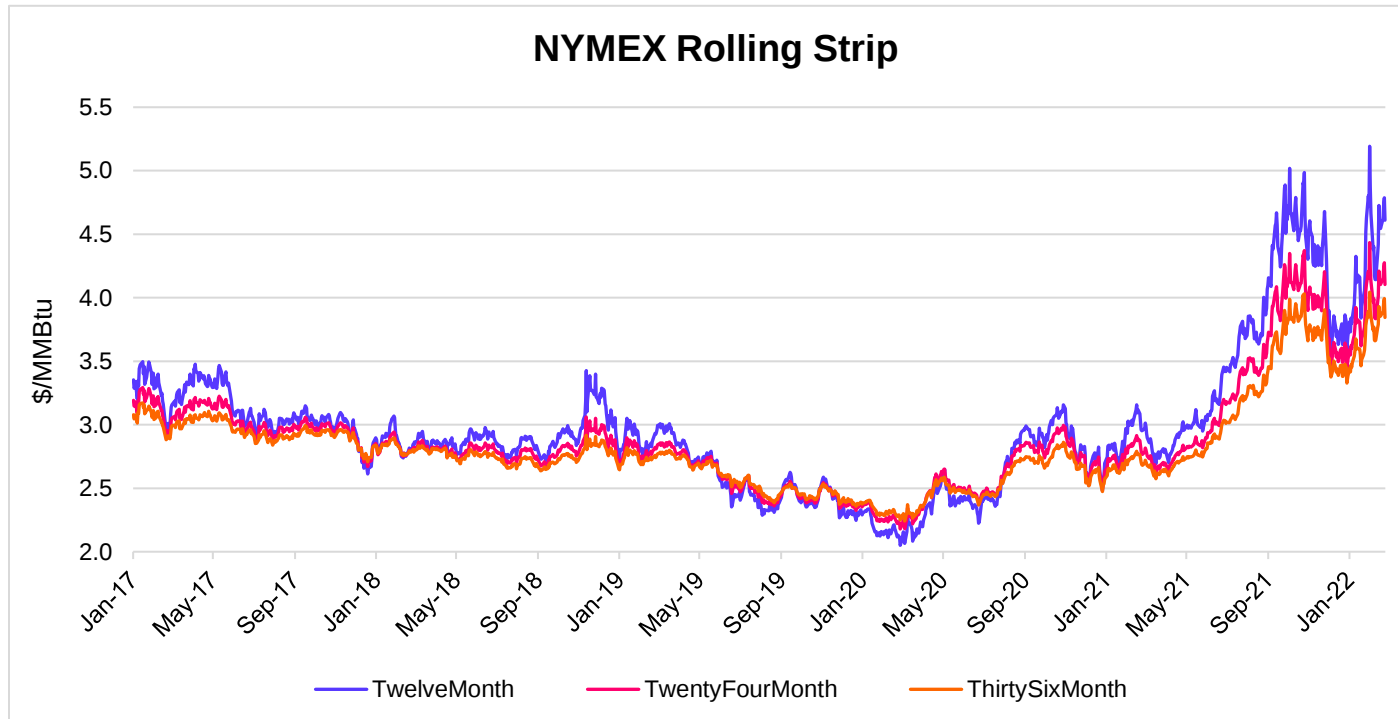
Natural Gas Exports



- Fundamentally, most of the US gas supply is domestic and LNG export capacity is already maxed out at ~13.9 Bcf/d peak capacity.
 - As the Calcasieu plant ramps up, US LNG exports could get to over 14.5 bcf/d between now and 2024.
 - In 2024, when construction on the Golden Pass LNG, the eighth U.S. LNG export facilities, is completed and the facility begins operations, US LNG export capacity is expected to increase to about 16.4 Bcf/d.

Key Takeaway: Even the increased US LNG export capacity, expected to come online within two years, will not be sufficient to fill the ~15 Bcf/d void created when Europe moves away from Russian imports.

Natural Gas – Pricing



Note: 12, 24 and 36 month rolling strips refer to forward pricing 12, 24 and 36 months away from the plotted point

- Natural gas prices have seen significant movement since last year as demand has outpaced supply, and increased export capacity has driven further demand on the commodity.
- As of 3/22/22, the Henry Hub 1 year rolling strip is up 2.14% from last week, and 82.92% from last year.

Term	12 month	24 month	36 month
Price (\$/MMBtu)	\$5.00	\$4.39	\$4.08
Variance to last week	2.14%	1.56%	1.23%
Variance to last year	82.92%	65.52%	56.39%

As of 3/22/22

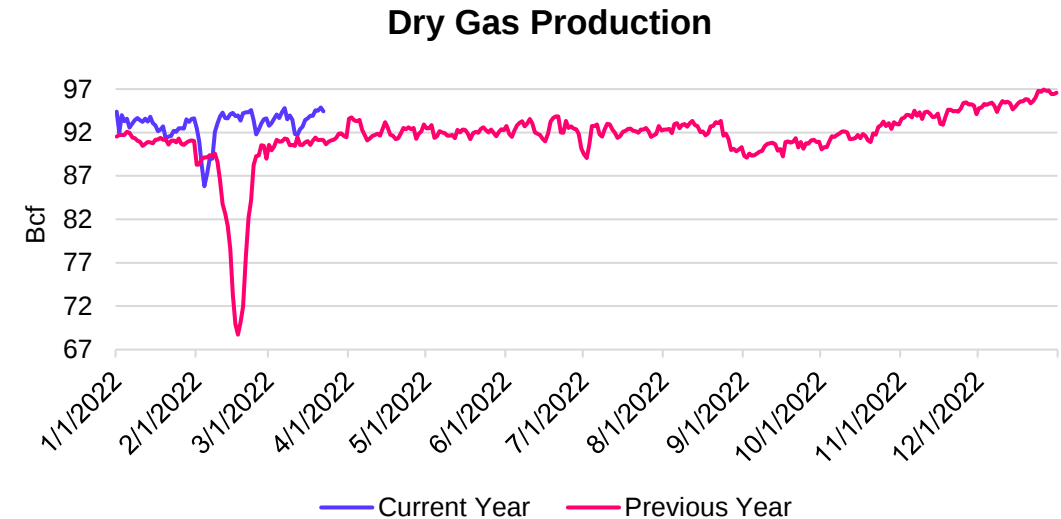
Key Takeaway: \$4-\$5/mmbtu is likely the new norm for the next foreseeable 12 months, which could be driven even higher with a colder April and if injection season is delayed.

Natural Gas – Supply

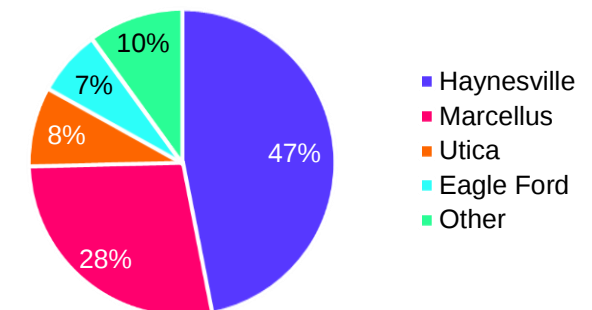


- As of December 2021, natural gas production was on pace to set new record highs in 2022, but production has stalled as producers shift focus away from high volume areas.
- Gas rigs are up to 130 currently in the US, which is 3 more than last week and 38 more than the same time last year.
- The majority of new production and new rigs are being deployed in the Haynesville basin, where producers can take advantage of closer access to high international pricing at LNG ports.
 - Southwestern Energy Co., typically an Appalachian producer, plans to spend 55% of its CAPEX budget of \$1.9-2.0 billion on development of its Haynesville assets, while the remaining budget will be spent in Appalachia.
 - Additionally, companies with Haynesville assets, like Southwestern Energy Co., are motivated to certify their gas with a third party to market Responsibly Sourced Gas (RSG) to LNG buyers that have interest in a product with a smaller carbon footprint.

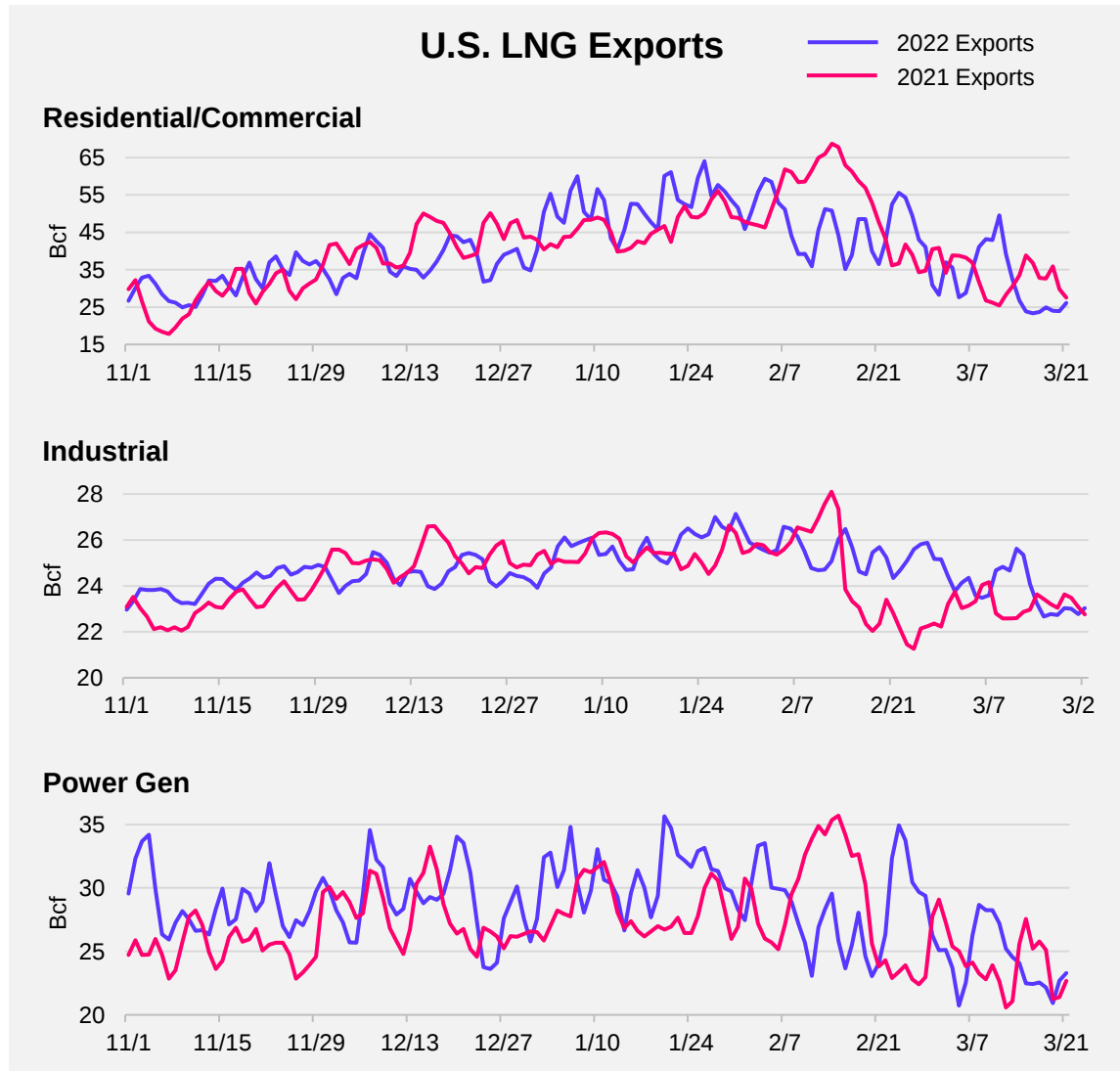
Key Takeaway: Producers are shifting focus away from high volume Appalachia to higher opportunity in Haynesville basin.



Gas Rig Count By Basin



Natural Gas – Demand



Source: Platt's Fundamentals

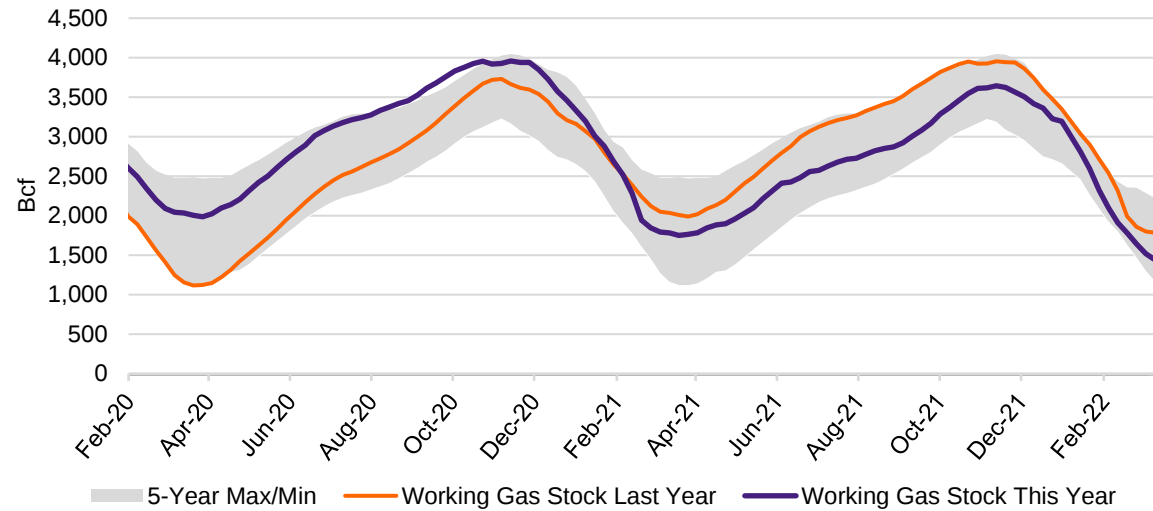
Why such low natural gas inventories?

- Despite, what seemed like a cooler winter than the previous year, residential/commercial usage was actually lower than the previous year. Over 73 Bcf's more were used in this sector than last year.
- This winter's industrial demand outpaced the previous year by over 58 Bcf so far for the season.
 - This falls in line with increased consumer demand and increased productivity as pandemic concerns slowly subside.
- One of the main sectors driving increased demand this winter season is power-gen, which burned over 212 Bcf more compared to last year.
 - Surprising, especially as more coal is being utilized in power-gen due to switching costs, particularly in the Midwest ISO region.
 - Additionally, more renewable assets have been brought online as compared to last year, which should mean more renewable energy would be generated.
 - However, one problem with the renewable assets is that they are dependent on weather conditions. Gas is the next likely supply absent those conditions, which is evident this winter season.
 - Additionally, switching to coal is not an option for every ISO.

Natural Gas – Storage



Natural Gas Working Storage



EIA Weekly Storage Report

1440

Bcf as of 03/11

Variance to Current Year

5YA

1YA

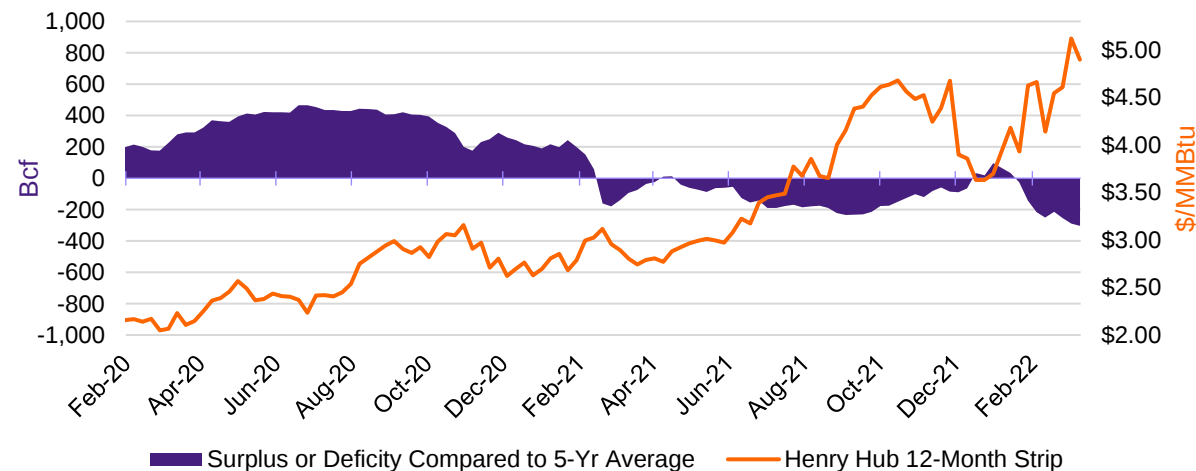
1,744

1,784

-21.11%

-23.89%

Storage as a Market Driver



- As of 3/22/22, current working stocks are Bcf , which is -344 Bcf less than storage levels 1 year ago at this time, and -304 Bcf less than the storage level's 5-year average.
- The East Region had the largest change from last week decreasing 8.52% , while the South Central Region had the smallest change at 1.89% less than last week at this time.
- End of season storage levels are estimated to be as high as 1400 Bcf to as low as 1300 Bcf, **April's first two weeks of weather will assist in guiding the subsequent monthly contracts for Henry Hub.**