Winter is Coming! What Will that Mean for your Energy Costs?

Mark LaVigne, PhD
Deputy Director
NYSAC

Constellation

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MEGA
MUNICIPAL ELECTRIC & GAS ALLIANCE

Market Fundamentals Update

September 28, 2023

NY Energy Price Drivers – Weather, Gas Supply, and Policy Key

Short- and Medium-Term

- **Weather –** This summer was a mixed bag in the East, with New York ranking 48th hottest on record (nationally just made it into the top 10). NOAA is forecasting above-normal temperatures in the Northeast this winter due to the current strong El Nino pattern. A shift in the pattern or introduction of blocking could introduce colder risks.
- **Natural Gas Storage Steady –** The EIA expects end-of-season stocks to be 3.8 Tcf (7% over 5-yr average), a "sufficient" volume heading into heating season. Current levels are running 14% over last year and 6% over the 5-yr average.
- **European Energy & LNG –** Subdued European natural gas demand and healthy inventories have steadied European prices around ~$12.50/MMBtu for the time being. We could expect some upside once winter materializes.
- **Volatility Remains Prominent - The generation portfolio in NY is in the process of turning over and volatility is expected.**
  - A shift towards renewables and the elimination of coal and oil have created less of a balancing mechanism for natural gas which equates to more price volatility.
- **Non-energy costs in NY have increased this year. Capacity, Transmission Project Costs, NYPA Transmission Adjustment Charge (NTAC) have moved higher this year and are flirting with another move up for 2024.**

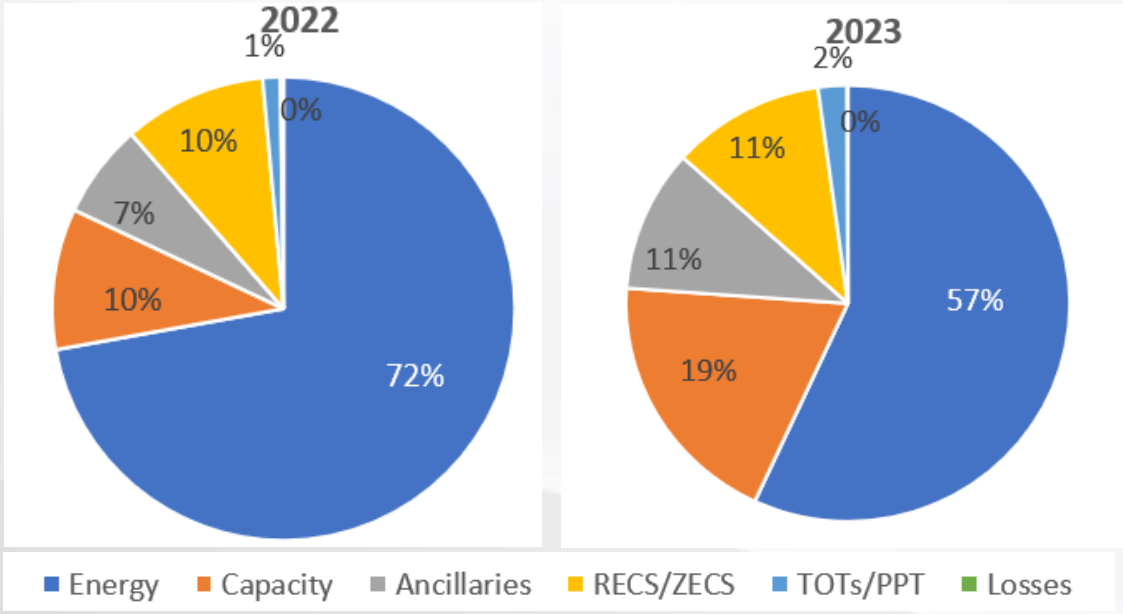
Long-term

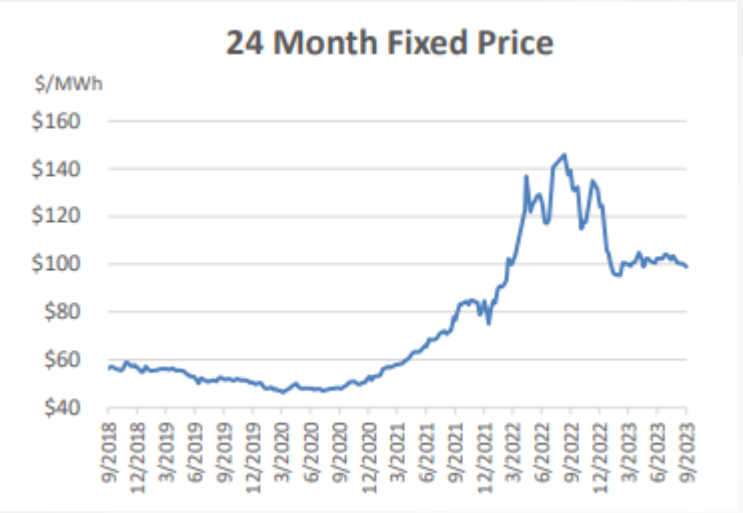
- **Exports Will Continue Grow** – "Energy security" and economics will encourage more LNG export growth in the US.
  - Forecasts of up to 10 Bcf/d of growth by 2030 – that means will need significant production gowth to keep up.
- **Gas and Oil Producers Pulling Back on Activities –** Production remains at or near historically high levels (~101-102 Bcf/d) despite the persistent downward trend of natural gas rig counts, which are at their lowest levels since February 2022.

Source: Constellation

Constellation

Price Implications of a Grid in Transition





- A slew of new transmission projects are expected in coming years as part of NYISO's Public Policy Transmission planning.
- Changes related to the Climate Leadership and Protection Act (CLCPA) and Clean Energy Standard (CES) continue to make their way into the cost deck, with increasing renewable costs.
- Higher statewide reserve margin requirements, less imports, and policy initiatives have supported statewide capacity prices this year.

Customer Takeaway: A number of market dynamics are currently affecting the non-energy supply cost components in NY, resulting in increased uncertainty and in many cases, increased prices. Implementing a procurement strategy to manage the energy portion of you supply charges can help minimize the impact of increasing non-energy costs.

Sources: NYISO, NYPA, Constellation

Constellation

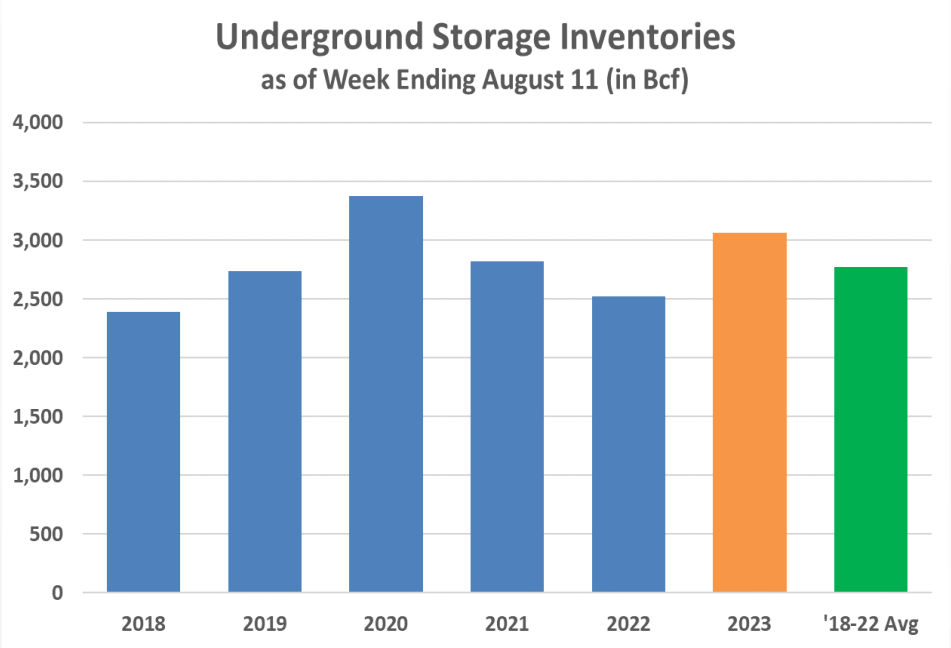
Henry Hub Natural Gas Prices Remain Below $3/MMBtu

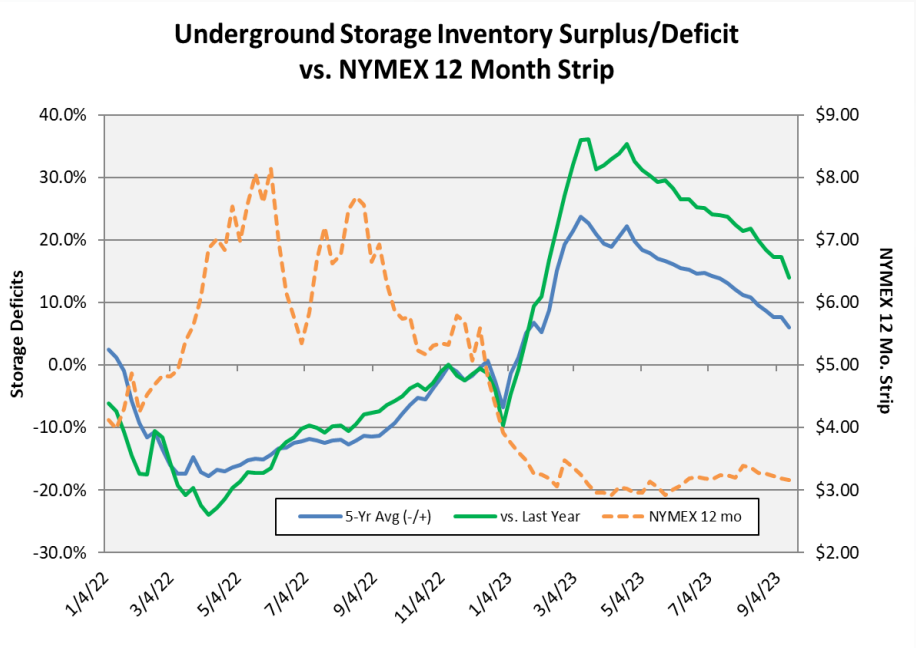
Customer Takeaway: A tight gas market pushed prices up substantially in 2022, but an ongoing supply glut has kept a lid on prices so far in 2023. NYMEX Henry Hub gas prices continue to move sideways despite a summer which just made it into the Top 10 rankings and spurred record power burns. Regional gas prices, like Iroquois Z2 have a bigger impact (and see much more winter volatility) in NY due to regional pipeline constraints.

Source: Reuters

Constellation

Storage Still Expected to be in Good Standing Come Heating Season





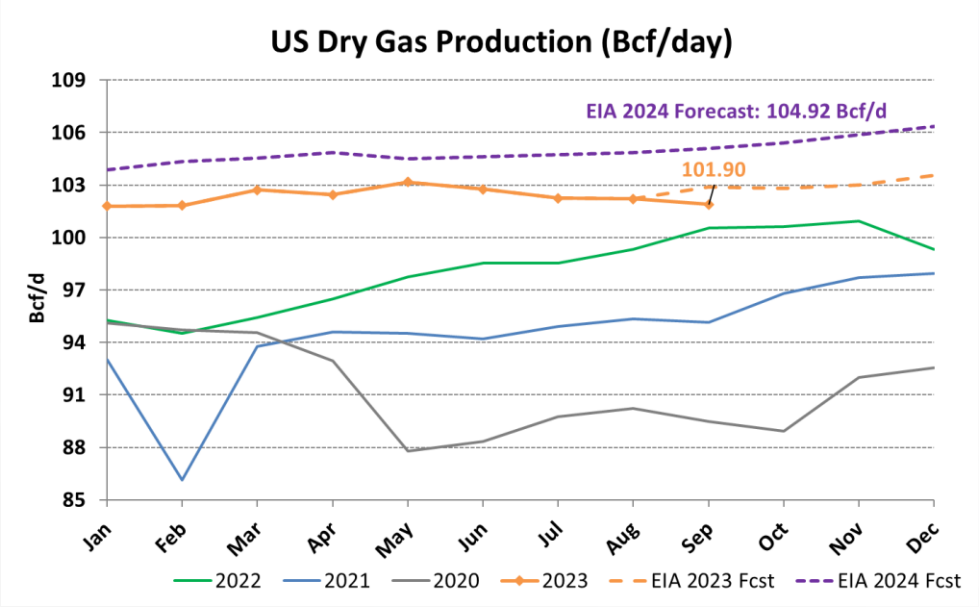
- The market (expectations) nailed the +64 Bcf of natural gas reported for week-ending September 15 but it failed to match the 5-year average of 85 and surpassed last year's 99 Bcf.
  - The 64 Bcf build narrowed both year ago and 5-year average surpluses to 14% and 6%, respectively. The storage surplus has narrowed a whopping 20% since April.
- EIA's September STEO narrowed the end of October storage number by 21 Bcf to 3,861 Bcf. This would compare to October 2022's end of season storage level of 3.6 Tcf.

Customer Takeaway: This fundamental driver has been unwaveringly bearish but expected tightening in the supply/demand balance could put a smidge more upside price risk on both forward natural gas and power. Weather will play its usual crucial role for the balance of injection season.

Source: EIA, Constellation

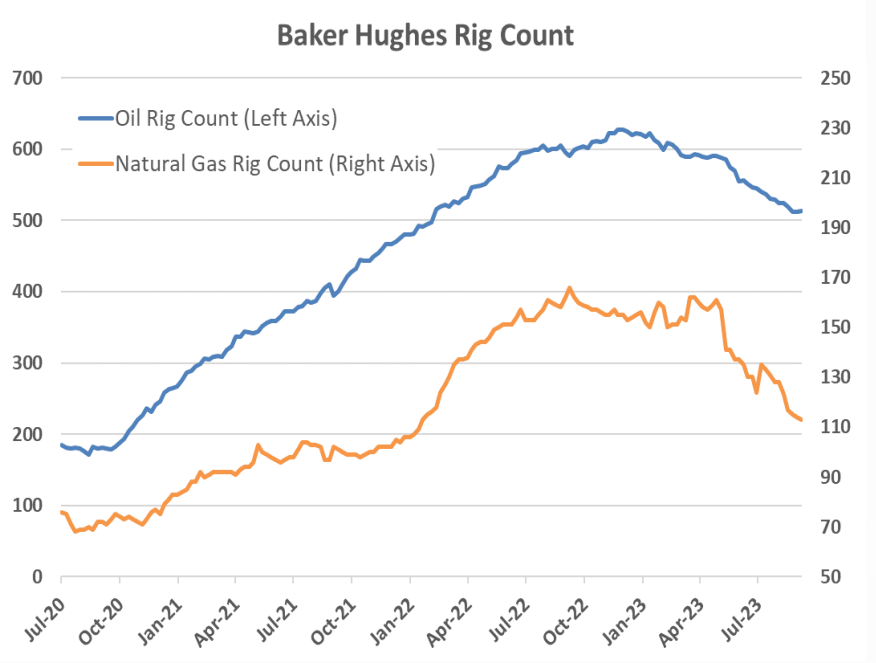
Constellation

Rig Counts Dropping, Output Holding On



- Total US dry gas production has averaged 101.9 Bcf/d in September so far, down slightly from August's 102.2 Bcf/d according to Spring Rock estimates.
- Both gas and oil rig counts continue their declines in a lower price environment as natural gas rigs are off a significantly from their peak in September 2022.
  - EIA's DPR shows how drillers have been able to improve efficiencies despite declining rig counts

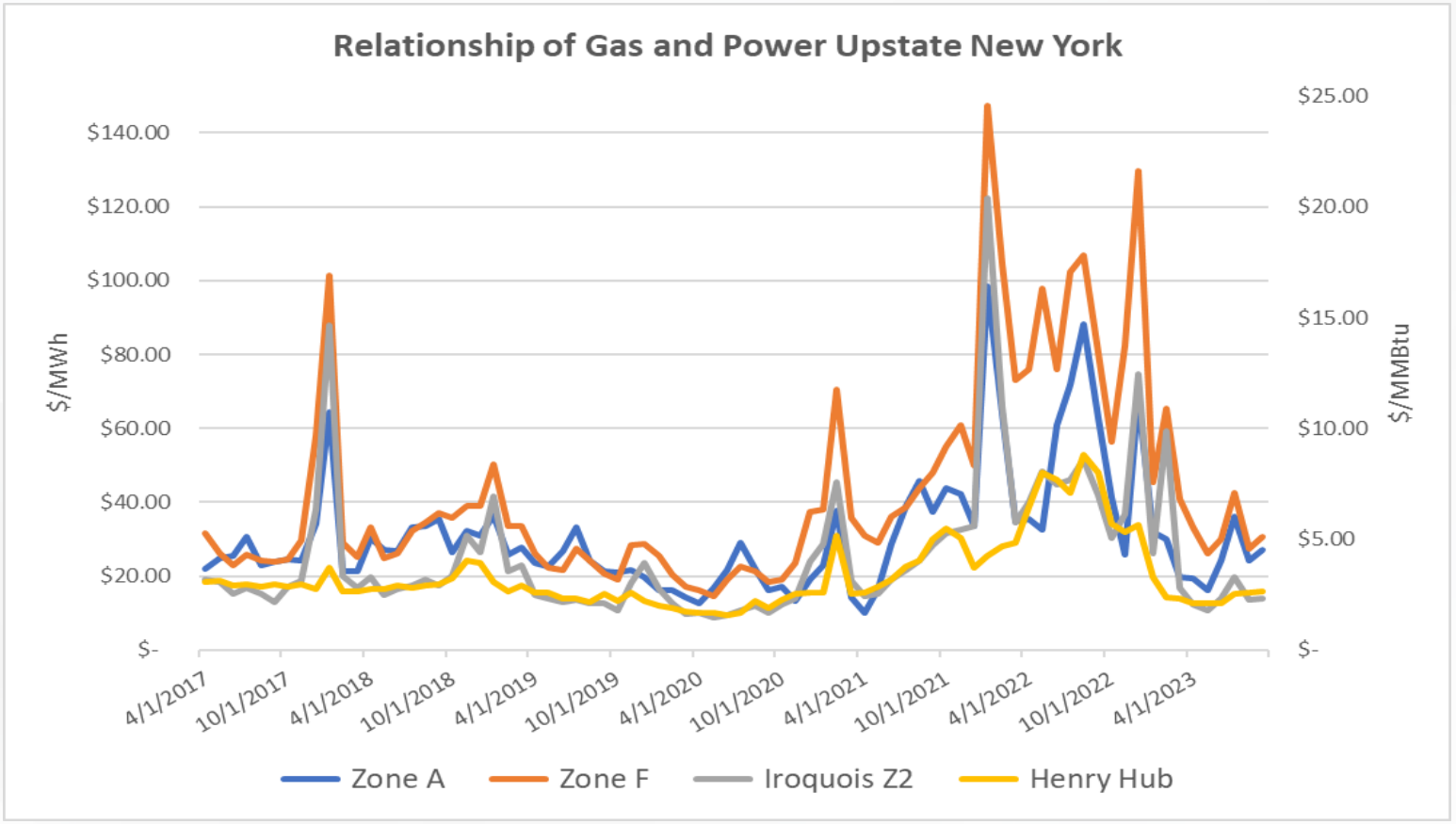
Customer Takeaway: Mediocre growth in production this year could be the first part of a longer pattern as low prices and declining equipment in the field is not a setup for production gains. The threat of an upside price break could occur driven by anticipated growth in LNG exports and strong power burn demand.



Source: EI, Constellation, Market Vendors

Constellation

Winter Risks and Volatility?

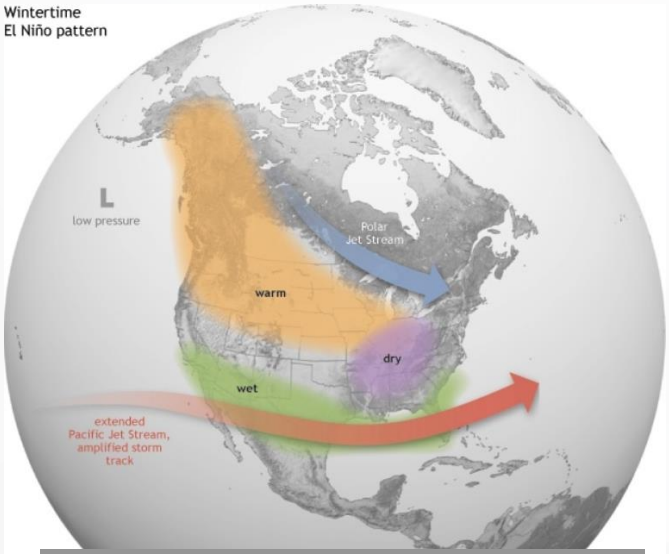


Customer Takeaway: Regional gas prices, like Iroquois Zone 2, tend to be more volatile in winter due to regional pipeline constraints, and are more closely aligned with power prices in NY than Henry Hub. We have yet to experience a significantly cold winter since the retirement of Indian Point, but even a few days of sustained cold can create a volatile price environment. Anticipate volatility and take advantage of purchasing opportunities when they present themselves.

Source: Reuters

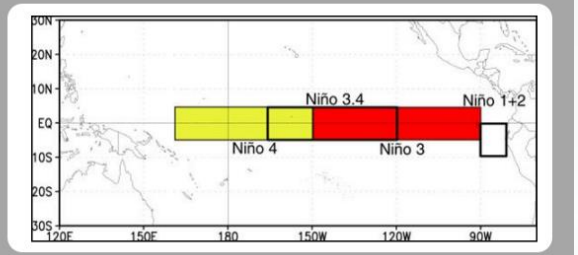
Constellation

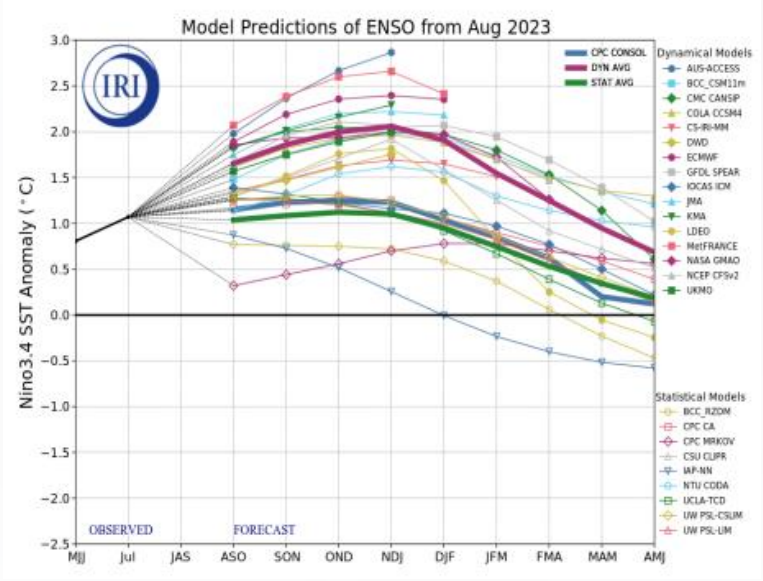
Early Winter El Nino Preview: Strength Matters



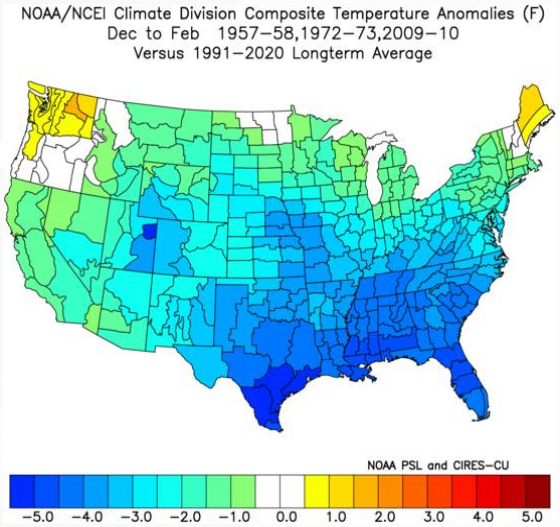
The latest weekly SST departures are:

Niño 4	1.2°C
Niño 3.4	1.7°C
Niño 3	2.1°C
Niño 1+2	2.8°C

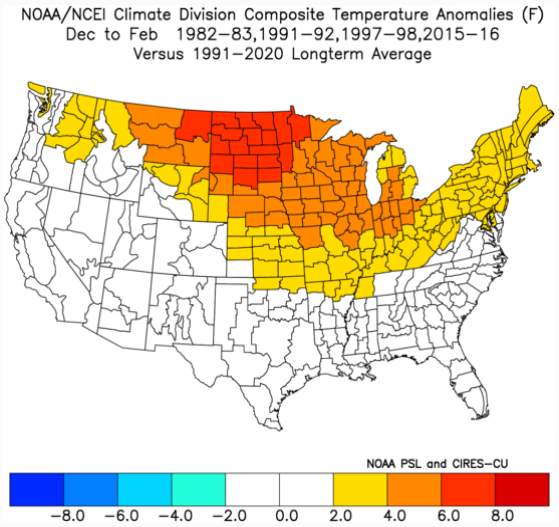




Moderate El Niño Winter (>1.0 C)



Strong El Niño Winter (>1.5 C)



Sources: NOAA, Constellation Weather Team

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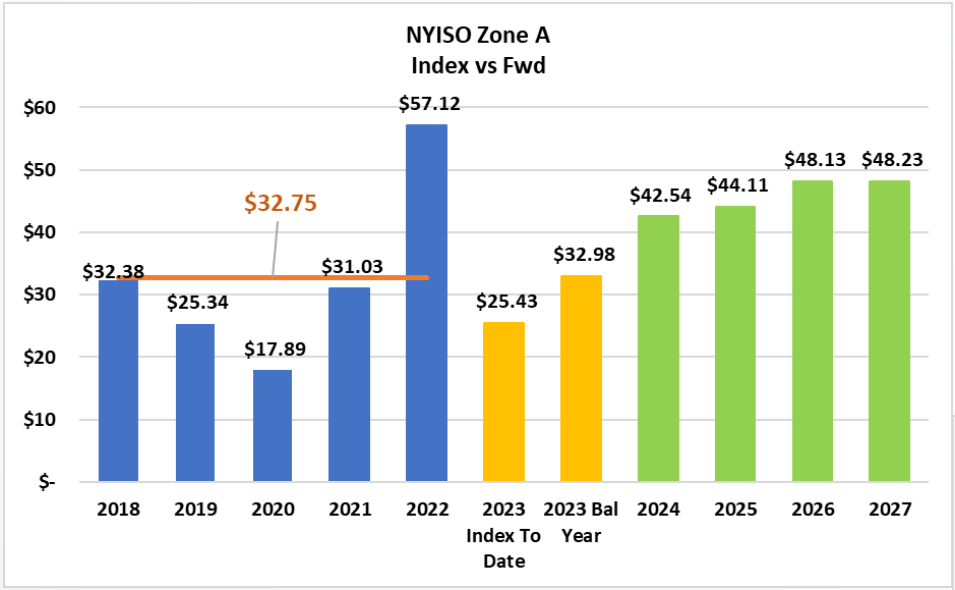
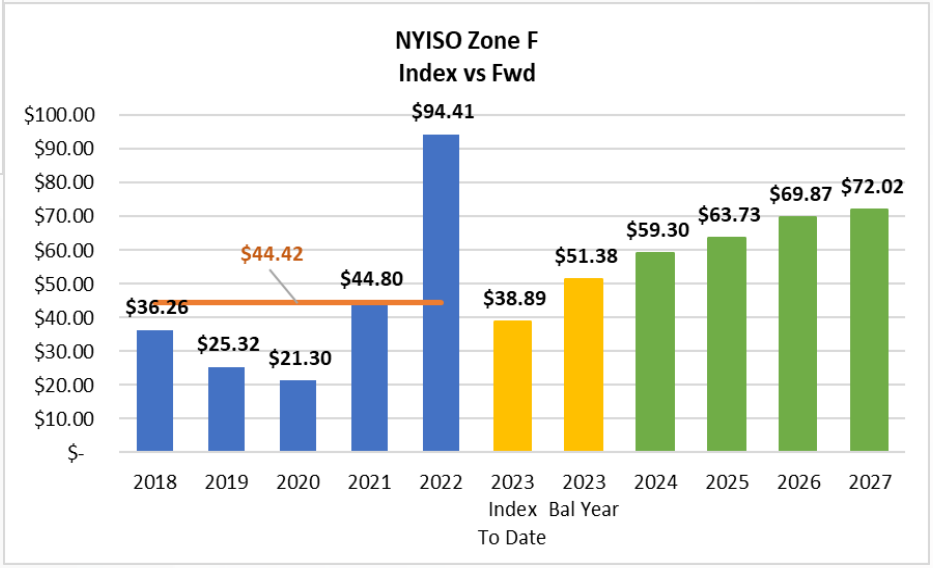
Historic vs. Forward Price Comparison





Customer Takeaway: A tight gas market pushed index and forward power prices up substantially in 2022, but an ongoing supply glut has kept a lid on prices so far in 2023. Despite near term pressure, the market's holding value longer term as regional power dynamics weigh in and the fundamentals that have pressured gas lower this year could turn on a dime.

Sources: Constellation

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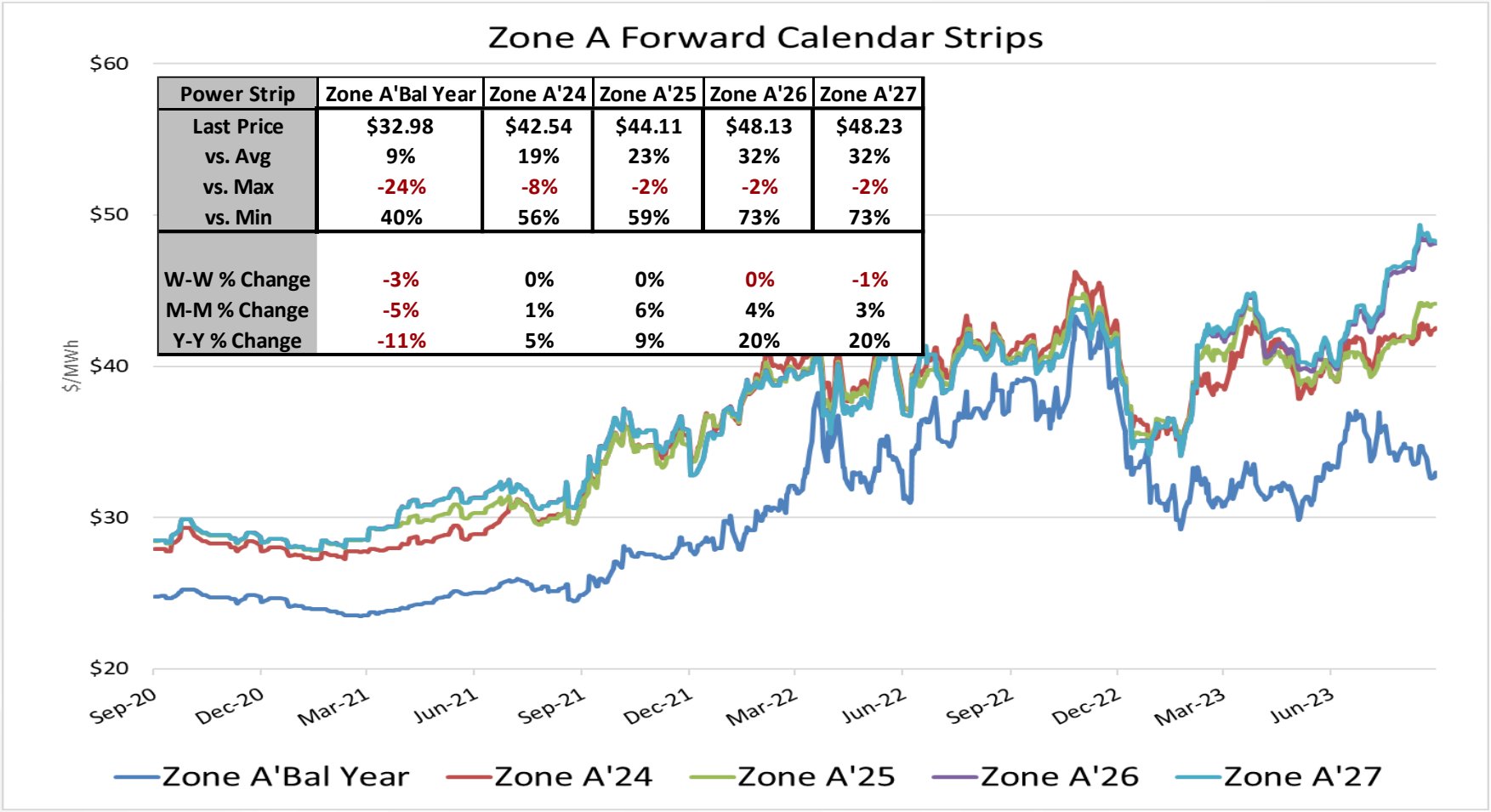
Historical Power Pricing – 3 Year Lookback



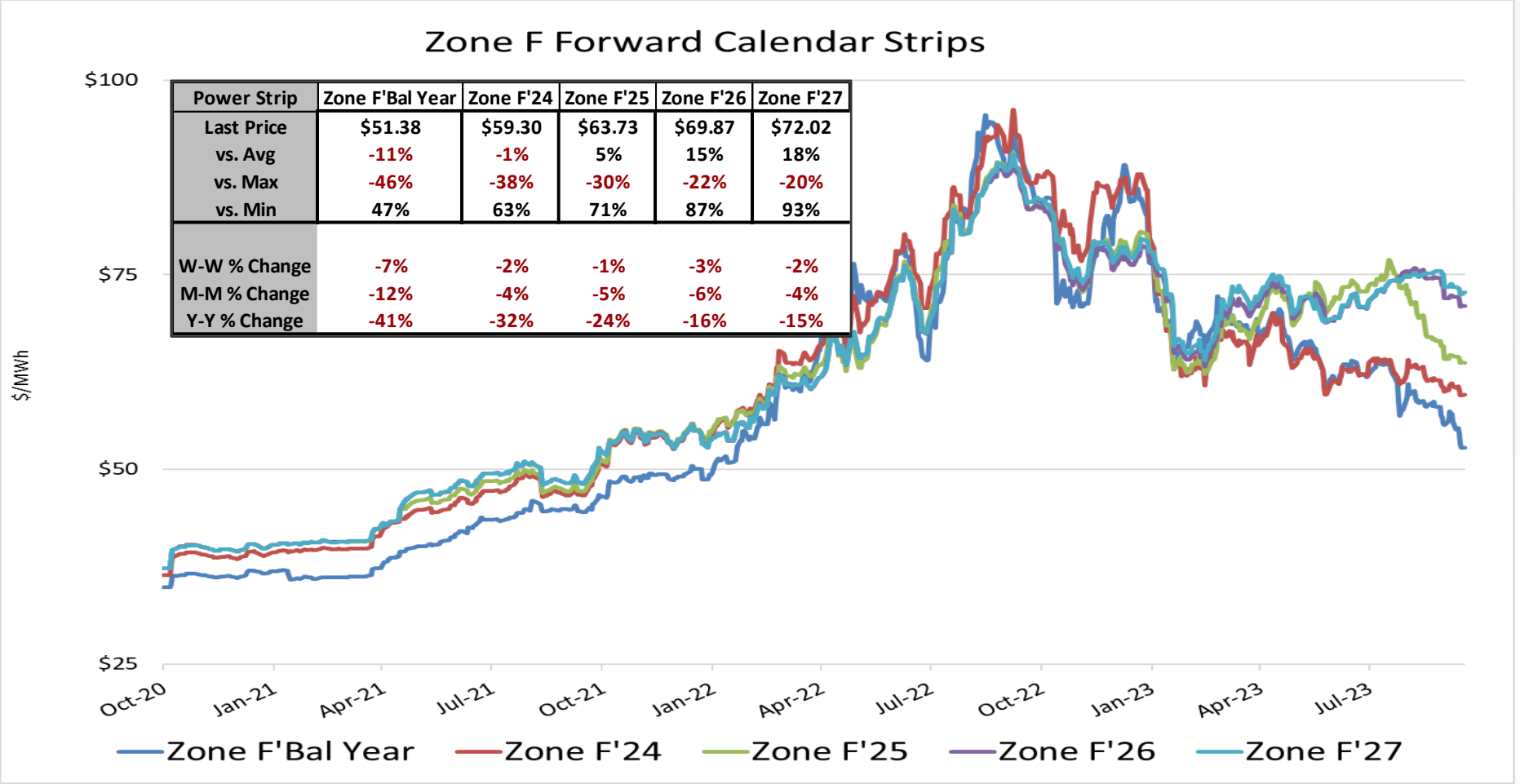
Power Strip	Zone A'Bal Year	Zone A'24	Zone A'25	Zone A'26	Zone A'27
Last Price	$32.98	$42.54	$44.11	$48.13	$48.23
vs. Avg	9%	19%	23%	32%	32%
vs. Max	-24%	-8%	-2%	-2%	-2%
vs. Min	40%	56%	59%	73%	73%
W-W % Change	-3%	0%	0%	0%	-1%
M-M % Change	-5%	1%	6%	4%	3%
Y-Y % Change	-11%	5%	9%	20%	20%

Customer Takeaway: Futures prices remain volatile since hitting record lows during the global pandemic in 2020. While near-term prices have fallen due to an oversupplied market, longer term prices remain supported on expectations for tighter supply/demand fundamentals in the future.

Sources: Constellation

Constellation

Historical Power Pricing – 3 Year Lookback



Power Strip	Zone F'Bal Year	Zone F'24	Zone F'25	Zone F'26	Zone F'27
Last Price	$51.38	$59.30	$63.73	$69.87	$72.02
vs. Avg	-11%	-1%	5%	15%	18%
vs. Max	-46%	-38%	-30%	-22%	-20%
vs. Min	47%	63%	71%	87%	93%
W-W % Change	-7%	-2%	-1%	-3%	-2%
M-M % Change	-12%	-4%	-5%	-6%	-4%
Y-Y % Change	-41%	-32%	-24%	-16%	-15%

Customer Takeaway: Futures prices remain volatile since hitting record lows during the global pandemic in 2020. While near-term prices have fallen due to an oversupplied market, longer term prices remain supported on expectations for tighter supply/demand fundamentals in the future.

Sources: Constellation

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Thank you

Britt Lyons
Commodities Management Group
Constellation
267-533-5412
Britt.lyons@constellation.com

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Appendix

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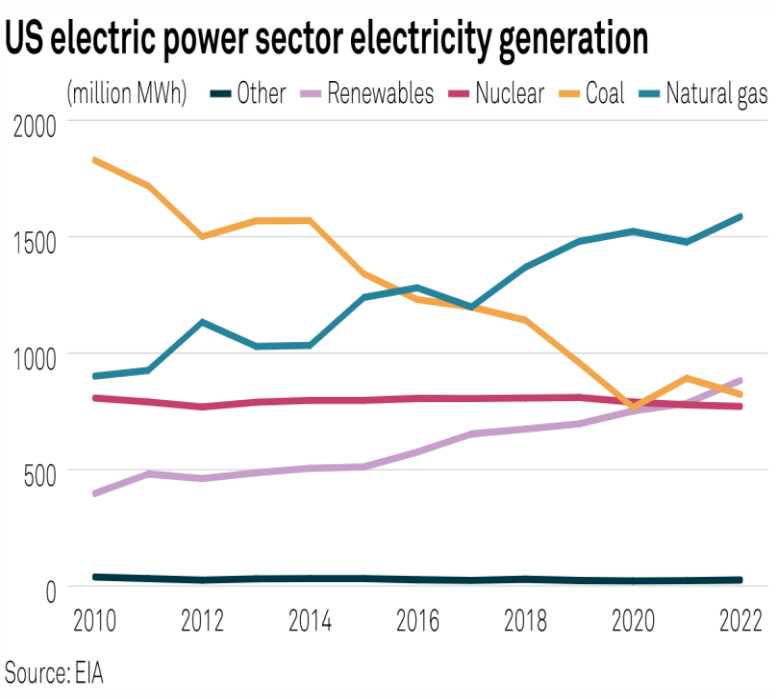
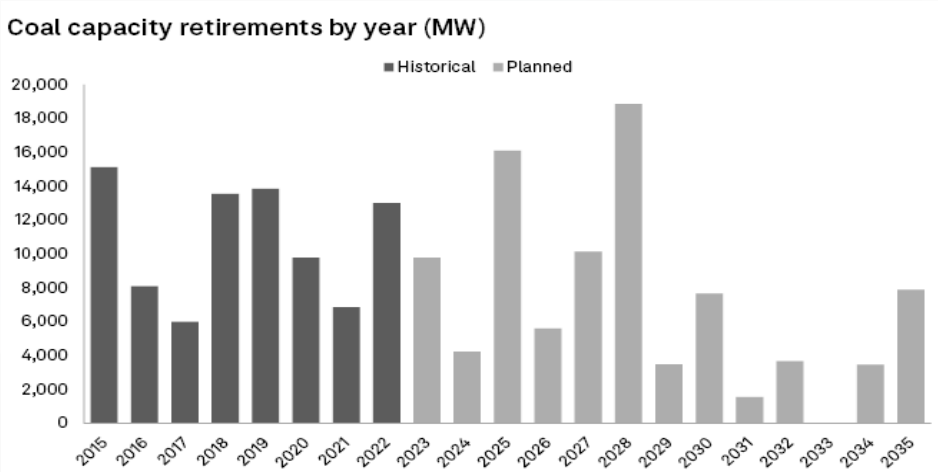
Acclimate to Volatility: Gas Dependency Set to Increase



MARKETS | HEARD ON THE STREET

Natural Gas: Fasten Your Seat Belts

The buffers that keep America's natural-gas price fluctuations at bay are eroding



- 41% of existing coal plant capacity are projected to retire by 2030 further diminishing the balancing effect the fossil fuel has on natural gas demand.
- Shell sees an additional ~7 Bcf/d of LNG export capacity by 2028 further pressuring natural gas demand in the US.

Natural Gas: Fasten Your Seat Belts - WSJ

Customer Takeaway: The warm winter has created more supply slack in the supply/demand balance of natural gas but as we continue to move forward on the path of sustainability, natural gas dependency will increase along with LNG export growth creating larger price swings.

Source: Constellation, S&P Global, Shell

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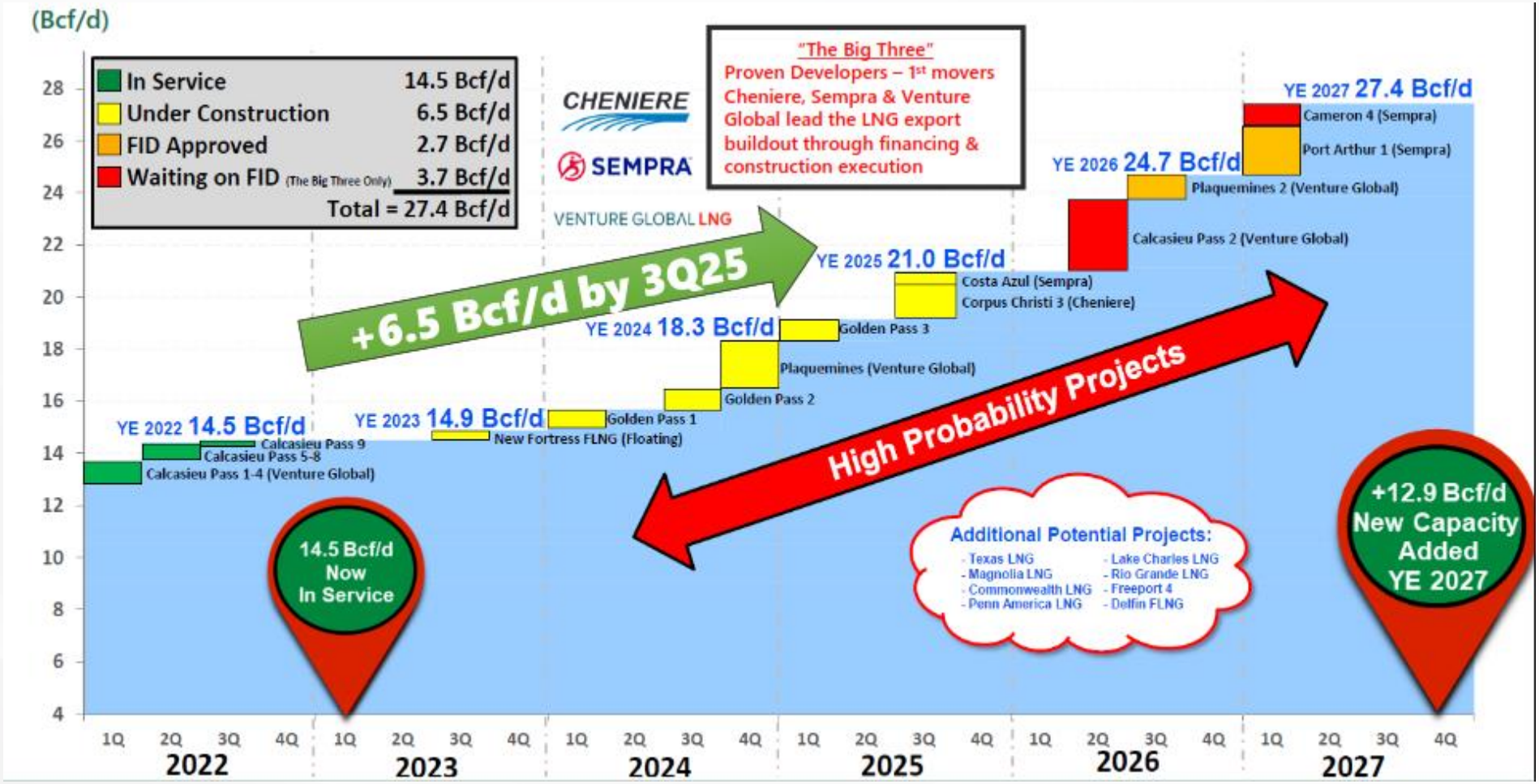
Acclimate to Volatility: LNG Exports Set to Increase



Customer Takeaway: LNG terminals remain the primary growth driver for gas demand. Already consuming close to 14 Bcf/d, two projects have recently reached Final Investment Decision, Port Arthur and Plaquemines 2, which will bring U.S. export capacity to 21 Bcf/d by end of 2025. European gas stocks are in fighting shape following winter.

Source: Constellation, S&P Global, Shell

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Energy Pricing and Procurement Challenges and Opportunities

Daniel (Dan) Murphy
Phone: 315-715-1231
E-Mail: Daniel.Murphy2@constellation.com
Web: www.constellationenergy.com

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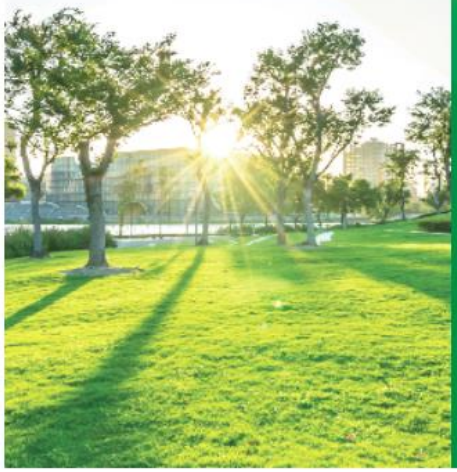
About Constellation



#1
producer of carbon-free energy in the U.S.

10%
of the nation's carbon-free electricity

32,400 MW
of capacity consisting of nuclear, wind, solar, natural gas and hydro, enough to power 20 million homes and businesses

215 TWh
of power served to Commercial customers

3/4
of Fortune 100 companies count on us for their energy needs

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Energy Pricing and Procurement - Challenges and Opportunities

- **Education**
- **Coordination/Consensus**
- **Have A Plan**

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Energy Use and Procurement in a Volatile Marketplace

Education - Energy Markets

- Weather
- Supply & Demand Fundamentals
- Pricing Trends
- Energy Supply Products

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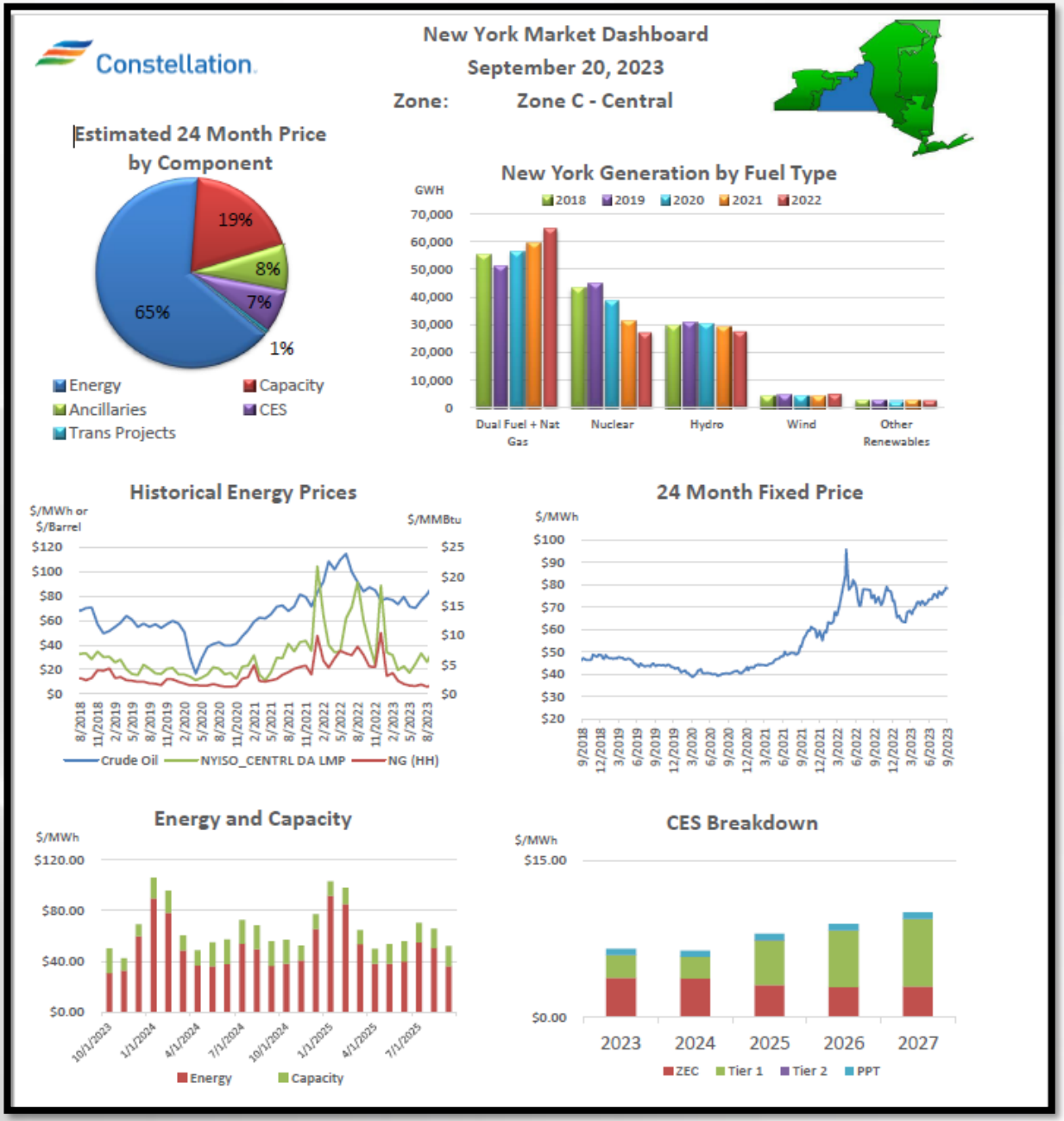
The Energy Market Dashboard



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Energy Market Dashboard

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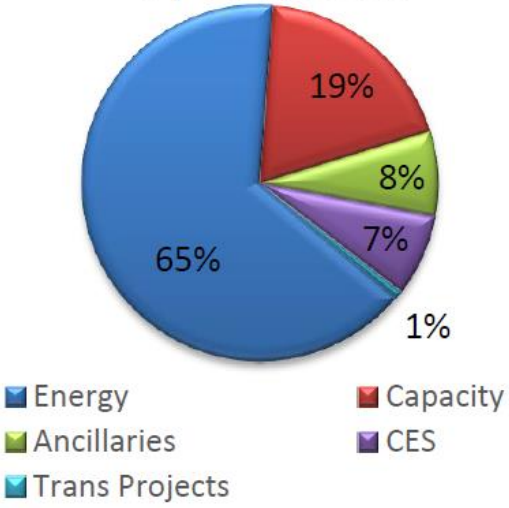
New York Market Dashboard

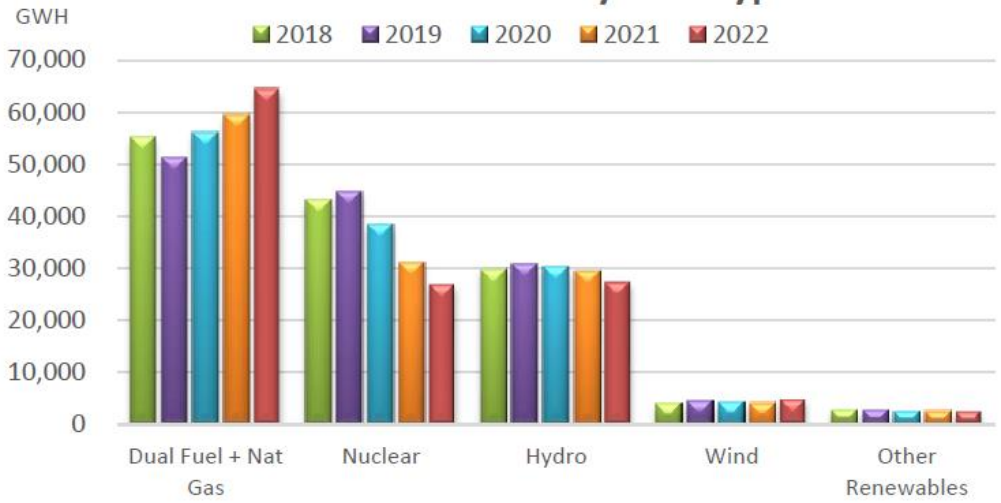
September 20, 2023

Zone: Zone C - Central

Estimated 24 Month Price by Component



New York Generation by Fuel Type



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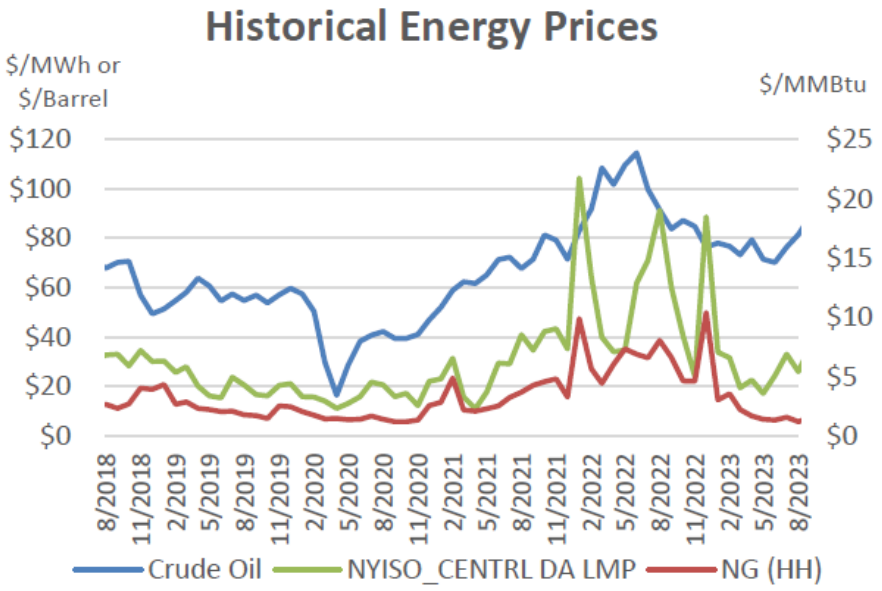

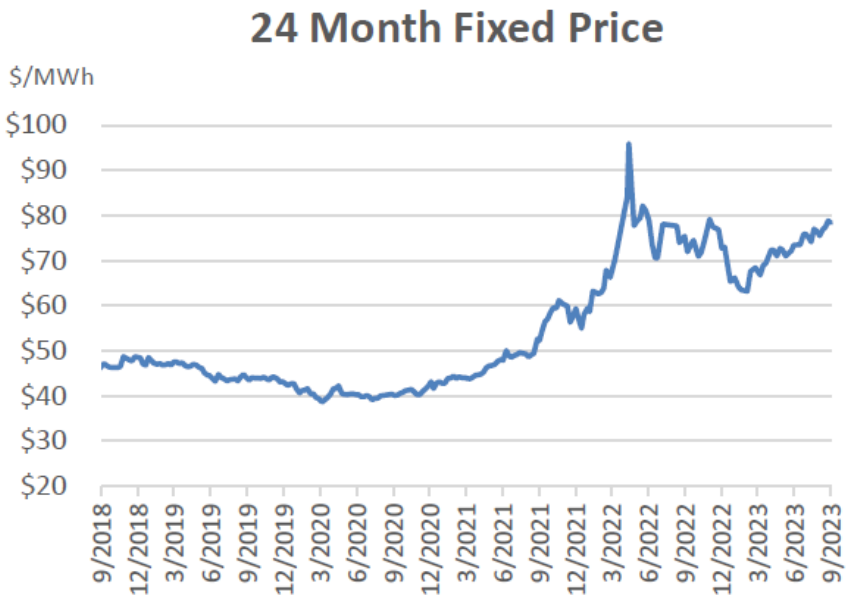

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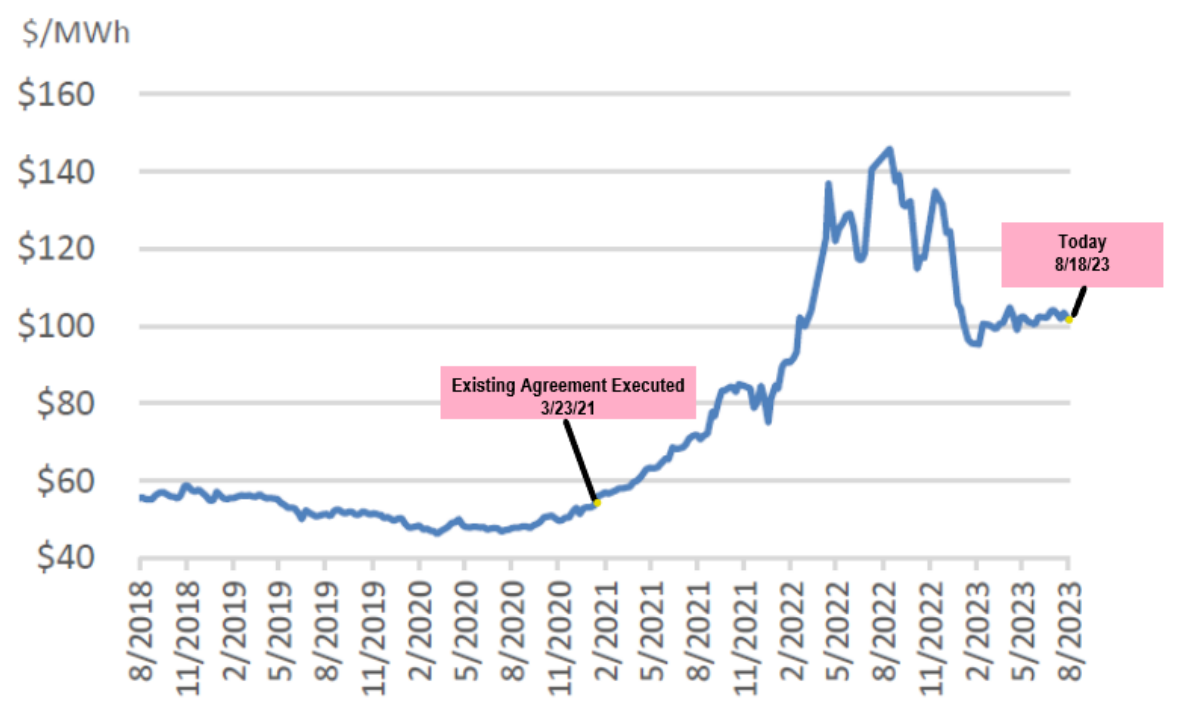

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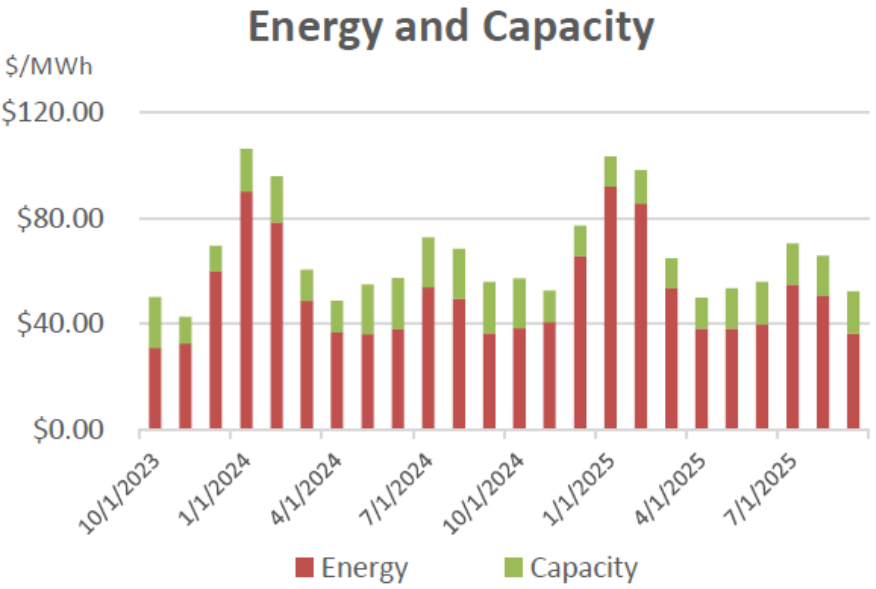

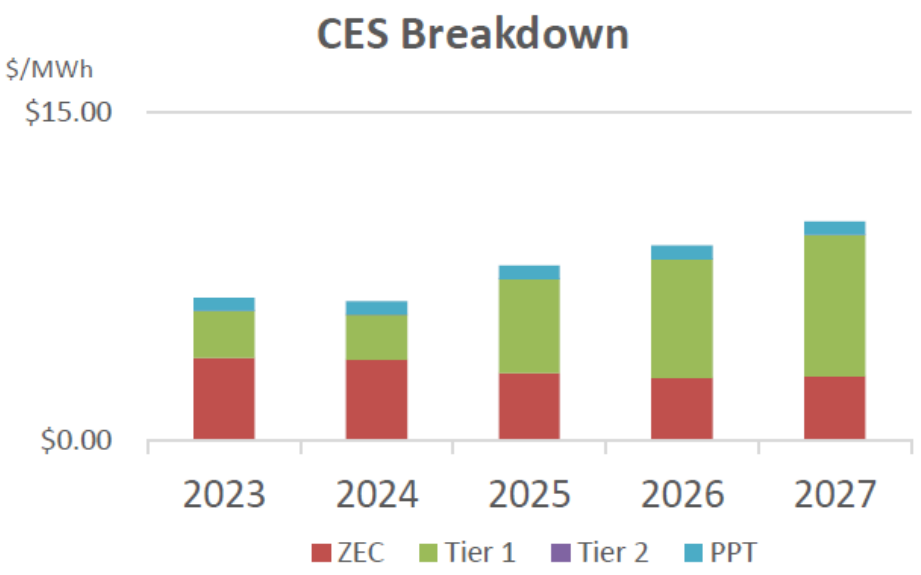

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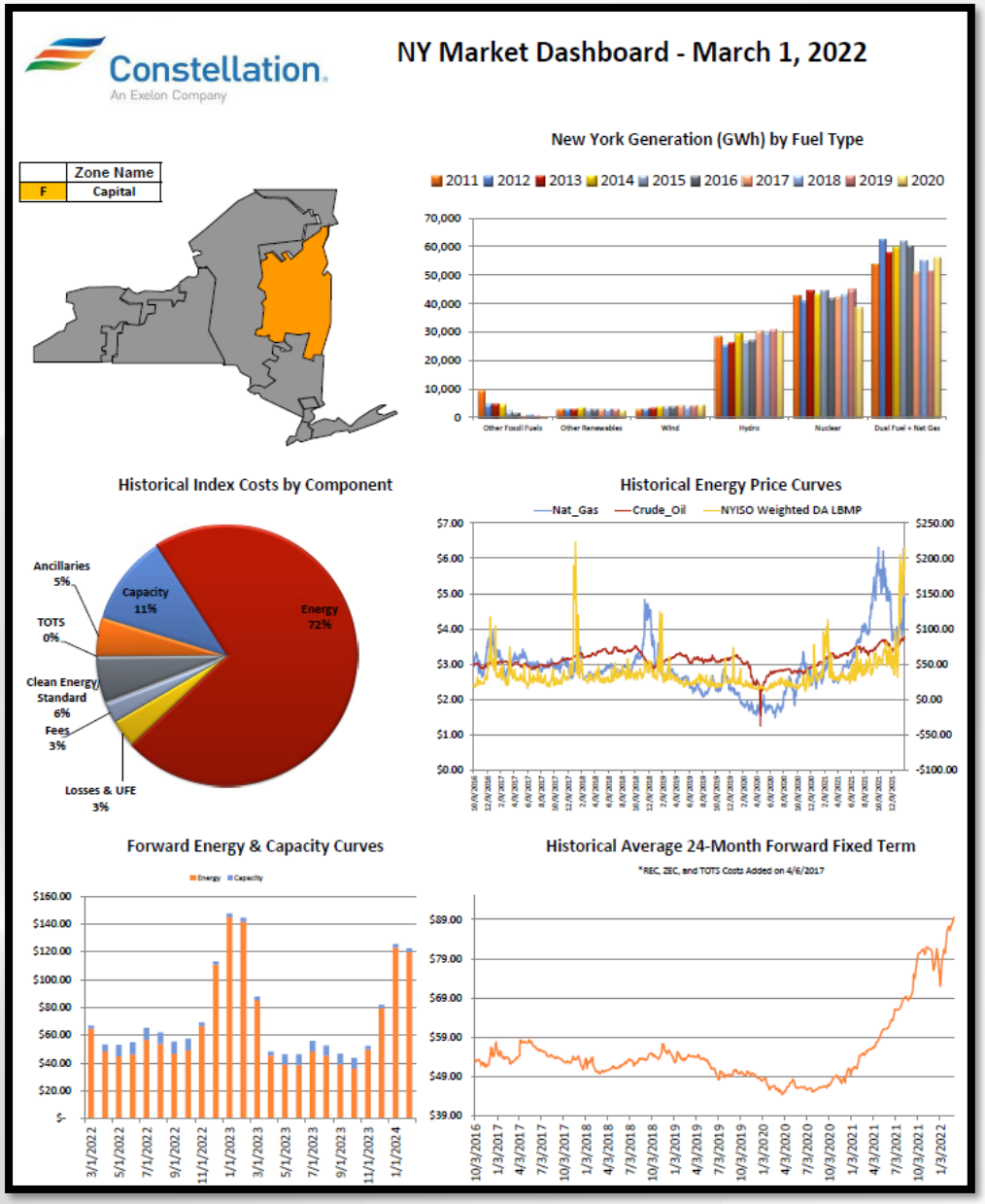

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Energy Supply Products

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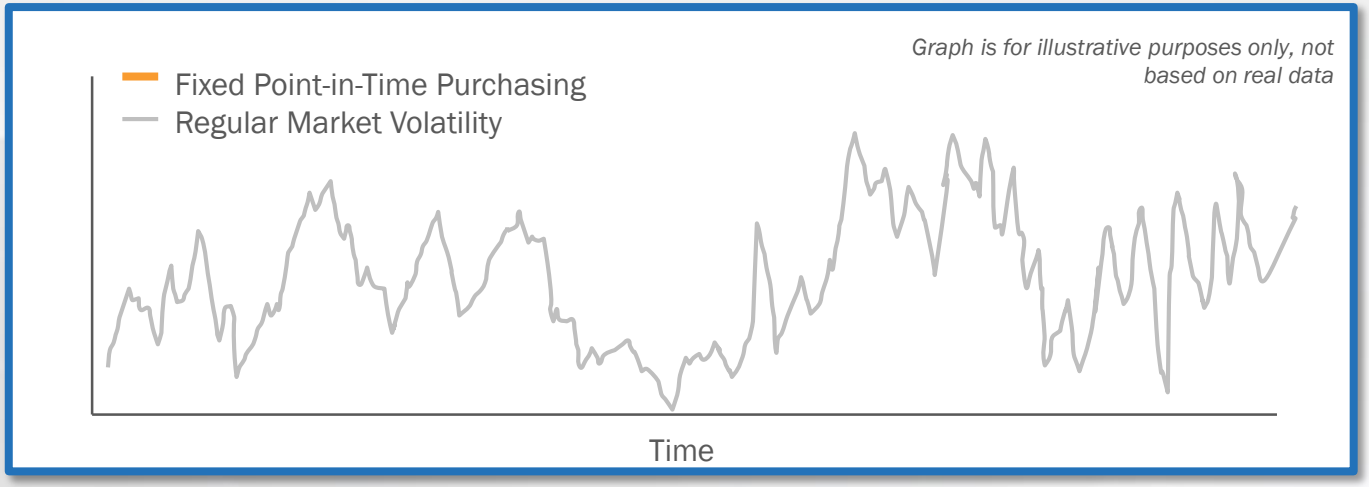
Fixed Price Solutions (FPS)

A Single point-in-time strategy in which prices are fixed for all of a customer's load for the term of the contract. A simple strategy for customers that prefer one price per kilowatt-hour (kWh) for their entire load no matter what their operations may require.



- ***Price is locked in to protect your business from market price changes***
- ***Make a one-time decision and an easy-to-understand bill***
- ***Keep a fixed price even when usage varies***

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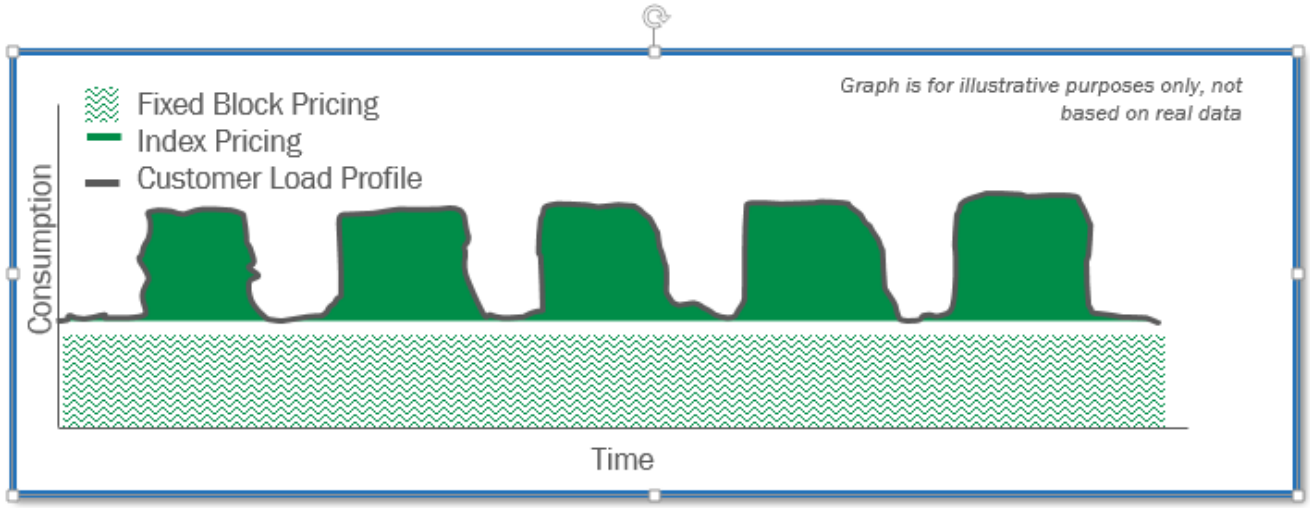
Index Plus Block Solutions (IPBS)

A Blended Strategy in which the customer fixes the price for a flat fixed volume based on usage patterns, and any usage above the set fixed volume will receive index or index market pricing. *IPBS is also a blended strategy for customers that have consistent operations and want to limit their exposure to the market while taking advantage of favorable market conditions.*



- ***Secures fixed price for a set block to meet your operational demands***
- ***Provides flexibility to take advantage of market activities without full market exposure***
- ***Variety of block purchasing options offered to meet customers' needs***

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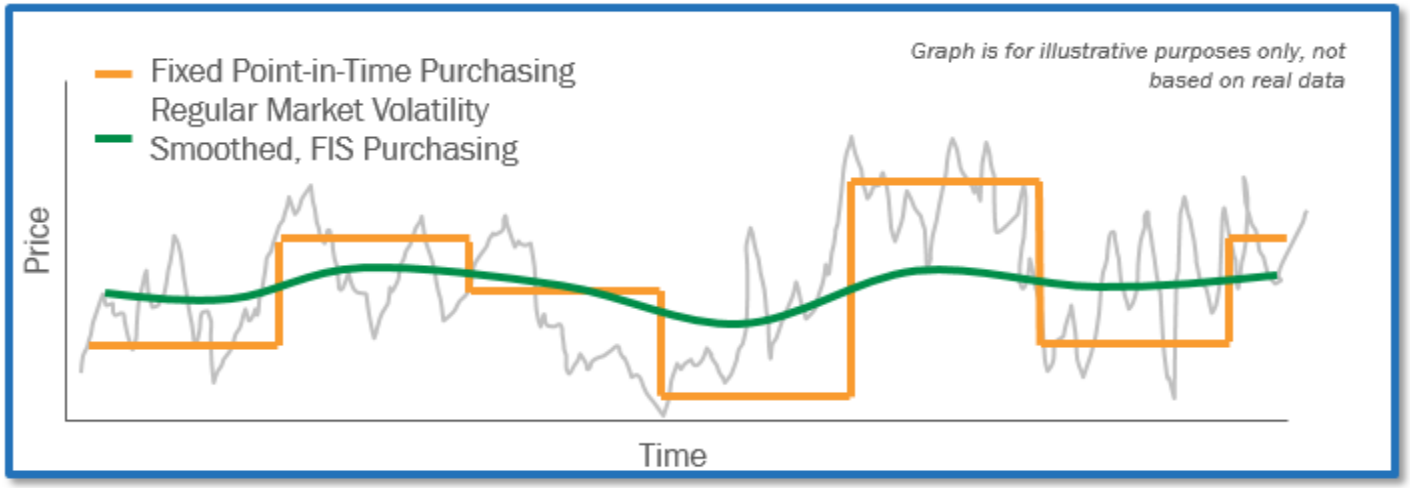
Flexible Index Solutions (FIS)

A Blended Strategy in which the customer makes a series of fixed price purchases over time. *FIS is a blended strategy for customers that would prefer a fixed price for a load following percentage of their usage. Customers can choose to fix any percentage up to 100% of their load, and can reach that desired percentage over time.*



- ***Achieves greater long-term budget predictability while allowing you to take advantage of market opportunities***
- ***Leverages a dollar-cost averaging approach to manage your energy costs over time***
- ***Mitigate timing risk through multiple purchases over time***

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Energy Pricing and Procurement - Challenges and Opportunities

- Education
- **Coordination/Consensus**
- Have A Plan

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Energy Use and Procurement in a Volatile Marketplace

Coordination/Consensus

- The energy customer.
- The energy supplier.
- The utility company.
- The energy broker or consultant.

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Energy Pricing and Procurement - Challenges and Opportunities

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- **Have A Plan**

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Energy Pricing and Procurement - Challenges and Opportunities

Have A Plan

What Are The Goals

- Saving $$$, Reducing Risk, Consumption Reductions, Carbon Reduction …..
- Budget, Contract Terms

Road Map

- How to we get to our shared goals, benchmarks

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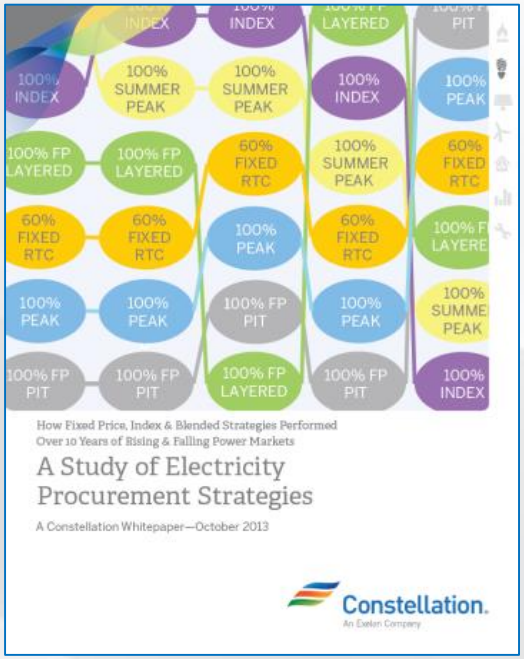
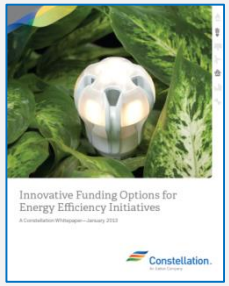
Please visit our website to find our this and our other whitepapers:

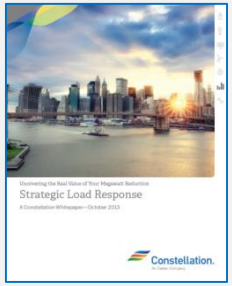


Electricity Procurement Strategies
Principal Author, John Domagalski
Contributing Authors & Researchers,
Lev Goldberg & James Hua
https://events.constellation.com/purchasing-white-paper



Energy Efficiency Initiatives
www.Constellation.com/eme_whitepaper

Strategic Energy Procurement
www.Constellation.com/ELprocurementWP



Strategic Load Response
www.Constellation.com/LRwhitepaperEL

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Daniel (Dan) Murphy
Phone: 315-715-1231
E-Mail: Daniel.Murphy2@constellation.com
Web: www.constellationenergy.com

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