

PJM Perspectives on Main Motion and Initial Margin

Nigeria Bloczynski
Chief Risk Officer

October 14th Special RMC

October 20th Members Committee

We appreciate the strong member support to move to the historical simulation initial margin methodology

We remain very concerned with using a 95% confidence interval

PJM strongly recommends a confidence level of 99% over time, but can support a starting CI of 97%

- PJM commissioned the development of a model to simulate the effects of various confidence intervals (the “PJM Model”). PJM shared the results with Stakeholders beginning in July 2019

<https://www.pjm.com/-/media/committees-groups/task-forces/frmstf/20190717/20190717-item-04-initial-margin-methodology-desktop-review.ashx>

- By definition, Initial Margin (IM) is a collateral deposit, posted by a market participant as collateral to protect against the financial consequences of default.
 - It is a methodology based on the historical VaR calculation for each FTR path
 - It typically is determined to cover potential losses due to default for the time period between when the position was incurred and when it can be liquidated and/or taken to final settlement.

- Builds a distribution of changes in the value of each Participant's portfolio based on prior auctions and calculates the loss in value of a market participant's portfolio at a specified confidence interval
- Calculates Initial Margin to a selected degree of statistical likelihood, across the participant's entire portfolio
- The model inputs include current portfolio composition for every participant and the entire history of the auction prices for FTRs in the current portfolio, along with selected confidence intervals & weighting ratios of straight sum & square root of sum of squares to account for correlation between months
- Separate calculations are performed for monthly, annual, and long-term auctions
- Model outputs the Initial Margin for each participant
- KPMG independently validated model
 - Determined the PJM HSIM model is consistent with industry practice for VaR-type calculations and that the model performs as expected

<https://www.pjm.com/-/media/committees-groups/task-forces/frmstf/20190925/20190925-item-07-results-of-risk-model-quantitative-analysis.ashx>

Historical Simulation Initial Margin Methodology Offers Several Benefits...

- Ease of replication
- Calculation transparency
- Predictability of IM allows Market Participants to allocate capital against trades
- Reduces barriers to entry for participants
- More efficient use of collateral



PJM appreciates Member's supports for its Historical Simulation methodology

...But PJM Has Continuing Concerns With Using a 95% Confidence Interval

Using a 95% confidence interval excludes coverage for extreme scenarios that have been observed 5% of the time historically

While a 95% CI suggests collateral inadequacy occurs about 5% of the time, updated analysis shows exposure can be material when it does occur

Historical models can underestimate risk in times of rising volatility and stress. We appear to be in such a period now

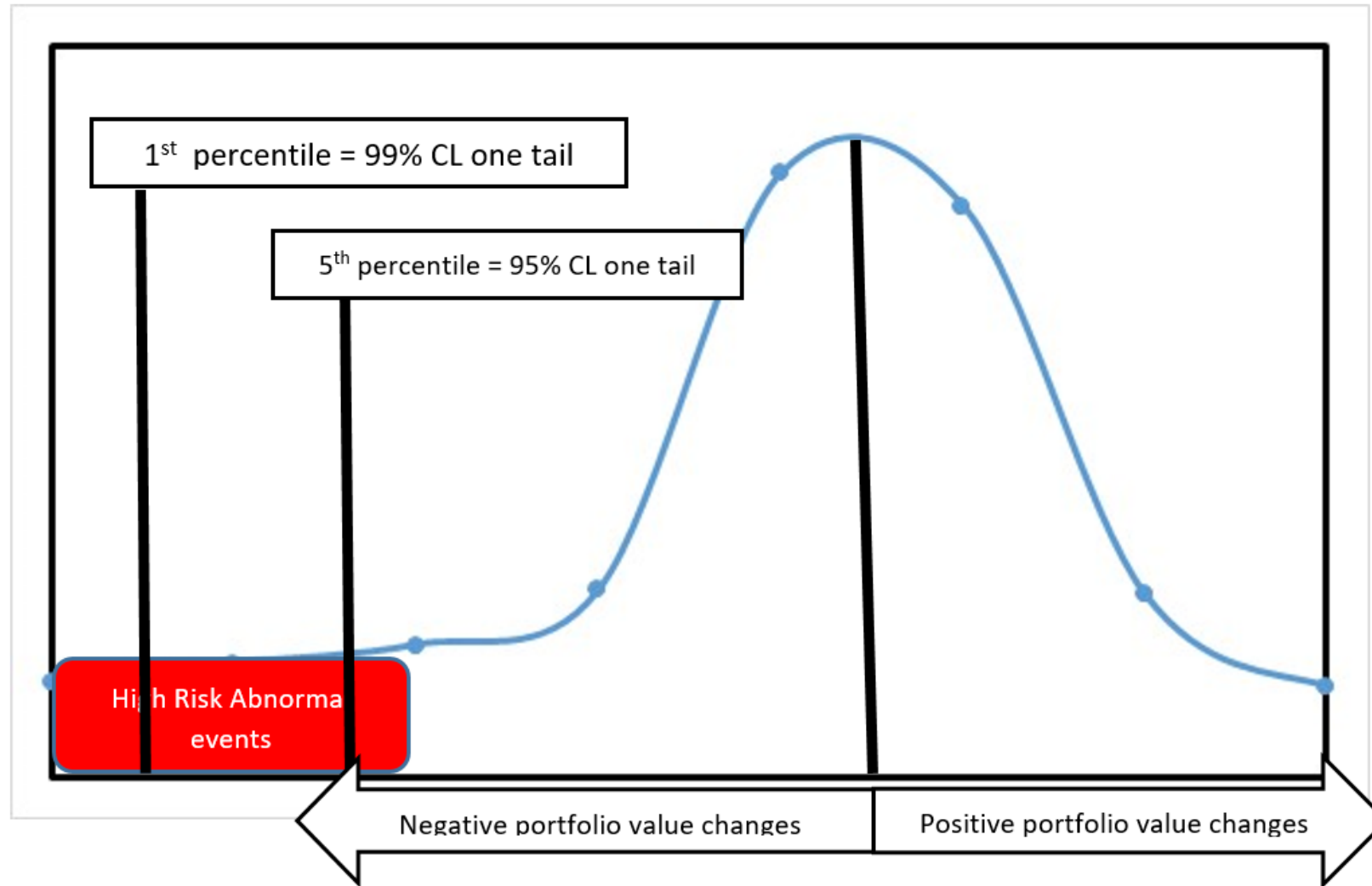
- Exchanges and Central Counterparties are raising their initial margin.
- Commodity volatility appears to be increasing
- Updated analysis suggests moving to 95% CI now will result in PJM holding approximately 30% less initial margin in aggregate when compared with the status quo, which does not appear to us to be prudent given the increasing risk environment

Several risks beyond the model can be material

- Liquidation of an FTR portfolio may take more than two auction cycles
- The liquidation of an FTR portfolio may cause adverse market movement
- History may not adequately predict future risk

- CFTC regulation specifies that margin models should be risk based and pass back-tests and stress tests at the 99% level
- Derivative Clearing Organization (DCOs) are required to use 99% CI
- While we are not a DCO or CFTC regulated, the RTO exemption requires alignment with CFTC regulatory objectives
- FTRs are unique products, and are less liquid, but they are essentially basis swaps. We believe lower liquidity argues for more conservatism, not less

Most Extreme Scenarios Not Covered in 95%



While failure only approximates 5% of the time in a 95% CI case, updated analysis* suggests that initial margin inadequacy can be material when it occurs

	99% CI	97% CI	95% CI
Potential shortfall when IM is inadequate	\$11 M	\$39 M	\$68 M
Collateral required	\$1.703 B	\$1.125 B	\$0.948 B

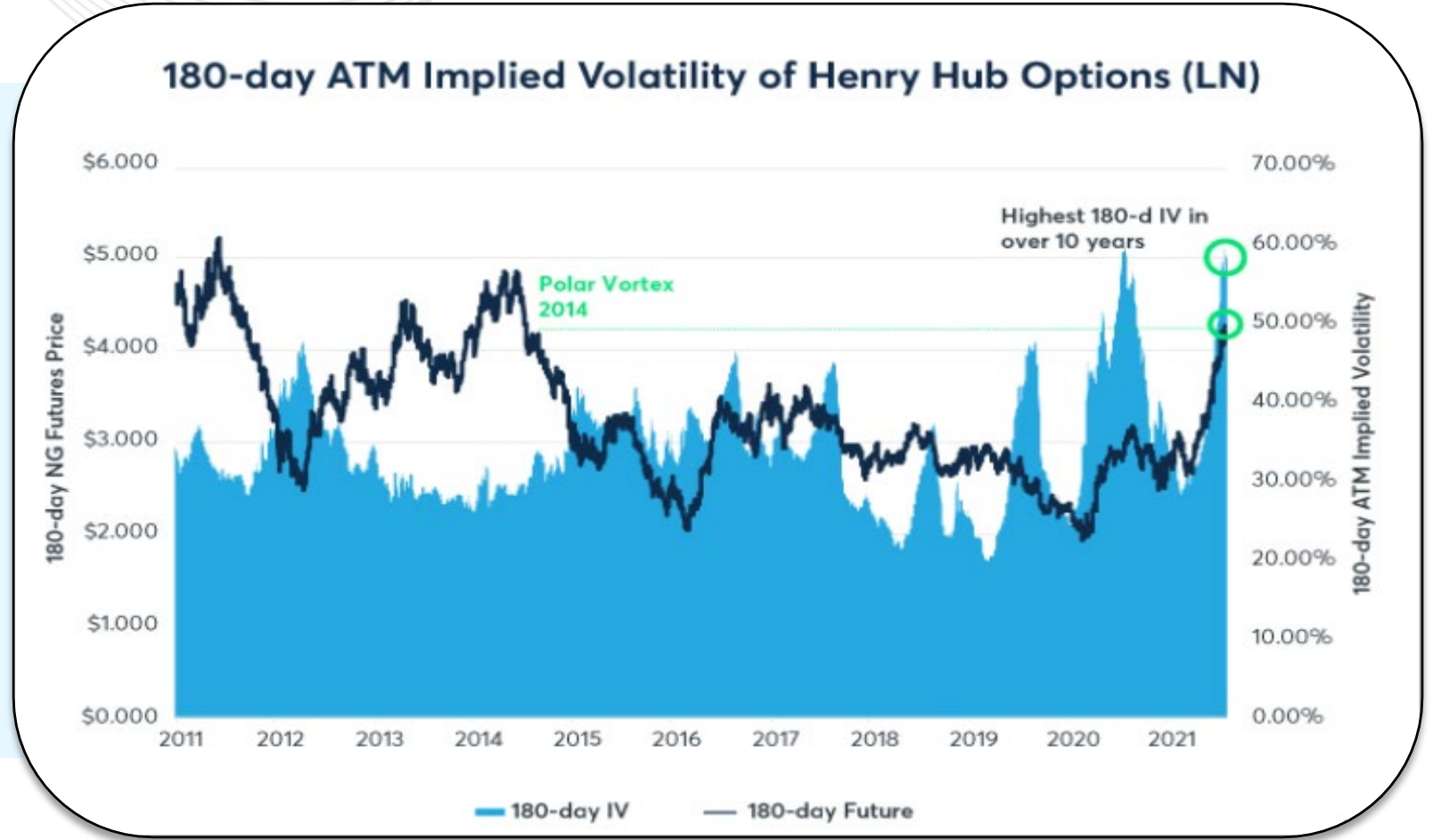
IM inadequacy can be material! Data further supports the need to move to 99% CI over time

* Updated analysis incorporates the percentile method.



We Appear To Be In A Period Of Increasing Price Volatility, Which Points to Increased Conservatism in ensuing Collateral Adequacy

- Commodity prices are up to levels not seen since 2008
- S&P Global increased their gas prices by 29% that will be used for credit decisions



JP Morgan Chase¹:

- Preparing for potential default as a result of soaring gas prices and debt ceiling concerns
- Stockpiling cash in anticipation of rising interest rates

1 – CNN Business.com, 09/28/21; [Jamie Dimon says JPMorgan has begun to prepare for potential US default - CNN](#)

The Intercontinental Exchange (ICE)²:

Increased their collateral margin deposits from their members by \$175MM (to protect the book)

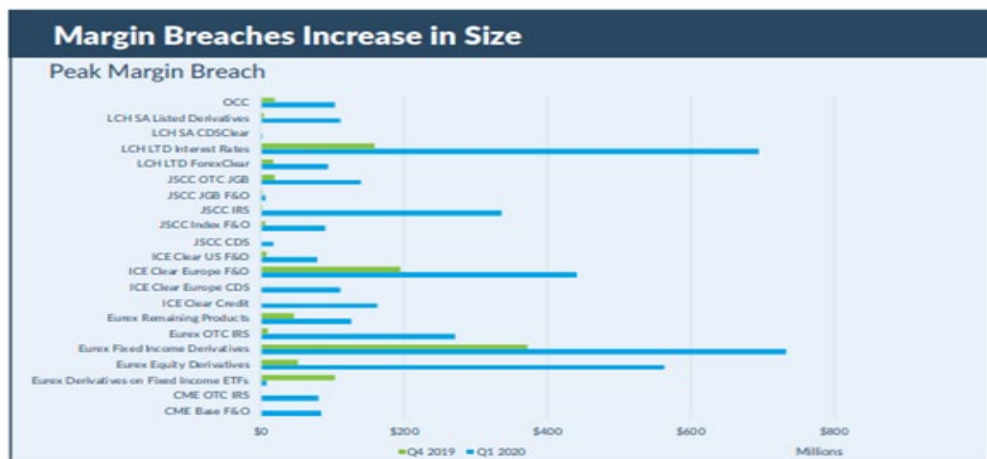
2 – <https://www.risk.net/risk-quantum/7882516/ice-clear-credit-member-default-fund-contributions-climb-6>

Margin Breaches Increase During Periods of High Price Volatility or Stress



Source: Public Quantitative Disclosures, FIA CCP Tracker

Note: Based on quarterly disclosures covering clearing services operated by nine CCPs (CME, Eurex, ICE Clear US, ICE Clear Credit, ICE Clear Europe, JSCC, LCH LTD, LCH SA, OCC)



Source: Public Quantitative Disclosures, FIA CCP Tracker

Note: LCH LTD and LCH SA data include only initial margin for cleared derivatives

Market stress situations such as Polar Vortex and COVID crisis have increased incidents of margin breaches

Futures Industry Association (FIA), an international association of futures commission merchants, brokers, banks and trading advisers in an October 2020 report on the Impact of COVID Crisis on Margin Requirements found that:

- Frequency and size of margin breaches at CCPs increased
- CCPs calculate initial margin at 99% CL or greater
- Yet, FIA estimates that the number of margin breaches reported by the nine major clearinghouses in the sample group rose from 3,106 during the 12 months ending in the fourth quarter of 2019 to 6,640 in the 12 months ending the first quarter of 2020
- The peak size of the breaches increased dramatically



Updated Analysis Shows PJM Would Hold Significantly Less Initial Margin to Protect Against Defaults Under a 95% CI Compared to the Status Quo

- Status quo had a failure rate of 8% based on backtesting
- Data from Q1 2021
- The 95% confidence interval is expected to converge to a 5% failure rate over time

Confidence Interval	CLEARED REQUIREMENT		Change	Failure Rate	Winter Failure Rate
	Status Quo Total Requirement (\$B)	IM-H Total Requirement (\$B)			
99%	\$1.345	\$1.703	27%	0.45%	0.90%
97%	\$1.345	\$1.125	-16%	1.65%	2.72%
95%	\$1.345	\$0.948	-30%	2.98%	4.89%

This slide reflects recalculated IM-H Total Requirement and the failure rate using the percentile method.

- PJM Settlement acts as a central counterparty for all transactions in the PJM market, including FTRs. As a CCP, PJM is analogous to a Derivatives Clearing Organization (“DCO”) regulated by the CFTC
- Under CFTC regulations DCO’s are required to do the following:
 - have initial margin requirements that are commensurate with the risks of each product and portfolio, including any unusual characteristics of, or risks associated with, particular products or portfolios;
 - use models that generate initial margin requirements sufficient to cover potential future exposures; and
 - meet *an established confidence level of at least 99 percent of actual coverage of the initial margin requirements produced by such models.*

See 17 CFR § 39.13(g)

- RTO's, including PJM, were granted an exemption from CFTC regulation in 2013. 78 Fed. Reg. 19879 (April 2, 2013)
- The CFTC's rationale for exempting RTO's from regulation was based, in part, on the following factors:
 - RTO compliance with the credit reforms in FERC regulation 35.47 was the basis for determining the RTO exemption was in the public interest
 - RTO alignment with the CFTC's Core Principle D which requires that each DCO limit its exposure to potential losses from defaults by clearing members
 - whether RTO tariffs and activities accomplish the regulatory objectives of each DCO Core Principle.

- FERC Regulation 35.47(c)'s elimination of unsecured credit in the FTR markets “appears to be congruent with Core Principle D’s requirement that each DCO limit its exposure to potential losses from defaults by clearing members.” 77 Fed. Reg. at 52147 (Aug. 28, 2012).
- The RTO exemption anticipates that the Covered Transactions (like FTR’s) only be offered or sold pursuant to a FERC or PUCT approved Tariff benefits the public by, for example, ensuring that the Covered Transactions are subject to a regulatory regime that is focused on the physical provision of reliable electric energy, *and also has credit requirements that are designed to achieve risk management goals aligned with the regulatory objectives of the Commission’s DCO and [Swap Execution Facility] Core Principles.* 78 Fed. Reg. at 199911 (April 2, 2013).

The RTO Exemption anticipates that RTO’s credit and risk management policies align with the CFTC Core Principles including initial margin requirements

- PJM has a arguably riskier profile than DCOs which supports the adoption of the 99% confidence interval for FTR initial margin calculations
 - FTRs are the economic equivalent of swaps and should be risk managed by PJM and market participants in the same way as any other financial transaction cleared by a CCP.
 - PJM has recently developed a historical simulation model
 - Risks within the PJM FTR market are not contained to rigorously qualified Clearing Houses, or for that matter even to FTR Market Participants
 - All Members will bear the risk of defaults, and a portion of default costs will flow thru to consumers and end use customers (ratepayers)
 - 99% CI represents best-practice and supports the CFTC policy of ensuring the financial integrity of the Covered Transactions (like FTR's), the avoidance of systemic risk and protects participant assets
 - 99% CI supports the public interest upon which RTO exemption is based.



PJM Respectfully Disagrees with Some Key Assumptions that Underpin the Main Motion

95% CI equates to 1.2% failure rate

- Backtesting shows that during winter periods, the failure rate nears 5%, not 1.2%
- Justification or the explanation for this has been presented to stakeholders in July and August at the FRMSTF and also at the August 2021MRC

- <https://pjm.com/-/media/committees-groups/task-forces/frmstf/2021/20210804/20210804-item-04a-info-only-im-h-summary-table-with-bopp-annual-and-lt.ashx>
- <https://pjm.com/-/media/committees-groups/task-forces/frmstf/2021/20210915/20210915-item-03c-confidence-interval-discussion-presentation.ashx>
- <https://pjm.com/-/media/committees-groups/committees/mrc/2021/20210825/20210825-item-04b-1-initial-margin-solution-package-presentation.ashx>

PJM Respectfully Disagrees with Some Key Assumptions that Underpin the Main Motion

To save \$1 in default costs, market participants must post \$679

- Dangerous to assume that 90% of defaults will be cured in good faith (magnitude, collateral default vs payment default)
- The amount of excess collateral if any that is held by PJM is not at the request of PJM and therefore is not applicable in the cost-benefit analysis

PJM maintains 20% in excess collateral on average

- This is not at the request of PJM and is recallable by the market participant so we can't count on it in extreme scenario cases

Moving the 97% CI will cause customer costs to increase in aggregate

- In aggregate the collateral decreases 16% (when moving from status quo to 97% CI)
- Entities that serve customers have the option to convert ARR to FTRs
- ARR credits are still used as an offset to the IM requirement of self-scheduled FTRs
- Individual account impacts will be driven by riskiness of positions carried

We appreciate the strong member support to move to the historical simulation initial margin methodology

We remain very concerned with using a 95% confidence interval

PJM strongly recommends a confidence level of 99% over time, but can support a starting CI of 97%

Appendix



Energy Related Commodities Up Across the Board YTD

Commodity	Price	YTD
<u>Crude Oil</u> USD/Bbl	\$ 76.96	57.28%
<u>Natural gas</u> USD/MMBtu	\$ 5.53	115.83%
<u>Gasoline</u> USD/Gal	\$ 2.31	62.29%
<u>Heating oil</u> USD/Gal	\$ 2.43	62.44%
<u>Propane</u> USD/Gal	\$ 1.50	132.35%
<u>Uranium</u> USD/Lbs	\$ 40.45	31.76%
<u>Methanol</u> CNY	\$ 3,487.00	44.33%
<u>TTF Gas</u> EUR	\$ 108.19	465.76%
<u>UK Gas</u> GBp	\$ 273.45	384.84%
<u>Coal</u> USD/T	\$ 230.00	185.71%
<i>As of 10.07.21</i>		

- S&P Global ratings reported on Oct. 4, 2021, that it had hiked the assumed gas price it will use for credit decisions by 29% to 4.50/MMBtu for the rest of 2021 and added \$0.50/MMBtu to its price deck for 2022 and 2023, moving these assumptions up to \$3.50/MMBtu and \$3.00/MMBtu, respectively. Ratings made its first call on 2024 prices with a \$2.75/MMBtu assumption
- Global LNG prices have rallied, with the Platts Japan Korea Marker up 540% from October 2020. Increase has been predicated on extreme weather, weak global gas and LNG production, and subsequent low gas storage in Europe
- Coal supply shortages are pushing prices for the fuel to record highs and laying bare the challenges to weaning the global economy off one of its most important—and polluting—energy sources according to WSJ

- EIA data shows US NG storage level to be 15.4% lower than same time last year as the season tends towards winter
- Industrial consumption of natural gas expected to increase into 2022



[SEE ALL NATURAL GAS REPORTS](#)

Weekly Natural Gas Storage Report

for week ending September 24, 2021 | Released: September 30, 2021 at 10:30 a.m. | Next Release: October 7, 2021

Working gas in underground storage, Lower 48 states

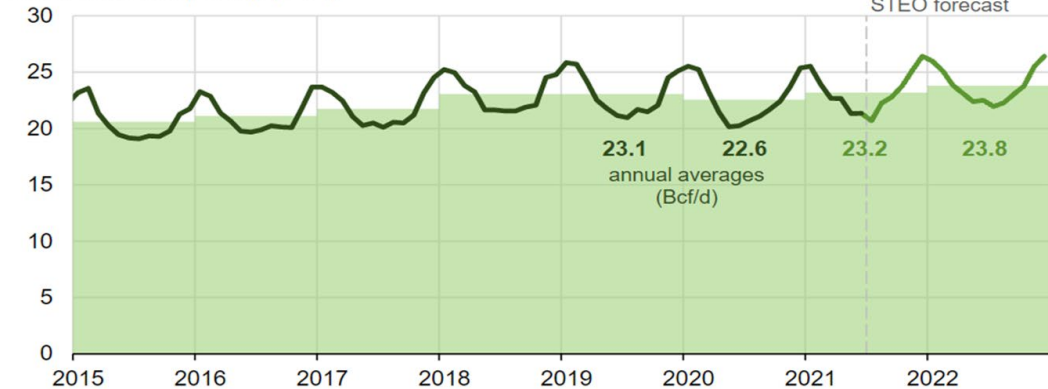
[Summary text](#) [CSV](#) [JSON](#)

Region	Stocks billion cubic feet (Bcf)				Historical Comparisons			
	09/24/21	09/17/21	net change	implied flow	Year ago (09/24/20) Bcf	% change	5-year average (2016-20) Bcf	% change
East	779	751	28	28	869	-10.4	831	-6.3
Midwest	934	904	30	30	1,030	-9.3	958	-2.5
Mountain	201	196	5	5	230	-12.6	211	-4.7
Pacific	243	240	3	3	315	-22.9	298	-18.5
South Central	1,013	990	23	23	1,301	-22.1	1,085	-6.6
Salt	239	228	11	11	357	-33.1	266	-10.2
Nonsalt	774	762	12	12	943	-17.9	819	-5.5
Total	3,170	3,082	88	88	3,745	-15.4	3,383	-6.3

SEPTEMBER 24, 2021

EIA expects increasing consumption of natural gas by U.S. industry in 2021 and 2022

U.S. monthly industrial natural gas consumption (Jan 2015–Dec 2022)
billion cubic feet per day (Bcf/d)



Source: U.S. Energy Information Administration, *Natural Gas Monthly* and *Short-Term Energy Outlook (STEO)*