

# **Wave of LNG Exports to Exacerbate Structural Reliability and Price Volatility Risks for U.S. Natural Gas & Electricity Markets**

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**Policy to Insulate the US Market from LNG Impacts Needed**

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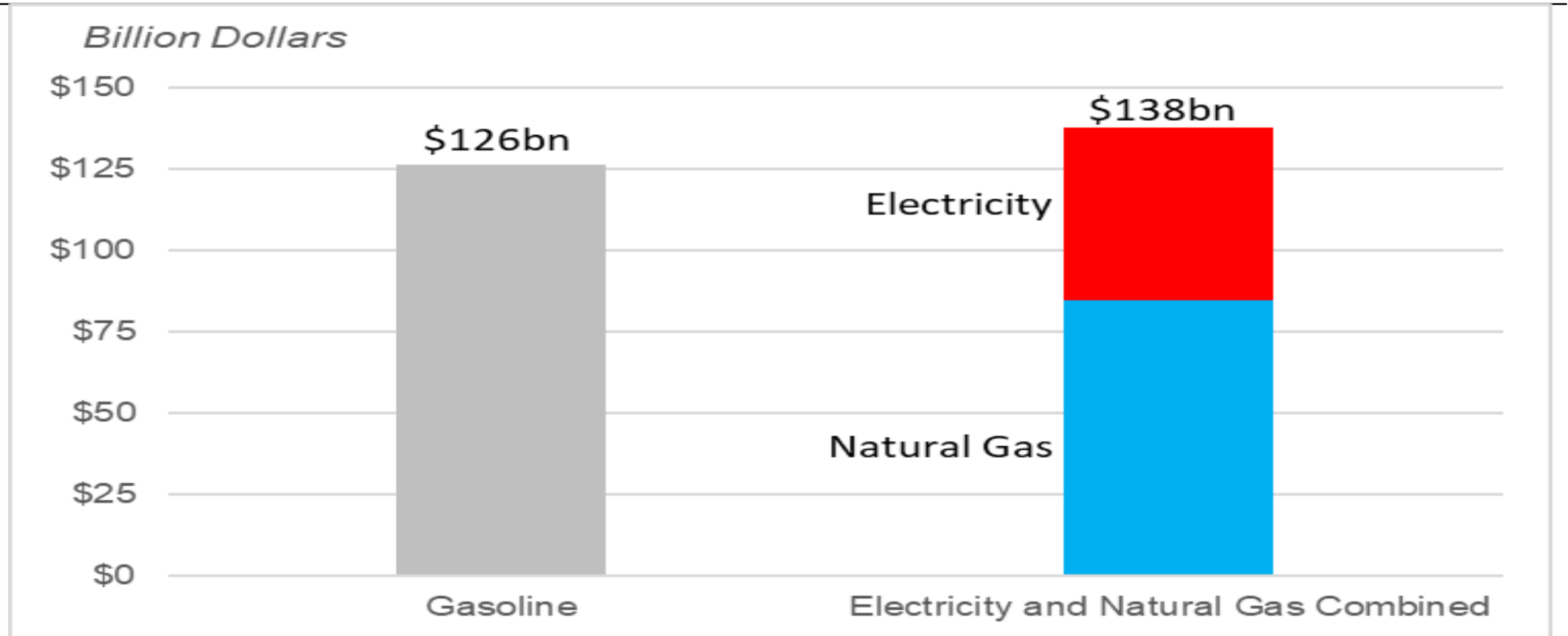
**Industrial Energy Consumers of America**

# LNG Exports Impact Domestic Reliability and Price for Natural Gas and Electricity

- LNG increases demand during peak winter demand periods which reduces inventory and increases prices for both natural gas and electricity.
- LNG consumers are countries. Can pay any price. “Market Power”.
- LNG exports imports global price volatility.
- Volatility is compounded by lack of storage and pipeline capacity and decreasing balancing mechanisms.
- Impacts US manufacturing the most. First to be curtailed for both gas and electricity. Price sensitive industries. Affordable natural gas is our only global competitive advantage.
- Higher LNG exports will lift (link) U.S. prices to the higher int’l LNG prices.

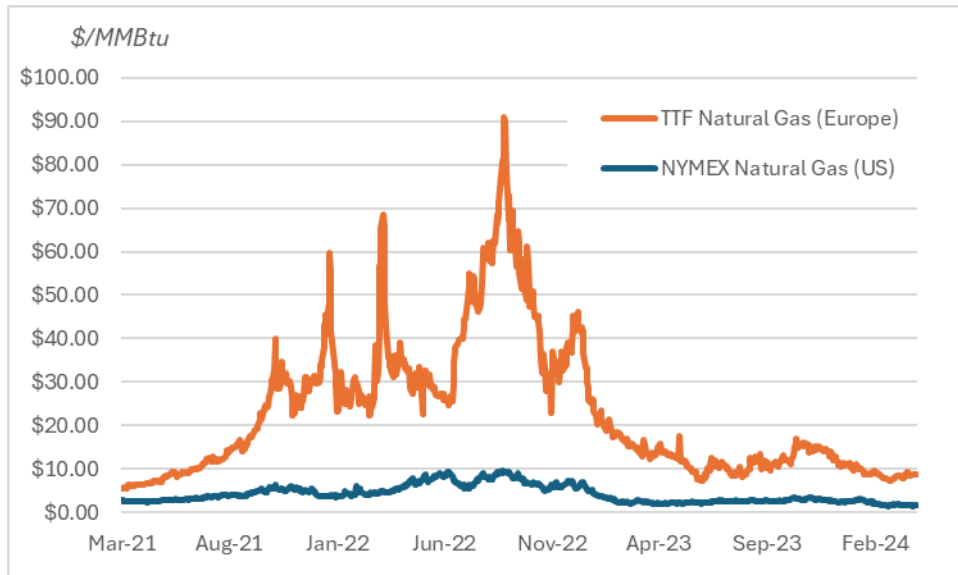
# LNG Impacts Natural Gas and Electricity

## “Larger National Impact than Gasoline Market”



# LNG Demand Additions Lead to Importing Global Price Volatility

US Prices Could Have Followed European Prices Steeply Higher in 2022  
If More LNG Export Capacity Existed

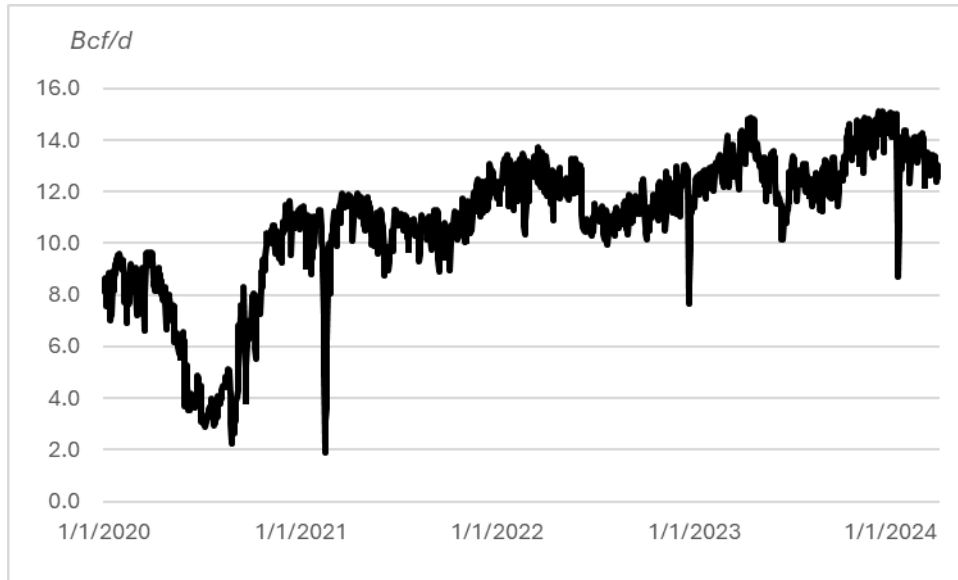


Source: Bloomberg

- Tremendous demand growth in variable LNG exports leads to importing global price volatility
- If the US had more export capacity in 2022, (during the start of the Russia/Ukraine war) domestic prices could have risen significantly higher (European prices were ten-fold NYMEX pricing)
  - High natural gas prices in Europe are leading to a permanent decline in European industrial demand.
- Foreign buyers are often nationalized oil, utility and SOEs companies that can pay higher prices than domestic industry. **“Market power”**
- Unplanned outages, forced maintenance, hurricane disruptions can all enhance market instability and risk premiums for natural gas prices

# LNG Demand Additions Amplify Structural Risks for Spiking Natural Gas and Electricity Price Volatility

Massive Swings in LNG Demand Already Apparent, 2020-2024 (Bcf/d)



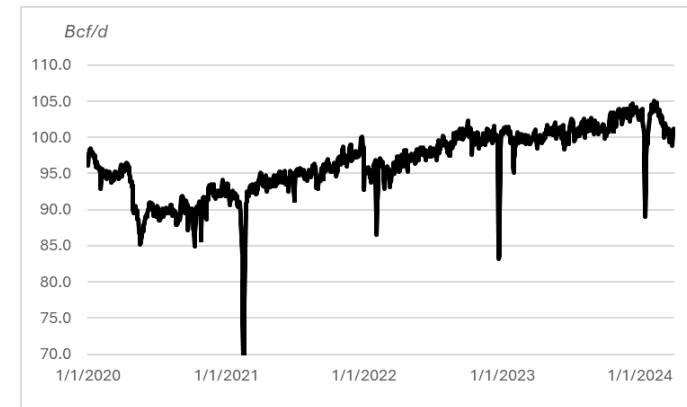
Source: Bloomberg

- A tidal wave of LNG demand exports – potentially representing more than 25% of total demand for US within 5 years, could destabilize prices for domestic industrial, commercial, and residential end users
  - 14.3 Bcf/d of LNG export capacity already operating
  - 12.0 Bcf/d under construction
  - 48.5 Bcf/d of DOE-authorized non-Free Trade Agreement capacity
- LNG demand also growing from new projects in Canada and Mexico to enhance risks
- Tremendous demand growth in variable LNG exports **will lead to importing global price volatility**
  - Unplanned outages, forced maintenance, hurricane disruptions can all enhance market instability and risk premiums for natural gas prices
- Natural gas known historically as a volatile commodity: Surge in LNG exports significantly increase volatility risks for both gas and power

# Rising Impacts of Global Warming Boost Market Instability for Natural Gas and Power

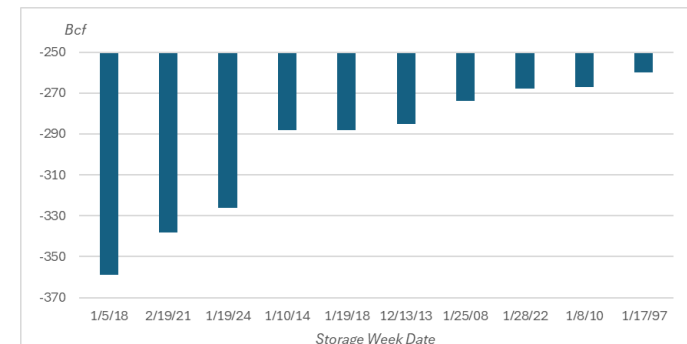
- Growing supply instability from producers leads to severe natural and power price spikes
  - Natural gas has already had production drop 10 Bcf/d or more in four consecutive winters
- The five largest weekly EIA storage report draws in the past 30 years were all in the last decade
- Extreme weather increases stress on natural gas market to compensate
- Layering in LNG demand and extreme weather globally compounds price risks

Daily US Dry Gas Production, 2020-2024 (Bcf/d)



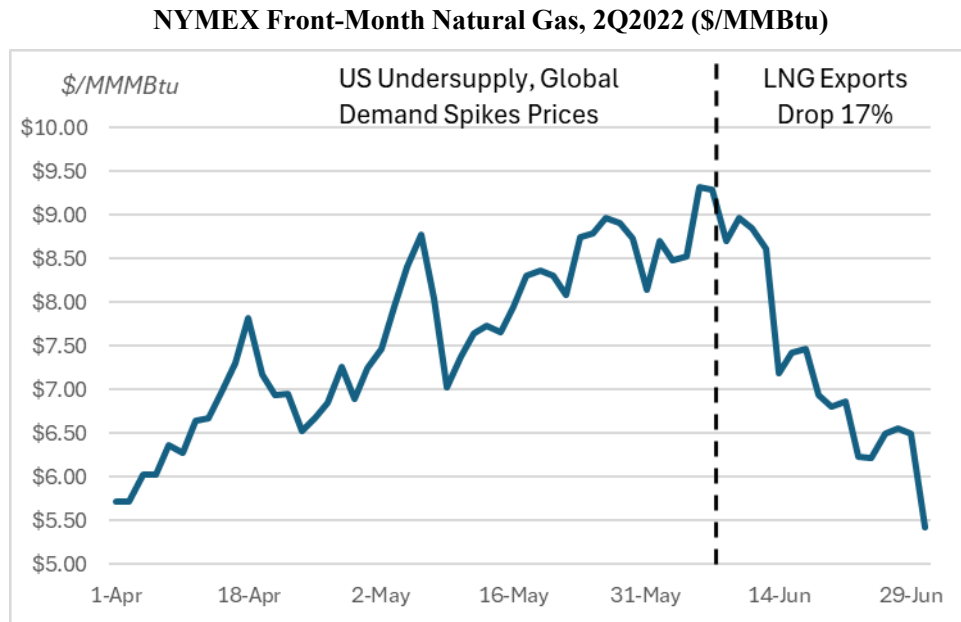
Source: Bloomberg

Largest Weekly EIA Draws Since 1994 (Bcf)



Source: EIA

# Real-World Example of LNG's Impact to Prices: June 2022

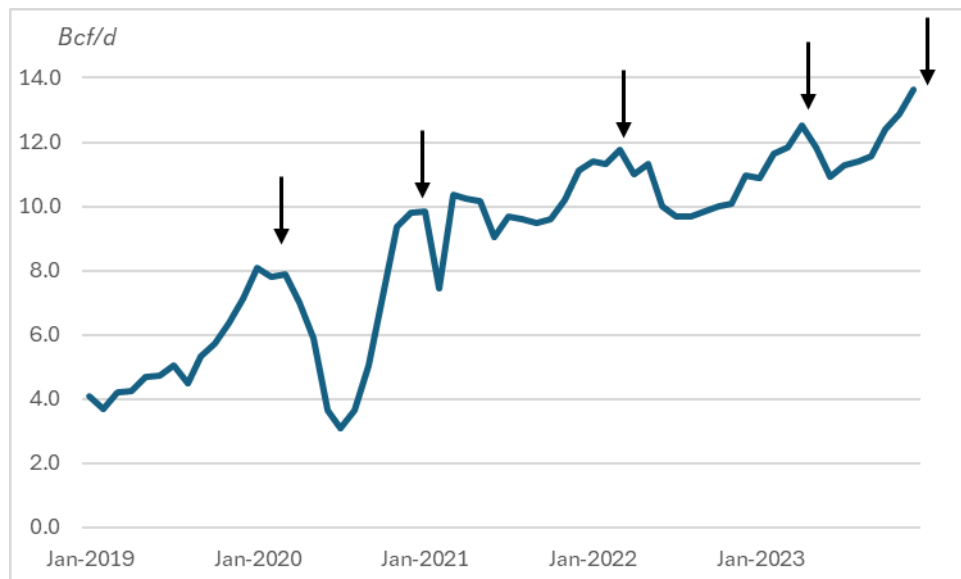


Source: Bloomberg, IECA

- Freeport LNG explosion and forced outage on June 8, 2022 offers a natural experiment of price impacts from LNG reductions
  - Prices were rising until the explosion. US LNG exports dropped 17% as a result of the outage
- NYMEX front-month natural gas plunged from \$9.29/MMBtu pre-outage on June 7<sup>th</sup> to \$5.42/MMBtu by June 30<sup>th</sup> – a decline of 42%

# LNG Exports are Highest During Winter Months When We Have Our Highest Demand

LNG Exports by Month Over Past Five Years, 2019-2023 (Bcf/d)



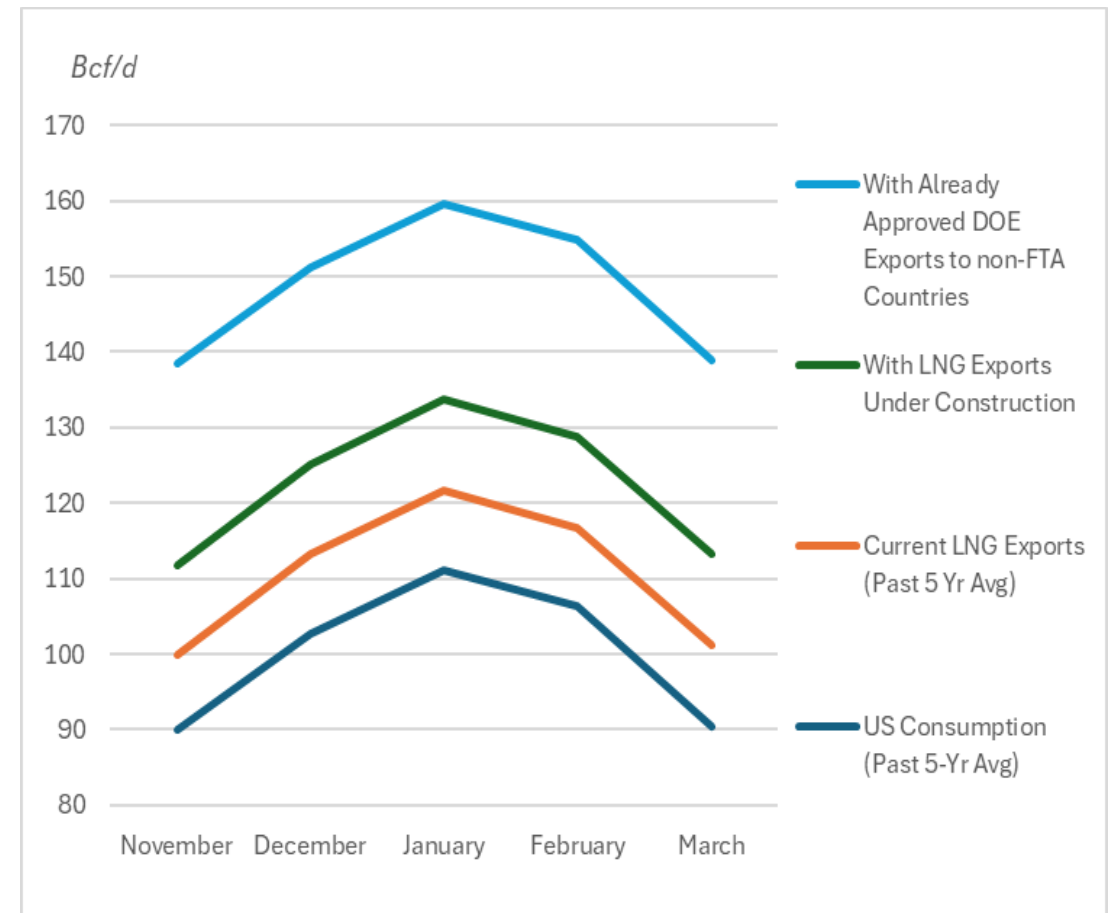
Source: EIA

- LNG demand highest during winter months when global demand peaks
  - Maintenance planned for off-season – amplifying seasonality
  - Variability to grow alongside exports
- Pro-cyclical demand enhances domestic price volatility risks
  - Increases infrastructure strains

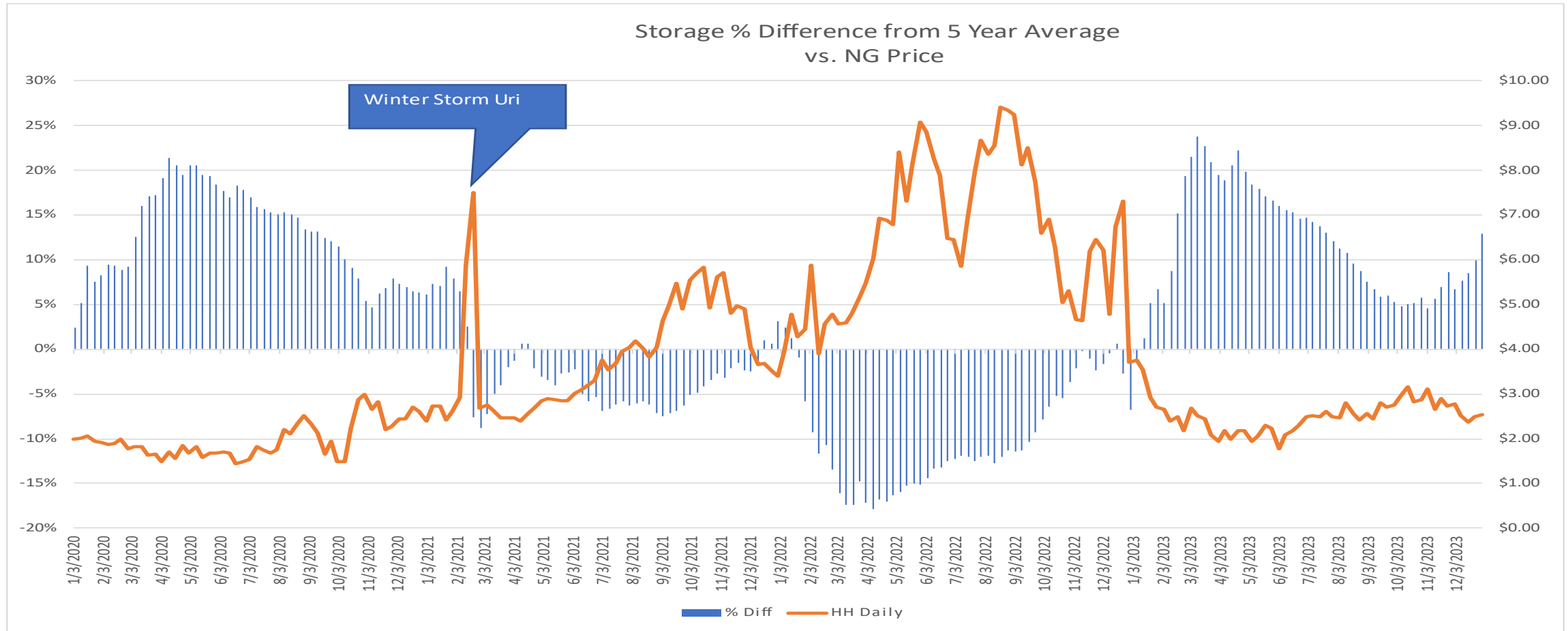


# Already-Approved LNG Exports Lift Normal Winter Demand 34% Above Current Records

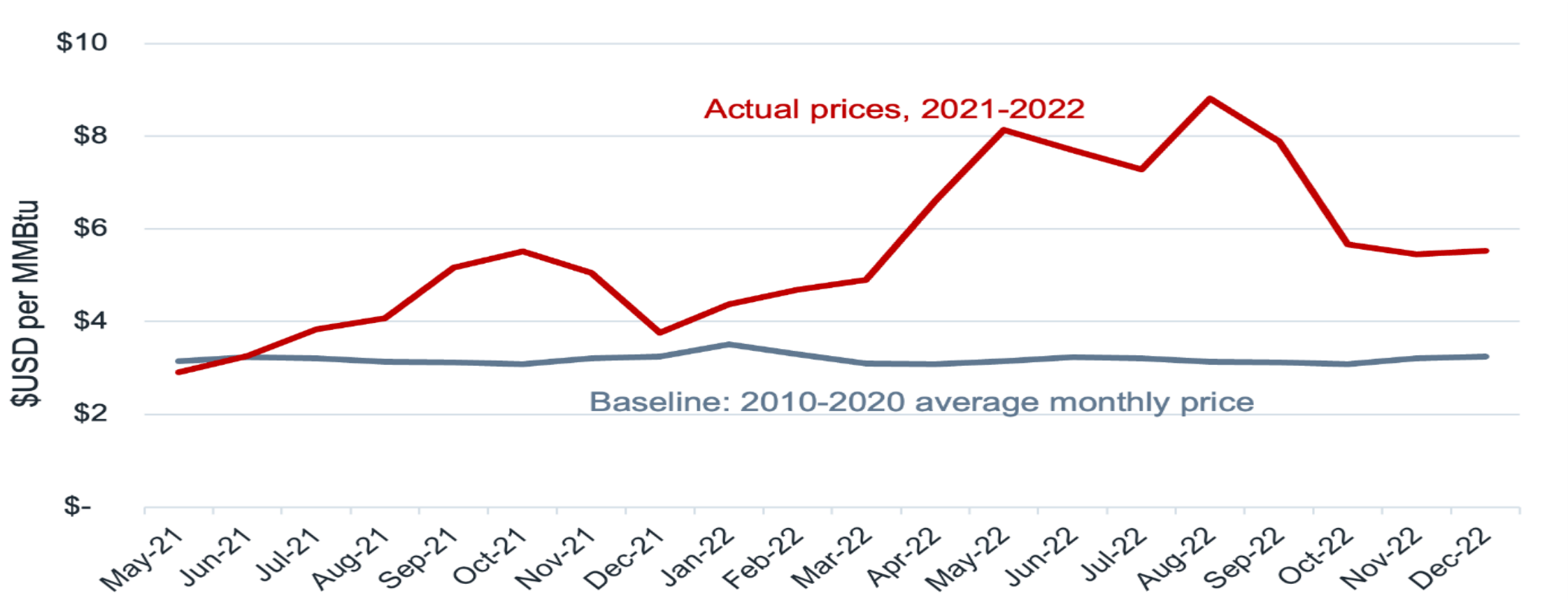
- With all LNG exports already approved by the DOE for non-FTA countries, average winter demand could soar 34%
- LNG exports are insensitive to price



# Real Example: Low Inventories Resulted in High Prices. -Increasing LNG Demand Amplifies Volatility-

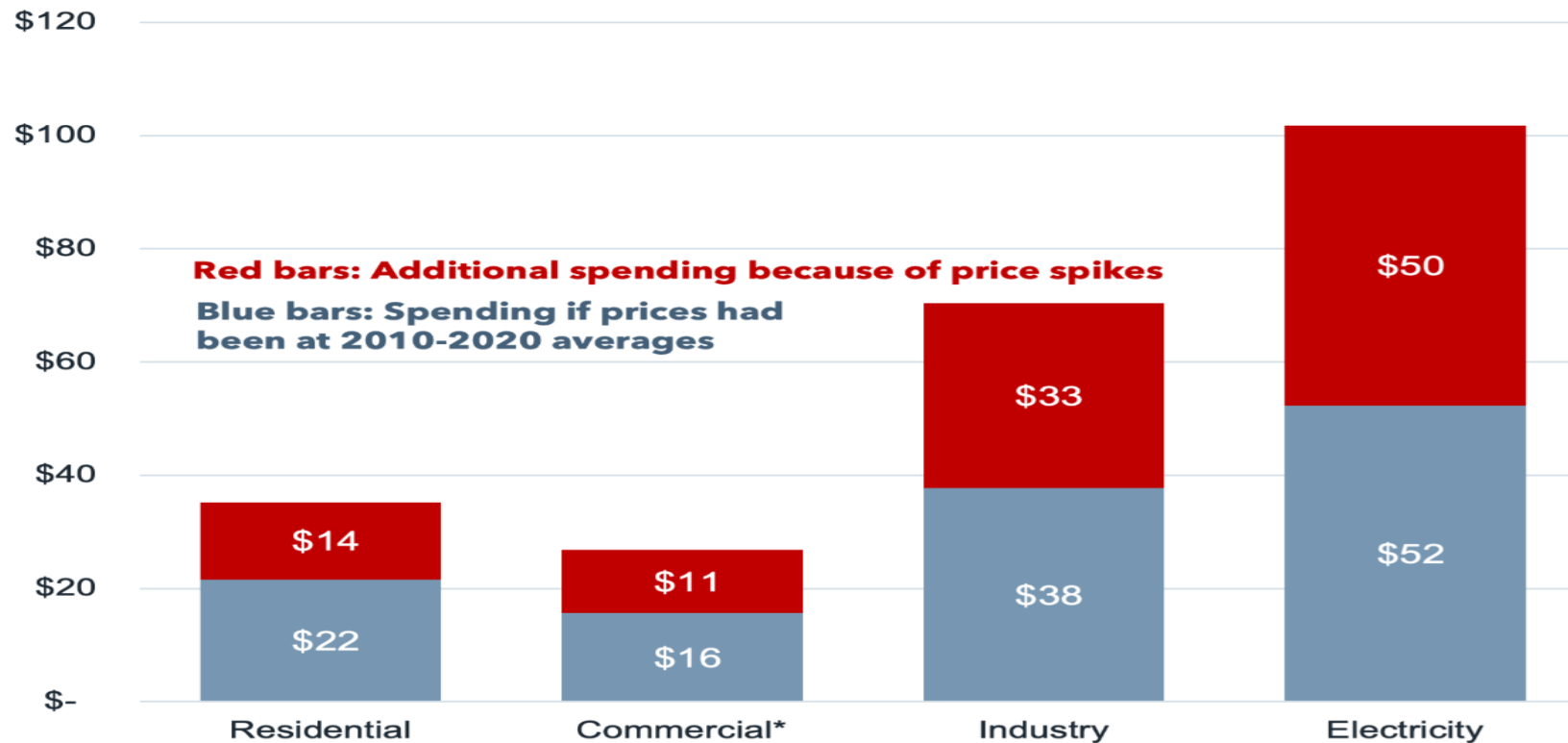


# Low Inventories Resulted in High Natural Gas Prices



Source: U.S. Energy Information Administration.

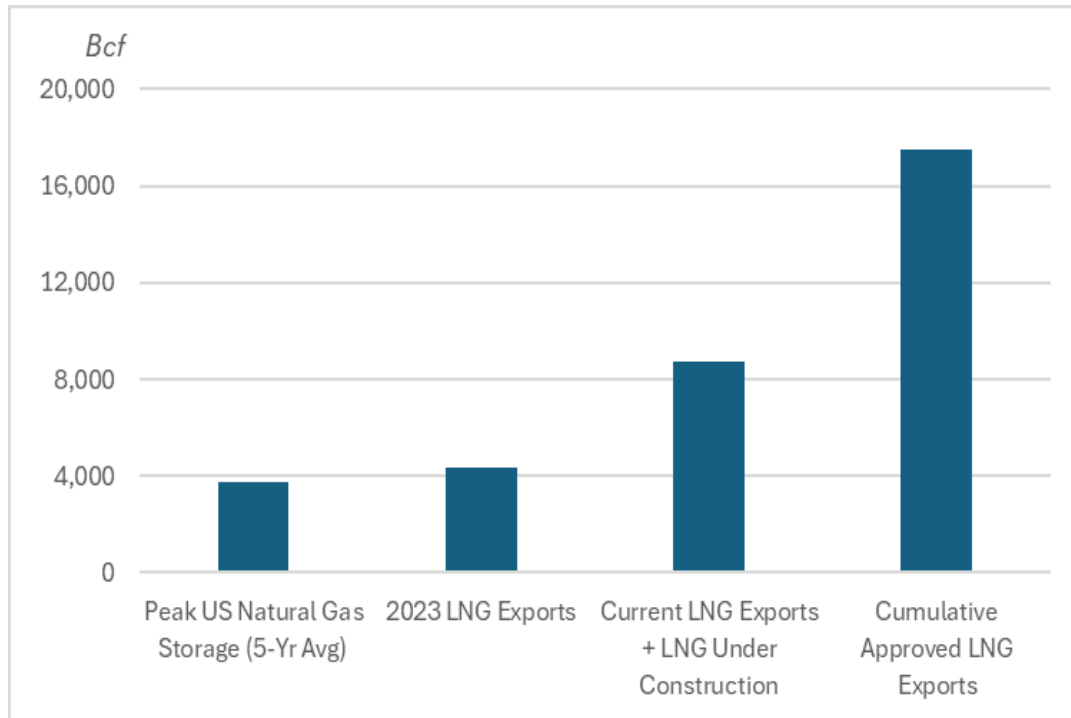
# Low Inventory Resulted in Electricity Price Spikes (2021-2022 vs Average of 2010-2020)



Source: IEEFA estimates based on U.S. Energy Information Administration data.  
\* Commercial includes vehicle usage.

# Already-Approved LNG Exports Dwarf Storage Inventories to Destabilize Market

Peak US Natural Gas Storage vs. LNG Exports in 2023, With LNG Exports Already Under Construction, and Cumulative DOE-Approved LNG Exports (Bcf)

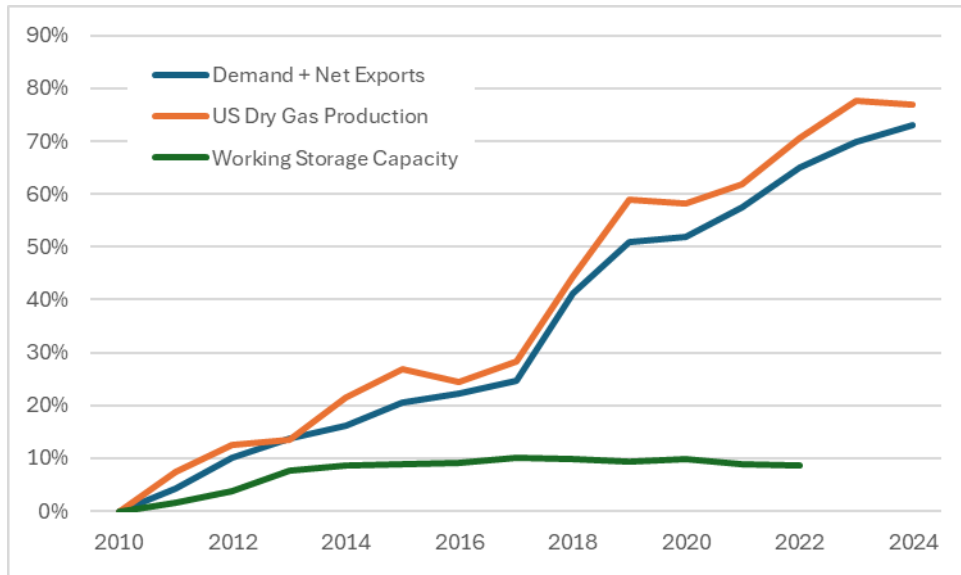


Source: EIA, DOE

- Cumulative approved LNG exports could equal more than 17,500 Bcf per year
- This is more than 4.6 times peak US storage – destabilizing the current equilibrium of low prices benefitting consumers

# Storage Availability Unable to Keep Up With Supply/Demand

Changes in Natural Gas Demand, Production, and Working Storage Capacity, Since 2010 (%)



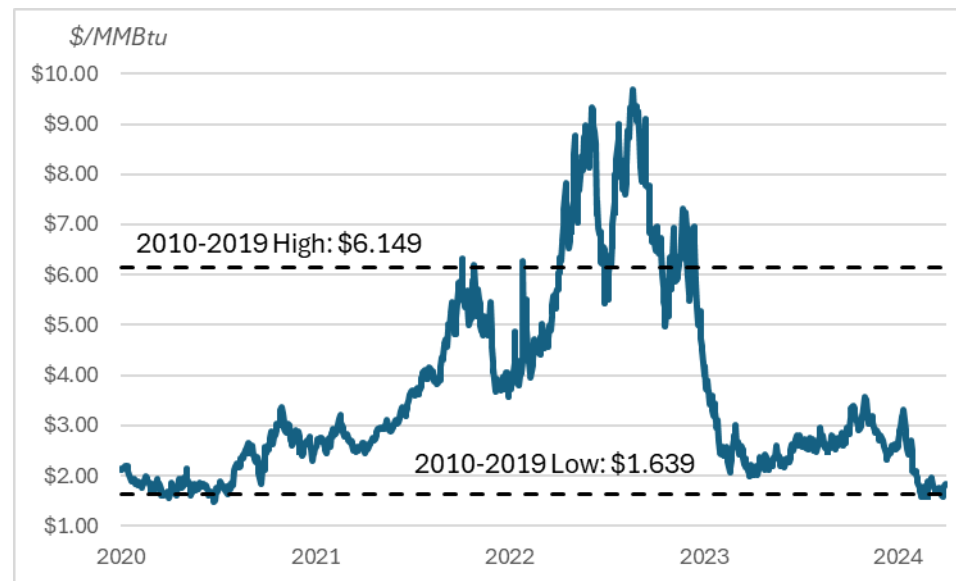
Source: EIA

- Natural gas storage is shrinking relative to the size of growth in supply and demand since 2010
- Inability to balance supply and demand via storage leads to massive price collapses (as in 2020, 2024) or price spikes (as occurred in 2022)

# Market Balancing Mechanisms Already Failing Prior to New Wave of LNG Demand Gains

- Natural gas price volatility has been soaring since 2020:
  - Higher highs 57% above 2010-2019 highs
  - Lower lows 16% lower
- Market-balancing mechanisms weakening:
  - Storage capacity shrinking relative to market size
  - Coal retirements reducing “shock absorbers”
- Adding huge market stressors
  - LNG exports result in importing global market volatility
  - More extreme weather
- **Could result in huge adverse economic effects absent safeguards**
  - Natural gas producers specifically warn of reduced industrial output from price spikes

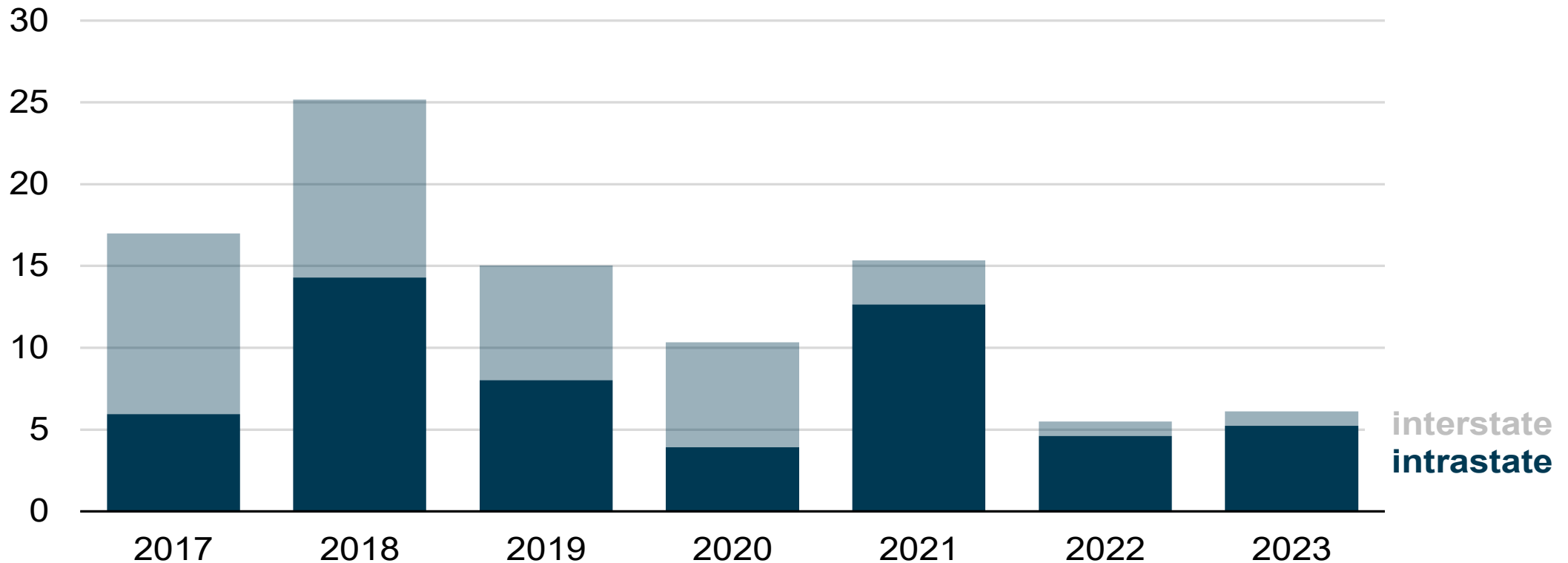
NYMEX Front-Month Natural Gas, 2020-2024 vs. Prior Decade High/Low (\$/MMBtu)



Source: Bloomberg

# Pipeline Additions Not Keeping up with Demand

Annual U.S. natural gas pipeline capacity additions by type (2017–2023)  
billion cubic feet per day



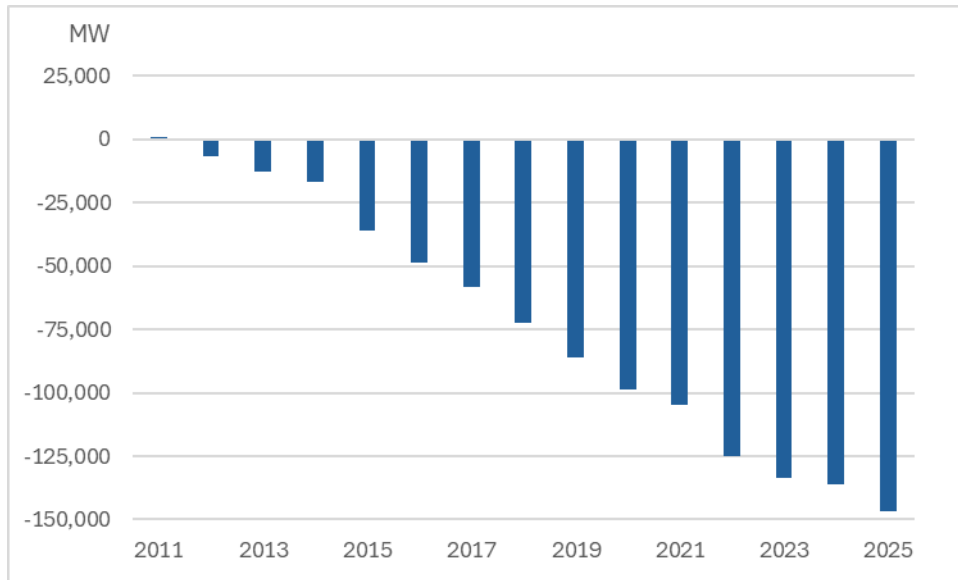


# Manufacturers Cannot Compete with LNG 20 Year Contracts for Pipeline Capacity

- LNG exports have locked up most of the remaining pipeline capacity.
- Manufacturers can not do 20-year firm pipeline capacity. Reasons: Variable demand; costs. (price sensitive)
- Most are on non-firm pipeline capacity. If on firm capacity, only 1-2 years .

# Coal Retirements Increase Natural Gas & Electricity Volatility

Massive Coal Retirements Reduce Price Sensitivity of Natural Gas Demand, 2011-2025 (Gigawatts)



Source: EIA

- During the 2010s, natural gas and coal fuel-switching capped natural gas prices
  - If natural gas was oversupplied and prices dipped, the natural increase from coal-to-gas stabilize prices
  - If natural gas was undersupplied and prices rose, the market switched for gas-to-coal and provided a “release valve”
- With almost 150,000 MW of coal retirements, however, this natural stabilization mechanism is ineffective
- Now, if the natural gas market is undersupplied, there is no “release valve” and prices can explode higher

# Producers Telling Investors The Same Story

- “Gas demand in the US has jumped 50% since 2010, while pipeline and storage capacity have increased just 25% and 10% respectively...That leaves the market prone to wild price swings” –Toby Rice, CEO EQT (Bloomberg, March 19<sup>th</sup>)
- The dozens of coal plants that have closed in the US in recent years means that coal retirements are “...no longer an effective lid on prices. So you can see prices run through that and unfortunately start seeing industrial demand destruction driving price.” –Toby Rice, CEO EQT (Bloomberg, March 19<sup>th</sup>)
  - Producers are publicly warning that natural gas prices will run high enough that it will force reduced US industrial output during periods of scarcity

# What if Production Does Not Increase Another 48 bcf/d?

- Since 2010, the US has increased dry natural gas production a cumulative 45 Bcf/d.
- If production does not increase, natural gas and electricity prices will increase and industrial demand destruction occurs.
- Production declined in 3 of last 9 years.
- Pipeline constraints limit production increases.
- Oil and gas industry consolidation underway emphasizing profit over volume.

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