

Manufacturing Energy Challenges 2024/2025

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Industrial Energy Consumers of America

U.S. Manufacturing

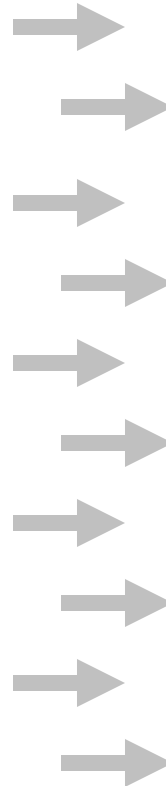
- Consumes 26% of U.S. natural gas
- Consumes 25% of U.S. electricity
- 400 thousand facilities
- 13 million employees
- \$2.9 trillion – value added
- >10.0% of U.S. GDP
- \$102,629 average annual employee wages

Energy Price Sensitive Products are Essential for Economic Growth

Building Block Industries

- Chemicals
- Plastics
- Fertilizer
- Glass / ceramics
- Steel
- Aluminum
- Pulp and Paper
- Cement
- Food Processing

Convert
to



Commercial & Consumer Products

- Food Production
- Automobiles
- Consumer goods
- Construction
- Medical Supplies
- Energy Production
- Appliances
- Household products
- Defense industries
- Telecommunication



IECA Mission

“Reduction & Avoidance of Energy Costs”

1. Affordability and reliability of electricity and natural gas:
2. Regulations that impact competitiveness: EPA PM_{2.5}; Clean Power Plan)
3. Climate/sustainability: Carbon Border Adjustment Mechanism (CBAM); Cap & Trade.

Status of U.S. Energy

Status of U.S. Energy

(Policy failures-not market failures)

1. Accelerating electricity prices-driven by escalating transmission costs.
 2. Accelerating electricity demand/PJM+generation cost increases. Accelerating 'peak' demand!
 3. Declining electricity reliability.
 4. Decade low natural gas prices.
 5. Regional shortages of natural gas pipeline capacity.
 6. Accelerating LNG exports - a long-term threat to manufacturing when inventories are low.
- **Mfg'ing: Always the first to be curtailed!**

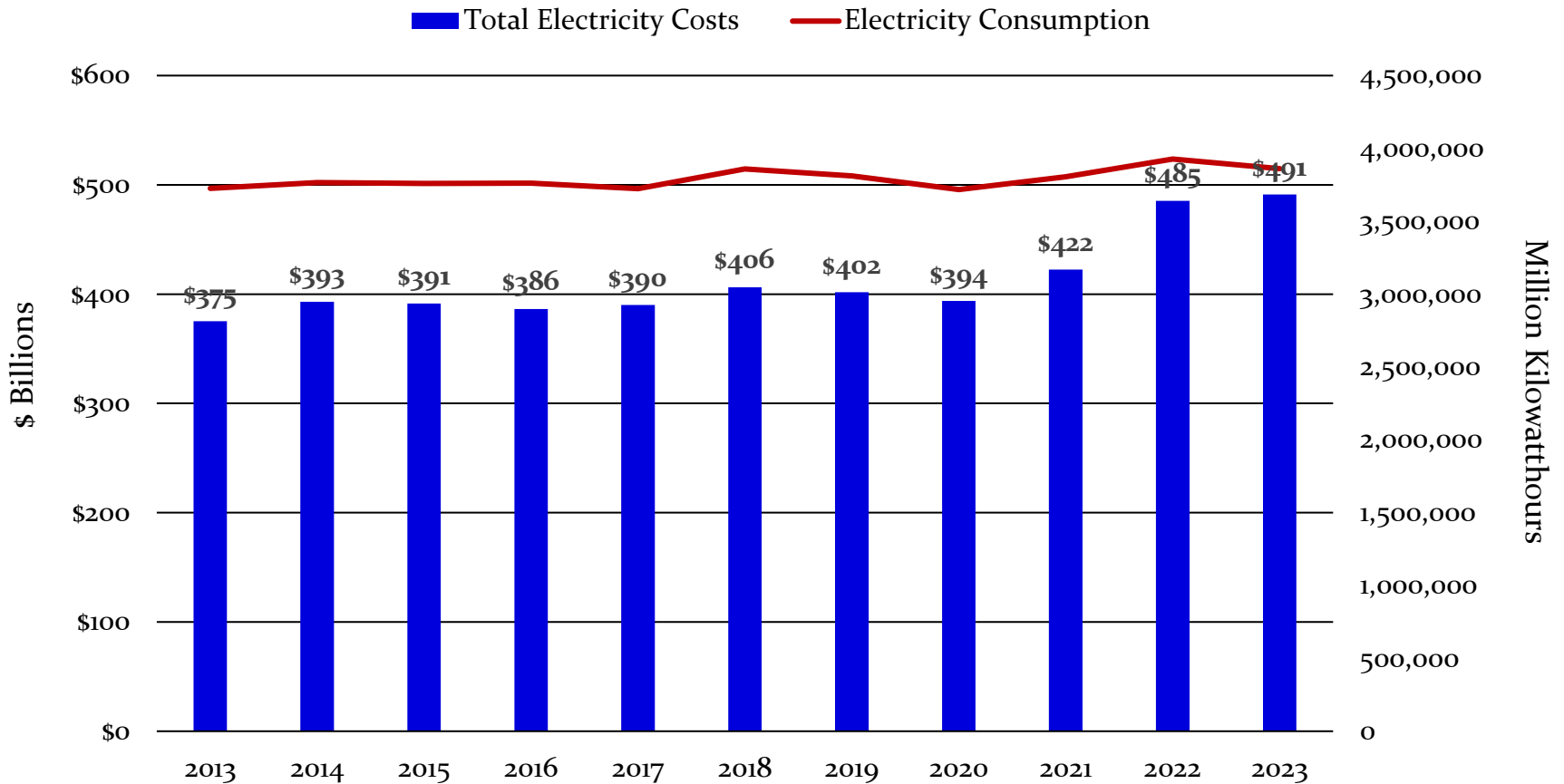
Top IECA Policy Issues 2024/2025

IECA Policy Issues 2024/2025

1. Competitive bidding of new electricity transmission projects/FERC incentives. (FERC) (states)
2. Declining electricity reliability. (FERC) (states)
3. Insufficient growth of natural gas pipeline capacity. (FERC)
4. Energy permitting reform legislation. (Congress)
5. Accelerating LNG exports. Impact to NG/Elect when inventories are low. (DOE) (LNG Inventory Policy) (Retain NGA consumer protections)
6. EPA NAAQS PM_{2.5} standards/ Clean Power Plan (EPA/Courts)
7. Climate: Carbon Border Adjustment Mechanism (CBAM); Cap & Trade. (Congress/Adm)

Electricity

U.S. Electricity Costs Increased 24.8% in Three Years While Demand was Flat



Average % Retail Electricity Rate Increases: 2021 vs 2024 (EIA)

1. NV: +38.2 (RPS)
2. ME: +38 (RPS)
3. CA: +36.1 (RPS)
4. HI: +30.3 (RPS)
5. MD: +29.6 (RPS)
6. CT: +28.4 (RPS)
7. PA: +27.7 (RPS)
8. DE: +27.7 (RPS)
9. RI: +27.4 (RPS)
10. OR: +27 (RPS)
11. NC: +26.5 (RPS)
12. MA: +24.1 (RPS)
13. WV: +23.6 (RPS)
14. IL: +21.6 (RPS)
15. VA: +20.1 (RPS)

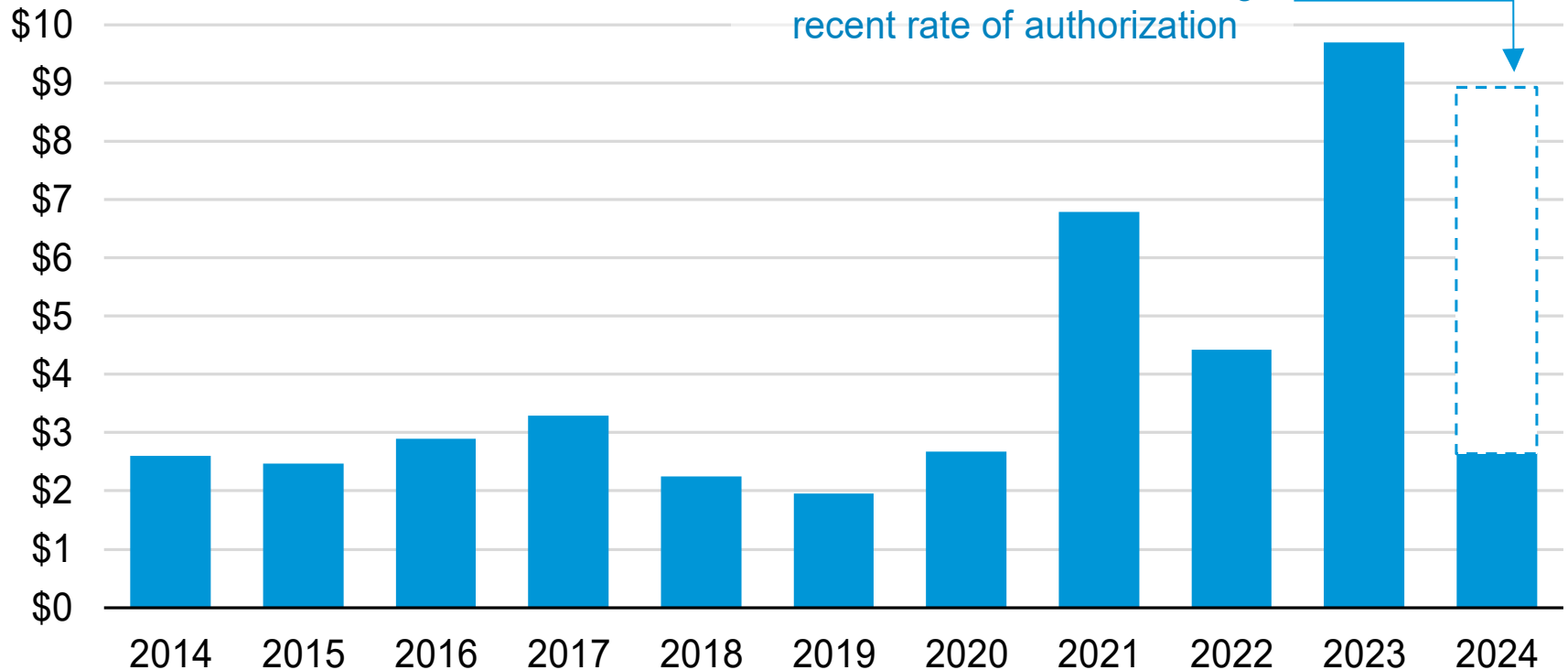
Average % Retail Rate Increase 2021 vs 2024 (EIA)

- Top 10 states: +31% (all have RPSs)
- Top 20 states: +26% (18 of 20 have RPS)
- Top 25 states: +24% (21 of 25 have RPS)

Escalating U.S. Electric Rates in Regulated Markets

Annual U.S. net rate increases (2014–2024)

real billion U.S. dollars



Transmission Spending is Accelerating

1. Driven by Biden/state RPS decarbonization goals.
2. Inflation Reduction Act: Profit motive to build renewable generation that are dependent upon new transmission.
3. Princeton University Study: U.S. will need to spend **\$2.1 trillion on transmission by 2050 or \$80 billion per year!**

Five Causes of Accelerating Electricity Prices

Policy failure – not market failure

1. Only 5% of new transmission lines are competitively bid.
2. Incumbent monopoly utility profit motive: 11-13% ROE for 40 yrs.
3. Little or no state, RTO/ISO oversight as to whether a transmission project is needed, and that the cost is ‘just and reasonable’.

Cause of Accelerating Electricity Prices

4. FERC's failure to enforce of Order 1000.
5. FERC awarding financial transmission incentives to utilities.
 - Incentive for a utility to join an RTO.
 - Construction Work In Progress (CWIP).

10 FERC Utility Transmission Incentives

1. RTO participation ROE Adder
2. Construction Work in Progress Incentive
3. Hypothetical Capital Structure Incentive
4. Accelerated Depreciation
5. Abandoned Plant Incentive
6. Deferred Cost Recovery
7. Single Issue Ratemaking
8. Performance-Based Ratemaking
9. Advanced Technologies Incentives
10. (New) Cybersecurity Incentives

Utilities avoid competition by:

1. Building transmission projects that avoid FERC jurisdiction. Not regionally planned.
 2. Advancing state legislation that creates ‘right of first refusal’ (ROFR) laws that protects their monopoly to build new transmission.
- 2023/24 ROFRs: IA, WS, MO, IL, IN, MS, MI, OK, KS.

PJM Transmission Costs Have Increased From 9.4% to 28% of the Electricity Price in 10 Years -Flat Demand-

Year	Transmission Cost	Total Wholesale Electricity Price	Percent Change
2013	5.00	52.96	9.4%
2014	5.75	70.37	8.0%
2015	6.93	55.89	12.0%
2016	7.63	47.49	16.0%
2017	8.58	49.64	17.0%
2018	8.84	60.00	14.7%
2019	9.52	48.98	19.0%
2020	11.03	43.41	25.0%
2021	11.72	64.07	18.0%
2022	11.40	82.96	13.0%
2023	14.09	49.87	28.0%

PJM Transmission Costs Increase 182% in 10 Years

PJM Transmission costs – going up

PJM transmission cost increases

Transmission cost increase - 10 years:

2013 - 2023 = 182%

Transmission cost increase - 5 years:

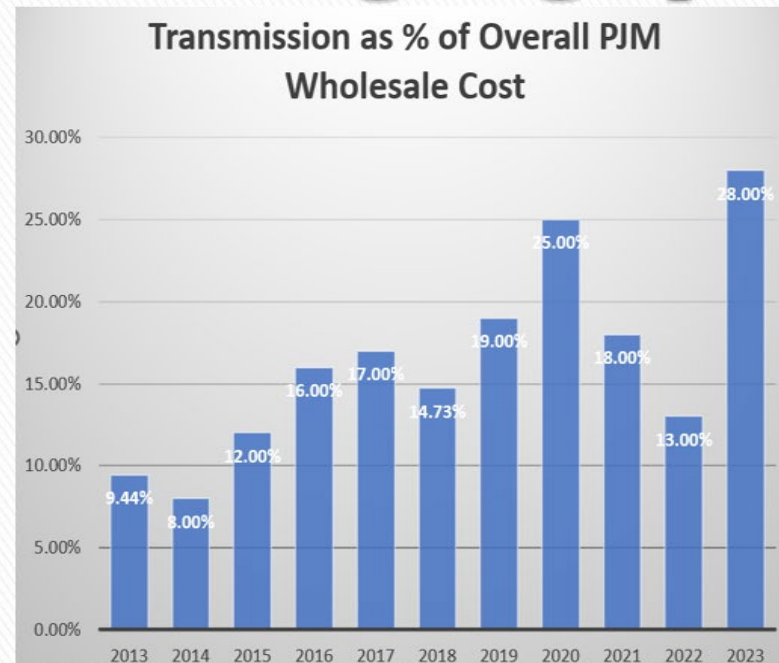
2018 - 2023 = 59%

Transmission cost increase - 3 years:

2020 - 2023 = 28%

Transmission cost increase - 1 year:

2022 - 2023 = 13%



*The data is based on the PJM Markets Report, presented during PJM MC Information webinars. (Approximately 10 times a year.). The information was compiled using the "PJM Wholesale Cost" Bar chart slide. The data is annual data except for 2023, which is year-to-date information.

PJM Network Integration Transmission Service Rates (\$/MW-Yr)

Zone	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Effective
AECO	\$40,731	\$36,810	\$ 50,96	\$53,775	\$56,171	\$45,693	\$66,741	\$79,876	\$91,559	\$103,398	June
AEP	\$41,438	\$41,438	\$56,991	\$59,818	\$65,923	\$80,306	\$95,598	\$110,857	\$123,925	\$125,467	January
APS	\$17,895	\$17,895	\$17,895	\$17,895	\$17,895	\$17,895	\$13,930	\$18,162	\$16,760	\$17,115	January
ATSI	\$37,014	\$43,391	\$45,058	\$54,689	\$55,185	\$57,482	\$66,399	\$67,421	\$66,479	\$87,624	January
BGE	\$25,237	\$27,285	\$32,851	\$35,762	\$29,860	\$31,311	\$40,962	\$45,531	\$46,400	\$55,851	June
ComEd	\$31,470	\$35,544	\$34,392	\$34,516	\$33,116	\$34,280	\$37,749	\$36,069	\$39,796	\$38,531	June
Dayton	\$13,296	\$13,296	\$13,296	\$13,296	\$12,561	\$14,456	\$19,203	\$18,410	\$18,687	\$32,782	January
Duke	\$17,039	\$19,881	\$20,055	\$24,077	\$25,840	\$32,143	\$35,136	\$37,718	\$40,717	\$45,820	June
Duquesne	\$38,880	\$50,695	\$47,892	\$51,954	\$49,200	\$53,072	\$51,001	\$60,851	\$63,330	\$63,699	June
Dominion	\$42,902	\$41,245	\$47,376	\$52,457	\$47,471	\$54,914	\$61,729	\$62,645	\$64,053	\$68,235	January

Competition is the Solution

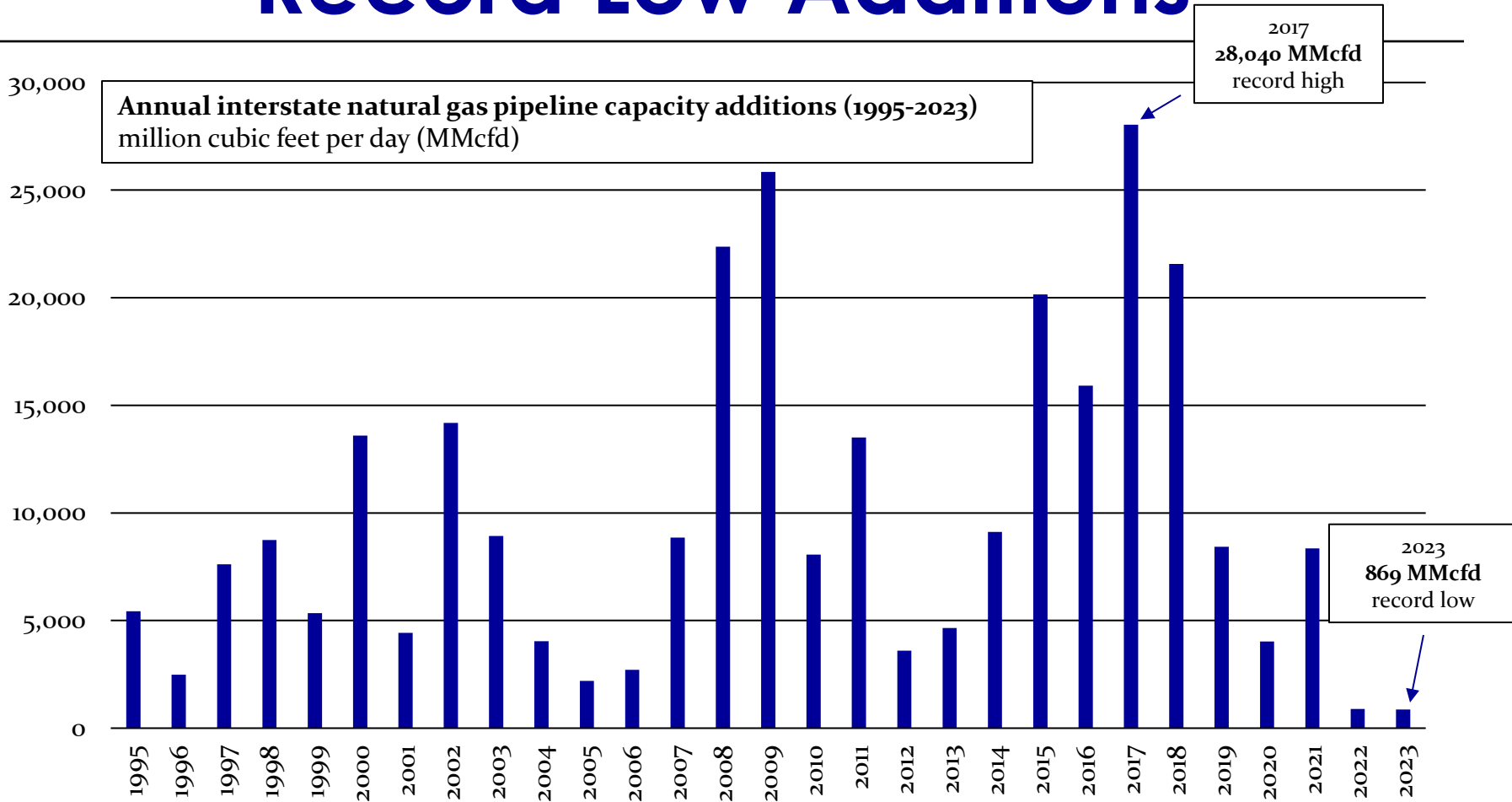
- Competitive bidding of transmission projects has been shown to lower costs by up to 40%. Many projects save 25-30%.
- **Accountability increases:** firm price; lower ROE; deadlines for project completion; penalties for not completing the project on time; regular reporting/oversight.
- W/o competition, monopoly utilities do not have an incentive to reduce costs.

FERC Issued the ‘Transmission Planning’ Rule: Order 1920

- Instead of advancing competition, it created a new loophole called “Right-Sizing” that lets the utilities continue to avoid competition.
- IECA has appealed the Order.

Natural Gas

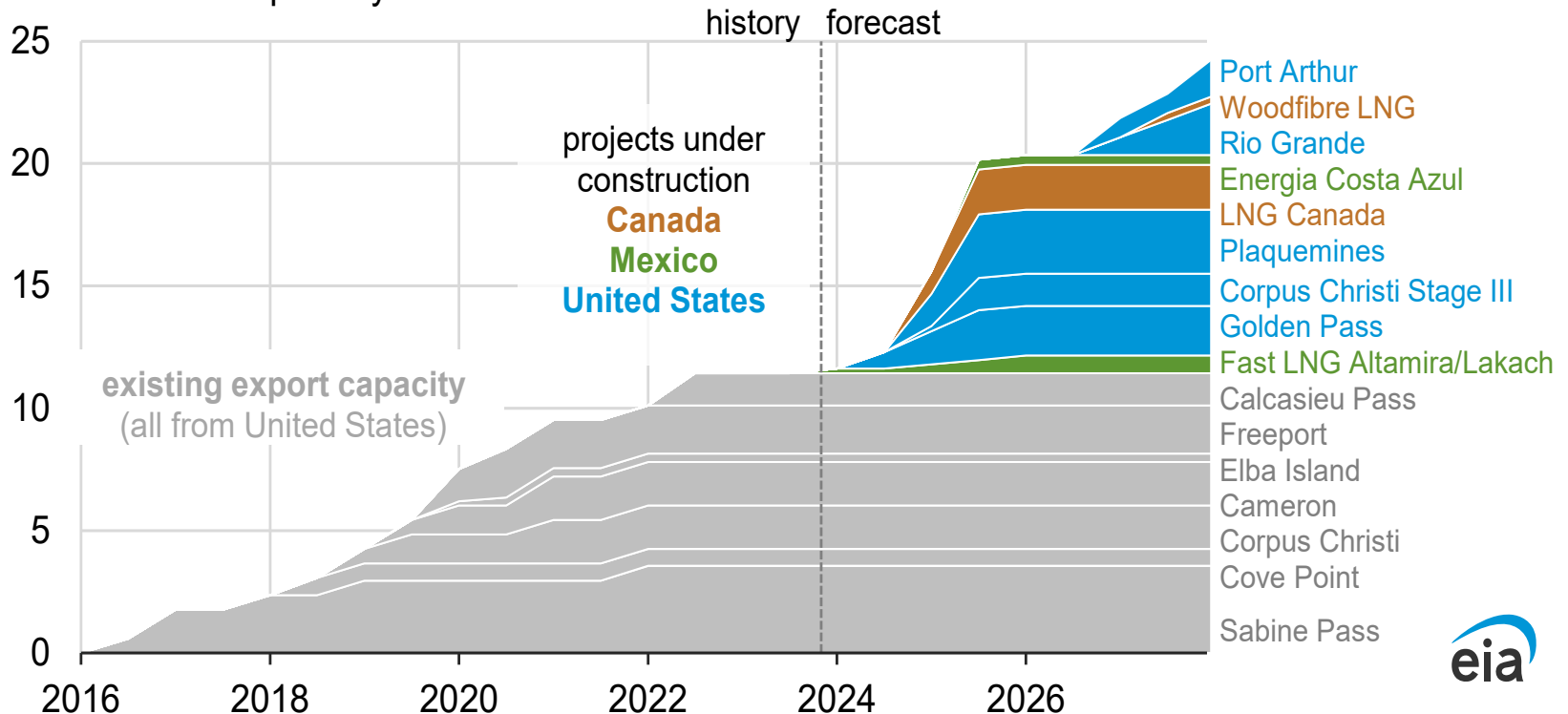
Interstate Pipeline Capacity Record Low Additions



Source: Pipelines, U.S. Energy Information Administration (EIA), <https://www.eia.gov/naturalgas/data.php#pipelines>

LNG Exports Increase 92% by 2027

Annual North American liquefied natural gas export capacity by project (2016–2027)
billion cubic feet per day



Status of U.S. LNG Export Capacity (FERC)

1. Operating capacity: 14.23 Bcf/d (*15% of net supply)
2. DOE approved, under construction: 16.93 Bcf/d (*17.8%)
3. DOE approved, not under construction: 12.28 Bcf/d (*12.9%)
4. Pending Applications: 7.26 Bcf/d (*7.6%)
5. Projects in Pre-filing: 3.50 Bcf/d (*4.7%)
 - TOTAL: 54.04 Bcf/d ** (*56.8%)

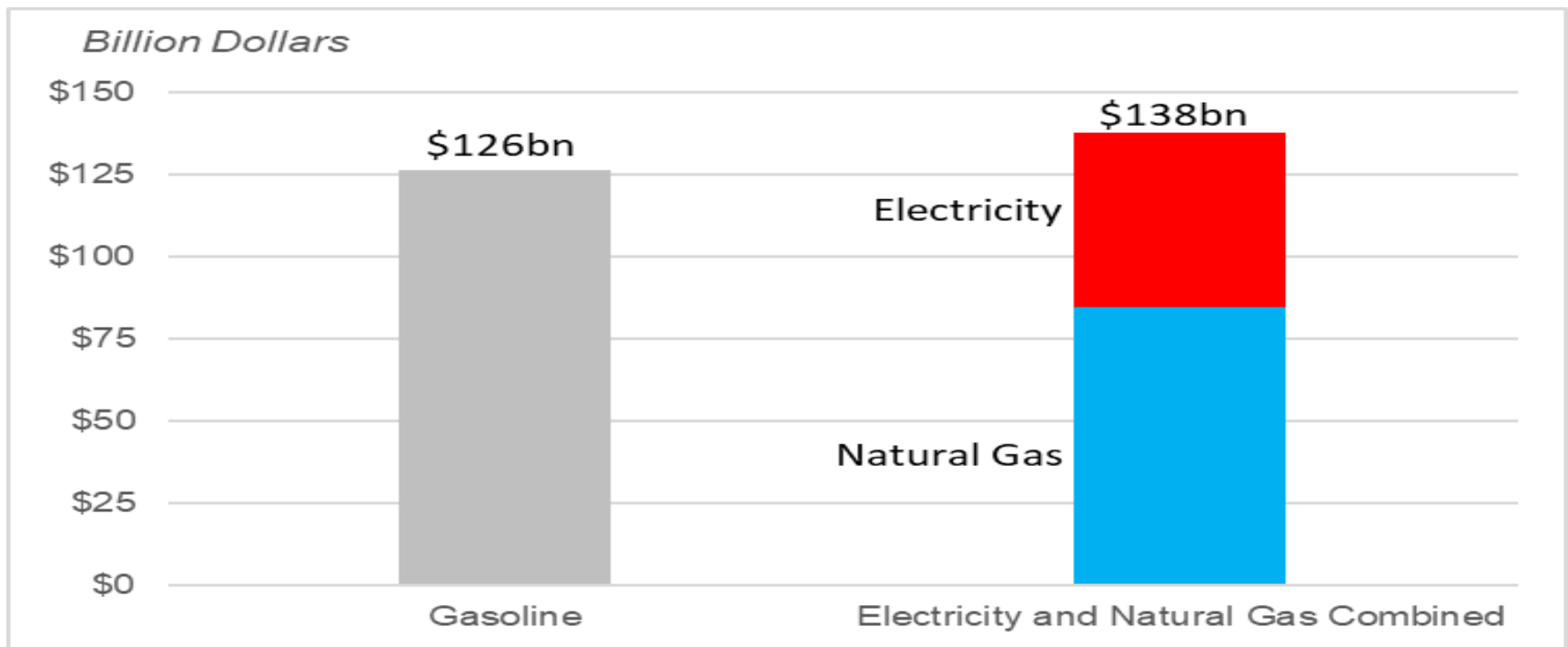
* Percent of net supply (DOE approved 48% of net supply.)

➤ Only 10 percent of US gasoline is exported

*EIA. In 2023, total U.S. gross production was 103.8 Bcf/d. Total net supply of 95.1 Bcf/d (minus lease and plant fuel, pipeline and distribution losses).

** [U.S. LNG Export Terminals – Existing, Approved not Yet Built, and Proposed | Federal Energy Regulatory Commission \(ferc.gov\)](#) 6_25_24

-LNG Impacts Natural Gas and Electricity- “Larger National Impact than the Gasoline Market”



Nine LNG Export Impacts

1. LNG exports increase peak winter demand. Problematic when US inventories are low. (Occurs 51% of the time. EIA)
2. LNG consumers are countries. Will pay any price to get the NG. Insensitive to price. “Market Power”.
3. U.S. consumers and power generators do not have an alternative for natural gas. 75 of 127 million households and over 300,000 factories.
4. Unlike gasoline, NG cannot be imported if we are short supply.
5. LNG exports decrease U.S. energy independence, threaten reliability of NG and electricity markets.

Nine LNG Export Impacts

6. Higher LNG volumes risk linkage to the higher priced int'l market. (Australia)
7. LNG 20-year contracts. Guarantees supply to foreign countries and reduces supply to U.S. consumers. Shifts supply and price risk from country buyers to U.S. consumers.
8. 20-year LNG contracts decrease available pipeline capacity availability to domestic consumers. Mfg'ers cannot compete for the dwindling capacity.
9. Manufacturers are the first to be curtailed for both natural gas and electricity. (millions dollars/day impacts)

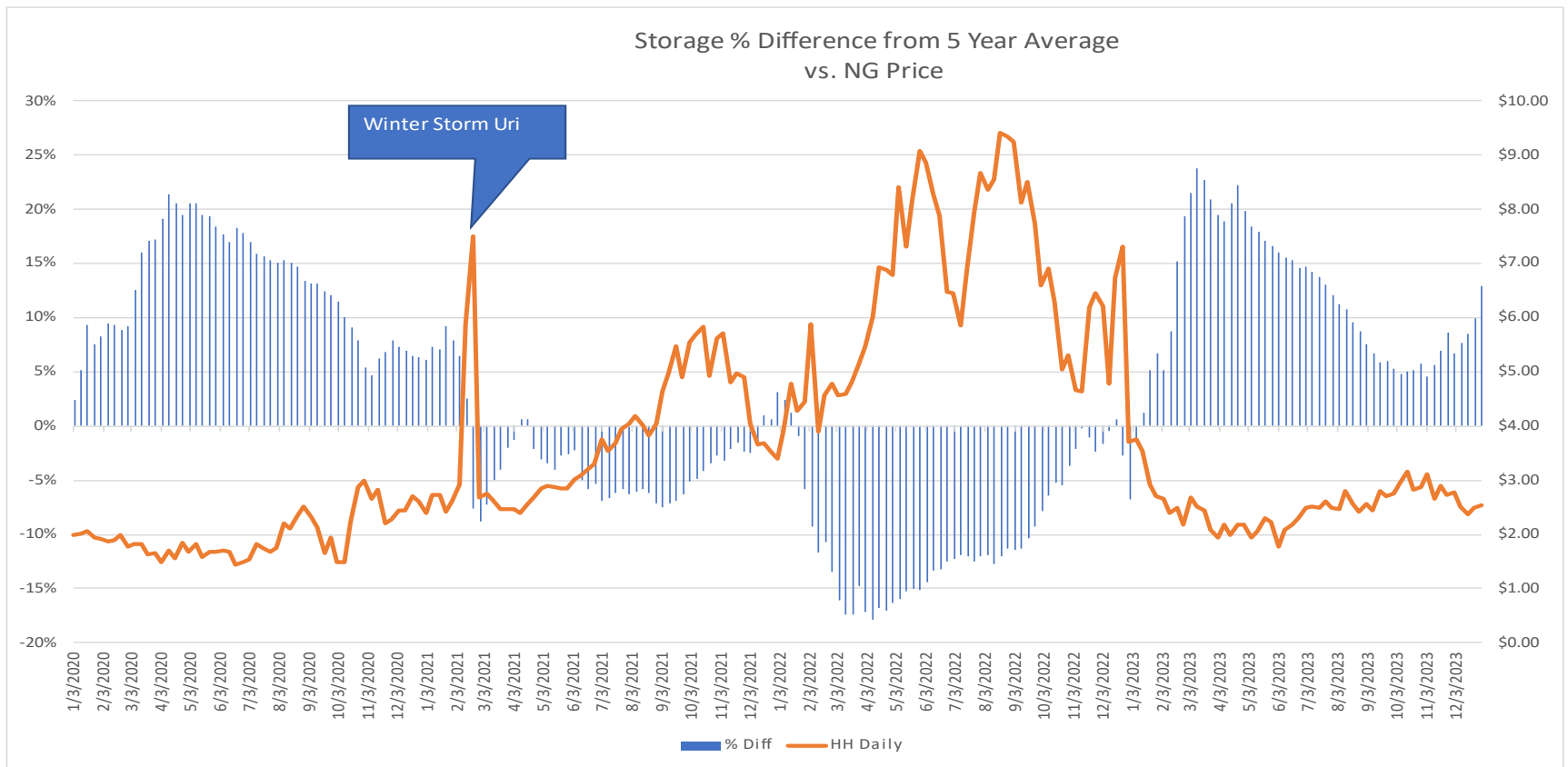
American Security Project

October 2024 Report: “The U.S.-China LNG Export Dilemma”

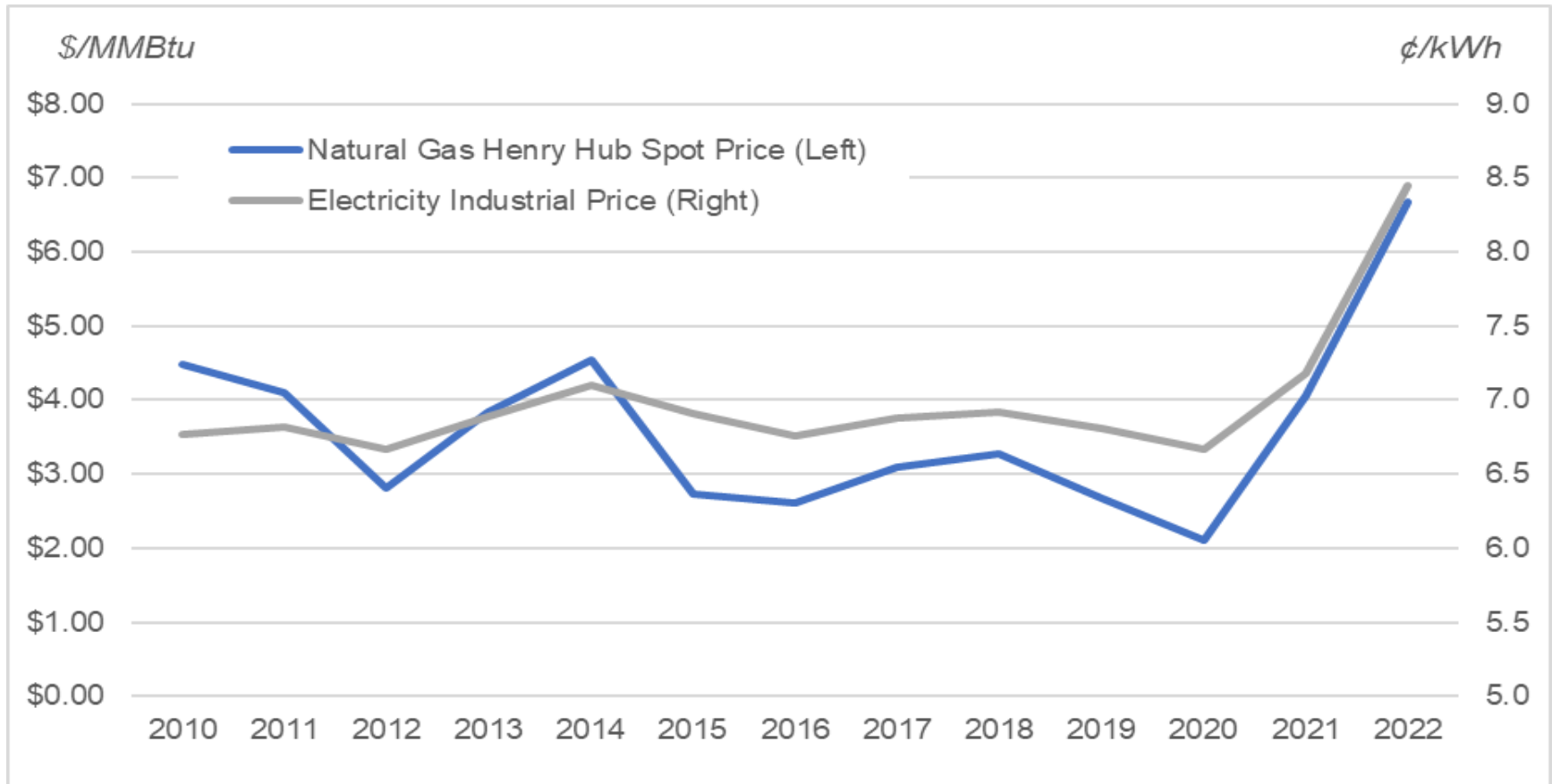
- “China is accelerating its predatory resale of low-cost US LNG.”

Real Example: Low Inventories Result in High Prices

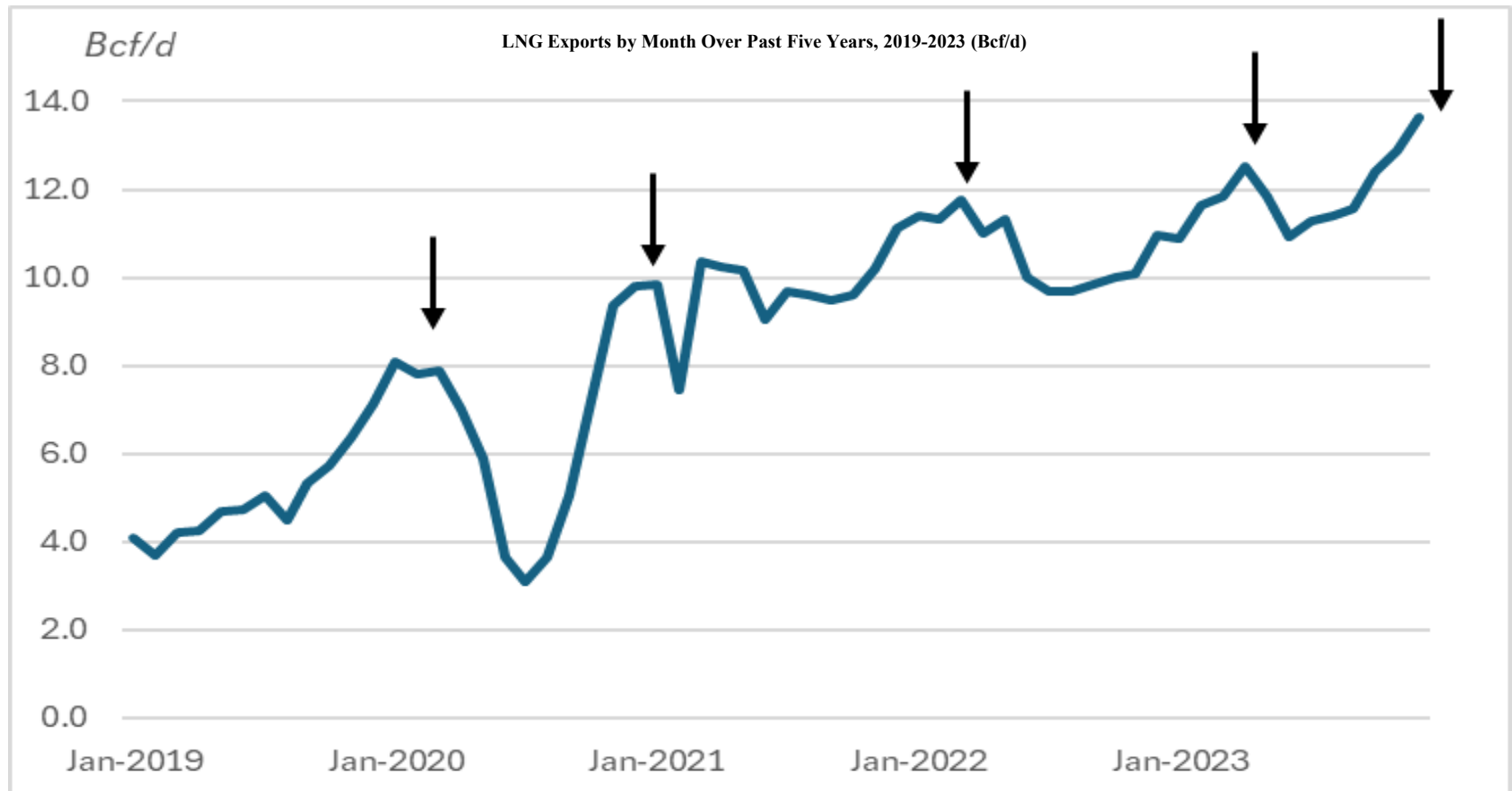
- Winter of 2021/2022 -



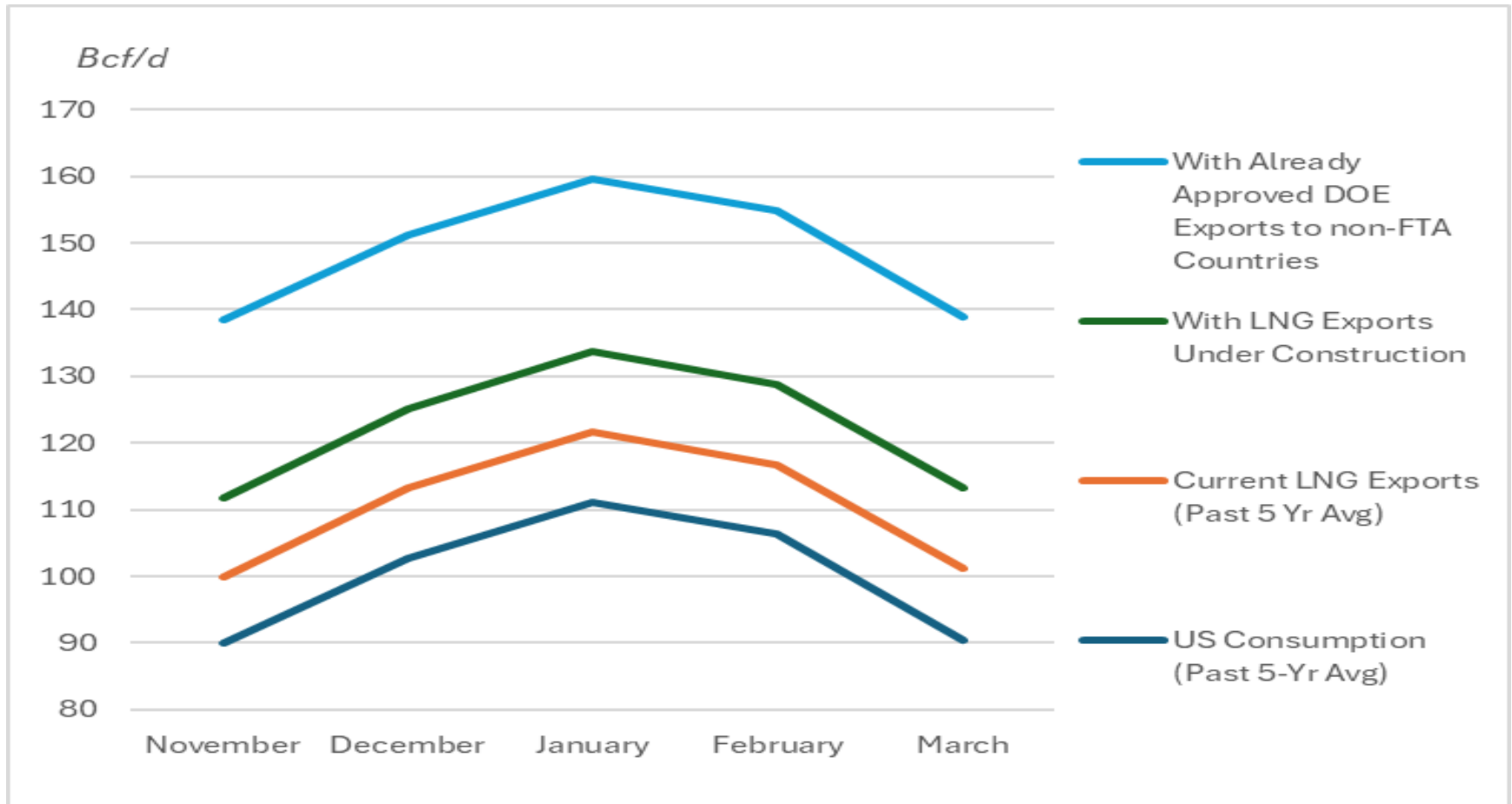
During Winter of 2021/2022, Monthly Average NG Prices Rose from \$2 to \$8.40 MM Btu. Electricity Prices Increased 30%



LNG Exports Highest Demand is During Winter Months (EIA)



Already-Approved LNG Exports Lift Peak Winter Demand 34% Above Current Records (+50 Bcf/d)



Insulate U.S. Market from Impacts of LNG Exports

- “IECA LNG Inventory Policy”
- **Policy Solution:** DOE authority under the Natural Gas Act.
 - DOE: Issue orders to LNG facilities.
 - In the event that U.S. inventories fall 5% below the previous year, DOE has the option to require export volume reductions to NAFTA countries.
 - Assures NG and electricity reliability, national security and supply chains. Same objective as the SPR.
 - **Oil and gas industry advance legislation to remove NGA consumer protections.**

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