

The Truth
The Whole Truth
Nothing But the Truth

Laird Dyer
Denver CO, August 2022

The Truth: All of the Data

**The Whole Truth: No Withholding of any
Contradictory Information**

**Nothing But the Truth: Nary an Opinion or
Narrative Unsupported by Data**

Biden Declares War on US Oil & Natural Gas Producers

“No more subsidies for (the) fossil fuel industry.

No more drilling on federal lands.

No more drilling, including offshore.

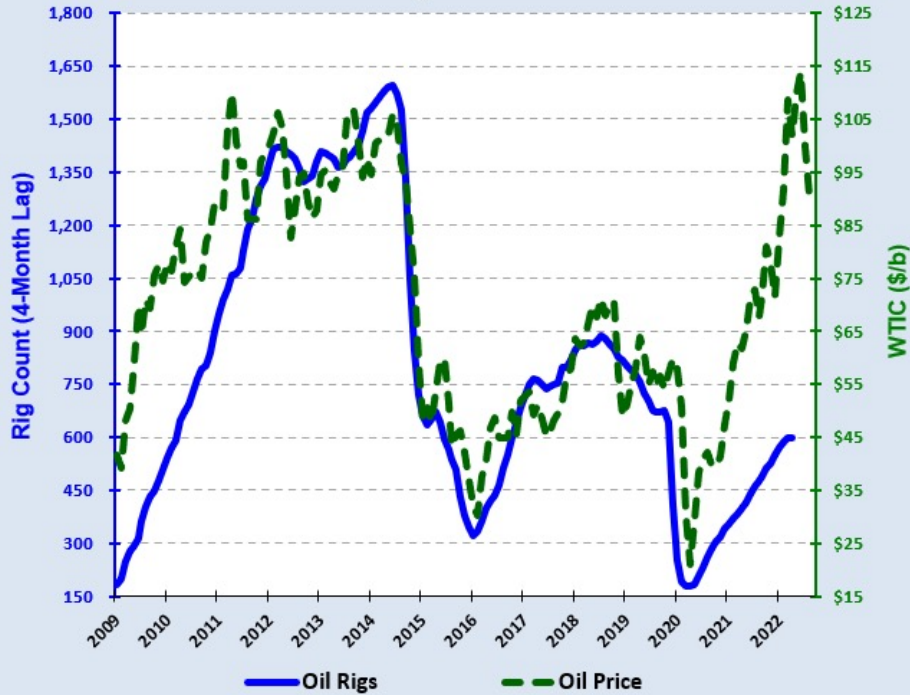
*No ability for the oil industry to continue to drill,
period, ends”*

... Joe Biden (March 2020)

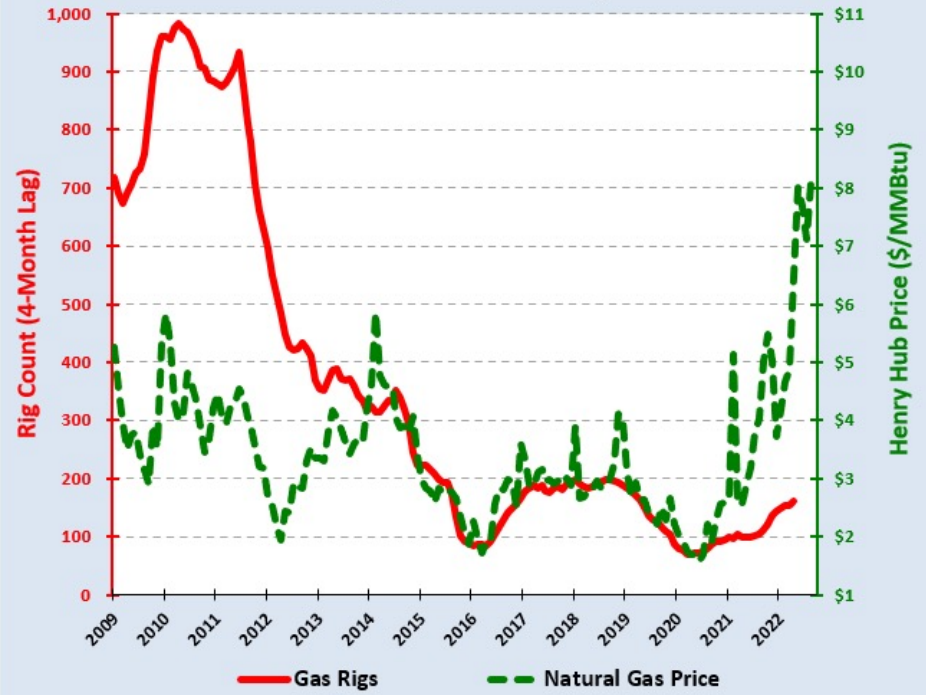
Natural Gas Supply

Words & Actions have Consequences

US Oil Well Rig Count v WTI Price

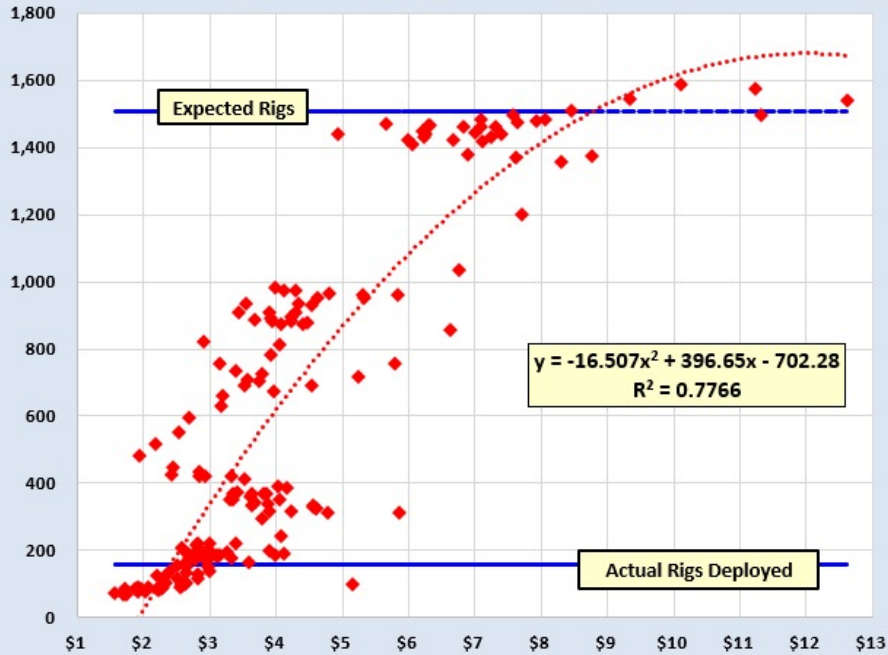


US Gas Well Rig Count v Henry Hub Price

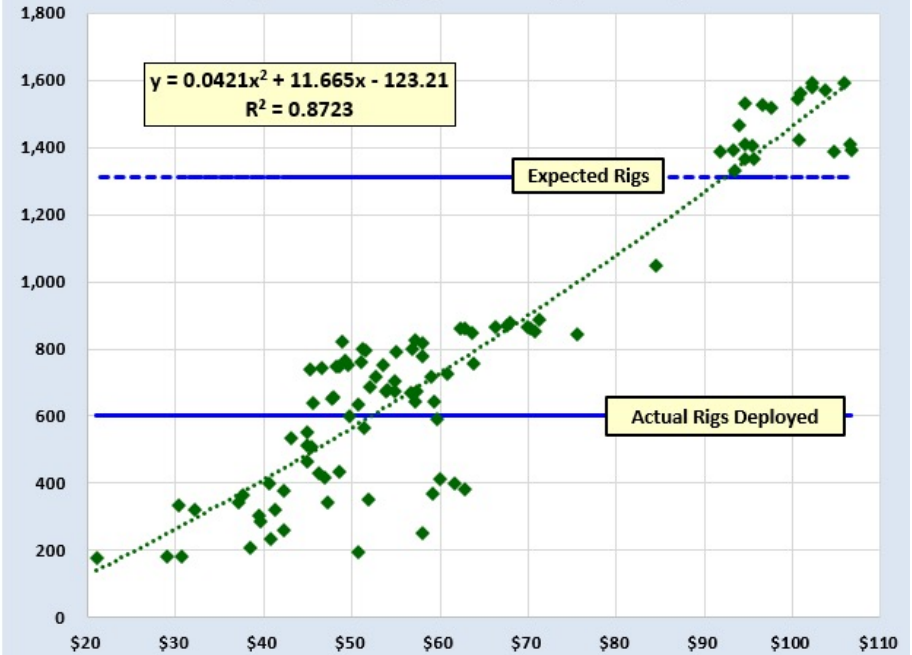


Words & Actions have Consequences

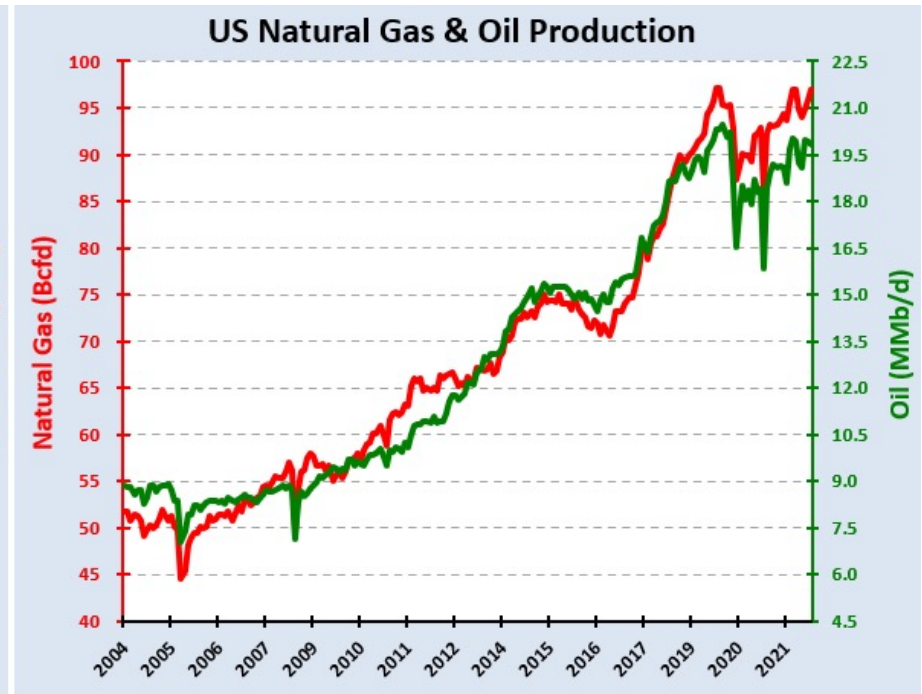
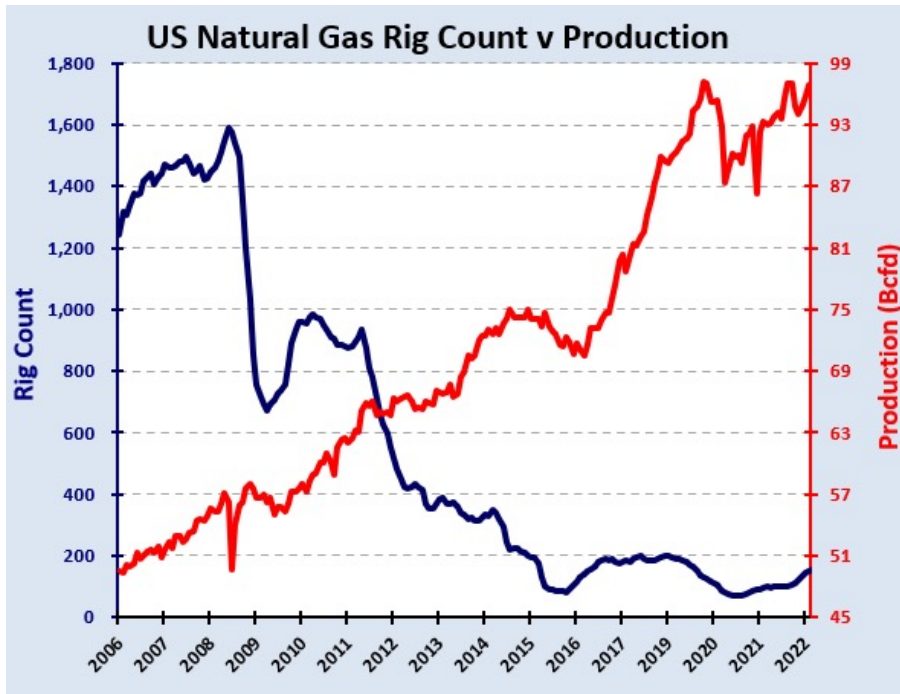
US Natural Gas Rigs v Natural Gas Price
(Rig Count Lagging 4 Months; \$/MMBtu)



US Oil Rigs v WTI Oil Price
(Rig Count Lagging 4 Months; \$/MMBtu)

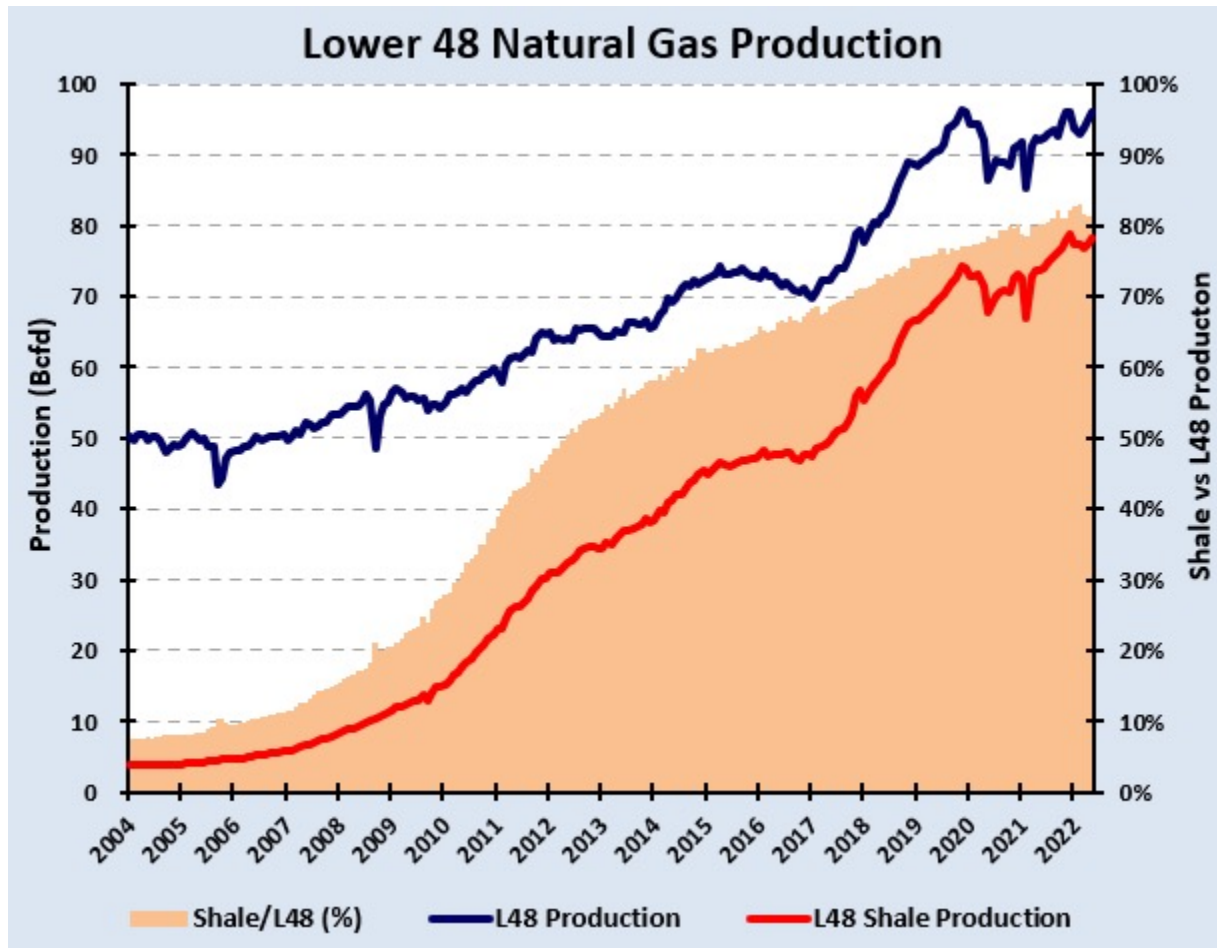


US Natural Gas Production Remains a By-Product of Shale Oil

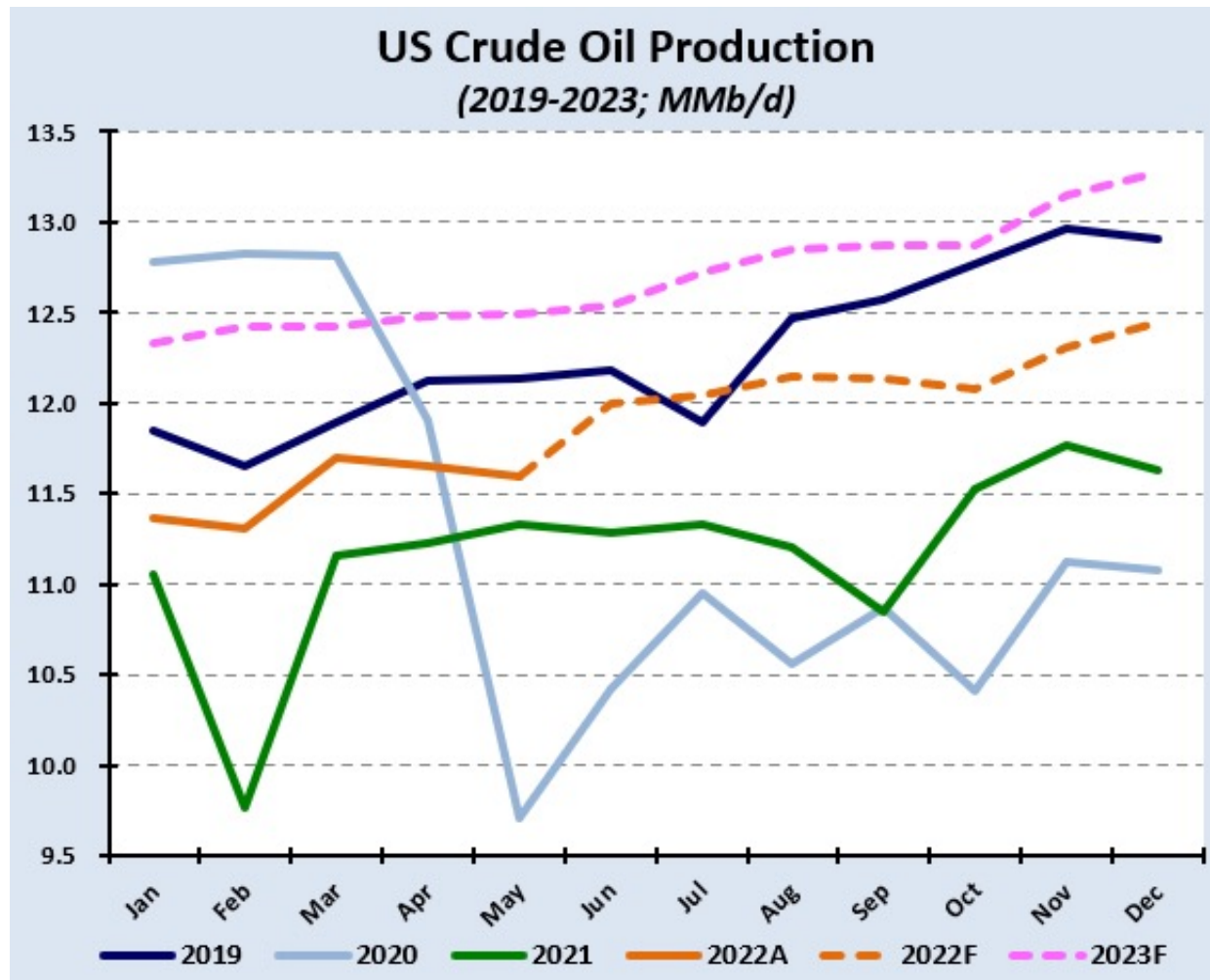


- Between 2.7 and 3.2 Bcf of natural gas is produced with every 1 MMb of shale oil

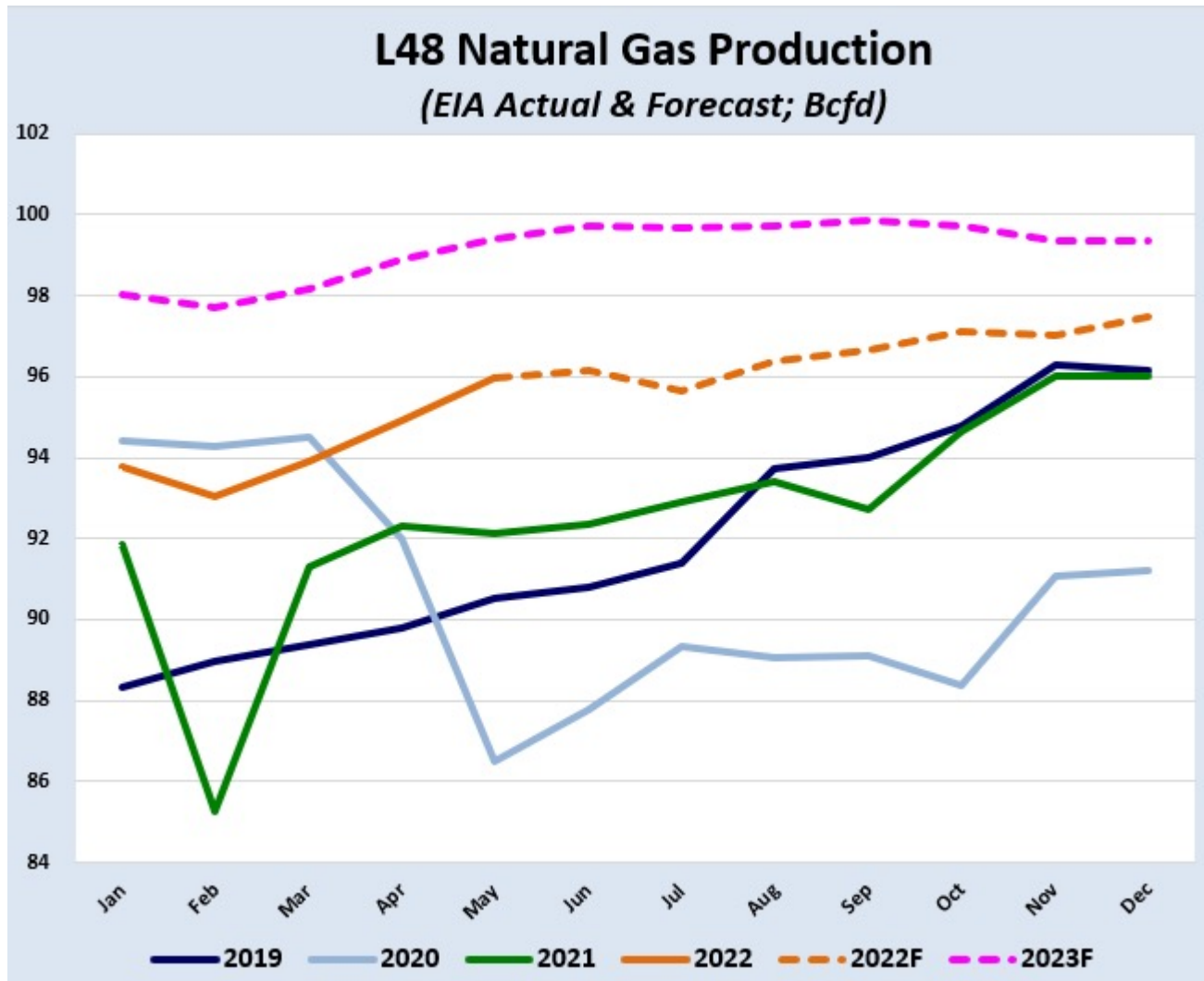
Shale Accounts for 80% of L48 Natural Gas Production



Despite Relatively Low Rig Activity, EIA Forecasts Growth



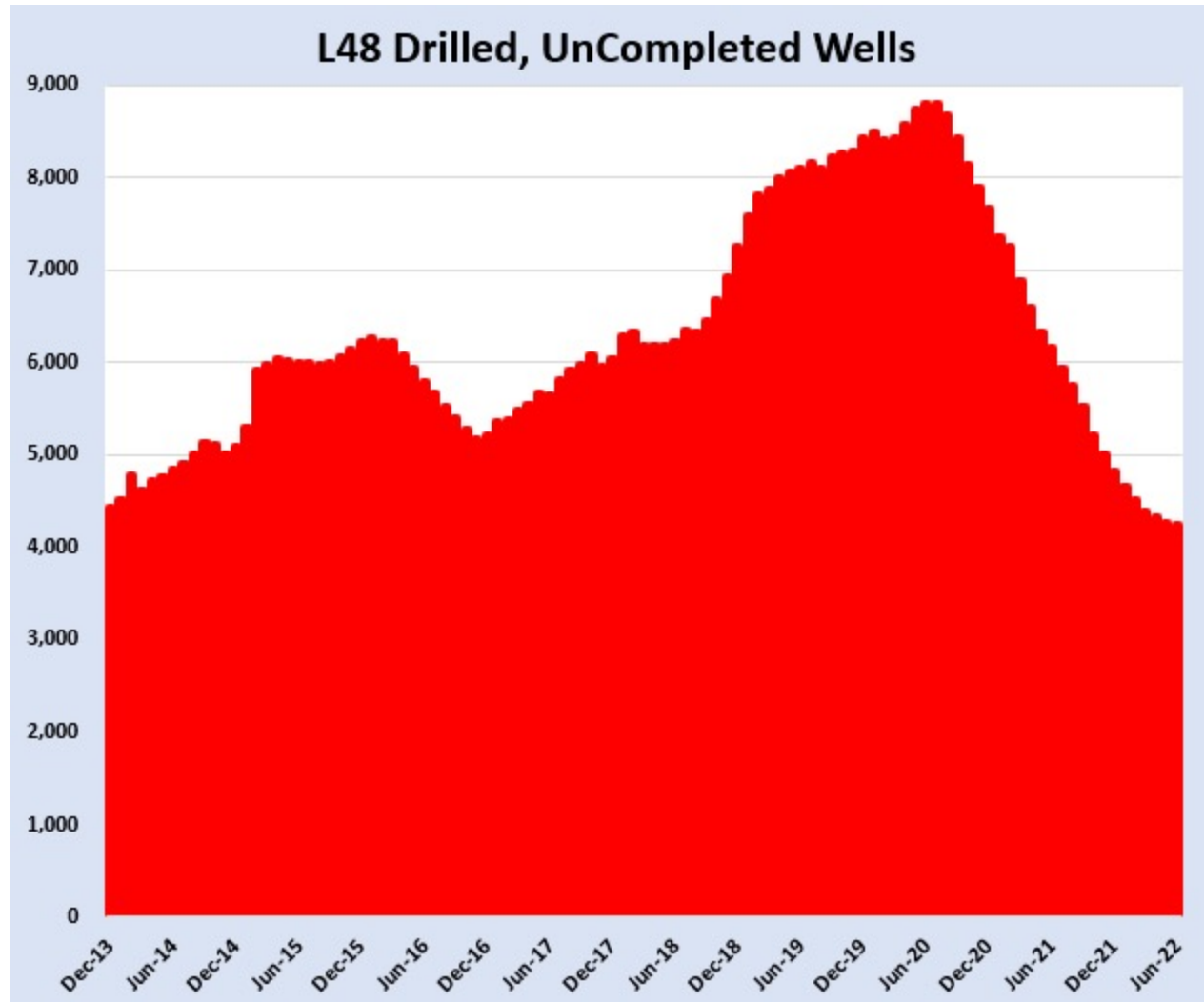
EIA Expects Natural Gas Production to Follow Oil Higher



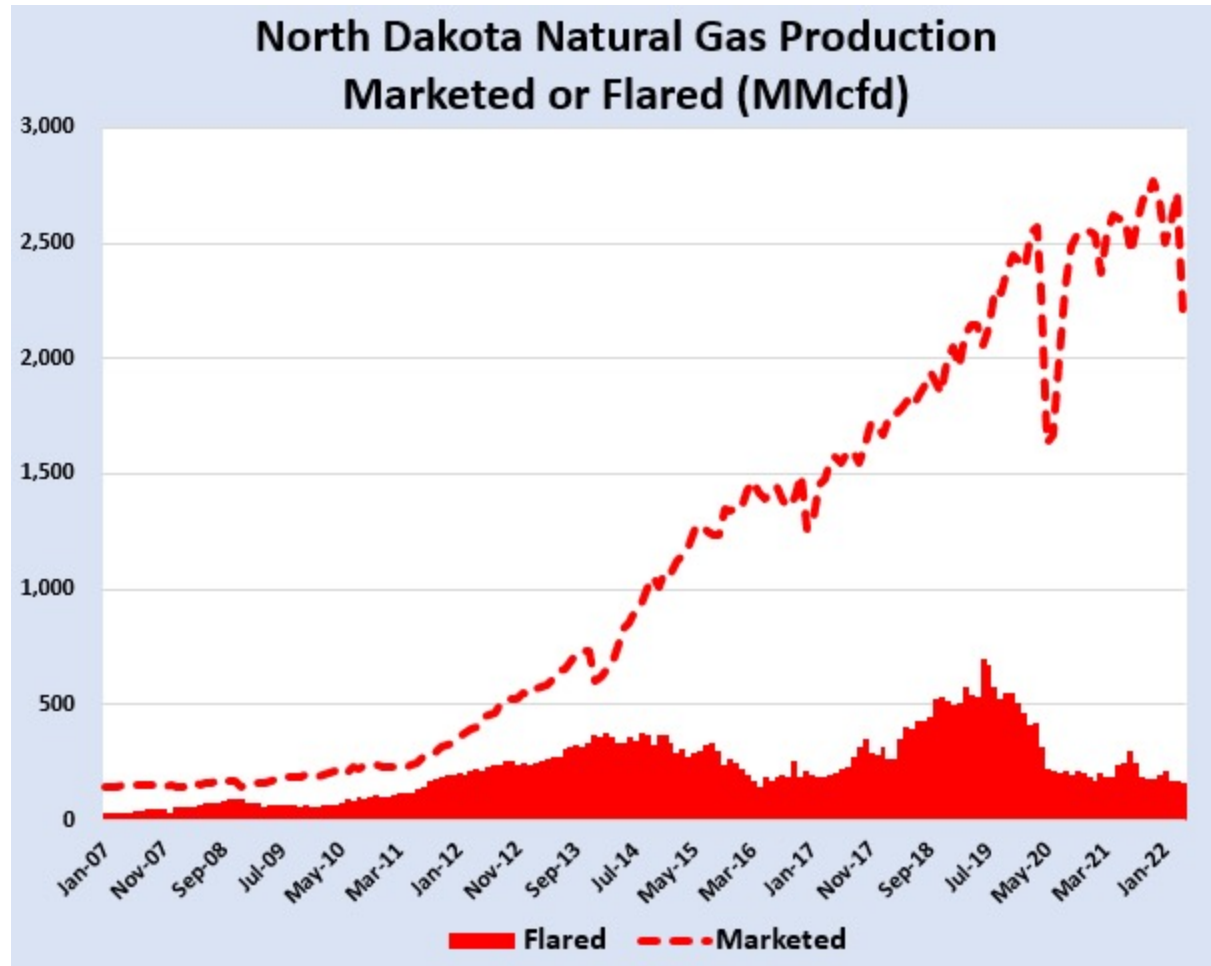
Sustaining US Production w/o Drilling

- As a substitute for drilling, producers are using every tool at their disposal to sustain production:
 - Harvesting cache of drilled, uncompleted (“DUCs”) wells
 - Lowering wellbore pressures by adding gathering or wellhead compression
 - Re-completing wells (i.e. re-perforating and/or re-fracking)
 - Reducing flaring through pipeline expansions
- These actions are not long-term substitutes for drilling, but discrete, short-term, efforts that boost production with little, if any, required regulatory approval
- **L48 supply remains at risk on low rig activity, declining inventories of viable DUCs, and limits on remaining, non-drilling, production boosting tools**

Sustaining US Production: Harvesting L48 Drilled, Uncompleted Wells (“DUCs”)

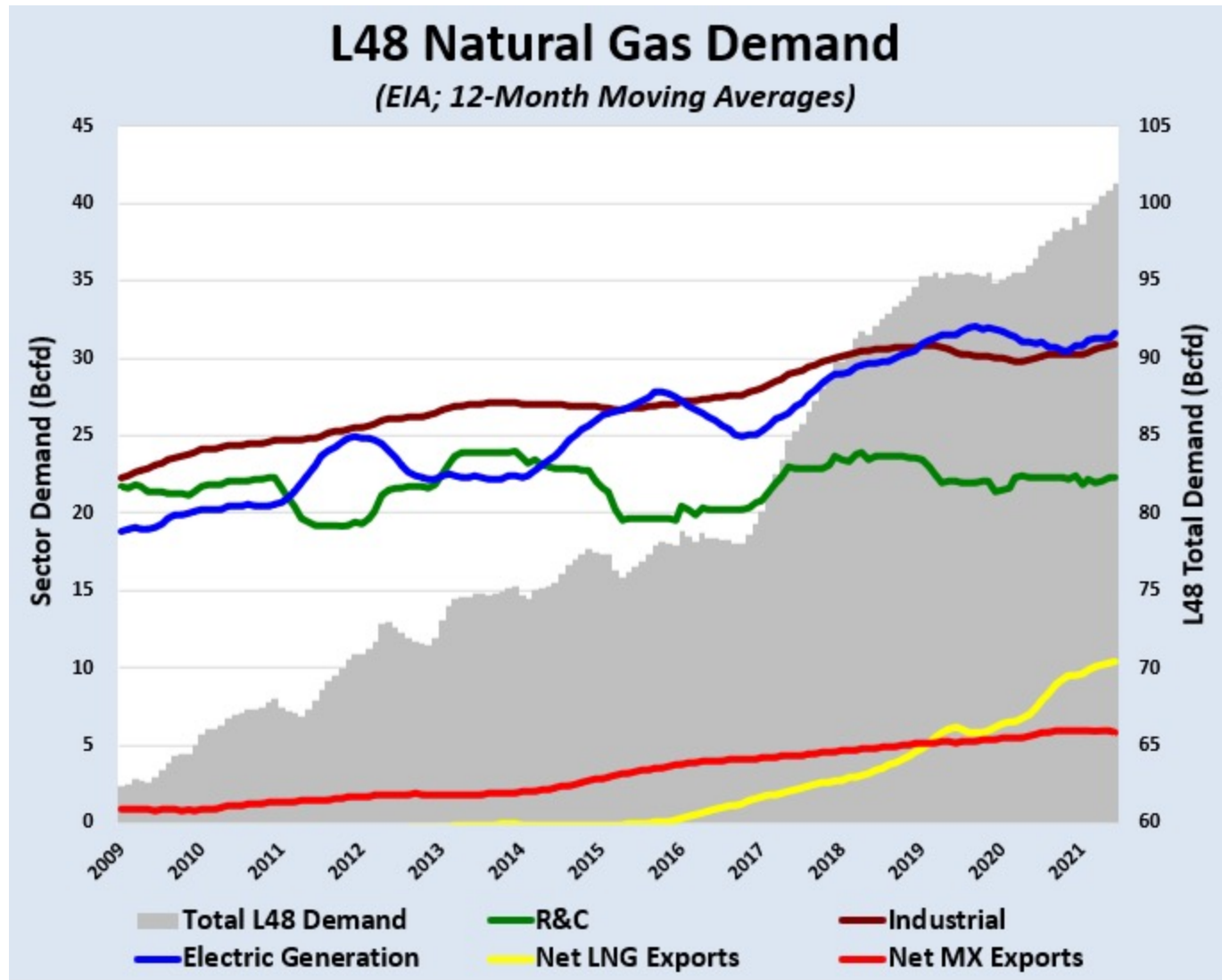


Sustaining US Production: Reduced Natural Gas Flaring



Natural Gas Demand

L48 Consumers are Structurally Committed to Natural Gas



That Commitment Started in Mid-2008 on Shale-Induced Collapse of Natural Gas Prices

\$NATGAS Natural Gas - Continuous Contract (EOD) CME

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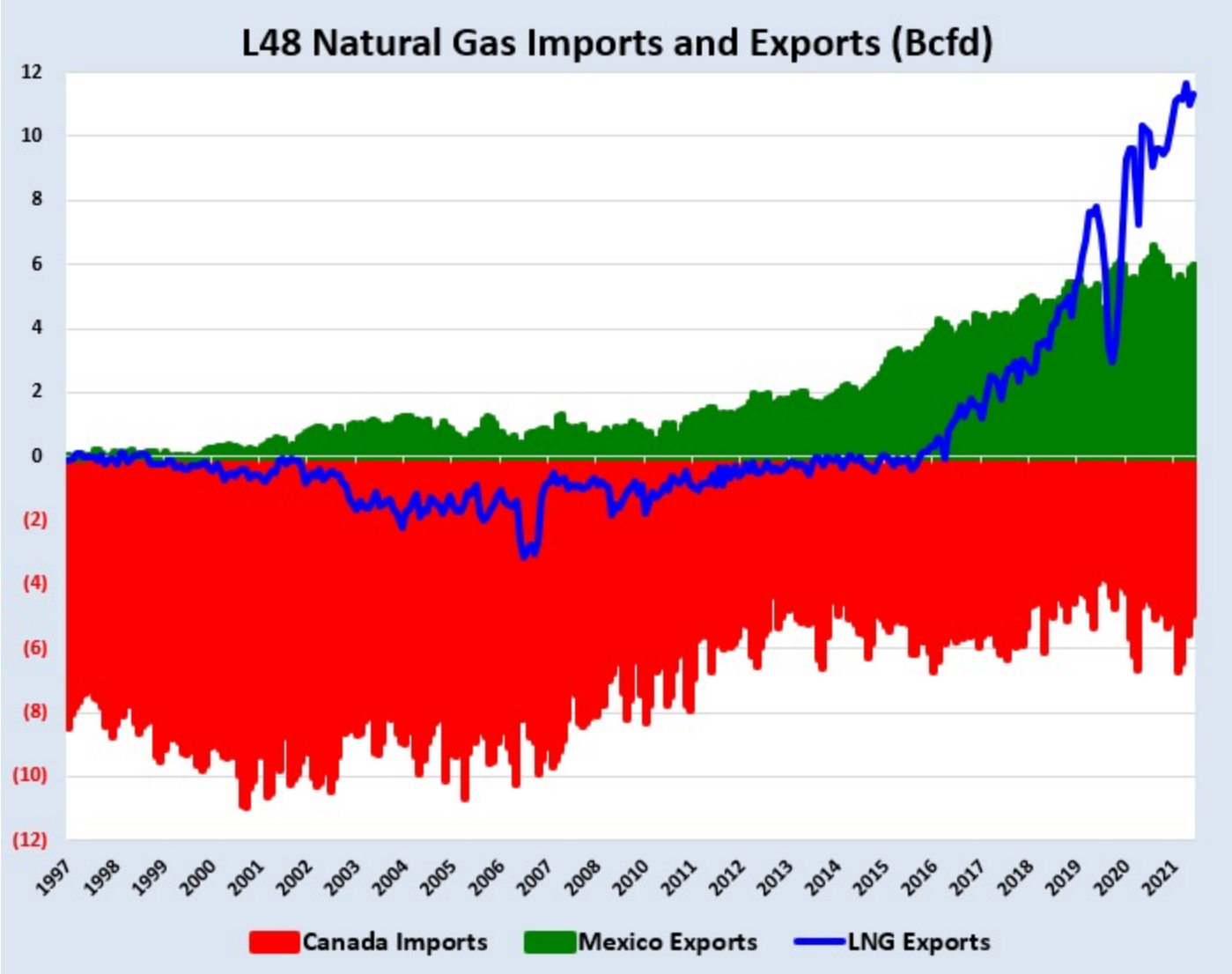
29-Jul-2022

Open 5.70 High 9.42 Low 5.32 Close 8.23 Volume 206.4M Chg +2.81 (+51.71%) ▲

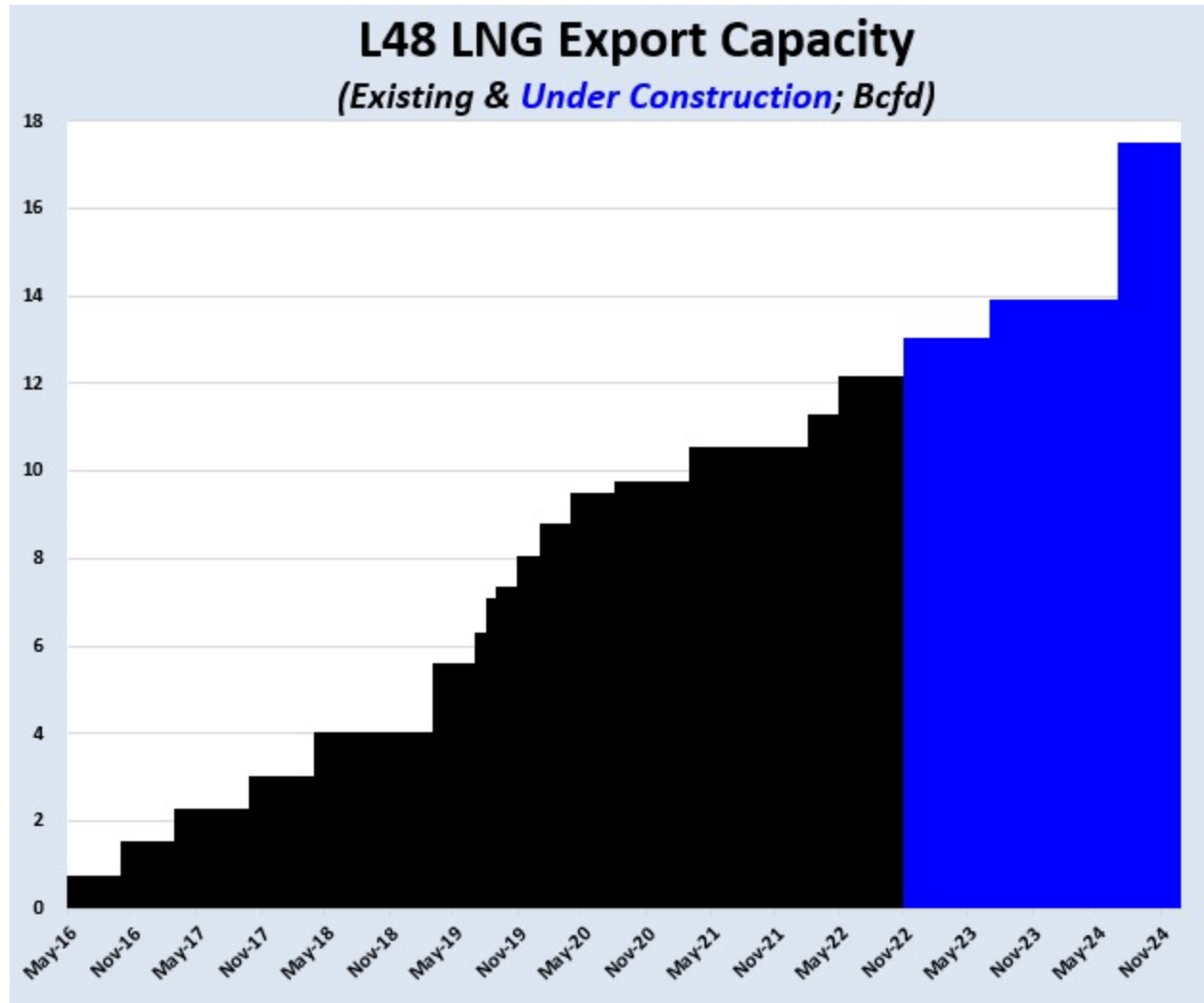


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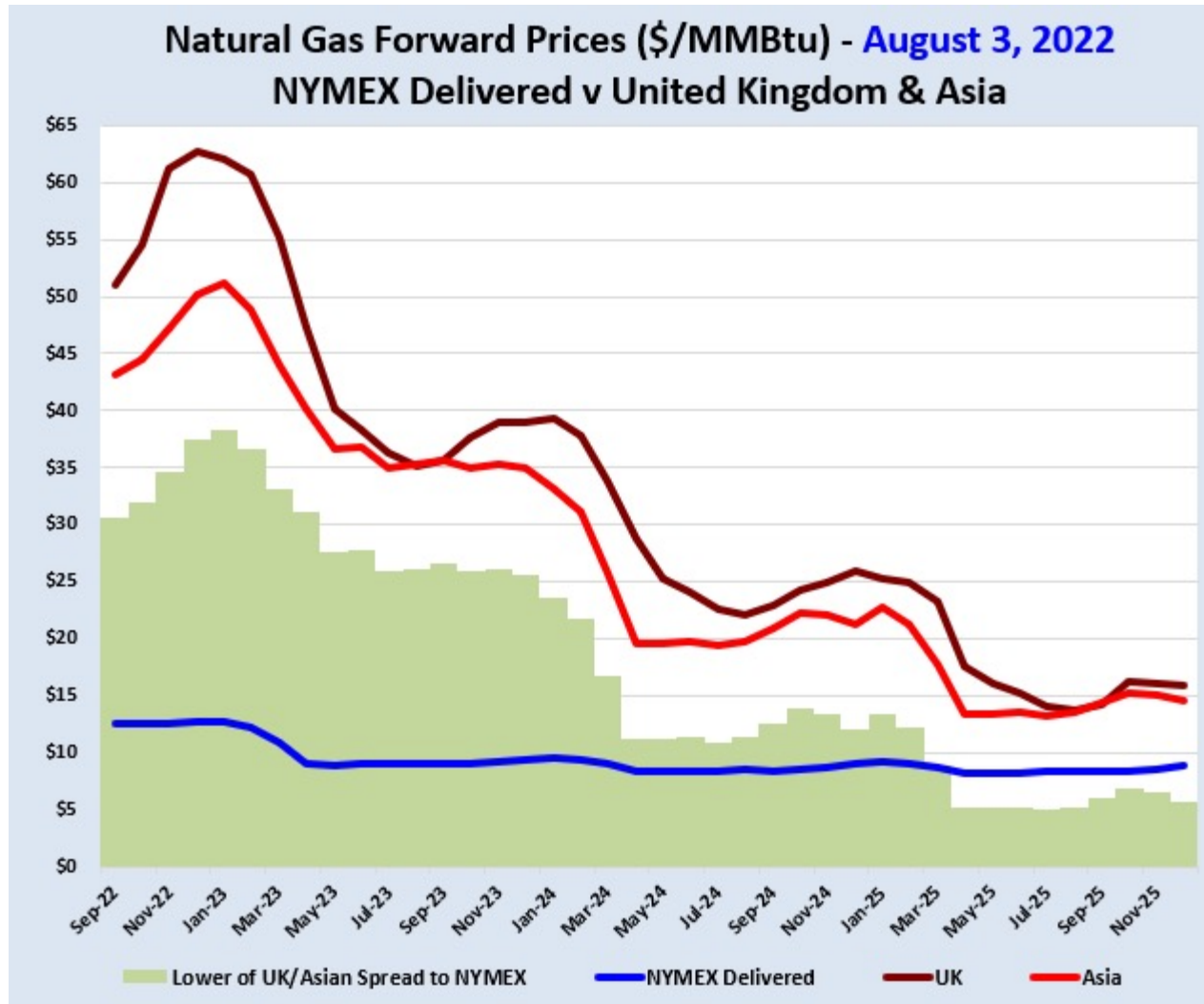
The L48 has Become a Large Exporter of Natural Gas



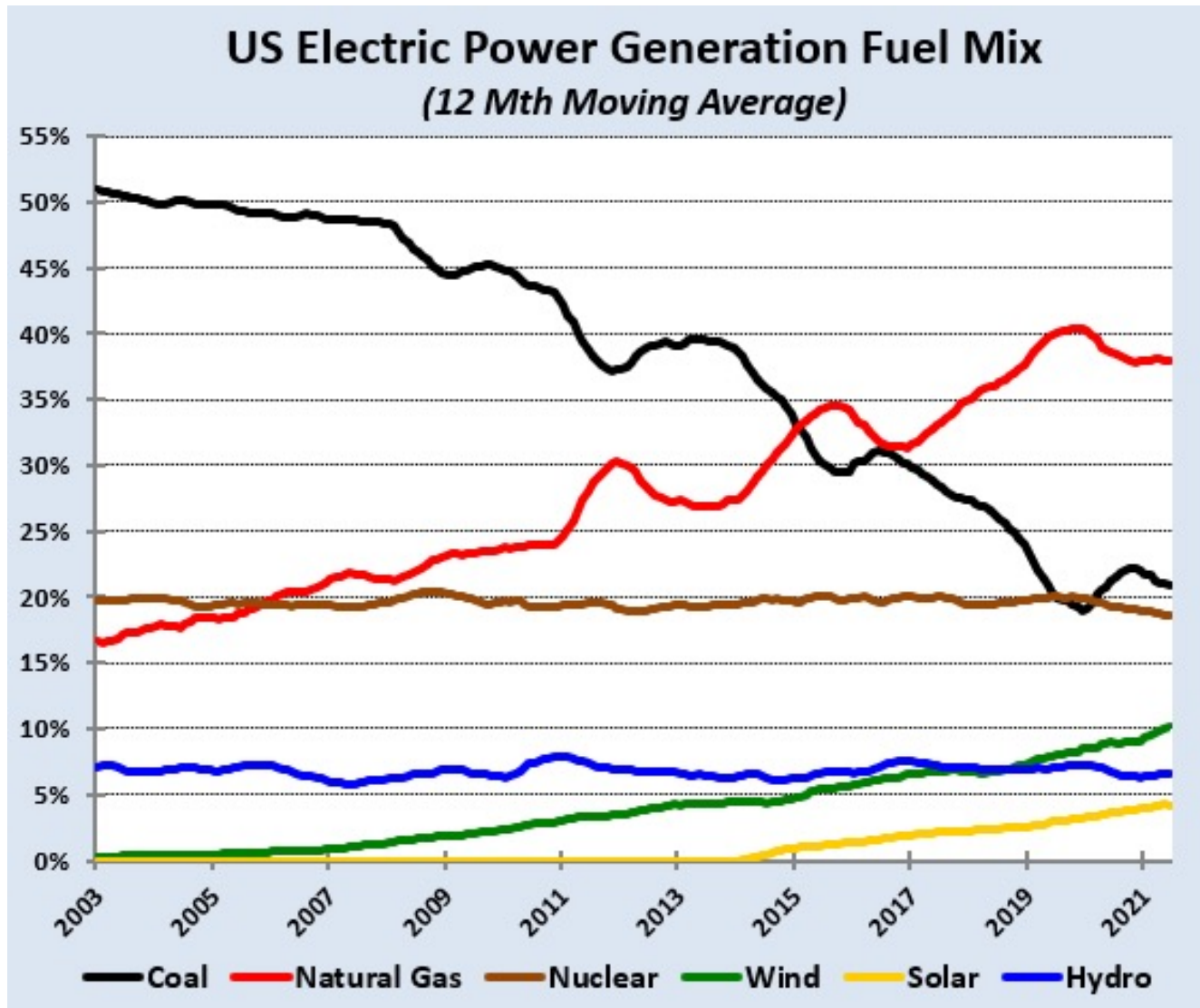
L48 LNG Export Capacity Will Increase 5.33 Bcfd by July 2024 to 17.52 Bcfd



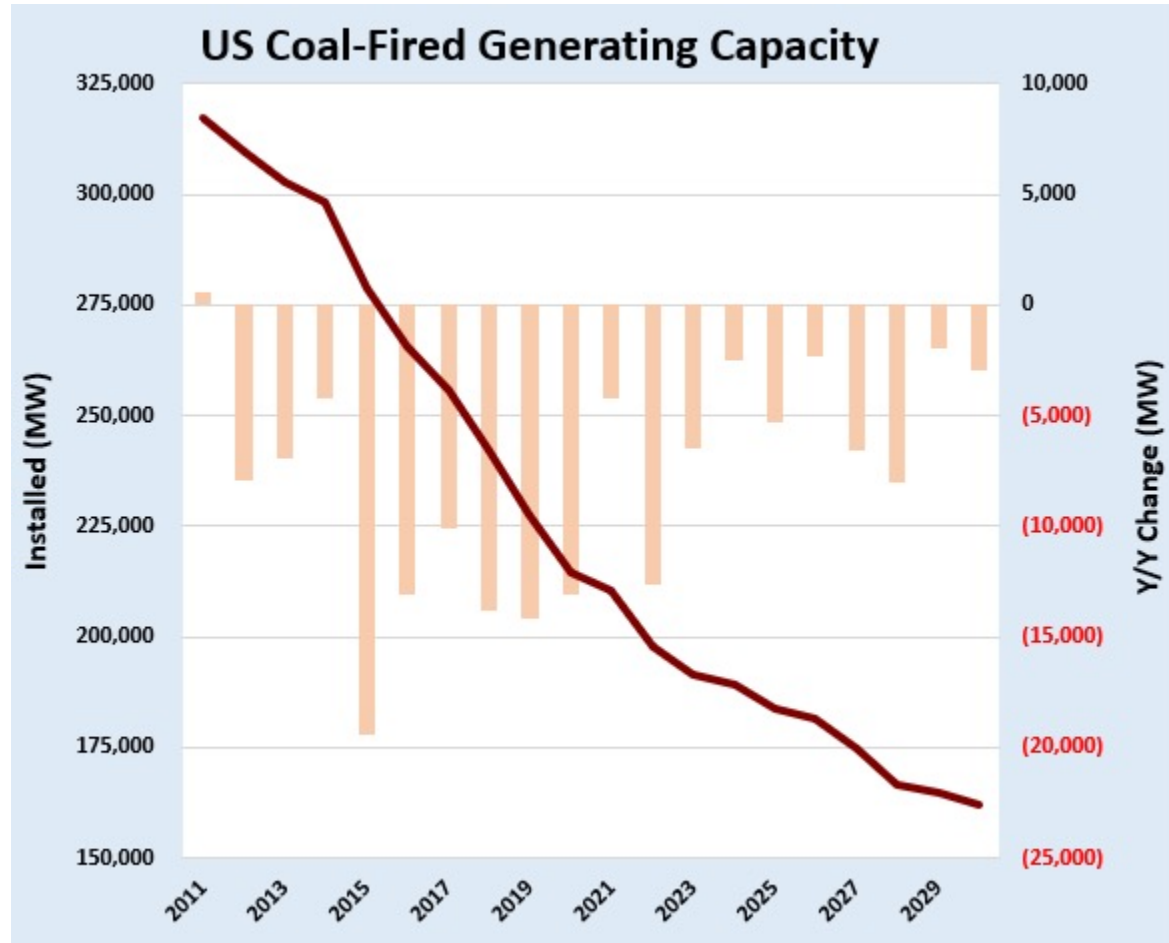
Strong Prices in Asia and Europe Promote Full Utilization of L48 LNG Export Capacity at least through 2025



At Home, Despite a Focus on Renewables, Natural Gas Keeps the Lights On and the Grid Somewhat Reliable

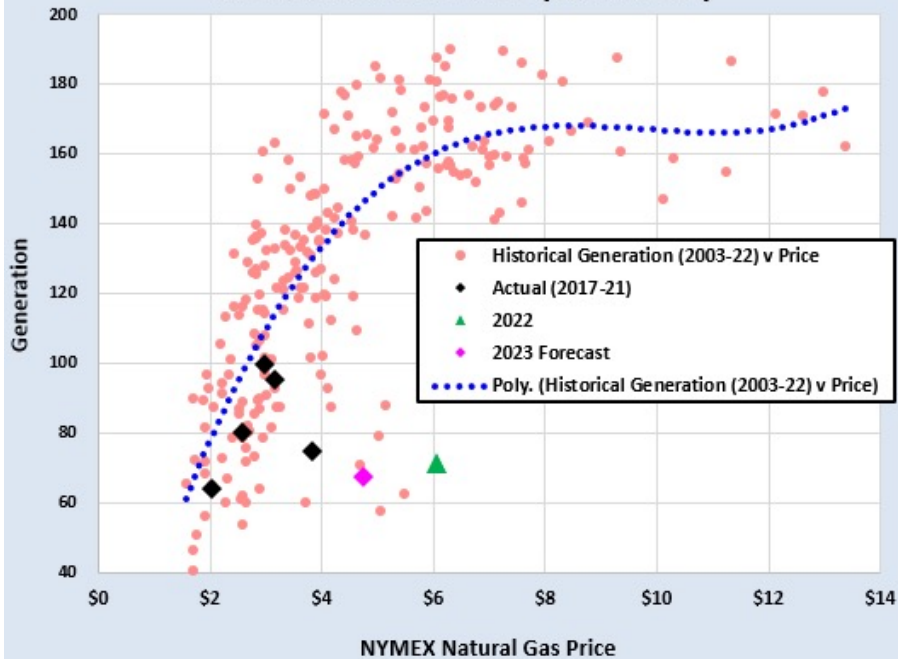


1/3rd of US Coal-Fired Power Generation Capacity has been Retired, Largely Eliminating Fuel Switching Options

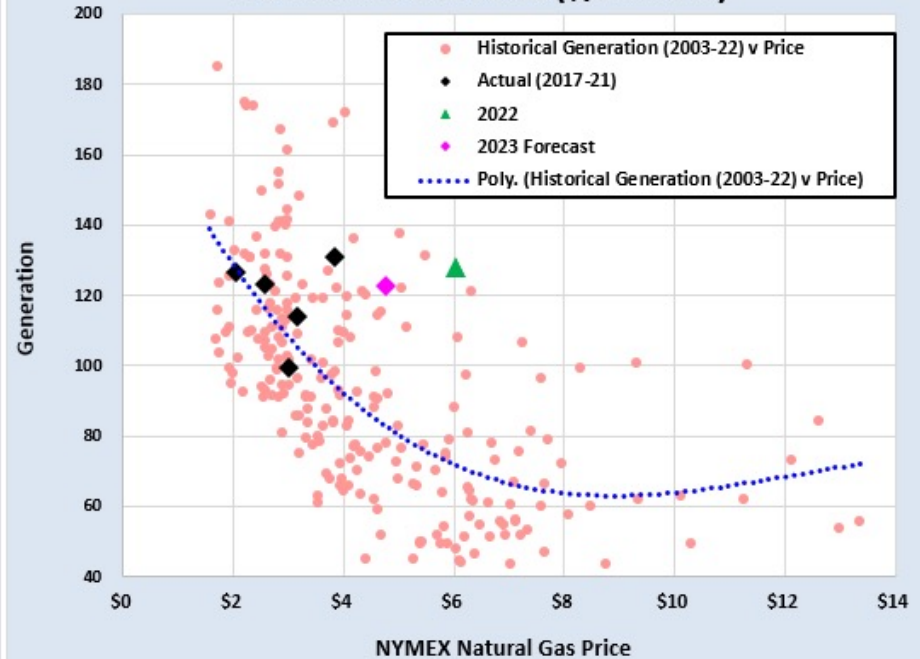


Even at Relatively High Prices, Natural Gas-Fired Power Generation is Robust.... The Historical Fuel-Switching Relationship between Coal & Natural Gas is Broken

Coal Generation (TWh/Month) vs the Natural Gas Price (\$/MMBtu)



Natural Gas Fired Generation (TWh/Month) v the Natural Gas Price (\$/MMBtu)

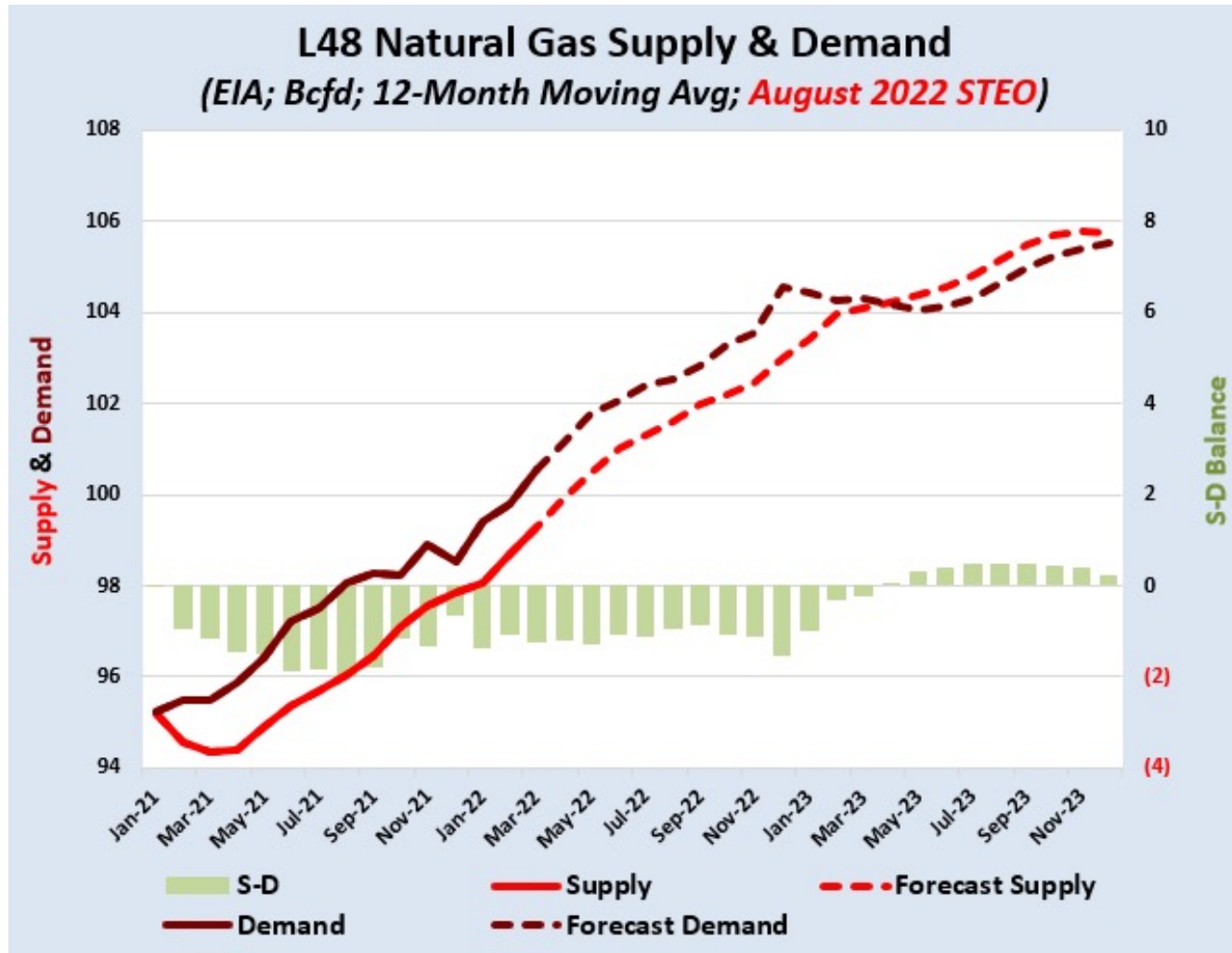


Comments

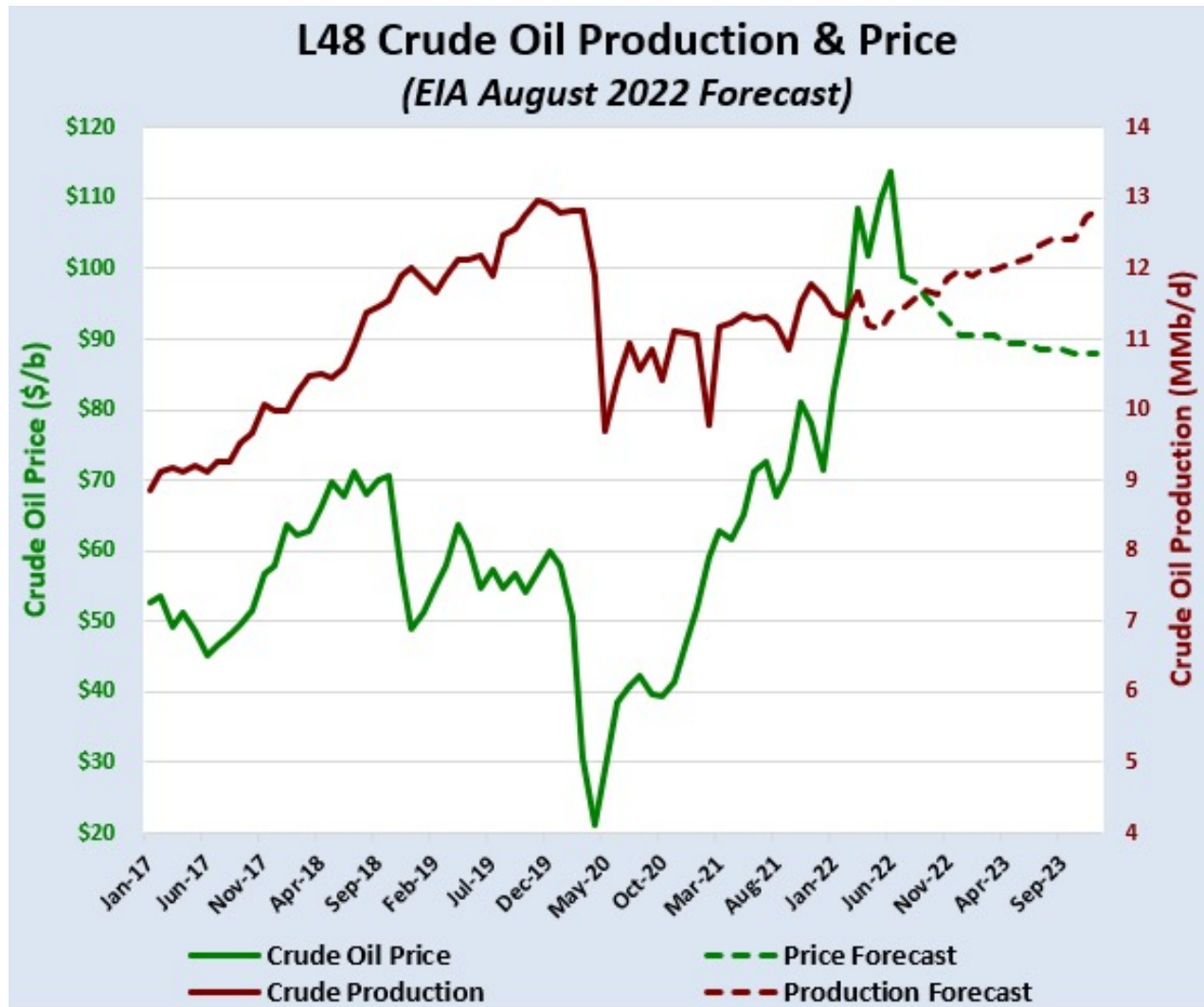
- Relatively low L48 prices since mid-2008 spurred commitments to natural gas among (a) electric generators, (b) industrials, (c) LNG exporters, and (d) Mexican importers
- L48 consumers limited their fuel switching options and capabilities
- L48 natural gas demand is robust, resilient, and price inelastic
- L48 LNG exporters will add 5.33 Bcfd of new capacity over the next 2 years... to 17.5 Bcfd. Canada will add 1.25 Bcfd in 2025
- Mexico continues to convert its power generation fleet from oil to natural gas
- US politicians and environmentalists continue to wage war on coal and nuclear power generation, increasing the reliance on natural gas
- There is lots of demand; where is the supply?

Natural Gas Supply-Demand Balance

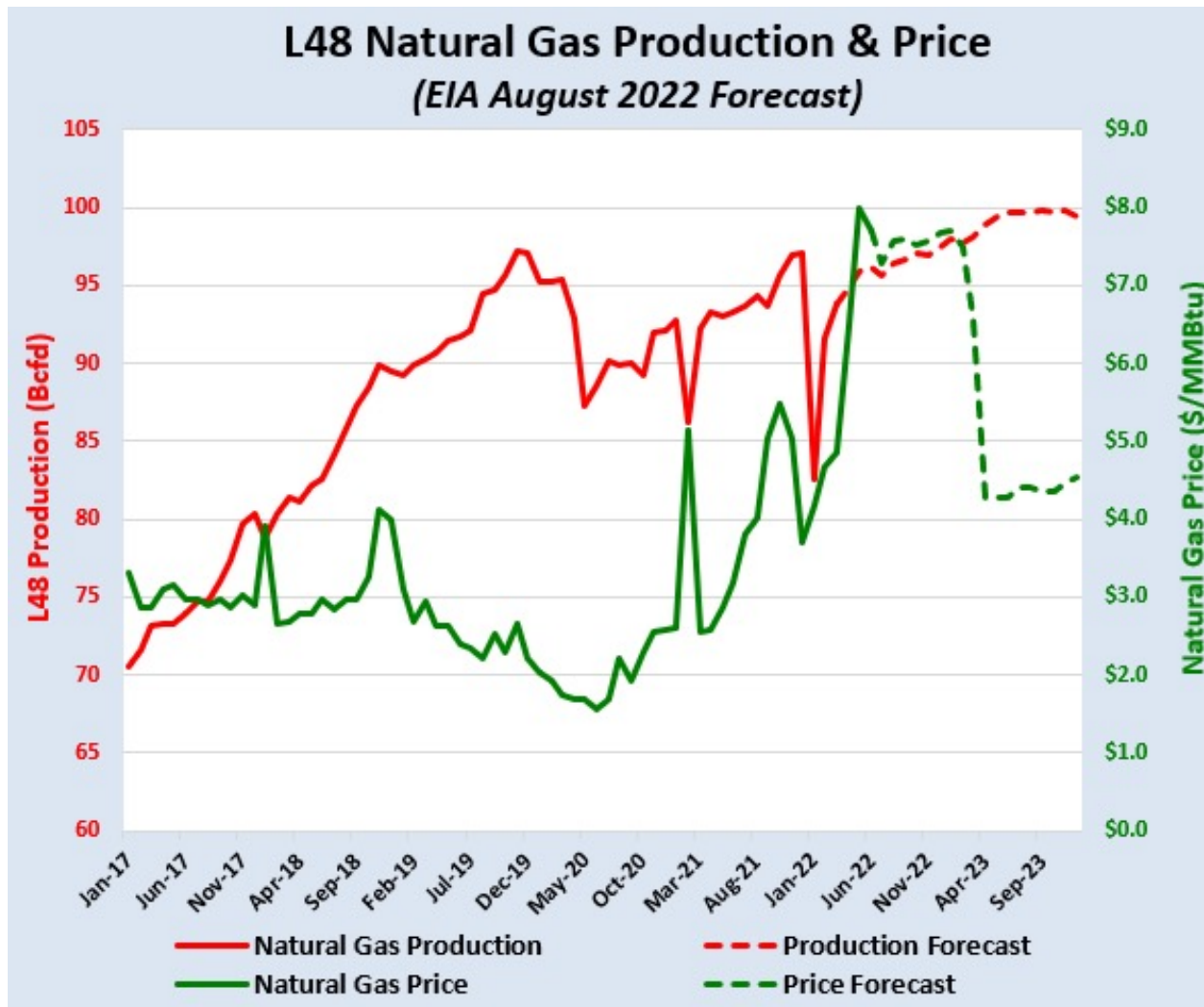
EIA Expects Drilling to Result in L48 Supply Exceeding Demand in 2023.... Ignoring Actual Rig Activity



EIA Also Expects US Oil Production to Increase Despite Projecting Price Declines into 2023



Similarly, EIA Expects US Natural Gas Production to Increase into Substantially Lower 2023 Prices



Comments... 1

- L48 supply is at risk
 - Confronted by hostile federal and state bureaucracies,
 - On relatively low rig deployments, and
 - Exhaustion of producer's cache of viable DUCs and other short-term, production boosting tools
- Demand is robust & resilient
 - L48 consumers made a structural commitment to natural gas after the July 2008 price collapse [even the 2020 COVID lockdowns did not materially affect demand]
 - Consumers have limited fuel options, particularly in power generation
 - L48 LNG exports will grow 5.33 Bcfd over the next 2 years to 17.52 Bcfd; Forward price spreads to Asia/Europe support full deployment of that capacity for the foreseeable future
 - Mexico relies on L48 supply to support the conversion and operation of its power generation fleet from oil to natural gas
 - L48 power generators are indifferent to the price of natural gas, provided market heat rates (in MMBtu/MWh) support dispatch

Comments... 2

- The temporary loss of the 2 Bcfd Freeport LNG export facility (on June 8th) brought L48 natural supply and demand into balance near-term... assuming normal weather
 - Freeport is reported to be restored to service by early October
- High Q3 temperatures promoted strong A/C demand, lifting prices
- In the very near-term, natural gas is principally at risk from weather, including that for Winter 2022/23
- A current 275 Bcf Y/Y L48 storage inventory deficit is a source of price support into the Fall
- Winter 2022/23 weather will dictate near-term price trajectories
- However, unless more rigs are deployed soon, the L48 natural gas supply-demand balance is at risk of severe tightening through 2024 on a large L48 LNG export capacity expansion and continued demand resiliency among L48 consumers

Comments... 3

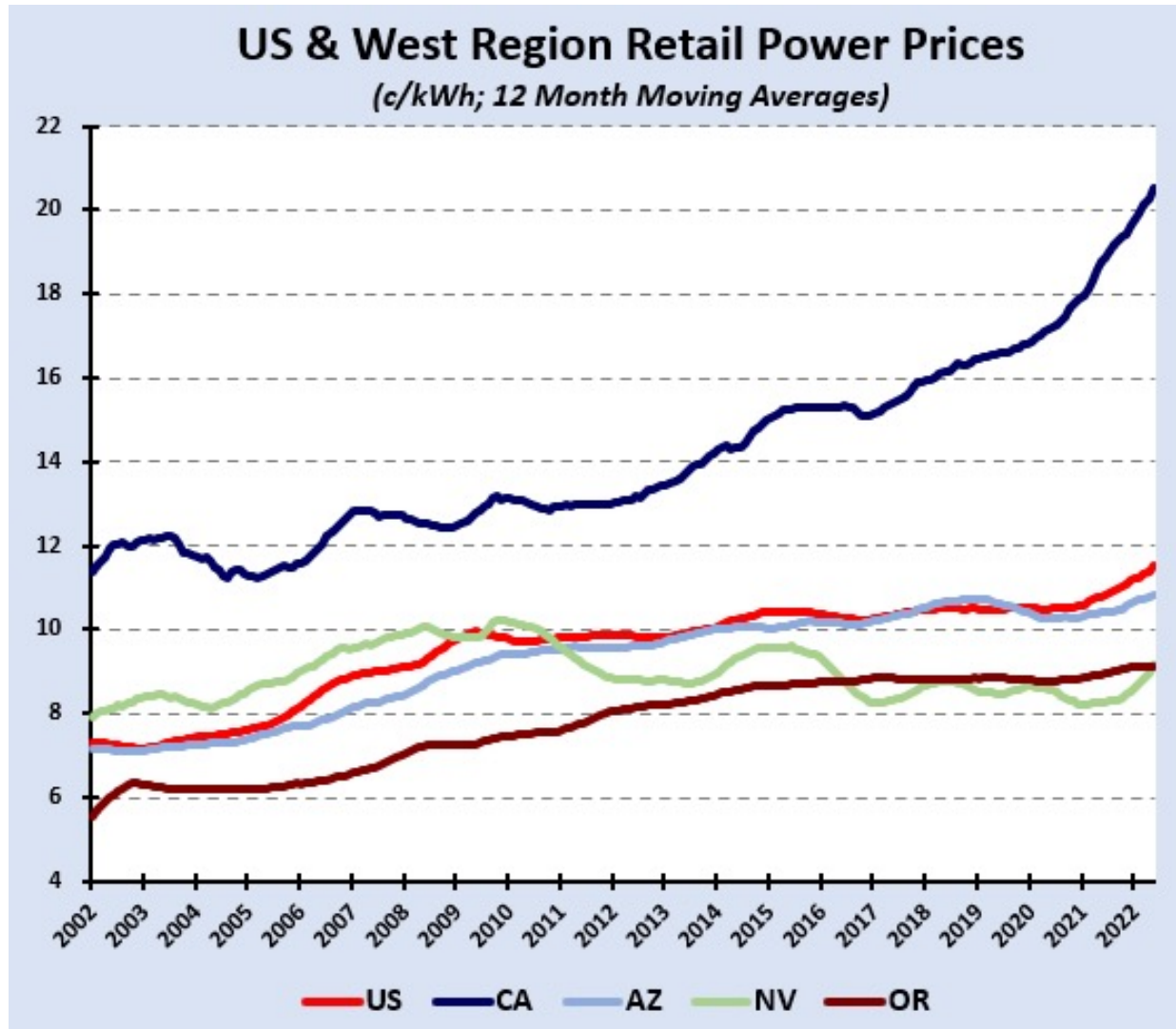
- I'm bullish...
- Natural gas prices like to trade around Fibonacci Numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55...
- L48 LNG exports could become the marginal demand component in the L48.... UK prices in forward markets trade well above \$50 per MMBtu

Risks to this Outlook

- The political class enacts an energy export ban
 - Low, given Biden’s March 2022 commitment to supply Europe with natural gas
- Producers shift from their current strategy and deploy substantially more rigs
 - Low, given the Biden administration’s increased red-tape and pressure on banks to defund the oil and gas industry
 - Low, given producer statements claiming fiscal discipline and a focus on returning value to shareholders
- Unplanned outages affect the L48’s export capacity (i.e. LNG export terminals and pipelines to Mexico)
- “Extremely” mild weather

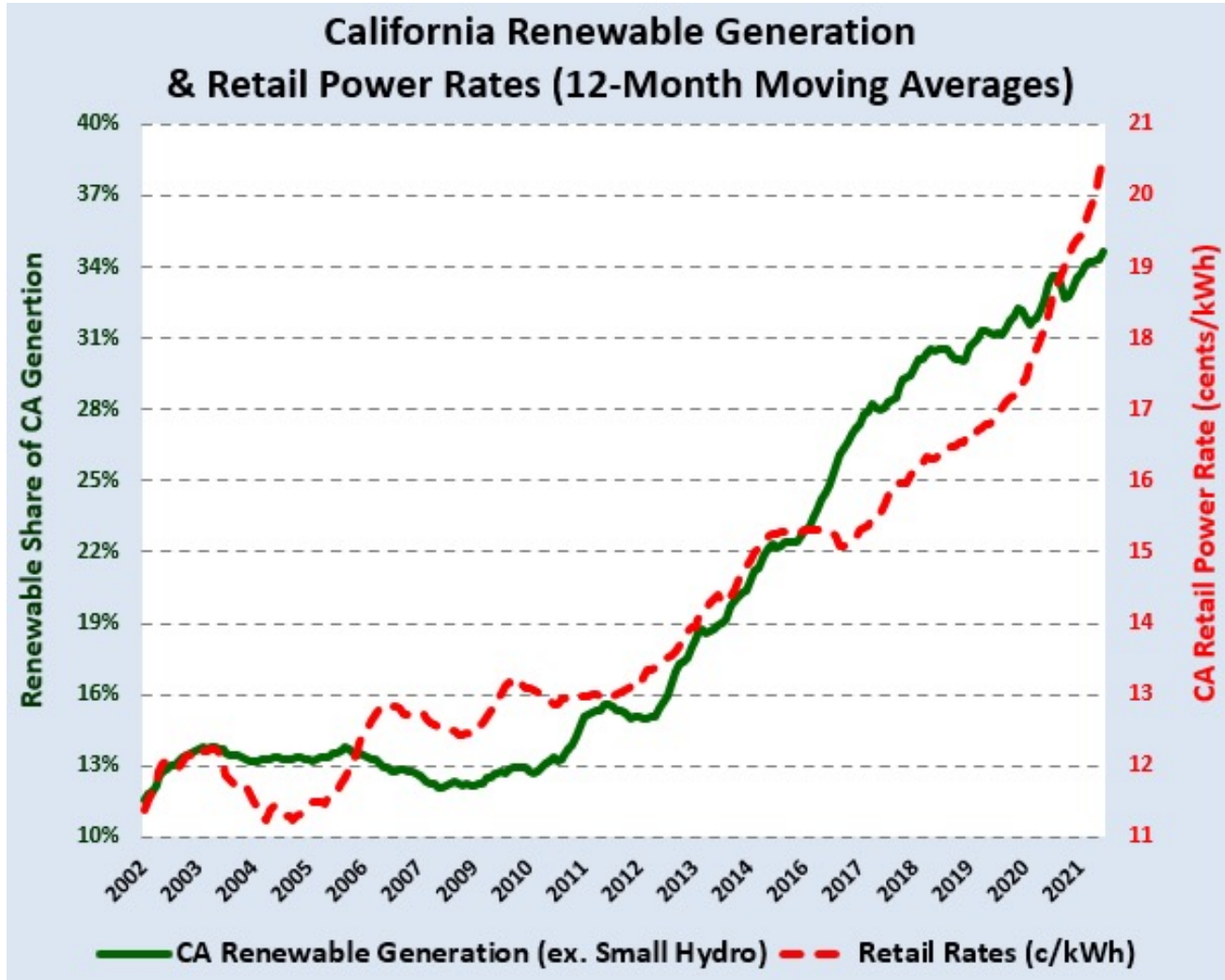
Stuff that Bothers Me... 1

Claim that Renewable Power is Cost Effective

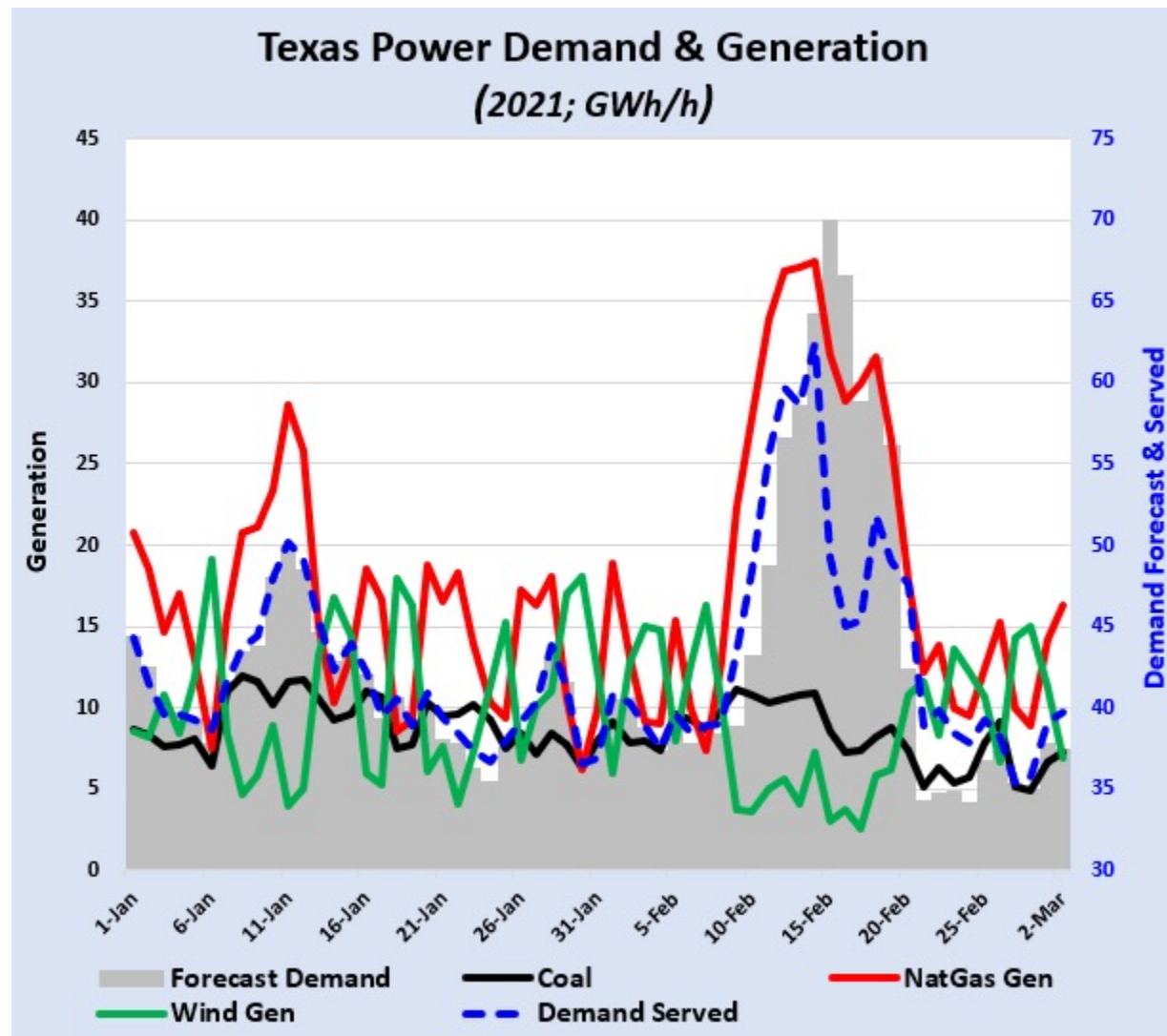


Stuff that Bothers Me... 2

Claim that Renewable Power is Cost Effective



Stuff that Bothers Me: Claim that Wind Power did not Materially Contribute to ERCOT's Failures during the Feb 2021 Freeze



Questions?