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High Energy/Utility Costs? Will the Recession Make it Better?

A “Quick and Dirty” Analysis

By

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Quick and Dirty?

"…a crude solution… that is imperfect, but which solves… the problem at hand, and is generally faster and easier to put in place than a proper solution.

Note to the reader: This analysis avoids rigor such as economic modeling, statistical analysis or anything requiring the use of supercomputing power….

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Information Sources:

- The Energy Information Administration
- National Bureau of Economic Research
- Investopedia
- Wall Street Journal/Daniel Yergin
- Forbes
- RealClearEnergy.com

Some Quick and Dirty Caveats:

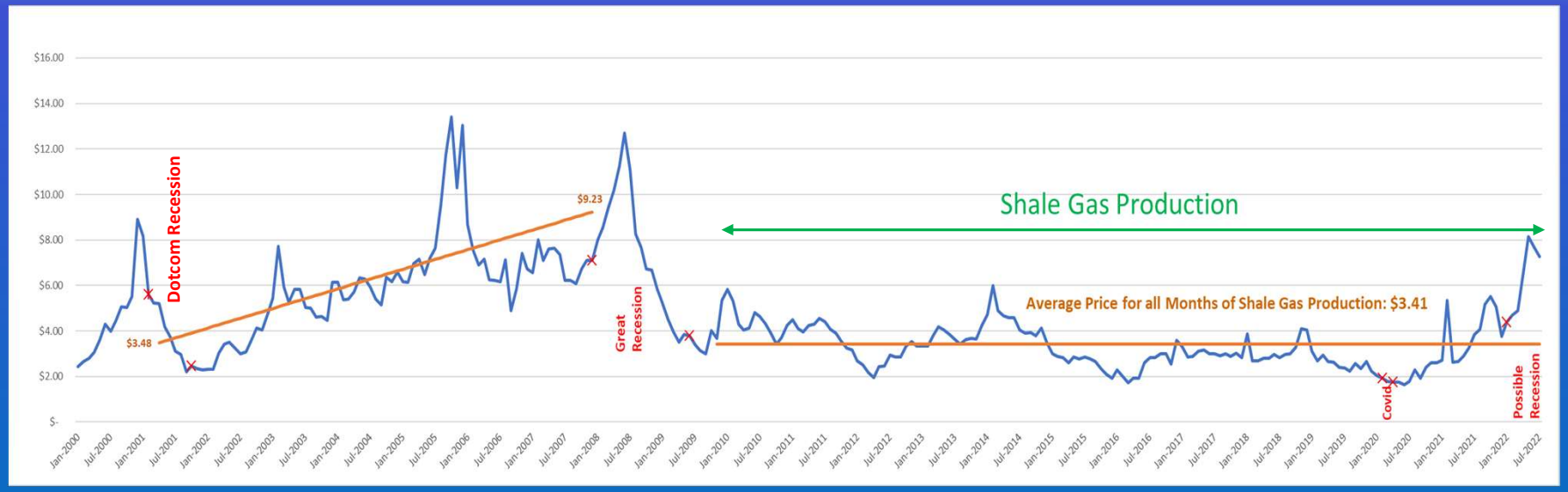
All Prices are in $/MMBtu

Analysis:

- **Is not normalized for effects of weather.**
- **Excludes storage effects on prices.**
- **Excludes economic disincentives caused by Environmental, Social Justice and Governance (ESG) pressures put on lenders and investors.**
- **Excludes inflationary effects of ever-increasing and more complex regulations on hydrocarbon exploration, production and transportation.**
- **Excludes possible effects of proposed SEC Climate Disclosure Rule.**

Henry Hub Month End Settled Wholesale Prices Mapped Against Recessions and Shale Gas Production

- Prices rose dramatically at the beginning of the Great Recession.
- Price collapse resulting from Great Recession continues through the economic recovery due to increased supply from ramp-up of Shale Gas Production.
- Note that prices and volatility dramatically increased after Dotcom recession and prior to Shale Gas Production.
- Prices began their current rise in April 2021 (ignoring the anomalous effects of Winter Storm Uri).
- Russian invasion of Ukraine accelerated existing trend of rising prices. Approximate rise of $1.14 to price due to Russian invasion.
- Previous recessions indicate a price decrease due to demand reduction.



Notes:
EIA Henry Hub Monthly Settled Price History Starts in 1997.
First Recession after 1997 begins in February 2001.
"Shale Gas Production" assumed to start in earnest in 2009.

A Recession Does Seem to Affect Gas Prices

	Months in a Recession	Total Months of Price Decrease	Lag Before Price Increase
Dotcom	8	6	3
Great Recession	18	15	4
Covid	3	6	3

- Monthly drop in gas prices usually a shorter time period than recession
- Usually a 3- or 4-month lag before effects of recession are felt in natural gas markets..

Effects of Shale Gas Revolution and Recessions on the Price :

Major Recessions Caused an Average 51% Drop in Natural Gas Prices

Price Decrease (%) from Start to Finish of Recession	
Dotcom	56.1%
Great Recession	46.6%
Covid	14.7%

Shale Gas Production Caused a Decrease in Average Prices Ranging $2.54 - $2.72

	Non-recessionary Price	Recessionary Price
Pre Shale Gas avg Price	$5.84	$4.57
- Post Shale Gas avg Price	-$3.30	-$1.85
Shale Gas Price Reduction Effect	$2.54	$2.72

About 13% of US Daily Gas Production Exported

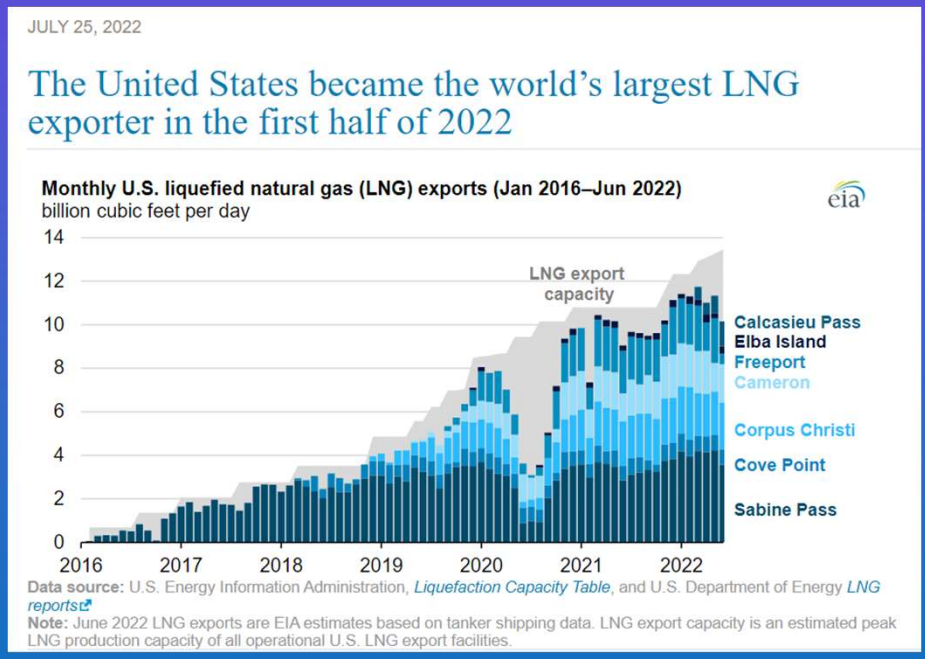
US Exporting 11 Bcf/day at the end of May 2022 or about 12-13% of production. Expected to be 17.3 Bcf/day by the end of 2025. Possibly could go as high as 30 Bcf/day or ***One Third*** of all US production!

Annual Production of Natural Gas by Country

Top 10	BCF/day	Global Share	Change
US	90.4	23.1%	2.3%
Russia	67.9	17.4%	10.4%
Iran	24.8	6.4%	3.1%
China	20.2	5.2%	8.1%
Qatar	17.1	4.4%	1.4%
Canada	16.7	4.3%	4.3%
Australia	14.2	3.6%	1.1%
Saudi Arabia	11.3	2.9%	4.0%
Norway	11.1	2.8%	2.8%
Algeria	9.8	2.5%	24.1%

Top 10 natural gas producers in 2021 ROBERT RAPIER

Source: Forbes.com



Freeport Fire Shuts Down Major LNG Facility on June 8, 2022.
15-20% of US Daily Gas Exports

June, 8, 2022, London (CNN Business)A fire at one of the world's biggest suppliers of liquefied natural gas has thrown Europe's fragile energy security into doubt and spooked global gas markets.

Freeport terminal:

- Accounts for 15-20% of US LNG exports.
- Consumes about 2% of US production.
- Fire initially caused US prices to decrease from $9.90 to $8.00.
- Will be back to 100% capacity by January 2023.

Known Unknowns

- How long will recession last?
- How deep will recession go?
- When will war in Ukraine end?
- Will Europe revert to purchasing gas from Russia, thus reducing inflationary pressure on North American prices?
- Will Freeport LNG facility resume exporting as planned (December ‘22 – January ‘23)?
- Will Shale Gas production ramp up again?

To Summarize

- **Average price of natural gas due to Shale Gas: $3.41**
- **Assume peak recession price is September 2022: ~$9.00 reduced 51% (past recessionary effect) results in price of $4.41**
- **Russian invasion adds $1.14 to price (add this to $3.41 to get to $4.55).**
- **Freeport fire reduced US prices about $1.90**
- **Predicted gas price during recession should average between $4.15 and $4.55 with Freeport offline.**
- **With Freeport back online, add $1.90 for a total of $4.88 to $6.45.**

See next page for tabulation

Price Analysis - Four Views (1 and 2)

If Shale Gas Production **resumes** its pre-pandemic exploration and production levels, we can expect recessionary price in the range of $4.88 - $6.31/MMBtu

1. What if price drops back to Covid recession price?

Average Price of Gas During Shale Gas Production Era (Covid recession)	$1.84
Effect of Russian Invasion of Ukraine	$1.14
Subtotal	$2.98
Add back in Freeport LNG Production	$1.90
Total Predicted Average Price During Recession	**$4.88**

2. Assumes September delivery price is peak.

Peak Recession Price (September 2022)	$9.00
Recessionary Effect (51% Reduction)	-$4.59
Subtotal	$4.41
Add back in Freeport LNG Production	$1.90
Total Predicted Average Price During Recession	**$6.31**

Price Analysis - Four Views (3 and 4)

3. If Shale Gas Production **levels off or declines**, we can expect an average recessionary price of $6.47/MMBtu. This assumes recessionary effects like recessions before Shale Gas production took off.

Pre Shale Gas Avg Recessionary Price	$4.57
Add back in Freeport LNG Production	$1.90
Total Predicted Avg Price During Recession	**$6.47**

4. If Shale Gas Production **resumes** its pre-pandemic exploration and production levels, we can expect an average recessionary price reduction of $2.72.

September 2022 Delivery Price	$9.00
- Shale Gas Price Recessionary Reduction Effect	-$2.72
	$6.28
+ Freeport Back Online	$1.90
Total	$8.18

Conclusions

- Possible effects of a recession could cause average natural gas prices to range from $4.88 - $8.18.
- Today's (8/25/22) Henry Hub forward curve predicts prices next spring at about $5.75.
- If natural gas production remains flat for the next 1 – 2 years, yet exports rise, expect prices closer to $8.18.
- If production rises, with demand falling due to a recession, expect prices in the area of $5.00.
- If production rises, exports continue to increase and domestic demand flat or falling due to a recession, expect prices around $6.
- Worst case scenario (from an end-user perspective) is that exports rise and demand remains unaffected by a recession, resulting in average prices above $8 and probably closer to $9.00.