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April 05, 2022

MEMORANDUM

TO: Council Members

FROM: Steven Simmons

SUBJECT: Update to the Natural Gas Price Forecast

BACKGROUND:

Presenter: Steven Simmons

Summary: This presentation will cover the recent efforts to update the natural gas price forecast for the WECC region. This work was needed to support the upcoming study of wholesale electric market prices. Coming so quickly on the heels of the 2021 Power Plan, this work was a limited in scale and was not a full price forecasting cycle. Instead, the forecast from the plan was revisited, evaluated for accuracy, and updated as needed. Updates to the forecast centered on three primary areas of concern:

1. Inflation rates
2. Monthly price shapes
3. Major hub price differentials

Relevance: Natural gas prices can influence many factors in power planning such as gas consumption, power plant dispatch, energy cost, and emission levels.

Workplan: A.4. Forecasting and Economic Analyses

Background: A detailed review of the natural gas work for the 2021 Power Plan may be found in the supporting materials:

https://www.nwcouncil.org/2021powerplan_sitemap/

Update to the Natural Gas Price Forecast

April 12, 2022

Steven Simmons



**THE 2021
NORTHWEST
POWER PLAN**

FOR A SECURE & AFFORDABLE
ENERGY FUTURE

Poland, dependent on Russian gas, touts 1st US LNG cargo as 'turning point'

Wednesday, June 7, 2017 1:47 PM PT

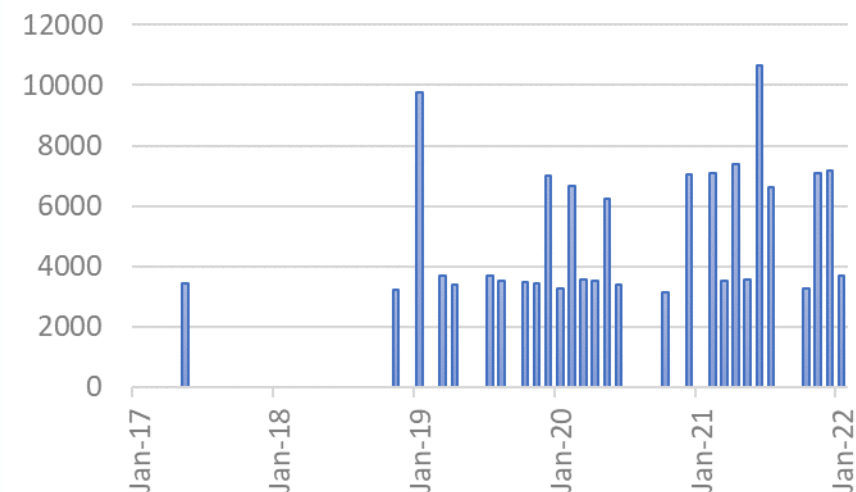
By Rachel Adams-Heard
Market Intelligence

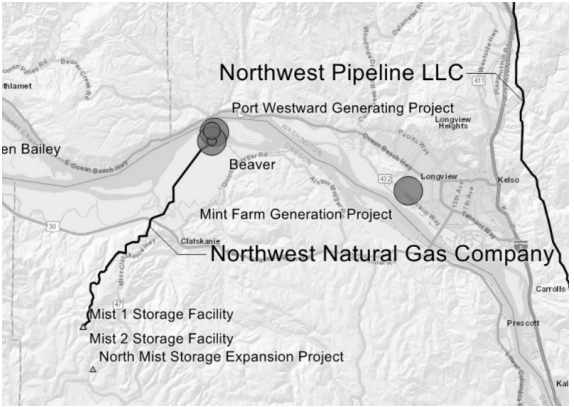
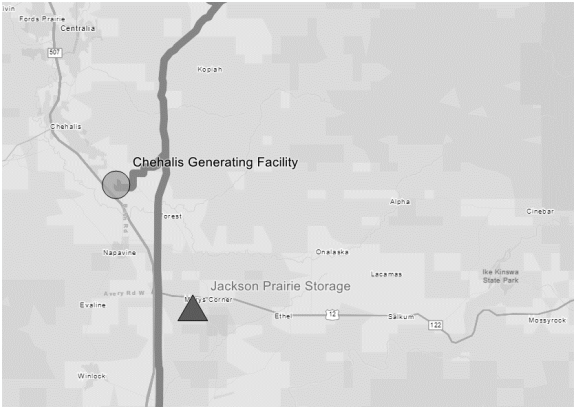
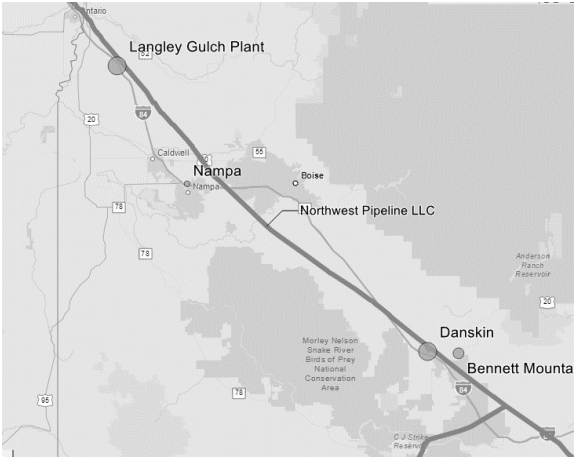
Poland is set to receive its first cargo of U.S. LNG, a "turning point" in the country's move to lessen its dependence on Russian gas, Polish officials said in Washington, D.C.

Proponents of U.S. LNG exports have promoted shipments across the Atlantic as a way to diversify Europe's gas supply away from Russia's state-owned Gazprom since before Cheniere Energy Inc. stepped onto the scene with its Sabine Pass LNG export terminal in Louisiana. From February 2016 to March 2017, the equivalent of 27 Bcf of U.S. gas from the terminal landed in Italy, Spain and Portugal. Poland expects to receive its first cargo June 8, and another shipment is on its way to the Netherlands.

Piotr Naimski, a Polish government official who leads the prime minister's energy infrastructure initiative, said the Kaczynski LNG terminal is an important part of Poland's energy diversification strategy and receiving the first cargo of U.S. LNG is a "milestone" for the country. "We are almost 100% dependent on gas imports from Gazprom," Naimski said at a June 7 event in Washington hosted by the Atlantic Council. "I believe that now we are on the verge of success. It's a turning point."

LNG Exports to Poland
mmcf





Agenda

1. Fuels at the Council and gas forecasting
2. Brief on fundamentals
3. 2022 Price Update



Fuels Work at the Council

1. Long term natural gas price forecast
 - a) A 20-year monthly forecast including low, mid and high price series for all major WECC hubs
 - b) Power plant & city gate price points
 - c) Stochastics for risk planning
 - d) Fixed fuel costs
2. Upstream methane emissions
3. Renewable natural gas and hydrogen production and demand
4. Power Plan materials are available for fuels
nwcouncil.org/2021powerplan_sitemap

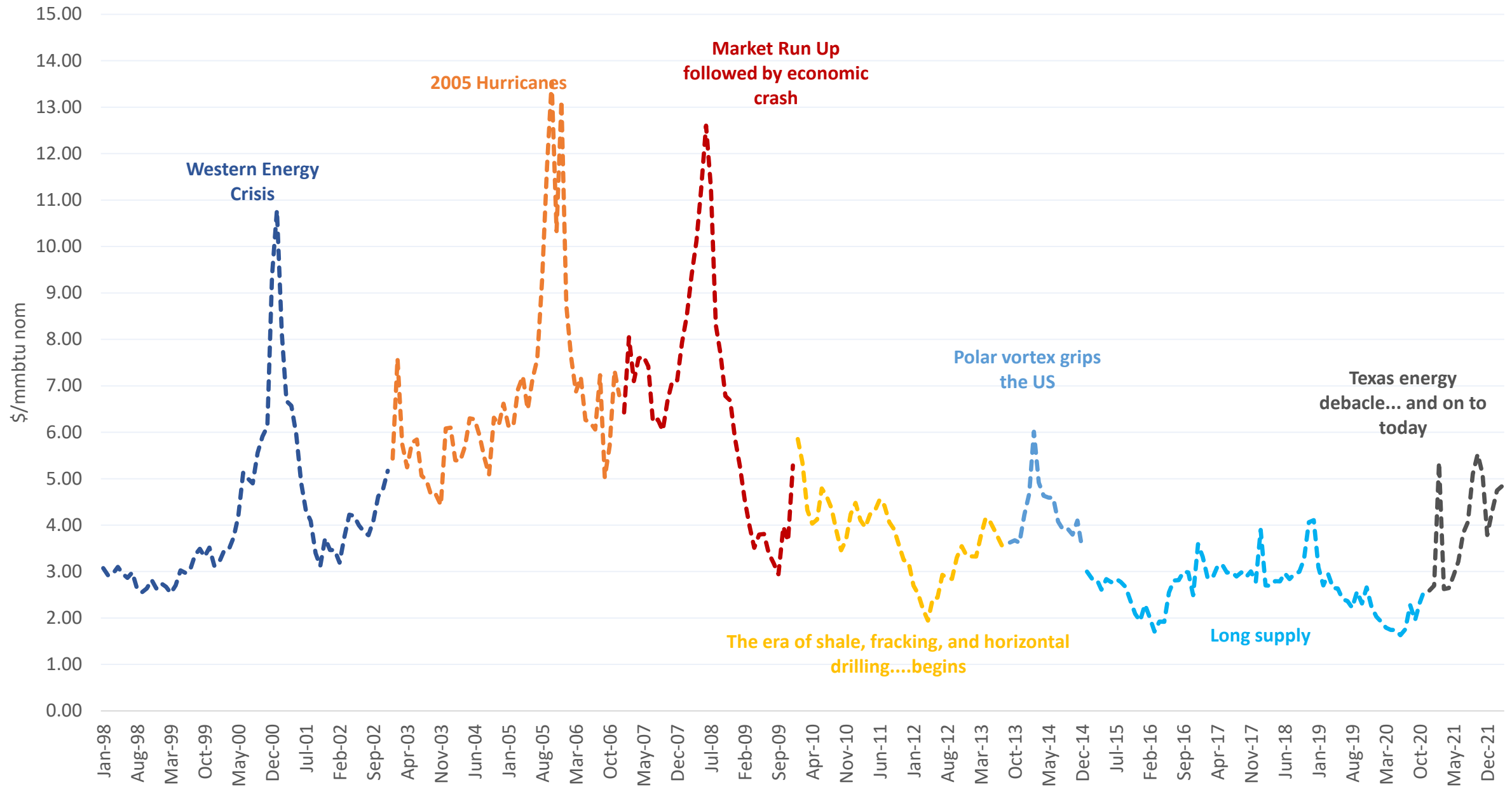


Forecasting Cycle

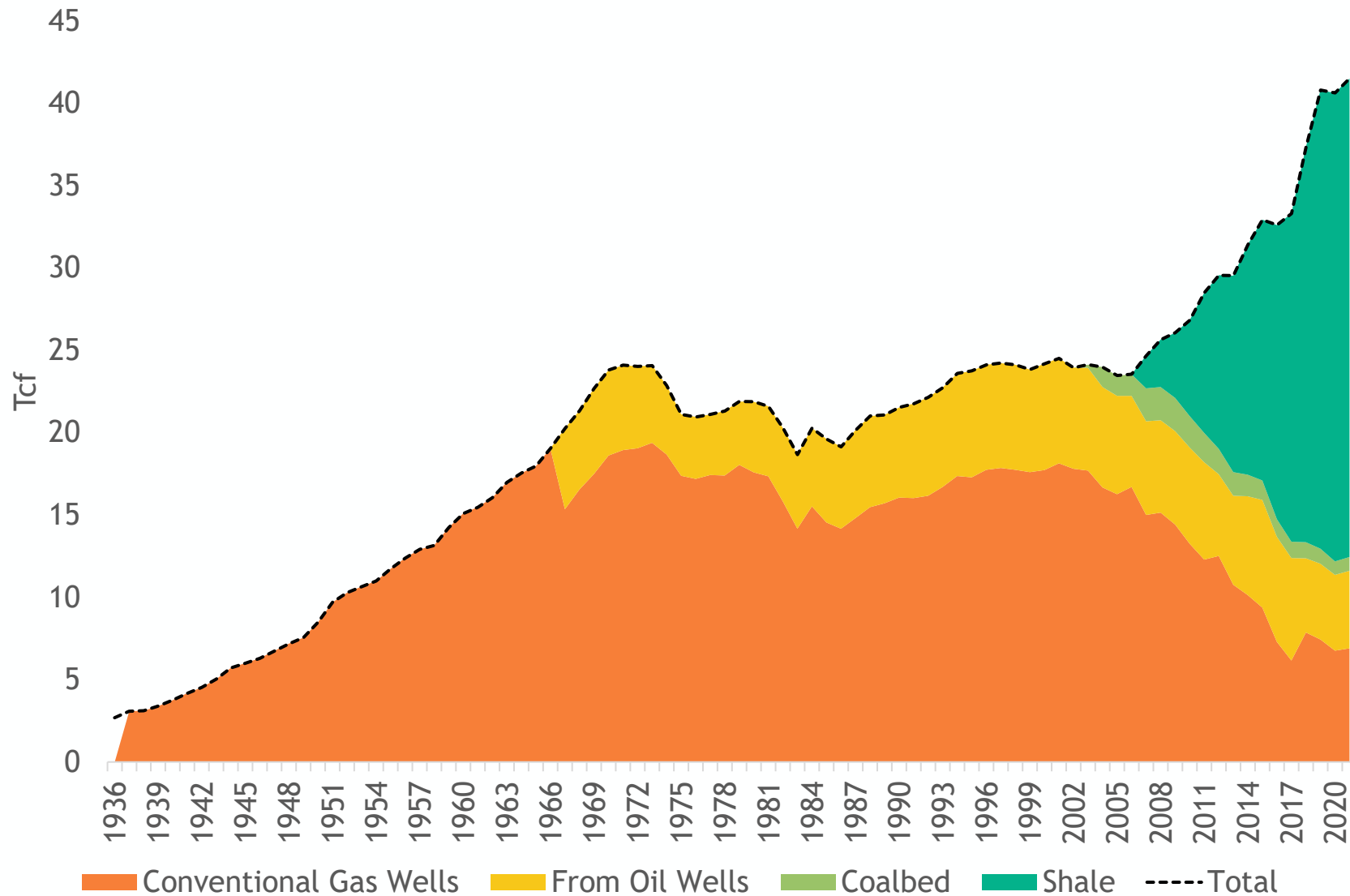
1. Natural Gas Advisory Committee members are surveyed for their organization's view on future gas prices - the results are compiled anonymously
2. Other price data sets are rolled in, including the EIA, Global Insight, and CEC forecasts
3. All outlooks are compiled, the high-level price results are discussed
4. A finely tuned, monthly forecast for each of the major WECC hubs is developed by staff— both quantitatively and using forecast “art” and judgment - what begins as a consensus driven, single hub annual forecast is expanded into an encompassing quantitative price forecast
5. Monthly price shapes are calculated from historic price data set
6. Finally – hub prices are moved to delivered prices for all the Council planning models as required, including the Aurora Model.



Monthly Natural Gas Prices at Henry Hub from 1998 to today

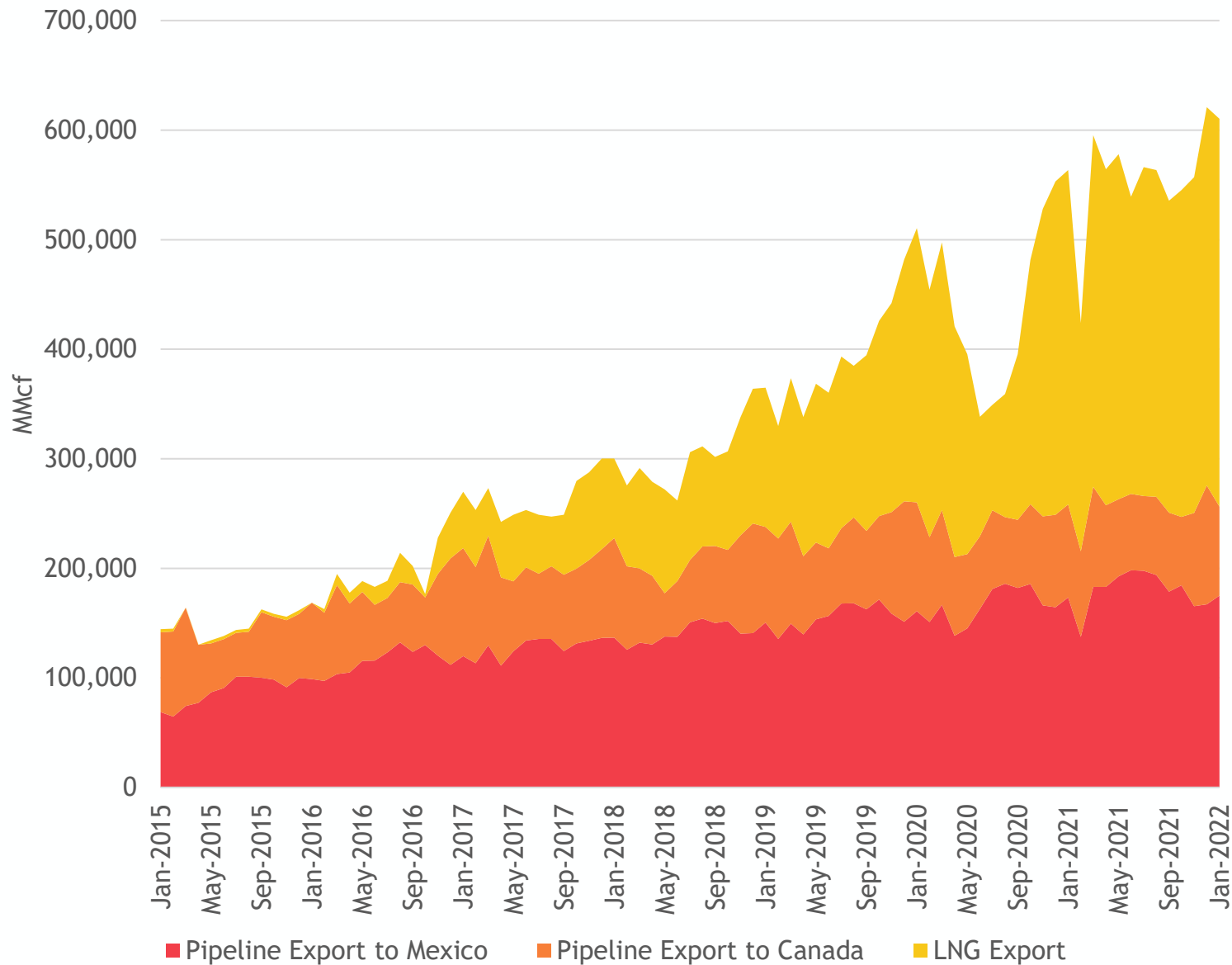


A History of US Domestic Natural Gas Production



- After leveling off in 2020, domestic production in 2021 grew by 2.2%
- Production in Jan 2022 is up 2.5% over Jan 2021

Monthly US Exports



Top 10 US LNG Export Destinations last 12 months

Top 10 US LNG Export Destinations last 12 months	%
South Korea	12
China	11
Japan	9
Brazil	8
Spain	7
United Kingdom	6
France	6
Turkey	6
Netherlands	5
India	5

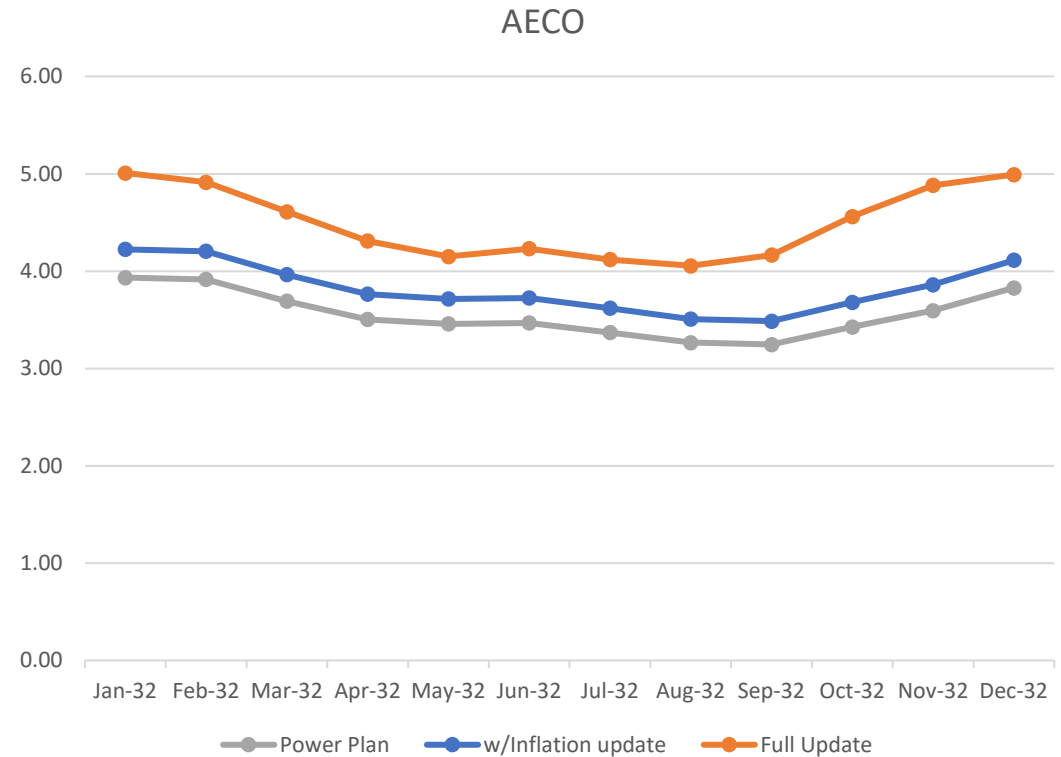
LNG Exports

- In 2021, the US exported 3,561 bcf of LNG – nearly 9% of domestic production that year
- By my calculation – installed capacity (peak) was 3,976 bcf in 2021 – suggesting facilities running at 90% of peak capacity
- In 2022 an additional 854 bcf of LNG export capacity will come on-line, with more to follow in 2024 and 2025
- Western Canada gas may flow west to support a LNG export facility in BC in Kitimat by 2025. A proposed pipeline – TC Energy Corp Coastal Gas Link would connect Alberta gas with the export terminal



2022 Update

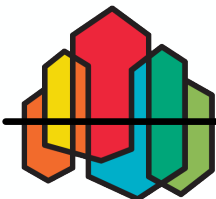
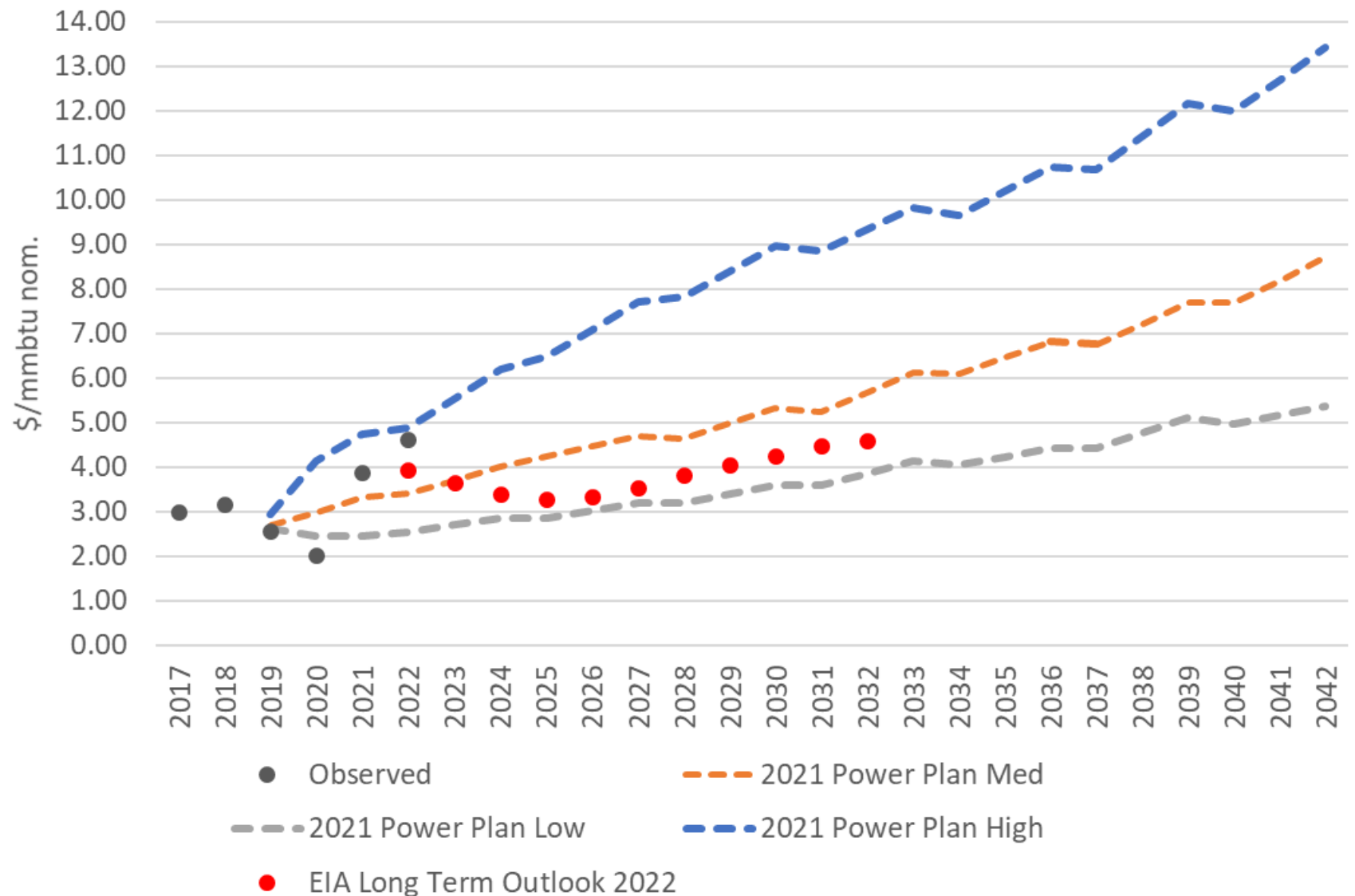
1. 2021 Power Plan price forecast is the starting point
2. Updated deflator series calculated from the most recent GDP Price Index data
3. Updates to monthly pricing shapes for each hub
4. Updates to differentials for each hub



Observed and
forecast for Henry
Hub - annual prices

*note 2022 for Jan -
Mar only

Updated with 2022
financial deflators



2022 Forecast Update - annual prices for select hubs

