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June 7, 2022

MEMORANDUM

TO: Council Members

FROM: Steven Simmons, Elizabeth Osborne, Leann Bleakney

SUBJECT: Fuels Panel

BACKGROUND:

Presenter: Steven Simmons from staff will provide a high-level overview of fuels work at the Council and introduction to the fuel panel

Summary: From the Energy Information Agency (EIA), *fuel* is defined as “Any material substance that can be consumed to supply heat or power. Included are petroleum, coal, and natural gas (the fossil fuels), and other consumable materials, such as uranium, biomass, and hydrogen”.

As part the of the power planning process, traditionally the Council has developed analyses and price forecasts for fuels used in power generation such as natural gas and coal.

However, the region’s energy and power systems are becoming more intertwined with the increased electrification of transportation, buildings, and industry, as well as a move toward low carbon intensity fuels. The 2021 Power Plan was the first to include an analysis of the regional roadway transportation system, and an analysis of the potential use of hydrogen as a fuel for transportation and industry, as well as an estimate of the electrical load resulting from hydrogen production. As power planning continues, there will be an increased emphasis to understand the full implication the trends and policies to reduce the use of fossil fuels in

the region and the extent to which the power system will enable this transition.

Presenter: Glenn Blackmon, PhD, Manager, Energy Policy Office, Washington Department of Commerce
Stephanie Celt, Senior Energy Policy Specialist, Washington Department of Commerce

Summary: Speakers from the Energy Policy Office within the Washington Department of Commerce will discuss the 2021 State Energy Strategy, which analyzed potential pathways for meeting the state's greenhouse gas emissions limits in 2050 and identified the mix of energy sources that will be needed to achieve emissions reductions. The presenters will focus on the role of hydrogen in the future resource mix, the current development of hydrogen resources in Washington, and the legislative and policy context at the state and federal levels.

Presenter: Colin McConnaha, Manger, Office of Greenhouse Gas Programs, Oregon Department of Environmental Quality
Cory-Ann Wind, Oregon Clean Fuels Program Manager, Oregon Department of Environmental Quality

Summary: Speakers from the Oregon Department of Environmental Quality will discuss the Clean Fuels Program (CFP), a program that began in 2016 which has made significant progress in reducing greenhouse gas emissions from fossil fuel use in the transportation sector. In addition, state's Climate Protection Program (CPP) is a new regulatory program designed to reduce greenhouse gas emissions from all fuels used across the state.

Relevance: The analysis of fuel consumption, prices, as well as fuel choices and trends will continue to be important for power planning.

Workplan: A.4. Forecasting and Economic Analyses

Fuels Panel

Overview of Fuels at the Council

June 15, 2022

Steven Simmons

Introduction

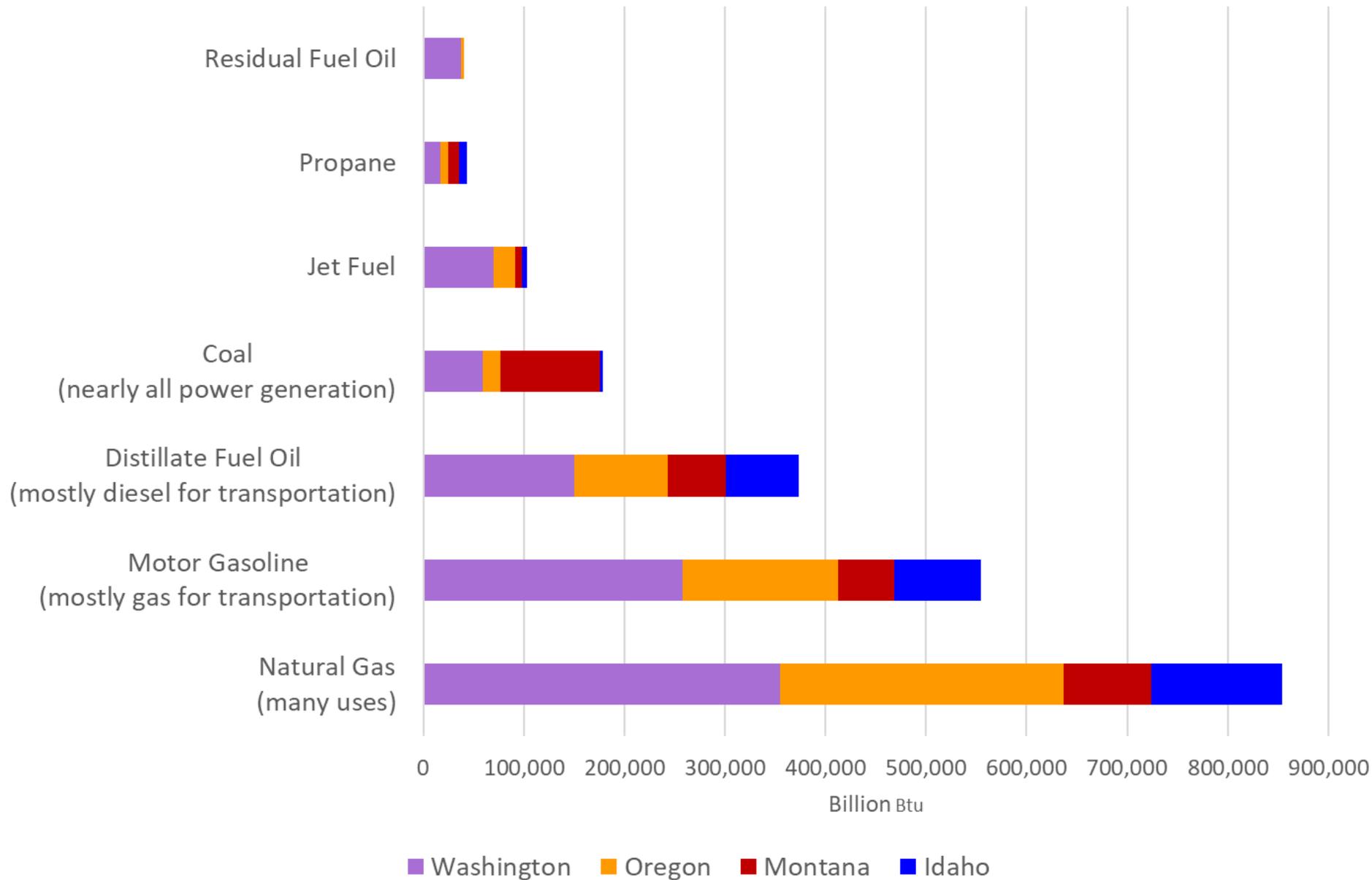
There is a transition underway in the fuels across the entire energy system – including the power sector, industry, buildings, and transportation

- Sharp move away from coal
- Move to blend and potentially replace traditional fossil fuels with lower carbon intensity fuels
- Move to replace traditional end-uses that relied on fossil fuel with electrification
- New fuels/energy carriers such as hydrogen, renewable diesel, are emerging

*“Any material substance that can be consumed to supply heat or power. Included are petroleum, coal, and natural gas (the fossil fuels), and other consumable materials, such as uranium, biomass, and hydrogen” **

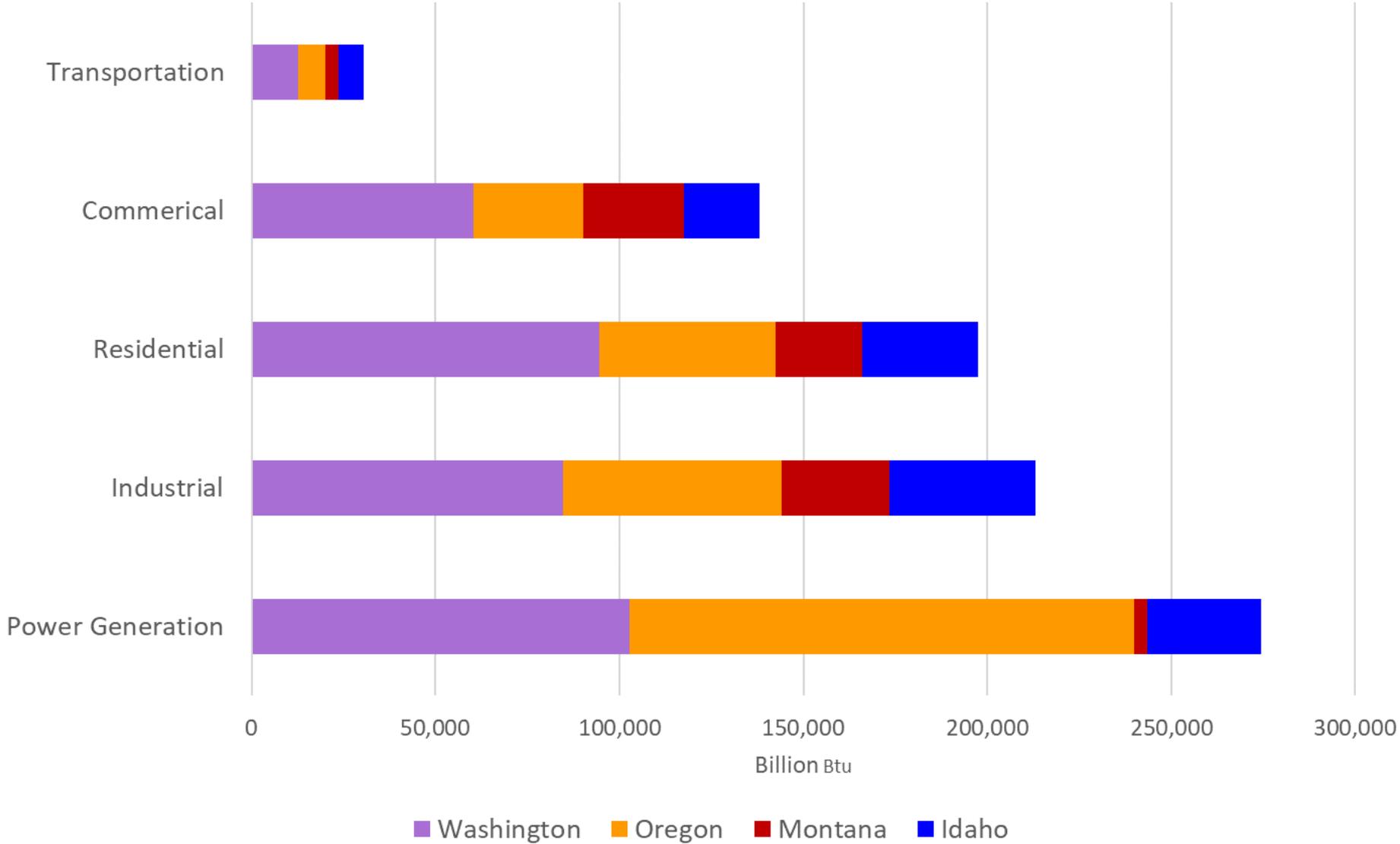
**Energy Information Agency*

Fossil fuel consumption across the 4-state region in year 2020



Natural Gas Consumption in 2020

Natural gas consumption across the 4-state region in year 2020



Government Actions and Policies

FEDERAL

Hydrogen Shot – from the Department of Energy – like the sun shot program that successfully lowered the cost of solar – goal is to reduce the cost of clean hydrogen by 80% in one decade (1 1 1) \$1 per 1 kg in 1 decade

The Federal Government has offered \$8 billion dollars to develop clean hydrogen hubs – this is thru the IJJA – infrastructure investment & jobs act.

Washington State

Energy Strategy

2021 Roadmap for meeting WA state's greenhouse gas emission limits – across all sectors

Clean Fuel Program

2022 - Similar to the programs in BC, California and Oregon – requires fuel suppliers to reduce the carbon intensity of the transportation fuels they sell into the market over time.

Oregon

Clean Fuels Policy (CFP)

From 2016, set a clean fuel standard for transportation fuels used in the state – has resulted in fuel suppliers delivering both cleaner and more renewable products

Climate Protection Program (CPP)

2022 – new regulatory program to reduce GHG emissions over the next 30 years. Sets a declining limit on emissions from all fossil fuels used in the state

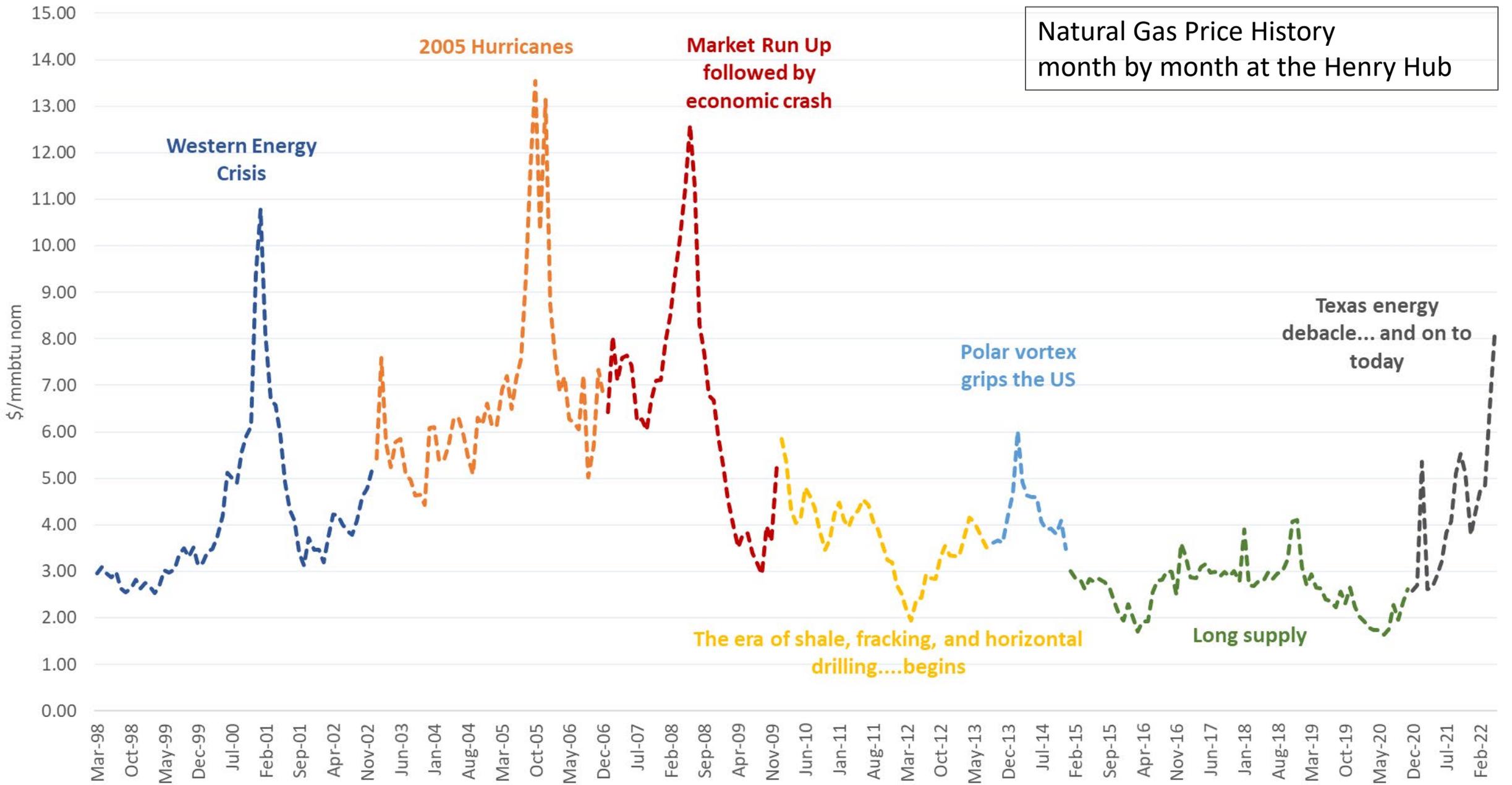
Fuels and Council Power Planning

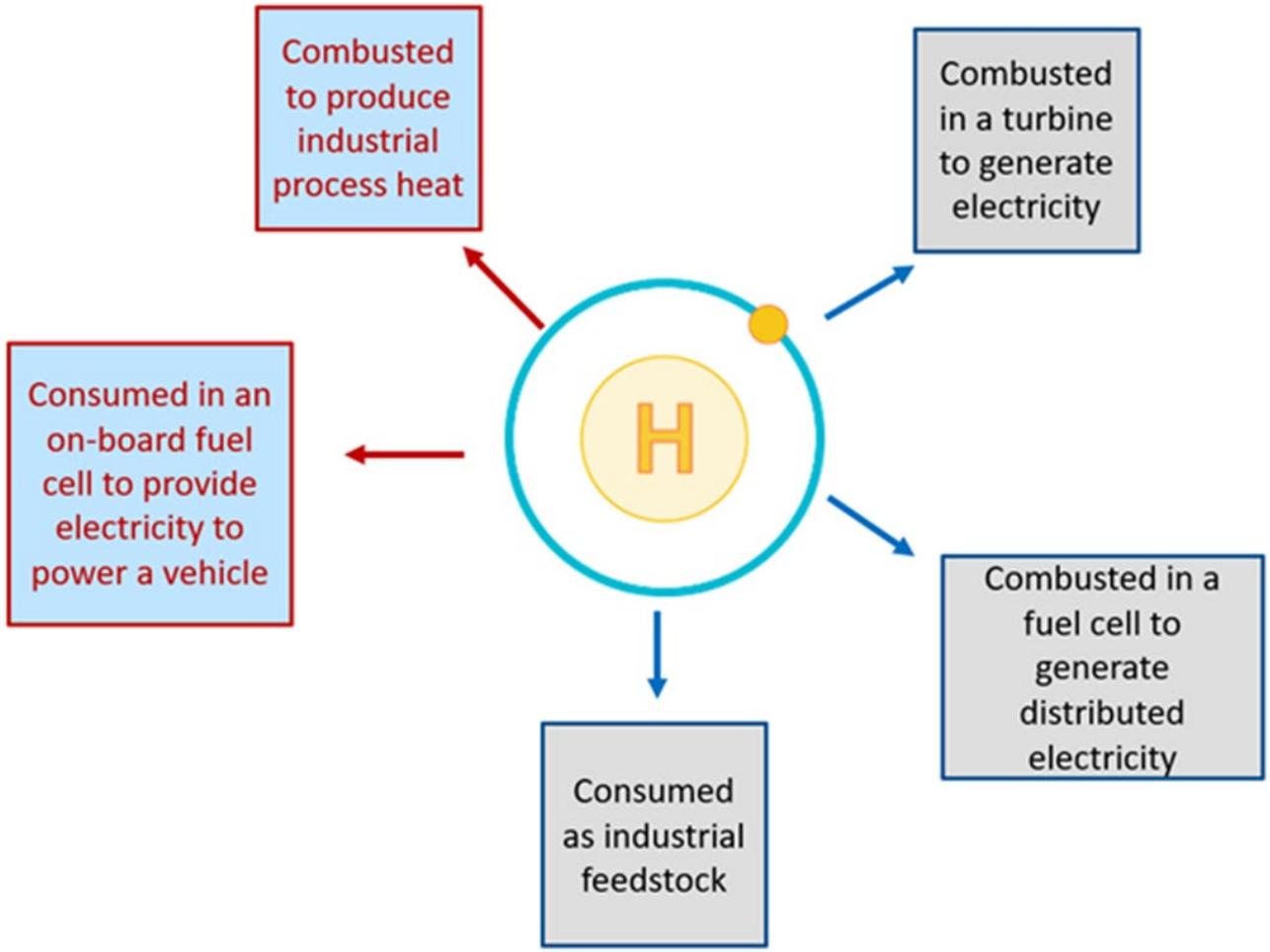
1. Natural gas prices
 - a. Long term price forecast for WECC wide hubs
 - b. Layer in price uncertainty for risk planning
 - c. Estimates for fixed fuel costs, and offtake price estimates for regional power plants and city hubs
2. Quantification of greenhouse gas emissions related to natural gas use
 - a. At point of combustion – CO₂
 - b. Upstream methane - CH₄
3. Forecast of renewable natural gas consumption and role in replacing fossil gas use
4. Roadway Transportation
 - a. Forecast of gasoline/diesel consumption and emissions from passenger vehicles, buses and trucking
 - b. Forecast of electricity demand for electric vehicles
 - c. Forecast of hydrogen demand under a high electrification and hydrogen scenario for heavy duty vehicles
 - d. Forecast of associated electricity demand for clean hydrogen production via electrolysis

Current Issues

- High domestic consumer prices for gasoline and diesel products
- High wholesale prices for natural gas
- Geopolitical conflict
- Supply chain issues and inflation
- Concern and actions around the damaging environmental effects of greenhouse gas emissions

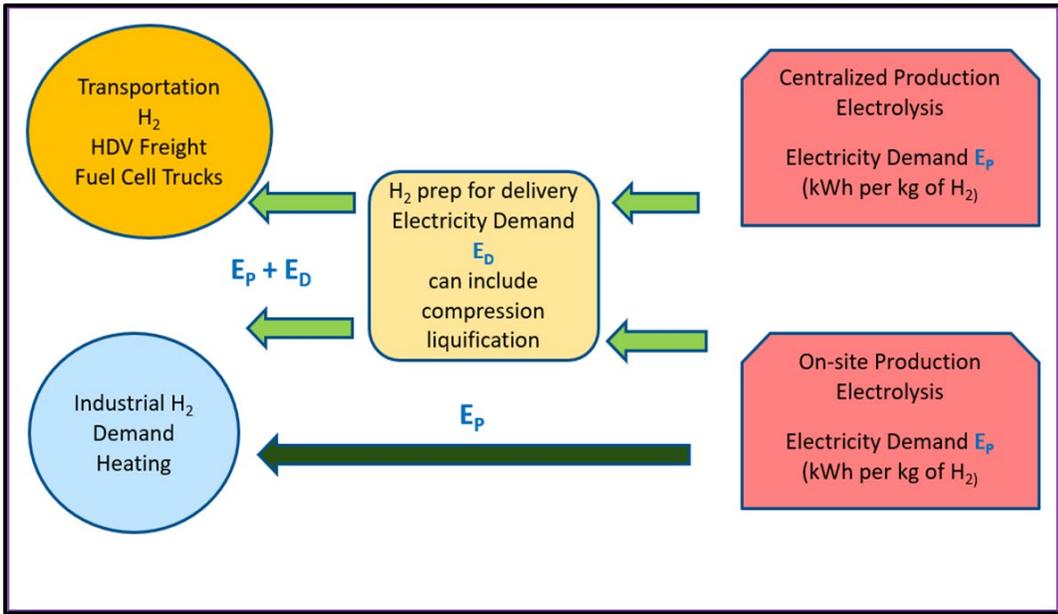
Natural Gas Price History
month by month at the Henry Hub





Hydrogen in the 2021 Power Plan

- Demand from Industrial and Transportation Sectors
- Production via Electrolysis to meet in-region demand – adds significant electricity load



Wrap Up

- Reconfiguring the Natural Gas Advisory Committee (NGAC) to an all-encompassing Fuels Advisory Committee – called the FAC
- Expect upcoming fuel series topics on hydrogen, and other low carbon renewable fuels