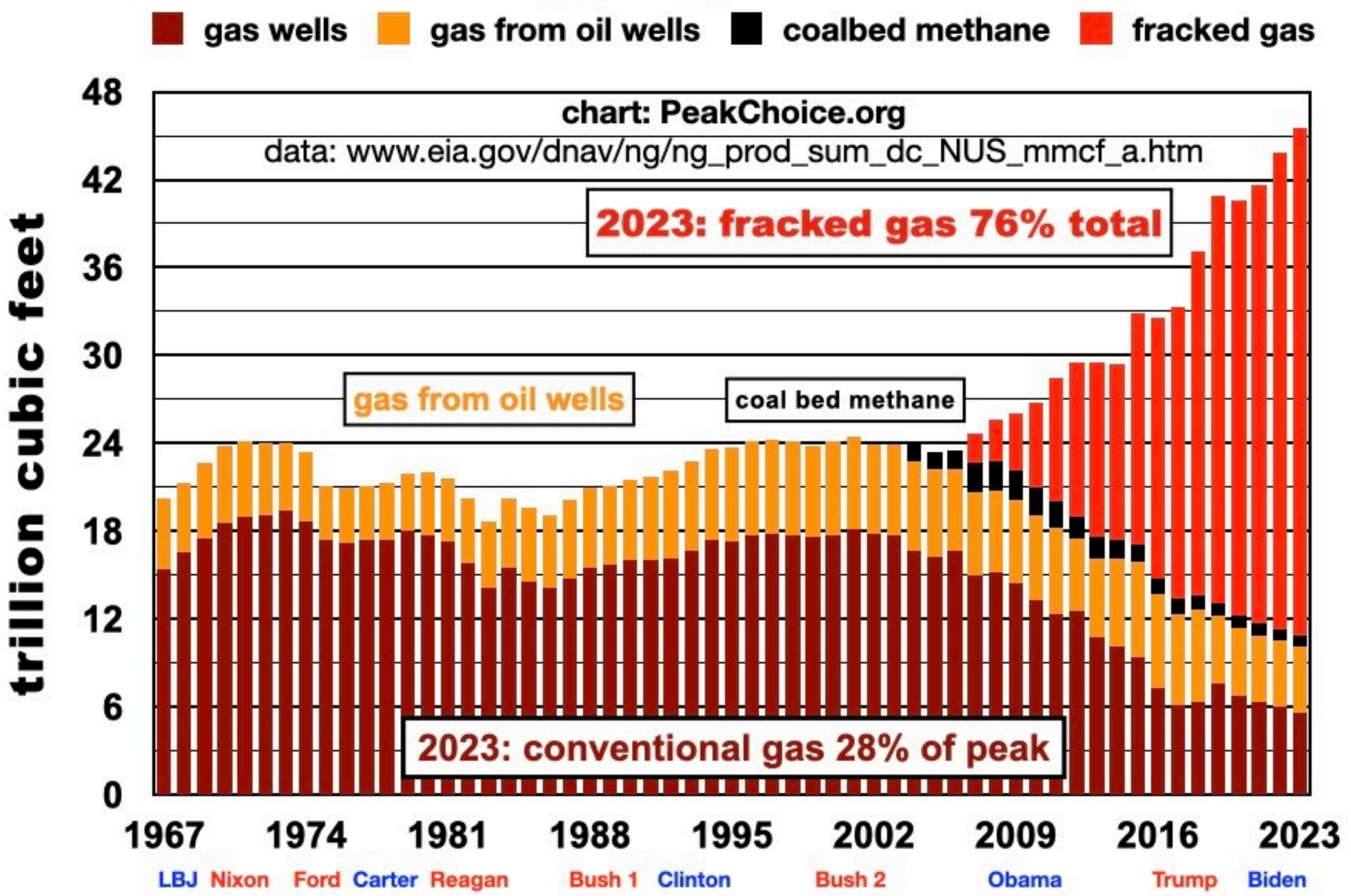
USA conventional unnatural gas peaked 1973
fracking postponed rationing



fracked gas was 8% of USA gas in 2007, in 2023 fracked gas was 76%

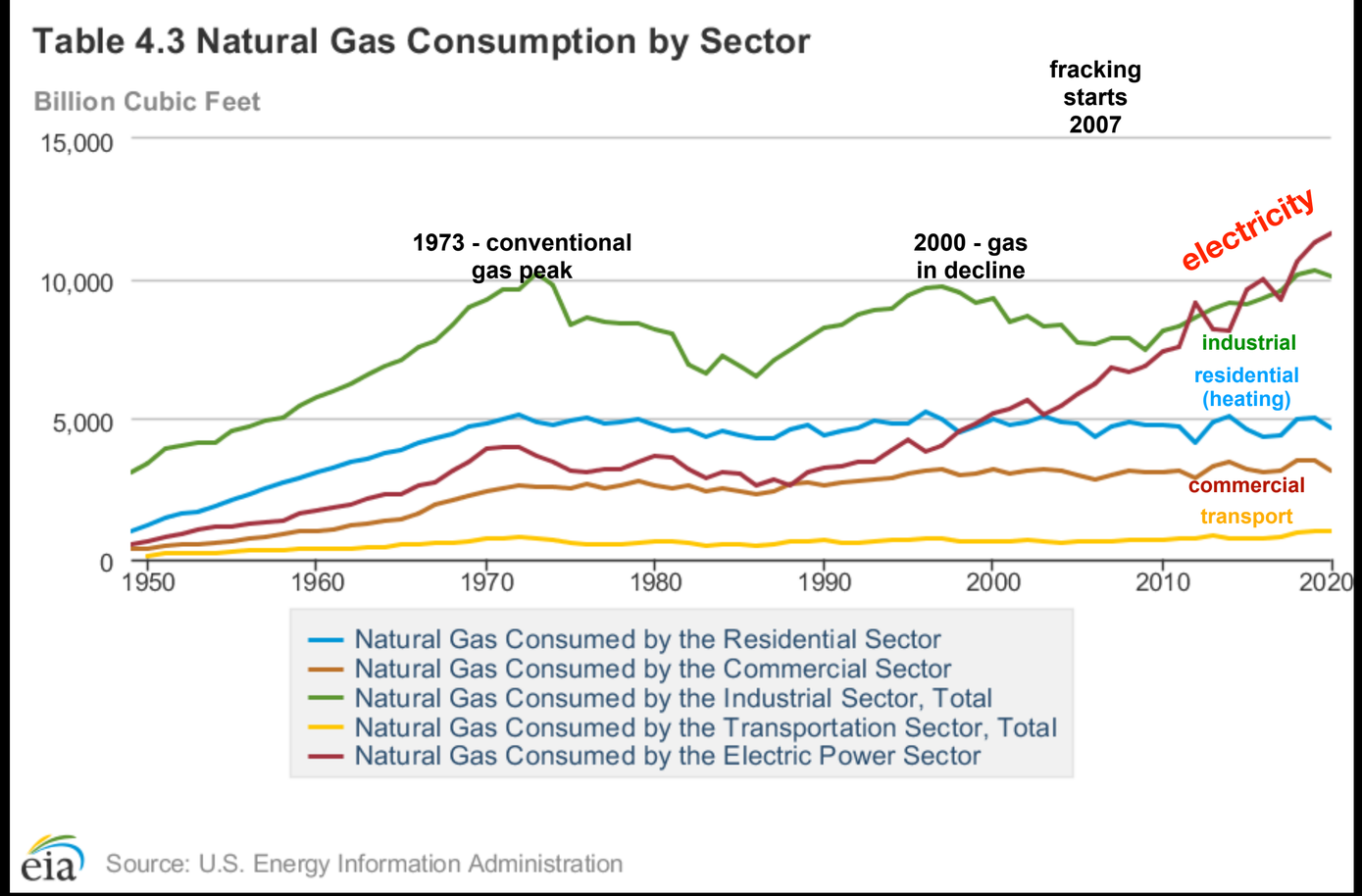
fracked gas in 2017 (19.927 trillion) surpassed 1973 conventional gas peak (19.371 trillion)

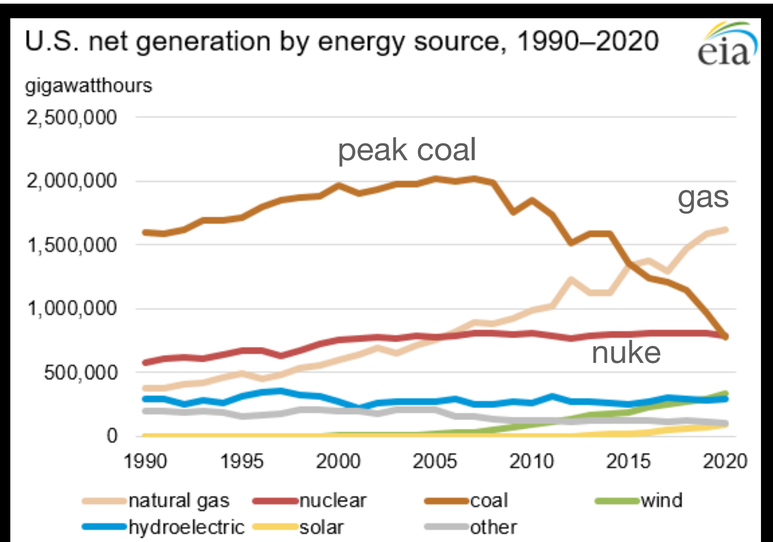
conventional gas and from oil wells combined in 2017 (12.873 trillion) below 1957 level (12.9 trillion)

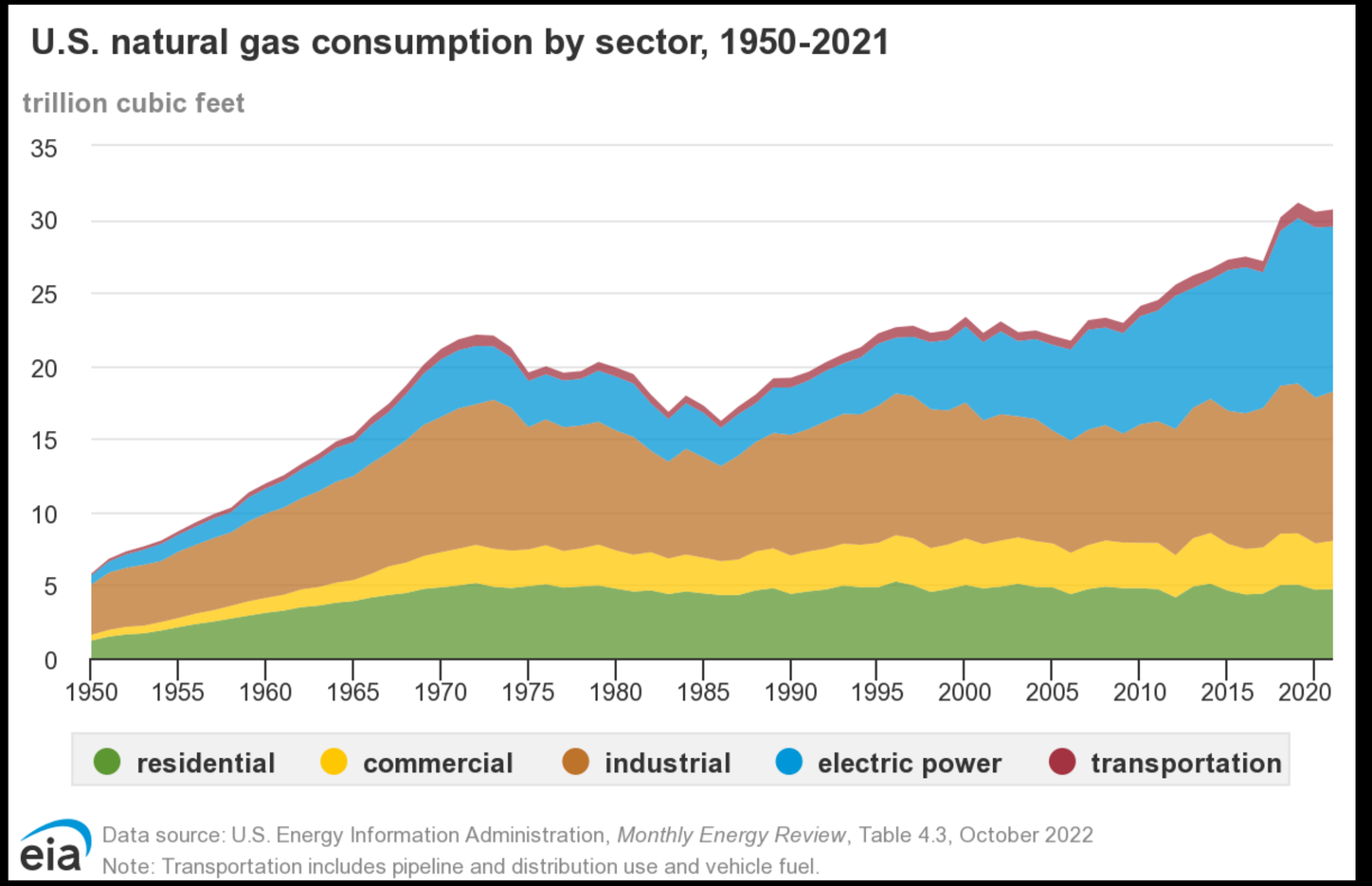
2022 conventional gas was 5.979 trillion, first time below 6 trillion since the 1950s

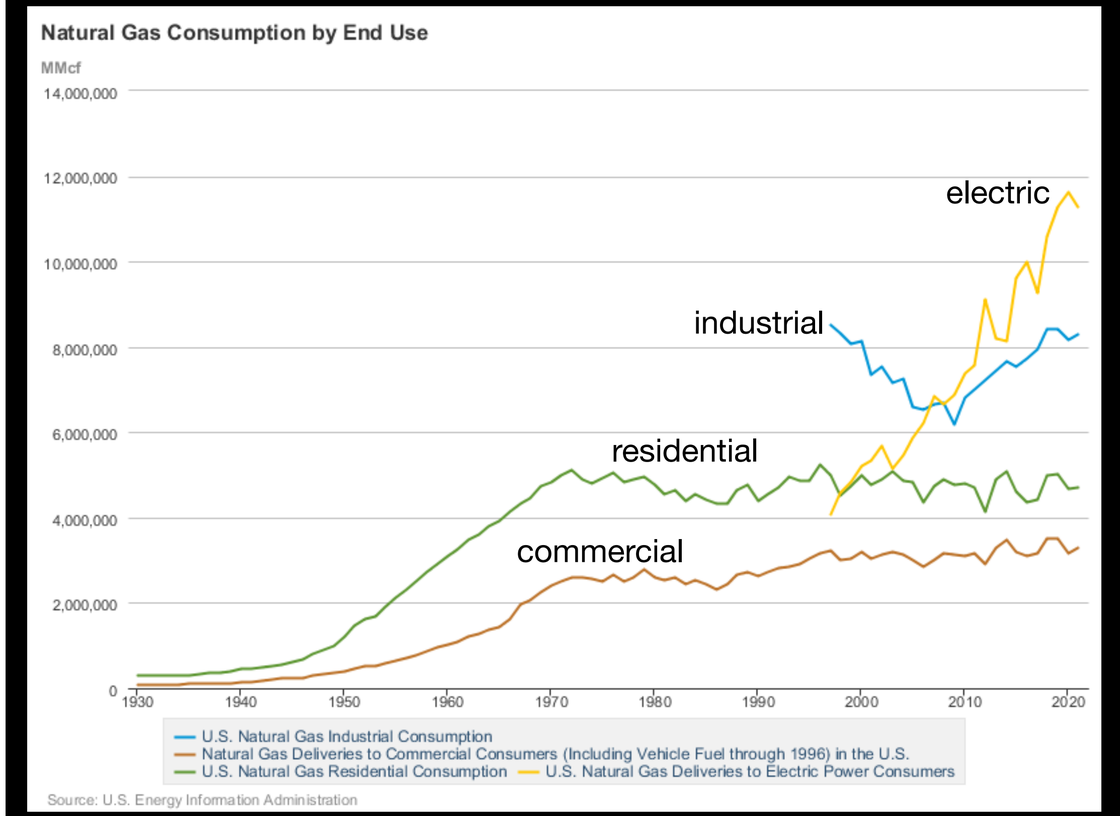
The main increase in the use of unnatural gas in the US in recent decades has been for electric grids. Nat. gas generators are easier to approve under the Clean Air Act than coal burners (and coal is in permanent geologic decline, a physical fact obscured by discussion of its more obvious pollution problems). However, gas supplies were never sized to both power electricity and heat cold cities in the winter. Conventional gas decline has been mitigated by the sudden, sharp increase in fracked gas since 2008, but fracked gas is not only more toxic than conventional gas wells, it's also more expensive, takes more energy and talent. Fracked wells rise and fall faster than conventional drilling, so the fracking bubble is a short term boom and bust.

Campaigns to restrict nat. gas use in favor of more electricity ignore that gas is a primary power source for electricity. Here in Oregon, there has been a huge increase in nat. gas combustion east of the Cascades in Klamath Falls and Boardman, hard to notice in the liberal cities of Portland and Eugene, but gas is a key source of power. **Burning that gas and sending the electrons over the Cascade mountains might be less efficient than just burning the fuel closer to where the energy is wanted.** **Using less energy, including less electricity, is usually belittled.**

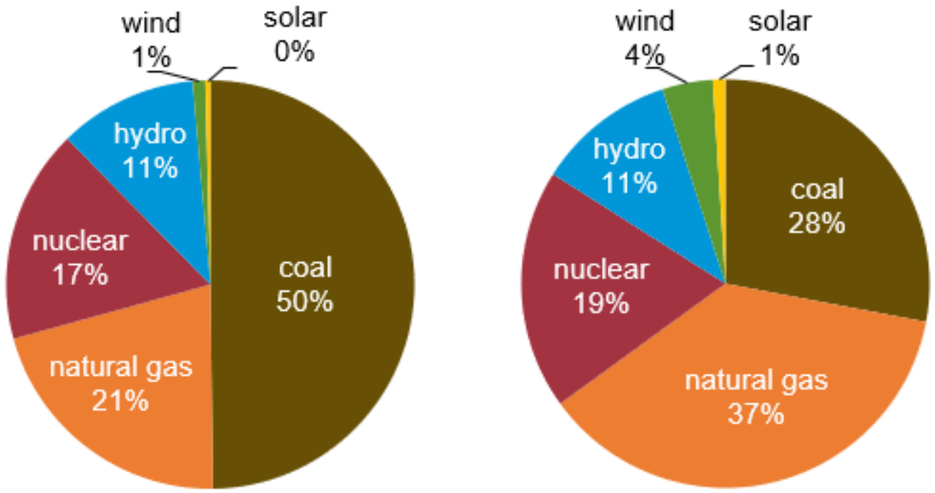





U.S. natural gas consumption by sector, 1950-2021
trillion cubic feet
35
30
25
20
15
10
5
0
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
residential
commercial
industrial
electric power
transportation
Data source: U.S. Energy Information Administration, Monthly Energy Review, Table 4.3, October 2022
Note: Transportation includes pipeline and distribution use and vehicle fuel.

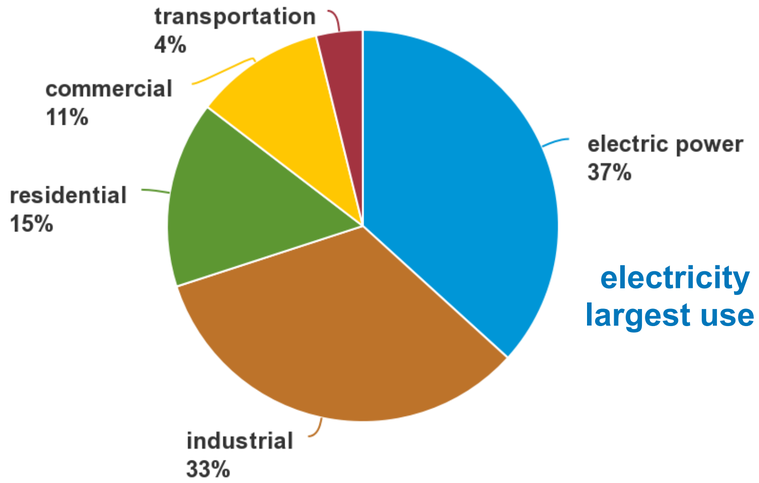

Natural Gas Consumption by End Use
MMcf
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
electric
industrial
residential
commercial
U.S. Natural Gas Industrial Consumption
Natural Gas Deliveries to Commercial Consumers (Including Vehicle Fuel through 1996) in the U.S.
U.S. Natural Gas Residential Consumption
U.S. Natural Gas Deliveries to Electric Power Consumers
Source: U.S. Energy Information Administration

Electric utilities power generation by source, 2013 and 2022



U.S. natural gas consumption by sector, 2021

Total = 30.66 trillion cubic feet



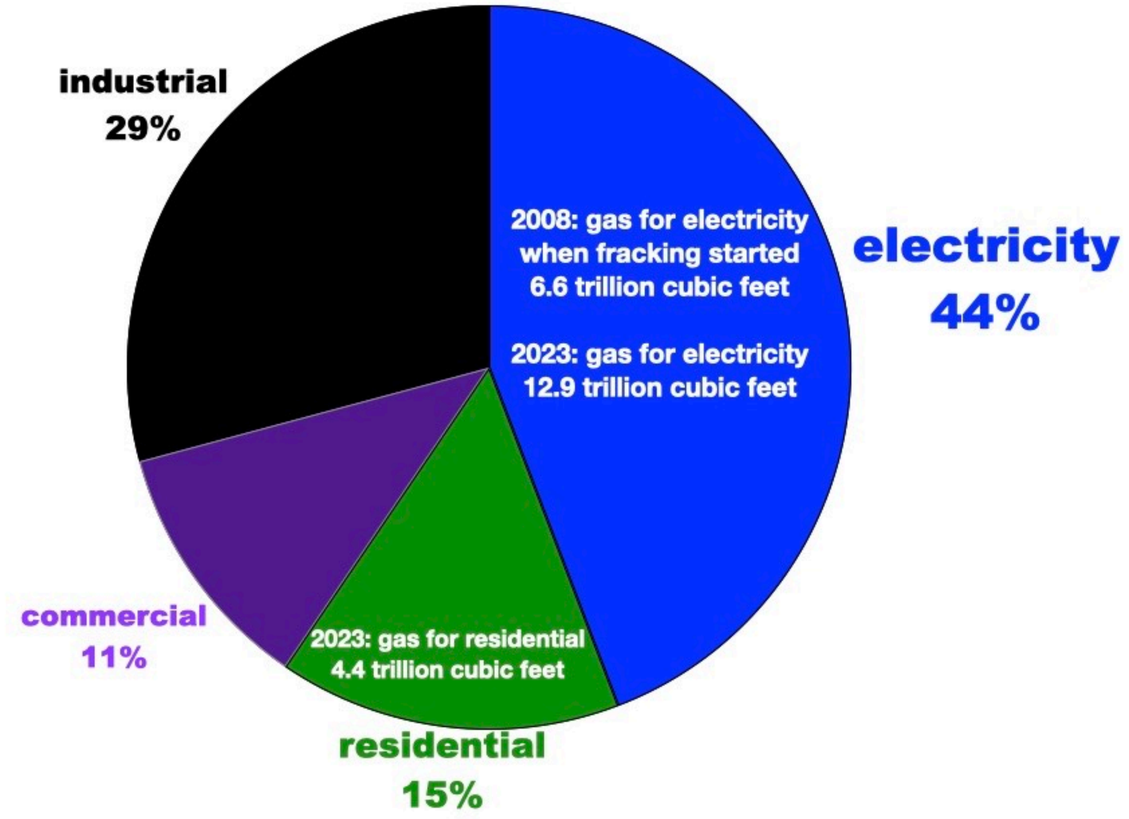
electricity is the largest use of gas

Data source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 4.3, October 2022

Note: Transportation includes pipeline and distribution use and vehicle fuel. Sum of shares may not equal total because of independent rounding of sector data.

unnatural gas

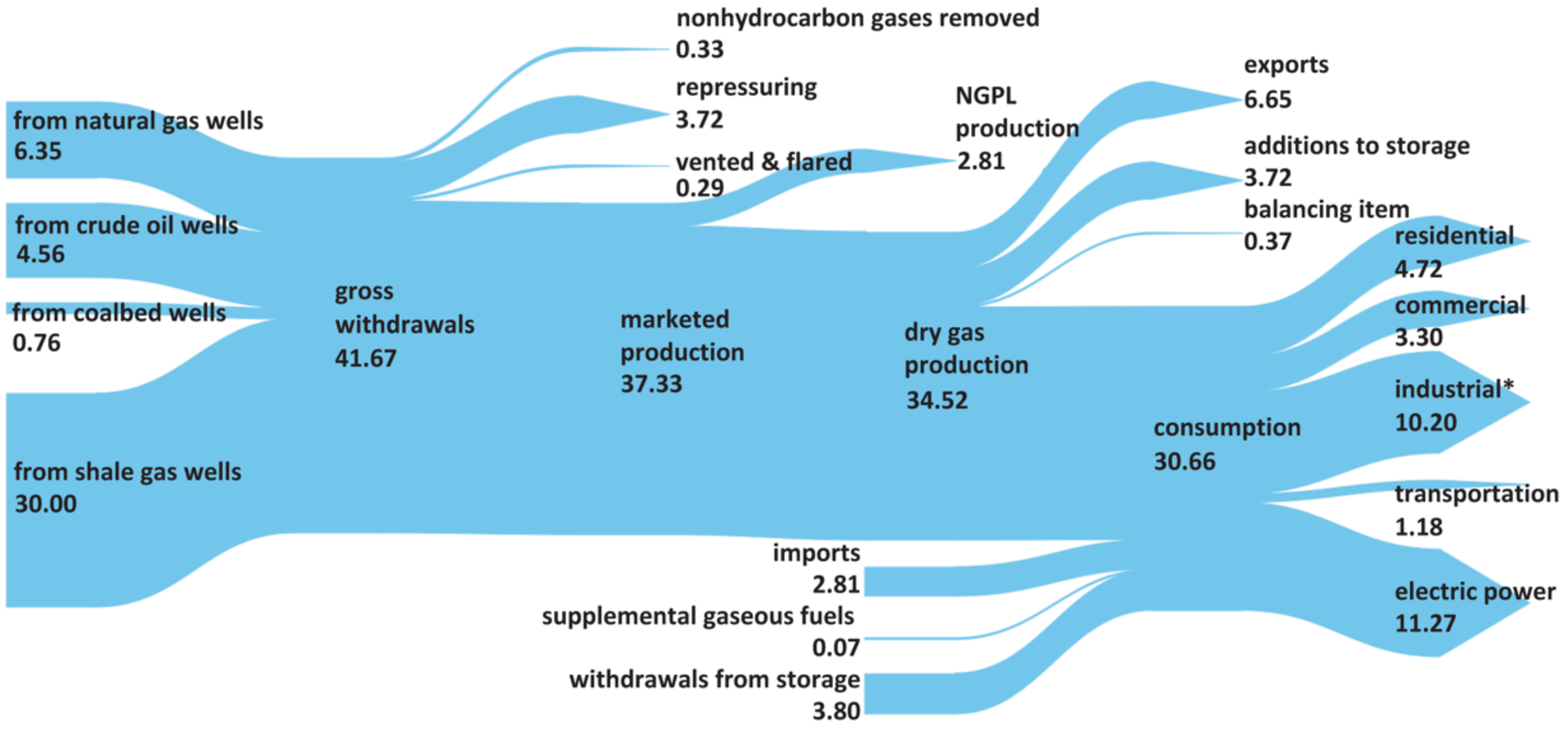
2023: volumes delivered to customers



data: www.eia.gov/dnav/ng/NG_CONS_SUM_DCU_NUS_A.htm
chart: PeakChoice.org

Natural Gas Flow in the United States, 2021

trillion cubic feet



* *Industrial* includes lease and plant fuel.

Source: U.S. Energy Information Administration (EIA), Form EIA-176, *Annual Report of Natural and Supplemental Gas Supply and Disposition*; Form EIA-914, *Monthly Natural Gas Production Report*; Form EIA-857, *Monthly Report of Natural Gas Purchases and Deliveries to Consumers*; Form EIA-816, *Monthly Natural Gas Liquids Report*; Form EIA-64A, *Annual Report of the Origin of Natural Gas Liquids Production*; Form EIA-191, *Monthly Underground Gas Storage Report*; Form EIA-923, *Power Plant Operations Report*; Form EIA-23, *Annual Survey of Domestic Oil and Gas Reserves;* Office of Fossil Energy and Carbon Management, U.S. Department of Energy, Natural Gas Imports and Exports; the Bureau of Safety and Environmental Enforcement and predecessor agencies; state and federal agencies; IHS Markit; Enverus; and EIA estimates based on historical data.

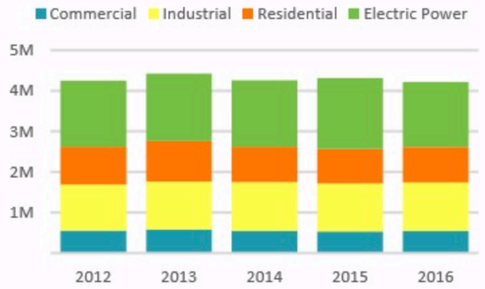
Note: The balancing item is expressed in this flow diagram as an outflow and is therefore a positive number. In the *Natural Gas Annual* tables, it is expressed as -0.37 trillion cubic feet, as U.S. total supply is greater than disposition for 2021. Transportation includes vehicle fuel and pipeline and distribution use.

Natural Gas

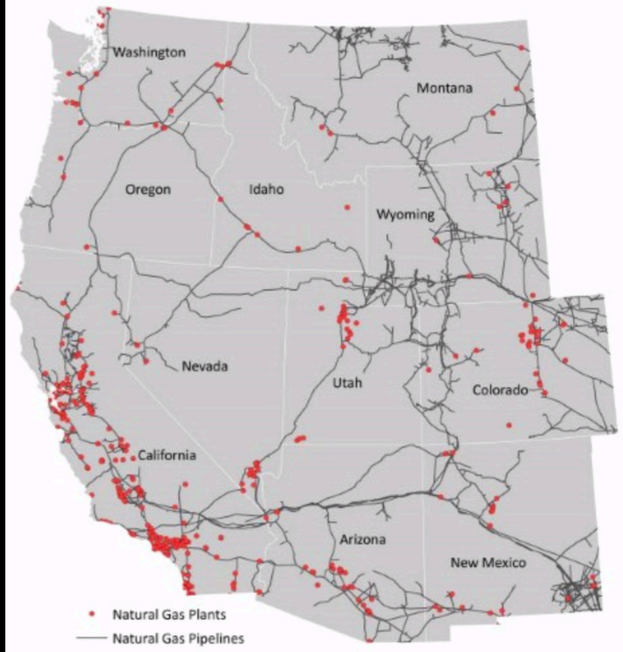
There is significant fluctuation from year to year in the consumption of natural gas for electric power generation. Consumption in other sectors is relatively steady.

Natural gas consumption for electric power generation is driven by the availability of other resources, especially hydroelectric and variable energy resources, and demand for electricity overall. As penetration of variable energy resources increases, the system relies more on natural gas resources for ramping, load-following and changes in generation associated with these variable resources.

Natural Gas Consumption by Sector (MMcf)



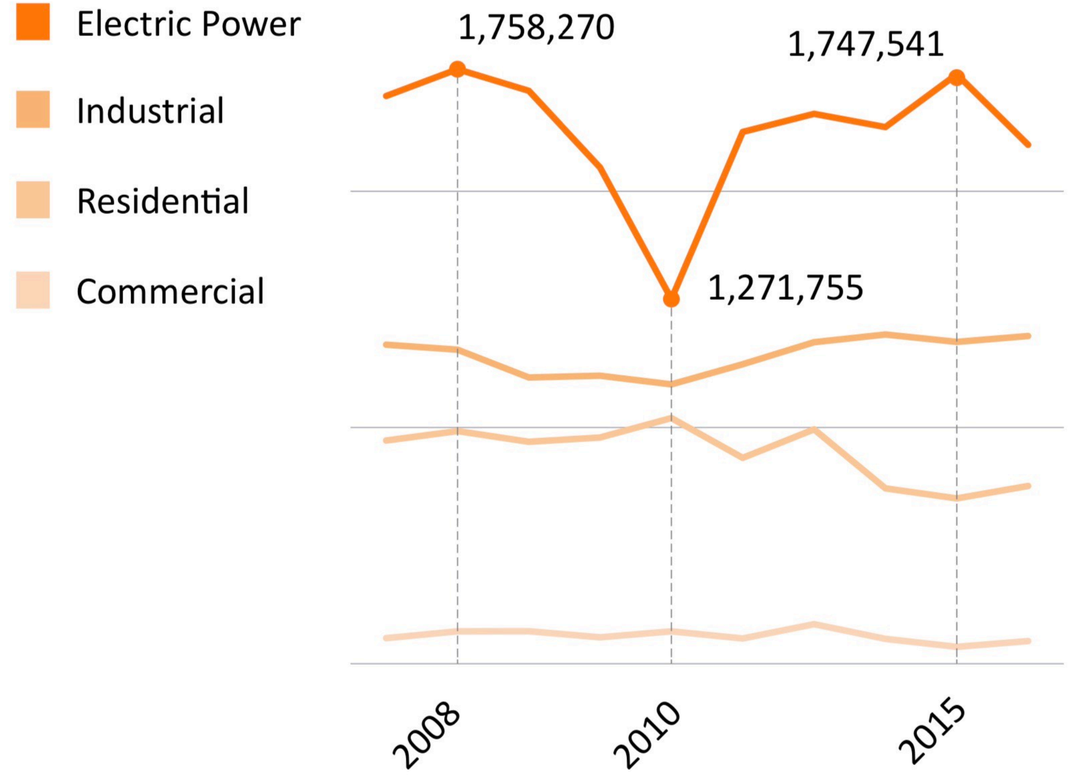
Pipelines and Power Plants



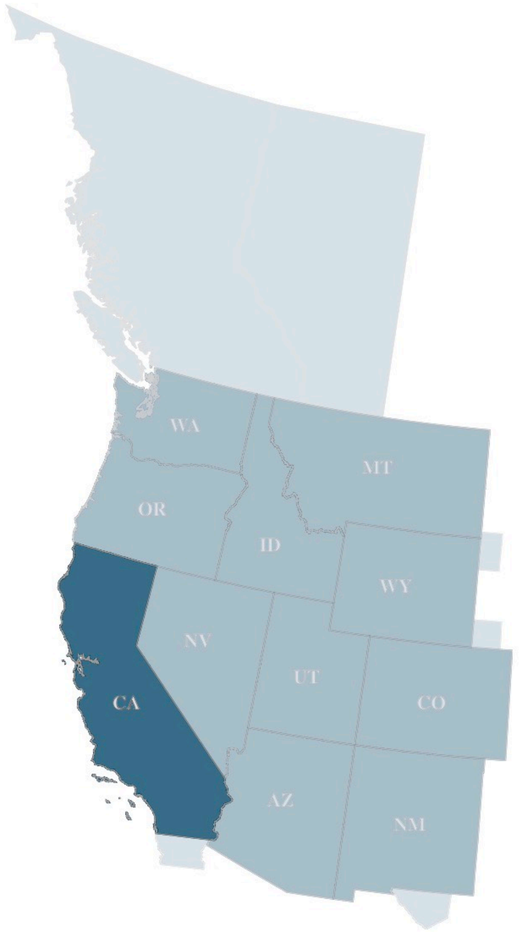
There are over 54,000 miles of natural gas pipeline in the Western United States. These pipelines carry gas long distances from production sites to consumers, including power plants.

California consumes more natural gas than any other state in the West. It is the primary fuel source for electric power generation in the state, as well as in Nevada. The amount of natural gas consumed for generation in California is expected to be steady or decrease in future years as the penetration of variable energy resources increases. However, natural gas and other conventional technologies that provide Essential Reliability Services remain critical for the reliability of the Western Interconnection.

Natural Gas Consumption by Sector (MMcf)

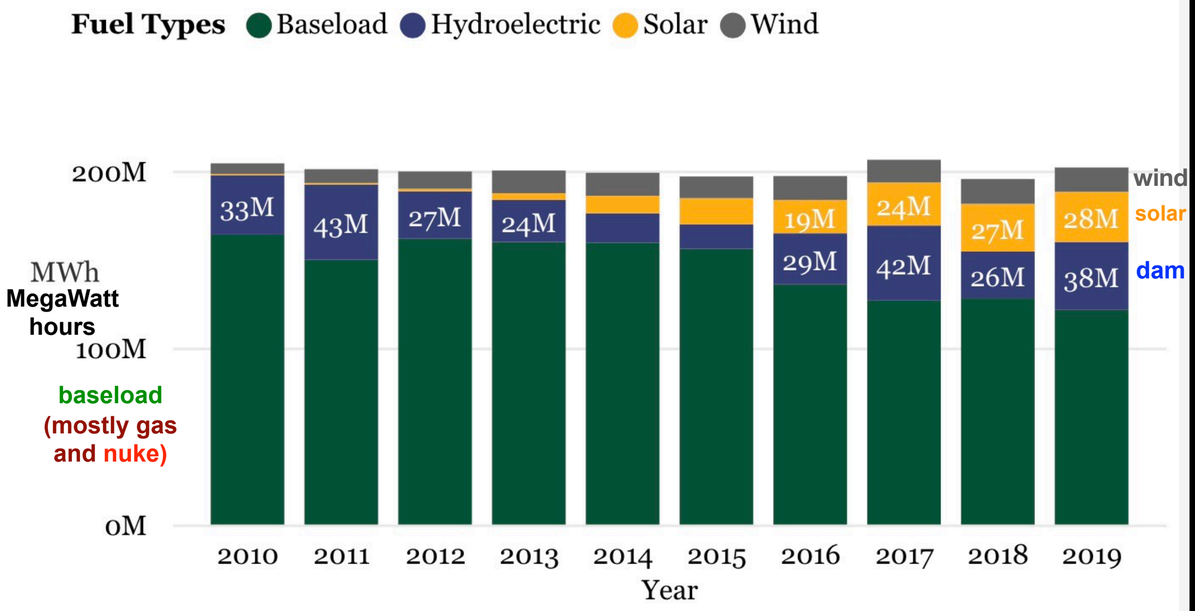


https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=%2FReliability%2FState%20of%20the%20Interconnection%20Digest%20%28Winter%202017%2D2018%29%2Epdf&action=view
https://www.wecc.org/Reliability/State%20of%20the%20Interconnection%20Digest%20(Summer%202018).pdf

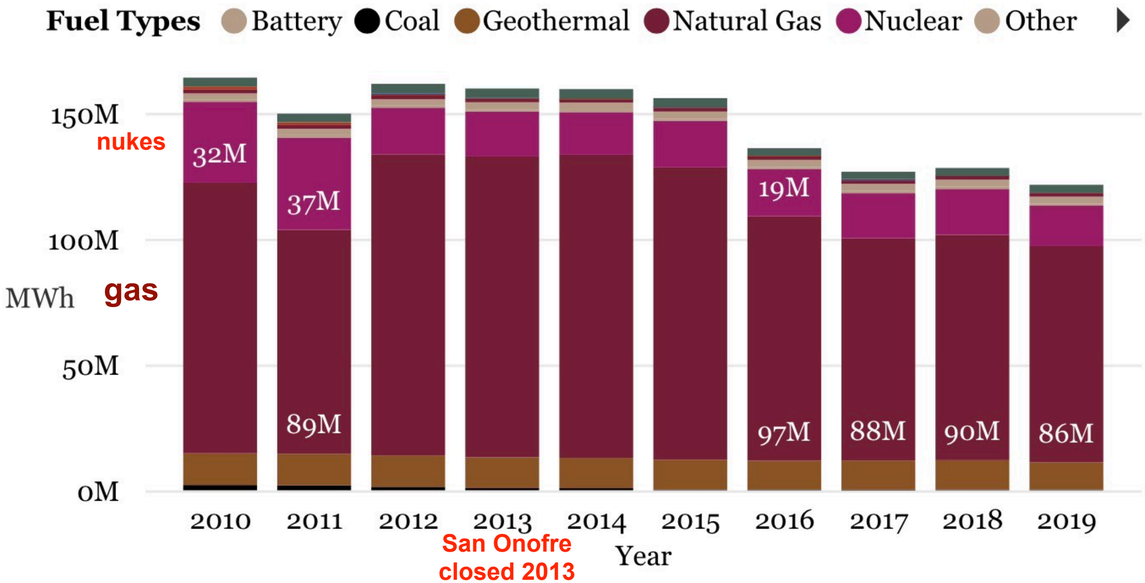


Western Electricity Coordinating Council
“state of the interconnection”

2010-2019 Generation by State



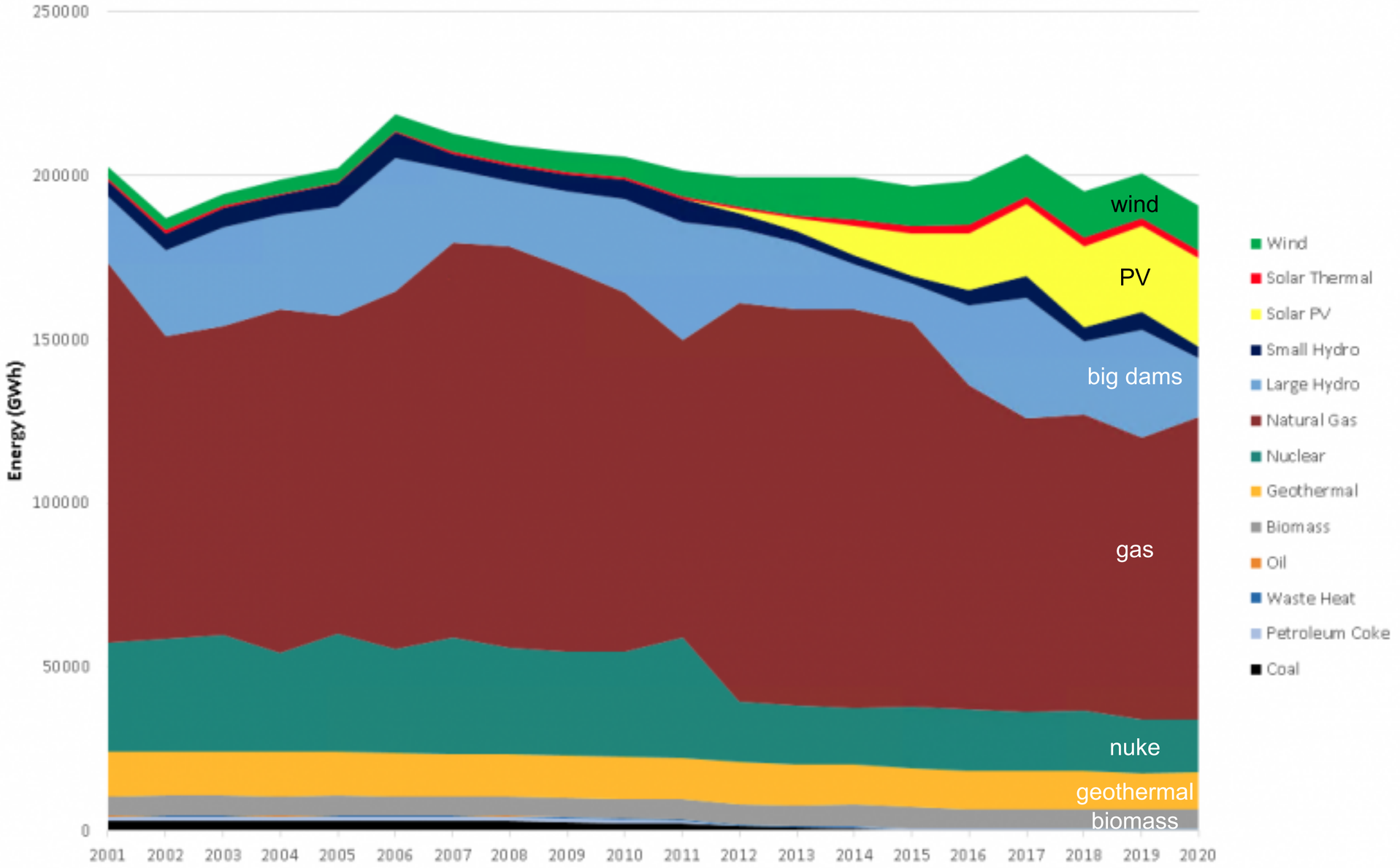
2010-2019 Generation Baseload Breakout by State



California Energy Commission

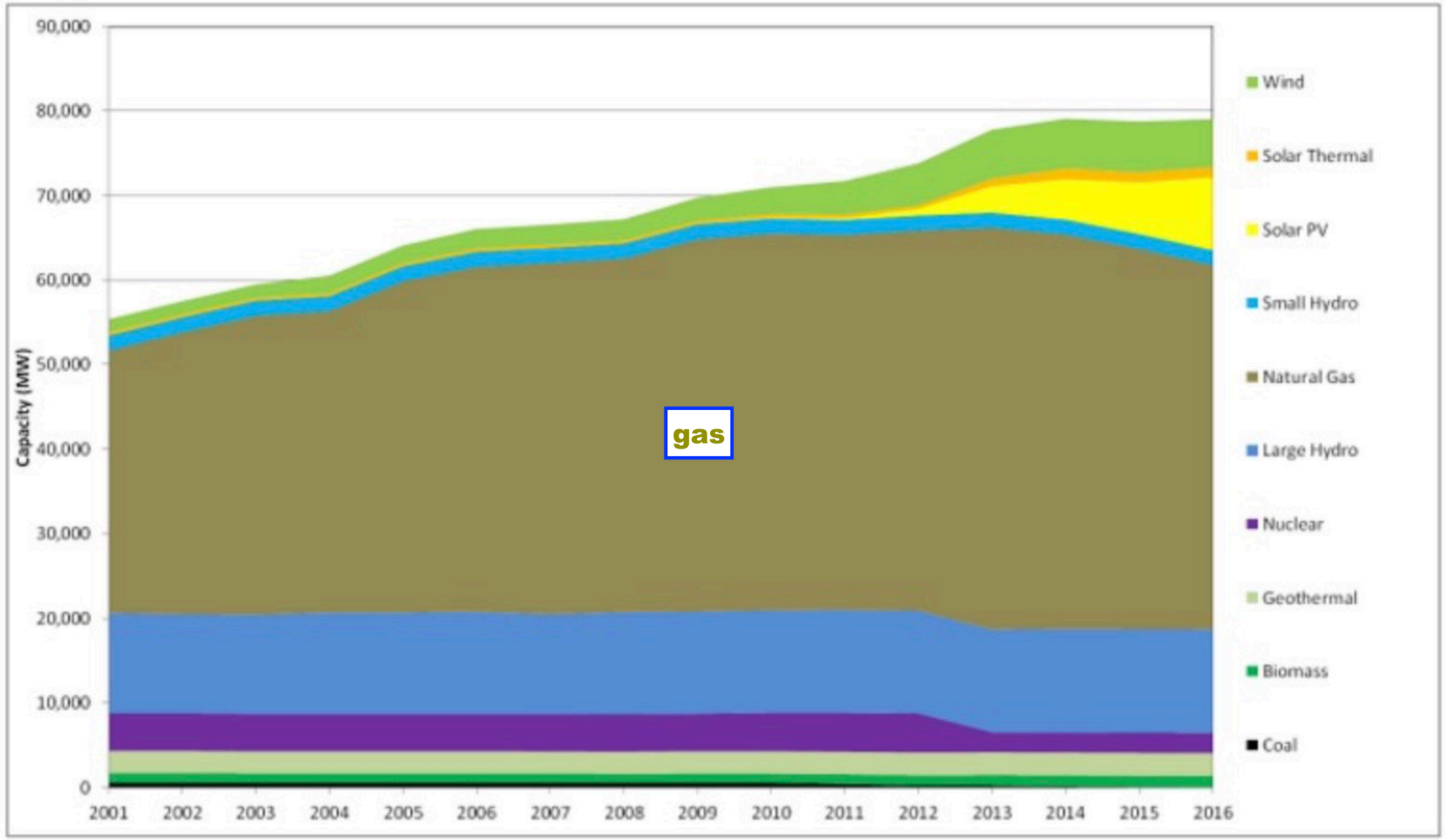
In-State Electric Generation by Fuel Type

Source: Quarterly Fuels and Energy Reporting Regulations



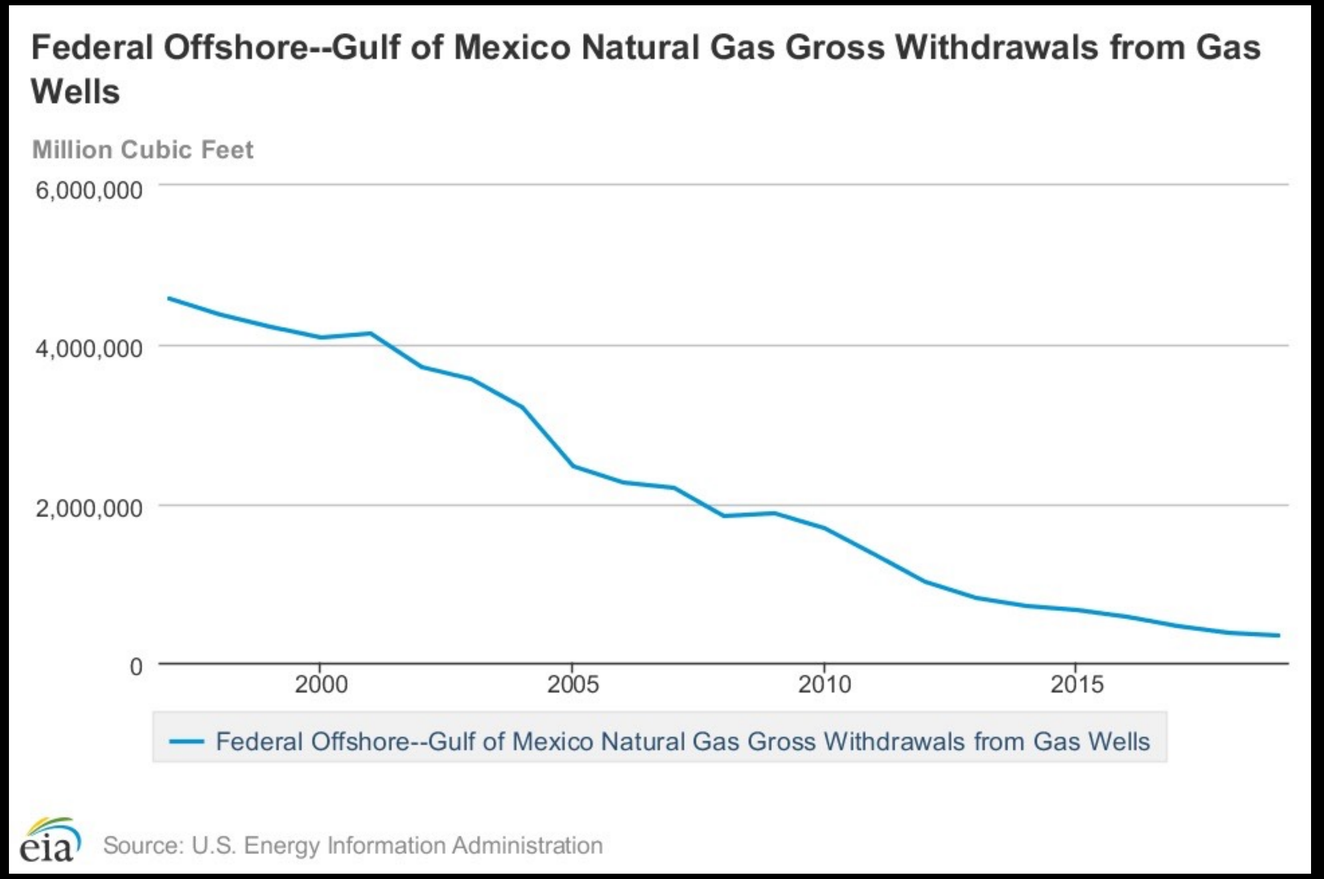
https://upload.wikimedia.org/wikipedia/commons/b/b3/California_electricity_generation_by_source_2001-2020.png

California's Electric Generation by Fuel Type

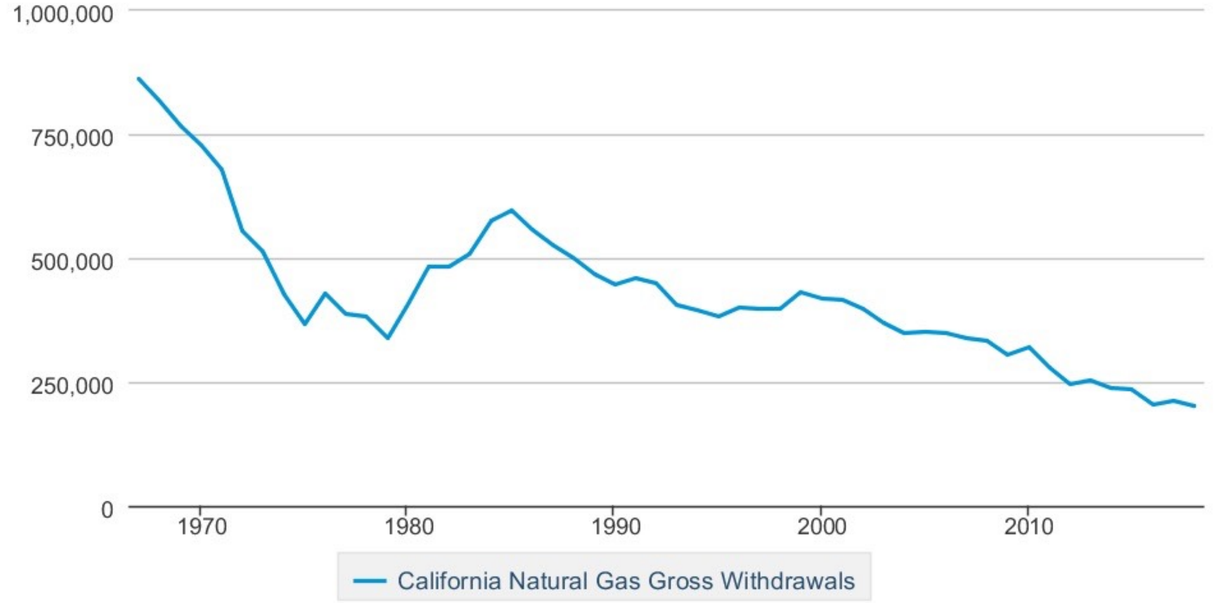


Source: California Energy Commission, CEC-1304 Power Plant Data Reporting.

https://www.wecc.org/_layouts/15/WopiFrame.aspx?sourcedoc=%2FAdministrative%2FCAISO%20%2D%20Gas%20Electric%20Forum%20Presentation%5FNovember%202019%2Epdf&action=view

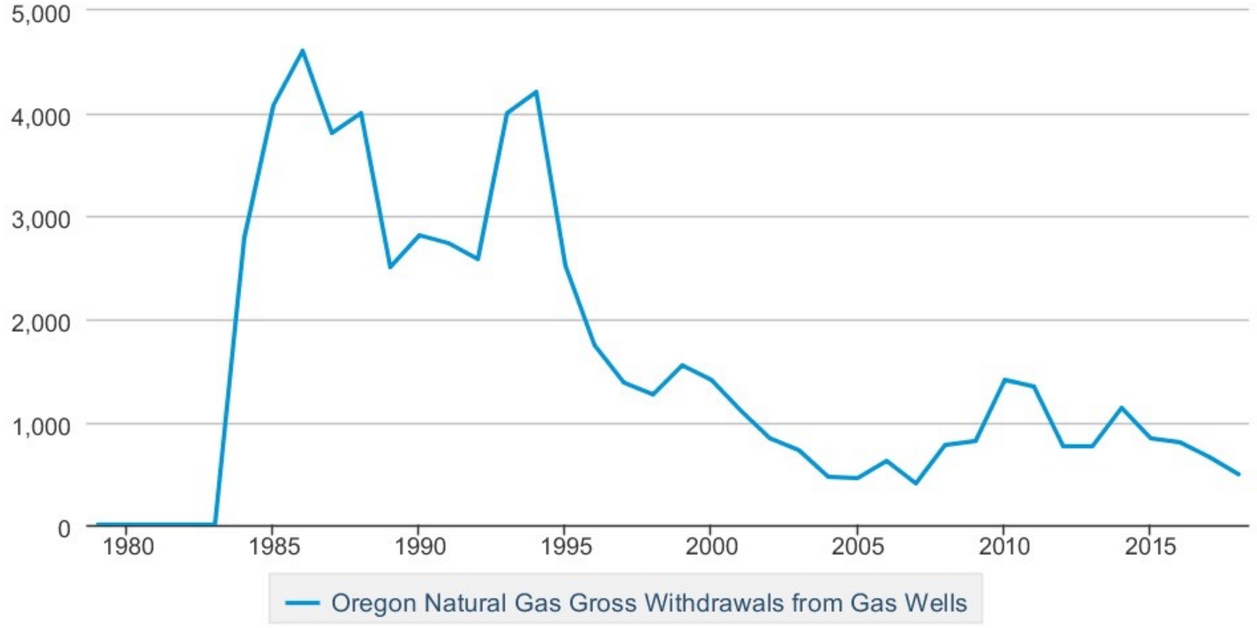

Federal Offshore--Gulf of Mexico Natural Gas Gross Withdrawals from Gas Wells
Million Cubic Feet
6,000,000
4,000,000
2,000,000
0
2000
2005
2010
2015
Federal Offshore--Gulf of Mexico Natural Gas Gross Withdrawals from Gas Wells
eia
Source: U.S. Energy Information Administration

California Natural Gas Gross Withdrawals



eia Source: U.S. Energy Information Administration

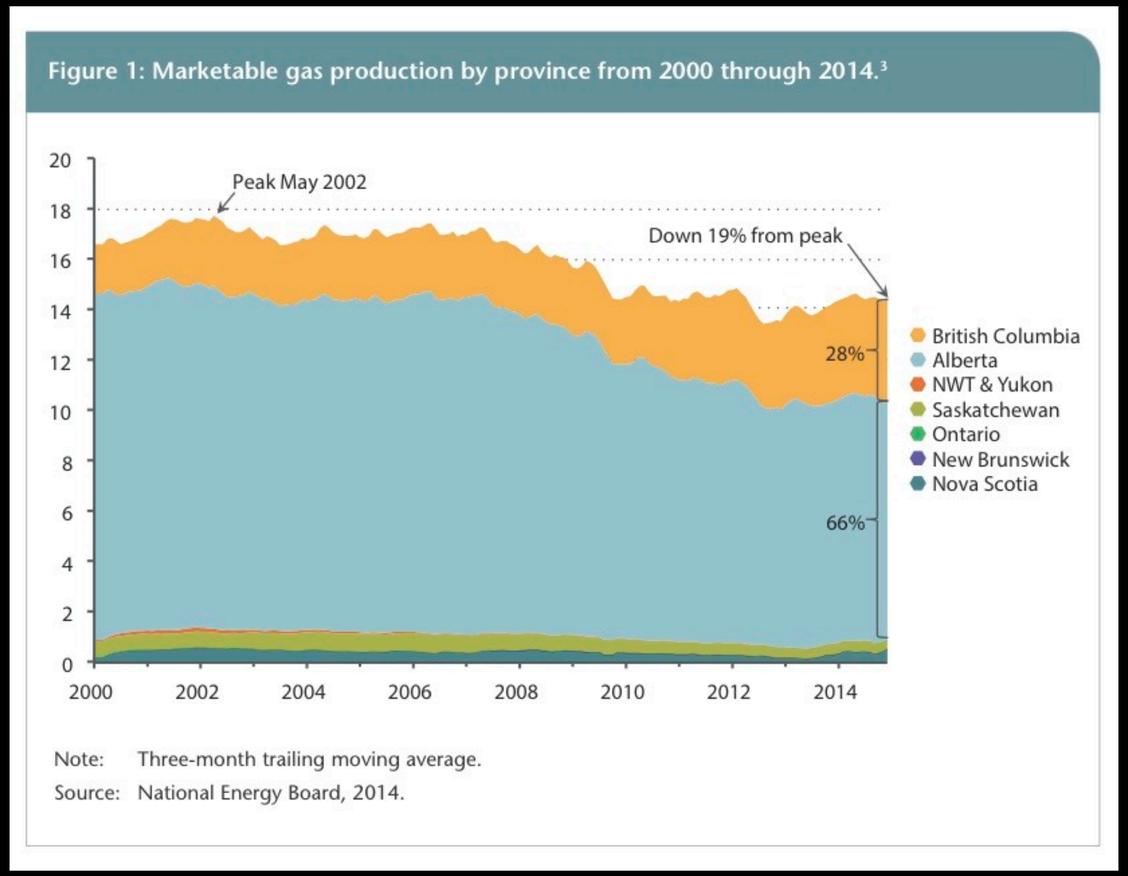
Oregon Natural Gas Gross Withdrawals from Gas Wells



eia Source: U.S. Energy Information Administration

Canadian gas peaked in 2002

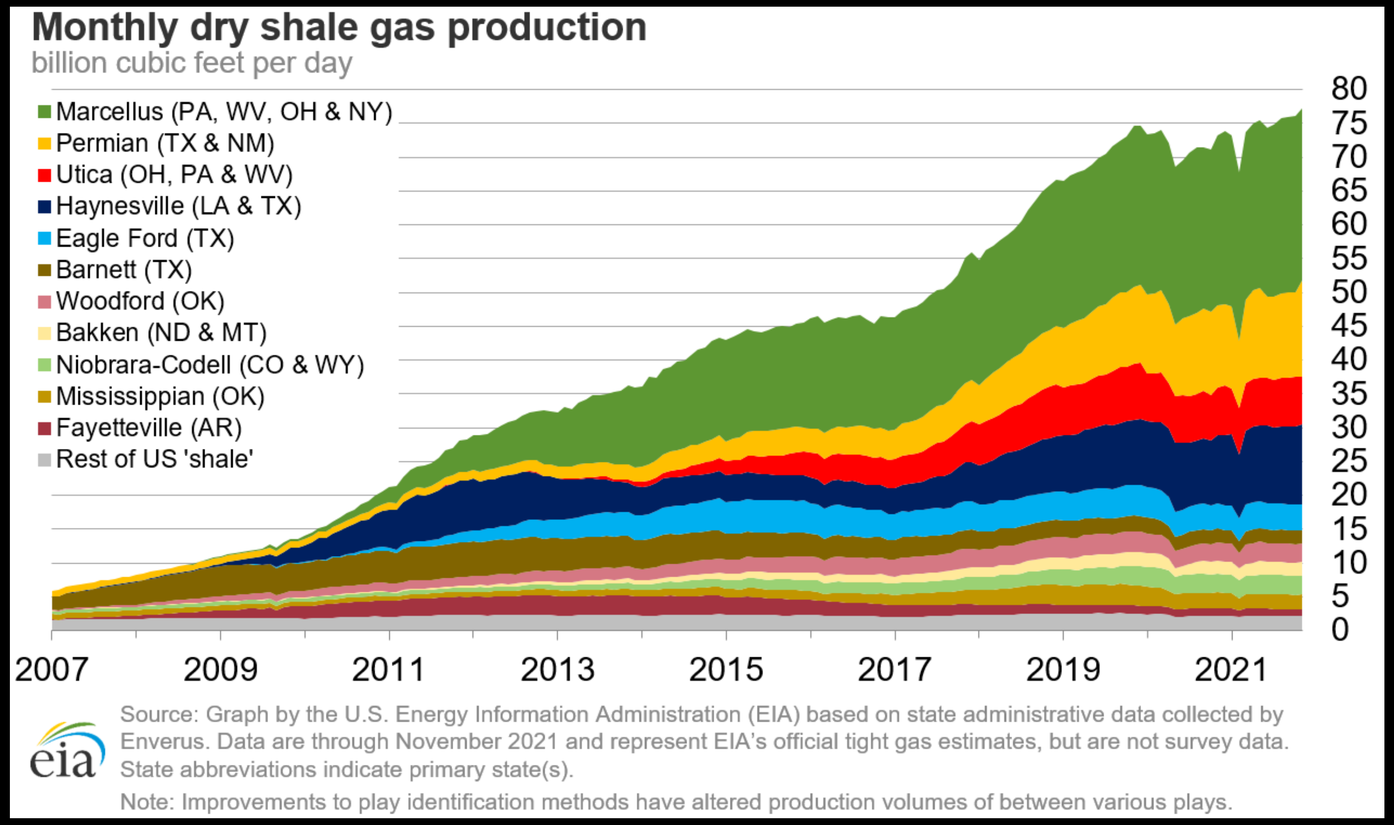
https://policyalternatives.ca/publications/reports/clear-look-bc-lng

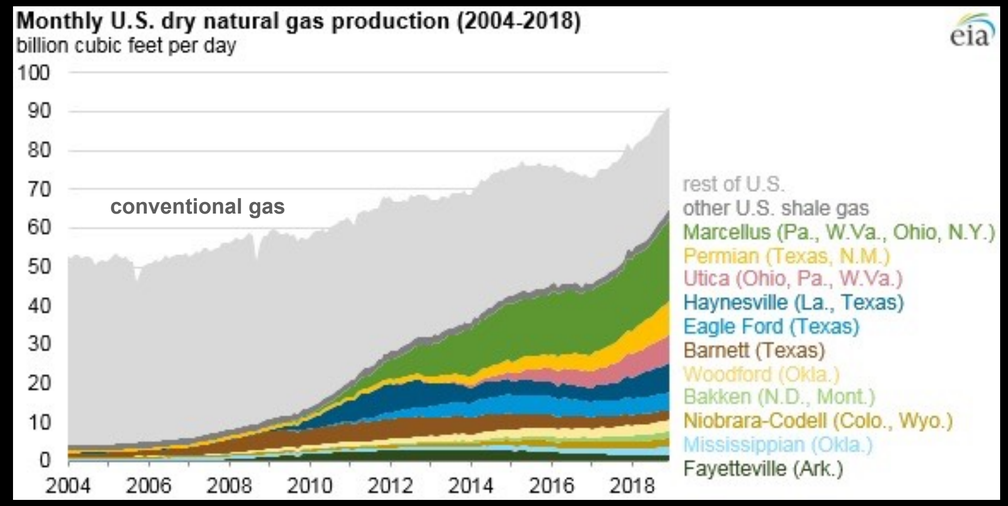


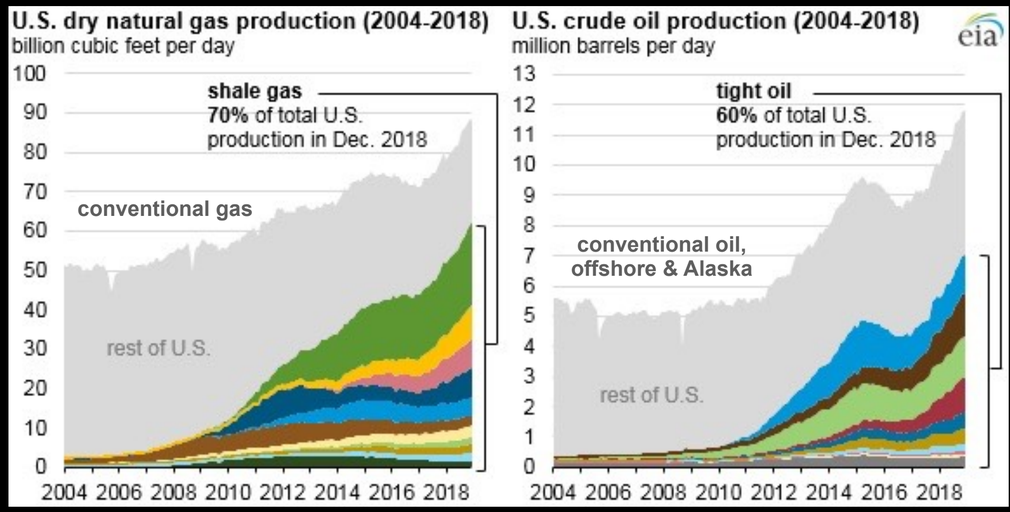
Fracked “tight oil” and “shale gas” - two thirds of US totals

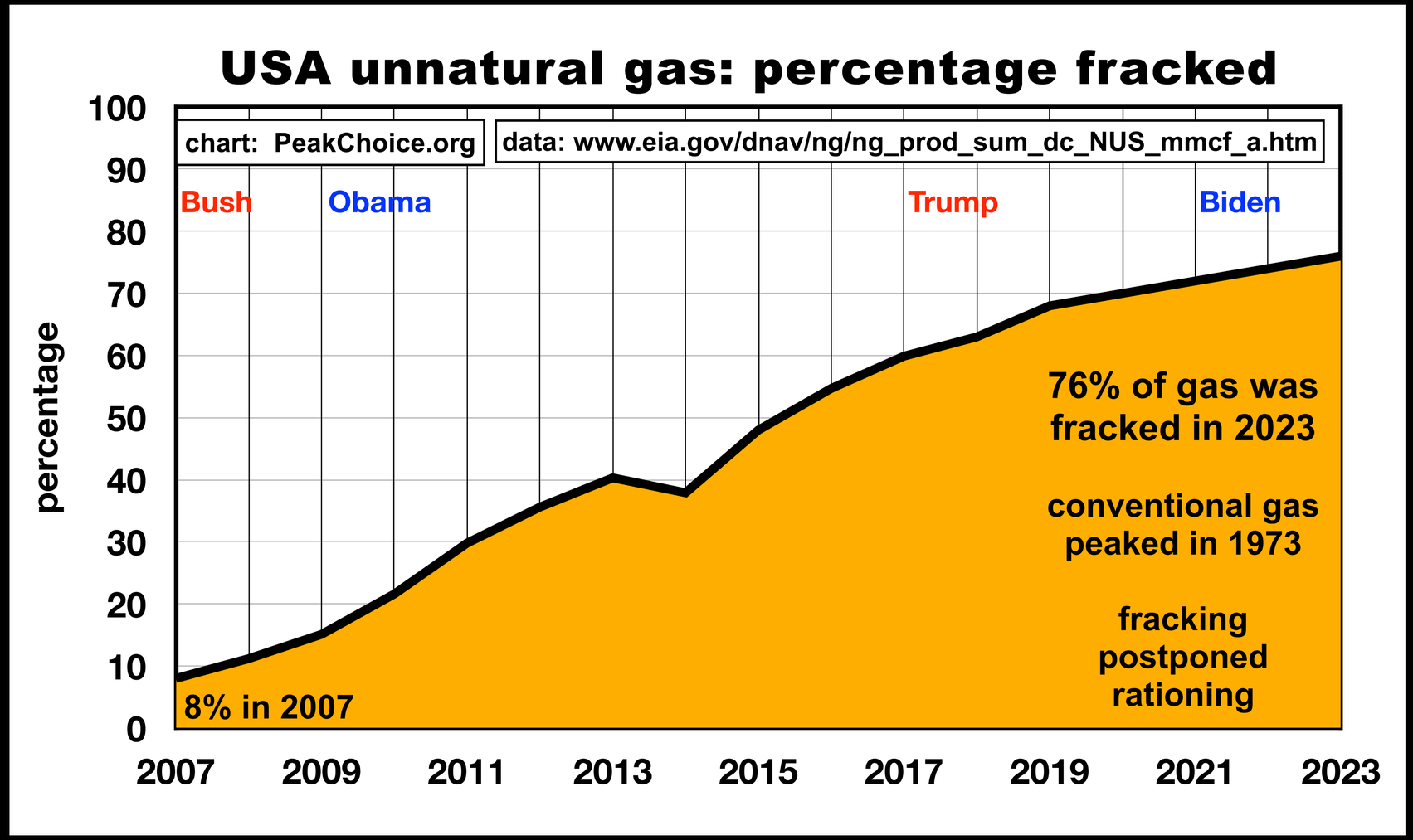
baseload for power grids, heat for cold cities, industrial uses

damned if we drill, damned if we stop, damned as it runs out








USA unnatural gas: percentage fracked
chart: PeakChoice.org
data: www.eia.gov/dnav/ng/ng_prod_sum_dc_NUS_mmcf_a.htm
Bush
Obama
Trump
Biden
percentage
100
90
80
70
60
50
40
30
20
10
0
2007
2009
2011
2013
2015
2017
2019
2021
2023
76% of gas was fracked in 2023
conventional gas peaked in 1973
fracking postponed rationing
8% in 2007