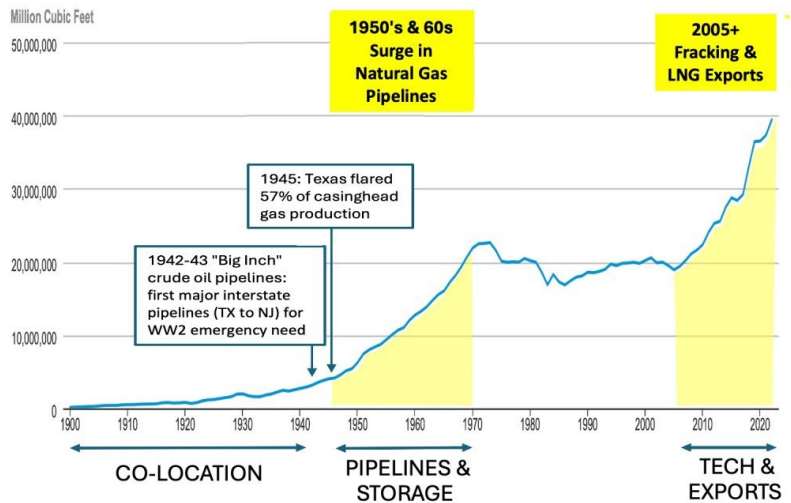


Synergetic's Hydrogen Summer School

Lessons on how America can maximize the benefits of IRA investments through 2036



U.S. Marketed Natural Gas Production, 1900-2023. CREDITS: Synergetic from EIA base graph (2024).

#1 - The History of Natural Gas: The Future of Clean Hydrogen?

Low-carbon Hydrogen is a wonderfully versatile energy transition tool creating solutions for hard-to-decarbonize sectors (like steel and cement) and enabling long duration storage of low-cost but variable wind and solar power. With [Hydrogen Hubs](#) as the kickstart, *how big can Clean Hydrogen become before the transformational IRA stimulus falls off its "safe harbor" cliff in 2036?*

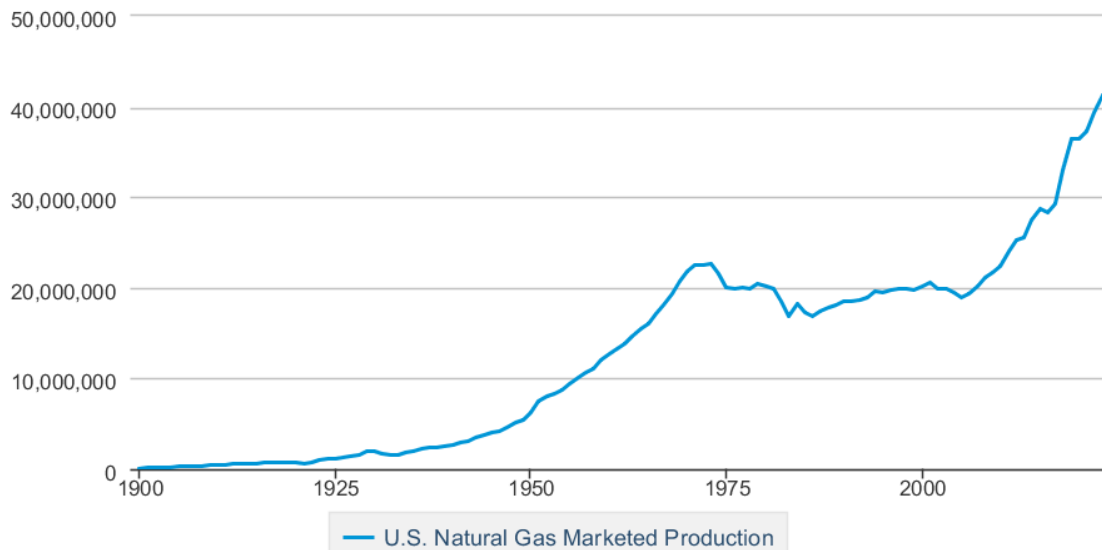
The answer lies in knowledge ready to be transferred from the past 125 years of [America's #1 energy product](#): Natural Gas.

The EIA's graph of [U.S. production of "marketed" natural gas](#) from 1900-2023 shows two distinct "hockey sticks" resulting in accelerated growth of gas sold to consumers:

- Interstate Pipelines in the 1950's and 60s
- Advanced Technology (fracking) and exports (LNG) since 2005

U.S. Natural Gas Marketed Production

Million Cubic Feet



Data source: U.S. Energy Information Administration

Prior to the 1940's, natural gas was dominated by "co-location" of gas use at production sites (oil fields) through a "use it or lose it" demand market. [In 1945, Texas was flaring 57% of its casinghead gas production.](#) Soon thereafter, **interstate natural gas pipelines and associated storage** began moving this otherwise wasted resource to provide reliable, high volume, affordable energy supplies to natural gas consumers nationwide.

After 1970, U.S. production stagnated, leading to [deregulation of natural gas](#) prices in 1978. By 2005 there was growing national interest for *importing* natural gas, until: **Technology to the rescue!** Hydraulic fracking revolutionized the industry and Liquefied Natural Gas (LNG) terminals intended to import were redesigned to **export** America's surging natural gas production around the world.

Initial Clean Hydrogen efforts today resemble the early 1900's for natural gas with focus on co-location of production and demand coupled with a growth in wasted energy ([by 2035 in ERCOT, 13% of wind and 19% of solar production](#) is projected to be curtailed for lack of users).

Fortunately, the same toolbox that grew natural gas can grow Clean Hydrogen:

Interstate Pipelines and Storage - Major new hydrogen pipelines coupled with high-volume storage caverns can be the same potent enabler to expedite clean hydrogen as they were for natural gas, providing reliable, high volume, affordable hydrogen to new customers nationwide.

Advanced Technology and Exports - Incentives that spur fast-ramping electrolyzers will make the most of variable wind and solar while export markets in Europe and Asia already await whatever hydrogen-derivatives America can send their way.

In seeking to score meaningful gains in the battle against climate change, America needs a “power play” mentality that simultaneously deploys all “hockey sticks” that surged growth in natural gas – major pipelines, storage, advanced tech and exports – to maximize the scale and impact of Clean Hydrogen by 2036.

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