

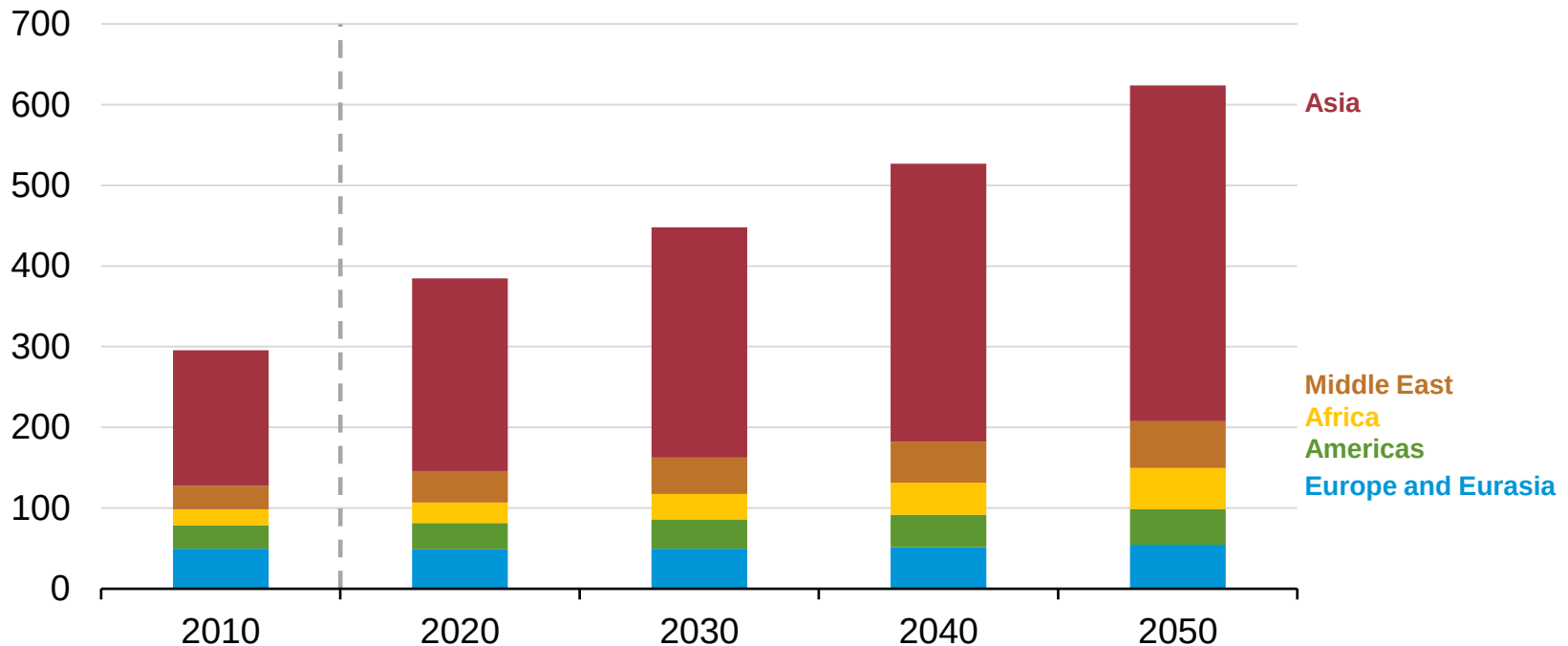
Natural Gas

**SECURING
OUR FUTURE**



EIA Projects Nearly 50% Increase in World Energy Usage by 2050, Led by Growth in Asia

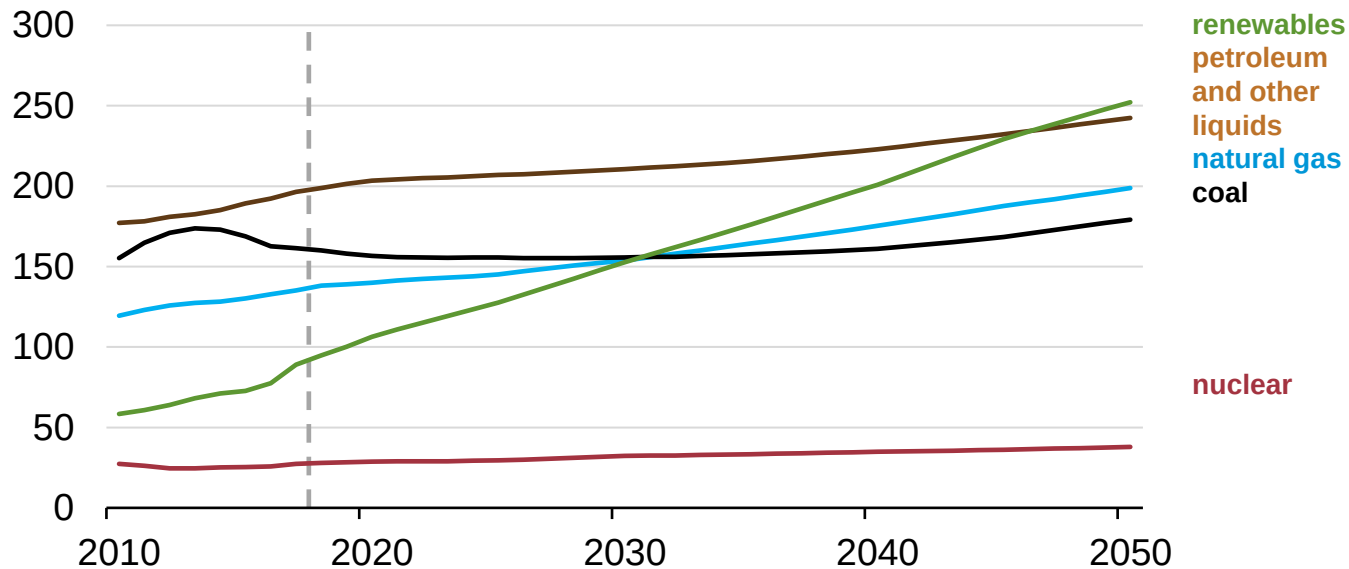
Non-OECD energy consumption by region
quadrillion British thermal units



Source: U.S. Energy Information Administration, International Energy Outlook

Global Primary Energy Consumption by Energy Source (2010 – 2050)

Primary energy consumption by energy source, world
quadrillion British thermal units

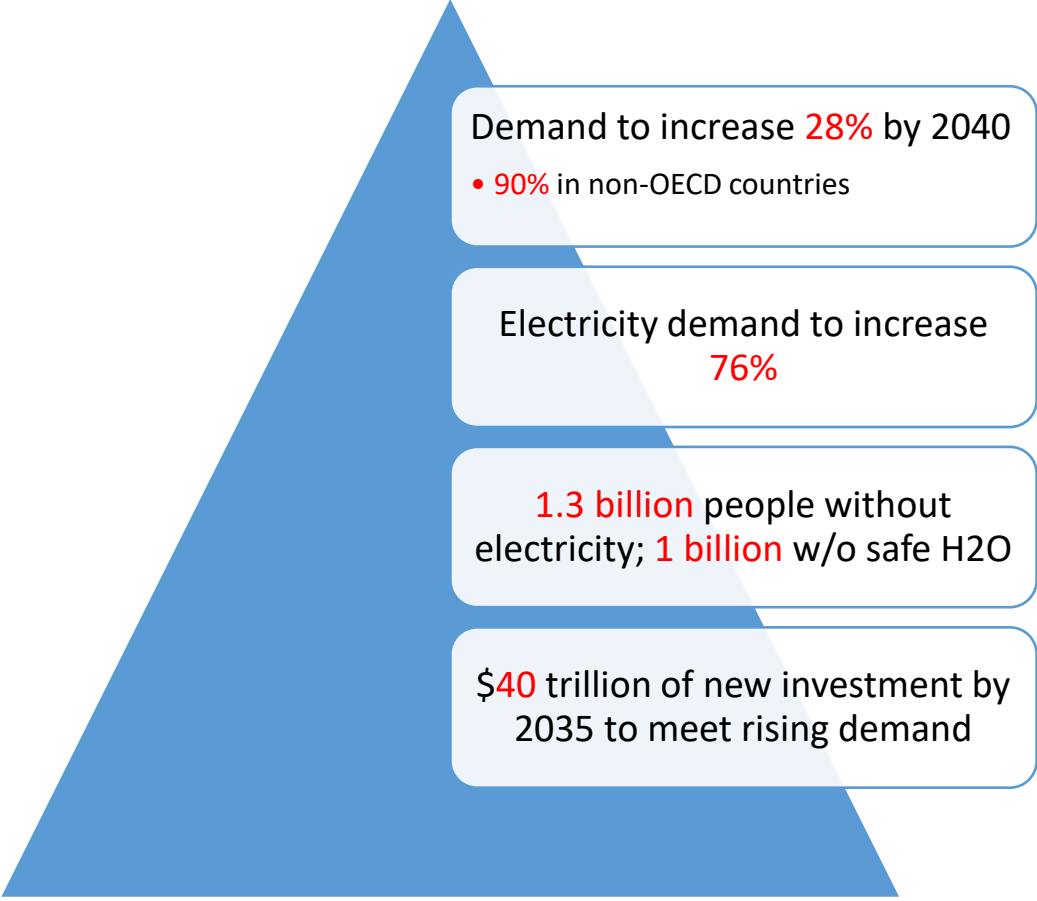


Source: U.S. Energy Information Administration, International Energy Outlook



The New Energy Reality

Energy Security is central to our national and economic security



Demand to increase **28%** by 2040

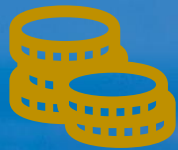
- **90%** in non-OECD countries

Electricity demand to increase
76%

1.3 billion people without
electricity; **1 billion** w/o safe H2O

\$40 trillion of new investment by
2035 to meet rising demand

Benefits of Natural Gas: Our Value Proposition



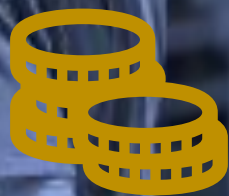
Economy



Environment



Customers



Economy

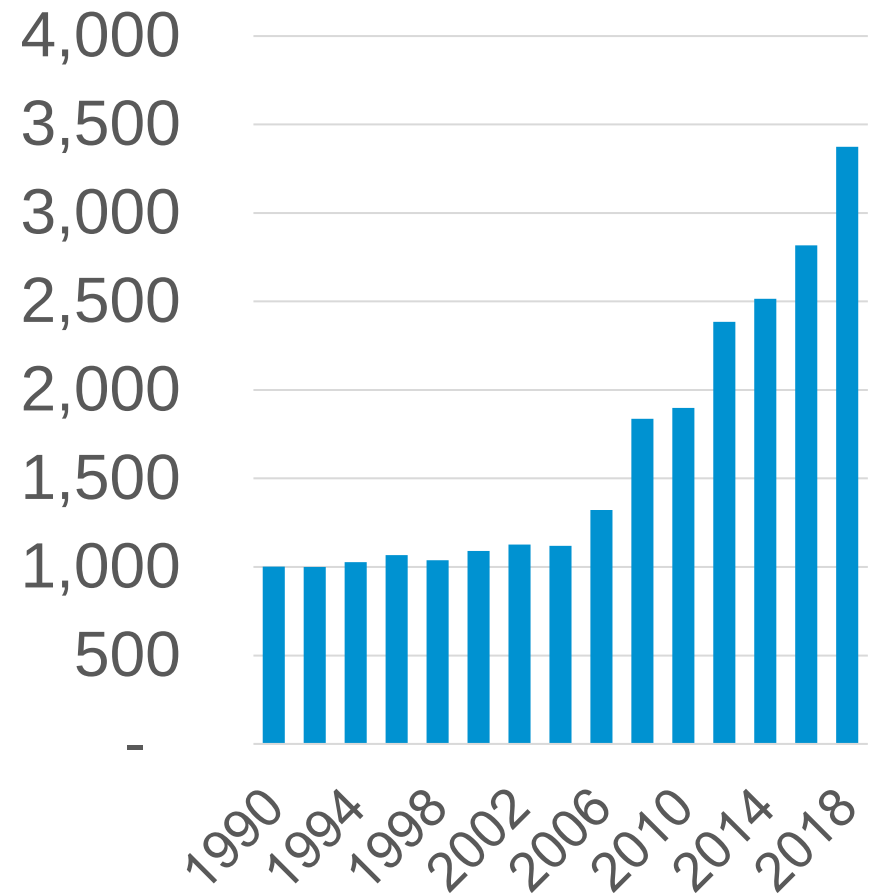
The natural gas industry supports more than 4.1 million jobs, delivers \$269 billion in personal income, and contributes \$550 billion in national GDP

Direct, Indirect, and Induced Economic Impacts

	Employment (Number of Workers)	Labor Income (Millions)	Value Added (Million)
End-Use	1,788,207	\$106,941	\$271,663
Infrastructure	1,282,306	\$84,341	\$167,624
Production	1,033,510	\$78,204	\$111,390
All Segments	4,104,023	\$269,486	\$550,667

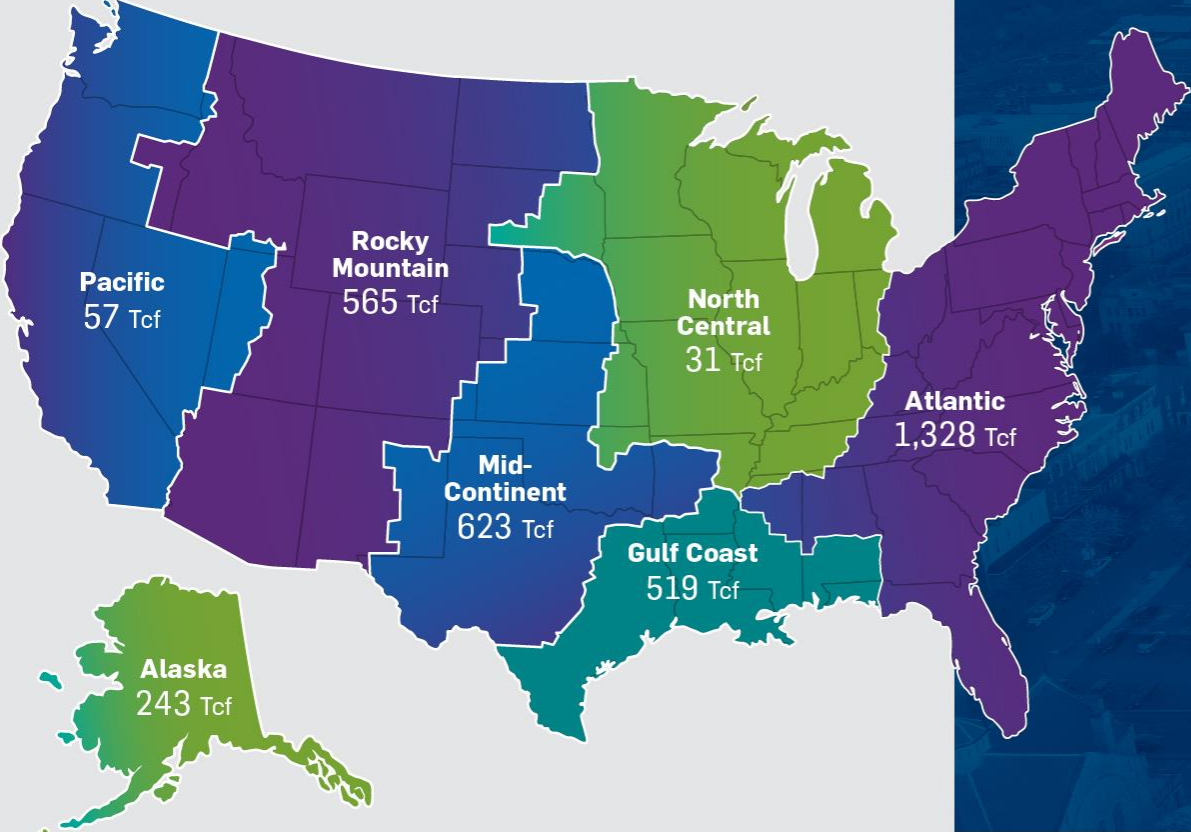
Future Supply of Natural Gas Sees Largest Increase in 54-Year History

U.S. Natural Gas Technically
Recoverable Resources
(Trillion Cubic Feet)



Source: Potential Gas Agency

Abundant Supply



3,838 Tcf *

TOTAL FUTURE SUPPLY

3,374 Tcf *

TOTAL U.S. GAS RESOURCES
(MEAN)

464 Tcf *

U.S. PROVED GAS RESERVES
(EIA)

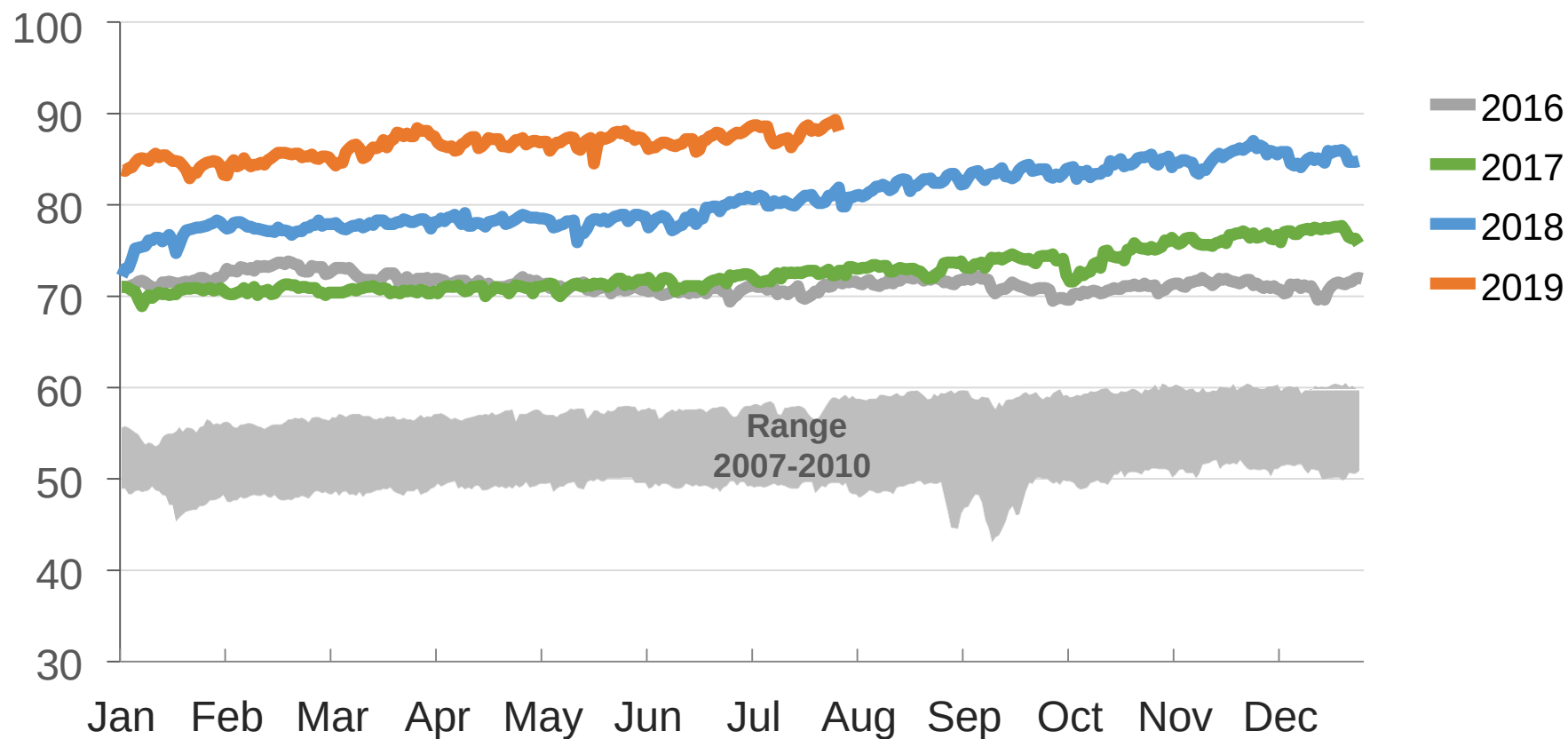
When the PGC's results are combined with the U.S. Department of Energy's latest available determination of proved gas reserves, the U.S. has a total available future supply of 3,838 Tcf.

* Total numbers, listed in trillion cubic feet (Tcf), account for resources in conventional (onshore and offshore), tight, shale and coalbed reservoirs. Source: Potential Gas Agency (2019) | Separately aggregated from all province data.



Record Levels of Natural Gas Production in 2019

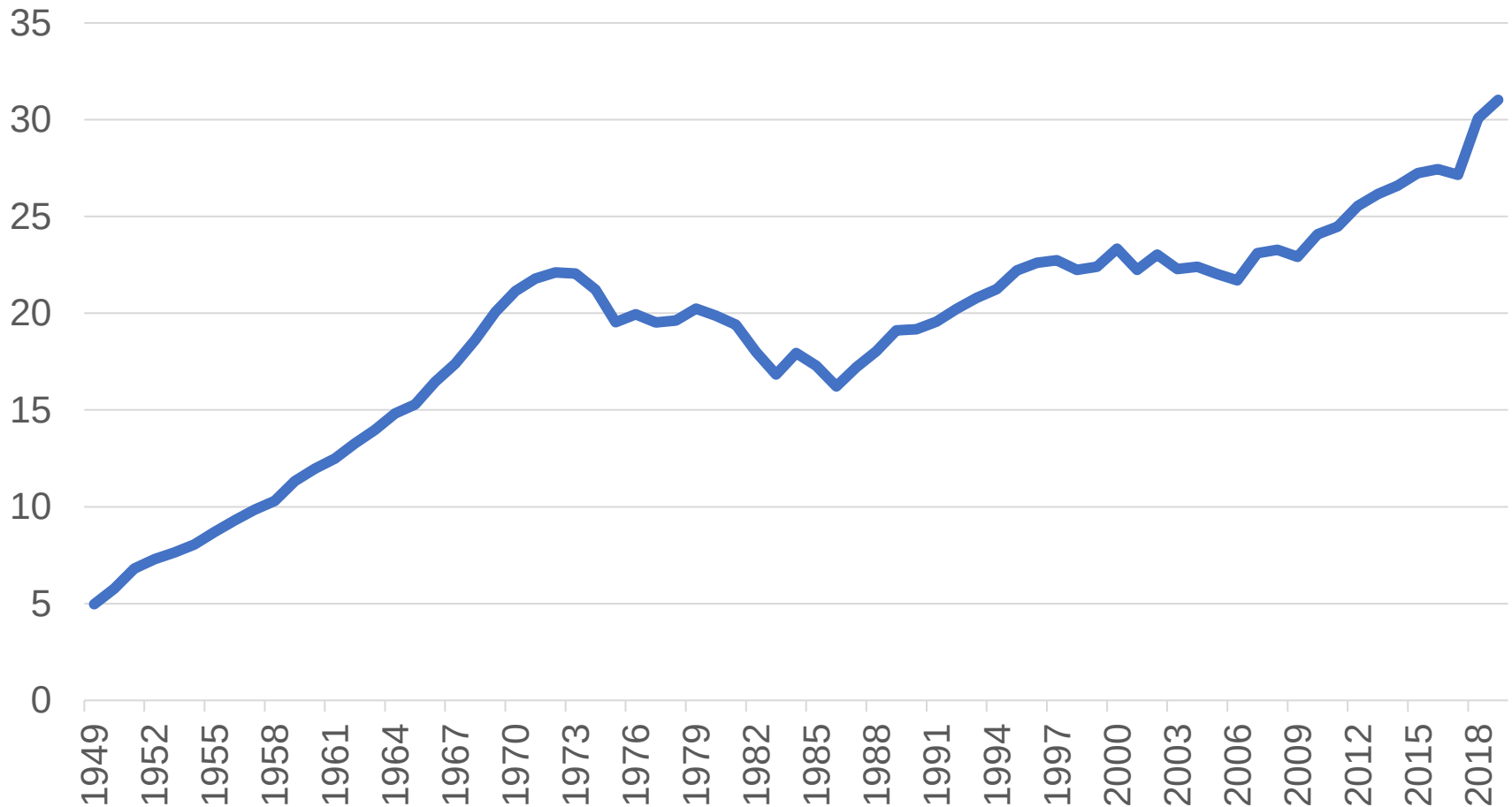
Daily Dry Natural Gas Production
US Lower-48 (Bcf per day)



Data: S&P Global

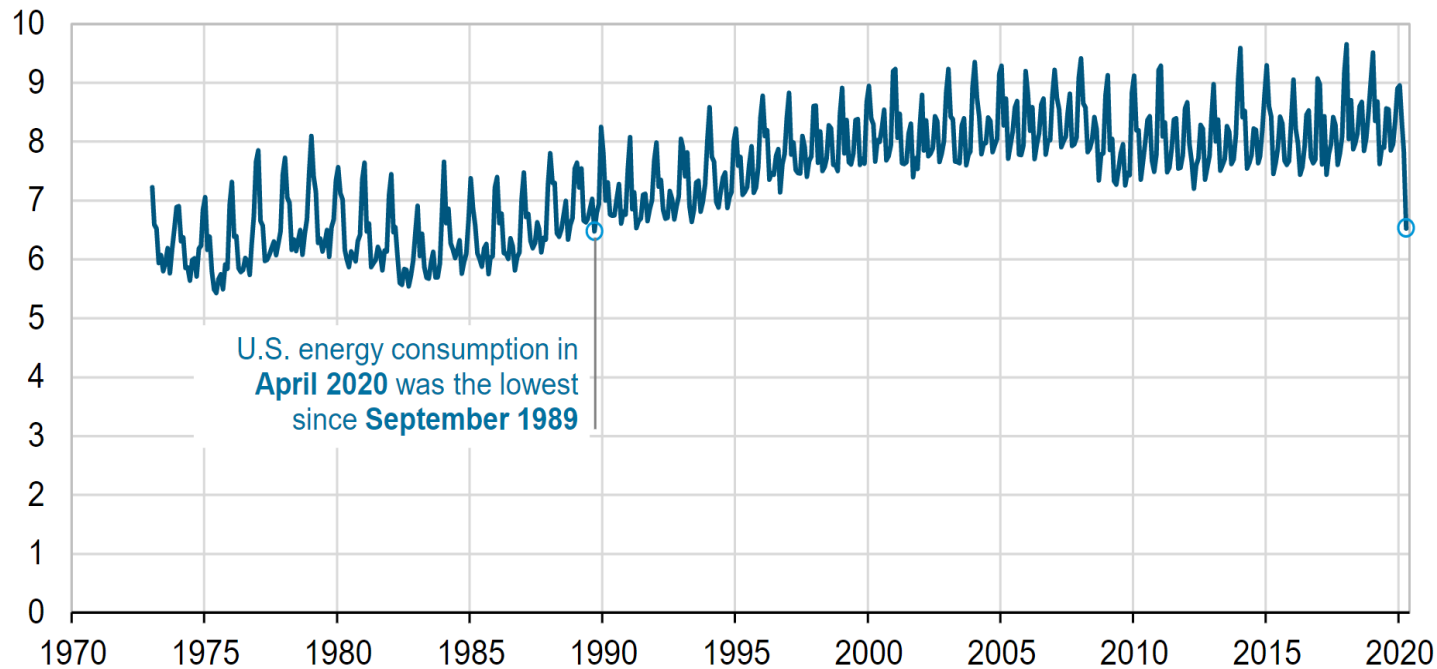
Domestic consumption of natural gas at a record level

US Natural Gas Total Consumption, 1950-2019
Trillion Cubic Feet



COVID Impact: US energy consumption in April 2020 fell to its lowest level in 30 years due to severe declines in petroleum and coal use.

U.S. monthly total energy consumption (Jan 1973–Apr 2020)
quadrillion British thermal units

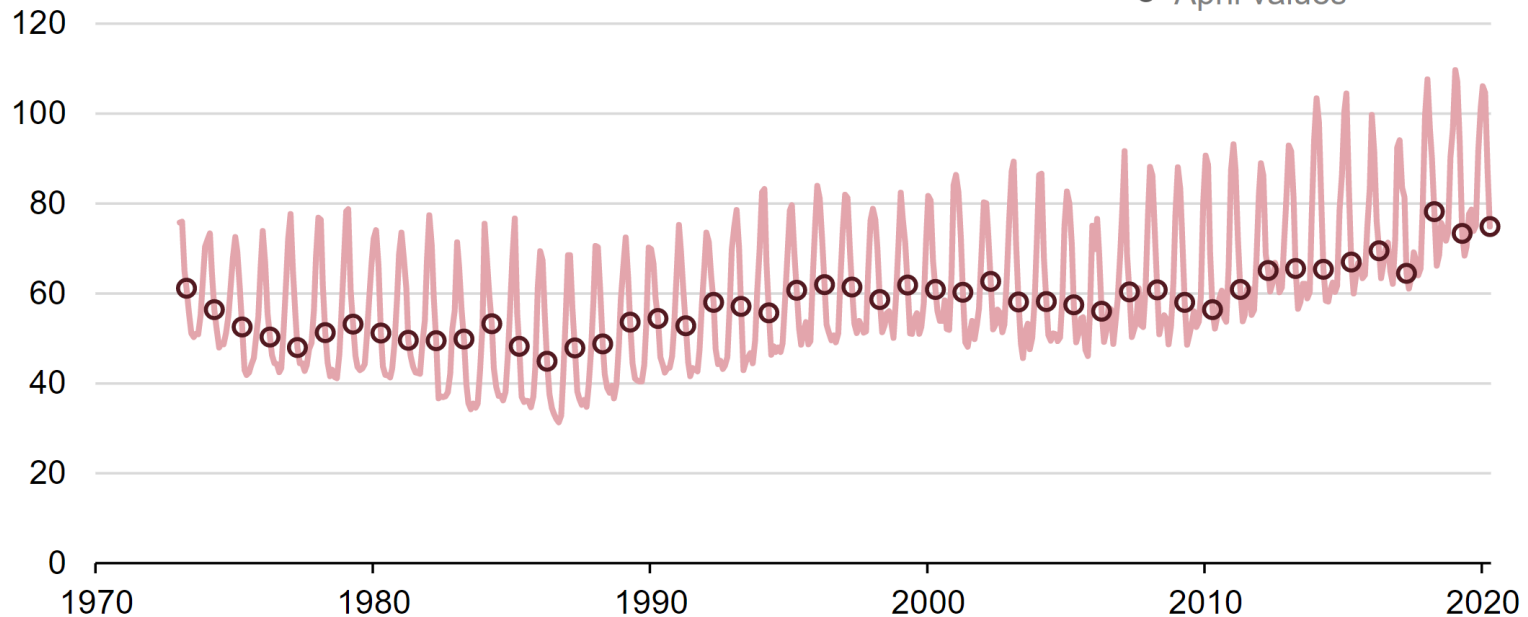


Source: U.S. Energy Information Administration, [Monthly Energy Review](#)

By contrast, natural gas consumption in April 2020 grew by 2% compared with April 2019

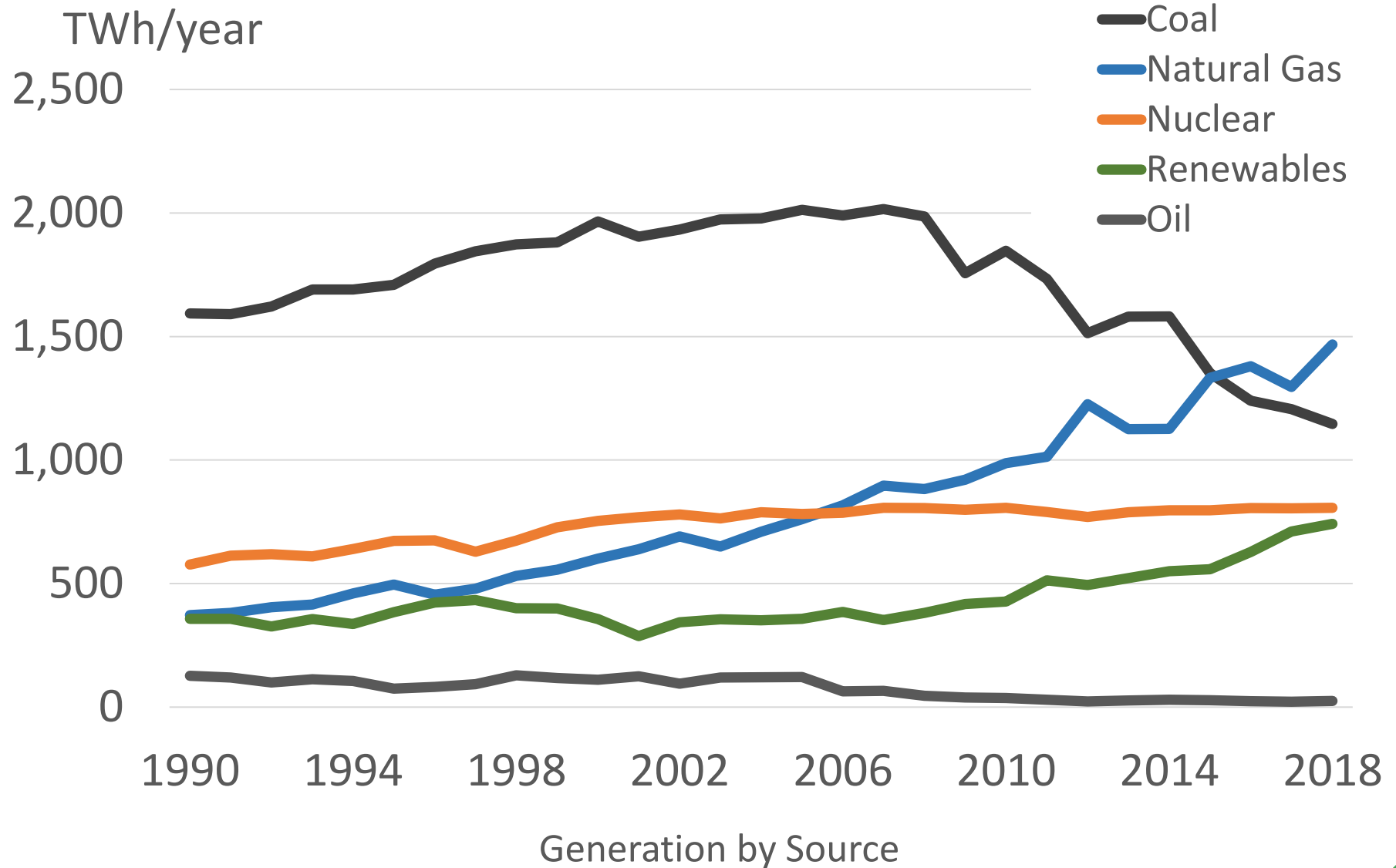
U.S. monthly natural gas consumption (Jan 1973–Apr 2020)

billion cubic feet per day



Source: U.S. Energy Information Administration, [Monthly Energy Review](#)

U.S. Electricity Sector Fuel Mix



\$86 Billion invested EVERY Day on Safety Improvements

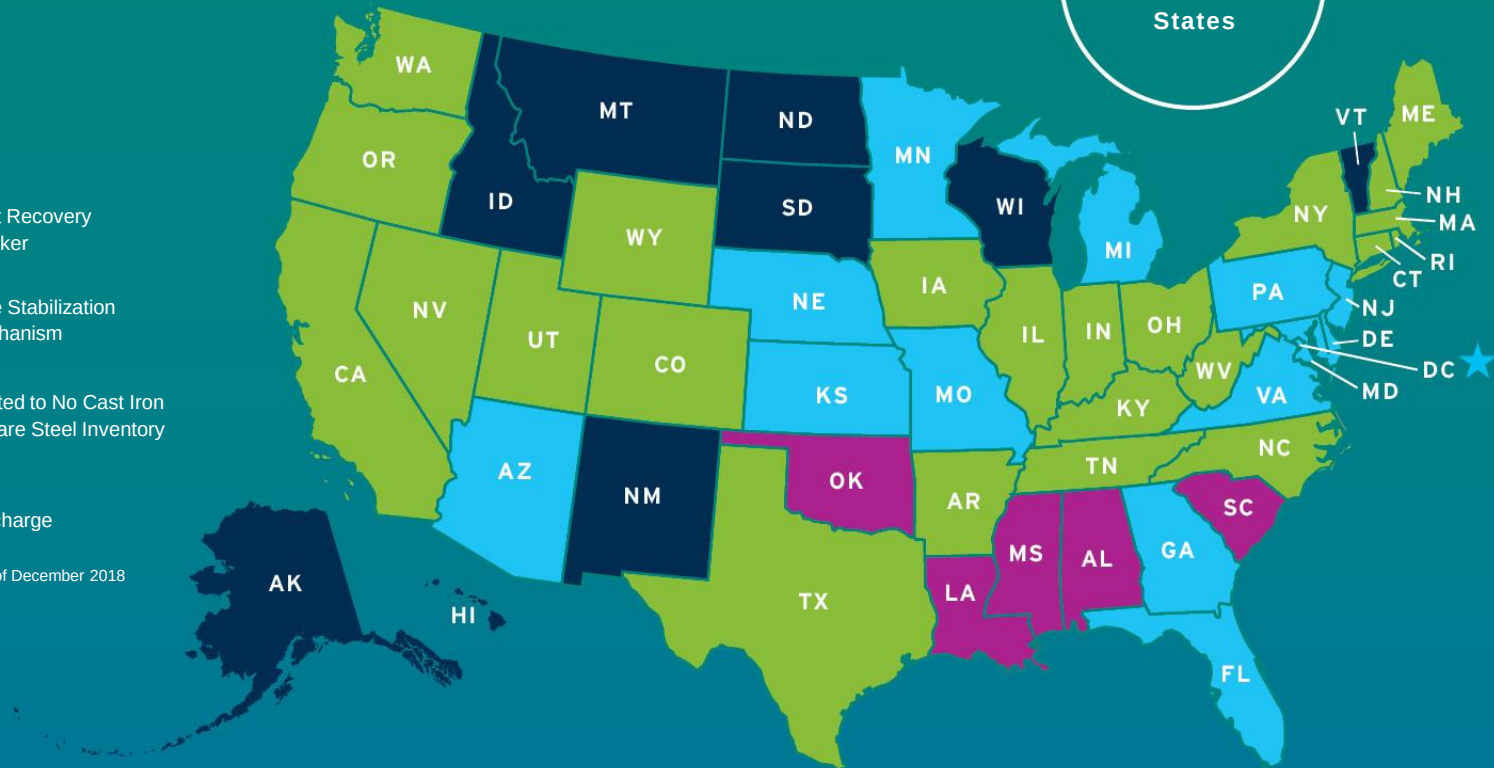
Accelerated Pipeline Replacement Programs

43

States

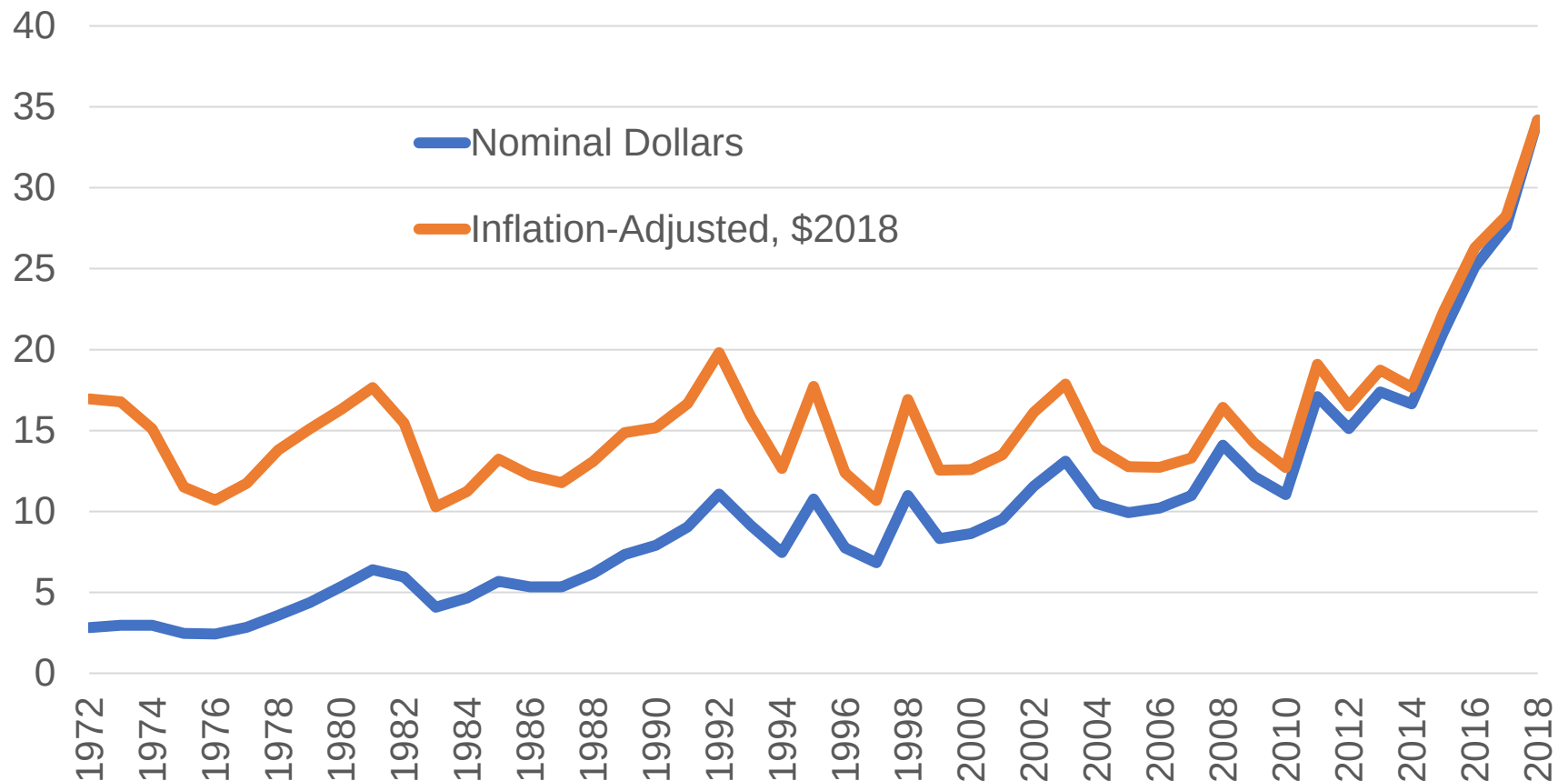
- Cost Recovery Tracker
- Rate Stabilization Mechanism
- Limited to No Cast Iron or Bare Steel Inventory
- Surcharge

* As of December 2018



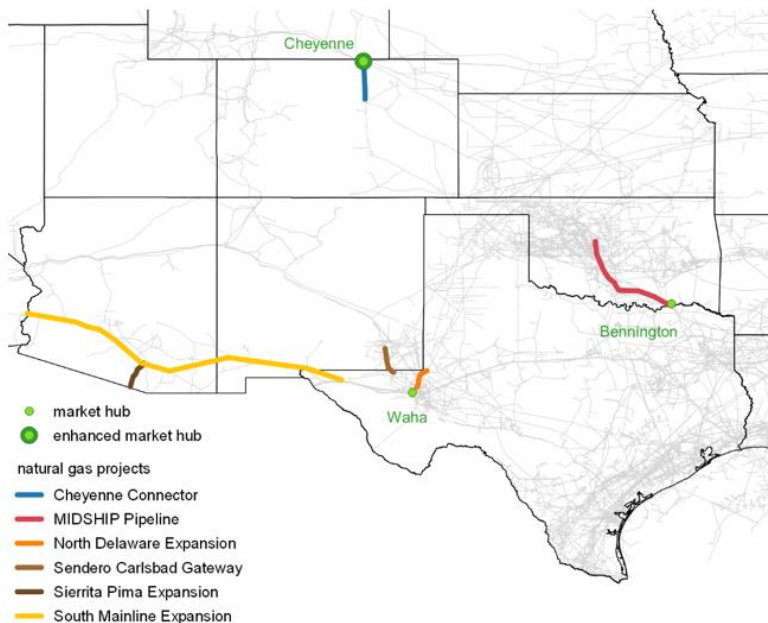
Gas utility construction expenditures have increased in recent years due to greater state adoption of pipeline replacement and expansion programs to improve safety and extend service to new customers.

Gas Utility Construction Expenditures 1972-2018, \$ Billion



Approximately 5 Bcf per day of natural gas capacity has entered service in the first half of 2020

Select new pipeline infrastructure through first half of 2020



eia Source: U.S. Energy Information Administration

Many projects face hurdles or have been cancelled in the face of opposition and regulatory uncertainty

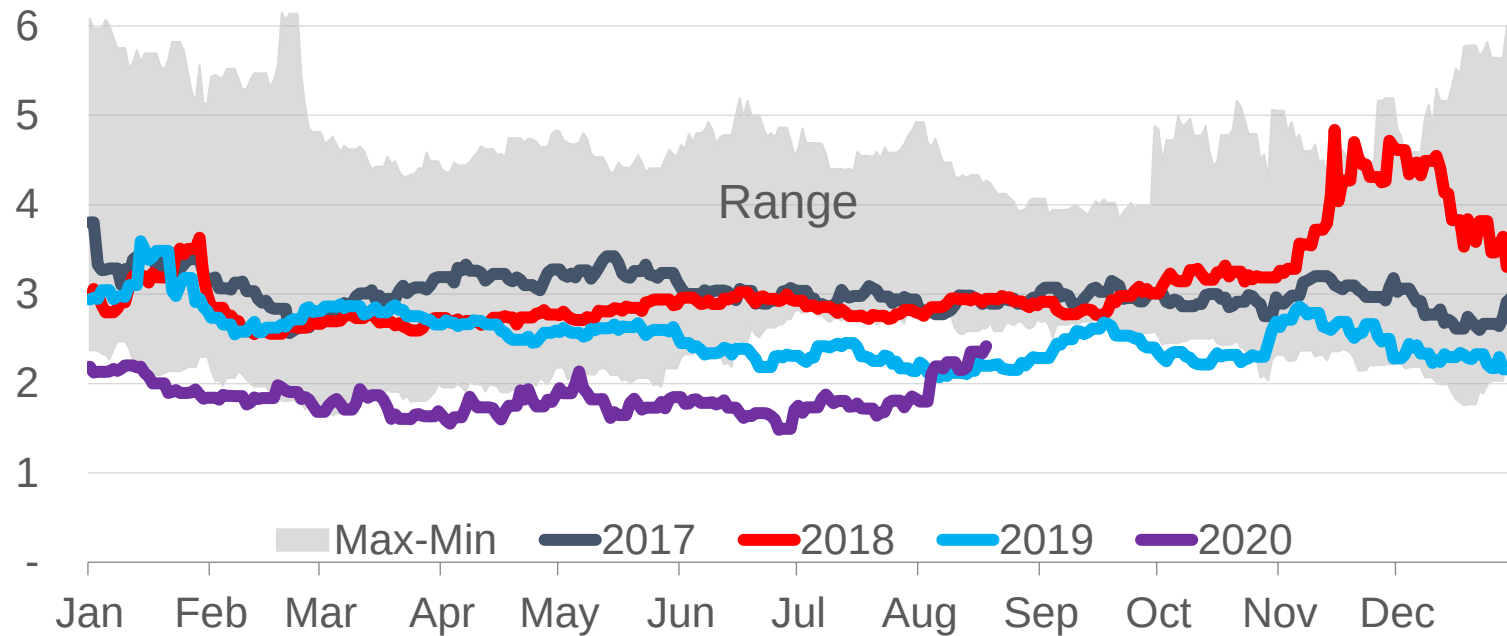
Atlantic Coast Pipeline



Source: S&P Global Platts Analytics

Natural gas prices have remained low compared with history

Natural Gas Prices Prompt-Month Futures at Henry Hub
\$/MMBtu

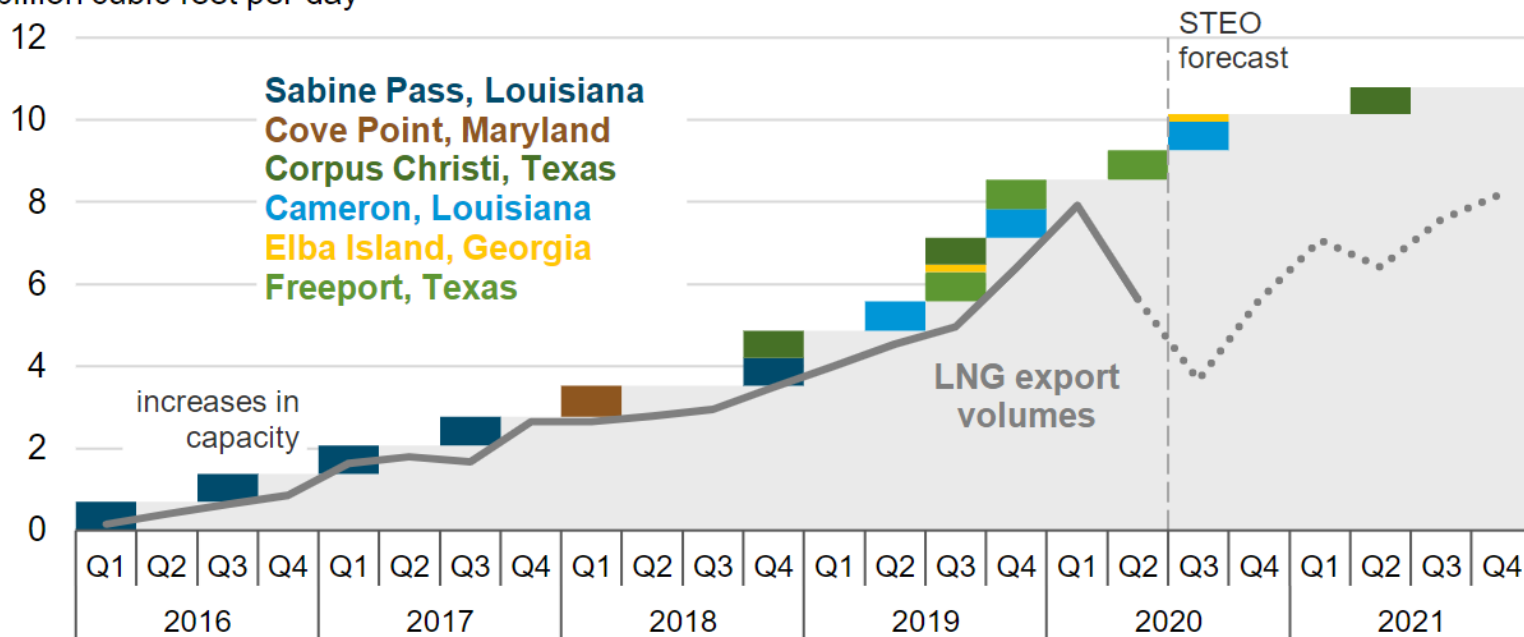


Source: Energy Information Administration

The US continues to add LNG export capacity

Quarterly U.S. liquefied natural gas (LNG) exports and export capacity (2016–2021)

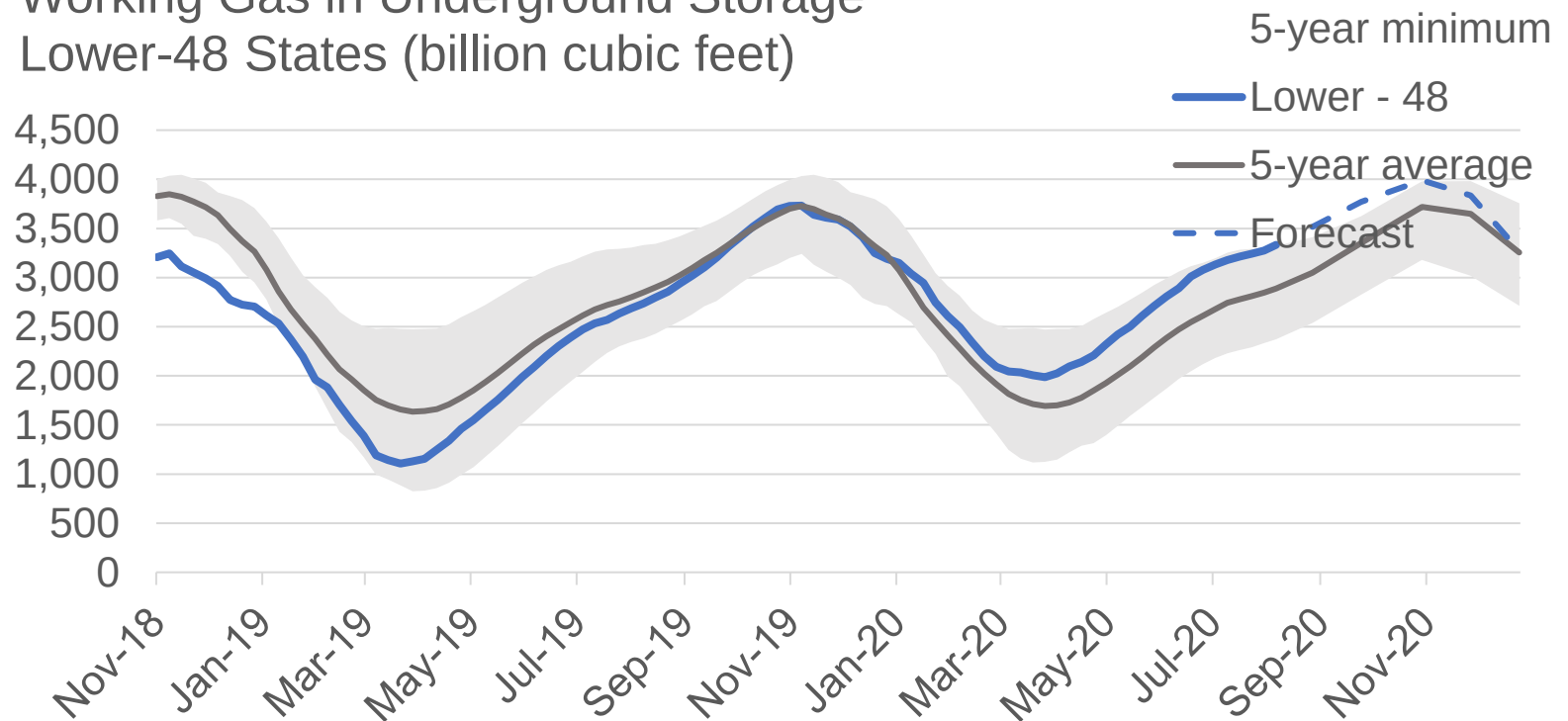
billion cubic feet per day



Source: US Energy Information Administration, *Short-Term Energy Outlook*

Natural gas inventories are above the five-year average. The winter heating season may begin with significant volumes of gas in storage

Working Gas in Underground Storage
Lower-48 States (billion cubic feet)



The natural gas delivery system is indispensable

- The scale of the energy delivered by the natural gas system is immense.
- On January 30, 2019, the natural gas system delivered a record 150 billion cubic feet of natural gas—double the demand for a typical day.
- Gas utilities delivered to residential homes and commercial businesses about 80 billion cubic feet of natural gas—the energy equivalent of the output of the entire US electric grid.



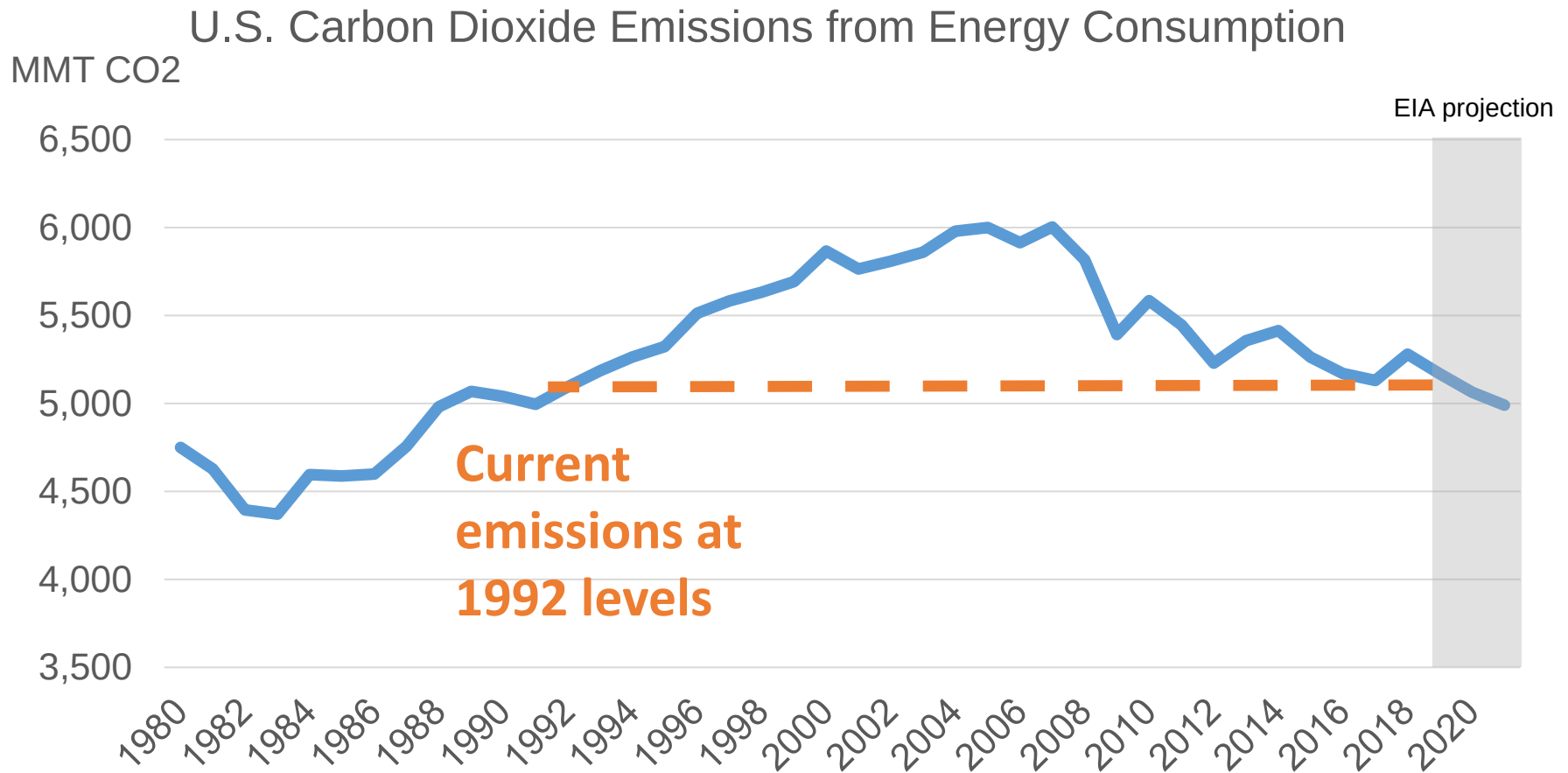
Natural gas utilities deliver essential energy when customers need it most



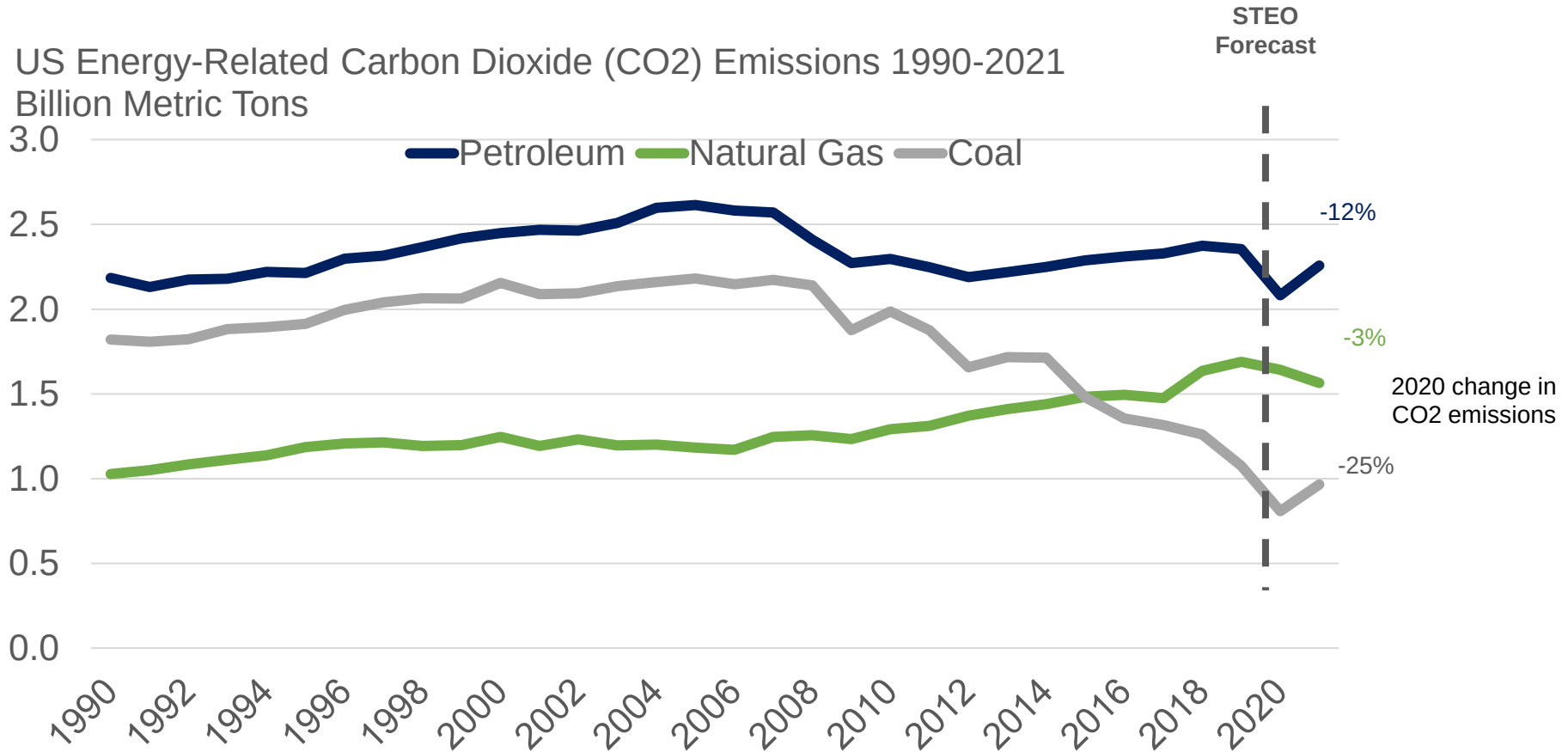


Environment

Natural Gas has Led Reduction in U.S. Carbon Dioxide Emissions to 27-Year Lows, and is Projected to Continue to Decline

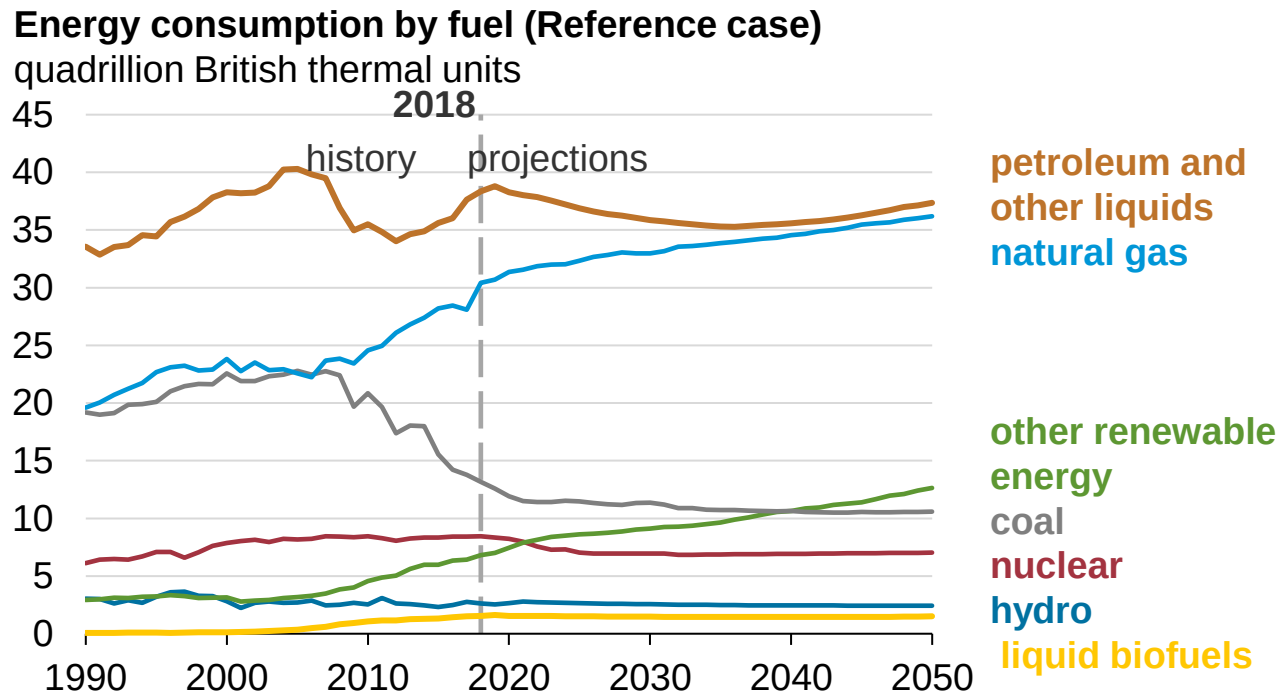


EIA now expects US energy-related CO2 emissions to drop 11% in 2020



Source: US Energy Information Administration, *Short-Term Energy Outlook*

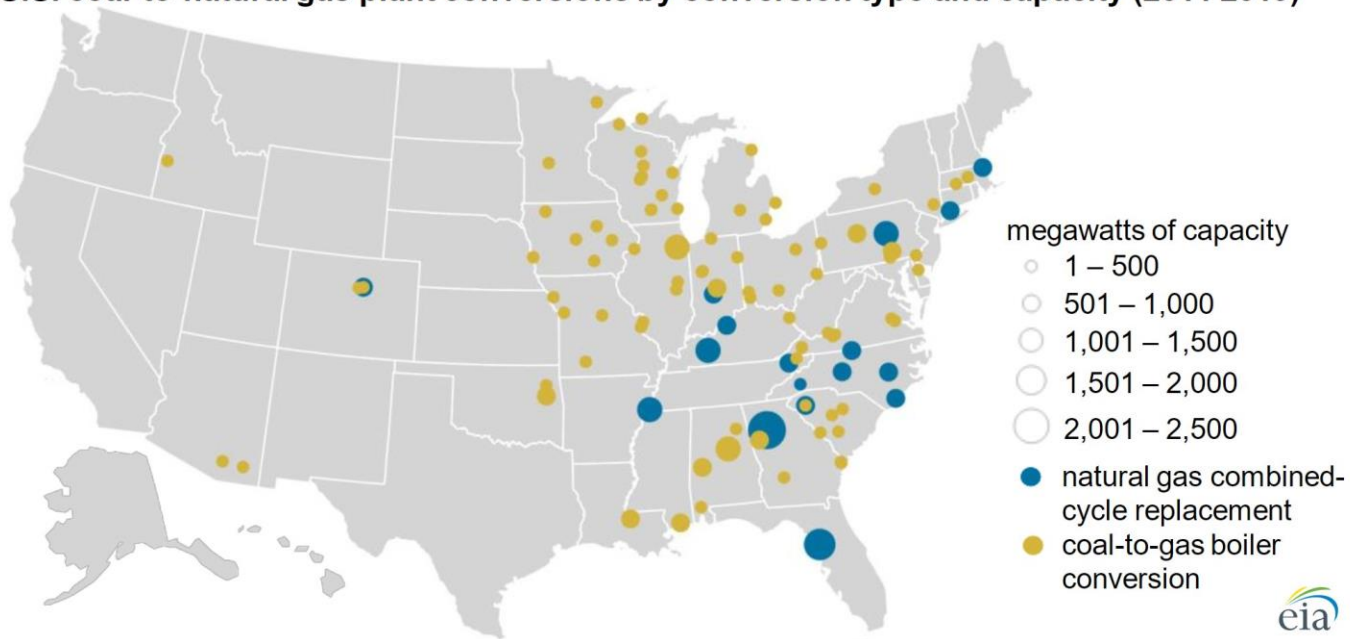
EIA Projects Continued Domestic Growth for Natural Gas and Renewables through 2050



Source: U.S. Energy Information Administration, Annual Energy Outlook

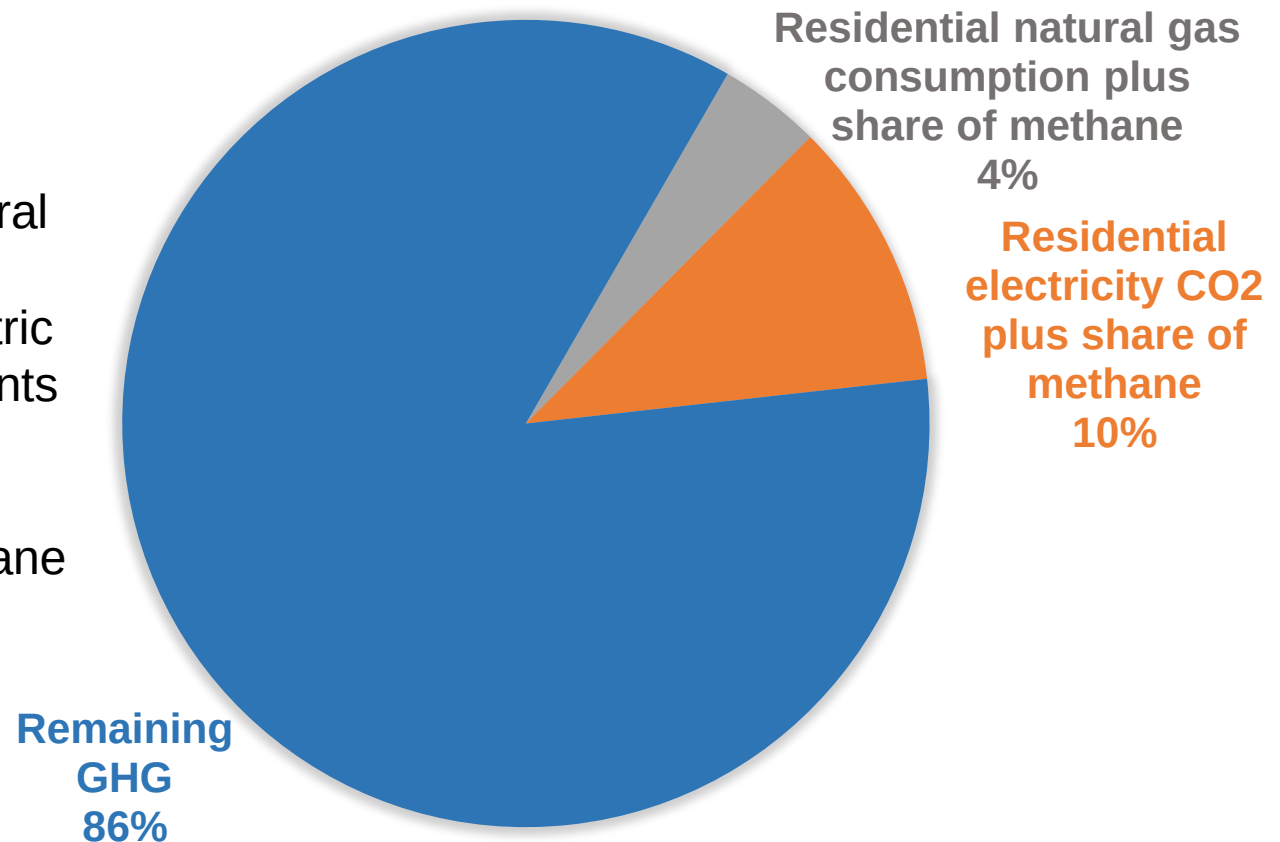
More than 100 coal-fired plants have been replaced or converted to natural gas since 2011

U.S. coal-to-natural gas plant conversions by conversion type and capacity (2011-2019)

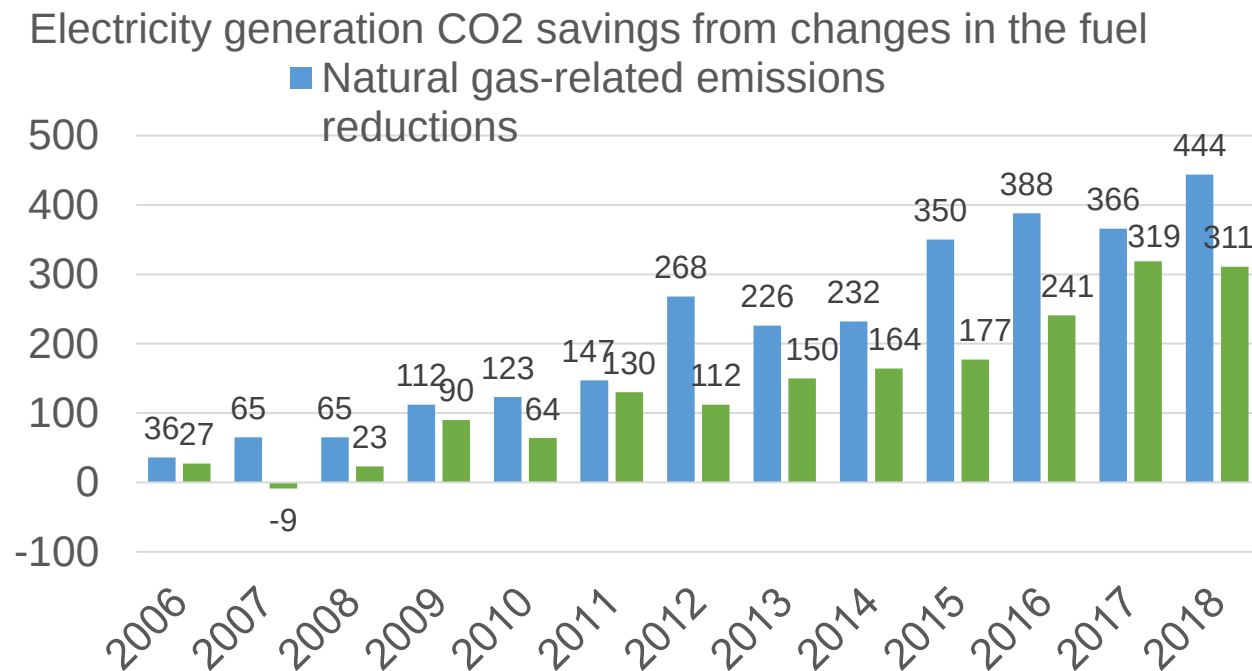


Residential natural gas use accounts for 4% of total US greenhouse gas emissions

- Commercial natural gas use is 3%
- Commercial electric power use accounts for 9%
- Residential and commercial propane and oil use is 3%

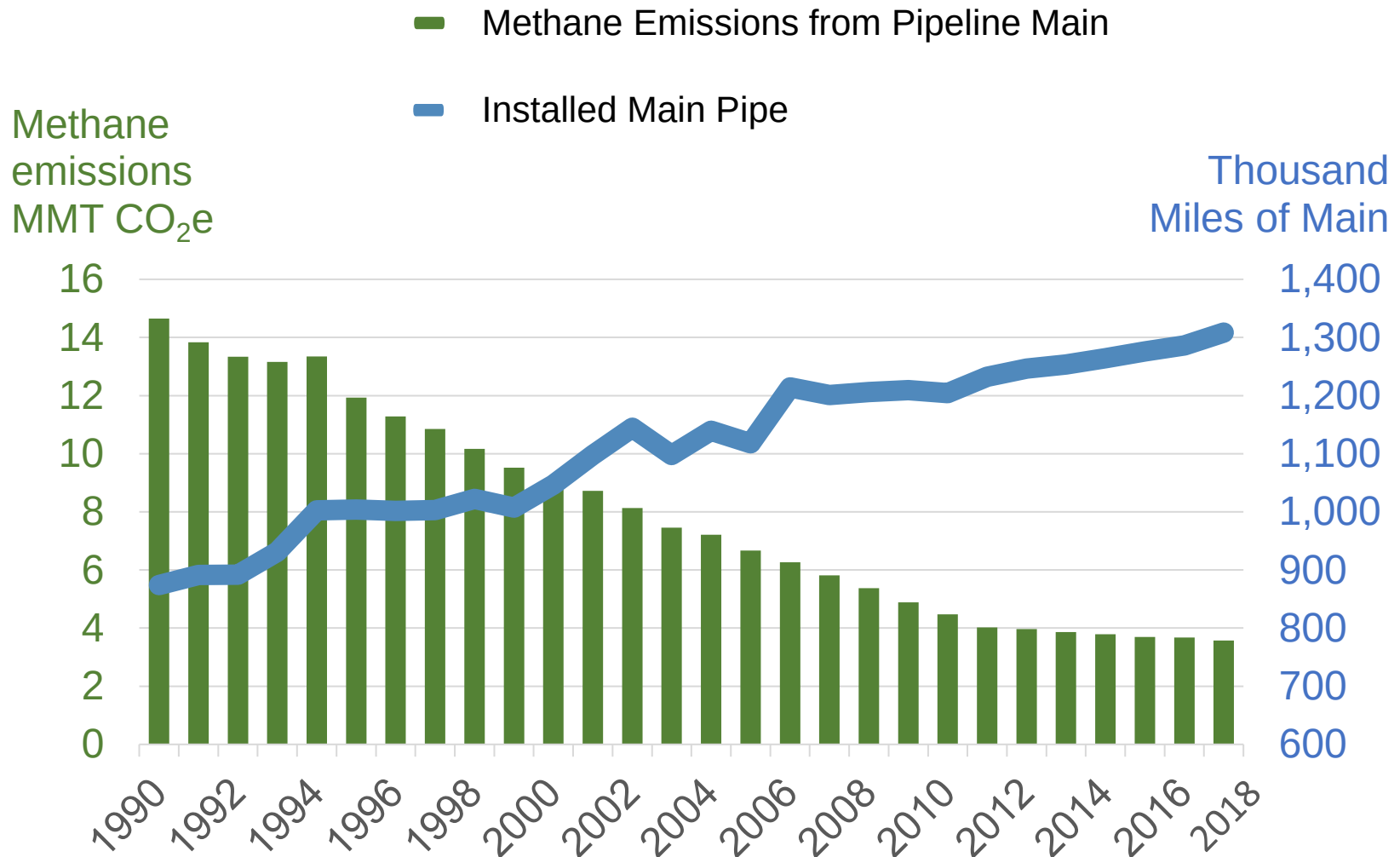


Natural gas is responsible for 61% of cumulative carbon dioxide emissions savings due to changes in the electricity generation fuel mix



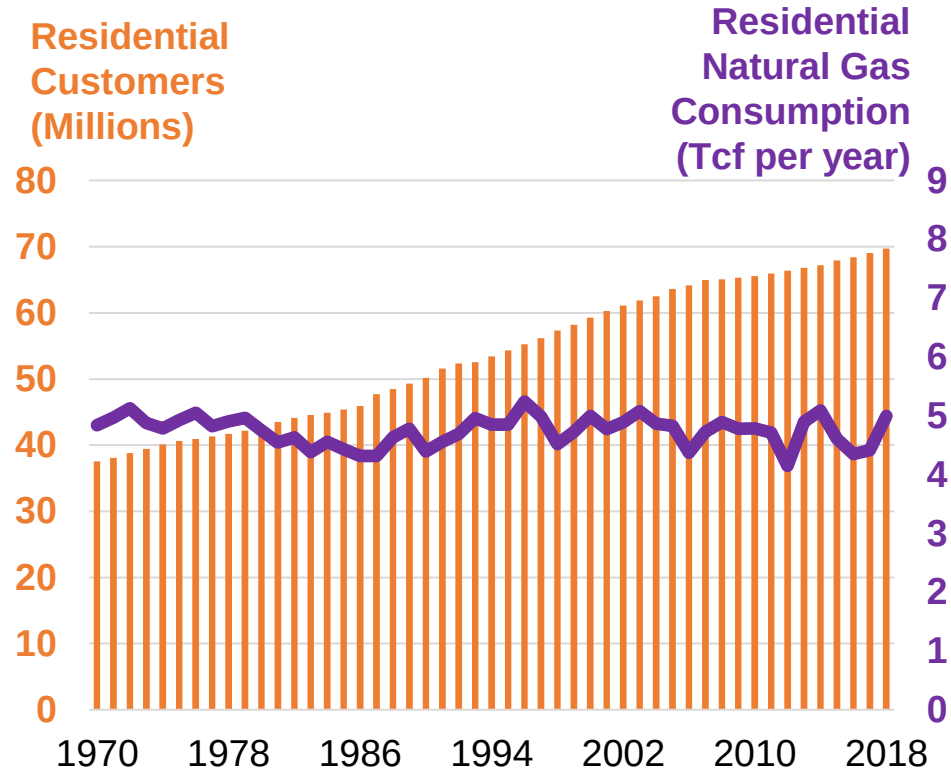
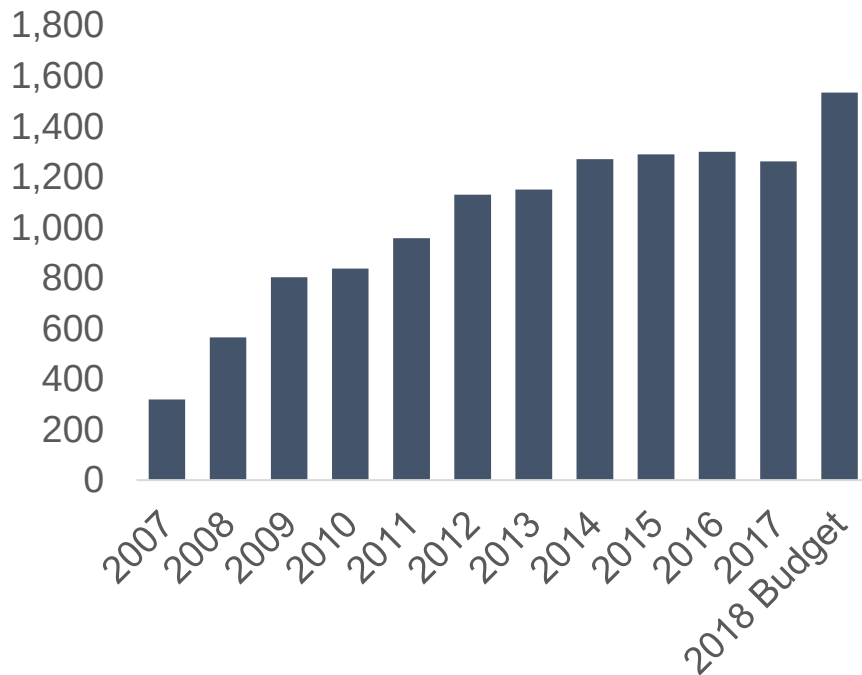
Source: US Energy Information Administration

Pipeline Replacement has Reduced Methane Emissions



Natural Gas Utilities Demonstrate Continued Commitment to Energy Efficiency

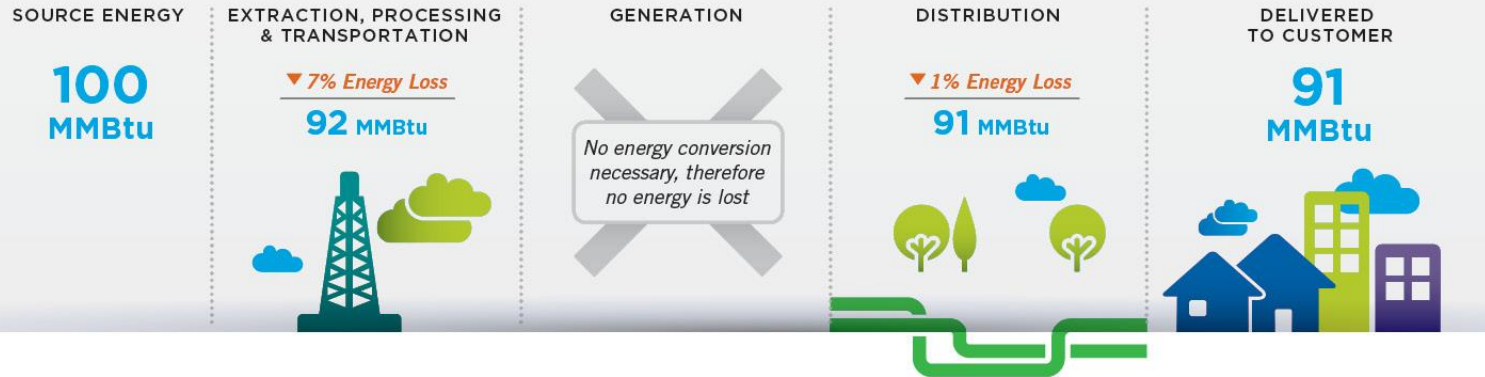
Natural Gas Efficiency Program Investments United States (Million Dollars)



Direct Use of Natural Gas vs. Electricity

91%

From the place where it is extracted from the ground, to appliances in your home, natural gas achieves 91% energy efficiency.



Converting to Electricity

Converting natural gas or any other fossil fuel into electricity to power comparable electric end-use products only maintains 36% of usable energy. This is because of the significant amount of energy lost on the journey from production to customer.



40%

CO2 emissions
reduction through
emerging gas
end-use
technologies



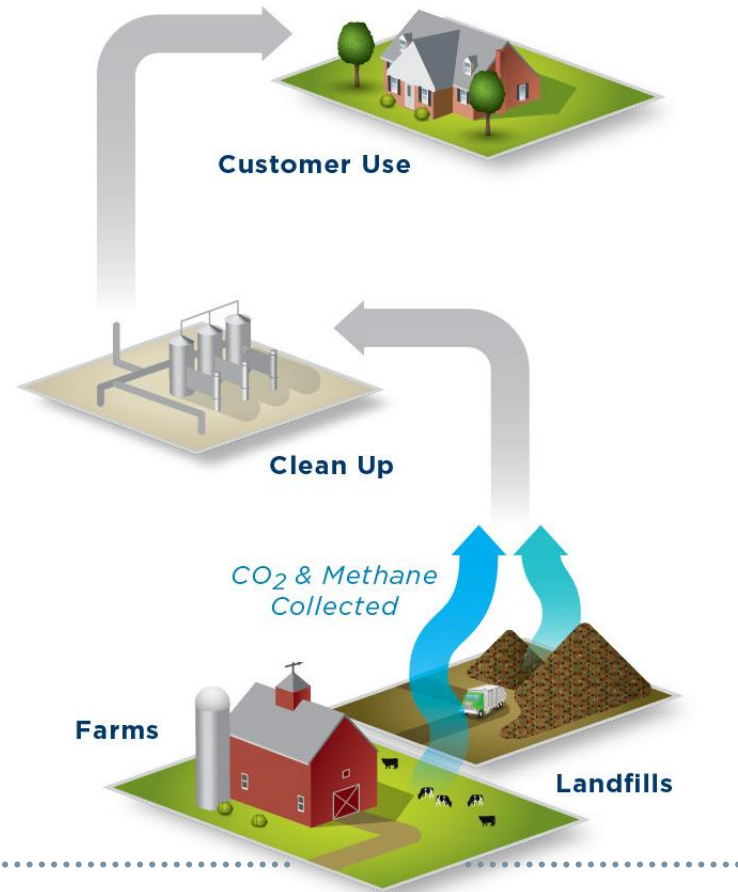
Emerging natural gas direct-use technologies can contribute to continued and significant reductions in carbon dioxide emissions

- US residential natural gas emissions can be reduced by 24 percent through the advancement of emerging technologies.
- With higher incentives, emissions can be reduced by 40 percent.
- Additional improvements to the energy efficiency of buildings, the adoption of smart technologies, and other advanced applications can reduce emissions even more.



Renewable Natural Gas

- Methane produced from farms, landfills and wastewater treatment plants
- Carbon neutral, versatile and fully compatible with the U.S. pipeline system
- Used in:
 - ✓ homes and businesses
 - ✓ manufacturing
 - ✓ electricity production
 - ✓ vehicles



Using RNG with next generation natural gas technologies further reduces emissions





Customers

Abundant Savings

Average Savings of

\$879

per year for households that use natural gas for heating, cooking and clothes drying — compared to homes using electricity for those appliances

\$121
billion

in savings for
American businesses
since 2009

Low domestic natural gas prices have led to savings of almost

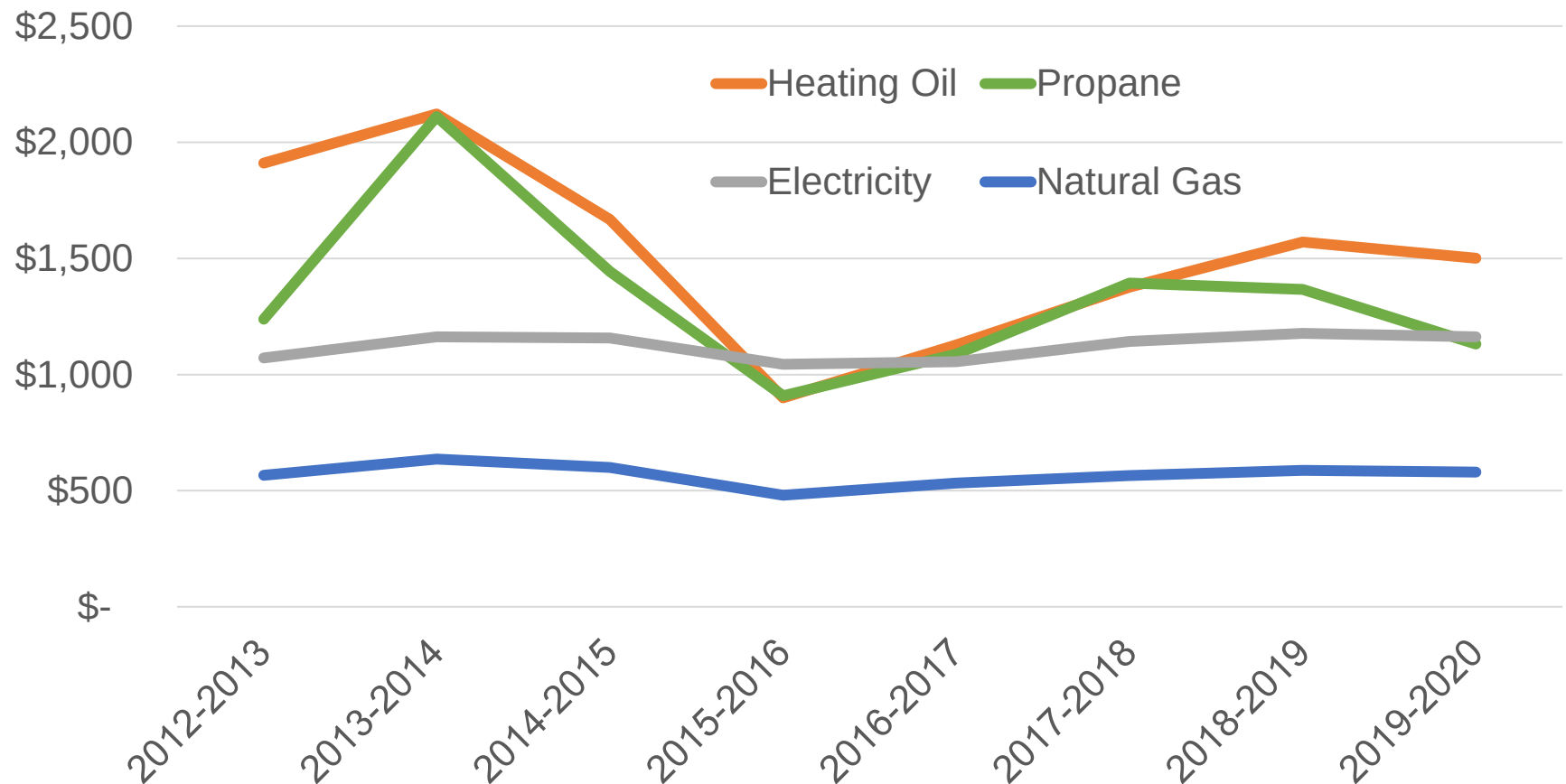
\$66
billion

for customers who have used natural gas for heating, cooking and clothes drying over the past four years

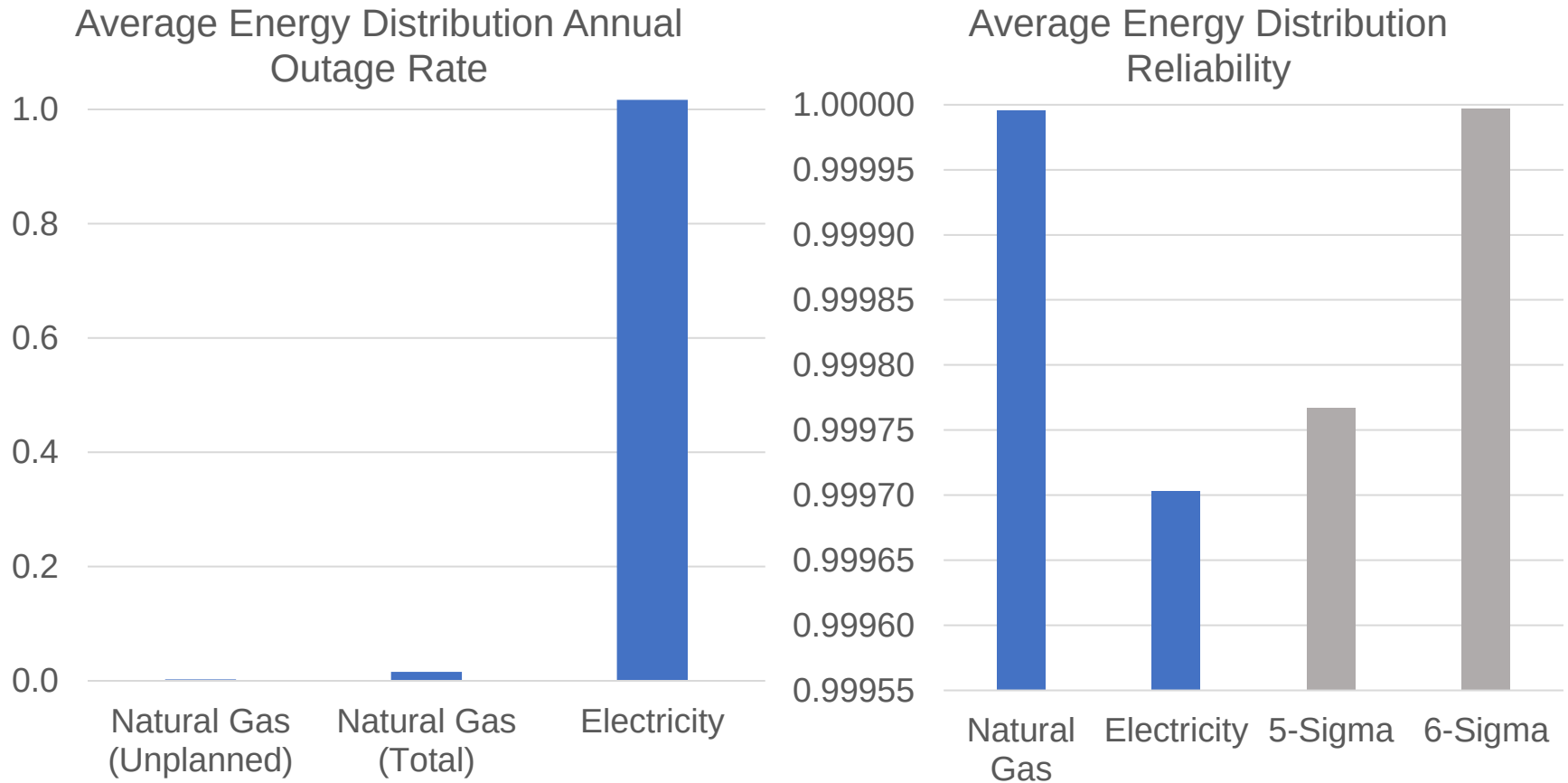


Households using natural gas for heat during the winter save twice as much as those using electricity

US Average Consumer Expenditures for Heating Fuels During the Winter (Dollars)



Natural gas service is reliable. Unplanned outages affect about 1 in 800 natural gas customers per year. By comparison, electric distribution systems have an average of one outage per year per customer.



A Manufacturing Renaissance

- The industrial sector accounted for 33% of total U.S. natural gas consumption in 2018
- \$1,337 per year in the pockets of the average American family through lower prices of manufactured goods.
- Natural gas is used to make:
 - ✓ Antifreeze
 - ✓ Fertilizer
 - ✓ Plastics
 - ✓ Pharmaceuticals
 - ✓ Fabrics
 - ✓ Chemicals



Challenges and Opportunities

What's at Stake for Natural Gas

179 million
Americans
use Natural
Gas

The Good News

Customers like Natural Gas

- *From a March 2020 AGA Poll:*
 - Natural gas: **67% favorable impression**
 - Natural gas industry: **63% favorable impression**
 - The natural gas industry is an important part of the American economy: **75% agree**
 - Natural gas is a reliable energy source: **71% agree**
 - Natural gas is an accessible energy source: **70% agree**
- *From a December 2019 Partnership for Energy Progress Poll:*
 - **66%-71% of Washington and Oregon voters had a Very Positive or Somewhat Positive view of Natural Gas**
- *From a November 2019 API Poll:*
 - Adults Nationwide had a **61% Favorable**, 18% Neutral and 21% Unfavorable view of Natural Gas

What

We Know

Situational Awareness

- The environmental NGOs are taking a holistic approach to eliminating the use of natural gas.
- State, cities and localities are capitalizing on the groundwork laid by the large environmental groups in the form of message amplification, organizing support, tactical and legal expertise, and financial resources.

[illegible]

As of May 29, 2020.
Map credit: Elizabeth Thomas
Source: S&P Global Market Intelligence

- Passed or introduced statewide prohibition against local measures to block access to utility service based on fuel type, including gas bans.
- Local building gas bans and electrification codes adopted or in development.

Changing the Narrative

AGA Goal & Strategy

- **Goal**

Reframe the debate on the value proposition of natural gas and energy infrastructure as an integral part of a clean energy future.

- **Strategy**

AGA has created an interdepartmental and cross-industry team to leverage existing resources and build new initiatives to address these challenges.

- *Proactive and Responsive*
- *Broad National Coalition*
- *New, non-traditional allies*
- *Go Local*



We can

- Further reduce emissions
- Lower costs
- Increase efficiency and affordability

And We will

- Advance research, development and deployment of next-generation natural gas technologies
- Increase access to high-efficiency natural gas appliances
- Develop renewable natural gas



Climate Change Position Statement

- Committed to reducing greenhouse gas emissions through:
 - ✓ Smart innovation
 - ✓ New and modernized infrastructure
 - ✓ Advanced technologies
- Ten collective commitments by natural gas utilities
- Eight principles for policy action
- A better, more thoughtful pathway



www.aga.org/climate



Natural Gas Solution to the “Energy

