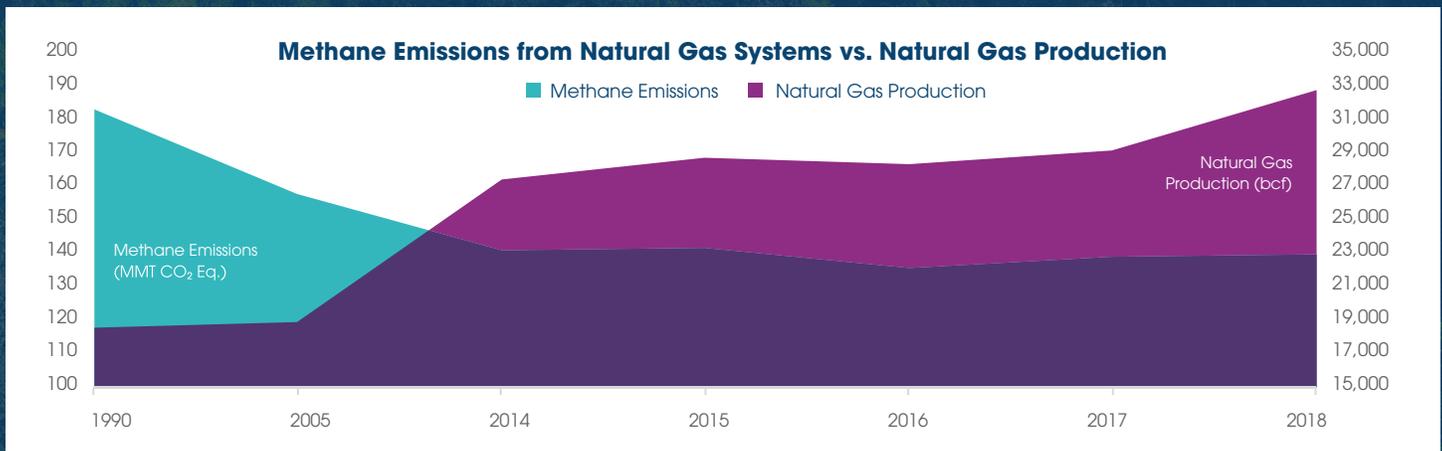


# HOW THE NATURAL GAS AND OIL INDUSTRY IS ADDRESSING METHANE EMISSIONS



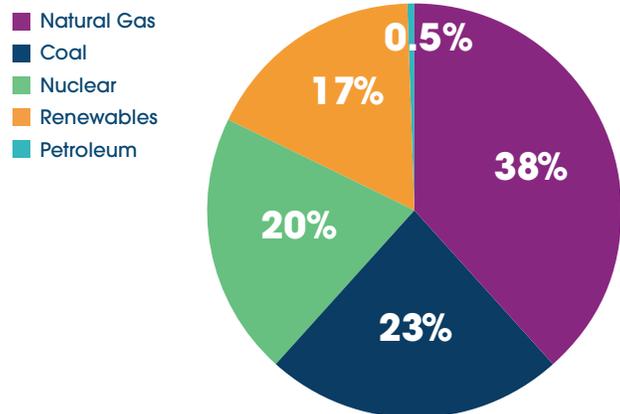
The natural gas and oil industry is developing innovative technologies and best practices that reduce methane emissions from its operations, all while providing affordable and reliable energy to American families and businesses.

The results speak for themselves. From 1990-2018, methane emissions from natural gas systems **dropped 23.6%** during a period when production has **increased more than 70%**. This is effectively a **55% reduction in the rate of emissions**.

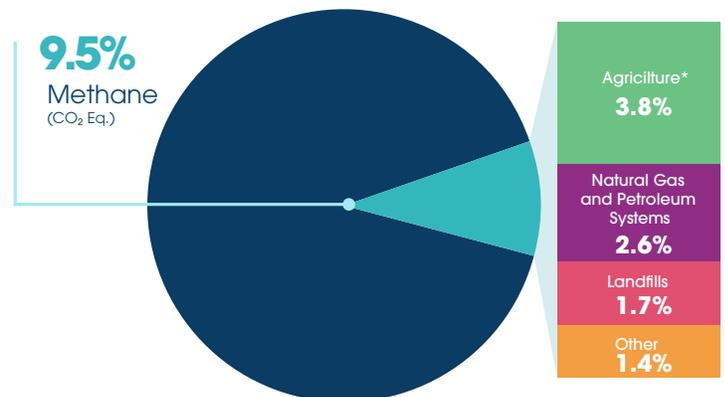


Natural gas is the country's top energy source for generating electricity. Its increased use has played a key role in reducing CO<sub>2</sub> emissions to the lowest levels in a generation. This valuable energy resource powers U.S. homes, businesses and manufacturing plants, while providing Americans with billions in cost savings.

Total U.S. Electricity Generation by Source, 2018



Total U.S. Greenhouse Gas Emissions by Sector



\*Includes enteric fermentation, manure management, rice cultivation and field burning of agricultural residues

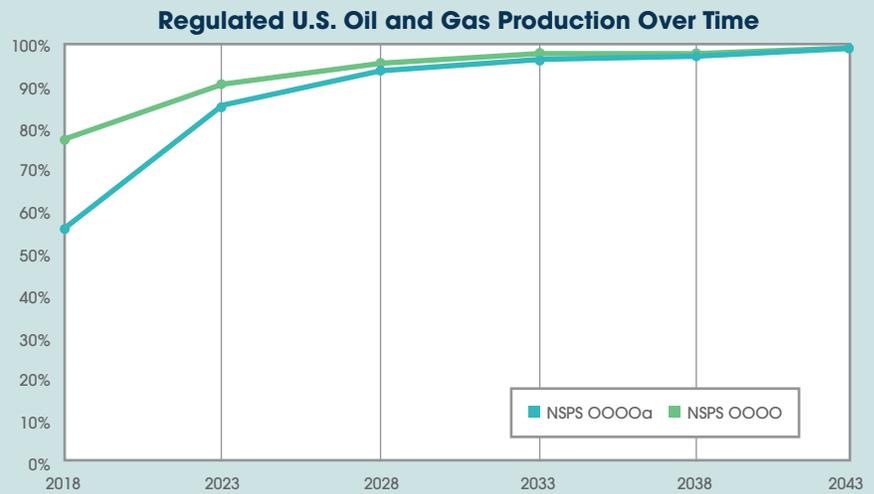
Methane emissions from natural gas and oil operations constitute approximately **2.6% percent of total U.S. greenhouse gas emissions.**

# The Industry is Regulated

From production to processing, the natural gas and oil industry is regulated. The industry supports smart regulations that provide the flexibility to develop abundant, domestic energy, while allowing for innovation and technological advancements that help environmental performance.

From exploration and production to processing, **by 2023 nearly 90%** of all U.S. natural gas and oil production will be regulated under the EPA's New Source Performance Standard (NSPS OOOO/OOOOa).

That number jumps to **98% by 2033**.



## Industry Actions Continue to Drive Emissions Down

To maintain production levels and improve environmental performance, the industry trend is moving toward new multi-well sites and central processing facilities. This trend provides operational efficiencies that also reduce emissions with less equipment and fewer components.

All new sites are also subject to the EPA rule. As a result, EPA's current regulation of new and modified sources already regulates most oil and natural gas production in the U.S. Industry is taking action through programs that will continue to address emissions in transmission, including pipeline maintenance and compressors.

## EPA's New Source Performance Standards (NSPS OOOO and OOOOa)

**In 2012, EPA finalized NSPS OOOO** to regulate volatile organic compounds (VOCs) from common oil and natural gas production emissions sources – storage vessels, compressors, hydraulically fractured natural gas wells, pneumatic controllers – that reduced methane emissions as a co-benefit.

**In 2016, EPA finalized NSPS OOOOa** to expand the 2012 rule to cover additional emission sources – equipment leaks, hydraulically fractured oil wells, and pneumatic pumps – and directly regulate methane emissions in addition to VOCs.

**In 2018, EPA proposed improvements to the 2016 rule** were intended to reduce regulatory duplication with state leak repair program requirements, ease the approval to use emerging technologies that find and repair equipment leaks, and provide greater clarity for the industry to comply.

**2012** EPA finalized NSPS OOOO to regulate VOCs.

**2016** EPA finalized NSPS OOOOa expanding rule to directly regulate methane emissions.

**2018** EPA proposed amendments to the 2016 rule.

The modifications allow EPA to meet its statutory obligations under the **Clean Air Act**, and better align federal and state methane requirements – allowing operators to meet certain state requirements as an alternative to EPA requirements where strong standards are also in place.

# Collaborating for Cleaner Operations

The natural gas and oil industry supports both the effective regulation of VOCs that reduce methane emissions and measurable industry action to incorporate methane-reducing technologies throughout the supply chain. These efforts are working. While global emissions of methane are up, overall U.S. methane emissions are down even as America produces more affordable, reliable and cleaner natural gas.

## Voluntary Efforts to Reduce Methane Emissions



### Environmental Partnership

- 80+ natural gas and oil companies
- Targeted programs covering the top methane-reduction opportunities
- Expanded actions to reduce emissions from compressors and pipeline maintenance within transmission operations

### Oil and Natural Gas Climate Initiatives

CEO-led initiative

Membership represents almost 1/3 of global natural gas and oil production

Committed \$1 billion to startups that lower the carbon footprint of the new energy and industrial sectors.



### Our Nation's Energy (ONE) Future Coalition

Members operate in 11 of 19 production basins.

Goal of reducing methane intensity to one percent or less by 2025 (performance-based)

Achieved rate of .55 percent in 2017, surpassing the 2025 goal.

## Implementing Innovative Technologies

The U.S. energy revolution is also a technology revolution. The industry is constantly developing, testing and implementing an extensive array of cutting-edge technologies to identify, capture and reduce methane emissions, including leak detection through sophisticated devices such as optical gas imaging (OGI) cameras.

### OGI Cameras

OGI cameras use specialized infrared technology to detect even the smallest methane and VOC leaks quickly and from a safe distance. These cameras can be handheld or attached to drones.

