



# UP CLOSE: METHANE SPOTLIGHT

## OPERATIONS

ExxonMobil has implemented a program across its U.S. unconventional production to reduce methane emissions from Company-operated facilities by:

- Enhancing leak detection and repair surveys.
- Ending use of high-bleed pneumatic devices.
- Monitoring low-pressure gas well liquid unloadings to reduce releases.
- Improving facility designs.
- Enhancing leak inspections and training programs for operations personnel.

The Company continues to deploy new research and technology developments, such as emerging aerial leak detection and expanded use of continuous methane detection technologies. In March 2021, the Company submitted the industry's first application to the U.S. EPA to use aerial leak-detection technology in lieu of handheld cameras to improve effectiveness and cost of monitoring and mitigation.

Since initiating its methane reduction program, ExxonMobil has conducted more than 39,000 leak surveys on more than 9.2 million components at more than 11,500 production sites. High-bleed pneumatic devices were eliminated across U.S. unconventional production as of year-end 2020. These actions reduced operated U.S. unconventional methane emissions by approximately 40% as of year-end 2021 compared to 2016, which equates to about 1.7 million metric tons of CO<sub>2</sub> equivalent.

Approximately 200 million cubic feet per day of natural gas produced from the company's Permian Basin facilities at Poker Lake, New Mexico, have been independently certified and received the top grade for methane emissions management. The assessment from independent, nonprofit certifier MiQ helps the company meet customer demand for energy produced with fewer emissions. ExxonMobil is working to expand certification to other unconventional operated assets, including Appalachia and Haynesville.

### Actions to reduce emissions

~40%

METHANE REDUCTION ACROSS THE  
COMPANY'S OPERATED U.S.  
UNCONVENTIONAL PRODUCTION AS OF 2021

~100%

HIGH-BLEED PNEUMATIC DEVICES PHASED  
OUT ACROSS THE COMPANY'S U.S.  
UNCONVENTIONAL PRODUCTION AS OF 2020

**ADVOCACY**

ExxonMobil supports the U.S. and European Union's Global Methane Pledge, the U.S. Methane Emissions Reduction Action Plan, and the Oil and Gas Climate Initiative's (OGCI) Aiming for Zero Methane Emissions by 2030. These actions follow ExxonMobil's ongoing advocacy efforts that include submitting a letter to the U.S. Environmental Protection Agency rulemaking docket indicating support for reasonable, cost-effective regulation of methane from new and existing sources, and the Company's participation on a national U.S. EPA Methane Technology panel in August 2021.

In March 2020, the Company published a model framework for industry-wide methane regulations and urged stakeholders, policy makers and governments to develop comprehensive, enhanced rules to reduce methane emissions in all phases of production and across the natural gas value chain. In addition, ExxonMobil is a founding and active member in the Methane Guiding Principles<sup>(27)</sup> – an international multi-stakeholder initiative now comprising more than 20 companies and 15 supporting organizations that work together to address methane emissions. Under the Methane Guiding Principles, ExxonMobil is a primary sponsor of the International Energy Agency's Methane Tracker,<sup>(28)</sup> a web-based portal that provides information on global methane emissions, mitigation measures, and potential regulatory approaches.

The Company also participates in the EU methane policy work to support legislation that achieves methane emission reductions, including submitting recommendations on monitoring, reporting and verifying oil and gas methane emissions, leak detection and repair, upstream venting and flaring, and reducing methane emissions in the agricultural and waste sectors.

ExxonMobil supports strong measurement, reporting and verification standards as part of a broad suite of regulations to help reduce methane emissions. In addition to its participation in the Methane Guiding Principles, the Company is actively engaged in the OGCI, the Collaboratory for Advancing Methane Science, and the Environmental Partnership. ExxonMobil also participates in the recently formed International Association of Oil & Gas Producers/Ipieca/OGCI Task Force for Recommended Practices for Methane Emission Detection & Quantification Technologies.



## RESEARCH AND TECHNOLOGY

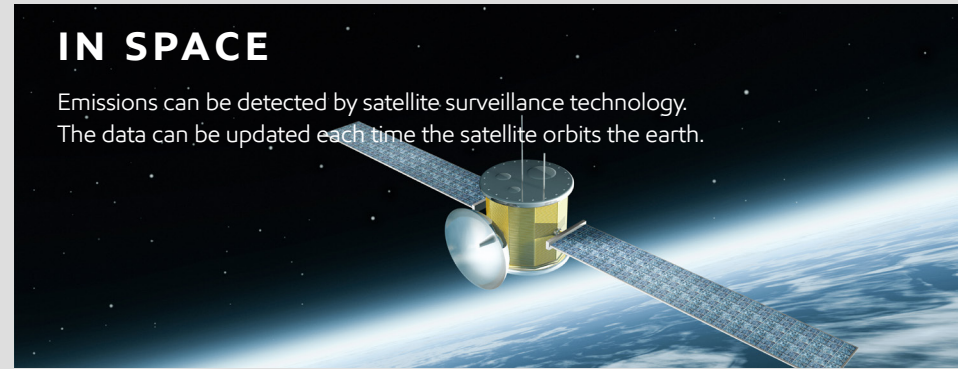
ExxonMobil participates in Project Astra, a collaboration of universities, environmental groups and industry partners developing an innovative sensor network to continuously monitor methane emissions across large areas of Texas for quick and efficient leak detection and repair. This high-frequency monitoring system will enable operators to more easily direct resources to specific locations and could provide a more affordable, efficient solution to reduce methane emissions. In 2021, the initiative completed its first phase of sensor evaluation and initiated a small-scale pilot in the Permian Basin.

The Company also works to advance the scientific understanding of satellite-based methane detection, and has partnered with Scepter Air to develop technology to greatly improve global methane detection and quantification. Through other collaborations with Stanford University and the Collaboratory for Advancing Methane Science, ExxonMobil is progressing field and desktop studies to better understand capabilities of current deployed satellite technology.

Through OGCI, the Company is working with GHGSat to finance monitoring of industry methane plumes in Iraq, one of the world's largest methane emitters. If successful, this initiative could be extended to other methane hotspots.

## IN SPACE

Emissions can be detected by satellite surveillance technology. The data can be updated each time the satellite orbits the earth.



## IN THE AIR

Using helicopters and airplanes, ExxonMobil is trialing four different airborne technologies fitted with methane sensors to detect and quantify emissions.

## ON THE GROUND

ExxonMobil is also testing a ground-based leak detection system that combines research in sensing technology, plume modeling and data analytics to identify leaks for repair.