



ANNUAL REPORT 2022

Reducing Methane Emissions from Oil and
Natural Gas Operations



Our Mission

To continuously improve the industry's environmental performance by taking action, learning about best practices and technologies and fostering collaboration to responsibly develop our nation's essential oil and natural gas resources.





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Joint Message

from the Director and Chair

As The Environmental Partnership approaches its five-year anniversary, we reflect on the journey since our launch in December 2017. We couldn't have imagined back then that we would be where we are today with 100 oil and natural gas companies committed to the program and its mission.

We set out to promote practices to reduce methane emissions that are available to companies. And, while we continue doing that, the program has expanded well beyond that original scope. Much of that growth has been driven by the tremendous strides made by industry and reflects a number of critical technological advancement over the last five years.

We saw progress last year across all six of the environmental performance programs the companies are implementing. A few examples:

- Across every major oil and natural gas basin in the country, the participating companies conducted more leak surveys than ever focused on reducing methane emissions.
- With increased participation by midstream, implementation of our pipeline program has expanded its reach.
- In our new flare management program, participating companies have cut their flare intensity – a measure of flare volumes relative to production – nearly in half for a second year in a row, clearly reflecting companies' strong commitment to reduce flaring of associated gas.

- As the development, testing and utilization of new emission detection technologies continue to rapidly evolve, participating companies have eagerly adopted and advanced their use. The Environmental Partnership is committed to collaborating with parties supplying methane emission detection methodologies to promote their capabilities within the coalition.

As the program has grown, so has the community of participants upon which we rely. We continue to be thankful for the many women and men who are working every day to reliably power our lives while reducing environmental impacts. We're proud that The Environmental Partnership has been, and will continue to be, integral to developing global energy and environmental solutions. We look forward to what the next five years will bring and are confident that the industry will meet tomorrow's challenges.

Sincerely,



VANESSA RYAN
Chair
Chevron



MATTHEW TODD
Director
The Environmental
Partnership

Program Summary

Our Mission and Principles

To continuously improve the industry's environmental performance by taking action, learning about best practices and technologies and fostering collaboration to responsibly develop our nation's essential oil and natural gas resources.



Principles

1

Take Action

Participants commit to taking action to improve their environmental performance through six programs that are implemented and phased into their operations.

2

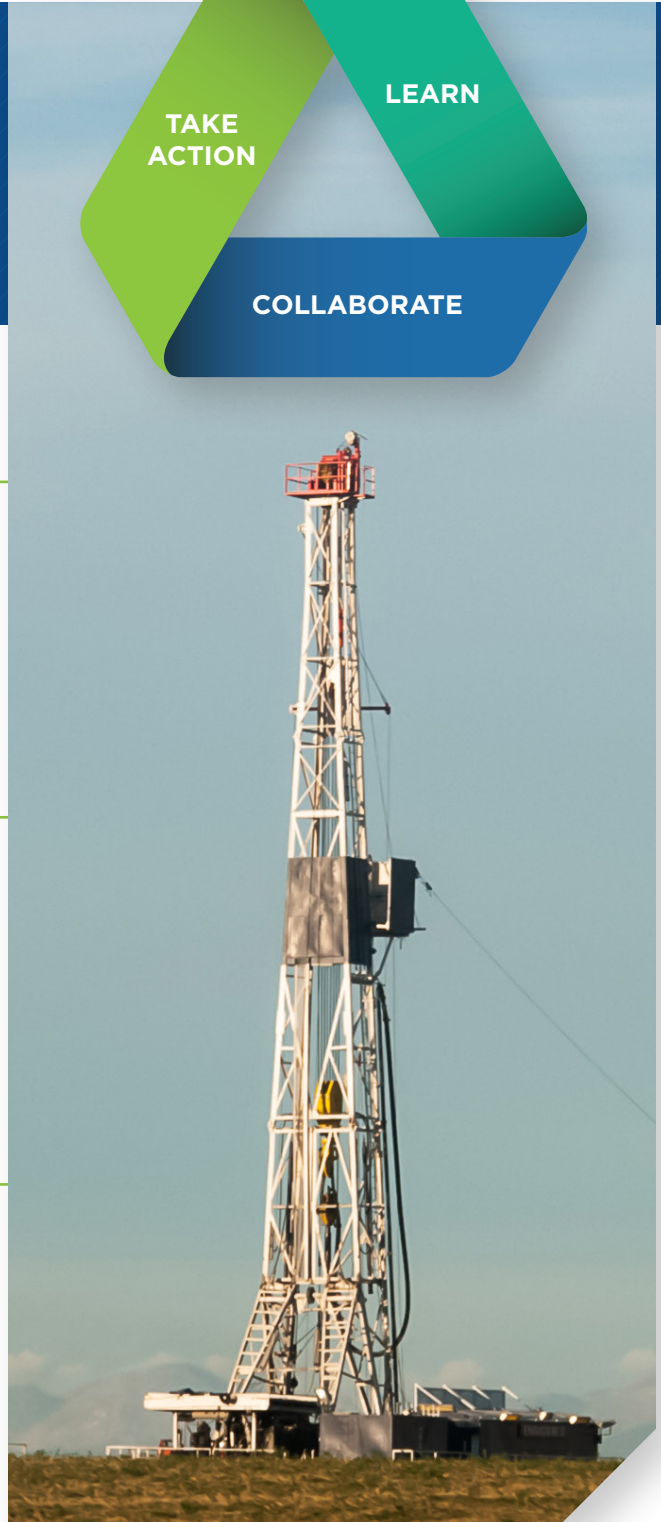
Learn

Participants commit to continuous learning about the latest industry best practices and innovations to help further reduce their environmental footprint while safely and responsibly growing energy production.

3

Collaborate

Participants commit to collaborating with one another and with academics, researchers and regulators on the best strategies, tools and tactics to improve environmental performance.





Background

The U.S. oil and natural gas industry has long committed to protecting human health, safety and the environment. Even as the United States grew to lead the world in oil and natural gas production (1990-2019), methane emissions from petroleum and natural gas systems fell, thanks to industry leadership, a motivated workforce and investment in and deployment of new technologies. Seeking to build on this success, a group of 26 oil and natural gas production companies formed The Environmental Partnership in December 2017.

The Environmental Partnership's first initiative focused on taking action to further reduce emissions, including methane and volatile organic compounds (VOCs) associated with oil and natural gas production.

Methane is a greenhouse gas, emitted both in nature and through human activity. Because methane is the primary component of natural gas, minimizing its release is important to industry from environmental and business standpoints. VOCs are naturally occurring compounds containing carbon that can be emitted during production and are an important target for reductions because they are a precursor to ground-level ozone formation and smog.

As the program matured, TEP participation has quadrupled in size and companies have accelerated progress in emissions reduction.

Environmental Performance Programs

The Partnership has continued to develop and expand its actions to cover more emission sources across the supply chain. Informed by data from EPA’s Greenhouse Gas Reporting Program (GHGRP), there are now six environmental performance programs that oil and natural gas production, processing and transmission companies can implement within their operations. Below is a summary of each of the six programs.

1. Leak Detection and Repair Program

Leak monitoring, followed by timely repair, at sites using detection methods and technologies such as portable analyzers, optical gas imaging cameras and laser-based aerial surveys.

2. Pneumatic Controller Program

Replace, remove or retrofit gas-driven pneumatic controllers with low- or zero-emitting devices.

3. Manual Liquids Unloading Program

Implement an industry best practice that minimizes emissions by monitoring the removal of liquids that, as a natural gas well ages, can build up and restrict natural gas flow.

4. Compressor Program

Implement reduction practices that minimize emissions associated with centrifugal and reciprocating compressors – such as routing vapors to control or replacing rod packings.

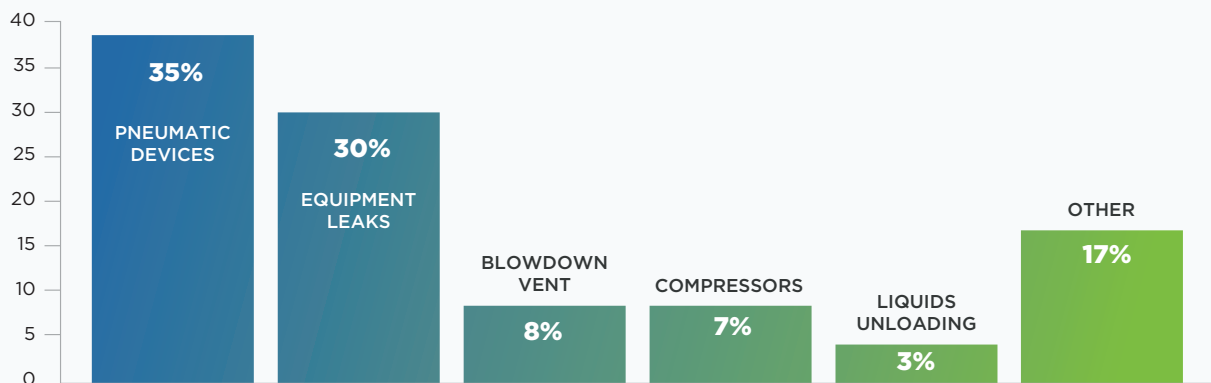
5. Pipeline Blowdown Program

Implement reduction practices to minimize emissions during pipeline blowdowns – such as routing natural gas to a low-pressure system or reducing pressure.

6. Flare Management Program

Implement practices to reduce flare volumes, promote beneficial use of associated gas, and calculate flare intensity to demonstrate progress.

GRAPH 1 EPA’S GHGRP 2020 CH₄ EMISSIONS



1. Other is comprised of 17 additional emissions sources, including associated gas flaring.
2. The percentage of CO₂ emissions from associated gas venting and flaring relative to total Subpart W emissions is 5.3%.
3. 2020 is the most recent available data from EPA’s GHG Reporting Program.

Taking Action from Coast to Coast

TEP participating companies represent more than

70%

of U.S. Onshore oil and natural gas production

The Environmental Partnership is implemented in

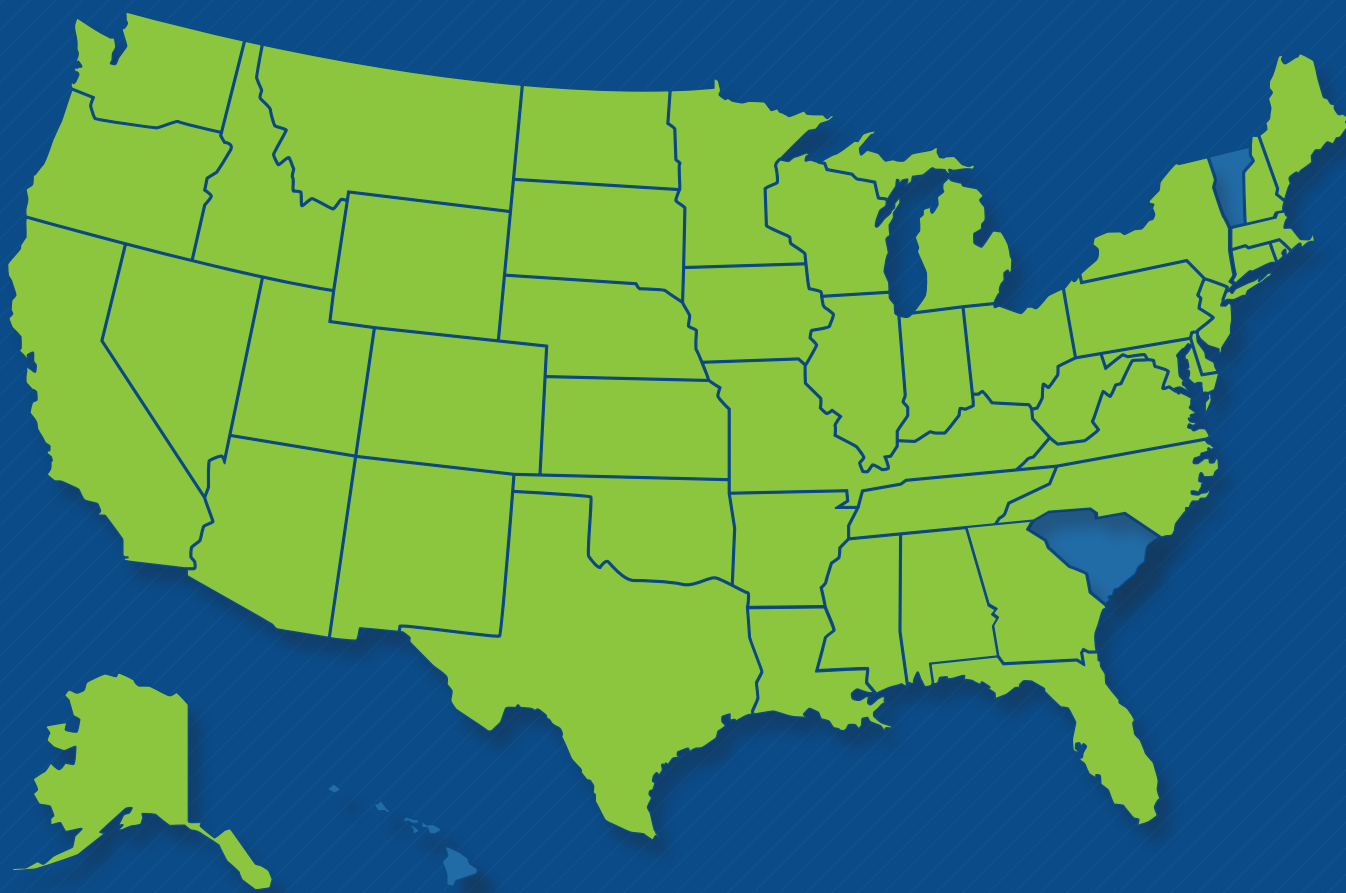
47 OF 50 STATES

Companies at launch:

23

Companies to-date:

100



 States Where Program is Implemented

2021 Participating Companies





Performance

2021 DATA

Highlights

LEAK DETECTION AND REPAIR PROGRAM

More than
345 million
component inspections performed

More than
460,000
surveys conducted

More than
90,000
sites surveyed

0.05%
leak occurrence rate, or less than 1 component
leaking in 2,000 among sites surveyed

PNEUMATIC CONTROLLER PROGRAM

More than
22,400
additional gas driven controllers replaced or
removed from service

More than
4,500
zero-emission pneumatic controllers
installed at new sites

More than
1,700
high-bleed pneumatic controllers replaced,
retrofitted or removed from service

60
participating companies no longer have high-
bleed pneumatic controllers in their operations

ACCELERATING PERFORMANCE

2018 - 2021 LEAK DETECTION AND REPAIR PROGRAM

More than
700 million
component inspections performed

More than
1.2 million
surveys conducted

2018 - 2021 PNEUMATIC CONTROLLER PROGRAM

More than
51,000
gas driven controllers replaced

More than
10,000
zero-emission pneumatic controllers installed

2021 DATA

MANUAL LIQUIDS UNLOADING PROGRAM

Monitored more than

39,000

manual liquids unloading events

PIPELINE BLOWDOWN PROGRAM

Emission reduction practices implemented during more than

7,800

pipeline blowdowns

COMPRESSOR PROGRAM

Rod packing changes on more than

3,200

reciprocating compressors

Approved Emissions reduction practices utilized on more than

1,500

compressors

Progress on Flaring: Continuing to Focus on Flare Reduction

Since the launch of the flare management program in 2020, The Partnership has advanced best practices to reduce flare volumes, promote the beneficial use of associated gas and improve flare reliability and efficiency when flaring is necessary. Typically, high-pressure flares are used when there is a lack of natural gas gathering lines or processing capacity, during facility or downstream facility maintenance or during unplanned events to safely alleviate pressure. In these instances, flaring is better for the environment, releasing fewer greenhouse gases than venting the gas directly into the air.

To track progress, participants in the program annually report data to calculate flare intensity, a measurement of flare volumes relative to production. The annual report reviews flaring trends and reduction efforts and participants collaborate to share information on flare management programs that includes best

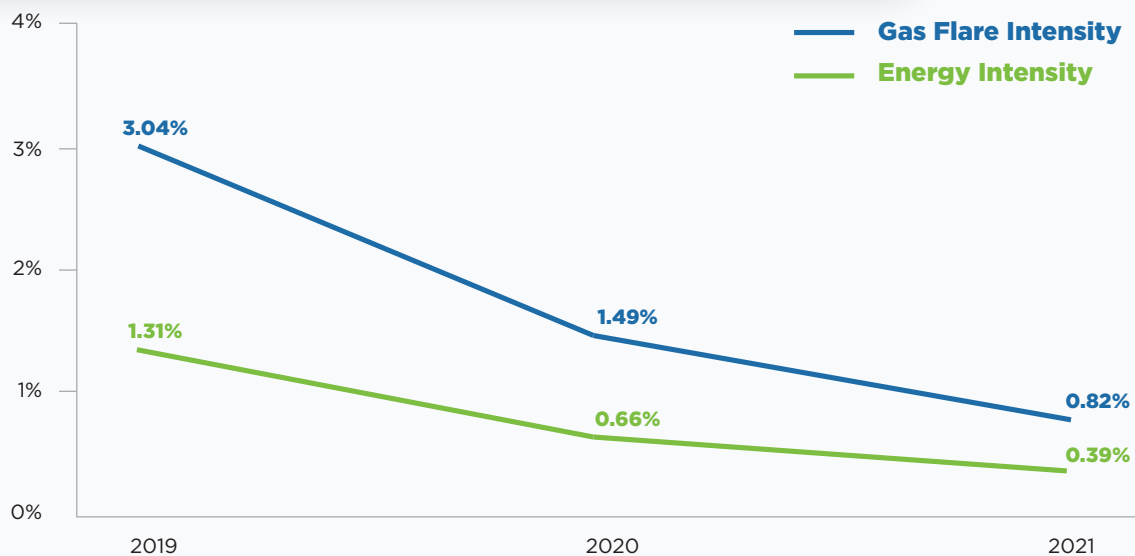
practices and utilization of innovative technologies to reduce flaring intensity.

There was a 40% increase in the number of participating companies in the flare management program in 2021. These companies represent 62% and 40% of total U.S. oil and natural gas production, respectively. Including new company participants, there was a 45% reduction in flare intensity and a 26% reduction in total flare volumes from the previous year.

45% reduction in flare intensity and a 26% reduction in total flare volumes

Participating company commitments to flare management programs, coupled with expanded natural gas infrastructure, are driving progress to reduce flare intensity.

GRAPH 2 PARTICIPATING COMPANY FLARE INTENSITY



* **Gas Flare Intensity** — Flaring relative to gas production in oil fields (MCF gas flared / MCF gas produced)

** **Energy Intensity** — Flaring relative to oil and gas production (BOE gas flared / BOE produced)

Industry Spotlights

Occidental

Like other participating companies, Occidental uses multiple strategies to eliminate and reduce emissions from its operations. One example is Oxy's innovative tankless facility design, which minimizes oil storage and processing at well sites by using pipelines instead of trucks to transport oil to central processing facilities. Now being implemented across Oxy's U.S. onshore domestic operations, the tankless design decreases the company's facility footprint and significantly reduces emissions, dust, noise and truck traffic.

Additionally, Oxy deploys technologies promoted by and through The Environmental Partnership to validate operating conditions and identify and repair leaks expeditiously. Combining aerial flyover technology, satellites, continuous and near-continuous fixed sensors, optical gas imaging (OGI) and drone-mounted OGI cameras, this comprehensive data collection helps to identify opportunities to limit emissions and sustain environmental performance and maximize the natural gas available to our customers.



“Oxy’s longstanding work with The Environmental Partnership and implementation of these strategies is a key part of our company’s global commitment to reduce GHG emissions,” said Kathleen Mowery of Oxy’s Regulatory Staff. “Our partnership maximizes the use of valuable methane resources and helps leading companies across industry sectors pursue a transition to achieve net-zero GHG emissions and a lower carbon world.”

— Oxy’s Kathleen Mowery



Repsol

In 2021, Repsol utilized cutting-edge aerial technology to detect and quantify methane emissions in the company's Marcellus Business Unit. Methane flights and mapping can pinpoint leaking equipment and estimate emissions rates in a cost-effective manner to help improve overall safety. It also allows Repsol and other operators to make changes to reduce leaks, ultimately reducing methane emissions from upstream operations. The process creates a map that images each detected emissions plume.

Following an initial survey that detected emissions from one of Repsol's well pads, leak detection and repair technicians visited the site and identified malfunctioning liquid level controllers. Operators rebuilt the units to ensure they were functioning properly, and a follow-up survey showed a decrease in emissions, keeping more gas in the pipe.

Our participation in The Environmental Partnership provided Repsol exposure to the aerial survey technology and the opportunity to share our findings with other participating companies. The ability to find and fix this leak is not only good for the environment, but it's good for our business. Great work to all involved and a terrific example of how methane quantification flights can help the industry improve operations.

— Repsol's Kris Perritt



Advancement through Collaboration

A Return to In-Person Learning and Collaborating

In 2021, The Partnership returned to in-person events to promote information sharing and collaboration - both key program principles. A Permian Workshop held in October provided a hands-on forum for upstream and midstream operators to come together to share learnings and best practices. The workshop covered emerging technologies for emissions detection and mitigation - from aerial surveying and pipeline blowdown technologies to tank vapor control designs and best practices for proper flaring and minimizing compressor emissions.



It has been my pleasure to work closely with The Environmental Partnership for the past several years. TEP and its member companies are pushing forward the understanding of emissions from oil and gas production and are identifying concrete mitigation options that can be used in operations to reduce emissions.

— Nicole Downey, Principle Consultant, Earth System Sciences



ExxonMobil is a big supporter of The Environmental Partnership and the program's focus on sharing information and best practices among the companies. There's so much we're doing individually to reduce methane emissions and this program's broad coalition of participants is an effective way to work together towards a common goal.

— Matt Kolesar, Chief Environmental Scientist, ExxonMobil



A highlight of Blue Racer's membership with The Environmental Partnership has been the collaboration with not only member companies, but also academics, to continuously evaluate best practices and innovative technologies that may have the potential to improve our environmental performance and reduce emissions from our operations. Through our membership we have had the opportunity to be directly involved in the research enabling us to provide first-hand knowledge and feedback to member companies, vendors, academics and agencies. We believe that involvement in these types of efforts will allow us to continue to gain a more accurate assessment of where the best opportunities for investment in emission reductions exist. We look forward to the continued collaboration opportunities availed by our membership in The Environmental Partnership.

— Jill Thornberry, Environmental Manager, Blue Racer



The Partnership also held its fourth annual conference in December in Houston. The conference included a panel discussion on Responsibly Sourced Gas and the latest on emerging technologies for emissions monitoring and mitigation. The conference's Tech Forum provided an opportunity for attendees to engage with companies that are working with industry to implement innovative technologies to reduce emissions, including those advanced by Colorado State University's Methane Emissions Technology Evaluation Center (METEC).



The Environmental Partnership is a truly unique program and we've enjoyed our collaboration with the participating companies since its launch. Their support for our research is advancing our collective understanding of emission to inform further action in the field.

— Dan Zimmerle, Director, METEC at Colorado State University's Energy Institute



2022 Acknowledgement

We would like to thank all of the dedicated individuals who contribute to The Environmental Partnership and look forward to the future as we continue to welcome new companies, including our most recent participants:

