

# ANNUAL REPORT 2019

Improving the Natural Gas and Oil Industry's  
Environmental Performance



THE  
ENVIRONMENTAL  
PARTNERSHIP

An Initiative of the U.S. Natural Gas and Oil Industry

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# Our Mission

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



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# Joint Message from the Program Director and Chair

## IMPROVING THE NATURAL GAS AND OIL INDUSTRY'S ENVIRONMENTAL PERFORMANCE



As the natural gas and oil industry supplies the energy needed to power America's modern economy, its continued commitment to advance environmental solutions has never been stronger. That's the context for The Environmental Partnership (The Partnership), a new coalition of natural gas and oil companies that have committed to continuously improve the industry's environmental performance.

The Partnership came together recognizing that more could be accomplished through a collective effort. The program is built upon three key principles: *taking action, learning about best practices and technologies, and fostering collaboration*. The Partnership is now comprised of **65** members representing every major onshore production basin in the U.S.

**The Partnership's initial focus is to further reduce the industry's air emissions. That means continuing to reduce methane, a greenhouse gas, and volatile organic compounds (VOCs), which can lead to the formation of ground-level ozone.**

To accomplish this, The Partnership developed three separate Environmental Performance Programs that participating companies are implementing to further reduce methane and VOC emissions from operations. Companies are using advanced monitoring technologies to find and repair leaking equipment, replace or modify higher-emitting process control equipment, and implement best practices to minimize emissions associated with the removal of liquids from natural gas wells as they age.



To underscore The Partnership’s commitment, our participants agreed to track their progress and report annually. This report is the first time we are publicly sharing these results.

Equally as important as The Partnership’s performance programs are the learning and collaborating that has been fostered. The Partnership provides a forum for competitors to become learning partners, where natural gas and oil operators large and small can share their experiences and knowledge with one another.

Additionally, collaborating with others outside the natural gas and oil industry—including regulators, researchers, and equipment manufacturers—will help build upon the natural gas and oil industry’s collective understanding.

Finally, none of this is possible without the dedication of the women and men of the participating companies, and we are grateful for the enthusiasm and leadership they continue to bring to the program. While there is much more work to be done, The Partnership is a solid foundation based on effective actions upon which we will continue to build in the years to come.

**We’re committed to accelerating the program’s progress and meeting the challenge of continually improving the industry’s environmental performance.**

Sincerely,

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**Matthew Todd**  
 Program Director  
 The Environmental Partnership

**Vanessa Ryan, Chevron**  
 Program Chair  
 The Environmental Partnership

# Message from Mike Sommers

**PRESIDENT AND CEO, AMERICAN PETROLEUM INSTITUTE**



## The U.S. energy revolution is changing our world for the better.

Today, the U.S. leads the world in producing natural gas and oil, while simultaneously reducing methane emissions relative to production in basins across the U.S. In the Permian basin, energy production grew 100 percent from 2011–2017, while methane emissions relative to production fell nearly 40 percent. In the Eagle Ford basin, production grew 130 percent over the same time period, and methane emissions relative to production fell nearly 70 percent.

We're proud of the work of The Environmental Partnership, an industry-led initiative launched in 2017 that is leading the way to further reduce methane emissions from energy operations. **With 65 members to date, The Partnership serves as a model for industry leadership on shared environmental goals and creating pathways for new technologies** and techniques—like optical gas imaging cameras, drones and other devices—to drive down emissions, while providing the energy vital to every American family and business.

Our shared challenges are great, but so too is the commitment of the industry—through efforts like The Environmental Partnership—to build on emissions reductions achieved and pave the way for continuous improvement. Answering the dual challenge of powering innovation while meeting the world's growing energy needs and continuously improving America's environmental performance has never been more important, and we're committed to leading the way and doing our part.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Sommers". The signature is fluid and cursive.

**Mike Sommers**  
President and CEO  
American Petroleum Institute

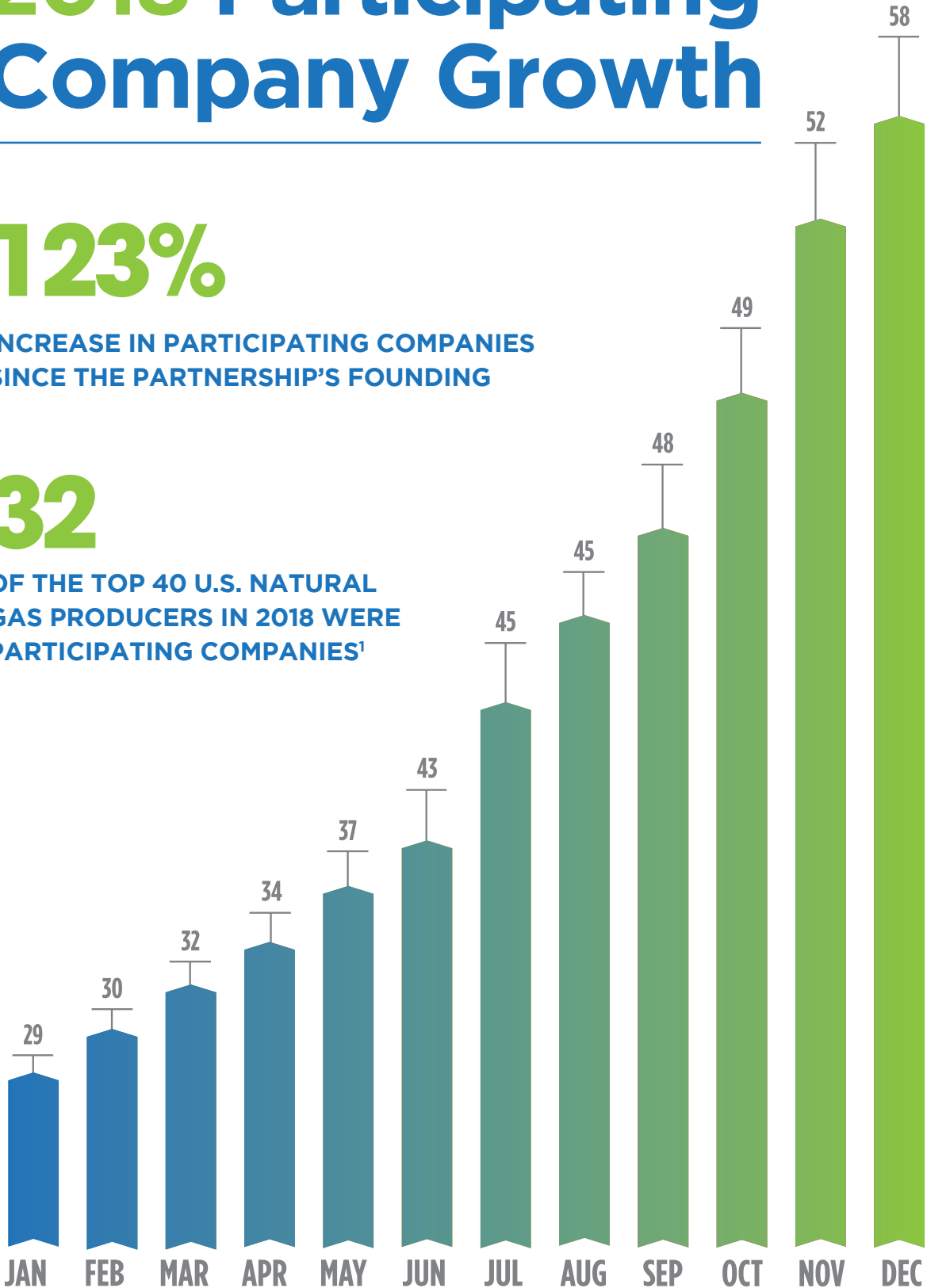
# 2018 Participating Company Growth

# 123%

INCREASE IN PARTICIPATING COMPANIES SINCE THE PARTNERSHIP'S FOUNDING

# 32

OF THE TOP 40 U.S. NATURAL GAS PRODUCERS IN 2018 WERE PARTICIPATING COMPANIES<sup>1</sup>



<sup>1</sup> <https://www.ngsa.org/wp-content/uploads/2019/04/Fourth-Q-2018-production.pdf>

# 2018 | Membership



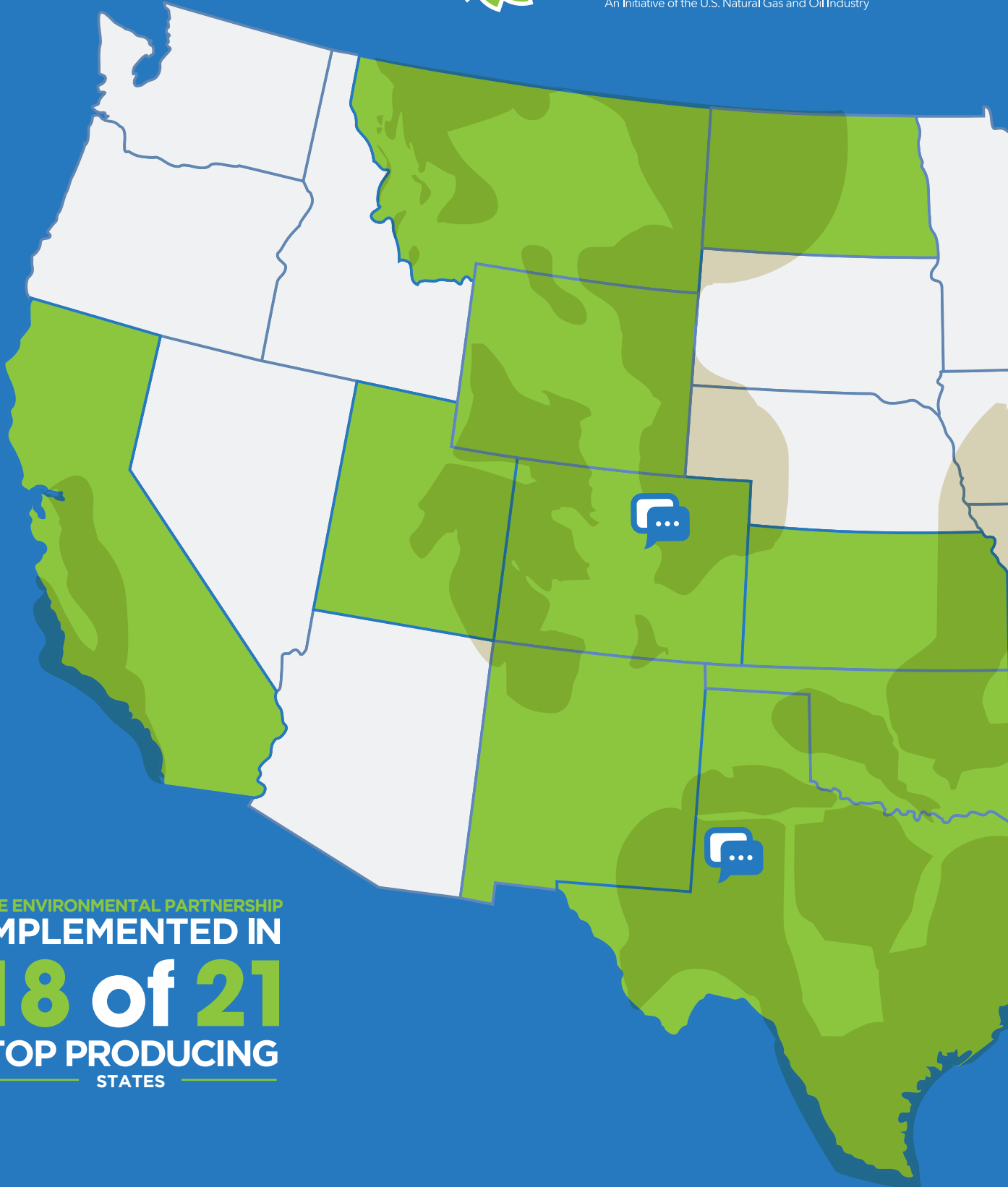






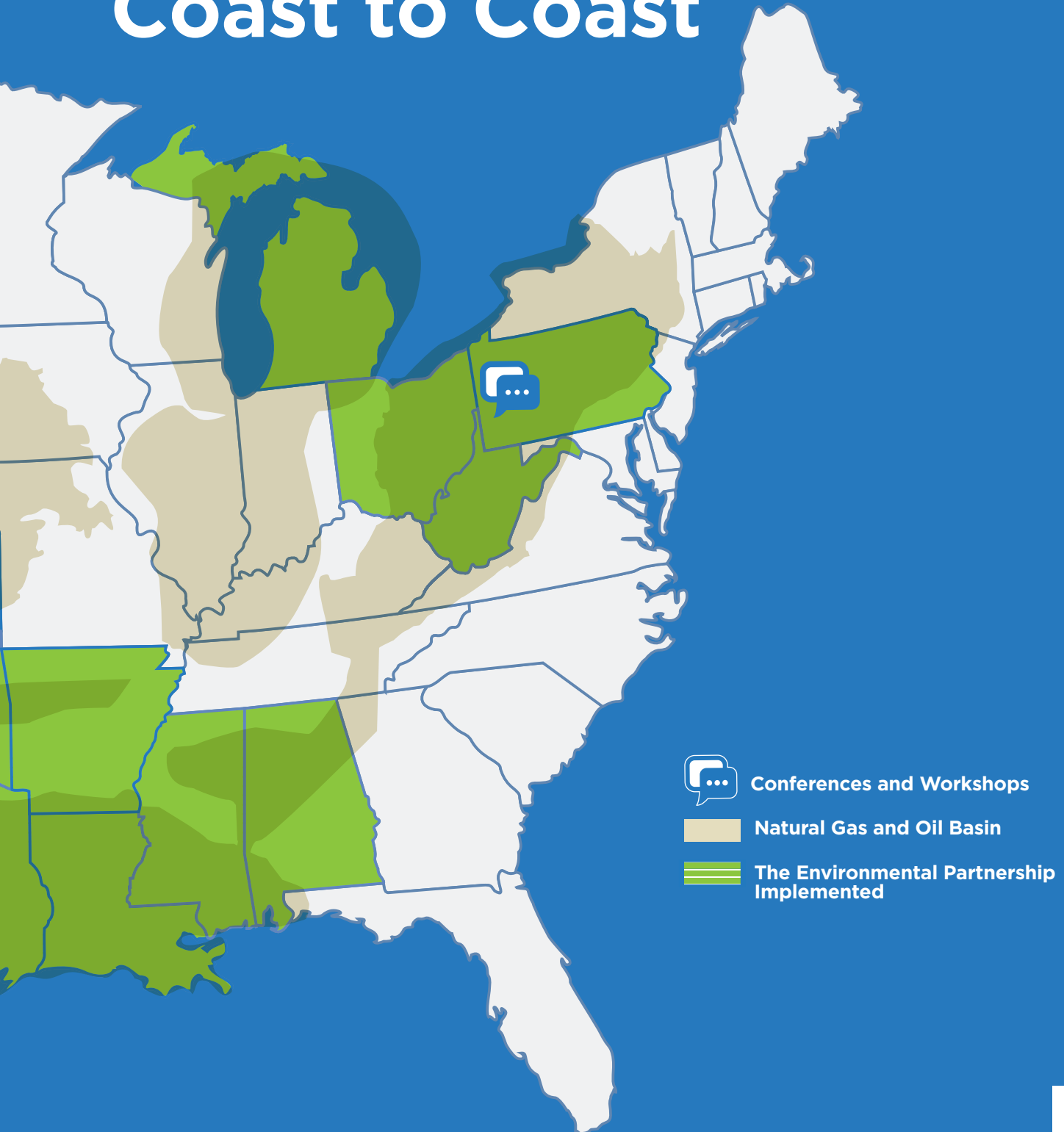
THE ENVIRONMENTAL PARTNERSHIP

An Initiative of the U.S. Natural Gas and Oil Industry



THE ENVIRONMENTAL PARTNERSHIP  
IMPLEMENTED IN  
**18 of 21**  
TOP PRODUCING  
STATES

# Improving Environmental Performance from Coast to Coast



# Program Summary

## TARGETING EMISSIONS THROUGH COLLABORATION, PROVEN METHODS, AND ADVANCED TECHNOLOGY

### MISSION

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



### PRINCIPLES

#### Learn

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

#### Collaborate

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

#### Take Action

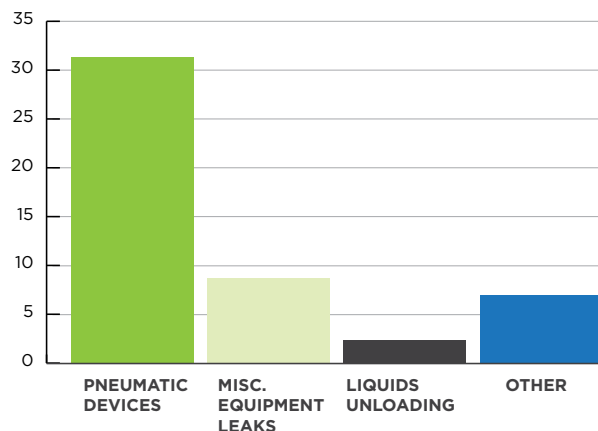
Participants have committed to taking action to improve their environmental performance. This is being accomplished through The Partnership's three environmental performance programs, which companies can implement and phase into their operations.

## Background

The U.S. natural gas and oil industry is committed to the protection of human health, safety, and the environment. Even as the U.S. is leading the world in natural gas and oil production, methane emissions have fallen, thanks to industry leadership and investment in new technologies.

Seeking to build on this success, a group of 26 natural gas and oil production companies formed The Partnership in December 2017. These companies committed to continuously improving their environmental performance.

### EPA's GHGRP 2017 CH<sub>4</sub> Emissions (MMT CO<sub>2</sub>E\*)



\*MMT CH<sub>4</sub> to MMT CO<sub>2</sub>E using IPCC-AR5 GWP of 28

Source: U.S. EPA Greenhouse Gas Reporting Program. Accessed April 29, 2019

**The Partnership is focused on reducing emissions from natural gas and oil production and is designed to evolve and advance, using innovations, science, and data to identify new initiatives to help the industry further reduce its environmental footprint, while safely and responsibly growing energy production.**

## Our Environmental Performance Programs

The Partnership developed three separate Environmental Performance Programs for participating companies to phase into their operations starting January 1, 2018.

These programs were selected based on EPA emissions data (see page 34) and are designed to further reduce emissions using proven, cost-effective controls targeting three of the most significant sources of emissions.

They consist of the following:

- **Leak Detection and Repair:** *Participants committed to leak monitoring, followed by timely repair, at select sites using detection methods and technologies such as portable analyzers or optical gas imaging cameras.*
- **Focus on High-Bleed Pneumatic Controllers:** *Participants committed to replace, remove, or retrofit high-bleed pneumatic controllers with intermittent, low-, or zero-emitting devices.*
- **Improving the Manual Liquids Unloading Process:** *Participants committed to implement an industry best practice that minimizes emissions associated with the removal of liquids that, as a well ages, can build up and restrict natural gas flow.*

# 2018 Environmental Performance Highlights



**0.16%**  
LEAK OCCURENCE  
RATE

MORE THAN  
**78,000**  
SITES SURVEYED



MORE THAN  
**156,000**  
SURVEYS CONDUCTED

MORE THAN  
**56**  
**MILLION**  
COMPONENTS INSPECTED



MORE THAN

**28,000**

HIGH-BLEED PNEUMATIC CONTROLLERS REPLACED, RETROFITTED, OR REMOVED FROM SERVICE PRIOR TO 2018



IN 2018, MORE THAN

**3,000**

ADDITIONAL HIGH-BLEED PNEUMATIC CONTROLLERS REPLACED, RETROFITTED, OR REMOVED FROM SERVICE

**38**

PARTICIPATING COMPANIES NO LONGER HAVE HIGH-BLEED PNEUMATIC CONTROLLERS IN THEIR OPERATIONS



EMISSIONS MINIMIZED BY MONITORING MORE THAN

**132,000**

MANUAL LIQUIDS UNLOADING EVENTS IN 2018





20  
18

# Learning Together

## ACHIEVING ENVIRONMENTAL PROGRESS

Participants in the program are committed to continually learning about the latest innovations and best practices that can further reduce their company's environmental footprint while safely and responsibly growing energy production.

The Partnership's workshops are one of the primary ways we help our participants learn more about opportunities to reduce emissions. In 2018, The Partnership hosted two workshops located near major natural gas and oil basins to allow production and facility workers to attend. The workshops were open to all upstream natural gas and oil producers, regardless of whether they were active participants in the program.

These workshops were a great success, with participants learning about a variety of topics. Workers from both small and large producers attended the workshops, where they heard directly from industry and technological experts. They also had the opportunity to explore some of the latest emissions-detection technologies and ask questions of the presenters.

These interactions enable sharing new ideas and creating new networks, and are an important foundation for 2019 and beyond.

## THE ENVIRONMENTAL PARTNERSHIP'S PERMIAN SPRING WORKSHOP 2018

**The first spring workshop focused on reducing emissions and included a session on the foundations of implementing an effective leak-detection and repair program. This included how, through the use of readily-available software, leak surveys and results could be tracked in a company's database to ensure timely repair.**

There was also a presentation on current and pending environmental regulations, and a discussion on how one company changed its approach to site designs in an effort to further reduce emissions.

This inaugural workshop included over 100 participants from more than 30 companies with operations in both New Mexico and Texas. These large and small operators focused discussions on reducing emissions in the Permian basin, one of the United States' most important regions for natural gas and oil production.



“The staff of University Lands is encouraging all oil and gas operators to consider joining The Environmental Partnership. The opportunity to participate and be recognized as a member **of this important program provides oil and gas producers with a way to collectively demonstrate the environmental stewardship that is being achieved by our industry.**”

**RICHARD BRANTLEY**  
Sr. VP Operations with University Lands



“ At Encana, sustainability is exemplified in our efforts towards innovative and efficient business practices. The Environmental Partnership provides a forum for collaborating with industry partners on the use of technologies and best management practices to reduce emissions without dictating solutions. Encana’s participation in **The Environmental Partnership demonstrates our commitment to reducing VOC emissions through innovation and deployment of efficient, sustainable business practices.**”

**MICHAEL MCALLISTER**

Executive Vice President & Chief Operating Officer  
Encana Services Company Ltd.

“ Lime Rock strives to become an industry leader in reducing emissions. Our participation in **The Environmental Partnership allows us to collaborate with other experts in the field to assure that our programs provide the best opportunity to achieve this goal.**”

**C. TIM MILLER**

President and COO  
Lime Rock Resources

## THE ENVIRONMENTAL PARTNERSHIP'S APPALACHIAN SUMMER WORKSHOP 2018



Presentations and discussions focused on program priorities and regulatory realities, including:

### REGULATORY REVIEW

Summary of regulatory developments likely to impact natural gas and oil producers. One company gave a presentation on its **experience acquiring new facilities and the steps it took to ensure compliance with federal and state regulations including permitting systems and inspections.** The company also discussed its firsthand experience with EPA's self-audit program and how companies can work more effectively with the EPA.

### PRO-ACTIVE LEAK DETECTION

Focused on the **importance of having robust, proactive Leak Detection and Repair (LDAR) programs.** This included a hands-on look at **technologies such as optical gas imaging (OGI) cameras that can be deployed for leak detection.**

### PNEUMATIC CONTROLLERS

Presenters gave an overview of the **multiple types of pneumatic controllers and potential alternatives, such as instrument air compressors that use air—rather than natural gas—to operate controllers.** The presenters also discussed the considerations and costs that should be accounted for when replacing pneumatic controllers.

### LIQUIDS UNLOADING

Discussion centered on several **techniques that can be employed to help minimize the environmental impacts associated with the liquids unloading process.**

### CONNECTING EXPERTS

The workshop concluded with a networking lunch, where attendees had the opportunity to collaborate with one another on **ways to further reduce emissions and lessen our environmental footprint.**



The Partnership's second workshop was held on July 26, 2018, in Canonsburg, Pennsylvania, located just outside of Pittsburgh. This region is home to the Appalachian basin, a fast-growing source of natural gas.

## THE ENVIRONMENTAL PARTNERSHIP ANNUAL MEETING 2018

### CONNECTING EXPERTS WITH OPERATORS

The first annual meeting focused on the science of pneumatic controllers, the regulations affecting them, and alternative power sources. During a panel discussion consisting of five natural gas and oil producers with smaller operations, producers expressed the benefits of their participation in The Partnership. Several panelists noted that **The Partnership provided them with access to experts and knowledge-sharing near major basins, which allowed nearby production and facility workers to attend.**

In the afternoon, the annual meeting included five presentations on pneumatic controllers, which sparked a lot of discussions among the participants.





# Building Knowledge

“*As a smaller operator in the Permian,*  
**it was important for us to attend and have an opportunity to communicate to the other local operators the value** *of being a participating company in The Environmental Partnership.*”

**TYLER TIMMONS**

Production Engineer for CrownQuest Operating

## CROWNQUEST FINDS VALUE IN THE ENVIRONMENTAL PARTNERSHIP'S FOCUS ON LEAK-DETECTION AND REPAIR PROGRAMS

CrownQuest Operating is an active oil and natural gas exploration and production company based in Midland, Texas, that has operations in several areas of the continental U.S. Tyler Timmons, an engineer for the company, describes its involvement with The Partnership.

“At CrownQuest, we place a premium on shared vision and systemic understanding, from operations to the office. As a founding member of The Partnership, we have had the ability to strengthen our company-wide shared vision and systemic understanding through our Leak Detection and Repair (LDAR) program.”

“When CrownQuest became involved with The Partnership, our company was still finalizing our LDAR program. Through The Partnership, we were able to learn from and collaborate with companies who already had successful LDAR programs in place. Being able to see the depth and details of those programs helped springboard our own, enabling us to operate our facilities at a higher level.”

“The Partnership’s workshops have also been a great help in allowing us to discuss field operations with colleagues and share information about our own experiences. We have been honored to lead presentations at these workshops and benefited from listening to the presentations of other companies. Because of The Partnership, CrownQuest is able to keep building on our accomplishments and become better stewards in our own community.”





Iowa Department of  
Public Health and Environment  
THE ENVIRONMENTAL  
PARTNERSHIP



20  
18



# Collaborating to Improve Performance

The Partnership works to bring together members of the U.S. natural gas and oil industry—as well as academics, researchers, and regulators—to collaborate on ways to improve environmental performance while responsibly developing our nation’s natural gas and oil resources. Through The Partnership, we can share strategies, information, and technologies that have been most effective in reducing emissions.

In 2018, The Partnership collaborated with outside groups in a number of ways. Our annual conference brought together industry and outside groups for thoughtful conversations about ways to work together. The Partnership also worked closely with the Methane Emissions Technology Evaluation Center (METEC) site at Colorado State University, assisting with its study of methane-detection technology.

## THE ENVIRONMENTAL PARTNERSHIP'S FIRST ANNUAL CONFERENCE

### PRODUCERS WITH MANUFACTURERS, RESEARCHERS, AND REGULATORS

**The conference focused on pneumatic controllers and brought together producers, manufacturers, researchers, and regulators to discuss this technology and how it might be improved.**

The conference included an overview of methane emissions in the industry, and noted that **pneumatic controllers are the industry's largest source of methane emissions. Building off of that context, there was information shared on industry studies and the challenges and successes with pneumatic controllers.**



An EPA official gave a presentation on the agency's efforts to study emissions from pneumatic controllers. This included an overview of federal and state regulations on pneumatic controllers, and a look at existing studies on this technology. In addition, the Colorado Department of Public Health and Environment presented an overview of a planned pneumatic controller study that the agency is undertaking.

Attendees were then treated to a panel discussion that included pneumatic controller manufacturers. **The manufacturers discussed new technologies that can help reduce methane emissions. Many of these new controllers are powered by electricity, instrument air or mechanical devices.** They also discussed common malfunctions and how they can be fixed or prevented.

A final presentation was given by the METEC at Colorado State University. This included a look at the facility's ongoing research of methane-detection technologies and the progress they have made.



The Partnership's first annual conference was held on October 10, 2018, in Denver, Colorado.

## METEC SITE PROVIDES IMPORTANT TOOLS FOR PARTNERSHIP COLLABORATION

The METEC site at Colorado State University is an **innovative facility designed to help evaluate new technologies to detect and quantify methane emissions at natural gas and oil production sites**. The facility is constructed so that researchers can precisely control field conditions, giving them the ability to more accurately test detection equipment. **At METEC, natural gas can be released at a known rate and then detection equipment is tested to determine if it is correctly identifying the leak source.**

A variety of methane-sensing methods are tested at METEC, including cameras, sensors, drones, helicopters, airplanes, and satellites. This testing gives natural gas and oil producers information about new leak-detection technologies and the knowledge of how to best utilize them.



## THE ENVIRONMENTAL PARTNERSHIP ASSISTS WITH OPTICAL GAS IMAGING CAMERA STUDY

In 2018, The Partnership collaborated with METEC on a study to help optimize the use of optical gas imaging (OGI) cameras. OGI cameras use highly sensitive thermal-imaging technology to detect fugitive emissions of natural gas.

The portable nature of these cameras make them ideal for use at natural gas production sites. Having access to more data about the cameras' capabilities helps researchers to better develop protocols for their optimal use.

To help complete this data and enhance the use of these cameras, **The Partnership supported additional field testing by METEC on OGI cameras. METEC was able to operate additional testing days where OGI camera operators were able to bring their cameras to the site for testing and data collection. Many participants in The Partnership were able to take advantage of this opportunity, test their equipment, and share their valuable data during this window. That data is now being analyzed so that natural gas producers can better employ this important technology.**



## PARTNERSHIP PARTICIPANTS VISIT METEC SITE FOR HANDS-ON DEMONSTRATIONS

Public/private collaboration is critical in ensuring that all sectors are working together toward the common goal of an even cleaner environment.

Through site visits, **The Partnership and METEC are bringing together academia, researchers, and industry experts to share information and improve data and technology.** METEC itself is a collaborative project supported by the Advanced Research Projects Agency-Energy (ARPA-E), a government agency that promotes and funds the research and development of advanced energy technology.





**“We recognize the challenge of providing the energy the world needs while reducing emissions.**

The Environmental Partnership aligns with our own longstanding commitment to reduce emissions while meeting global energy demand. ”

**STAALE GJERVIK**

Senior VP Unconventional, ExxonMobil and  
President, XTO Energy

**“** Participation in The Environmental Partnership demonstrates our **commitment to further reduce our overall methane profile.**

The Environmental Partnership’s programs will play a complementary role to our ongoing work in reducing emissions, providing a platform for collaboration with other participants, other experts and share best practices while we learn from one another. ”

**THOMAS E. JORDEN**

President and CEO  
Cimarex



# Collaborating for Excellence

“Through its grant and promotional efforts,  
**The Environmental Partnership**  
has helped enhance our  
research into methane-sensing  
**technologies** and fostered important ties between  
researchers and producers.”

**DAN ZIMMERLE**

Senior Research Associate  
Colorado State University and Director of METEC

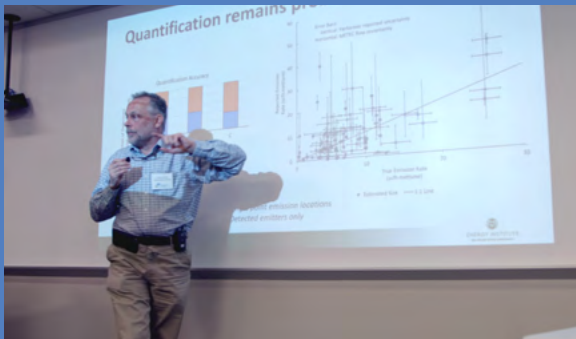
## THE ENVIRONMENTAL PARTNERSHIP AIDS RESEARCH IN ADVANCED EMISSIONS-DETECTION TECHNOLOGY

The Methane Emissions Technology Evaluation Center (METEC) at Colorado State University models natural gas facilities so that researchers can test and evaluate new methane-sensing technologies. Dan Zimmerle is a Senior Research Associate in the Energy Institute at Colorado State University and Director of METEC.

“In just its first year, The Partnership recognized the shared goal of METEC to bring together energy and environmental researchers with the industry to advance research. This has extraordinary benefits for researchers and natural gas and oil producers, and ultimately, our environment.”

“Our efforts to study the performance of optical gas imaging cameras was assisted by a grant from The Partnership. The grant allowed us to invite participating company camera operators to the site to conduct more testing and data collection. Ultimately, this will further advance our understanding of how the cameras perform in different operating scenarios and create a benchmark for the testing and use of new technologies.”

“The Environmental Partnership’s support was also helpful in promoting METEC and making more companies aware of our work. As a result, we’ve seen more natural gas and oil producers using our site to test their own equipment and improve their environmental performance. We’re grateful for the collaboration and support of The Partnership and expect the connections it is helping to foster between all of us will continue to better identify and reduce emissions.”







2018



# Taking Action

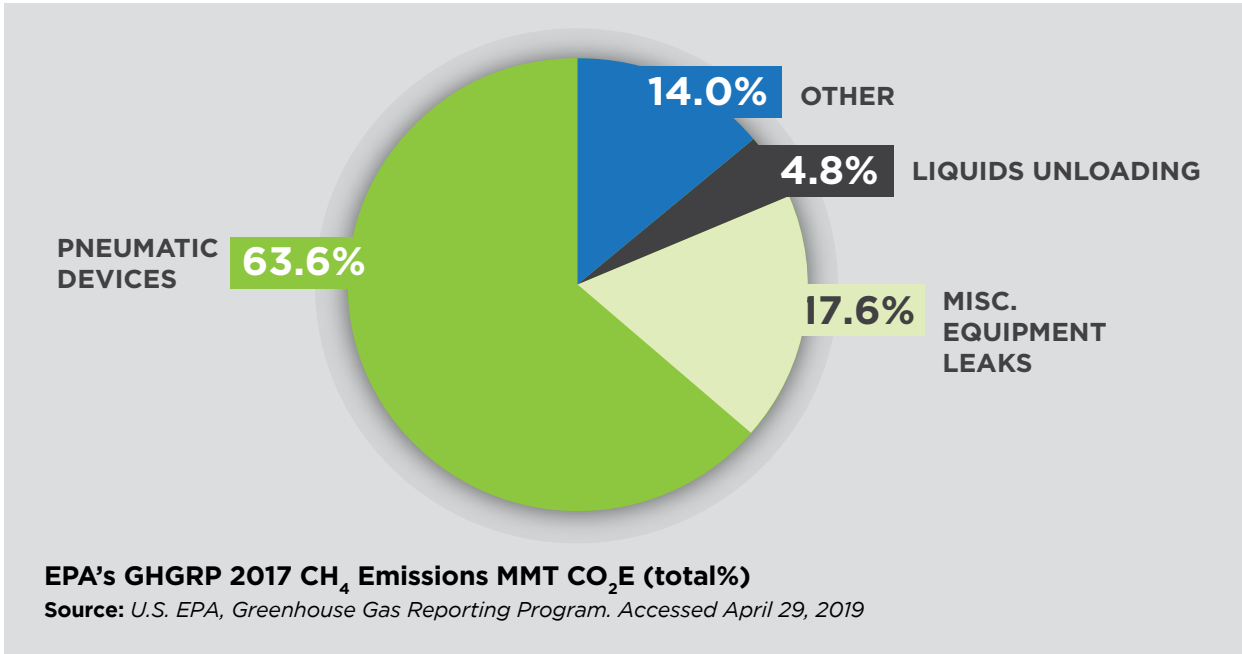
**PARTICIPANTS ARE IMPLEMENTING PROGRAMS THAT ACHIEVE SIGNIFICANT EMISSIONS REDUCTIONS IN THESE AREAS.**

**Our participants are committed to taking real and concrete steps to help further reduce our industry's environmental footprint.**

The Partnership's initial focus is on reducing emissions of methane and volatile organic compounds (VOCs). Methane is the second-most abundant greenhouse gas, emitted both in nature and via human activity. **Because methane is the primary constituent of natural gas, minimizing its release is important to industry from an environmental and business standpoint.** VOCs are naturally occurring compounds containing carbon that can be emitted along with methane during natural gas production. This is an important target for emissions reductions because they are a precursor to ground-level ozone formation and smog.

The Partnership studied available data and research about the source of industry emissions, including the EPA's Greenhouse Gas Reporting Program (GHGRP). According to GHGRP, the three primary sources of industry methane emissions are pneumatic devices, equipment leaks, and leaks made during the liquids unloading process.

## U.S. EPA GREENHOUSE GAS REPORTING PROGRAM



Based on the highest sources of methane emissions in EPA's analysis (above), The Partnership created three performance programs—one for each emissions source. These performance programs are designed to help producers better locate the source of these emissions and then take corrective measures to stop or reduce them. Participants have the option of participating in one or more of these programs and have committed to reporting annually on their progress. Participation in these programs began on January 1, 2018.



These performance programs are one of the most critical components of The Partnership. **Through these programs, we are making real progress in reducing emissions and helping to ensure we are responsible stewards of our environment.**





**“Occidental employs cutting-edge technologies and processes to contribute to the decline in methane emissions**

and to achieve exemplary safety and environmental performance. Our participation in The Environmental Partnership is an extension of Occidental’s continuing commitment to conducting its business in a manner that protects the health and safety of people and the environment at its facilities and in the communities where we operate. The learnings from The Partnership workshops has been valuable to Occidental.”

**VICKI HOLLUB**

President & CEO  
Occidental Petroleum Corporation

“Shell is a proud member of The Environmental Partnership in part because it provides a smart strategic framework with **measurable and sustainable programs. It’s a unique platform that showcases industry efforts to do more to reduce methane emissions.** We are excited by the continued growth of this important voluntary effort.”

**GRETCHEN WATKINS**

President  
Shell Oil Company

A woman with short brown hair, wearing a white hard hat with the Anadarko Petroleum Corporation logo, safety glasses, and a blue work shirt, is smiling. She is standing in an industrial environment with large tan-colored equipment. The background is slightly blurred, showing more of the industrial setting.

# Taking Action & Finding Solutions

**“THANKS TO THE  
ENVIRONMENTAL  
PARTNERSHIP,**

companies like ours can work with other  
producers on solutions that will help further  
reduce emissions. ”

**ANGELA ZIVKOVICH**

Health, Safety and Environmental Advisor  
Anadarko Petroleum Corporation

## TAKING ACTION PRINCIPLE

Anadarko Petroleum Corporation is among the world's largest independent natural gas and oil exploration and production companies. Based in The Woodlands, Texas, Anadarko operates in the DJ basin of Colorado, the Delaware basin of West Texas, the deepwater Gulf of Mexico, and several international locations. Angela Zivkovich, one of the company's health, safety and environmental advisors, describes the company's involvement with The Partnership.

"At Anadarko, we are focused on improving the safety and environmental profile of our operations. The Partnership's Leak Detection and Repair (LDAR) program has standardized existing voluntary programs in areas such as the Delaware basin, Utah, and Wyoming and helped us implement a consistent program across all our operational areas. As a result, Anadarko has strengthened its preventative maintenance and detection programs and built awareness in the field that allows us to continuously improve and further integrate environmental progress into our culture."

"Environmental improvement should be a noncompetitive issue, and The Partnership has created a venue for more than 60 companies to work together on solutions to help to eliminate emissions."

"Doing the right thing for the environment and for the community is a priority for the members of The Partnership."



# 1 LEAK-DETECTION AND REPAIR PROGRAM

Under The Partnership's leak-detection program, participants will utilize the latest technology and increase their efforts to detect and capture fugitive emissions at their facilities. Natural gas production and transportation involves miles of pipelines and a significant number of valves, flanges, and connections. The industry is already investing heavily into maintaining this vital infrastructure, but the use of enhanced technologies will make it possible to further locate and repair leaks that could be emitting methane and VOCs into the atmosphere.

Participants will implement initial monitoring at selected sites using instrument methods and technologies such as portable analyzers or optical gas imaging (OGI) cameras to detect fugitive methane emissions.



## Program Specifics

### EMISSIONS SOURCE:

Company plan will outline criteria for site selection (*e.g. percent production, number of sites, etc.*).

### METHOD:

OGI camera, portable analyzer, or other instrument/technology.

### TIMELINE:

Phased in, initiated within 18 months with all participating sites covered within a maximum five-year period.

### REPAIR PERIOD:

Completed within 60 days unless delay of repair is required to wait until the next scheduled shutdown or pending part availability.



# Leak Detection Program



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[TheEnvironmentalPartnership.org](http://TheEnvironmentalPartnership.org)

**0.16%**  
LEAK OCCURENCE  
RATE

MORE THAN  
**78,000**  
SURVEYS CONDUCTED

MORE THAN  
**56**  
**MILLION**  
COMPONENTS INSPECTED

MORE THAN  
**156,000**  
SITES SURVEYED

## 2 PNEUMATIC CONTROLLER PROGRAM

Pneumatic controllers, frequently used at remote or automated industry facilities, utilize gas pressure to operate mechanical devices. Even through normal operations, these controllers can release small amounts of methane and VOCs into the atmosphere. Pneumatic controllers are used widely in the industry and thus comprise a major source of emissions.

IN 2018, MORE THAN

# 3,000

ADDITIONAL HIGH-BLEED PNEUMATIC CONTROLLERS REPLACED, RETROFITTED, OR REMOVED FROM SERVICE

# 38

PARTICIPATING COMPANIES NO LONGER HAVE HIGH-BLEED PNEUMATIC CONTROLLERS IN THEIR OPERATIONS

MORE THAN

# 28,000

HIGH-BLEED PNEUMATIC CONTROLLERS REPLACED, RETROFITTED, OR REMOVED FROM SERVICE PRIOR TO 2018

### Program Specifics

**EMISSIONS SOURCE:**

Existing onshore gas-powered, continuous, high-bleed pneumatic controllers located at upstream onshore production and gathering facilities as well as natural gas processing plants.

**METHOD:**

These controllers will be replaced, removed or retrofitted with one of the following technologies:

- *Continuous-low-bleed controller*
- *Intermittent-vent controller*
- *Electrically operated controller and valve actuator or mechanical controller*
- *Convert to compressed air to replace natural gas as the motive gas*
- *Remove from service where feasible with no replacement*

Exceptions will be granted if a pneumatic controller cannot be replaced due to safety or operational reasons.

**TIMELINE:**

Commitment to meet 100% replacement goal within five years.



### 3 MANUAL LIQUIDS UNLOADING PROGRAM

Over time, liquid can accumulate inside natural gas wells and impede the flow of gas. These liquids must then be removed or “unloaded” so that gas production is not inhibited. During manual liquids unloading, the flow of natural gas from the well is diverted to an atmospheric vent. This can cause the wellbore pressure to change, allowing liquids to rise to the surface without the assistance of automated equipment. Without careful monitoring, this process can allow some methane and VOCs to be released into the atmosphere.

#### Program Specifics

##### EMISSIONS SOURCE:

Existing onshore gas well sites that conduct manual liquids unloading operations.

##### METHOD:

Operators will monitor the manual unloading process and close all wellhead vents to the atmosphere. This method does not apply to the following operations: swabbing, plunger lifts, or episodes where remaining on site might be considered a safety hazard.

EMISSIONS MINIMIZED BY  
MONITORING MORE THAN

# 132,000

MANUAL LIQUIDS  
UNLOADING EVENTS IN 2018



# Acknowledgement

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





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