

Tackling Flaring: Learnings from Leading Permian Operators

June 2020



About this Report

This research was prepared on behalf of the Environmental Defense Fund.

About GaffneyCline

GaffneyCline is a global consultancy that has been offering technical, commercial, and strategic advice to the oil and gas sector since 1962. GaffneyCline's reputation demonstrates that the advice delivered, together with its industry insights, is of high-quality, impartial, technically based, and commercially astute. GaffneyCline is well known as one of the leading suppliers of Reserves and Resources assessments, which are required for many purposes including statutory reporting, stock exchange listing, development planning, project finance, and asset valuation.

In addition, GaffneyCline offers a full range of upstream, midstream and downstream technical and commercial consultancy services. These range from seismic interpretation, static and dynamic reservoir modelling, field development planning, facilities and pipeline engineering, gas monetization, LNG/GTL, mergers and acquisitions, economics and project finance, unitization & redetermination, and expert witness work, exploration prospect assessment, fiscal & regulatory advice, negotiation support, strategic consulting on energy matters, carbon intensity assessments, new technology assessments, and site visit assessments.

GaffneyCline operates worldwide from three main offices located in London, Houston and Singapore, and supported by offices in Buenos Aires, Sydney and Dubai.

Author

Jennifer Stewart
Carbon Management Strategy and Policy Lead

Acknowledgements

The author is grateful to the interviewees who generously contributed their time and expertise to this project, including all producers highlighted therein as well as University Lands.

Contact

Inquiries can be directed to jennifer.stewart@gaffneycline.com

4425 Westway Park Blvd, Houston, TX 77041

www.gaffneycline.com, +1 713-850-9955

Foreword

At J.P. Morgan Asset Management, creating value for our clients is central to everything we do. As fiduciaries, sustainability factors, including those related to environmental, social and governance (ESG) practices are an important component of our investment decision-making process.

The oil and gas sector produces social, environmental and economic costs that must be evaluated and measured. Decarbonizing the global economy is a priority but will take time. There are a variety of technologies and operational practices that can be applied today at reasonable cost to significantly reduce the environmental and social costs of extraction. The Permian basin represents an opportunity for substantial emissions reductions with the potential to deliver one of the oil and gas industry's smallest comparative environmental footprints.

Carbon dioxide (CO₂) combustion of flaring and methane from unlit and partially burning flares contribute unnecessarily to greenhouse gas (GHG) emissions without economic benefit. Societal and economic costs manifest themselves in foregone revenue streams to federal and state governments and private mineral owners because gas been not been captured and sold. Operators must preserve their social and regulatory license to operate.

Flaring is a problem with multiple solutions and a compelling long-term economic proposition. A number of industry participants – including those profiled in this report – have begun to differentiate operating practices, delivering substantial emissions reductions. Some have delivered flaring intensity as low as 1% (versus others greater than 20%) because of more deliberate planning and the adoption of widely available technologies and equipment.

Voluntary operator actions to reduce routine flaring, while necessary, have proven insufficient to deliver on the industry's full potential. Government and policymakers are well-positioned to ensure successful achievement of zero routine flaring.

J.P. Morgan Asset Management supports policymakers developing regulations to achieve the objective of zero routine flaring by 2025. With related policies, regulations and enforcement mechanisms, zero routine flaring by 2025 represents an important and achievable goal.

Our ongoing engagement with operators emphasizes the importance of establishing suitably ambitious objectives to reduce their environmental footprint through deliberate, practical business plans supported by enhanced emissions transparency. And we will hold companies accountable. The changing climate needs to be placed high on every corporate agenda as it poses both wide-ranging risks and opportunities that could impact company operations and investment valuations.



David Maccarrone, Fundamental Equity Research Analyst
Hunter Horgan, Fundamental Equity Research Analyst
J.P. Morgan Asset Management

Introduction

The practice of flaring and venting is in serious question, especially during an increasingly competitive oil & gas environment brought about by pandemic-constrained demand and a global supply glut. Flaring is a pressing challenge that industry and its stakeholders must address today.

Recent publicly available information indicate numerous Permian producers are consistently “best-in-class” with respect to flaring intensity, achieving rates from less than 1.0 to 2.6 percent where the basin average is about 4 percent.¹

The two primary reasons industry often cites for flaring is the lack of takeaway transportation² and operational upsets. Our study indicates that top-tier producers treat gas takeaway capacity as a manageable constraint and handle operational upsets with both just-in-time planning and taking action to increase reliability within the operational supply chain.

We are grateful that a subset of Permian producers in this top tier – [Chevron](#), [EOG Resources](#), [Occidental](#), [Parsley Energy](#), and [Pioneer Natural Resources](#) – were willing to share their journey to eliminating flaring as well as their best practices when flaring is necessary. We conducted in-depth interviews with leadership in each organization, along with reviewing sustainability reports, SEC filings, Texas Railroad Commission filings, public reports, and public statements to round out the discussion and provide additional perspective.

Industry, scientific, and academic literature is rife with potential solutions, and some in industry are taking collaborative steps in the right direction³ but others may fall short of ensuring meaningful flaring reductions. To effectively develop and implement solutions, Permian stakeholders can learn from these best-in-class producers that demonstrate reducing flaring is practical and achievable industry-wide. Our intention is that this brief report generates discussion and accelerates industry action and, ultimately, accountability by all stakeholders – communities, investors, banks, and regulators.

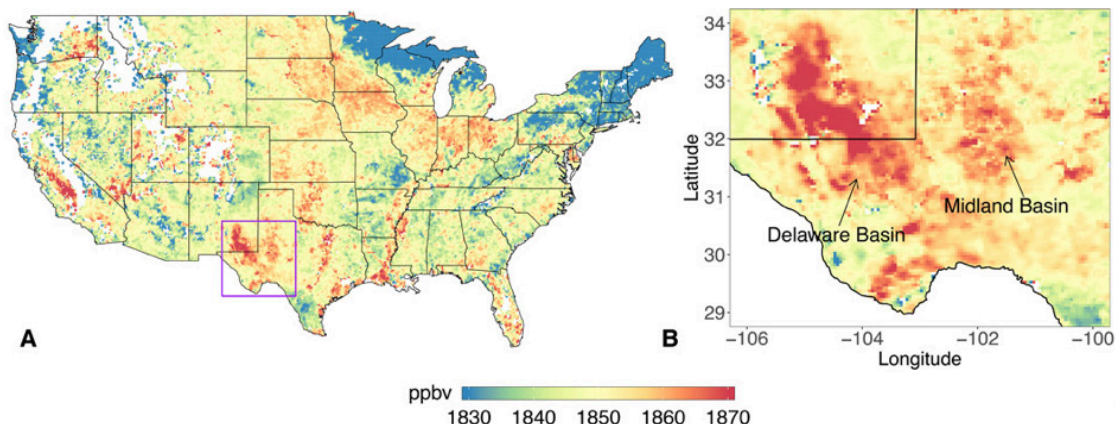
Impact of flaring on Permian methane emissions

Flaring has always been a concern from an economic waste perspective, but new science is indicating it is also an important source of greenhouse gas emissions. It is now known that reducing greenhouse gas emissions is required to prevent the earth from warming more than 2 degrees Celsius (3.6 degrees Fahrenheit).⁴ Recent studies suggest extensive flaring is not only a primary source of upstream CO₂ emissions,⁵ but also a significant source of methane emissions in the Permian due to malfunctioning and unlit flares. Increased scrutiny of incomplete flare combustion and venting is warranted as the warming potential of methane is approximately 84 times that of carbon dioxide over a 20-year period.⁶

Through its Permian Methane Analysis Project (PermianMAP), the Environmental Defense Fund found that around 11% of Permian flares surveyed were either unlit or malfunctioning. Of that 11%, 5% were unlit

and directly venting methane, and the remaining 6% were lit but malfunctioning, leading to inefficient combustion.⁷ As a result of these flaring issues, an estimated 7% of Permian gas sent to flares is escaping directly into the atmosphere, translating to a combustion efficiency closer to 93%, rather than the US Environmental Protection Agency’s assumed 98%.⁸

Both PermianMAP and a recently released peer-reviewed scientific study of individual satellite readings from the Tropospheric Monitoring Instrument (TROPOMI) found similarly high methane leakage rates in the Permian basin. Adding to PermianMAP’s flaring findings, the TROPOMI study also speculated that flaring and venting was likely a major contributor to the high methane emission rates detected.⁹



TROPOMI satellite observations of the Permian methane anomaly. Source: Quantifying methane emissions from the largest oil-producing basin in the United States from space; Science Advances, April 22, 2020

Given this recent flare performance data, Permian producers with near-zero methane emission targets, such as members of the Oil & Gas Climate Initiative, will likely find it difficult if not impossible to achieve these commitments without significant reductions in flaring. Eliminating routine flaring is an important step to credible methane mitigation.¹⁰

Flaring creates waste and financial/investment risk

As investors take a sharp look at industry investments during this challenging time, the financial and ESG case for reducing flaring has never been more important.

Permian flaring has reached such a sufficient scale that the premise of “burning gas to allow oil extraction” is really “wasting one resource to produce another.”¹¹ When translated into exportable volumes, the numbers are striking: Gas flared in just the third quarter in 2019 would have yielded more than 15% of the total LNG volumes exported in 2018, with a value of approximately a billion dollars depending on price. At those flaring rates, if all flared or vented gas in the Permian was captured and liquefied, it could fill a Q-Max LNG carrier (the world’s largest carrier size) every 10 days.¹²

Asset managers with trillions under investment are quite clear: Larry Fink, Chairman and CEO of BlackRock, the world's largest asset manager, stated in his 2020 annual letter to Chief Executive Officers that "climate risk is investment risk," as climate change concerns are driving a reassessment of risk and asset values in the investment community. He stated "In the near future – and sooner than most anticipate – there will be a significant reallocation of capital."¹³

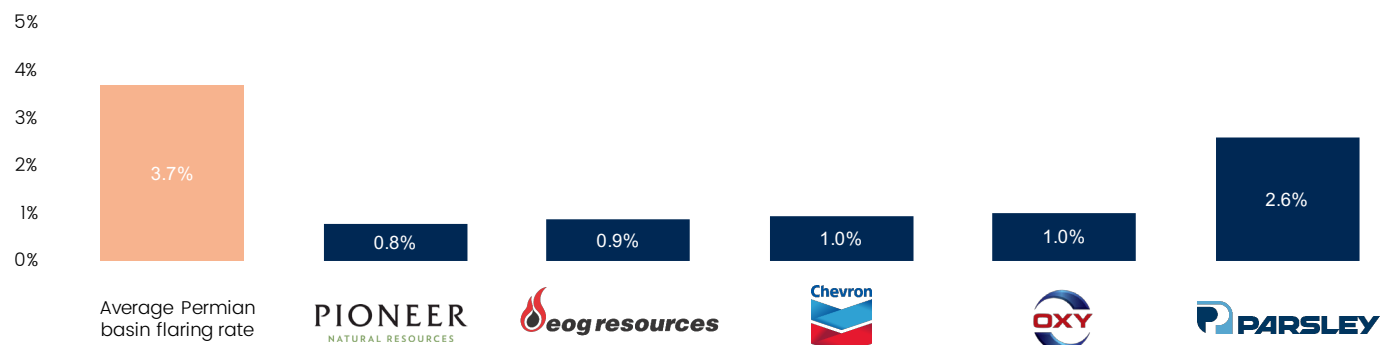
Reallocation is indeed taking place; for instance, the University of California system recently announced it divested more than \$1 billion in fossil fuel investments within its \$126 billion portfolio.¹⁴ JPMorgan, historically a top financier of the energy industry, has brought climate into its investment framework, saying climate change is "no longer simply a risk, climate change and global warming are now realities that continue to reshape the corporate and investment landscape."¹⁵ BlackRock also recently issued a report indicating that oil and gas companies with better sustainability characteristics were more likely to outperform in the marketplace.¹⁶ Reducing flaring is a clear opportunity for industry to respond to increased investor calls for improved financial and environmental performance.

It is not just banks and asset managers who see flaring as an investment risk. In a recent earnings call, Pioneer CEO Scott Sheffield suggested that if companies are not flaring at 2% or less, public investors, private equity, and banks should either "not [do] business or sell whatever [they] have in regard to that company" to also help the flaring issue.¹⁷

With flaring challenges come flaring solutions that work – today

Average Permian Basin Natural Gas Flaring Rate vs. top-tier operators interviewed (2019)

Gas flared/vented as a percent of total gas production



Source: Texas Railroad Commission (RRC) and New Mexico Energy, Minerals and Natural Resources Department (EMNRD). Public flared/vented and gas production data as of May 27, 2020. Note: Parsley Energy excludes Jagged Peak 2020 acquisition

Bloomberg Green

Finance

A \$1.4 Trillion Asset Manager Is Zeroing In on Methane Leaks

In 2020, Legal & General Investment Management stated a "zero tolerance" for methane leaks in the energy industry.

“

The most efficient flare is one that isn't taking volumes.

Chevron



Flaring intensity data is readily available and provides an objective measurement of a producer's commitment to reducing or eliminating flaring. Thus, it is a straightforward process to identify those top tier producers with the lowest flaring intensity relative to other producers in the Permian.¹⁸

Not surprisingly, the participants in our study are transparent about their flaring practices, and their leadership speaks with candor, acknowledging publicly that flaring is a serious, immediate problem that must be solved quickly.

In Texas, an operator must obtain a permit from the Railroad Commission to flare gas. Concern and critique over the RRC's application and interpretation of existing flaring rules and what role that plays in contributing to excessive flaring is an ongoing debate. The companies profiled in this report are making an intentional, strategic decision to ensure they have takeaway before their wells go online. If most associated gas goes to sales, the dilemma about how to manage it becomes largely moot.

Therefore, each producer's success is due almost entirely to intentional decisions to preventing flaring in the first place. Eliminating flaring is accomplished by ensuring adequate takeaway infrastructure is in place before bringing a well online, and includes the willingness to shut a well in until takeaway capacity is secure if necessary. This commitment is shared with all stakeholders to ensure accountability, starting with the Board of Directors and extending across the organizational hierarchy from senior leadership to the field.

Whether the producer was integrated or independent, multinational or domestic was not a relevant indicator of flaring reduction success in our study.

Further, these flaring reduction commitments are not changing in the face of today's challenged price environment. Producers in this study were unanimous that their flaring and GHG emissions reduction strategies and processes are not changing despite unprecedented reductions to cash flows caused by a Saudi-Russia price war combined with demand destruction due to the COVID-19 pandemic. Some operators shared that they were actually taking advantage of the brief lull in operations by re-assigning certain employees to teams dedicated to finding and developing flaring solutions.

“

We focus on infrastructure planning to make sure we have gas takeaway, thus reducing the need for flaring in the first place. If you don't have the volume of gas going to the flare, then you're not going to have the issues with flaring emissions or flare functionality.”

Chevron

“

Nothing changes in a low commodity environment. We think ESG leadership, when we come out on the other side of this thing, will be more important than ever. To be the company of the future, you've got to continue progress on this path. So we're not taking our eye off the ball.”

David Dell'Osso
COO, Parsley Energy

We found three main themes facilitating best-in-class flaring performance, discussed in detail below:

1

a strong governance structure coupled with leadership on environmental stewardship;

2

a commitment to reduce or eliminate flaring by ensuring that wells do not go online until gas takeaway is in place; and

3

best-in-class practices to ensure flare functionality and reduced vapor emissions.

1

Strong Governance and Culture of Environmental Stewardship Leadership

Corporate culture around safety and environment drives low flare intensity. Each organization in our study indicated an effective, strong culture that is demonstrated in numerous ways.

Some producers set the tone outside the organization, issuing a call to their peers, employees, and contractors to align in the commitment to eliminate routine flaring. For example, in the 2019 Q4 earnings call, in his introductory remarks Pioneer CEO Scott Sheffield committed to 100% of wells being tied into gas gathering before going to production, called flaring a “black eye”, and recommended that “every CEO set a [flaring] target of 2% or less.”¹⁹ In his 2020 Q1 earnings call, Mr. Sheffield recommended that the Texas Railroad Commission “shut in all companies that are above 2% in regard to [flaring] intensity.”²⁰

Parsley CEO Matt Gallagher gave a speech at the annual NAPE industry conference in early 2020 calling current flaring levels “unacceptable” and that the industry “must come together on this. We must commit to spending the capital dollars and pouring resources into it.”²¹ The speech was posted on Parsley’s intranet and employees were encouraged to watch.

Methane management values expressed at the executive level and supported through standards and measurable performance expectations are reflected at the operational level. For example, when a field operator with a busy schedule and pressure to “do more with less” is faced with the choice to vent gas and quickly accomplish the work, or take the time to minimize the amount of gas vented before proceeding, what decision will they make? The choice will reflect the cultural values of an organization, and what field personnel believe will be supported.²²

“

Reducing flaring requires executive and board leadership; it is a commitment to not put wells on production until takeaway is available.”

Chevron

“

Parsley is taking leadership in this space, and we wanted to make sure everybody understood the message that was sent outside. People took a lot of pride that we were vocal and put a flag in the ground.”

David Dell’Osso
COO, Parsley Energy






So while the strategic decisions and policies are made at the Board and executive levels, thousands of day-to-day decisions impacting flaring intensity are made in the office and field front lines. The producers in our study exhibit strong governance by ensuring an engaged workforce is committed to making the right decisions regarding reducing flaring and GHG emissions. Best governance and employee engagement practices in our study include:

- Tying **compensation metrics** to flaring performance goals.
- **Sharing best practices** with other producers via technical forums and trade associations.
- Establishing cross-functional **working committees** dedicated to reducing flaring through regular design reviews, after-action analyses, and/or vetting and implementation of employee ideas.
- **Communicating** flaring targets and progress against targets in group settings such as town halls and quarterly operational meetings. EOG's executives travel to each division office across the company at least three times a year holding day long reviews to gather information, provide direction, and review ESG performance.
- Conducting internal **learning** and **technical** conferences. Occidental holds "**Environmental Boot Camps**" where it brings operations, engineering, and environmental staff to field offices to understand environmental problems such as flaring, enabling them to better design solutions.
- Making flaring intensity **data transparent** and visible to employees. One producer publishes a daily flaring report showing the previous day's performance, and the performance to date against their flaring intensity target. This is shared across all levels and functions; field, geosciences, engineering, land, and executives. Others produce similar reports weekly.
- And finally, the most impactful best governance practice is **setting aggressive flare intensity goals**, which provides employees and contractors a target to aim for and creates accountability from the Board of Directors down to the tool pusher. Some have intensity-based or absolute reduction targets, while others do not yet have stated targets but have made public statements on what they believe is the appropriate level of flaring intensity. Setting goals or targets creates accountability within the entire organization, and makes leadership accountable to investors, banks, nongovernmental organizations, and other key stakeholders.

“

We think it's important to set a percent target. Pioneer would like to be able to continue to produce below 2%.”

Scott Sheffield
CEO, Pioneer Natural Resources

Producer	2020 Flaring Intensity Target, Goal, or Reduction Target
	<p>Committed to reducing its global flaring intensity by 25 percent to 30 percent from 2016 levels by 2023. Chevron is unique among the study participants as it uses an equity method in determining its progress against goals, holding joint venture partners accountable for their flaring and emissions performance.</p>
	<p>Takes a continuous improvement approach. Executive compensation is tied to reducing 2020 flaring rates below 2019 flaring rates.</p>
	<p>Committed to eliminating all routine flaring. Occidental is the first U.S. producer to endorse the World Bank's Zero Routine Flaring by 2030 initiative.</p>
	<p>Below 2.5% for 2020. Importantly, this goal includes full year results of Jagged Peak, which had a flaring intensity rate of 20% at the time of the January 2020 acquisition.</p>
	<p>Currently evaluating a flaring intensity target. CEO Scott Sheffield has stated publicly that Pioneer would like to be below 2.0%, and further "every CEO has to set a target of 2% or less."²³</p>

2 The best flaring practice is not to flare at all

Each producer we spoke to attributes their top-tier performance with the strategic decision to require a gas line be connected on all new wells, eliminating the need to flare associated gas in the first place. Thus, each producer mandates that infrastructure takeaway be in place before a well comes online. This is coupled with the willingness to shut in wells if the infrastructure is not in place.

Interestingly, these producers don't consider the lack of takeaway as a barrier but a constraint, i.e., a condition that needs to happen before a project is successful. One producer offered an insightful analogy: Just as permitting is built into the process as an additional constraint, meaning a producer would not drill a well without a permit, a producer should not drill a well without takeaway.

Another important point is that necessity of takeaway is in no way an unexpected event. It takes planning, communication, and coordination, which implies the need for time. However, producers suggested there is plenty of time, usually years in advance, considering the months it takes to create a production schedule and budget, construct a pad, and then drill and complete the well.

Strategic partnerships with midstream

For producers that don't own their own gathering and/or processing, they stressed the importance of establishing a mutual trusting relationship with gathering partners. Commercial arrangements are transformed into long-term, strategic partnerships instead of merely a tactical means to sell hydrocarbons.

Strong partnerships are important. A possible reason for the lack of takeaway capacity is information barriers combined with a lack of trust with producers, preventing midstream companies from acquiring adequate information about operators' production plans. Without this information, they are not incented to invest in infrastructure without some assurance of supply and a return on investment that meets investors' hurdle rates.

To build trust, several producers mentioned the need (if firm transportation is not in place) to not just develop but protect these relationships by ensuring that gathered volumes are maintained at a sufficient level to meet the gatherer's business plans, while at the same time meeting producers' own financial and production forecasts.

While some producers have entered into traditional firm transportation commitments designed to increase over time to accommodate expected production growth, some prefer shorter-term contracts to

“

Routine flaring should not be a normal practice in the Permian.”

Chevron

“

Our goal isn't to reduce flaring, it's to eliminate flaring. We see this as business critical to sustain our ability to operate.”

Occidental

avoid long-term fixed commitments, while others have created innovative, more complex arrangements that get their associated gas to sales. Although the terms of these contracts are confidential, producers shared with us that they provide timing and location of well development and projected production volumes well enough in advance to enable midstream companies to respond with adequate gathering and processing capacity. In the spirit of partnership, midstream companies share existing and planned future capacity additions and constraints to better align drilling schedules.

An integrated model

At the other end of the spectrum is investing in an integrated model in which the producer owns and operates its own gathering systems to ensure takeaway. For example, EOG owns and operates compressors and low pressure gathering systems, which, in addition to ensuring reliability, may open up multiple markets and create optionality with processors.

Occidental cited a recent example where they completed a development program tying 395 wells into a single gathering system to prevent flaring from both infield development and existing wells. In this system, they installed both high and low pressure systems to maximize takeaway capacity and eliminate the need to flare gas.

Pioneer owns interests in 11 gas processing plants, including the related gathering systems.

3 Best flaring and emission reduction operational practices

Despite all efforts to eliminate routine flaring, at times producers have no choice but to flare in the case of operational upsets and high gas line pressures.

Operational upsets primarily occur due to unplanned upsets or malfunctions at gas gathering or processing facilities. Failure of equipment in the midstream sector, such as a compressor, can cascade to upstream facilities. For example, a compressor engine failure can cause an unanticipated increase in the pressure on a low-pressure gathering pipeline system. This pressure increase can cause fail-safe devices at upstream production facilities to send gas to flare automatically.

“

Anticipating and developing infrastructure needs to transport our products well ahead of our development plans lowers costs, maximizes efficiencies and netbacks, and minimizes flaring.”

Billy Helms
COO, EOG Resources

Ensuring flaring functionality and efficiency

When flaring does occur, producers use myriad equipment and processes to ensure flare tips are lit and that the flares are functioning properly. Each company discussed numerous emissions monitors and controls incorporated into facilities design. For example, EOG utilizes data collection and analysis tools to constantly monitor flared volumes at the facility, route, and foreman levels. Monitored flaring is discussed with engineering, foremen, and lease operators based on data collected from these tools. Real time, automatic changes in operating pressure are investigated with the goal to reduce flaring. When considering cost, they are incorporated into facilities budgets routinely and are considered nondiscretionary elements of facilities design. One producer pointed out that any of these types of emissions controls are relatively inexpensive or are already embedded in facilities design (i.e., SCADA). Pioneer has remote monitoring of these flares via SCADA system and failure alarms that are directed to a technician for quick repairs.

Utilizing trained staff or contractors to routinely and frequently check flares was cited as one of the best practices in terms of both operational efficacy and cost efficiency.

Flaring and emissions controls practices commonly cited by study participants

Daily AVO (auditory, visual, olfactory) observation of flare stacks	Monthly preventive maintenance	High pressure alarms on production separators
Remote observation of tank batteries by integrated operation centers	Thermocouples (temperature sensors) to ensure pilot stays lit	Designing flares to handle wide range of production rates
Continual flare vs auto-ignite to prevent foul out ignition issues	Flares designed at correct velocity to ensure gas flow does not cause pilot light to extinguish	Blower packages to introduce oxygen to efficiently combust high BTU gas
Dual tip flares (high pressure and low pressure) sized for maximum production flow in an emergency situation	Ensure that production levels stay below flare capacity to ensure combustion efficiency	Low level alarms to prevent gas blowby to tanks which prevents venting
Tie in to SCADA systems and programmable logic controllers ("PLCs") to monitor flare ignition	Flare failure alarms directed to technicians for immediate repairs	

Planning for operational upsets and increasing reliability

Operational upsets and high pressure issues are usually out of a producer's control, but leading producers take a pro-active, strategic approach to manage these upsets. Strategic solutions include:

“

An escalation process for unplanned flaring allows decisions to be made by an individual with the resources and authority.”

Chevron

- Escalation processes for unplanned flaring events to ensure decisions are made at the right level so an individual with the resources and authority can do things like authorize overtime, expedite parts, move crews around, or ultimately decide to shut in production if necessary to reduce flaring.
- Ensuring reliability by installing and maintaining company-owned rather than third-party compressors or, similarly, low-pressure gathering systems. Owning infrastructure and equipment provides a higher level of control and ensures maintenance and repairs are done expeditiously and correctly.
- Adding compression to counter the effect of higher pressure new wells pushing lower pressure older wells off the gathering system. Occidental provided an example where, in order to eliminate flaring, it installed its own compression because the third-party gatherer would not be able to make the installations for an extended period of time.

The producers in our study stressed that no matter who owns, operates, or maintains the equipment, midstream companies and producers should work together to avoid circumstances such as operational upsets that require flaring.

Use of Vapor Recovery Units

All participants in the study use vapor recovery units (“VRUs”) on the majority of their production facilities. Pioneer installs multiple VRUs at all horizontal tank batteries regardless of the economics of recovered gas to ensure 100% VRU capture efficiency. In addition, to minimize the safety and environmental impact,

Pioneer utilizes flares as back-up to VRUs for emergencies that would otherwise be vented. Additionally, Pioneer’s engineering design process considers VRU capacities as a limiting factor for facility design. They measure the gas off the tanks across several facilities to create a conservative benchmark for the amount of gas to be recovered per barrel of oil produced for future VRU designs.

Over 90% of Parsley’s production flows through facilities with a VRU, and their VRUs have a 99% emissions capture efficiency manufacturer rating on all new facilities. In addition, Pioneer and Parsley both use a redundant low pressure stack system in case a VRU goes down. If a VRU fails or malfunctions, the low pressure gas that comes off the tanks is routinely vented by some operators, but in the dual pressure design used by these producers, vapors are routed to a flaring system and combusted rather than vented.

When we started the study, we asked each producer what technologies and solutions were being utilized and/or explored to handle associated gas and eliminate routine flaring (e.g., microscale LNG, CNG,

enhanced oil recovery using gas, onsite power generation, distributed generation, and injection into storage sites). Each producer responded they continuously look to improve existing, and innovate new, flaring technology and processes. Occidental has had success in the Permian with piloting enhanced oil recovery projects using reinjected associated gas, and Chevron is in the permitting process for a pilot reinjection well as a means for temporary storage. But producers were also unanimous in the view that the only viable, long term solution is getting gas to market, which prevents the need to find a use or temporary home for it. A participant from Chevron summed it up best, saying “the most efficient flare is one that isn’t taking volumes.”

How does a responsible flaring practice translate to the financials?

Each company participating in this study is publicly traded, so not only do they have responsibility to protect the environment, they also have a duty to their shareholders to protect value and provide an acceptable return on investment. The producers in this study saw the bridge from responsible flaring practices to the financial statements in terms of protecting cash flow, risk mitigation, and access to capital markets.

Protecting cash flow. The producers recognized that flaring is financially wasteful and it is a protection of shareholder resources to not combust natural gas and the more profitable natural gas liquids, but rather sell it, adding to production, cash flows and top line revenues.

Risk mitigation. In terms of risk, it was noted that long-term investors are not just interested in a dividend but in the long term stability of their investment. Direct evidence such as public reports of flaring intensity vis-a-vis peers indicate these companies are managing their assets responsibly and for the long-term.

Access to capital markets. One-on-one meetings at investor conferences are confidential, but Parsley CEO Matt Gallagher has stated publicly that “investors are so focused on [flaring] that they spend as much as 15 minutes of an hour-long one-on-one meeting on ‘in the weeds’ questions about flaring, venting, and other environmental issues.”²⁴ So producers are certainly listening to their investors, meaning they understand that a responsible approach to flaring can attract investment (or prevent divestment), facilitate access to capital markets (when they eventually open), and possibly drive a premium to multiples. David Dell’Osso of Parsley stated, “We think that the companies that demonstrably lead in the ESG space will ultimately compete better for investor

“

Overall ESG accountability is something that's going to differentiate companies in their performance over the long term. We don't think this is something that's going away.”

David Dell’Osso
COO, Parsley Energy

dollars. We could see a higher earnings multiple over time. Ultimately, it could become conditional for competitive access to low-cost capital.”

A call to action for both industry and their stakeholders

We see that solutions to eliminating flaring exist despite complex economic and infrastructure issues. But while the industry holds a significant share of responsibility for reducing and eliminating flaring, this complexity requires collective action. Producers and trade associations cannot solve the problem completely by themselves. Policy makers, investors, banks, midstream companies, and regulators not only have a stake in a financially and environmentally positive outcome, but a role to play in making sure routine flaring is a thing of the past.

Footnotes

1. Texas Railroad Commission (RRC) and New Mexico Energy, Minerals and Natural Resources Department (EMNRD). Public flared/vented and gas production data as of May 27, 2020.
2. In a late 2019 Federal Reserve Bank of Dallas survey of 146 oil and gas companies, 73% indicated a lack of pipeline takeaway as a reason for routine flaring. <https://www.dallasfed.org/-/media/Documents/research/surveys/des/2019/1904/des1904.pdf>
3. For example, a recent invitation-only Permian flaring workshop sponsored by Columbia University and the University of Texas at Austin, brought together producers, pipeline companies, policymakers, non-governmental organizations, academics and analysts to talk about Permian Basin flaring (<https://energypolicy.columbia.edu/research/global-energy-dialogue/columbia-global-energy-dialogue-natural-gas-flaring-workshop-summary>).
4. Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104
5. https://www.epa.gov/sites/production/files/2019-10/documents/subpart_w_2018_industrial_profile.pdf
6. <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>
7. Data as of March 2020. The study is ongoing, collecting methane data across a 10,000 square-kilometer study area within the basin via fixed-wing aircraft, helicopters, towers, and ground-based mobile sensors. Flare performance estimates are based on helicopter-based optical gas imaging.
8. The Environmental Protection Agency assumes a 98% efficiency flare rate, but flare performance studies show that observed combustion efficiency can be as low as 62%. Douglas M. Leahey , Katherine Preston & Mel Strosher (2001) Theoretical and Observational Assessments of Flare Efficiencies, *Journal of the Air & Waste Management Association*, 51:12, 1610-1616, DOI: 10.1080/10473289.2001.10464390 and Kleinberg, Robert. (2019). Greenhouse Gas Footprint of Oilfield Flares Accounting for Realistic Flare Gas Composition and Distribution of Flare Efficiencies. 10.1002/essoar.10501340.1.
9. Yuzhong Zhang, Ritesh Gautam,, Sudhanshu Pandey, Mark Omara, Joannes D. Maasackers, Pankaj Sadavarte, David Lyon, Hannah Nesser, Melissa P. Sulprizio, Daniel J. Varon, Ruixiong Zhang, Sander Houweling, Daniel Zavala-Araiza, Ramon A. Alvarez, Alba Lorente, Steven P. Hamburg, Ilse Aben and Daniel J. Jacob, "Quantifying methane emissions from the largest oil-producing basin in the United States from space", *Science Advances* 22 Apr 2020: Vol.6,no.17,eaaz5120DOI:10.1126/zciadv.aaz5120, <https://advances.sciencemag.org/content/6/17/eaaz5120>
10. <https://oilandgasclimateinitiative.com/about-us/#members>; <https://www.worldbank.org/en/programs/zero-routine-flaring-by-2030#:~:text=This%20%E2%80%9CZero%20Routine%20Flaring%20by,perspective%2C%20and%20who%20agree%20to>
11. <https://www.bakerinstitute.org/media/files/files/9553353d/bi-brief-111919-ces-methane.pdf>
12. Id.
13. <https://www.blackrock.com/us/individual/larry-fink-ceo-letter>
14. <https://www.naturalgasintel.com/articles/122077-university-of-california-system-to-divest-fossil-fuel-investments>
15. <https://www.jpmorgan.com/global/research/climate-challenge>
16. <https://www.blackrock.com/corporate/literature/investor-education/sustainable-investing-resilience.pdf>

-
17. <https://www.fool.com/earnings/call-transcripts/2020/02/21/pioneer-natural-resources-pxd-q4-2019-earnings-cal.aspx>
 18. Texas Railroad Commission (RRC) and New Mexico Energy, Minerals and Natural Resources Department (EMNRD). Public flared/vented and gas production data as of May 27, 2020.
 19. <https://www.fool.com/earnings/call-transcripts/2020/02/21/pioneer-natural-resources-pxd-q4-2019-earnings-cal.aspx>
 20. <https://seekingalpha.com/article/4344323-pioneer-natural-resources-co-pxd-ceo-scott-sheffield-on-q1-2020-results-earnings-call?page=4>
 21. <https://www.youtube.com/watch?v=8JlI6MGFqwU>
 22. Roy Hartstein, Five Keys to Methane Management <https://www.linkedin.com/pulse/five-keys-methane-management-roy-hartstein/>
 23. <https://www.fool.com/earnings/call-transcripts/2020/02/21/pioneer-natural-resources-pxd-q4-2019-earnings-cal.aspx>
 24. <https://www.reuters.com/article/us-climate-change-flaring-analysis/crossing-state-lines-oil-firms-flare-texas-gas-as-investors-vent-on-climate-idUSKBN20Z23C>

Tackling Flaring: Learnings from Leading Permian Operators

June 2020

