

# Flaring in Texas

A COMPREHENSIVE GOVERNMENT FAILURE

What the Texas Railroad Commission  
fails to track, it can't govern

August 2021



EARTHWORKS

# Flaring in Texas

## A COMPREHENSIVE GOVERNMENT FAILURE

What the Texas Railroad Commission  
fails to track, it can't govern

August 2021

### AUTHORS:

Jack McDonald and Sharon Wilson

### CONTRIBUTORS:

Alan Septoff and Nadia Steinzor—Earthworks  
Emma Pabst—Sierra Club

### COVER AND TITLE PAGE PHOTOS:

Flaring at the MDC Texas Operator Special Effort site  
Photos: flares by Earthworks, pump jack by Charlene Anderson

Photos by Earthworks unless noted

Design by CreativeGeckos.com



EARTHWORKS

### EARTHWORKS

Offices in California, Colorado, Maryland, Montana, Pennsylvania,  
New Mexico, New York, Texas, West Virginia

EARTHWORKS • 1612 K St., NW, Suite 904 Washington, D.C., USA 20006  
[www.earthworks.org](http://www.earthworks.org) • Report at <https://earthworks.org/texasflaring>

*Dedicated to protecting communities and the environment from the  
adverse impacts of mineral and energy development while promoting  
sustainable solutions.*

# Table of Contents

Executive Summary.....	4
Introduction .....	5
Unchecked flaring and venting.....	5
Regulation of flaring.....	5
Analyzing data and results .....	7
The Results: 69-84% of observed flares were unpermitted .....	9
Debunking “emergency flaring” .....	11
Companies must report emergencies — RRC has no records of them .....	11
Abuse of flaring permits.....	12
Seattle Slew — 14 site visits without a permit.....	16
Flaring’s impact on climate and health.....	17
Corporate Accountability: .....	19
Shell.....	19
Exxon .....	20
Diamondback Energy.....	20
Table: Unpermitted flares compared to total surveyed.....	21
Failed attempts at reform.....	22
Conclusions.....	23
Recommendations.....	24
Survey data table.....	26
Endnotes.....	32





# Executive Summary

Even as Texas regulators, oil companies and environmentalists have come to agree that flaring of gas — methane and associated toxic volatile organic compounds — produced by oil extraction should cease, flaring in Texas has continued to increase in frequency.

In Texas, flaring is governed by both the Texas Railroad Commission (RRC) and the Texas Commission on Environmental Quality (TCEQ). Permits for flaring are governed by Rule 32, which makes flaring illegal except under specific circumstances. When an operator wishes to flare they are legally required to apply for a flaring permit (a Rule 32 Exception) from the RRC. Those permits have increased 65 fold in the past 11 years.<sup>1</sup>

In this report, Earthworks compares RRC's flare permitting database against 227 flares directly observed and recorded during helicopter flyovers with optical gas imaging cameras. **69-84% of observed flares did not have required flaring permits (Rule 32 exceptions).**

Shell and Exxon, both of which have made prominent climate commitments and called for stronger federal oversight of oil and gas air pollution, were among the violators: Shell did not have a permit for any of its observed flares; Exxon only had permits for two flares.

Rule 32 allows for “emergency” flaring without a permit for a limited period. Through Public Information Requests and documentation of flares over multiple days we established that it is unlikely that the unpermitted flares were emergencies.

The report also analyzed trends regarding when and how flaring permits are accepted by the RRC.

## Key Findings:

- 1 The RRC systemically fails to regulate flaring.** The scale of unpermitted flaring — 84% — is not the result of a mistake by the RRC, or a few bad actors. It is a conscious choice by the RRC not to put sufficient effort into determining if the law is being violated, never mind enforcing the law when it is violated.
- 2 An unpermitted flare is a flare the RRC does not know exists.** Therefore state regulators don't know how much gas was flared, nor how much pollution was emitted. Without accurate data, informed policy choices are impossible.
- 3 All RRC data, and decisions based upon it, are flawed.**
- 4 The RRC rubber stamps most flaring permits.** Even in those cases where an operator seeks a permit as required by law, the clear intent of the law is violated. The Rule 32 exception was created to allow flaring under certain limited circumstances because without this exception to the law, flaring isn't supposed to occur. Instead, the permitting database reveals that the RRC effectively permits unlimited flaring.
- 5 Even the “major” companies who make high profile public commitments to behave responsibly still ignore the law when it comes to flaring.** Shell and Exxon — who have endorsed federal and state oversight that would govern flaring — were both observed multiple times flaring unpermitted by the RRC in violation of the law.



EARTHWORKS

FLARING IN TEXAS—A COMPREHENSIVE GOVERNMENT FAILURE  
*What the Texas Railroad Commission fails to track, it can't govern*  
[earthworks.org/texasflaring](http://earthworks.org/texasflaring)

# Introduction

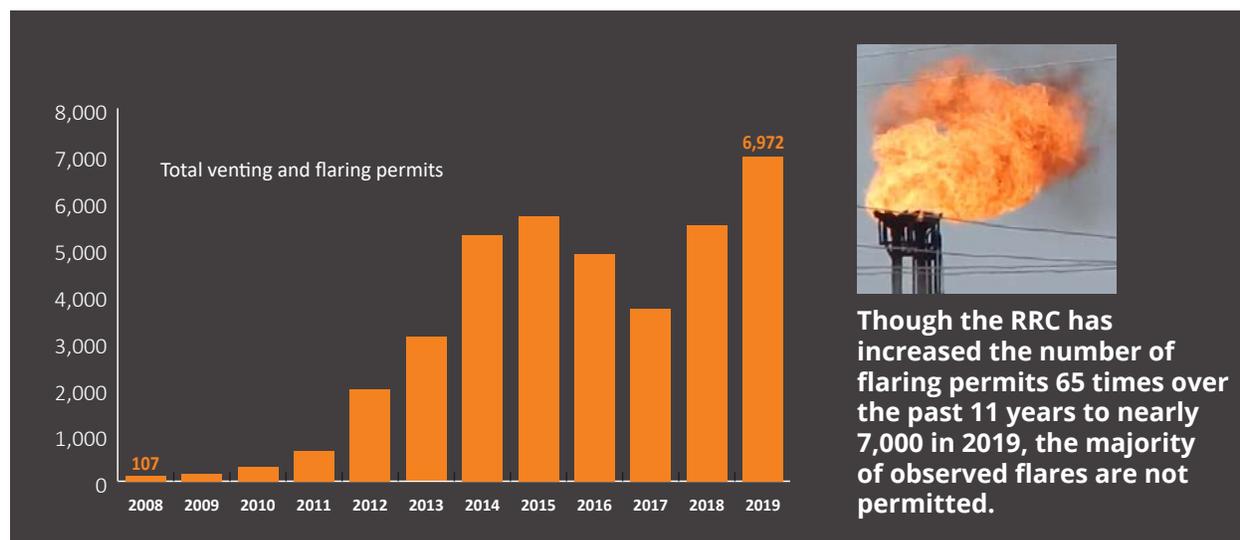
## Unchecked flaring and venting

Over the past several years, flaring (burning) of gas — methane and associated toxic volatile organic compounds — from oil extraction has generated a rare state of agreement among regulators, industry, and environmental groups: *it is a problem*. Yet the state agency that permits flaring — the Texas Railroad Commission or RRC — now issues 65 times the flaring permits it did 11 years ago: nearly 7,000 in 2019.<sup>2</sup> That spike parallels the rapid expansion of oil and gas operations in the Permian Basin over the past five years.

## Regulation of flaring

Flaring in Texas is governed by a section of the Texas Administrative Code known as Rule 32<sup>3</sup> which makes flaring illegal in Texas except under certain circumstances. Rule 32 is implemented by the RRC, which despite its name is the state's primary regulator of oil and gas extraction, not railroads. Under Rule 32, operators are allowed to flare for 10 days at the beginning of operation. If the operator wants to continue flaring they are legally required to apply to the Commission for a Rule 32 exception (a flaring permit), except under tightly defined conditions. Permits can be approved administratively (by employees of the commission rather than the commissioners), but are limited to no more than 180 days.<sup>4</sup> Generally permits are granted for much shorter times, averaging 88 days.<sup>5</sup> Operators are required to justify the flaring, but neither the law nor the RRC clearly defines what constitutes sufficient justification. Some operators cite economics, others cite downstream issues, and still others cite mechanical failures on site. RRC tracks these permits including their effective dates and the justification given by the operator in the RRC Flaring and Venting Master Document<sup>6</sup> which contains permits granted from 1991 to present, and associated data.

Flaring permits (Rule 32 exceptions), also establish daily limits of volume of gas allowed to be flared. These limits vary widely, from as low as 1,000 cubic feet per day to over 1 billion cubic feet per day.<sup>7</sup>



It is unclear how the RRC enforces these limits through anything other than the honor system. Not every flare stack is metered by the RRC nor are sites required to procure meters. Thus, operators could exceed these volume limits without the RRC realizing.

There are specific circumstances where an operator can flare without a permit, notably in an emergency situation such as an over pressurized system<sup>8</sup>. However if such an emergency lasts more than 24 hours Rule 32 requirements still apply.

If the issue that resulted in the granting of the initial permit persists, operators can petition the commissioners to extend the permit beyond 180 days. Extensions are common. Since 2019, the RRC has approved 9,206 permits. More than 1 in 10, or 1,044 were later extended<sup>9</sup>. As with the initial flaring permit, neither Rule 32 nor the RRC clearly defines what constitutes sufficient justification for a permit extension.

**In 2019, the RRC approved 6,900 flaring permits.** Over the past 11 years for which RRC data is posted, that is an all time high, surpassing the previous high in 2015 of 5,689. In 2016 and 2017, permitting decreased. Unfortunately, even as concern about methane gas became a prominent issue throughout the state, flare permitting climbed again in 2018.<sup>10</sup>

**As Rule 32 makes flaring illegal except under certain circumstances, flaring permits are critically important to the RRC's record keeping of when and how flaring occurs.**

**1,044**  
**flaring permits were extended since 2019**

**Flaring at MDC Texas Operator Special Effort. Inset shows volatile organic compounds including methane released when the flare is unlit.**



## Analyzing data and results

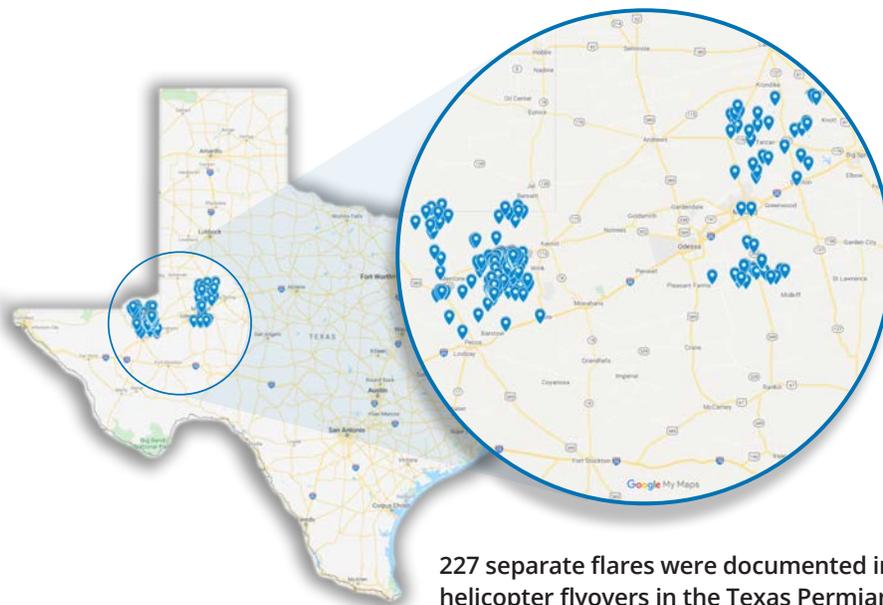
Earthworks, through correspondence with the RRC, acquired a copy of the Master Flaring and Venting Document that the RRC uses to track flaring permits (Rule 32 exceptions). Earthworks used Environmental Defense Fund (EDF) public flyover data of more than 1,000 flares mainly in the RRC's District 8 covering the Permian Basin. Helicopters flew over a sample of sites with active flares<sup>11</sup> (active flares includes any flare that has gas going to it regardless of whether it is lit) throughout the Permian Basin and took optical gas imaging (OGI) footage<sup>12</sup> of each flare observed.

EDF conducted three sets of these flaring flyovers during January, March and June of 2020<sup>13</sup>. Each flyover included new sites as well as some overlap of previously visited sites. This means that some sites were surveyed during only one flyover, some during two and some during all three flyovers. By cross referencing the flares directly observed with the RRC's Master Flaring and Venting Document, Earthworks determined the percentage of flares unpermitted by the RRC.

### To determine the percentage of unpermitted flares, Earthworks:

- Removed sites from the flyovers that were never documented flaring (i.e. the flare was not operating; flares that were active but unlit were still included).
- Removed sites from the flyovers not in the state of Texas (the Permian crosses into New Mexico).
- Removed any flare not within 200m of a well site.

After the data was cleaned, every site within 200m of every flare was cross referenced with the RRC Master Flaring and Venting document to determine which sites ever had a permit to flare and for what time period they were permitted. Those dates were then cross referenced with the dates of the flyovers.



**227 separate flares were documented in helicopter flyovers in the Texas Permian Basin.**

## Regarding flaring permits, we gave the benefit of the doubt to the operator:

- If there was any overlap between a permit period and a site flyover, that site was considered permitted during that survey.
- If a site had a similar but non-exact match (ex. a site named University 20 that is listed in the Flaring and Venting Master document as Univ. 20) that was permitted during a survey, it was also considered permitted for that survey.
- Some flares had multiple possible sites within the 200m circles. In cases where it was impossible to determine which site was associated with a flare, and *any* of the sites within the circle had a flaring permit, the flare was considered permitted for purposes of this study.



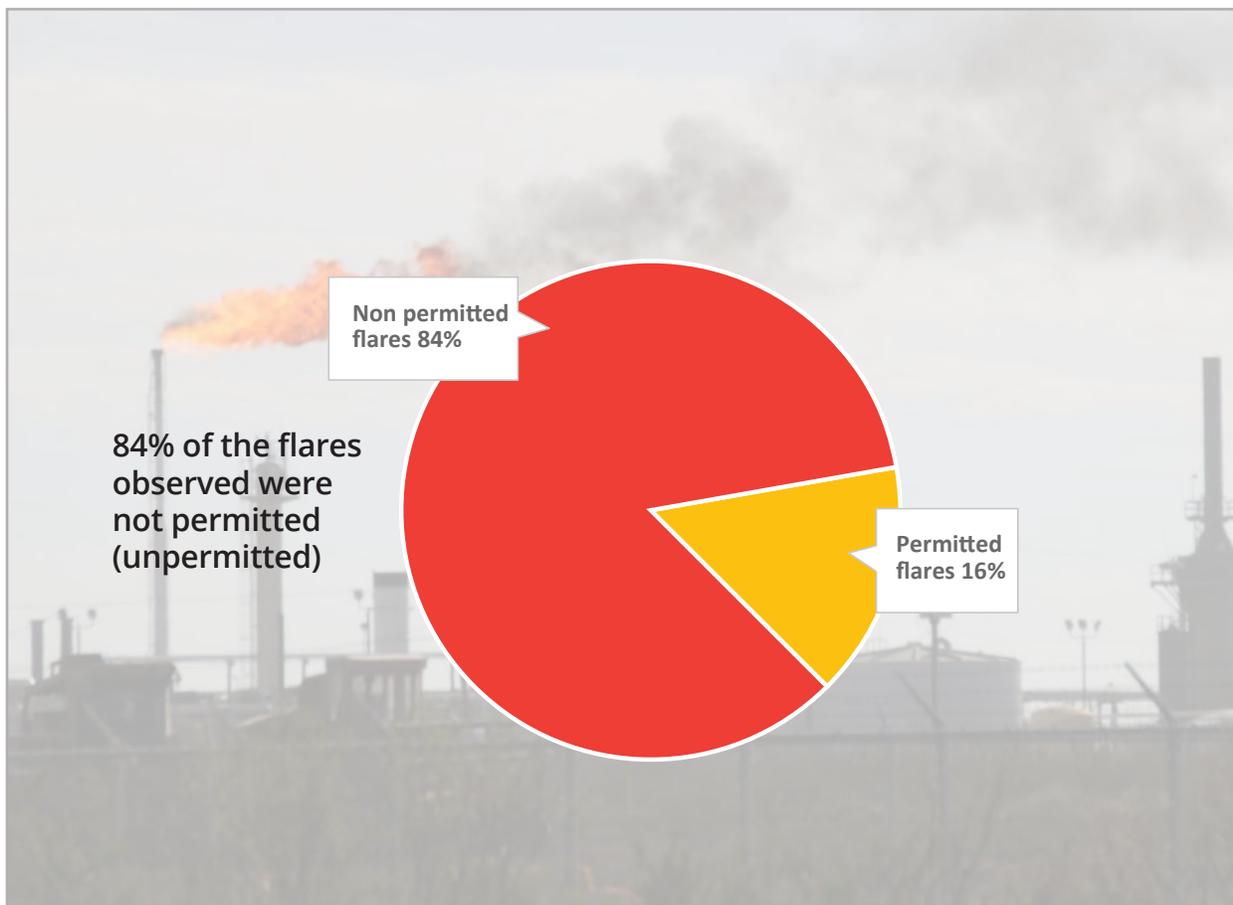
The site is ARM Salt Creek Midstream processing facility. Flares that are fully combusting gas do not release smoke. Unfortunately, flares like this with massive plumes of smoke and ash are common at far too many drilling operations in Texas. This “black carbon” is estimated to be responsible for 15% to 30% of global climate change.<sup>57</sup>



EARTHWORKS

## The Results: 69-84% of observed flares were unpermitted

After attributing flare ownership and removing flares that were inactive, out of state, or unattributable, we were left with 227 separate flares.



### Flare Analysis

EDF conducted three sets of these flaring flyovers during January, March and June of 2020<sup>14</sup>. Each flyover area had overlapped with previous flyovers as well as covering new sites. Some sites were surveyed during only one flyover, some during two and some during all three flyovers. By cross referencing the directly observed flares with the RRC's Master Flaring and Venting Document, Earthworks determined the percentage of flares unpermitted by the RRC.

Surveyed at least once - 227 flares	Surveyed twice - 79 flares	Surveyed three times - 36 flares
84% (192) unpermitted	78% (62) unpermitted	58% (21) unpermitted

- 63 (28% of the 227 flares) documented to be flaring at least once during the flyovers had *never received a permit* for a flare in the site's history.
- Only 35 (15% of the 227 flares) were permitted *every time* they were documented flaring.
- See the [full table of data](#).



## RRC Responds — 69%, not 84%

In order to ensure the accuracy of this report, Earthworks provided a pre-publication draft of this report to the RRC. The core of their response:

*We would like to point out some concerns with the report:*

- *Of the 227 flare locations described in the report, RRC staff identified an additional 36 flare exceptions applicable to those 227 locations. It is also very important to note that an exception to Rule 32 (i.e, an exception to flare gas) may not be required in many cases. Some flaring is authorized by the rule (which means the rule allows gas to be flared without the explicit authority of an exception issued by the Commission), and some flaring may be exempt from the rule. Examples of exempt flaring [Rule 32 section (d)(1)] include vapors from storage tanks, fugitive emissions, and blowdown gas during construction, maintenance, or repair. Examples of authorized flaring [Rule 32 section (f)(1)] include during the first 10 producing days after initial completion and in the event of a full or partial shutdown.*
- *For reasons stated above regarding exempt and authorized flaring, we also believe flyover information can be problematic. A short-term observation of a flare and absence of an explicit exception does not necessarily mean the observed flaring is illegal.<sup>15</sup>*

The RRC provided no documentation to support their claims. Earthworks attempted to clarify the RRC's assertion about an additional 36 flare exceptions by asking what sites those exceptions applied to, when they were active, and why they weren't included in the master flaring and venting document. The RRC responded but failed to answer those questions.

**Given the ample evidence in this report and others of RRC's inaccurate records, and their failure to provide supporting information, it is unclear how accurate their assertion is. Even if it is accurate, that still leaves 69% of observed flares as unpermitted.**

Their other claims have little bearing on the report. EDF surveyed flare stacks, so blowdown gas and storage tanks releases are not considered in the report, and none of the sites surveyed were less than 10 days old. The claim relating to fugitive emissions is addressed in the below "Debunking Emergency Flaring" section.

Finally their claims about a trend of decreased flaring suggests they missed the significance of this report. Even if their assertions are true, the data they present represents only 31% of flares. The rest are unpermitted, not represented in the data, and therefore their claims about flaring reduction are suspect or invalid.



# Debunking “emergency” flaring

In response to our smaller scale February 2021 flaring analysis, similar in results but limited to Texas General Land Office lands, the RRC explained the high percentage of unpermitted flares thusly: “rules specify certain situations in which an operator can flare, including for safety reasons, without going through the application process to obtain an exception from the RRC.”<sup>16</sup>

That explanation of the statute is true, but the assertion that it accounts for such high unpermitted flaring numbers is not.

## Companies must report flaring emergencies — RRC has no records of them

As outlined above operators are permitted to flare for up to 24 hours in an emergency situation. If the flaring continues for over 24 hours the operator is legally required to report it to the RRC. Earthworks attempted to acquire a record of these notices, and was told by the RRC statewide field operations team that “if any records exist, they would be with the individual District Offices”.<sup>17</sup>

The District Office was unwilling to assist in acquiring these records, so Earthworks submitted a Public Information Request (PIR) on June 14th. On July 13th, the RRC fulfilled this request. Rather than sending back a list of emergency notifications, the RRC sent hundreds of individual files (many of which were unrelated to the query) that had no formalized filing or naming system.<sup>18</sup> It is unclear, from the lack of organization, how the RRC could ever know which flares are emergencies and which are not in order to make the claim they did in response to the *Flaring Away* report. After parsing these files Earthworks found that just 23 companies have ever submitted an emergency notification of flaring to the RRC in District 8, one of the twelve districts the RRC has divided Texas into for local offices. Further, only three of the unpermitted sites in the sample for *Flaring Away* ever reported emergencies.



## “Emergency” flares lasting more than three days are not emergencies

To further address the RRC’s emergency claim, Earthworks conducted a second analysis that focused on flares visited three times over the course of five days.<sup>19</sup> For this analysis, Earthworks followed the same procedure as outlined previously, using a different EDF flyover survey that visited 145 flares. In that survey, EDF visited 145 sites three times within one week. Of those 145 flares, 97% were not permitted (versus 84% in the separate, larger sample for all three flyovers).

This directly undermines the RRC’s claim that unpermitted flares were exempt from reporting requirements due to emergency situations — because emergency flares (without permits) may only last 24 hours whereas these were flaring without permits for at least three days. Were the RRC’s explanation accurate, the analysis of this sample would have yielded a much lower unpermitted flare percentage (zero), instead it was higher.

This finding demonstrates that unpermitted flares are those for which operators simply didn’t bother to apply for a flaring permit rather than those who are legally exempt from reporting requirements.

Even assuming the RRC’s explanation that unpermitted flares are the result of emergencies, despite the overwhelming evidence to the contrary, then either the RRC’s interpretation of an “emergency” is too broad, or they aren’t emergencies in any sense and the RRC’s explanation isn’t valid.

## Abuse of flaring permits

The problems with the RRC flaring regulations do not end with widespread unpermitted flaring. A lawsuit in 2019 revealed that **the RRC has not rejected a single application to flare since 2012, totaling more than 27,000 permits**<sup>20</sup>. Even among the operators who take the time to apply for flaring permits there is apparent widespread abuse.

**The RRC cedes justification of flaring to operators** — Rule 32 outlines a series of flaring justification examples, but does not actually articulate any standard for determining when a flaring permit should be granted.<sup>21</sup> In practice this means the RRC has ceded flaring permit decision making to each individual operator, effectively preventing the RRC from denying flaring permits. For example:

- Six times in 2019 alone Apache Corporation requested flaring permits where the justification was simply, “during times of upset conditions or plant (sic) due to shut downs, capacity or pressure issues”.<sup>22</sup> This is concerning because by approving these permits RRC gave Apache discretion to determine when they should flare. The RRC, not Apache, should make this determination.



- RSG Permian LLC in 2019, filed for 12 flaring permits (Rule 32 exceptions) with the same justification for each, “High line pressure”.<sup>23</sup>
- In 2020, BHP Petroleum applied for and was granted 82 flaring permits using this justification: “Flaring due to inconsistent curtailments due to pl & plant capacity constraints, pl & facility modifications, upset & maintenance situations.”<sup>24</sup> Just like the Apache sites, this justification is so broad that it moves the impetus of determining when it is appropriate to flare to operators rather than the Commission, allowing operators to flare with impunity.
- Orintiv (previously known as Encana) received 46 Rule 32 exceptions (flaring permits) on the same day for various “system upsets.”<sup>25</sup>

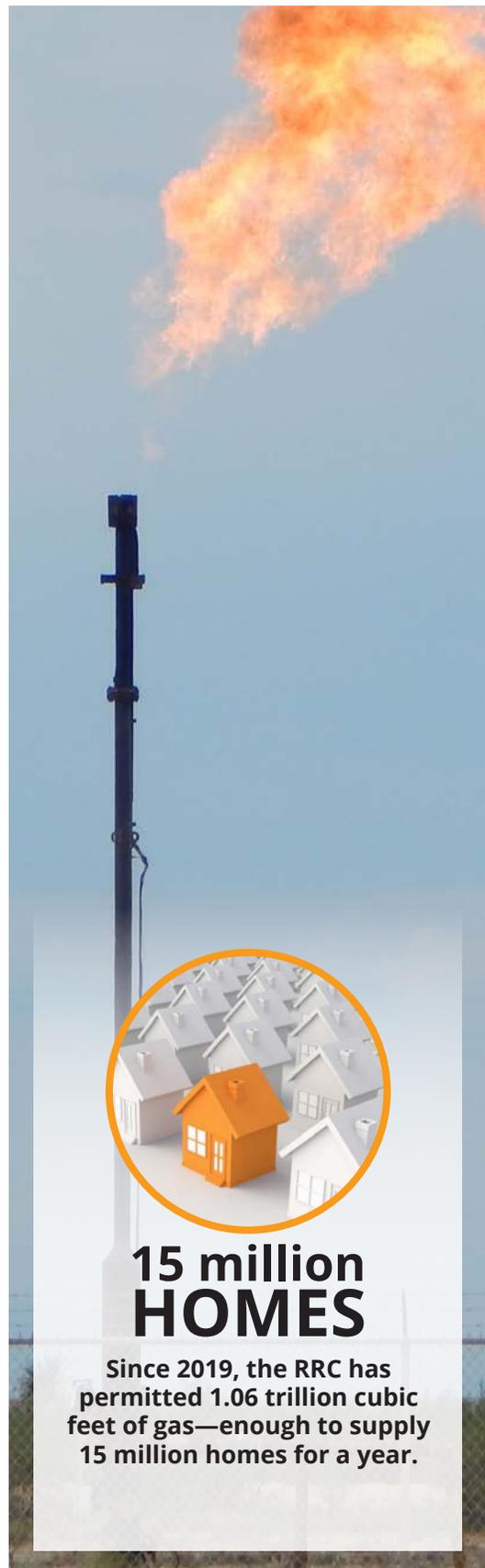
**Since 2019, 32 flaring permits have been justified simply as “Economic Conditions.”**<sup>26</sup>—

By accepting such vague justification the RRC abdicates its responsibility to determine if a Rule 32 exception (flaring permit) is a responsible answer to the problem on-site vs some other operational solution. Based on these examples it is unclear what justification the RRC would not accept.

- In one particularly egregious example of rubber stamping revealed via PIR, the RRC approved a flaring permit despite comments from RRC staff that the “Drilling permit had not been approved and the necessary drilling permit/API won’t show up.”

**The RRC does not limit the volume of flaring —**

When applying for a Rule 32 exception, operators may propose the amount of gas they should be allowed to flare each day. Since 2019, RRC has approved 152 permits to flare over 1,000,000 cubic feet of gas per day. Assuming everything flared is pure methane gas, that is the equivalent of nearly 14 houses’ annual consumption of gas per day.<sup>27</sup> Collectively, since 2019, the RRC has permitted over 1.06 trillion cubic feet of emissions. That is enough gas to supply nearly 15 million homes for a year.



**The RRC allows unlimited extensions to flaring permits** — The average duration of a permit for a flare is 88 days. When operators decide that they need more time to flare beyond 180 days maximum based on some mitigating circumstance, they apply to get their flaring permit amended. Those amendments generally must be approved through a final order by the RRC Commissioners. These amendments are a regular aspect of RRC Commissioner meetings, and are often put on the consent agenda meaning that often they do not even receive discussion and are simply approved.

As with justifications for flaring permits in the first place, justifications for amended permits are similarly undefined and open to abuse. For example:

- An Impetro Operating well, Kudu B, was permitted to flare for nearly six years (from October 2015 to June 2021) while waiting on a compressor upgrade<sup>28</sup>. It is unlikely that it would take that long for a compressor upgrade, yet while waiting on that upgrade Impetro was permitted to flare over 900,000 cubic feet of gas each day.
- Carrizo (Permian) LLC, cited a compressor shut down in order to get 14 flaring permits in one day. Then several months later Carrizo applied to have 7 of the sites amended (on the same day). The RRC approved the amendments allowing Carrizo to flare from 7 sites for nearly three years each, ostensibly due to system upsets and the shut down.<sup>29</sup>
- It is common throughout the Flaring and Venting Master document to see operators apply for numerous permits on the same day for the same reason, then apply to amend the same permits at the same time also for the same generally vague reason.

**The RRC has taken a stance that flaring should be “a necessary last resort during an upset” per Texas Railroad Commissioner Jim Wright in 2021.<sup>30</sup> Yet, since 2019, RRC has granted 490 flaring permits that were amended to last a year or longer.**

OGI footage documenting emissions from an unlit flare at Diamondback Energy Misbehaving site in Reeves County, Texas, 2019. Inset photo shows how flare appears to the naked eye.



**Below, the Diamondback Energy Misbehaving well within sight of a cemetery. At right is an optical gas image from the site showing VOCs released by an unlit flare.**



## SEATTLE SLEW—14 SITE VISITS WITHOUT A PERMIT

Despite the RRC's claims that flaring should be used only in an emergency and as a last resort,<sup>31</sup> operators clearly do not view it as such. One particularly noteworthy example of this is MDC Texas Operator's Seattle Slew site in the Permian Basin. This site was approved for a permit to drill in 2016. Since that time Earthworks has visited the site fourteen times with an optical gas imaging camera that makes visible normally invisible air pollution.<sup>32</sup> We detected pollution all fourteen times — most notably improperly flaring nine times within the past year. **MDC has never had a permit from the RRC to flare at the site in its entire history of operation.**

In order to address the pollution, Earthworks filed several complaints with the Texas Commission on Environmental Quality (TCEQ). Despite footage of emissions on fourteen separate occasions, the TCEQ failed to issue any violations. In order to understand how that was possible, Earthworks requested investigations and correspondence between MDC and TCEQ through a public information request (PIR). That PIR returned correspondence between MDC and TCEQ including emails in which TCEQ asked MDC for an estimate of emissions released from their tanks

during one of the videos Earthworks submitted.

MDC responded that they could not provide that information, saying: *There is no way to estimate how much gas was vented as we don't measure our tank gas MCFD since it isn't sold to gas sales but instead sent to the combustor for incineration. Also, we don't know for how long (hrs.) this gas was vented to the atmosphere.*

This response indicates RRC and TCEQ oversight is significantly lacking. It also seems to indicate that MDC is not metering the gas going up their combustor (flare). If operators do not meter the gas going through their flare stacks, how can the RRC enforce their flaring volume limits? This undermines the credibility of any data RRC presents on flaring or methane volumes, and further may explain the proliferation of unpermitted flares. If operators are not obligated to meter their flare stacks, then the RRC has no way to verify when gas is sent to be flared and how much other than through the word of the operators.

**How can the RRC enforce flaring volume limits if they are not metering the flare?**

**MDC SEATTLE SLEW NEVER HAD A FLARING PERMIT**

**Earthworks visited the site 14 times since 2016, each time detecting pollution with the OGI camera.**



# Flaring's impact on climate and health

Such widespread flaring amendment abuse and unpermitted flaring should be deeply concerning to the RRC. Most obviously, widespread unpermitted flaring makes it is nearly impossible for Texas regulators to ensure that operators follow flaring best practices. Moreover, flaring has a significant impact on climate and health, even more so when not done properly. Flares operating exactly as intended release carbon dioxide into the atmosphere; according to the Global Carbon Project, properly combusted flaring is responsible for 0.6% of all human-driven fossil carbon dioxide emissions.<sup>33</sup>

Unfortunately, unlit and malfunctioning flares present a much greater threat. When flares are unlit but continue venting, or the flare is not fully combusting, they vent methane and other harmful gases directly into the atmosphere. According to EDF satellite data, the Permian Basin oil and gas operations release methane gas into the atmosphere at three times the nationwide rates by mass reported by the EPA.<sup>34</sup> At least 300,000 metric tons of methane are being released into the atmosphere from oil and gas operations across the Permian Basin.<sup>35</sup> Methane is a greenhouse gas over 86 times more potent than carbon dioxide. It also has a relatively short life span in the atmosphere, so cutting emissions of methane gas can have a significant impact in slowing the speed of warming, buying the world valuable time to determine solutions for other longer lived greenhouse gases like carbon dioxide.

Flaring has also been found to emit black carbon into the atmosphere.<sup>36</sup> Black carbon is estimated to be responsible for 15% to 30% of global climate change.<sup>37</sup> A major reason black carbon has such a significant climate impact is that it lowers the albedo of the Earth's surface increasing heat absorption.<sup>38</sup> Just like methane, black carbon has a short lifespan in the atmosphere, and thus reducing black carbon can have rapid effects on slowing warming. Clearingstone Energy went so far as to say, "Flaring mitigation is an excellent means of reducing



**"NOx emissions contribute to acid rain, ozone and smog formation, and can irritate the eyes, nose, throat and lungs."**

— Professor Gunnar W. Schade of Texas A&M

## LIVING IN THE PROXIMITY TO FLARING AND PREMATURE BIRTHS:

**A study by the University of Southern California found that the risk can increase by as much as 50%.**



EARTHWORKS

FLARING IN TEXAS—A COMPREHENSIVE GOVERNMENT FAILURE  
*What the Texas Railroad Commission fails to track, it can't govern*  
[earthworks.org/texasflaring](http://earthworks.org/texasflaring)

the amount of black carbon emissions, which has a positive impact on climate change and a direct positive impact for people".<sup>39</sup> Black Carbon is also a pollutant that the World Health Organization (WHO) has tied to increased occurrences of cardiopulmonary events.<sup>40</sup>

In addition to its significant impact on the climate, flaring can cause health problems for those living in proximity. The link between flaring and premature births has been studied extensively and indicates that those who live near flares have a significantly greater chance of premature birth according to the National Institutes of Health (NIH).<sup>41</sup> A study by the University of Southern California found that that risk can increase by as much as 50% when in close proximity to flaring.<sup>42</sup>

Flares also emit volatile organic compounds (VOCs), which contribute to smog. VOCs have also been linked to eye, nose, and throat irritation, respiratory problems, nausea, headaches, and dizziness. Texas A&M University researchers have linked flaring to nitrogen oxide emissions. Their data reveals that flaring may be the single greatest contributor to nitrogen oxides emissions in rural Texas. According to Professor Gunnar W. Schade of Texas A&M, "NOx emissions contribute to acid rain, ozone and smog formation, and can irritate the eyes, nose, throat and lungs."<sup>43</sup>

**Flaring emits black carbon and is responsible for 15% to 30% of global climate change.**

Outside of air pollution, there is also the risk associated with light pollution. In many cases flares operate throughout the night. Many flares have strong enough flames that nearby residents complain that they "turn night into day." Extensive light pollution like this has been linked by the NIH to a disrupted circadian rhythm which can result in trouble sleeping and even cancer.<sup>44</sup>

These health impacts are particularly concerning because, especially in the Midland area, there are numerous wells that are in close proximity to communities.

---

### THE RRC MISSION

Our mission is to serve Texas by our stewardship of natural resources and the environment, our concern for personal and community safety, and our support of enhanced development and economic vitality for the benefit of Texans.<sup>45</sup>

---

*If the RRC is truly dedicated to stewardship of our natural resources, the environment, as well as public safety, then they must act to curtail the dangerous proliferation of poor oversight that has permeated flaring regulation in Texas.*



# Corporate accountability

Just as flaring has captured the attention of environmentalists and state regulators, it has also gained the attention of industry. Some oil and gas companies have made commitments related to flaring as well as touting their reductions in flaring, but do those commitments translate into best practices in the field?

In order to answer that question, Earthworks analyzed the collected flaring data with a focus on specific operators.

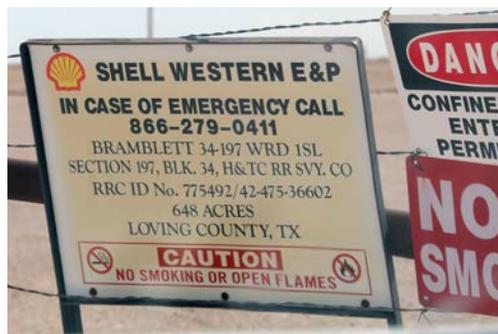


**WHAT THEY CLAIM**  
**Reduction in flaring by 36%**

**WHAT WE FOUND IN THE PERMIAN**  
**7 out of 7 flares were unpermitted**

Shell is one of the biggest and most powerful oil and gas producers in the world. Shell has used its platform in order to present themselves as champions of the environment. They have a landing page on their website dedicated to reducing to net zero emissions by 2050.<sup>46</sup> Shell signed onto the Global Gas Flaring Reduction Partnership (GGFR) which aims to reduce routine flaring to zero by 2030.<sup>47</sup> Shell even published a report about achieving that net zero goal outlined above that touted that they had already reduced flaring by 36%.<sup>48</sup> They have also used their political influence to lobby the RRC to increase restrictions on flaring.<sup>49</sup>

Those commitments are in question. Of seven Shell flares, all seven were unpermitted when they were directly observed flaring, and not a single one was reported to the RRC as an emergency. Two of the sites had never had a flaring permit in their history of operation. It is difficult to understand why an operator would push for increased regulation of flaring when they do not appear to be complying with existing regulation. One explanation: Shell realizes that the RRC will not enforce new regulations even if they are passed, so Shell gets the political benefits of advocating for more regulation without having to actually change its practices. Evidence that Shell is skirting regulation in order to flare (even if accidental and isolated to a few sites) calls into question its statistics about reduced flaring. It also implicates any claims that they make about achieving zero routine flaring by 2030.



# ExxonMobil

WHAT THEY CLAIM  
**Cease flaring by 2030**

WHAT WE FOUND IN THE PERMIAN  
**6 out of 8 flares were unpermitted**

Another one of the major global oil and gas companies, Exxon, has also committed to ceasing routine flaring by 2030.<sup>50</sup> Of the eight Exxon flares directly observed during flyovers, six were unpermitted and only one was reported as an emergency to the RRC. Just like Shell, it is difficult to take seriously commitments to reduce flaring when Exxon's existing flaring is not being reported.

# DIAMONDBACK Energy

WHAT THEY CLAIM  
**Flaring reduction by 74%**

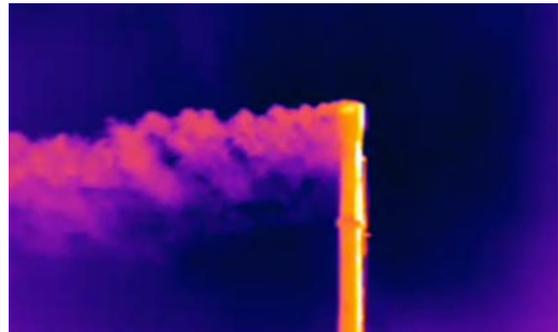
WHAT WE FOUND IN THE PERMIAN  
**21 out of 21 flares were unpermitted**

Diamondback Energy is a much smaller operator than Exxon or Shell, but is based in Midland Texas and has all of its reserves in the Permian. Thus, Diamondback sites are common throughout the Permian. Diamondback has touted its flaring reductions as evidence of their environmental stewardship. Their CEO even advertised their 74% reduction in flaring during 2020.<sup>51</sup>

As with Shell and Exxon, EDF visited numerous Diamondback sites during 2020 (the same time frame during which the CEO claimed a 74% reduction in flaring). Of the 21 flares surveyed, not a single one was permitted. Such widespread unpermitted flaring calls into question Diamondback's flaring reduction claims. Even when their flares are permitted, Earthworks has documented numerous issues at Diamondback sites, from unlit flares to tanks releasing dense plumes of hydrocarbons. Earthworks has submitted 13 complaints on Diamondback sites over the past two years.

Diamondback has not reported a single emergency flare to the RRC.

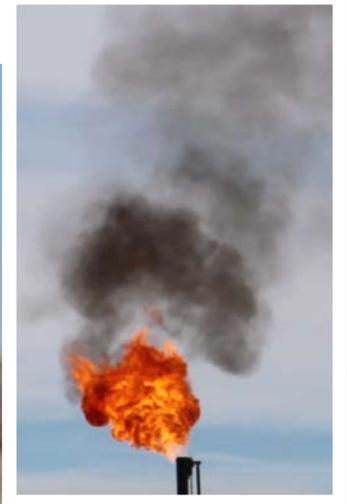
## Diamondback Energy Desperado state lease.



**Ratio of unpermitted sites to total surveyed per operator.** Among the operators who had more than four flares surveyed there was a consistent trend of failing to obtain permits. Unfortunately, this data makes clear that this problem is not isolated to just a few bad actors. Rather, it is the norm across the Permian Basin.

Operator Company Name	Unpermitted Flares Compared to Total Surveyed	% Flares Unpermitted
Diamondback Energy	21/21	100%
Mewbourne	14/14	100%
Shell	7/7	100%
Endeavor	5/5	100%
Conoco	4/4	100%
Devon	17/19	89%
Ovintiv	8/9	89%
Pioneer Natural Resources	5/6	83%
Callon	4/5	80%
Occidental	14/20	70%
Exxon	6/8	75%
Oasis	4/8	50%
Lillis	2/5	40%

Diamondback Energy Longfellow site in Reeves County, Texas. 2019.



## Failed attempts at reform

The RRC has acknowledged that its flaring oversight needs improvement, creating a Blue Ribbon Committee to address flaring regulation in December 2019.<sup>52</sup> Based on our findings, the Committee's recommendations fail to solve the problem.

The most important failure: the Committee didn't consider that unpermitted flaring is occurring at any scale, when two analyses show that more than 80% of flaring in Texas is unpermitted. A systemic regulatory failure like this demands systemic change, not the tweaks the Committee recommends.<sup>53</sup>

The thrust of the Committee's recommendations is a reduction in the length of time for which an administrative permit can be granted from 180 days to 90 days. This recommendation might be valuable if it was not so easy for operators to get amended permits that effectively allow indefinite flaring. So long as the RRC continues to grant an unlimited chain of amended permits, no change in the length of an individual permit will have any material impact.

Another major recommendation from the Committee was the creation of the Flaring Matrix.<sup>54</sup> This document outlines how various justifications for flaring should be treated by the RRC. Unfortunately, just like the current text of Rule 32, the Matrix leaves an option for a "other" justification that allows for the vague justifications that the RRC has approved in the past.

The RRC enacted many of these recommendations, including the reduction in the length of an administrative permit as well as restructuring the form used by operators to apply for a Rule 32 exception to include more information about the justification for the flaring.<sup>55</sup> But our analysis demands these incremental policy changes constitute just an opening sally in a complete overhaul of the RRC's approach to flaring.

### Apache Corp. Cheyenne Central Processing Facility.



## Conclusions

**The RRC systemically fails to regulate flaring. The scale of unpermitted flaring — 69-84% — is not the result of a mistake by the RRC, or a few bad actors. Instead it is the consequence of a conscious choice by the RRC not to put sufficient effort into determining if the law is being violated, never mind enforcing the law when it is violated. The RRC’s Blue Ribbon Committee on flaring did not address this lack of verification to determine whether legally required permits were being obtained. It is clear the RRC is not equipped or motivated to track, monitor, and regulate the rapidly expanding oil and gas industry.**

- The RRC has an incomplete record of when and where flaring occurs, because operators fail to seek flaring permits and the RRC fails to require them as the law dictates.
- The RRC’s incomplete record of flaring discredits data they present on the issue and makes it virtually impossible for their reforms to be effective.
- The RRC rubber stamps most flaring permit (Rule 32 exception) requests. Even in those cases where an operator seeks a permit as required by law, the clear intent of the law is violated. The Rule 32 exception was created to allow flaring under certain limited circumstances because without this exception to the law, flaring isn’t supposed to occur. Instead, the permitting database reveals that the RRC effectively permits unlimited flaring.
- Even the “major” companies who make high profile public commitments to behave responsibly still ignore the law when it comes to flaring. Shell and Exxon — who have endorsed federal and state oversight that would govern flaring — were both observed flaring unpermitted by the RRC multiple times in violation of the law.



**Diamondback Energy  
Desperado well with  
an unlit flare.**



# Recommendations

Earthworks has documented the failure of the Texas state government to govern the oil and gas industry in the public interest for more than a decade: *Drill Right Texas, Loud and Clear, Flaring Away, Flowback, Reckless Endangerment*. From that chronicle of continuous regulatory failure, we offer two tiers of recommendations: (1) what is necessary to serve the public interest as dictated by science and history, and (2) what changes would be necessary given the Texas Railroad Commission's history as a regulator captured by industry, assuming the RRC intends to start enforcing the law. It is important to recognize that the second tier is inadequate to serve the public's interest in a clean environment and to avoid catastrophic climate change.

## What's necessary to serve the public interest as informed by science and history

### Stop permitting new oil and gas facilities

- It is clear from the lack of enforcement that Earthworks has spent the last decade documenting that the RRC is unwilling or unable to regulate existing sites. New permitting further increases that burden. Further expansion of oil and gas production increases the difficulty of meeting IPCC emissions targets<sup>56</sup> necessary to avoid catastrophic climate change.

## What would be necessary assuming the RRC intended to enforce the law

### Prioritize enforcement of the law before permitting new operations

- Establish minimum inspector-to-well and annual-inspections-to-well ratios. New wells must not be allowed until the state can effectively manage existing operations. Currently there are numerous sites in the state that have not been visited by the RRC in over five years.<sup>26</sup>
- Establish binding criteria for taking enforcement actions and levying penalties, and increase the use of enforcement actions to deter would-be violators.
- Make permitting and enforcement transparent — make all permitting and enforcement action publicly available and easily searchable online.
- Establish meaningful financial penalties — significant enough to deter potential violators — for unpermitted flaring, and apply them consistently. Fines should be high enough to more than offset any economic value a company may have found from non-compliance with its permit.
- Prohibit new flaring permits and increase monitoring for repeat offenders.
- End the practice of granting extensions to existing flaring permits, which turns temporary permits into long-term permits. Operators should be required to apply for new permits should they wish to continue flaring.



## Clarify Rule 32 flaring permits and how they're applied

- Clearly define what justifications operators can provide that the RRC will accept when applying for a flaring permit (Rule 32 exception), and eliminate the “other” justification except when approved directly by the Commission (i.e. not administratively).
- Clearly define what constitutes an “emergency” flaring situation.
- Require operators to report emergency flares as well as the reason for the flaring to the state within 1 business day of the event, and consider any emergency flare that is not reported to be an unpermitted flare and handle it accordingly.

**The Texas Legislature should mandate that the RRC create an impartial panel whose members have no oil and gas interests to review all flaring permits (Rule 32 exception requests).**

BPX State Doug 52.



# Survey data table

Below is the full table of the 227 flares that were surveyed. There were three passes, that is, three surveys. Note that a flare can be “on”, or “active” (gas is escaping) but is not lit.

- X or Y** **Y:** Flare was active and permitted.
- X:** An exact match could not be found for the flare in the RRC flaring database, but the flare was counted as permitted because there were sites in the database that are similar in name.
- NA** **NA:** The site wasn't visited or the flare wasn't on (a flare can be “on” but not lit, directly venting instead of burning).
- N** **N:** There is not an permit for an active flare

Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
PIONEER NATURAL RESOURCES	MCCRARY	X	NA	NA
ADVANCE ENERGY PARTNERS, LLC	SPIRE 226-34 UNIT	N	NA	N
BATTALION OIL	MONROE 1-10	NA	N	NA
BATTALION OIL	MONROE 1-10	NA	NA	N
BIRCH OPERATIONS	AGGIE THE BULLDOG 39-46 D	N	NA	N
BIRCH OPERATIONS	AGGIE THE BULLDOG 39-46 D	NA	NA	N
BP	AMARILLO BY MORNING 54-T2-42	Y	NA	Y
BTA OIL PRODUCERS	RIFLE 21801	N	N	N
BTA OIL PRODUCERS	ARPENT 21602 25	Y	NA	Y
CALLON PETROLEUM	CHUPACABRA 51 STATE UNIT	NA	N	NA
CALLON PETROLEUM	WARWINK UNIVERSITY "18-34" -A-	NA	NA	N
CALLON PETROLEUM	UNIVERSITY 22-18 'B'	NA	NA	N
CALLON PETROLEUM	CHUPACABRA 51 STATE UNIT	NA	NA	N
CALLON PETROLEUM	MONROE 1-10	NA	NA	N
CALLON PETROLEUM	STATE CVX UNIT B1314	Y	NA	Y
CHEVRON	VLT BROWNING MEDALLION UNIT	N	N	NA
CONOCOPHILLIPS	PEGASUS FIELD UNIT 3	N	N	N
CONOCOPHILLIPS	TXL "VV"	N	N	NA
CONOCOPHILLIPS	WINDHAM "A"	N	NA	N
CONOCOPHILLIPS	PEGASUS SAN ANDRES ROYALTY UNIT	N	NA	N
CONOCOPHILLIPS	PEGASUS FIELD UNIT 3	NA	NA	N
CONOCOPHILLIPS	WINDHAM "A"	NA	NA	N
CONOCOPHILLIPS	PEGASUS SAN ANDRES ROYALTY UNIT	NA	NA	N
CROWNQUEST OPERATING	SIDEWAYZER UNIT 1824	N	N	NA
CROWNQUEST OPERATING	HANG NAIL F	NA	N	N
CROWNQUEST OPERATING	SIXTEEN PENNY NAIL 310C	NA	N	N
CROWNQUEST OPERATING	HANG NAIL F	NA	NA	N
DEVON ENERGY	LINDSAY 15	N	N	N
DEVON ENERGY	UL WILLOW 383633-16	N	NA	N
DEVON ENERGY	QUINN 37	NA	N	NA
DEVON ENERGY	UL URAD 1609-21	NA	N	NA
DEVON ENERGY	QUINN 37-36F	NA	NA	N
DEVON ENERGY	QUINN 37-36A	NA	NA	N
DEVON ENERGY	SILVER DOLLAR 4231-27 A	NA	NA	N
DEVON ENERGY	SILVER DOLLAR 4231-27 I	NA	NA	N
DEVON ENERGY	SMOKIN JOE 4441-28 P	NA	NA	N



Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
DEVON ENERGY	UL MONTGOMERY 0310-21	NA	NA	N
DEVON ENERGY	VALLECITO STATE 3736-28	NA	NA	N
DEVON ENERGY	VALLECITO STATE 3736-28	NA	NA	N
DEVON ENERGY	CROSS MOUNTAIN 4045-28	NA	NA	N
DEVON ENERGY	CROSS MOUNTAIN 40-28	NA	NA	N
DEVON ENERGY	NELLIE 45-28	NA	NA	N
DEVON ENERGY	UL URAD 1609-21	NA	NA	N
DEVON ENERGY	UL MAROON 0904-21 A	NA	NA	N
DEVON ENERGY	UL SPRUCE 1621-21 A	NA	NA	N
DEVON ENERGY	UNIVERSITY 32	NA	NA	Y
DEVON ENERGY	MOSQUITO 1108-74 W	Y	N	N
DEVON ENERGY	FIVER STATE 18-27B-54-4	Y	Y	Y
DIAMONDBACK ENERGY	MARGIE 9-4 (ALLOC-1NH)	N	N	N
DIAMONDBACK ENERGY	DEGUELLO UNIT 54-7-2	N	N	N
DIAMONDBACK ENERGY	DEGUELLO UNIT 54-7-2	N	N	N
DIAMONDBACK ENERGY	VICTORY STATE E 54-14-19	N	N	N
DIAMONDBACK ENERGY	LONGFELLOW UNIT 3-13	N	N	N
DIAMONDBACK ENERGY	CHECKERS STATE UNIT 54-12-21	N	N	N
DIAMONDBACK ENERGY	WILBANKS ALLAR WEST UNIT	N	NA	NA
DIAMONDBACK ENERGY	WILBANKS SN 16-15 04	N	NA	NA
DIAMONDBACK ENERGY	JONES-HOLTON	N	NA	NA
DIAMONDBACK ENERGY	ELMER 33-67	N	NA	NA
DIAMONDBACK ENERGY	ALAMEDA STATE UNIT 54-8-1	N	NA	NA
DIAMONDBACK ENERGY	AMOCO-HOLT	N	NA	NA
DIAMONDBACK ENERGY	UNIVERSITY 20	NA	N	NA
DIAMONDBACK ENERGY	ALLDALE A	NA	N	NA
DIAMONDBACK ENERGY	UNIVERSITY 23-20	NA	N	NA
DIAMONDBACK ENERGY	PRUETT 20	NA	N	NA
DIAMONDBACK ENERGY	GREER-MCGINLEY	NA	N	NA
DIAMONDBACK ENERGY	LEEDE UNIT 7	NA	N	NA
DIAMONDBACK ENERGY	UNIVERSITY 36-20	NA	N	NA
DIAMONDBACK ENERGY	UNIVERSITY 23-20	NA	NA	N
DIAMONDBACK ENERGY	LONGFELLOW UNIT 3-13	NA	NA	N
DIAMONDBACK ENERGY	ALAMEDA STATE UNIT 54-8-1	NA	NA	N
DIAMONDBACK ENERGY	GREER-MCGINLEY	NA	NA	N
DIAMONDBACK ENERGY	UNIVERSITY 11-19	NA	NA	N
DIAMONDBACK ENERGY	UNIVERSITY 20-B	NA	NA	N
DIAMONDBACK ENERGY	PRUETT 20	NA	NA	N
DIAMONDBACK ENERGY	LEEDE UNIT 7	NA	NA	N
DIAMONDBACK ENERGY	UL 20 STRIPES 38-47	NA	NA	N
DISCOVERY OPERATING, INC.	JW M	N	N	N
ELEMENT PETROLEUM OP III, LLC	MISCHIEVOUS BADGER UNIT 80-85	N	N	NA
ENDEAVOR ENERGY RESOURCES	LIBERTY BELLE 23-18 UNIT 1	N	N	N
ENDEAVOR ENERGY RESOURCES	BANKHEAD 4-33 UNIT 2	N	N	N



Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
ENDEAVOR ENERGY RESOURCES	HENCE "A"	N	N	Y
ENDEAVOR ENERGY RESOURCES	MIDKIFF "A"	N	NA	NA
ENDEAVOR ENERGY RESOURCES	BENGE CORNER	N	NA	NA
ENDEAVOR ENERGY RESOURCES	LIBERTY BELLE 23-18 UNIT 1	NA	NA	N
ENDEAVOR ENERGY RESOURCES	DICKENSON 18-7ESL	NA	NA	Y
ENDEAVOR ENERGY RESOURCES	DICKENSON 18-7ESL	NA	NA	Y
ENDEAVOR ENERGY RESOURCES	BANKHEAD 4-33 UNIT 2	NA	NA	N
ENDEAVOR ENERGY RESOURCES	DICKENSON 18-7ESL	Y	Y	Y
EOG RESOURCES	STATE MERCURY	N	N	N
EOG RESOURCES	ATLANTIS 7 UNIT	N	NA	NA
EOG RESOURCES	STATE MERCURY	NA	NA	N
EXXON MOBIL	TXL 21 UNIT 1	X	X	X
EXXON MOBIL	PEGASUS FIELD UNIT #3	N	N	NA
EXXON MOBIL	BOB MIDKIFF 48-01 0118	N	NA	N
EXXON MOBIL	MA+Y23RALO 41-32 ALLOCATION 3203	N	NA	NA
EXXON MOBIL	JOHN BRAUN A UNIT 1	N	NA	NA
EXXON MOBIL	JOHN BRAUN C UNIT 1	N	NA	NA
EXXON MOBIL	TXL 21 UNIT 1	NA	NA	X
EXXON MOBIL	ELONA BROWN 35 ALLOCATION 2604	NA	NA	N
EXXON MOBIL	BOB MIDKIFF 48-01 0117	NA	NA	N
EXXON MOBIL	TXL 11 UNIT 1	NA	NA	Y
EXXON MOBIL	UNIVERSITY BLK 20	NA	NA	N
EXXON MOBIL	TXL 11 UNIT 1	Y	NA	Y
EXXON MOBIL	TXL 11 UNIT 3	Y	Y	NA
HUNT OIL COMPANY	MCMURRY-CRIM 20	N	NA	N
ISKANDIA ENERGY OPERATING, INC.	WEBER -A-	N	N	N
LARIO OIL & GAS CO	MOTT 4	N	N	N
LEGACY RESERVES INC.	DR ORSON E	N	N	NA
LILIS ENERGY	NE AXIS	N	NA	N
LILIS ENERGY	ANTELOPE	N	NA	NA
LILIS ENERGY	HOWELL	NA	NA	Y
LILIS ENERGY	MOOSE	Y	NA	NA
LILIS ENERGY	KUDU B	Y	NA	NA
LUXE OPERATING LLC	ALYSE 51 UNIT	Y	Y	N
MATADOR RESOURCES	TOOT 'N TOTUM 18-TTT-C24 NL SA	N	NA	NA
MCDANIEL COMPANY, INC., THE	UNIVERSITY 7	NA	X	NA
MEWBOURNE OIL COMPANY	KENTZEL STATE 42	N	NA	N
MEWBOURNE OIL COMPANY	HARRISON 43	NA	N	NA
MEWBOURNE OIL COMPANY	BRUMLOW 46	NA	N	NA
MEWBOURNE OIL COMPANY	BRUMLOW 48	NA	N	NA
MEWBOURNE OIL COMPANY	UNIVERSITY B20 2/11	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 2/11	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 11	NA	NA	N



Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
MEWBOURNE OIL COMPANY	UNIVERSITY B20 11	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 7	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 7	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 5	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 5	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 8	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 8	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 5	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 8	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 5	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B21 8	NA	NA	N
MEWBOURNE OIL COMPANY	HARRISON 43	NA	NA	N
MEWBOURNE OIL COMPANY	BRUMLOW 48	NA	NA	N
MEWBOURNE OIL COMPANY	MITCHELL 39	NA	NA	N
MEWBOURNE OIL COMPANY	BRUMLOW 46	NA	NA	N
MEWBOURNE OIL COMPANY	HARRISON 44	NA	NA	N
MEWBOURNE OIL COMPANY	HARRISON 44	NA	NA	N
MEWBOURNE OIL COMPANY	HARRISON 43	NA	NA	N
MEWBOURNE OIL COMPANY	HARRISON 43	NA	NA	N
MEWBOURNE OIL COMPANY	MITCHELL 28-47	NA	NA	N
MEWBOURNE OIL COMPANY	MITCHELL 28-47	NA	NA	N
MEWBOURNE OIL COMPANY	MITCHELL 28-47	NA	NA	N
MEWBOURNE OIL COMPANY	MITCHELL 28-47	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 12/13	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 12/13	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 12	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 1	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 12	NA	NA	N
MEWBOURNE OIL COMPANY	UNIVERSITY B20 12	NA	NA	N
OASIS PETROLEUM	UL 21 YELLOWTAIL	N	N	NA
OASIS PETROLEUM	UL SUGARLOAF D 20-37-48	NA	X	NA
OASIS PETROLEUM	UNIVERSITY "20-12A"	NA	NA	X
OASIS PETROLEUM	UL BIGHORN B 21-30-19	NA	NA	N
OASIS PETROLEUM	UL 21 YELLOWTAIL	NA	NA	N
OASIS PETROLEUM	UL RATTLESNAKE A 18-5-6	NA	NA	N
OASIS PETROLEUM	UL 21 PAHASKA	NA	NA	N
OASIS PETROLEUM	UL SUGARLOAF E 20-37-48	NA	NA	Y
OASIS PETROLEUM	UL SUGARLOAF C 20-37-48	Y	NA	Y
OCCIDENTAL PETROLEUM	YOKUM UL 19-4 A	N	N	N
OCCIDENTAL PETROLEUM	HICKORY 55-2-1 UNIT	N	N	N
OCCIDENTAL PETROLEUM	OLYMPIC 54-2-7	N	N	N
OCCIDENTAL PETROLEUM	HICKORY 55-2-1 UNIT	N	N	N
OCCIDENTAL PETROLEUM	VERDE STATE 34-153 UNIT	N	N	N



Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
OCCIDENTAL PETROLEUM	MESQUITE HEAT 28-41 UNIT	N	N	NA
OCCIDENTAL PETROLEUM	UNIVERSITY 20-6	N	N	NA
OCCIDENTAL PETROLEUM	UNIVERSITY 19-7 B	N	NA	N
OCCIDENTAL PETROLEUM	MAGNOLIA 55-2-1 UNIT	N	NA	N
OCCIDENTAL PETROLEUM	RICOCHET 29-40 UNIT	N	NA	N
OCCIDENTAL PETROLEUM	WAR ADMIRAL 28-4 UNIT D	N	NA	N
OCCIDENTAL PETROLEUM	MESQUITE HEAT 28-41 UNIT A	NA	NA	N
OCCIDENTAL PETROLEUM	MESQUITE HEAT 28-41 UNIT	NA	NA	N
OCCIDENTAL PETROLEUM	MESQUITE HEAT 28-41 UNIT	NA	NA	N
OCCIDENTAL PETROLEUM	UNIVERSITY 19-1	NA	NA	N
OCCIDENTAL PETROLEUM	UNIVERSITY 20-6	NA	NA	N
OCCIDENTAL PETROLEUM	HALEY, J.E. 28-33 UNIT A	NA	NA	N
OCCIDENTAL PETROLEUM	SMOKIN JOE 28-41 UNIT A	NA	NA	Y
OCCIDENTAL PETROLEUM	HALEY 28-43	NA	NA	Y
OCCIDENTAL PETROLEUM	SMOKIN JOE 28-41 UNIT A	NA	Y	NA
OCCIDENTAL PETROLEUM	COVINGTON 34-224	Y	NA	Y
OCCIDENTAL PETROLEUM	SHOCK-N-AWE UNIT 29-41	Y	NA	Y
OCCIDENTAL PETROLEUM	SOUTH CURTIS RANCH	Y	Y	N
OCCIDENTAL PETROLEUM	THRESHER 55-1-12 UNIT A	Y	Y	Y
OCCIDENTAL PETROLEUM	ELKHORN 54-1-40	Y	Y	Y
OVINTIV INC.	DAVIDSON "38A"	N	X	N
OVINTIV INC.	RAB DAVIDSON 22B	N	N	NA
OVINTIV INC.	DFK 319G	N	N	NA
OVINTIV INC.	DOROTHY FAYE-320-	N	NA	Y
OVINTIV INC.	HNE 249R	N	Y	N
OVINTIV INC.	HNC 248CC	N	Y	N
OVINTIV INC.	HN 249G	N	Y	N
OVINTIV INC.	WINDHAM 11XX	Y	N	N
OVINTIV INC.	HOLT RANCH NW	Y	NA	NA
PDC ENERGY	SUGARLOAF 74	N	NA	NA
PIONEER NATURAL RESOURCES	WARD	N	N	NA
PIONEER NATURAL RESOURCES	SALE RANCH "Q"	N	NA	N
PIONEER NATURAL RESOURCES	SALE RANCH 20A	N	NA	NA
PIONEER NATURAL RESOURCES	MIDKIFF UNIT	NA	NA	X
PIONEER NATURAL RESOURCES	MIDKIFF UNIT	NA	NA	X
PIONEER NATURAL RESOURCES	RK-UTL 3031A-17	NA	NA	N
PIONEER NATURAL RESOURCES	UTL 2932-17	NA	NA	N
PIONEER NATURAL RESOURCES	UTL 2932-17	NA	NA	N
POINT ENERGY PARTNERS PETRO, LLC	MONROE 1-6 WRD	NA	N	NA
POINT ENERGY PARTNERS PETRO, LLC	BENJAMIN	NA	NA	N
POINT ENERGY PARTNERS PETRO, LLC	MONROE 1-6 WRD	NA	NA	N
POINT ENERGY PARTNERS PETRO, LLC	MONROE 1-8 WRD	NA	NA	N
QEP RESOURCES	DUPREE E	N	NA	NA



Operator Company Name	Well/Lease Name	Survey 1	Survey 2	Survey 3
ROSEHILL OPERATING COMPANY, LLC	SID M. KYLE 26	N	N	N
ROSEHILL OPERATING COMPANY, LLC	WEBER 26	N	NA	N
ROSEHILL OPERATING COMPANY, LLC	WEBER 26	N	NA	N
ROSEHILL OPERATING COMPANY, LLC	Z&T 42	N	NA	N
ROSEHILL OPERATING COMPANY, LLC	Z&T 20	Y	Y	Y
SCOUT ENERGY MANAGEMENT LLC	TIPTON "33"	N	NA	NA
SHELL	UNIVERSITY 20-20	NA	N	NA
SHELL	HALEY, J. A. "43"	NA	NA	N
SHELL	UNIVERSITY 20-20	NA	NA	N
SHELL	UNIVERSITY 19-23	NA	NA	N
SHELL	UNIVERSITY 20 PW	NA	NA	N
SHELL	WRIGHT 1-22W WRD	NA	NA	N
SHELL	TRAUBE 1-11 WRD	NA	NA	N
SHELL	UNIVERSITY 20 PW UNIT	NA	NA	N
SUMMIT PETROLEUM INC	BANAY BE	N	NA	N
TITUS OIL & GAS PRODUCTION, LLC	UL 20-44 CATALINA	NA	NA	N
T-POST PRODUCTION, LLC	UNIV. 20-12	NA	N	NA
T-POST PRODUCTION, LLC	UNIV. 20-12	NA	NA	Y



# Endnotes

- 1 “Flaring Regulation,” Texas Railroad Commission, <https://www.rrc.texas.gov/about-us/faqs/oil-gas-faqs/flaring-regulation/>
- 2 Ibid.
- 3 Texas Administrative Code, Rule 32 [https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p\\_dir=&p\\_rloc=&p\\_tloc=&p\\_ploc=&pg=1&p\\_tac=&ti=16&pt=1&ch=3&rl=32](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=3&rl=32)
- 4 While most initial permits are granted administratively it is possible for an operator to apply for a permit that from the beginning is anticipated to last longer than the maximum duration for an administrative permit and thus must be approved via final order from the commissioners.
- 5 Flaring and Venting Master Document DAT file obtained from Daniel Betts, Customer Service representative for the Texas Railroad Commission. [https://www.dropbox.com/s/7k2aunb6klntrj1/Flaring master file updated.xlsx?dl=0](https://www.dropbox.com/s/7k2aunb6klntrj1/Flaring%20master%20file%20updated.xlsx?dl=0)
- 6 Ibid.
- 7 Ibid.
- 8 While most initial permits are granted administratively it is possible for an operator to apply for a permit that from the beginning is anticipated to last longer than the maximum duration for an administrative permit and thus must be approved via final order from the commissioners.
- 9 Flaring and Venting Master Document DAT file obtained from Daniel Betts, Customer Service representative for the Texas Railroad Commission.
- 10 “Flaring Regulation,” Texas Railroad Commission, <https://www.rrc.state.tx.us/about-us/resource-center/faqs/oil-gas-faqs/faq-flaring-regulation/>
- 11 “Methodology: Permian Methane Analysis Project (PermianMAP),” EDF, [https://www.edf.org/sites/default/files/documents/PermianMapMethodology\\_1.pdf](https://www.edf.org/sites/default/files/documents/PermianMapMethodology_1.pdf)
- 12 “OGI Information Sheet,” Earthworks, <https://www.dropbox.com/s/26aavazrvlp1a0/EW%20OGI%20Information%20Sheet%20%28051520%29.doc?dl=0>
- 13 “Methodology: Permian Methane Analysis Project (PermianMAP),” EDF, [https://www.edf.org/sites/default/files/documents/PermianMapMethodology\\_1.pdf](https://www.edf.org/sites/default/files/documents/PermianMapMethodology_1.pdf)
- 14 “Ibid.
- 15 RRC Email Correspondence, <https://www.dropbox.com/s/nmqubys687p4p0x/RRC%20review%20email%20conversation.pdf?dl=0>
- 16 “On flaring, the Texas Railroad Commission might be blowing smoke,” Jack McDonald, Earthworks, <https://www.earthworks.org/blog/on-flaring-the-texas-railroad-commission-might-be-blowing-smoke/>
- 17 Earthworks email communication with RRC, June 11, 2021.
- 18 <https://www.dropbox.com/s/glptq4ex79kbnck/RRC%20Emergency%20Flaring%20PIR.zip?dl=0>
- 19 “Methodology: Permian Methane Analysis Project (PermianMAP),” EDF, [https://www.edf.org/sites/default/files/documents/PermianMapMethodology\\_1.pdf](https://www.edf.org/sites/default/files/documents/PermianMapMethodology_1.pdf)
- 20 “Pipeline giant sues Railroad Commission, alleging lax oversight of natural gas flaring,” Kiah Collier, Texas Tribune, <https://www.texastribune.org/2019/12/03/railroad-commission-sued-lax-oversight-natural-gas-flaring/>
- 21 Texas Administrative Code, Rule 32 [https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p\\_dir=&p\\_rloc=&p\\_tloc=&p\\_ploc=&pg=1&p\\_tac=&ti=16&pt=1&ch=3&rl=32](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=3&rl=32)
- 22 Flaring and Venting Master Document DAT file obtained from Daniel Betts, Customer Service representative for the Texas Railroad Commission.
- 23 Ibid.
- 24 Ibid.
- 25 Ibid.
- 26 Ibid.
- 27 “Natural Gas Facts”, American Gas Association, <http://northeastsupplyenhancement.com/wp-content/uploads/2016/11/Natural-Gas-Facts.pdf>
- 28 Flaring and Venting Master Document DAT file obtained from Daniel Betts, Customer Service representative for the Texas Railroad Commission
- 29 Ibid.
- 30 “Commissioner Wright Statement From February 9th Open Meeting,” Jim Wright, RRC, <https://www.rrc.texas.gov/news/020921-wright-statement/#:~:text=%E2%80%9CFlaring%20is%20a%20necessary%20last,requests%20that%20go%20beyond%20that>
- 31 Ibid.
- 32 “OGI Information Sheet,” Earthworks, <https://www.dropbox.com/s/26aavazrvlp1a0/EW%20OGI%20Information%20Sheet%20%28051520%29.doc?dl=0>
- 33 “Global Annual Fossil CO2 Emissions, 2000-18,” Global Carbon Project, [https://folk.universitetetioslo.no/roberan/img/GCB2019/PNG/s21\\_2019\\_CO2growthbars\\_category.png](https://folk.universitetetioslo.no/roberan/img/GCB2019/PNG/s21_2019_CO2growthbars_category.png)
- 34 “New Data: Permian Oil & Gas Producers Releasing Methane at Three Times National Rate,” Matt Watson, Environmental Defense Fund, <https://www.edf.org/media/new-data-permian-oil-gas-producers-releasing-methane-three-times-national-rate>
- 35 “Helicopter Surveys Indicate Malfunctioning Flares in the Permian Basin are Releasing at Least 300,000 Metric Tons of Unburned Methane a Year,” Jon Goldstein and Colin Leyden, Environmental Defense Fund <https://www.edf.org/media/helicopter-surveys-indicate-malfunctioning-flares-permian-basin-are-releasing-least-300000>



- 36 “Gas flaring has dangerous side effects but these mitigation opportunities could be a win for everyone,” Climate and Clean Air Coalition, <https://www.ccacoalition.org/en/news/gas-flaring-has-dangerous-side-effects-these-mitigation-opportunities-could-be-win-everyone>
- 37 “Scientists discover a major cause of global warming -- ordinary soot,” Mark Shwartz, Stanford, <https://news.stanford.edu/pr/01/soot214.html>
- 38 “The Damaging Effects of Black Carbon,” Renee Cho, Earth Institute Columbia University <https://news.climate.columbia.edu/2016/03/22/the-damaging-effects-of-black-carbon/>
- 39 “Gas flaring has dangerous side effects but these mitigation opportunities could be a win for everyone,” Climate and Clean Air Coalition, <https://www.ccacoalition.org/en/news/gas-flaring-has-dangerous-side-effects-these-mitigation-opportunities-could-be-win-everyone>
- 40 “Health Effects of Black Carbon (2012),” Nicole AH Janssen, Miriam E Gerlofs-Nijland, Timo Lanki, Raimo O Salonen, Flemming Cassee, Gerard Hoek, Paul Fischer, Bert Brunekreef and Michal Krzyzanowski
- 41 “Flaring from Unconventional Oil and Gas Development and Birth Outcomes in the Eagle Ford Shale in South Texas Cushing,” Johnston, Franklin, Chau, and Vavra-Musser, National Institute of Health, <https://ehp.niehs.nih.gov/doi/10.1289/EHP6394>
- 42 “Living near gas flaring poses health risks for pregnant women and babies,” Leigh Hopper, University of Southern California, <https://news.usc.edu/173335/natural-gas-flaring-pregnant-women-babies-health-risks-usc-research/>
- 43 “Routine gas flaring is wasteful, polluting and undermeasured,” Gunner W. Schade, The Conversation, <https://theconversation.com/routine-gas-flaring-is-wasteful-polluting-and-undermeasured-139956>
- 44 “Missing the Dark: Health Effects of Light Pollution,” Ron Chepesiuk, National Institute of Health, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2627884/>
- 45 “About Us,” RRC, <https://www.rrc.state.tx.us/about-us/#:~:text=Our%20mission%20is%20to%20serve,for%20the%20benefit%20of%20Texans.>
- 46 “OUR CLIMATE TARGET: FREQUENTLY ASKED QUESTIONS,” Shell, <https://www.shell.com/energy-and-innovation/the-energy-future/what-is-shells-net-carbon-footprint-ambition/faq.html>
- 47 “Achieving Net Zero Emissions,” Shell, <https://reports.shell.com/sustainability-report/2020/achieving-net-zero-emissions/managing-greenhouse-gas-emissions/flaring.html>
- 48 “Reducing Flaring in Shale Oil and Gas,” Shell, <https://www.shell.com/energy-and-innovation/shale-oil-and-gas/social-and-environmental-responsibility/reducing-flaring-in-shale-oil-and-gas.html>
- 49 “SHELL AND BP RECOMMEND THE RAILROAD COMMISSION OF TEXAS (RRC) TO CONSIDER ELIMINATING ROUTINE FLARING IN TEXAS,” Shell, <https://www.shell.com/energy-and-innovation/shale-gas-and-oil/shell-and-bp-recommend-the-railroad-commission-of-texas--rrc-to.html>
- 50 “ExxonMobil announces emission reduction plans; expects to meet 2020 goals,” ExxonMobil, <https://corporate.exxonmobil.com/News/Newsroom/News-releases/2020/1214-ExxonMobil-announces-2025-emissions-reductions-expects-to-meet-2020-plan>
- 51 “Diamondback Reduces Permian Flaring 74%, Discounts Any Merger Talk,” Diamondback, <https://www.naturalgasintel.com/diamondback-reduces-permian-flaring-74-discounts-any-merger-talk/>
- 52 “Blue Ribbon Taskforce Unveils Plan To Curtail Flaring,” RRC, <https://www.rrc.texas.gov/news/061620a-christian-flaring-report/>
- 53 “Flaring Recommendations Best Practices,” Texas Methane and Flaring Coalition, <https://www.rrc.texas.gov/media/43tdav54/blue-ribbon-report-06-16-20.pdf>
- 54 “Proposed Flaring Matrix,” Texas Methane and Flaring Coalition, <https://docs.txoga.org/files/1966-tmfc-proposed-rrc-flaring-matrix.pdf>
- 55 “RRC Approves Revisions To Form R-32,” RRC, <https://www.rrc.state.tx.us/announcements/110420-rrc-approves-revisions-to-form-r-32/>
- 56 Climate Change 2014: Mitigation of Climate Change,” IPCC, <https://www.ipcc.ch/report/ar5/wg3/>
- 57 “Scientists discover a major cause of global warming -- ordinary soot,” Mark Shwartz, Stanford, <https://news.stanford.edu/pr/01/soot214.html>

