



Methane Abatement Rule Introduction

New Mexico Environment Department
Air Quality Bureau
October 8, 2026



Agenda

- ☐ Introductions
- ☐ Need for Methane Abatement
- ☐ Methane Emissions from Large Leaks
- ☐ Methane Emissions from Process Controllers
- ☐ Building on Existing State Policy
- ☐ Methane Super-Emitter Program
- ☐ Process Controller Requirements
- ☐ Key Takeaways
- ☐ Questions



Introductions

□ NMED:

- Michelle Miano, Environmental Protection Division Director
- Kerra Roudebush, Environmental Protection Compliance and Enforcement Bureau Chief
- Kelly Villanueva, Assistant General Counsel, Office of General Counsel
- Dr. Jessica Hejny, Control Strategies Manager, Air Quality Bureau
- Ken Miller, Sr. Environmental Scientist, Air Quality Bureau
- Alex Sanchez, Sr. Environmental Scientist, Air Quality Bureau

1

Need for Methane Abatement

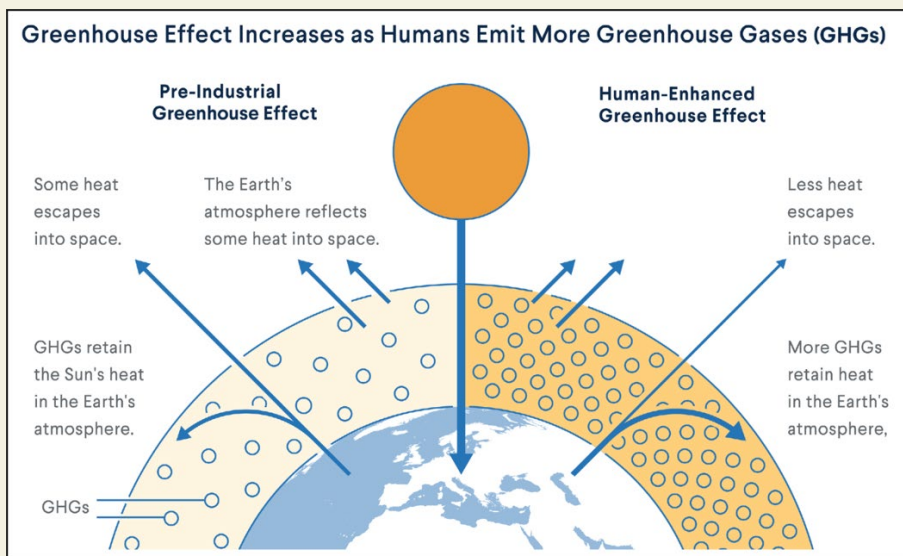


Methane

- **Methane** is a colorless, odorless gas that is the primary component in natural gas used by commercial and residential consumers
- Methane is a **potent greenhouse gas**

Properties of Methane

- Chemical Formula: **CH₄**
- Lifetime in Atmosphere: **12 years**
- Global Warming Potential
 - The impact of CH₄ is **82 times greater** than CO₂ over a **20-year** period
 - The impact of CH₄ is **29 times greater** than CO₂ over a **100-year** period



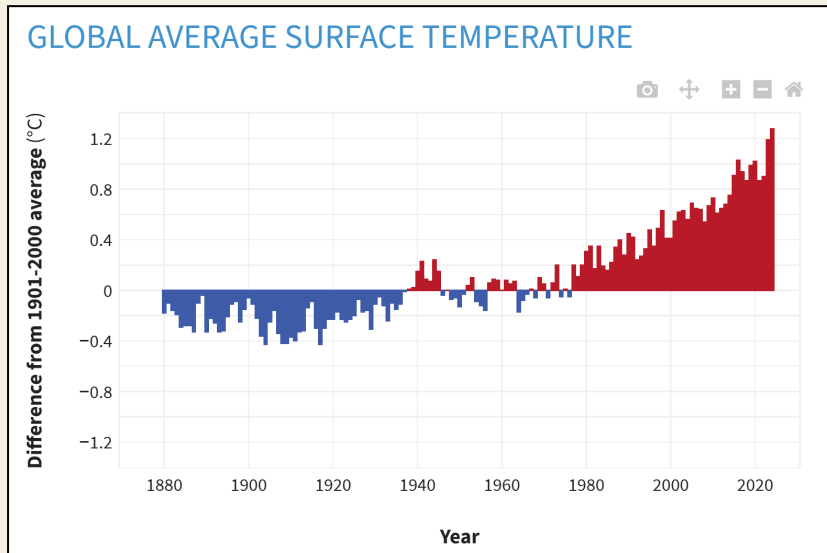
Source: <https://www.cfr.org/education/learn/reading/greenhouse-effect>

Greenhouse gases collect in the atmosphere and trap heat, raising the temperature of the planet



Climate Change Impacts

Global Temperature Increase



- Heat waves
- Drought and aridification
- Wildfires
- Sea level rise
- More extreme weather
- Forest die-off
- Dust storms
- Ocean warming
- Spread of mosquito-borne disease
- Lower crop yields
- Heat-related illness and death
- Water and food scarcity
- Loss of Ecosystems



Climate Change Impacts in NM

Climate change is a **global challenge** with **localized impacts**

New Mexico is already feeling the impacts of climate change acutely and will continue to experience increasingly severe climate impacts that affect the wellbeing of the region's people, ecosystems, economy, and ways of life

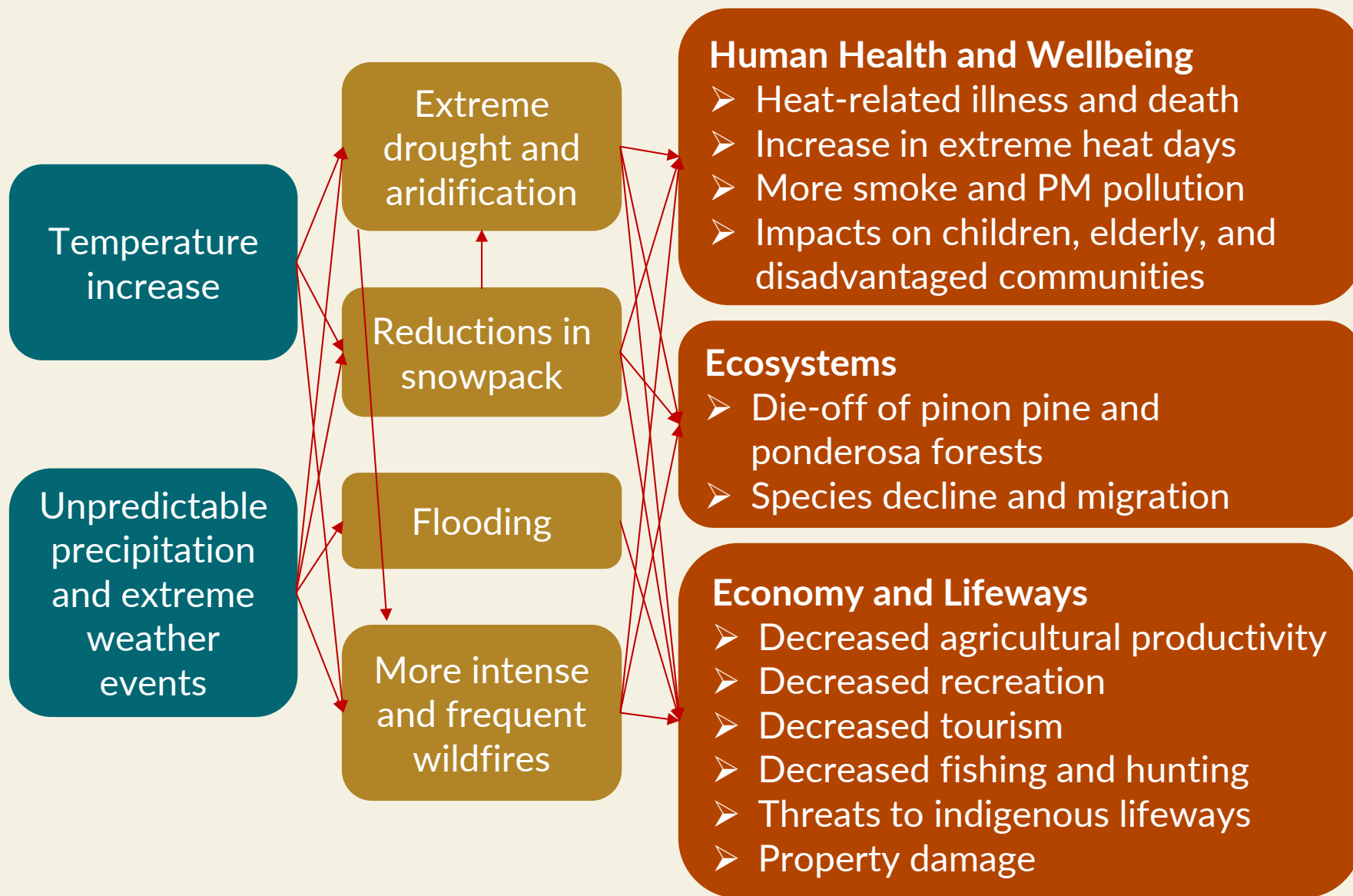
Climate Change in New Mexico Over the Next 50 Years: Impacts on Water Resources

- Climate models project an average temperature increase across the state of New Mexico of **between 5° and 7°F** over the next 50 years
- Coupled trends of increasing temperature with no clear increasing trend in precipitation lead to a confident projection of **increasingly arid conditions**, including **decreased soil moisture**, **stressed vegetation**, and **more severe droughts**
- **Snowpack and associated runoff** are projected to decline substantially by 2070, generating **diminished headwater streamflow**
- Warmer temperatures will also cause **lower river flows due** to increased evaporation

"The impacts of climate change on New Mexico's resources are, unfortunately, overwhelmingly negative."



Climate Change Impacts in NM





Declining Water Resources

In the arid Southwest, impacts on water resources are especially severe

Climate Change in New Mexico Over the Next 50 Years: Impacts on Water Resources

“The primary observed and projected impacts include **warmer temperatures**, **decreased water supply** (partly driven by thinner snowpacks and earlier spring melting), **lower soil moisture levels**, **increased frequency and intensity of wildfires**, and **increased competition and demand for scarce water resources**. These effects may be accentuated by **positive feedback cycles**, **tipping points**, or **compounding events**.”

Rio Grande in Albuquerque reaches historic dryness level

Officials release millions of gallons of water to help vegetation, wildlife

BY PATRICK LOHMANN - SEPTEMBER 2, 2026 9:41 AM



Source: Patrick Lohmann/Source NM <https://sourcenm.com/2026/09/02/rio-grande-in-albuquerque-reaches-historic-dryness-level/>



Extreme Drought, Storms, and Floods

Feds to impose new cuts on lower Colorado River states amid climate-fueled megadrought

New Mexico, Upper Basin states 'committed to continued good-faith discussions with our counterparts.'

BY CHASE WOODRUFF - JULY 31, 2026 3:46 PM

Source NM



Drought conditions worsen across New Mexico, West

BY PATRICK LOHMANN - AUGUST 21, 2026 1:00 PM

Source NM

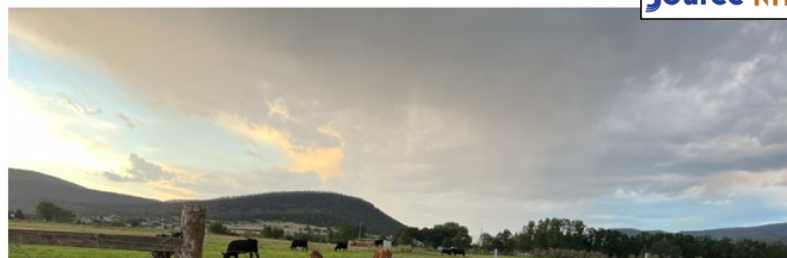


📷 The Elephant Butte Reservoir, pictured above on July 30, 2026, remains at 1.4% of its capacity, according to a new drought outlook from the National Oceanic and Atmospheric Administration. (Photo courtesy New Mexico Energy, Minerals and Natural Resources Department)

Water conservation program officials ask New Mexico lawmakers to boost funding amid drought

BY MATT MONDSCHNEIN - SEPTEMBER 28, 2026 4:00 PM

Source NM



New Mexico governor's office releases up to \$3.75M in emergency response to flooding

BY PATRICK LOHMANN - SEPTEMBER 30, 2026 4:07 PM

Source NM



📷 Widespread flooding in New Mexico prompted state officials on Sept. 30, 2026, to authorize \$3.75 million in emergency spending. Above: Flooding in Hondo in Lincoln County on Sept. 25, 2026. (Photo courtesy New Mexico National Guard)



Human Costs of Climate Change in NM

Source NM

Frijoles Fire grows to roughly 14,000 acres, creates smoke concerns

Internal report shows firefighters contending with limited resources, steep terrain

BY PATRICK LOHMANN - AUGUST 20, 2026 12:40 PM

Frijoles Fire reaches 11,300 acres, as officials warn of poor air quality in Nambe and Española

BY PATRICK LOHMANN - AUGUST 17, 2026 12:31 PM



The Frijoles Fire in the Pecos Wilderness grew to more than 11,300 acres as of Aug. 17, 2026, according to Santa Fe National Forest officials. (Photo courtesy of Inciweb)

Heat-related illnesses on rise in New Mexico amid record-high temperatures

BY PATRICK LOHMANN - AUGUST 7, 2026 4:00 PM

Frijoles Fire officials report crew death as fire reaches 45% containment

BY PATRICK LOHMANN - AUGUST 24, 2026 11:31 AM

New Mexico acequia advocates renew effort for disaster funding amid floods, fires and drought

Natural disasters continue to plague acequias, which have few options for meaningful funding, advocate says

BY PATRICK LOHMANN - JULY 17, 2026 12:55 PM

- Dangerous air quality caused by wildfire smoke
- Heat-driven illness and death
- Firefighter death and injury
- Threats to acequias and New Mexican lifeways

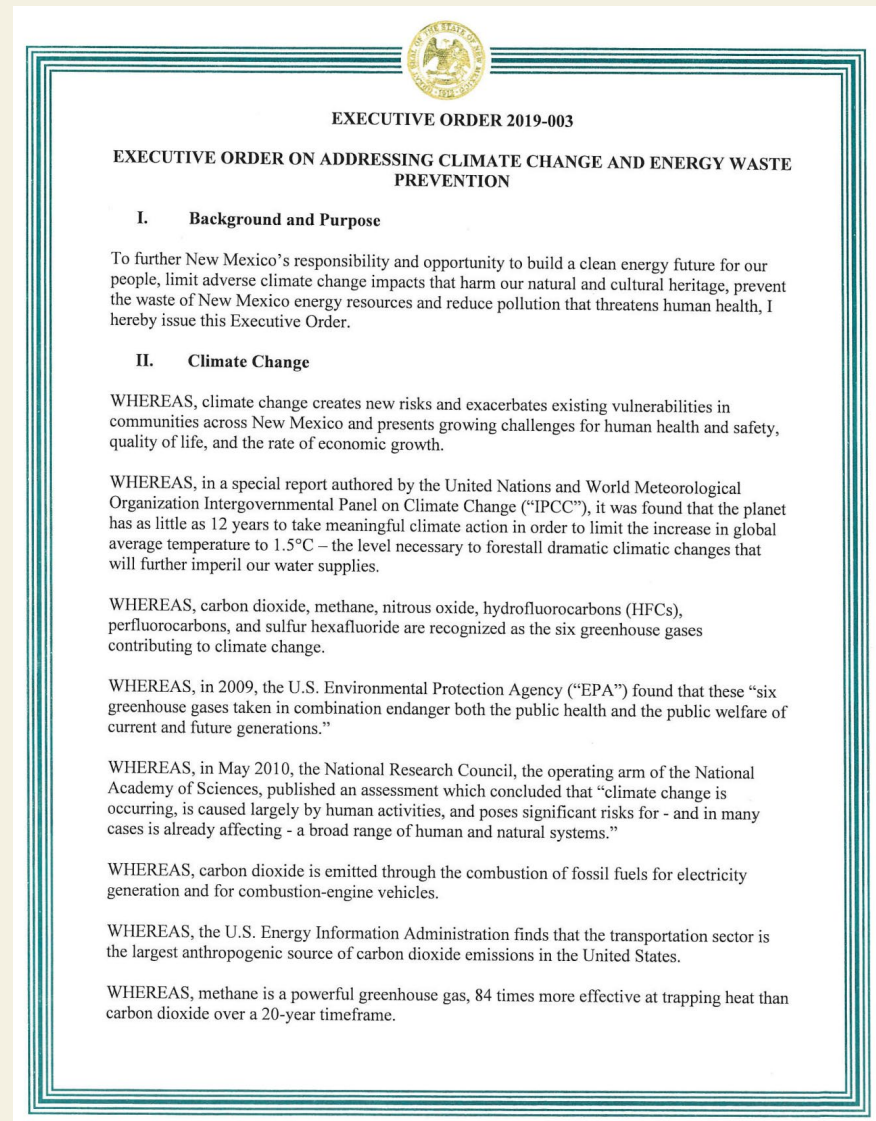


Executive Order 2019-003

In 2019, Governor Michelle Lujan Grisham issued an **Executive Order** requiring the state to reduce greenhouse gas emissions by **45% by 2030** (from the 2005 baseline)



The State adopted a **Climate Action Plan** as a guide to reducing greenhouse gas emissions to meet this target



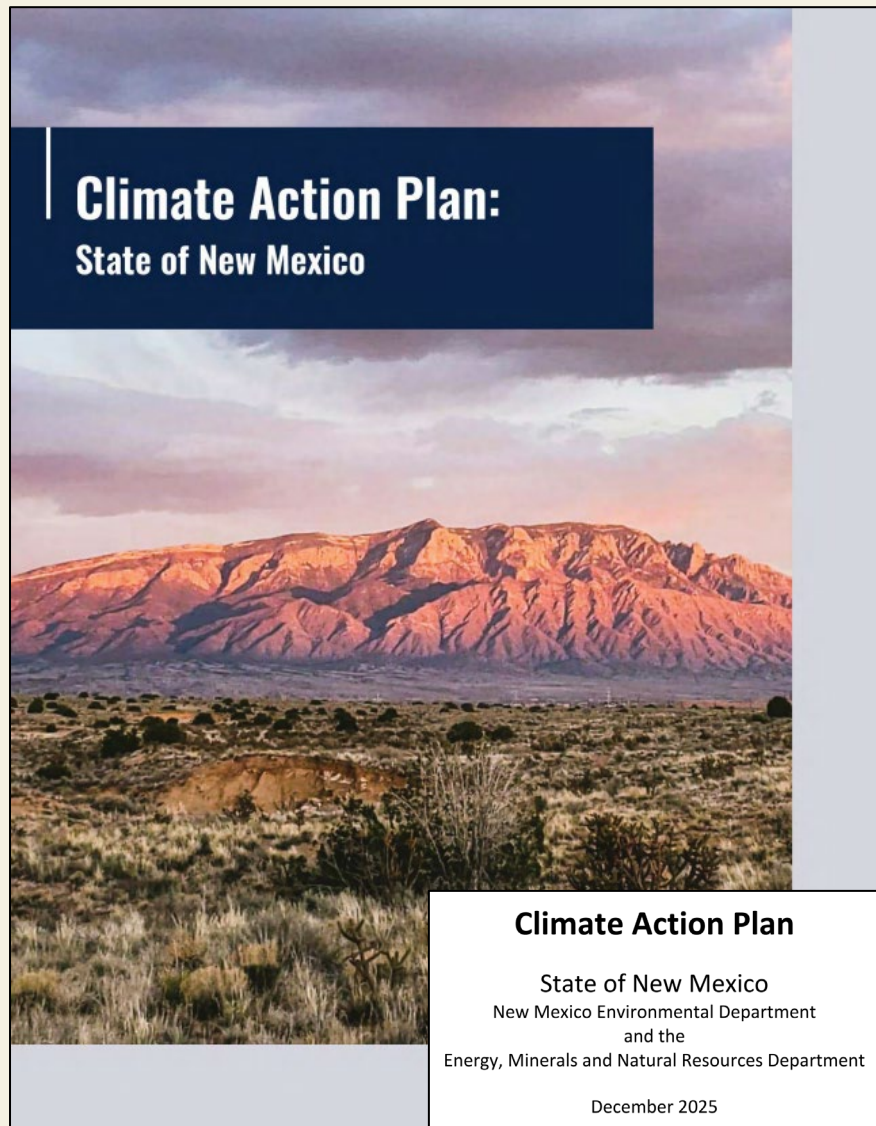


Climate Action Plan

The **Climate Action Plan** contains emissions reduction **measures** for every economic sector



Focus on the **Industry** Sector, which includes the **Oil and Gas** Sector

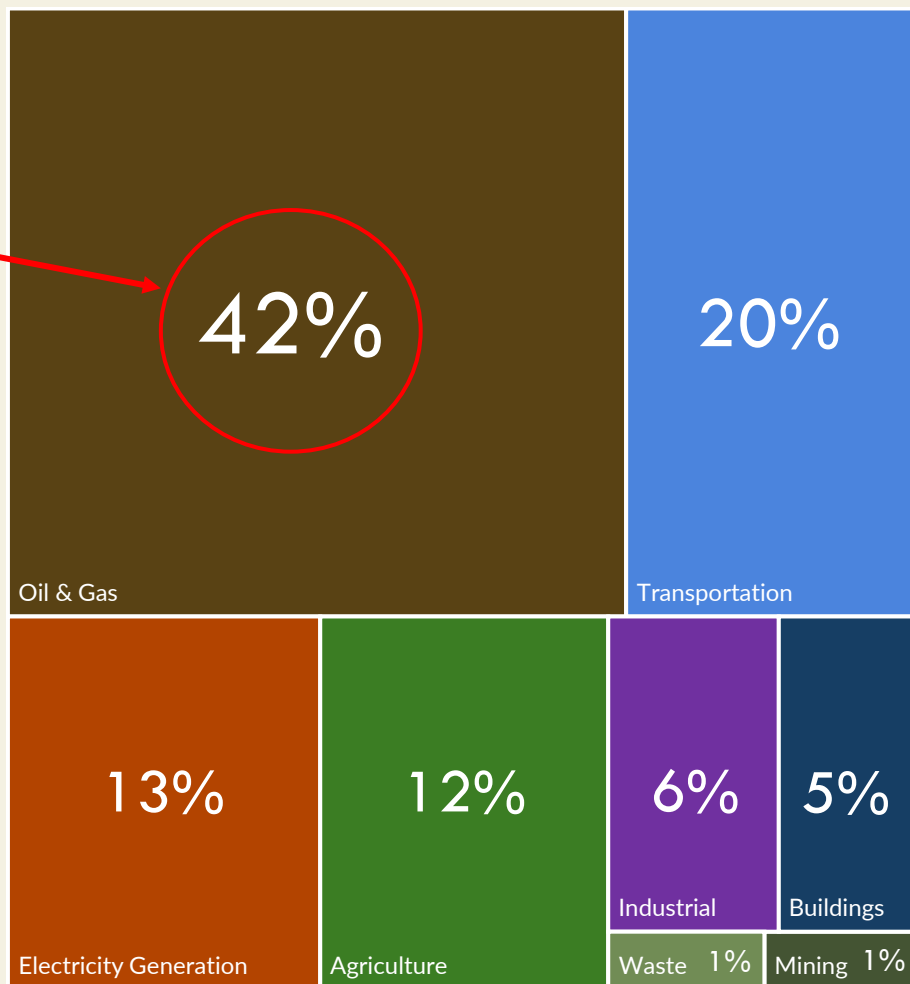




NM 2021 GHG Emissions by Sector

The **Oil and Gas Sector** in NM accounts for **almost half** of the state's greenhouse gas emissions

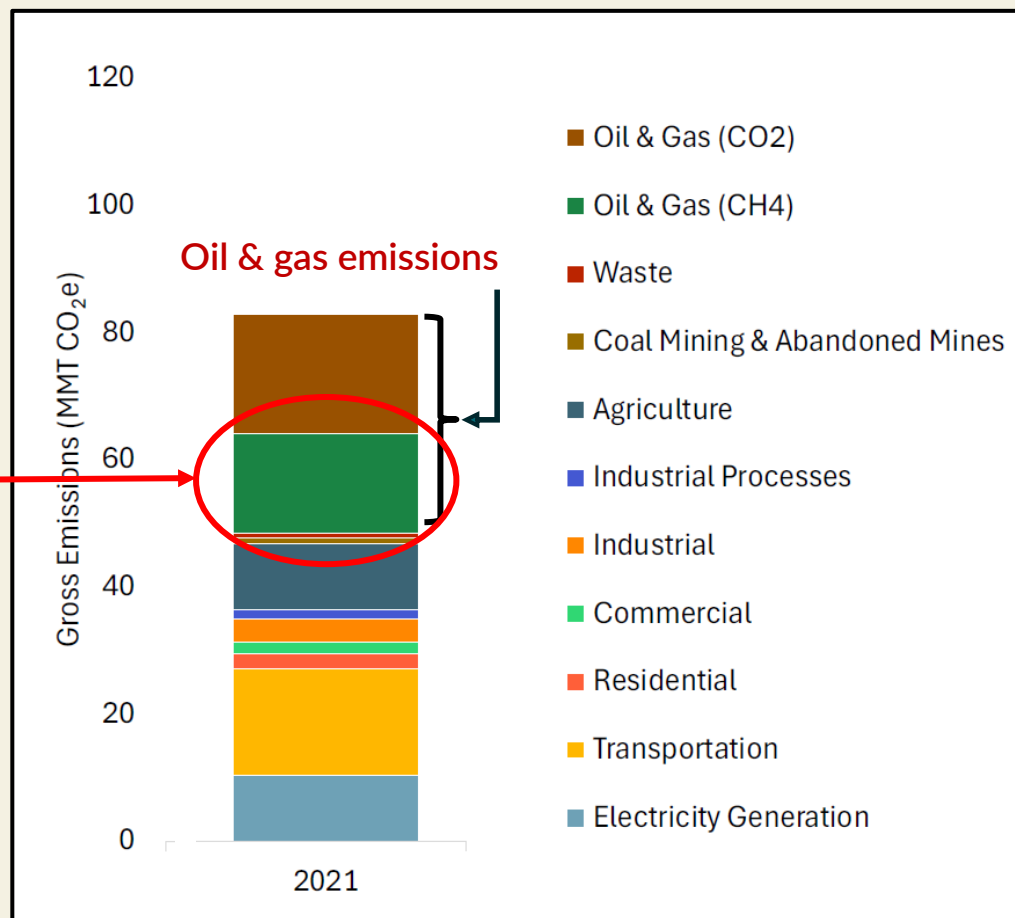
2021 NM Relative GHG Emissions By Sector





Industry Sector Emissions

Methane Emissions from the Oil and Gas Sector



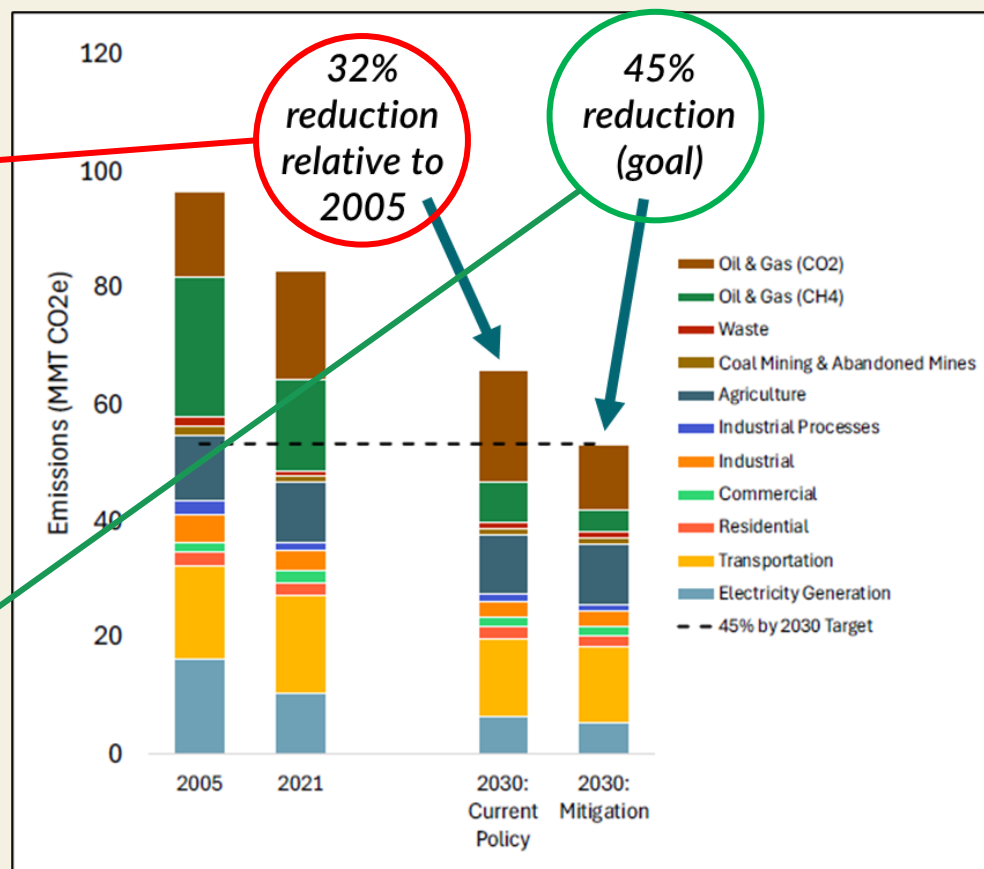
Source: [New Mexico Greenhouse Gas Emissions Inventory and Forecast: 2021 Emissions Inventory and 2030–2050 Forecast, December 2024 \(E3\)](#)



Emissions Reductions

Existing policies are **insufficient** to meet the target set in Executive Order 2019-003

Additional measures are needed to reduce emissions, including **methane reduction measures** for the Oil and Gas Sector

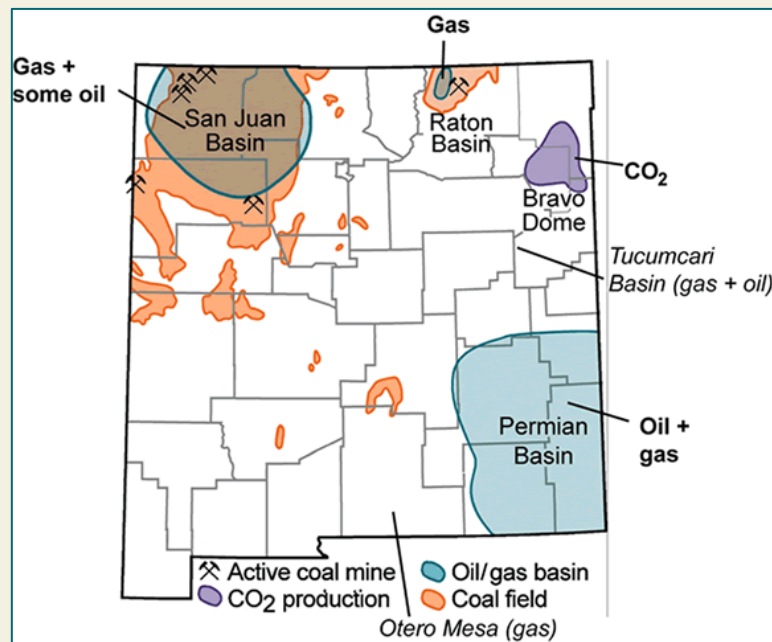


Source: *New Mexico Greenhouse Gas Emissions Inventory and Forecast: 2021 Emissions Inventory and 2030–2050 Forecast, December 2024 (E3)*



Oil and Gas Production in NM

- New Mexico was responsible for **16%** of US crude oil production and **9%** of US natural gas production in 2025
 - ▣ NM is currently the second largest producer of oil in the country
- The **Permian** and **San Juan Basins** are the most productive oil and gas regions in New Mexico



How is Methane emitted in the Oil and Gas Sector?

- Venting and flaring
- Leaks during extraction, processing, and distribution of oil and gas
- Use of methane to power process controllers and pumps
- Incomplete combustion of methane (methane slip)
- Leaking wells

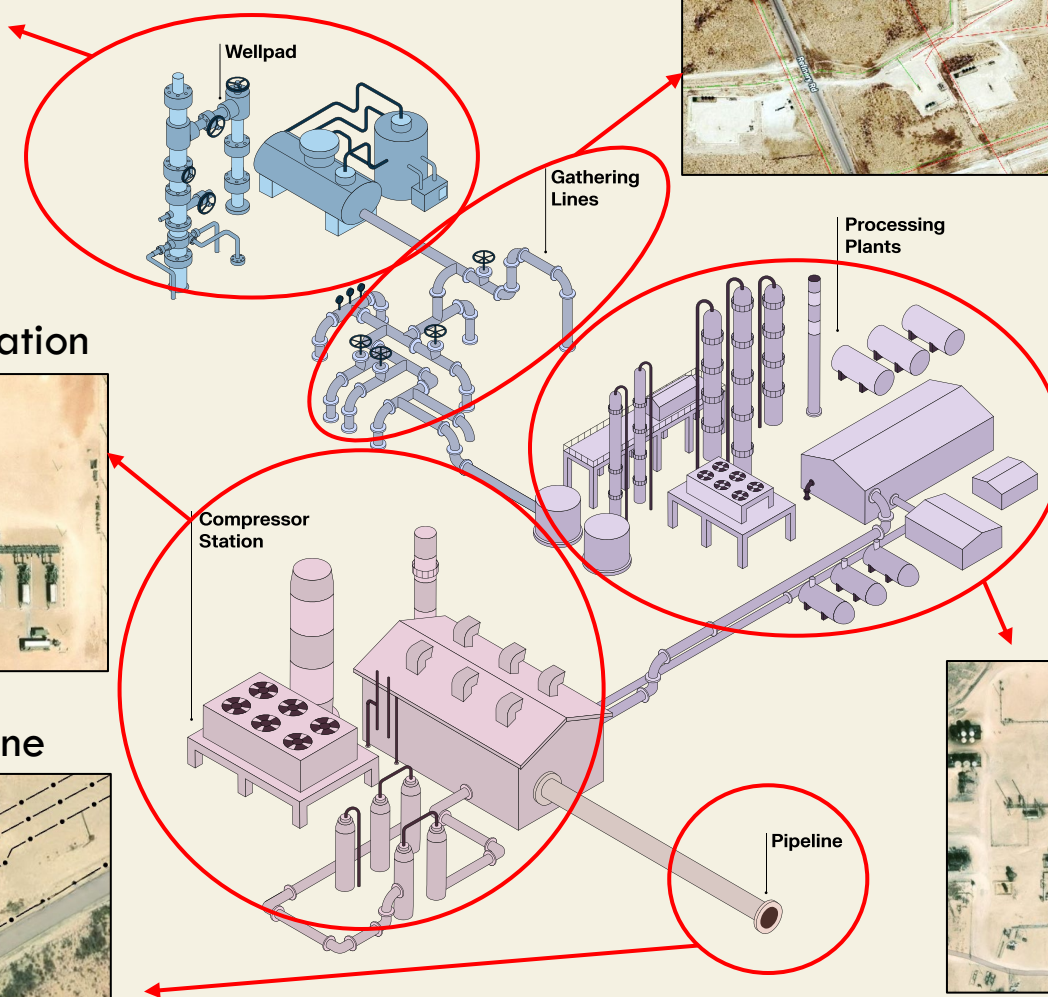


Oil and Gas Infrastructure

Well site



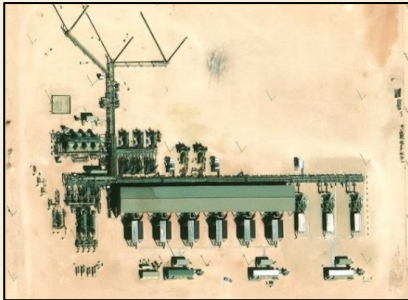
The gas supply chain



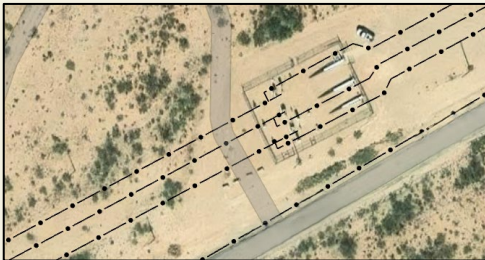
Gathering Pipelines



Compressor Station



Transmission Pipeline



Gas Processing Plant





Methane Leaks

Leaks can occur at any **juncture** in infrastructure or due to **malfunctioning equipment**

Well site



Gathering Pipelines



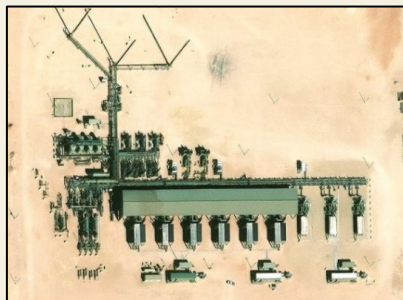
Tank Battery



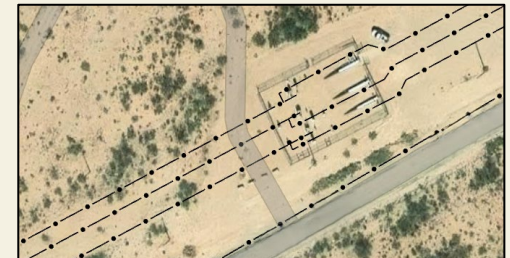
Gas Processing Plant



Compressor Station



Transmission Pipeline





Oil and Gas Development

Permian Basin Aerial Photo

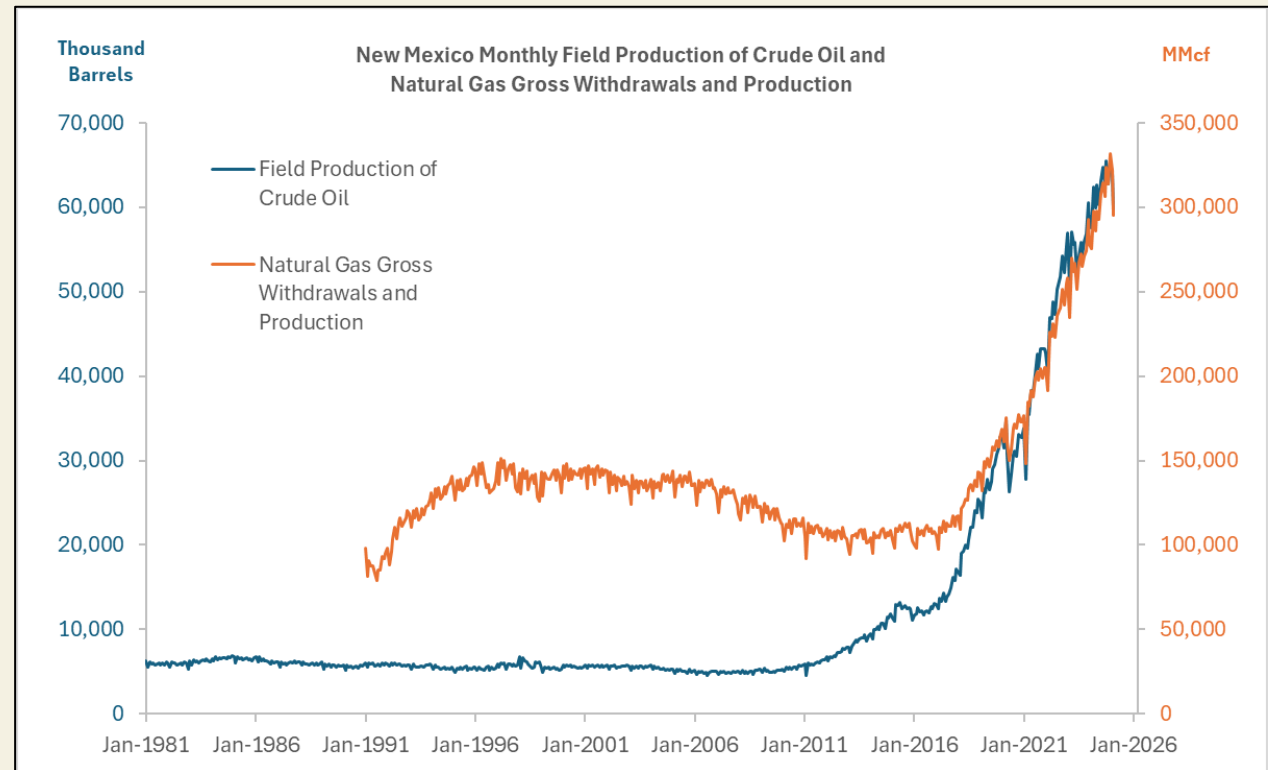




Increase in Oil & Gas Production

Production increase
2011-2024:

- **Oil** production increased **tenfold**
- **Natural gas** production more than **doubled**



More production → More Infrastructure → More potential sources of leaks

2

Methane Emissions from Large Leaks

Policy Proposal: Super-Emitter Program

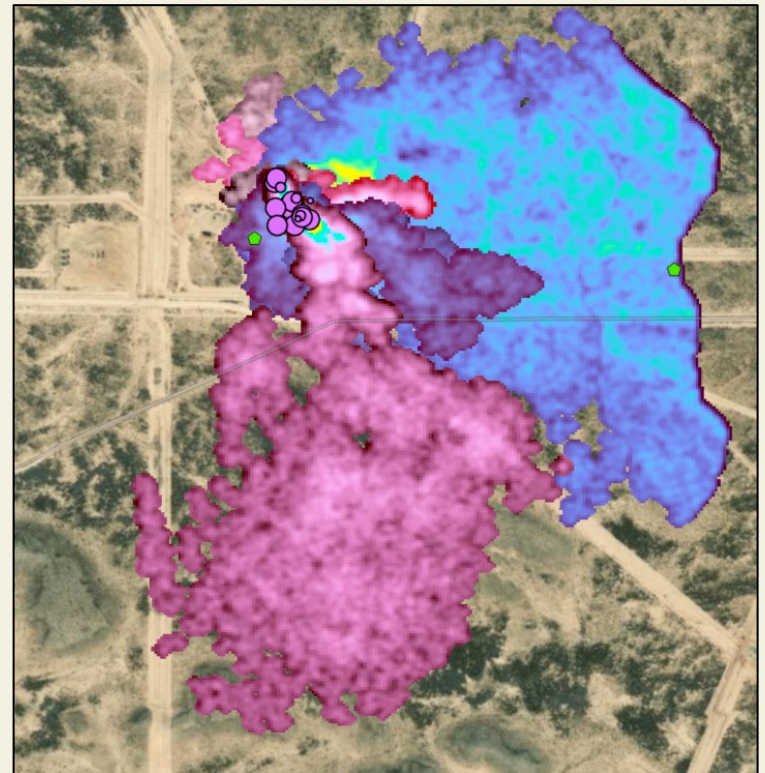


Remote Methane Detection

How are large methane leaks remotely detected?

- Through remote-sensing technology
 - ▣ Airplane
 - ▣ Satellite
- Methane interacts with specific wavelengths of light
- Specialized sensors can detect the signature of methane and quantify the emission rate of the detected methane plume
- Used widely by industry operators and governments to monitor for methane leaks

Remotely-sensed methane plumes





Emission Rates and Aggregate Emissions

The **emission rate** is the rate at which methane is escaping at the leak site, measured in kilograms of methane per hour (kg/hr)

- ▣ A kilogram is 2.2 pounds

To determine **aggregate emissions**, we need to know the emission rate and the duration of the leak

Carbon Mapper routinely detects emission rates in the Permian Basin as high as 1000 kg/hr and has detected plumes above 5000 kg/hr

$$\text{Aggregate Emissions} = \text{Emission Rate} \times \text{Duration of Leak}$$



Emissions from Large Leaks

- Research has shown that **large leaks** from oil and gas infrastructure **significantly contribute** to methane emissions
- **Carbon Mapper research:**
 - A 2024 remote-sensing campaign found that **large methane leaks** made up **approximately 50%** of the total methane emissions observed during the 13-day study
 - When compared to historical data since 2019, researchers found that **18 facilities** were **ultra-persistent sources of large leaks**



Duration of super-emitting oil and gas methane sources

[Daniel H. Cusworth](#) , [Daniel M. Bon](#), [Daniel J. Varon](#), [Alana K. Ayasse](#), [Gregory P. Asner](#), [Joseph Heckler](#), [Evan D. Sherwin](#), [Sebastien C. Biraud](#) & [Riley M. Duren](#)

[Nature Communications](#) **17**, Article number: 2011 (2026) | [Cite this article](#)

Abstract

The duration of super-emitting events ($>100 \text{ kg h}^{-1}$) in oil and gas basins remains insufficiently understood but is key for reporting programs and mitigation strategies. Carbon Mapper conducted aerial surveys from April 30 to May 17, 2024, over the New Mexico Permian Basin, covering 276,000 wells, 1100 compressor stations, 175 gas processing plants, and 27,000 km of pipeline. We find over 500 super-emitting sources with 300 of these sources observed repeatedly across multiple days. We quantify total super emissions by integrating individual events with observationally constrained event durations ($5.98\text{--}14.7 \text{ Gg CH}_4$) and compare to total emissions derived from basin average snapshots ($12.7 \pm 0.92 \text{ Gg CH}_4$). This gap between emission estimates is reconciled through assumptions on missed detections, characteristic event duration, detection frequency, and diurnal variability. Emission events generally lasted for at least 2 hours, and a small subset of sources (18 total), persistently emitted throughout the entire campaign, representing a near-term opportunity for mitigation. When compared to regional flux estimates derived from independent observations, we estimate super-emitters to contribute approximately 50% (37–73%) towards total emissions. Frequent wide-area monitoring is crucial for capturing rare super-emitter events that, together with other emission sources, drive basin-level variability and emission intensity.

Extrapolated over five years, emissions from these ultra-persistent sources equal the emissions from 1.7 million passenger vehicles

Methane Emissions from Process Controllers

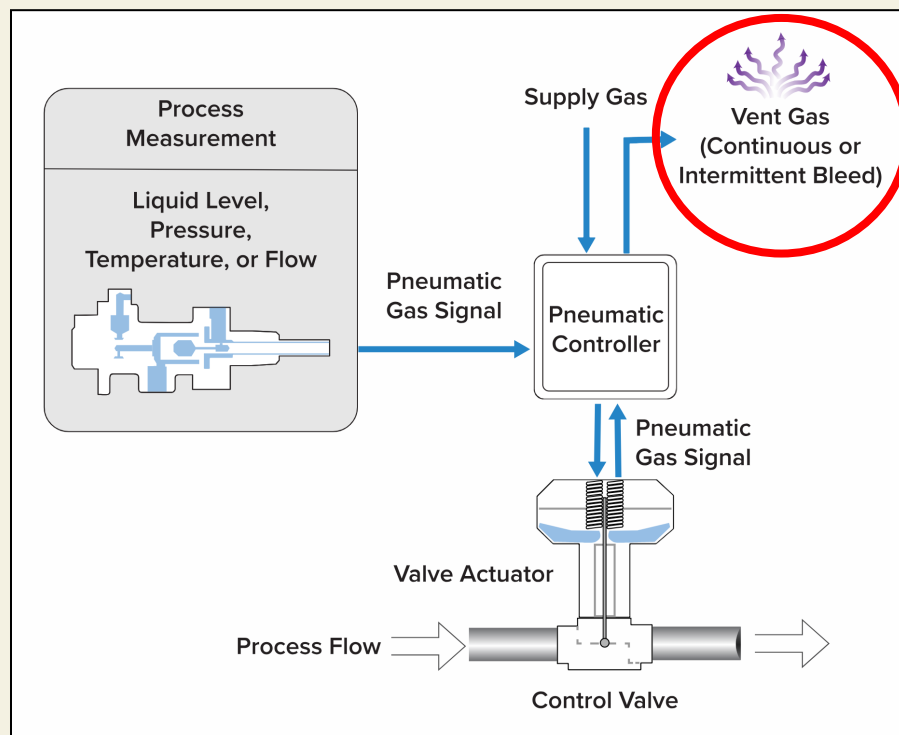
**Policy Proposal: Requirement for 100%
Non-Emitting Controllers**



Methane Emissions from Process Controllers

- **Process controllers** are used to regulate liquid level, pressure, temperature, or flow
- They are commonly powered by **natural gas**, which is **vented** in the process
- These emissions can be eliminated by **shifting to non-emitting controllers** or **capturing the methane** that is emitted

Natural Gas-Powered Process Controller



Source: <https://www.epa.gov/natural-gas-star-program/pneumatic-controllers>



What has the state done already?

- **Ozone Precursor Rule (2022) (20.2.50 NMAC)**
 - ▣ Includes requirements to transition to non-emitting process controllers with staggered deadlines of 2024, 2027, and 2030

Table 1 – WELL SITES, STANDALONE TANK BATTERIES, GATHERING AND BOOSTING STATIONS

Total Historic Percentage of Non-Emitting Controllers	Total Required Percentage of Non-Emitting Controllers by January 1, 2024	Total Required Percentage of Non-Emitting Controllers by January 1, 2027	Total Required Percentage of Non-Emitting Controllers by January 1, 2030
> 75%	80%	85%	90%
> 60-75%	80%	85%	90%
> 40-60%	65%	70%	80%
> 20-40%	45%	70%	80%
0-20%	25%	65%	80%

Table 2 – TRANSMISSION COMPRESSOR STATIONS AND GAS PROCESSING PLANTS

Total Historic Percentage of Non-Emitting Controllers	Total Required Percentage of Non-Emitting Controllers by January 1, 2024	Total Required Percentage of Non-Emitting Controllers by January 1, 2027	Total Required Percentage of Non-Emitting Controllers by January 1, 2030
> 75%	80%	95%	98%
> 60-75%	80%	95%	98%
> 40-60%	65%	95%	98%
> 20-40%	50%	95%	98%
0-20%	35%	95%	98%



Why Additional Action is Needed

- There are an estimated **823,000** process controllers located at **oil** production facilities and **694,000** process controllers located at **natural gas** production facilities nationwide, **many powered by natural gas**
- Emissions from individual natural gas-driven process controllers may be small, but **in aggregate**, emissions from these devices represent a **significant portion of total methane emissions from the oil and gas industry**

In 2021, there were approximately:

- **1,015 kilotons** of methane emissions from natural gas-driven process controllers at **oil** production facilities and
- **1,002 kilotons** of methane emissions from such controllers at **natural gas** production facilities nationwide

These aggregate emissions represent:

- **57%** of total petroleum system methane emissions and
- **15%** of total natural gas system methane emissions

4

Existing State Policy

Why are additional regulations needed?



Current State Policy

- **Methane Waste Rule (2021) (19.15.27 and 19.15.28 NMAC)**
 - ▣ Administered by EMNRD Oil Conservation Division
 - ▣ Prohibits routine venting and flaring of methane

- **Ozone Precursor Rule (2022) (20.2.50 NMAC)**
 - ▣ Administered by NMED
 - ▣ Requirement for reduction of ozone precursors (NO_x and VOCs)
 - ▣ Includes requirement for periodic leak detection and repair (LDAR)
 - ▣ Includes requirement to reduce use of emitting process controllers



Building on Current Policy

- ❑ These rules have reduced methane emissions
- ❑ However, additional action is necessary to reduce methane emissions further to meet statewide greenhouse gas reduction targets
- ❑ **Methane Waste Rule:**
 - ▣ Reducing emissions directly through prohibition on routine methane venting and flaring, which could be the source of super-emitter events
 - ▣ **BUT**, it does not address the sources of other methane emissions in the sector
 - Methane leaks
 - Emissions from natural-gas driven process controllers



Building on Current Policy

□ Ozone Precursor Rule:

- Indirectly reduces methane emissions through regulation of volatile organic compound (VOC) emissions
- Requires routine leak detection and repair (LDAR), which can catch leaks that cause super-emitter events
- **BUT**, the LDAR required is not frequent enough to catch all large leaks, so a super-emitter event could go undetected and the leak unrepaired for three months
 - The current rule proposal closes this gap by creating a Super-Emitter Program to continuously monitor for large leaks and require their investigation and repair
- **AND**, the process controller requirements do not go to 100%, so we will still see methane emissions from process controllers with full compliance
 - The current rule proposal closes this gap by requiring 100% non-emitting controllers

5

Methane Super-Emitter Program



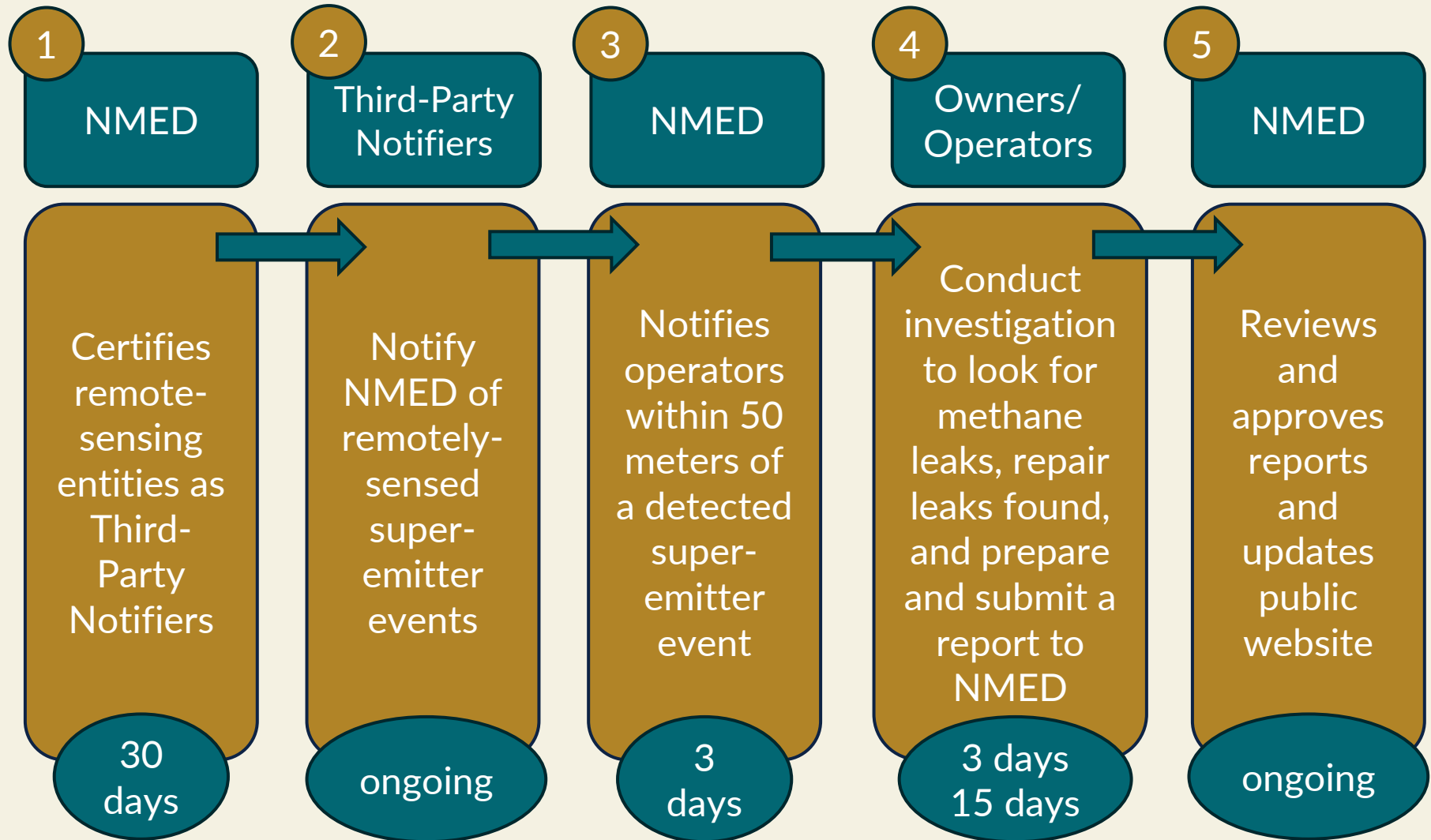
Super-Emitter Program Overview

□ Key Provisions:

- **Methane super-emitter event** = emission rate equal to or greater than **50 kg/hr**
- NMED certifies **Third-Party Notifiers**, who will conduct the remote sensing of methane emissions
- Upon receiving a report of a super-emitter event, NMED will **notify the owner or operator** of any source or sources located **within 50 meters** of the detected event
- The owner or operator must conduct an **investigation**, **repair any leaks** of methane found, and submit a **report** to NMED



Super-Emitter Program Overview





Super-Emitter Program Benefits

- **Significantly reduce** methane emissions statewide
 - Estimates use a median emission rate of 253 kg/hr
 - 555,137 kilograms = 555.137 metric tons
 - Equivalent annual car CO₂ emissions
- The potential maximum emissions from **ongoing leaks** highlight the importance of **catching leaks early** and **repairing** them
- Catching leaks early saves operators **revenue** from lost natural gas product

Super-Emitter Duration	Aggregate Methane Emissions (kilograms)	Annual Emissions from passenger vehicles (CO ₂ e)
15 min	63	1
30 min	127	2
1 hour	253	5
3 hours	760	14
5 hours	1,267	23
12 hours	3,042	55
24 hours	6,084	109
48 hours	12,167	218
72 hours	18,251	327
7 days	42,586	764
14 days	92,776	1,664
21 days	127,757	2,291
3 months	555,137	9,956



Super-Emitter Program Costs

- **NMED** will bear the costs associated with:
 - ▣ certifying Third-Party Notifiers
 - ▣ contracting with Third-Party Notifiers for remote sensing
 - ▣ notifying owners/operators of detected super-emitter events
 - ▣ reviewing Super-Emitter Event Reports
 - ▣ maintaining a public website for the program
 - ▣ enforcing the rule
- **Owners/operators** will bear the costs associated with:
 - ▣ conducting investigations
 - ▣ completing repairs
 - ▣ documenting actions in Super-Emitter Event Reports
 - ▣ recordkeeping

6

Process Controller Requirements



Pneumatic Controller Requirements

- Starting **January 1, 2031**, all **existing** natural gas-driven process controllers in the state of New Mexico will be subject to a new **zero methane emissions** standard
- Builds on the requirements of the Ozone Precursor Rule, which requires most **existing** process controllers to be non-emitting by **January 1, 2030**
- Closes the **remaining regulatory gap** of **2-20% of controllers** that are emitting
- **New** process controllers are already subject to a zero methane emissions standard under the Ozone Precursor Rule and are **not affected**



Process Controller Provision Benefits

- **Complete elimination** in New Mexico of what has historically been a significant source of methane emissions from the oil and gas industry
- **Savings for owners/operators** by transitioning to non-gas-powered controllers
 - ▣ Potentially lower operation and maintenance costs
 - ▣ Natural gas that would otherwise be used to power process controllers can be sold instead



Process Controller Provision Costs

- **Facility compliance costs** will vary widely depending on the number of existing natural gas-driven process controllers and the chosen compliance method
- EPA net annual cost estimates range from approximately **\$2,500 to \$87,000 per year per facility**
- These estimates do not account for **progress already made under the Ozone Precursor Rule** or the **value of the natural gas saved**, which could more than offset costs in some instances

7

Key Takeaways



Key Takeaways

- ❑ **Methane emissions** are driving global **climate change**
- ❑ Climate change is **already significantly affecting** human health, ecosystems, the economy, and livelihoods in New Mexico
- ❑ The state has an **obligation** to **reduce greenhouse gas emissions** to meet **targets** set in Executive Order 2019-003
- ❑ The rule has **two provisions**:
 - Establishing a **Super-Emitter Program** designed to identify large methane leaks as quickly as possible so they can be repaired
 - Requiring that all **process controllers** in the oil and gas sector be **non-emitting** by January 1, 2031



Key Takeaways

- This rule will:
 - ▣ **protect** the people, ecosystems, and economy of New Mexico,
 - ▣ **save** owners/operators **revenue** lost through methane leaks,
 - ▣ position the state to **lead** in climate action, and
 - ▣ make our communities more **resilient**





Questions?

