



Mitigating Methane from Oil and Gas

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Why Prioritize Methane?

Methane is a super potent greenhouse gas that the UN reports is responsible for roughly **30 percent of global warming** since preindustrial times — and it has an outsized near-term warming impact compared with CO₂.

We will **not achieve a 1.5°C future** without addressing methane, but climate science suggests that we are **moving in the wrong direction**.

Methane emissions have grown rapidly since 2007, and recently the National Oceanic and Atmospheric Administration reported **record levels of atmospheric methane** for the second year in a row.

Methane from Oil and Gas

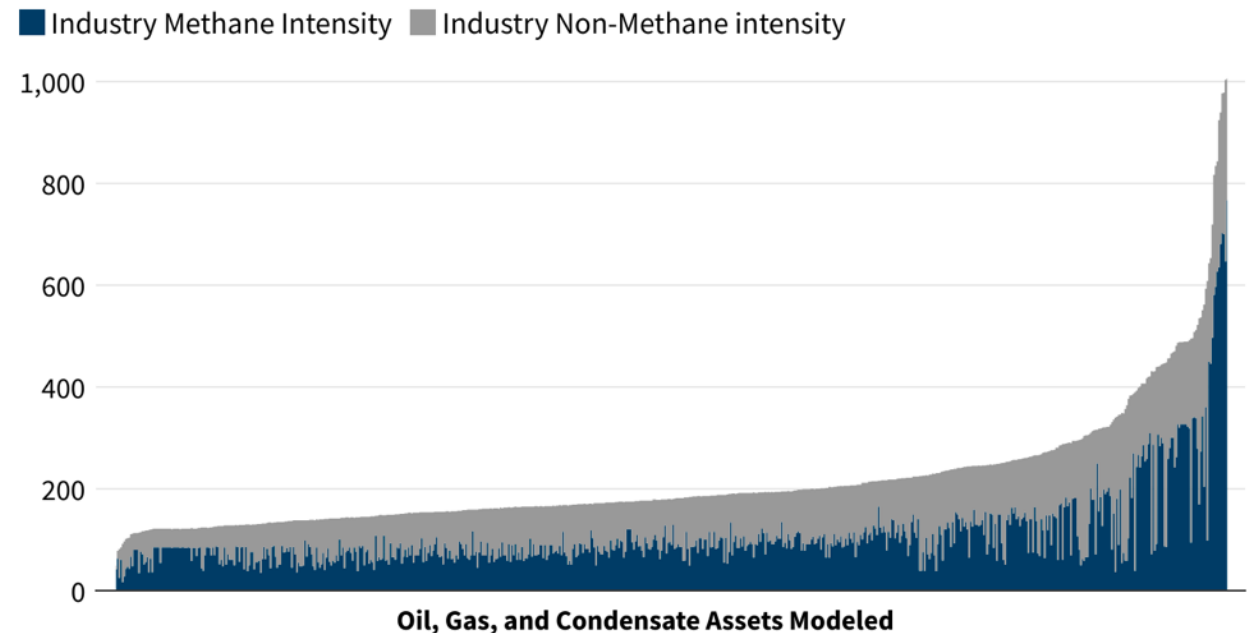
- RMI is delivering **emissions transparency**: Modeling 70% of global oil and gas assets
- Key finding: **methane contributes one-half** of the industry's emissions.
- Year ahead: **Model 100%** assets and **incorporate new satellite** and other intermittent measurements on methane emissions.
- RMI is launching a new OCI+ flaring tool that will **highlight EJ** in fence-line communities



Welcome Map Total Emissions Supply Chain Analysis

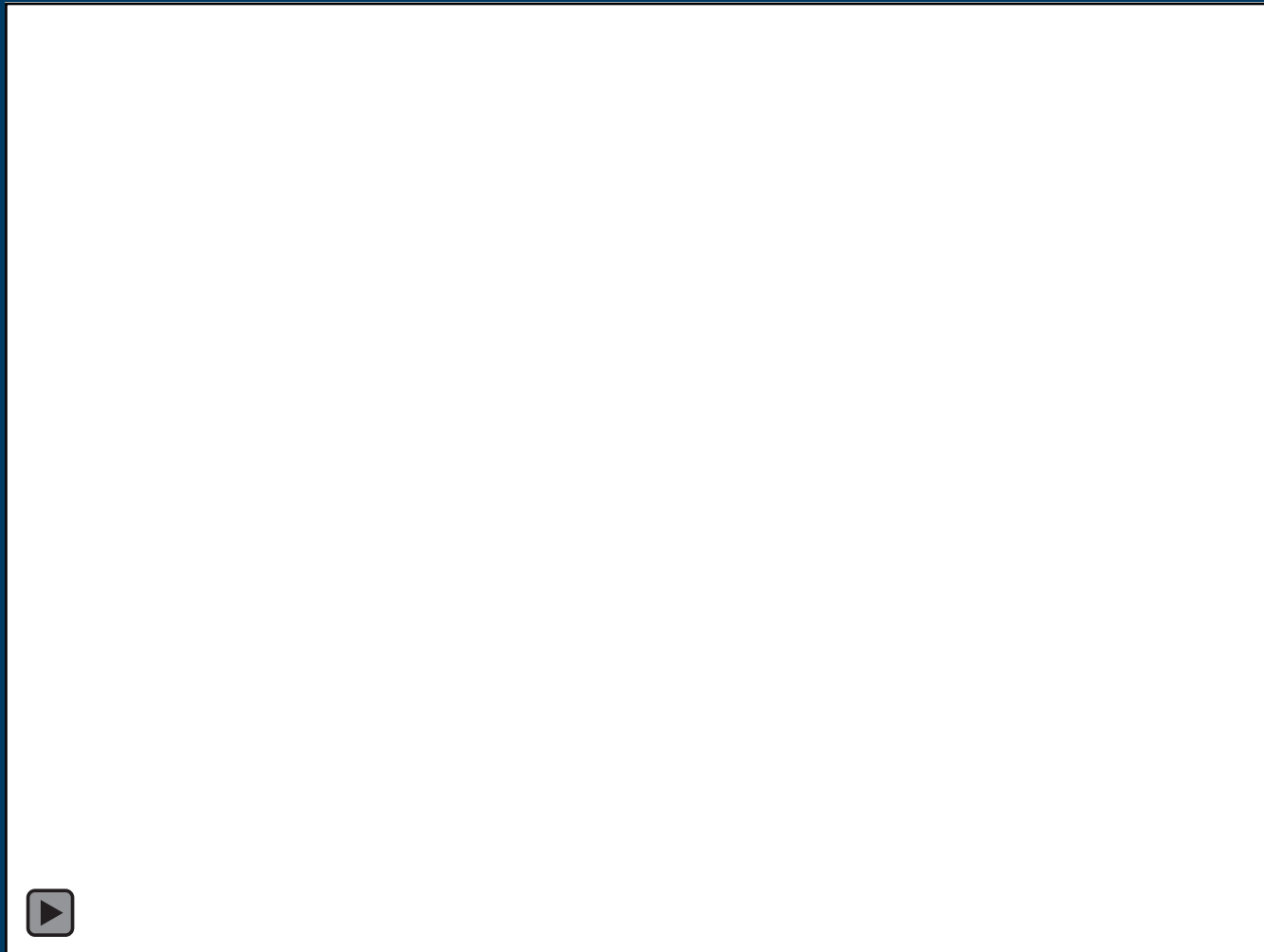
Methane Plays a Large Role in Driving Industry Emissions

GHG Emissions Intensity (kg CO₂e/boe)



Ongoing Measurement is Required

Methane Leakage Rates Matter



Gas is made up of mostly methane, which is prone to leaks, especially when co-produced with oil.

Gas Composition Matters

Wide ranging gas composition through the supply chain

Natural Gas Main Components	Volume %
Methane	<70 - >90%
Natural Gas Liquids	5-15%
Oxygen & Nitrogen	1-5%
CO ₂ & H ₂ S	5-40%
Benzene	1-10%

Air Toxins in Gas Study Samples*	Concentration (ppm _v)
Benzene	165
Toluene	161
Ethylbenzene	13
Xylene(s)	75

HARVARD STUDY ON GAS TOXICITY, 2022

[HTTPS://PUBS.ACS.ORG/DOI/10.1021/ACS.EST.1C08298](https://pubs.acs.org/doi/10.1021/acs.est.1c08298)

*RESIDENTIAL GAS SAMPLES, WHICH MAY HAVE FEWER TOXINS THAN INDUSTRIAL GAS


Targeting Super-Emitters

RMI is part of the Carbon Mapper consortium with CARB

Climate, air quality, public health and environmental justice issues

California Oil & Gas x 18 Plumes 1 Sources **CARBON MAPPER**

Show filters

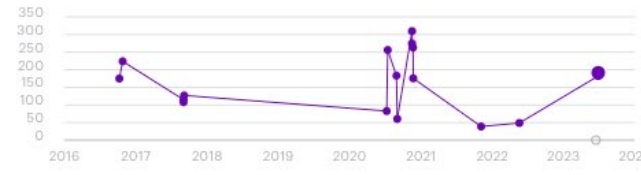


Bakersfield, California, US

Open in Google Maps

PLUMES SUPPORTING DETAILS

100 +/- 45 Source Emission Rate (kg CH4/hr)
60 % Source Persistence
18 Number of Plumes

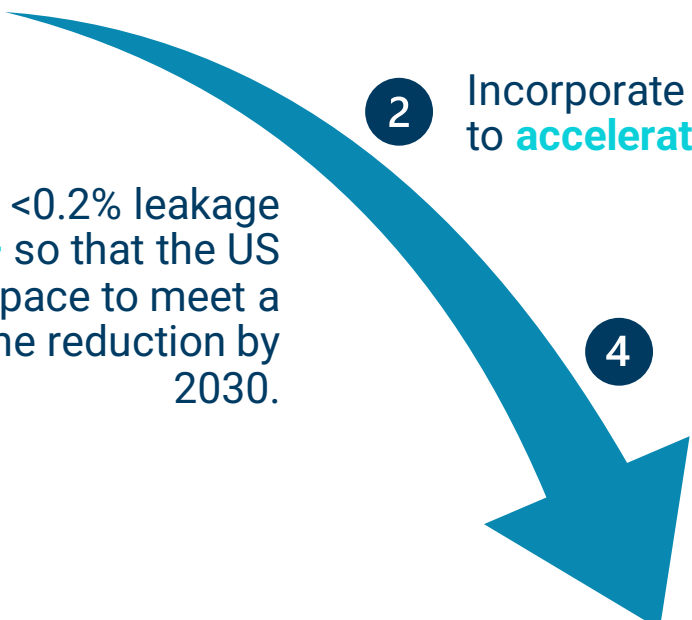


Date	Time (UTC)	Emission Rate (kg CH4/hr)
JUN 28 2023	19:04:35	191 +/-136
JUN 28 2023	16:34:22	182 +/-134

Sort by Acquired Date Include Null Detects

Oil and Gas Methane Initiative

California Goals

- 1 Quantify super emitters and marginal wells and synthesize this data into OCI+ modeling for **visible and actionable climate intelligence**.
 - 2 Incorporate methane measurement, modeling, and mitigation to **accelerate California policies and regulations**.
 - 3 Tip the market for gas with <0.2% leakage – **starting in California** – so that the US can put the world on pace to meet a durable global methane reduction by 2030.
 - 4 Motivate investors and industry (including state-owned companies) to **zero out their methane leaks**.
 - 5 **Slash oil and gas methane emissions ~80% by 2030, close marginal wells, and eliminate flaring.**
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Next Steps on Methane

California Leadership on Oil and Gas

- Openly and verifiably certify California low methane gas supplies at **<0.2% methane intensity**.
- Create first-of-its-kind low methane gas **Buyer-Seller Alliance** with Colorado and other states.
- Ensure public funding remains intact to **expand and make aerial and satellite observational data** widely available and used in future policy making.
- Institute an oil and gas **methane waste fee** that applies to all in-state gas leakage from California production, processing, and pipelines.
- Lean into **subnational efforts** to establish durable methane policies in the US and globally.
- Underscore methane in **expanded corporate climate disclosures** for both private and public companies doing business in California (new laws, SB 253 and SB 261).
- Lead the nation for new owners to **set aside funds** to cover the costs of plugging, abandoning, and restoring the sites of idle or low-producing, marginal oil and gas wells (new law, AB 1167).
- Don't forget about methane **from waste and agriculture**; expand reduction initiatives.