



# **Public Workshop: Potential Changes to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (Oil and Gas Methane Regulation)**

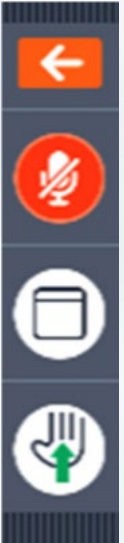
September 20, 2022

# Purpose

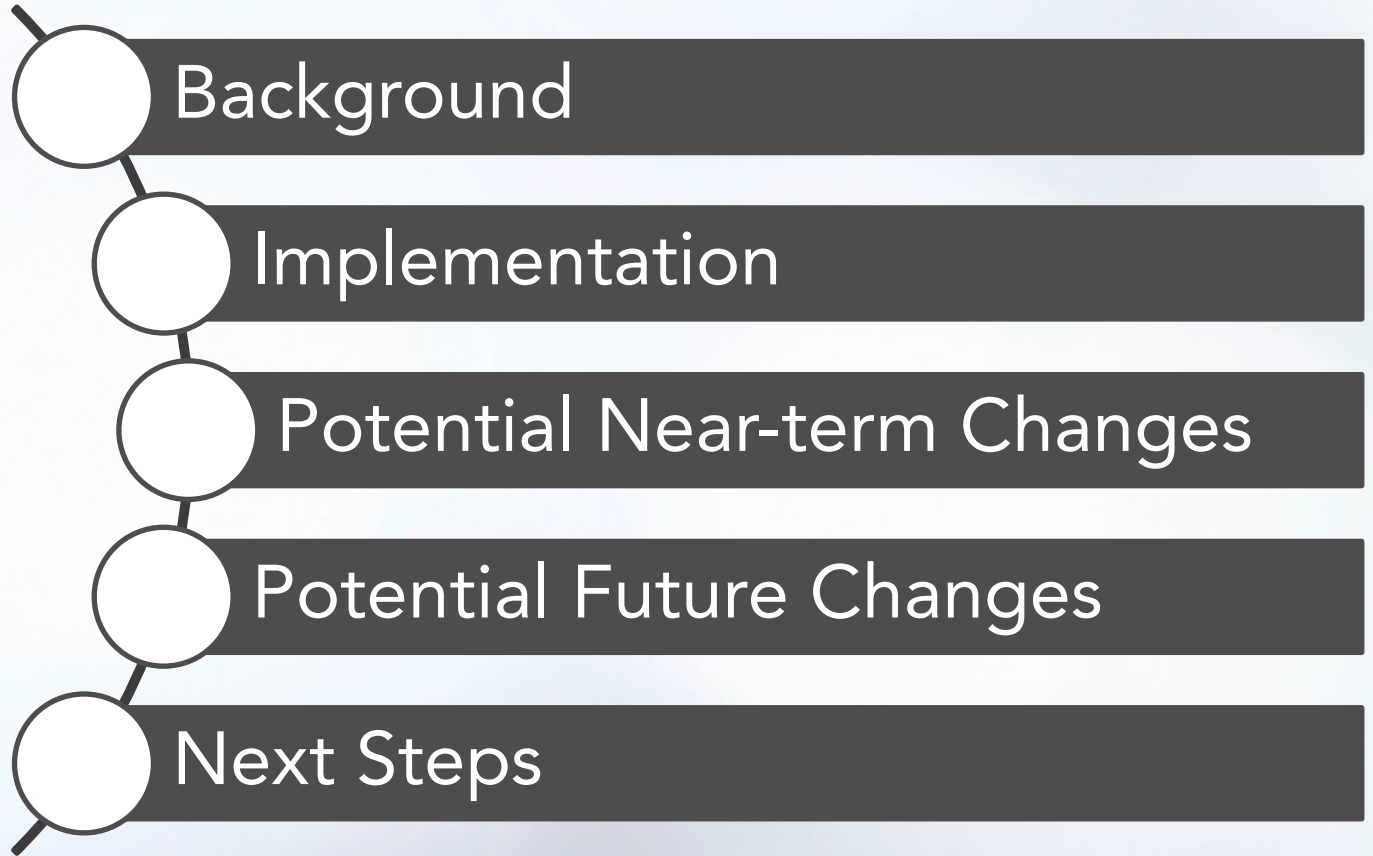
- Present accomplishments and data collected from the regulation
- Discuss potential near-term changes to the regulation
  - Mostly due to recent US EPA action concerning its Control Techniques Guidelines
- Discuss potential future regulation amendments
- Solicit stakeholder feedback

# Workshop Logistics

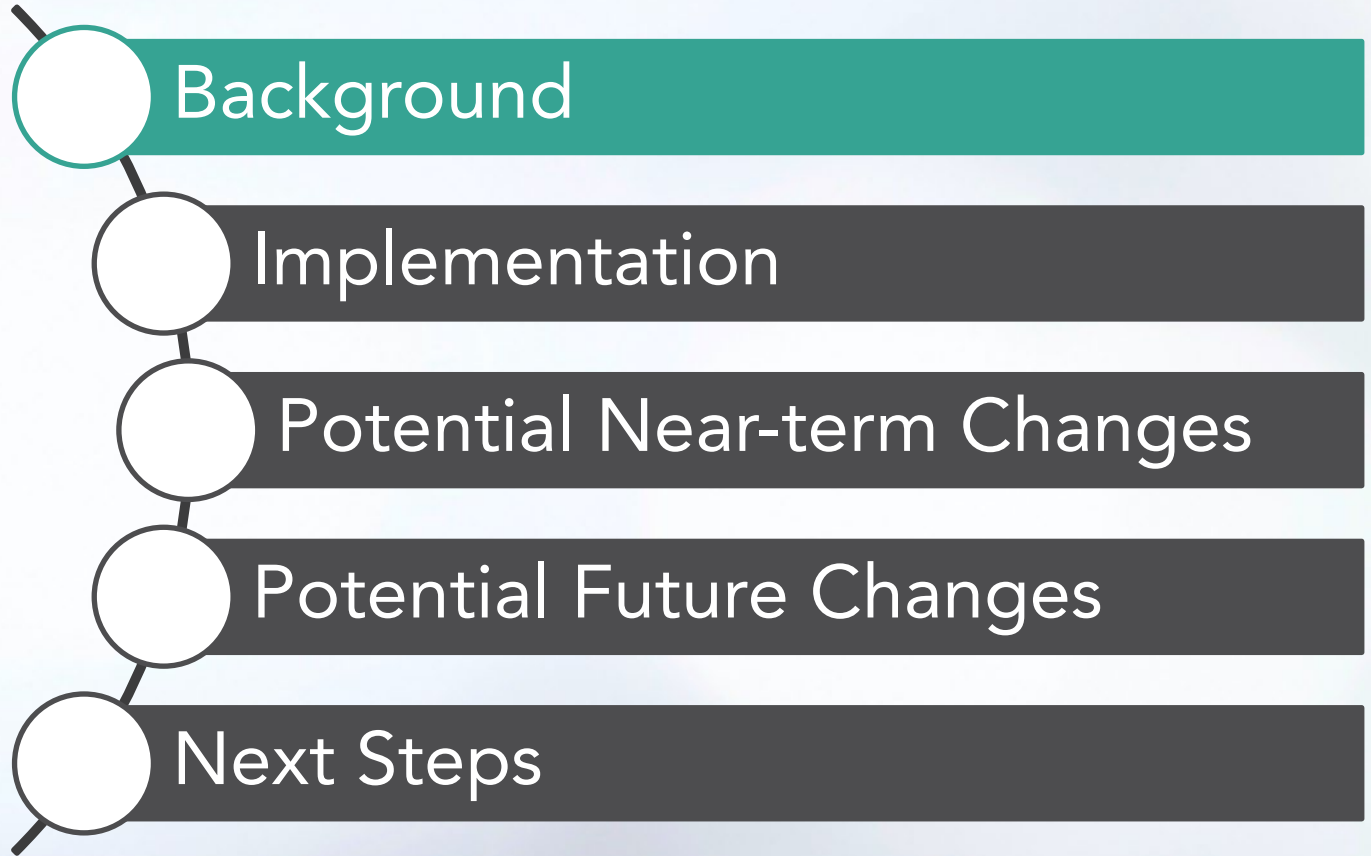
- Q&A during the workshop
  - Use the “[Raise Hand](#)” function in the GoToWebinar toolbar, which should be located to the right of your screen
  - When staff call your name, please “[Unmute](#)” yourself by clicking the red button, and proceed to introduce yourself
  - Workshop materials and online docket available on the [Meetings & Workshops](#) section of our Oil and Natural Gas Production, Processing, and Storage webpage
- Written feedback may be submitted to the online docket
  - Docket closes October 11 at 5 pm Pacific Time



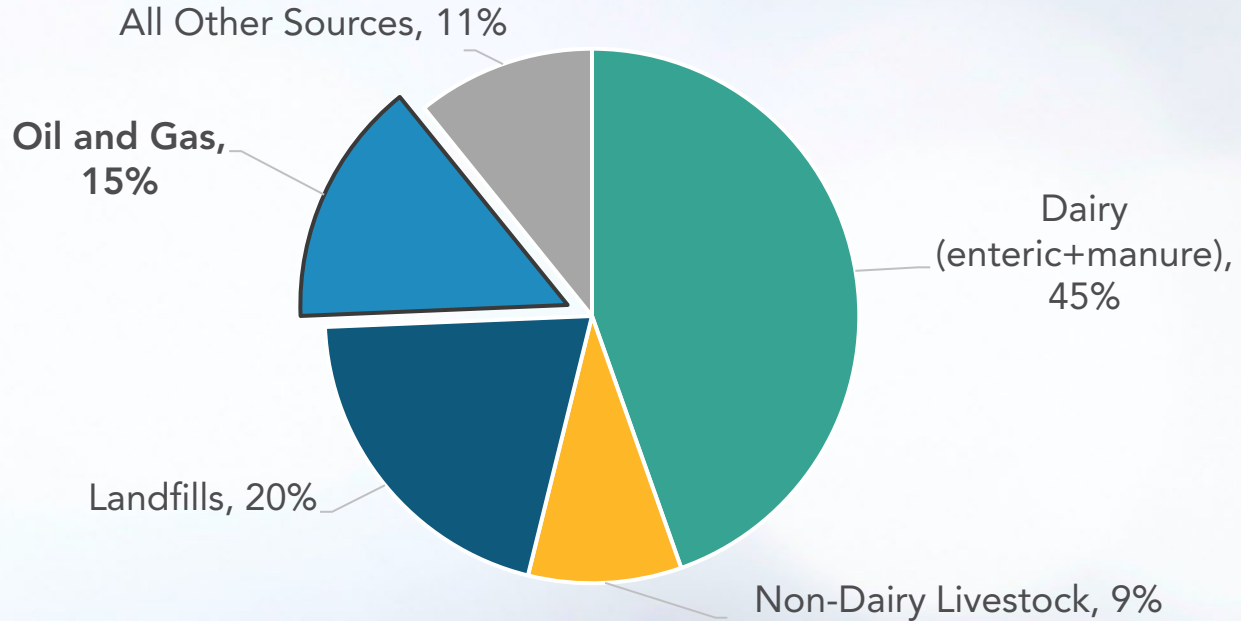
# Agenda



# Agenda



# Methane Emissions in California



Source: 2019 California Greenhouse Gas Inventory; using 100-year AR4 global warming potential

# Why Reduce Oil and Gas Methane Emissions?

- Methane is a potent greenhouse gas (GHG)
- Short-lived: emission reductions have large near-term benefits
- Many cost-effective emission reduction measures
- Other pollutants with potential health implications are often emitted along with methane (e.g., VOCs, BTEX)
  - Reducing methane emissions can reduce co-pollutant emissions

VOCs = Volatile organic compounds

BTEX = Benzene, toluene, ethylbenzene, and xylenes

# Oil and Gas Methane Regulation

Adopted in 2017 to address methane from new and existing oil and gas facilities

Builds off local air district rules targeted at volatile organic compounds (VOCs)

CARB and the local air districts have been working together to implement the regulation since 2018



# Where this Regulation Applies

## Crude Oil and Natural Gas Industry

Regulation Applies

### Production & Processing

1. Onshore and offshore well sites
2. Storage tank batteries
3. Gathering and boosting compressor stations
4. Natural gas processing plants

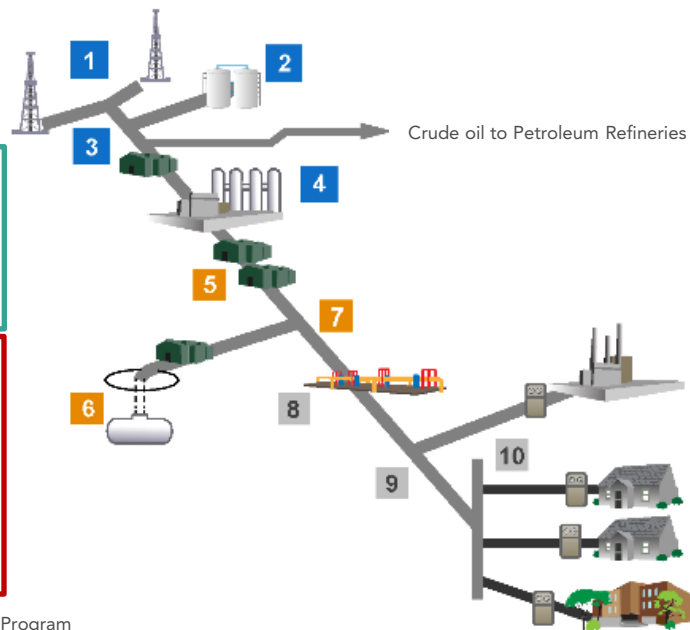
### Natural Gas Transmission & Storage

5. Transmission compressor stations
6. Underground storage
7. Transmission pipeline

Regulation Does Not Apply

### Distribution

8. City Gate
9. Distribution mains/services
10. Regulators and meters for customers



Source: Adapted from American Gas Association and U.S. EPA Natural Gas STAR Program

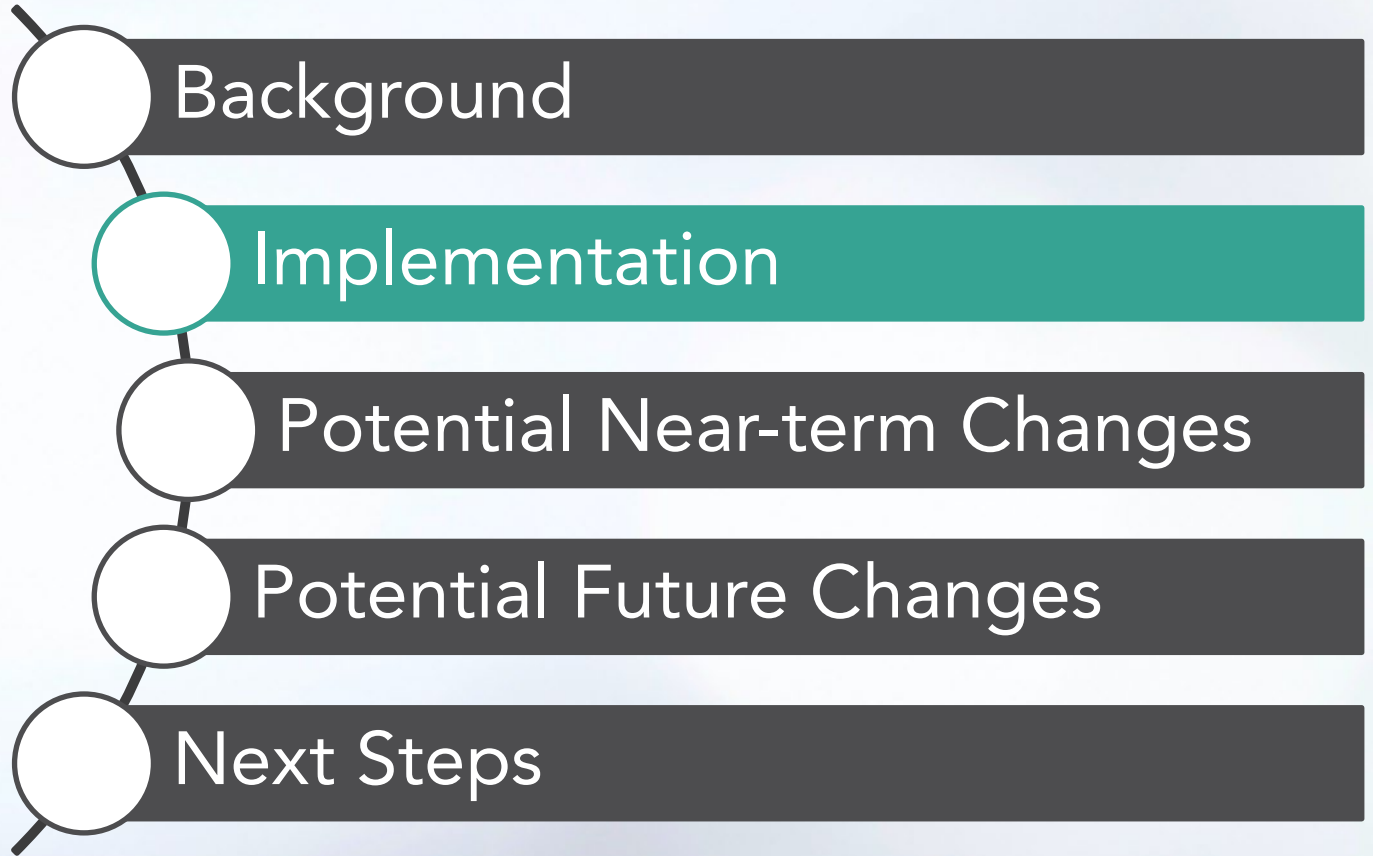
# Regulatory Requirements

- Quarterly leak detection and repair (LDAR)
- Vapor control on tanks above an emission threshold
- Replacement of high-emitting seals on compressors
- Zero-emitting pneumatics (some exceptions)
- Additional monitoring for natural gas underground storage facilities (UGSFs)
- Measuring liquids unloading and well casing vent emissions
- Record keeping and reporting

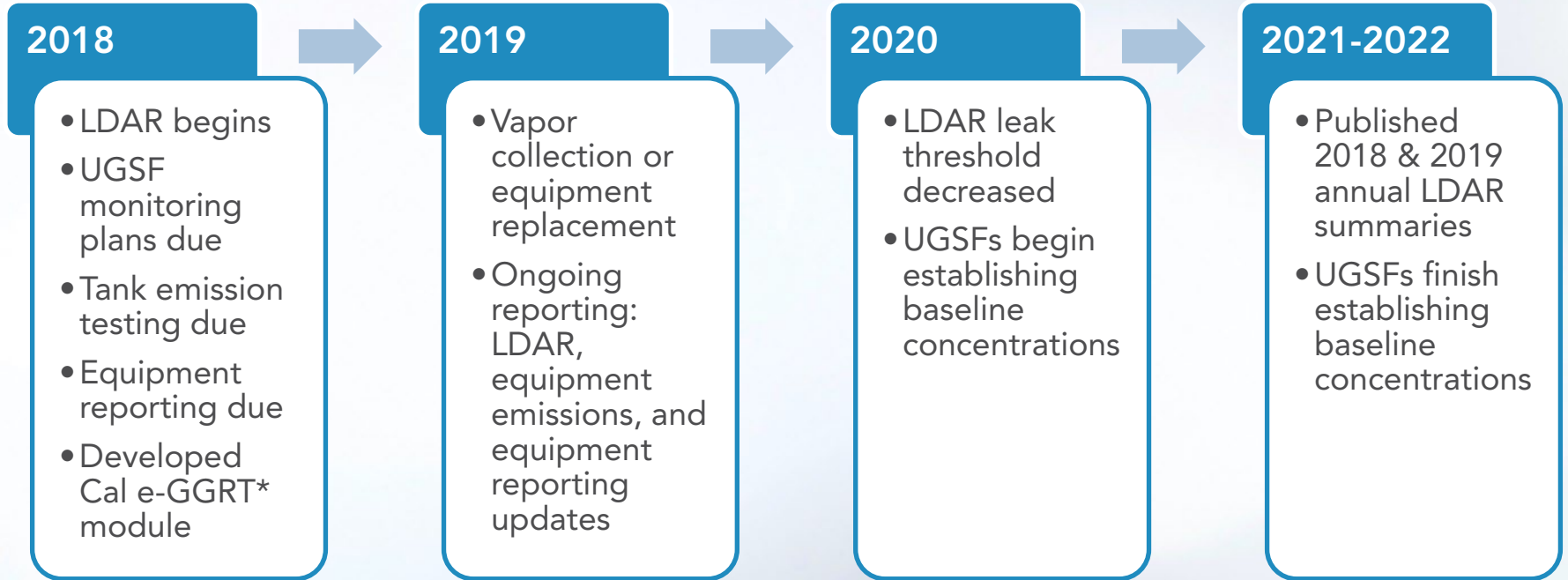
# CARB and Air District Roles for O&G Methane Regulation

- Local air districts primarily enforce the regulation through Memoranda of Agreement
  - CARB distributes grants to air districts to support implementation
- CARB lends leak detection equipment to districts and provides training on use
- CARB receives/analyzes data reported by regulated parties

# Agenda



# Highlights Since Adoption



\*California Electronic Greenhouse Gas Reporting Tool

# Regulation Reporting

- Over 200 operators and over 800 facilities reporting
- Reporting by equipment type:

Compressors	Separators and Tanks	Pneumatic Devices	Open Well Casing Vents
1,000+	7,700+	2,800+	1,700+
		>95% intermittent	Emitted average of 132,500 MT CO <sub>2</sub> e/yr*

\*Metric tons carbon dioxide equivalent using AR4 100-yr GWP of methane

# Regulation Accomplishments

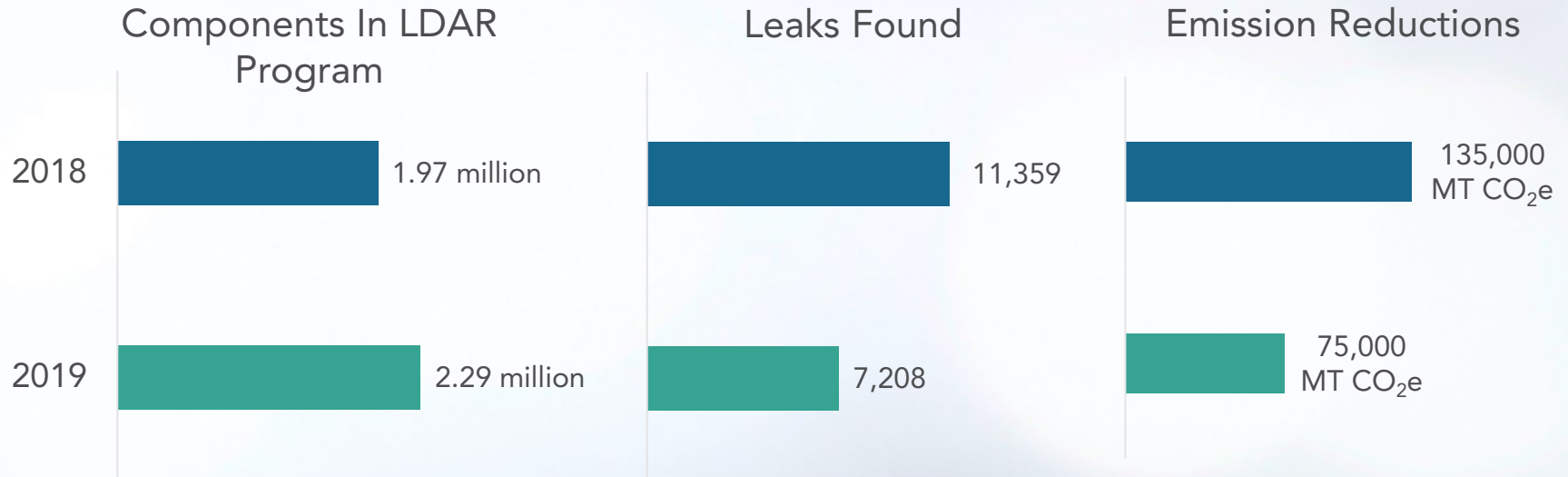
- All separators, tanks, and compressors subject to CARB's regulation are complying
- No high-bleed pneumatics left; few low-bleed left
- Close to 150,000 MT CO<sub>2</sub>e\* reduced from equipment replacement and emission control systems in 2019
  - Mostly due to pneumatics replacement
- Monitoring plans for all 12 natural gas underground storage facilities have been approved
  - 34 new ambient air monitors installed

# Fraction of Components Subject to CARB Regulation LDAR

Subject to Local Air District Rules (46%)	Subject to CARB's Regulation (20%)
	Exempt (34%) (Heavy Oil < 20 API Gravity)  Note: Exempt category makes up less than 1% of estimated hydrocarbon emissions from leaking components

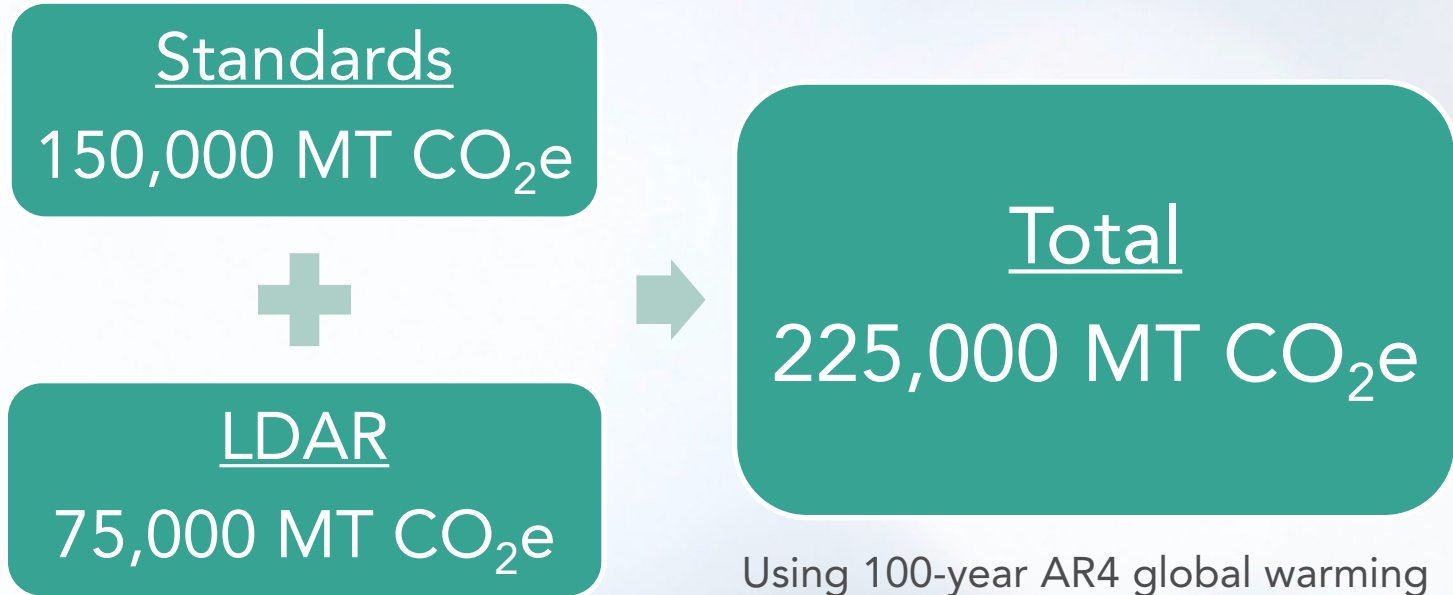


# 2018 and 2019 CARB Regulation LDAR Data



Source: [CARB LDAR Reports for 2018 and 2019](#), emission reductions using AR4 100-yr GWP of methane

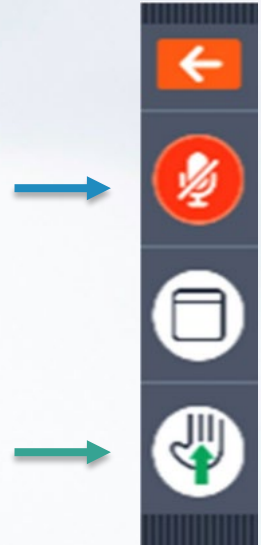
# Total Methane Emission Reductions in 2019



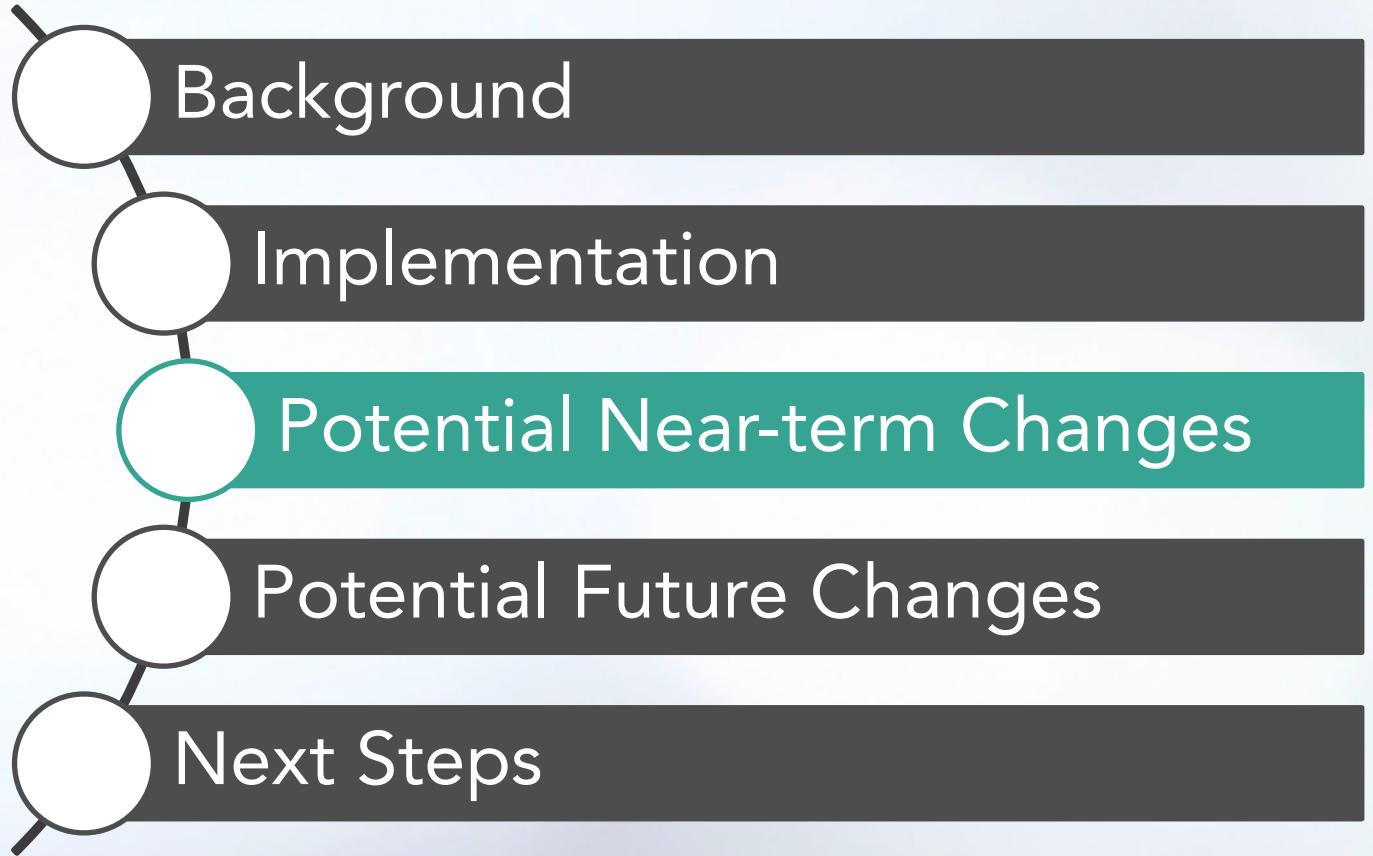
Using 100-year AR4 global warming potential of methane (25)

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# Control Techniques Guidelines for the Oil and Natural Gas Industry (CTG)

2016

## US EPA issues CTG

CTG sets requirements for states to revise their State Implementation Plans (SIPs) for ozone nonattainment areas

2018

## CARB Submits Oil and Gas Methane Regulation into SIP

Intended to meet CTG for California  
Regulation references some air district rules; EPA also evaluated those

# US EPA Decision on SIP Submittal

- In May 2022 US EPA proposed “limited approval, limited disapproval” of CARB’s State Implementation Plan (SIP) submittal
- US EPA’s [Technical Support Document](#) details deficiencies
- Some deficiencies need to be addressed by amending CARB’s Oil and Gas Methane Regulation, others by amending air district rules
- Amended rules must be submitted into the SIP and approved by US EPA before ~May 2024
- Potential sanctions are driving near-term timeline

# Potential Changes: Fully Comply with CTG

- Most potential changes would be administrative or minor
- Some requirements need to be clarified in the regulation
- Additional requirements for vapor collection systems and vapor control devices may be needed to verify 95% efficiency
- Operators may need to develop and maintain LDAR plans
  - Includes lists of equipment and components subject to LDAR

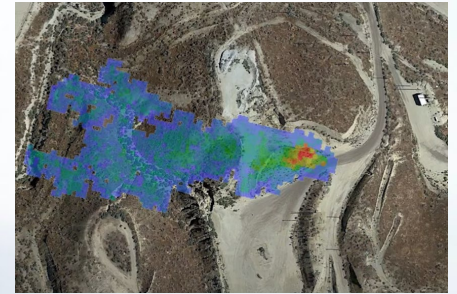
# Upcoming Satellite Data

- Two satellites to be deployed in 2023
  - Through Carbon Mapper partnership
  - California to purchase additional satellites in future
- Data not available for 18 months
- Satellites can play important role detecting methane leaks in California and beyond
  - Comprehensive spatial coverage
  - Repeatable measurements



# Potential Changes: Remotely Detected Methane Leaks

- Action required for leaks identified by satellites or other remote monitoring technology
  - Operators must inspect facilities if notified of a leak by CARB
  - Leaks must be repaired within specified timeframes



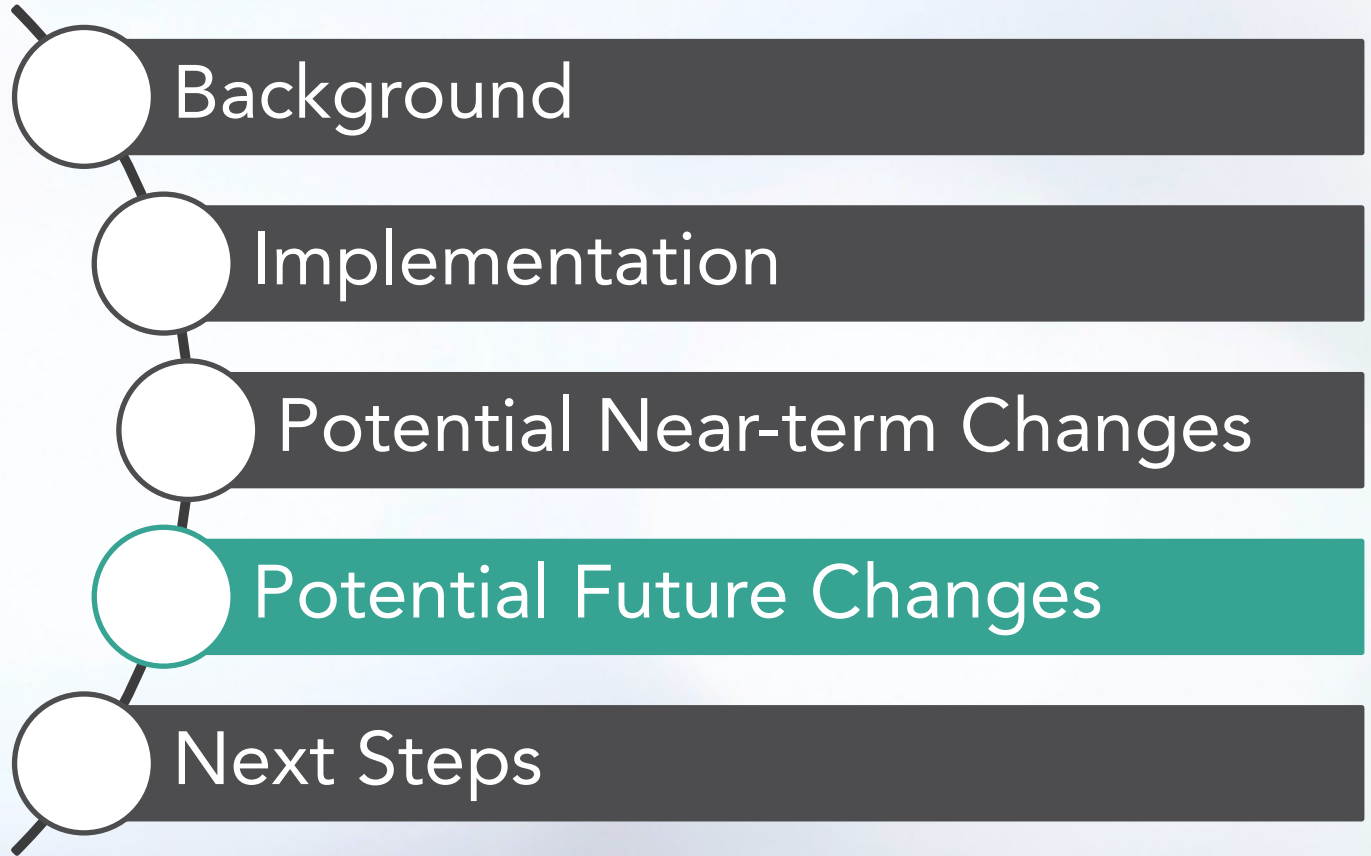
Source: Carbon Mapper ([upper](#)) ([lower](#))

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# Potential Future Changes: Motivations



CARB/CalGEM Methane Task Force



US EPA's Proposed Emissions Guidelines



CARB's Draft 2022 Scoping Plan

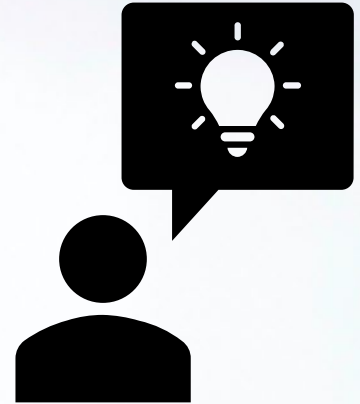
# CARB/CalGEM Methane Task Force

- *Requested by:* Governor Newsom
- *Participants:* CARB and CalGEM
- *Purpose:* identify and address methane leaks from oil infrastructure near communities
- *Recognizing:* these leaks can pose potential threats to community health and safety



# CARB/CalGEM Methane Task Force

- The Task Force will seek input from:
  - Community members
  - Local air districts
  - Local government entities
- Task Force provides an additional opportunity to receive input on methane reduction strategies
- Separate from the regulatory process



# US EPA's Proposed Emissions Guidelines (EG) for Existing Sources

- In Nov. 2021, US EPA proposed EG for oil and gas facilities
- EG is separate from the CTG discussed earlier

**CTG**

Addresses VOC controls necessary in non-attainment areas to improve air quality

Finalized in 2016

vs.

**EG**

Reduces GHG and other pollutant emissions across the existing oil and gas sector

Initial proposal in 2021

# US EPA's Proposed Emissions Guidelines (EG) for Existing Sources

- If EG is finalized, US EPA would regulate existing O&G sources for first time
- States would need to submit plans to EPA showing how they will meet the EG
- US EPA planning to issue supplemental proposal by end of 2022
  - Timeline for final EG is unknown
- Timeline for states to submit plans to be determined in final EG



# Comparison of Proposed EG and CARB's Oil and Gas Methane Regulation

## Similar Requirements

Tanks

Compressors

## Different Requirements

Pneumatic  
Pumps

Pneumatic  
Controllers

LDAR

Associated  
Gas Venting

# What is the Scoping Plan?

- Scoping Plans are action plans for CA to meet statewide GHG reduction targets
  - Mandated by Assembly Bill 32
  - Outline a suite of climate policies to address emissions across all sectors
  - Required to be updated at least every 5 years

# Scoping Plan Targets

- 2017 Scoping Plan set a path to achieve CA's 2030 GHG reduction target
- Draft 2022 Scoping Plan:
  - Assesses progress towards achieving the 2030 target
  - Outlines a path to achieve carbon neutrality no later than 2045
  - Currently a draft plan, to be finalized by end of year

# Draft Scoping Plan Scenario for O&G Extraction

## 2030 Fugitive O&G Methane Reduction

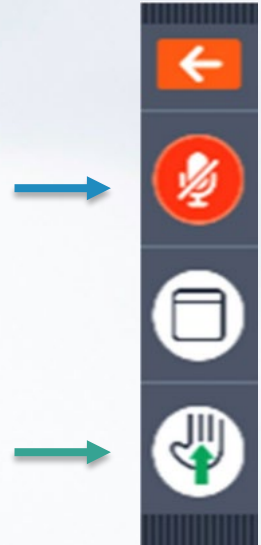
- Draft target: 50% reduction relative to 2013
- Currently on track for ~41% reduction
- Action needed to reach draft 2030 target

# Potential Future Changes

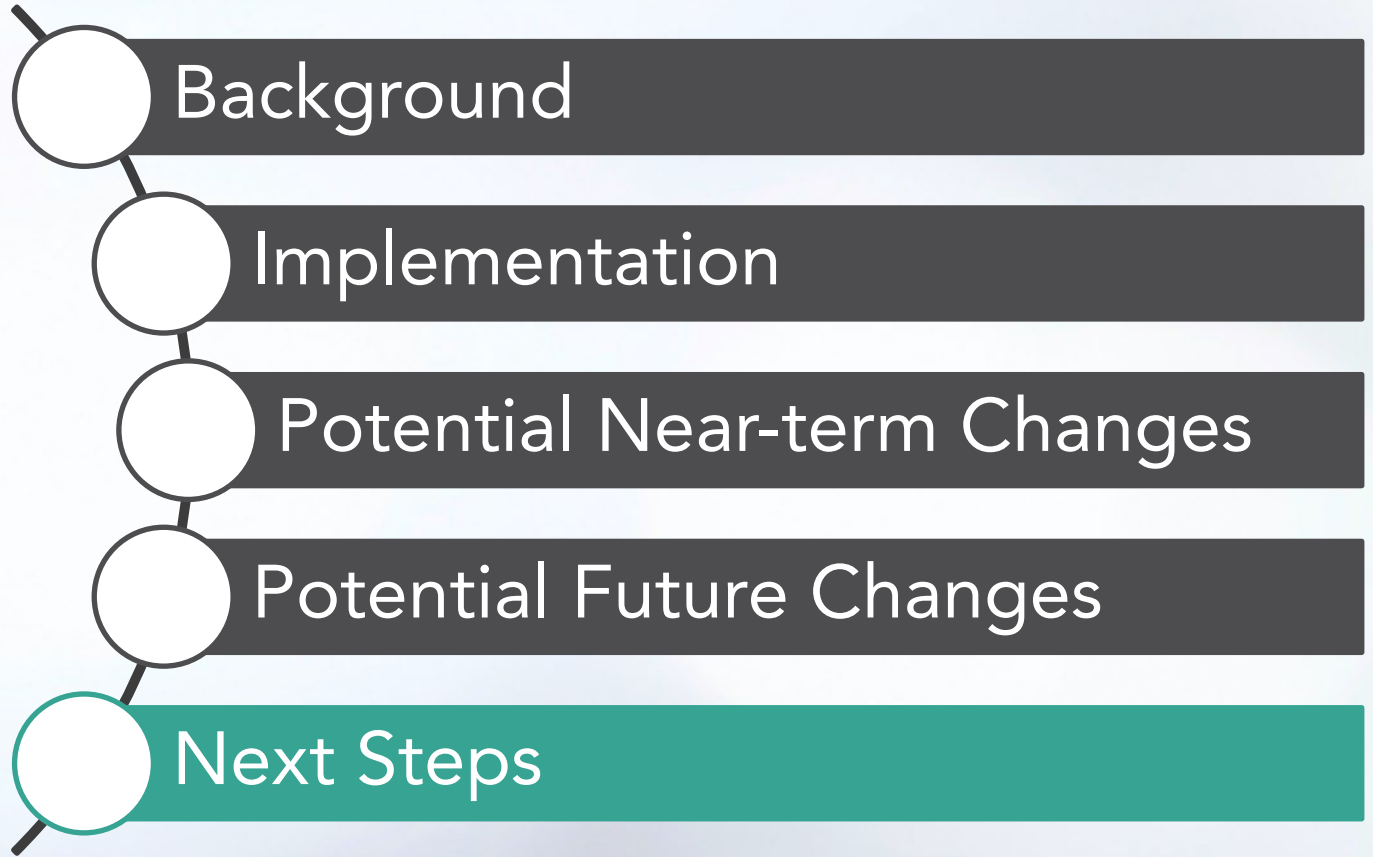
- Responsive to EG and/or Scoping Plan, when finalized
  - Prohibit venting from intermittent pneumatic controllers
  - Prohibit venting of associated gas
  - Allow alternative LDAR approaches that achieve equivalent or better emission reductions
- Responsive to community concerns
  - Reexamine heavy oil LDAR exemption (<20 API gravity)

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# Next Steps

- Submit written feedback online through October 11, 2022 (5 pm Pacific Time)
  - Link to submit written feedback found on the [Meetings & Workshops](#) section of our Oil and Natural Gas Production, Processing, and Storage webpage
  - Second public workshop will be held later in 2022
  - [Sign up](#) for email updates
- Board Meeting tentatively planned for spring 2023



# Contact Information

Questions?

Contact Quinn Langfitt:

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We are available for individual meetings by request