



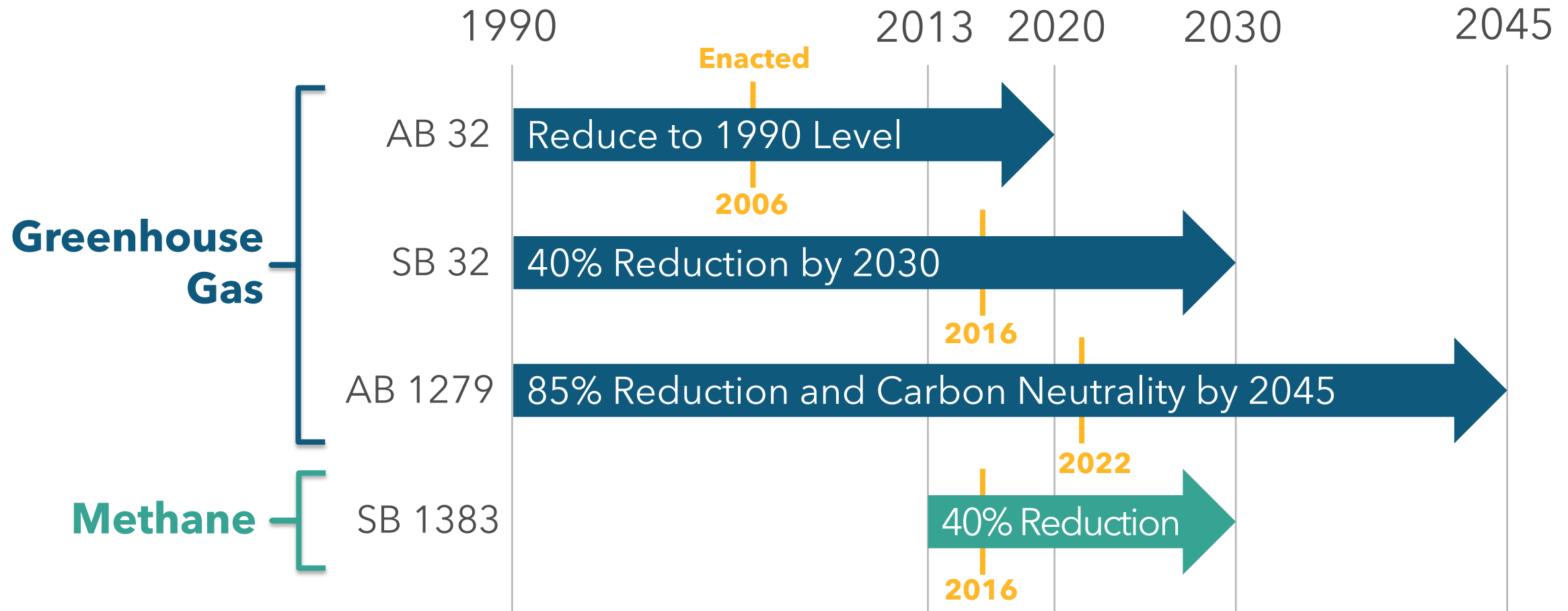
Proposed Amendments to the Regulation on Methane Emissions from Municipal Solid Waste Landfills

Board Hearing
November 20, 2025

Agenda

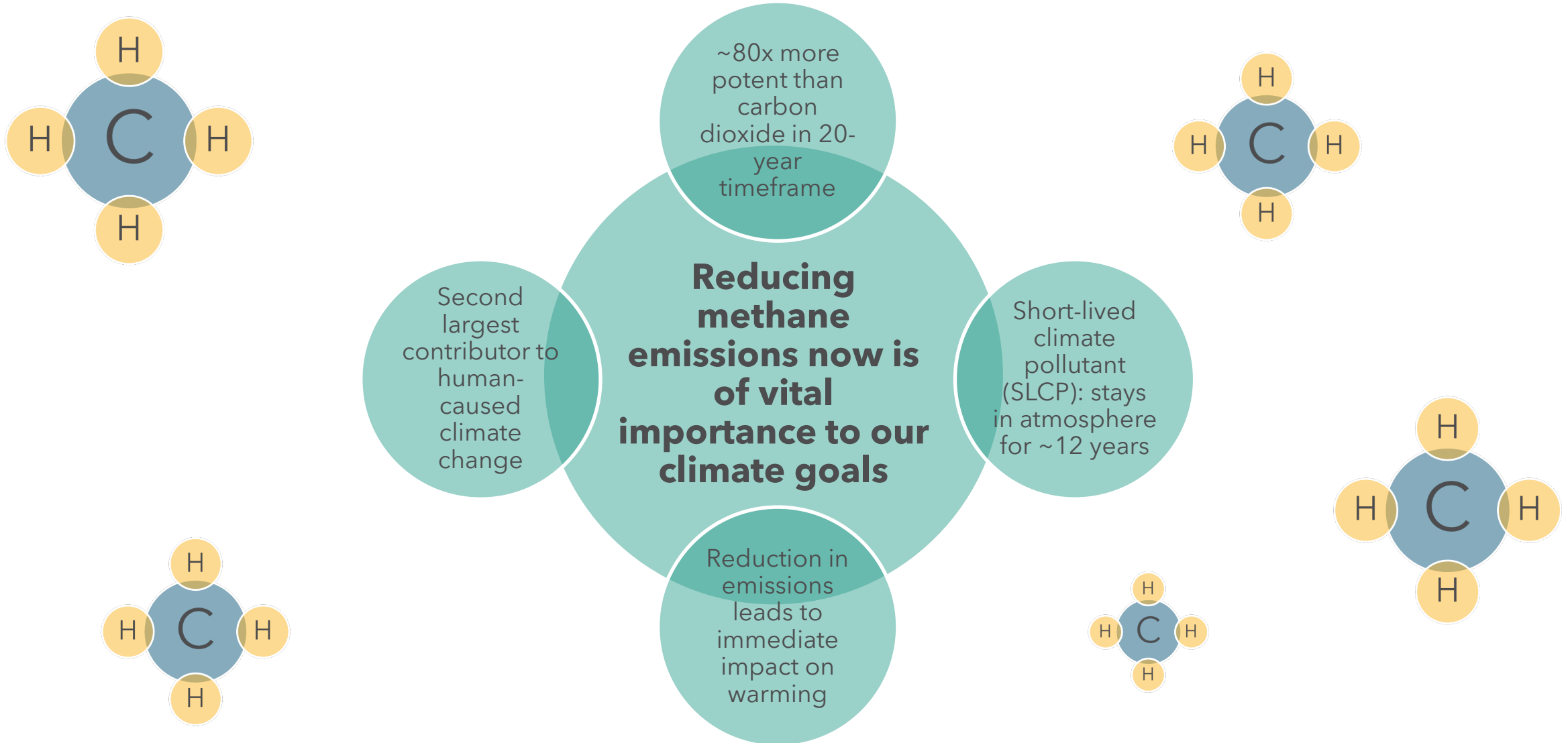
- Background
- Proposed Amendments
- Benefits
- Next Steps
- Staff Recommendation

California's Climate Targets



Citations: AB 32 (Núñez, 2006); SB 32 (Pavley, 2016); AB 1279 (Muratsuchi, 2022); SB 1383 (Lara, 2016).

Methane (CH₄): A Potent Greenhouse Gas



California's Landfill Regulatory Context

FEDERAL



US EPA

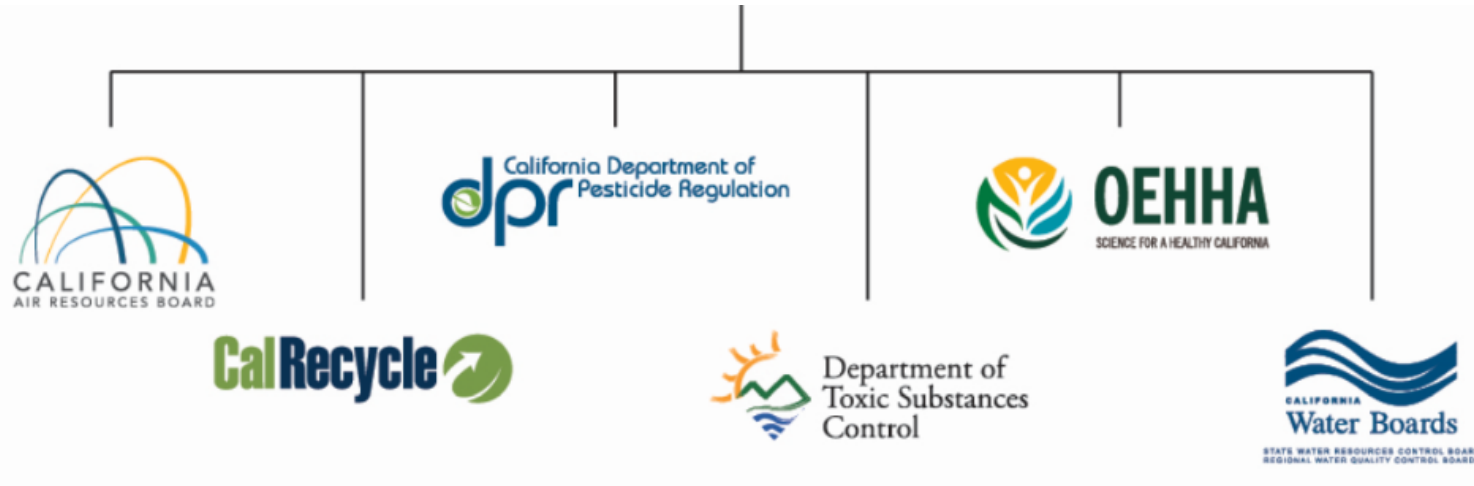
STATE



LOCAL



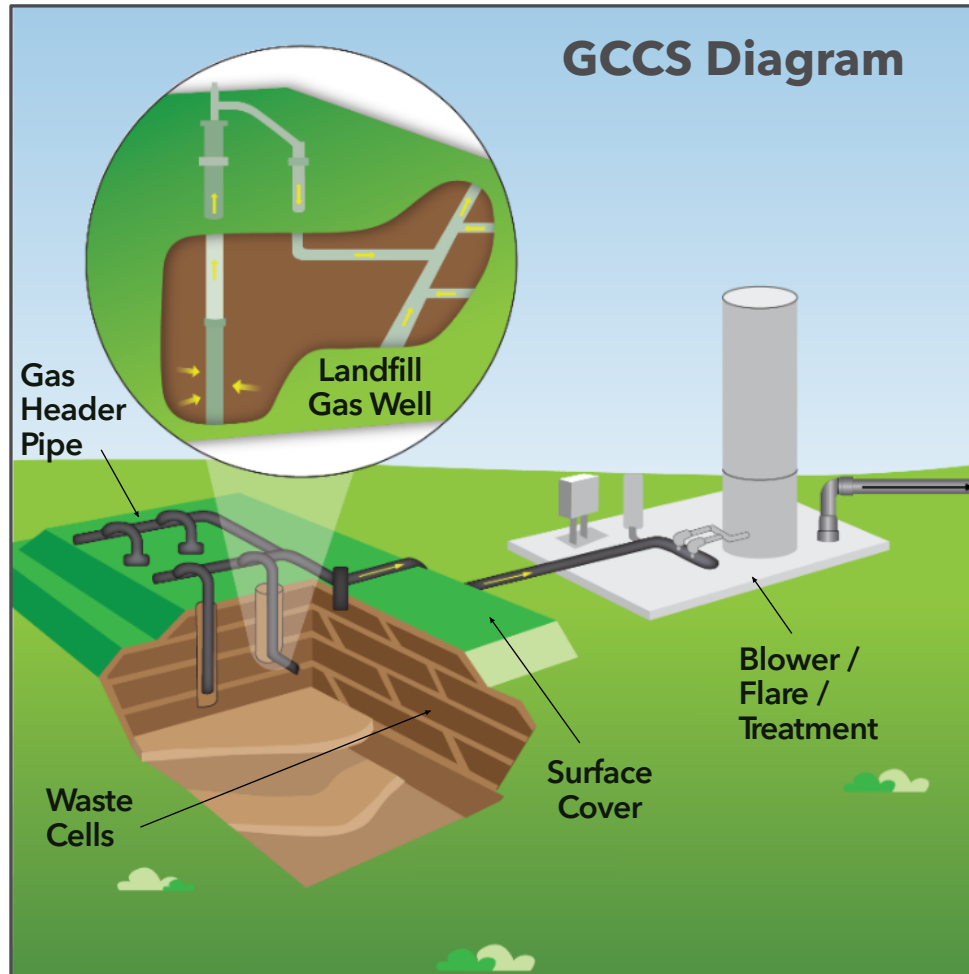
Local Air Districts



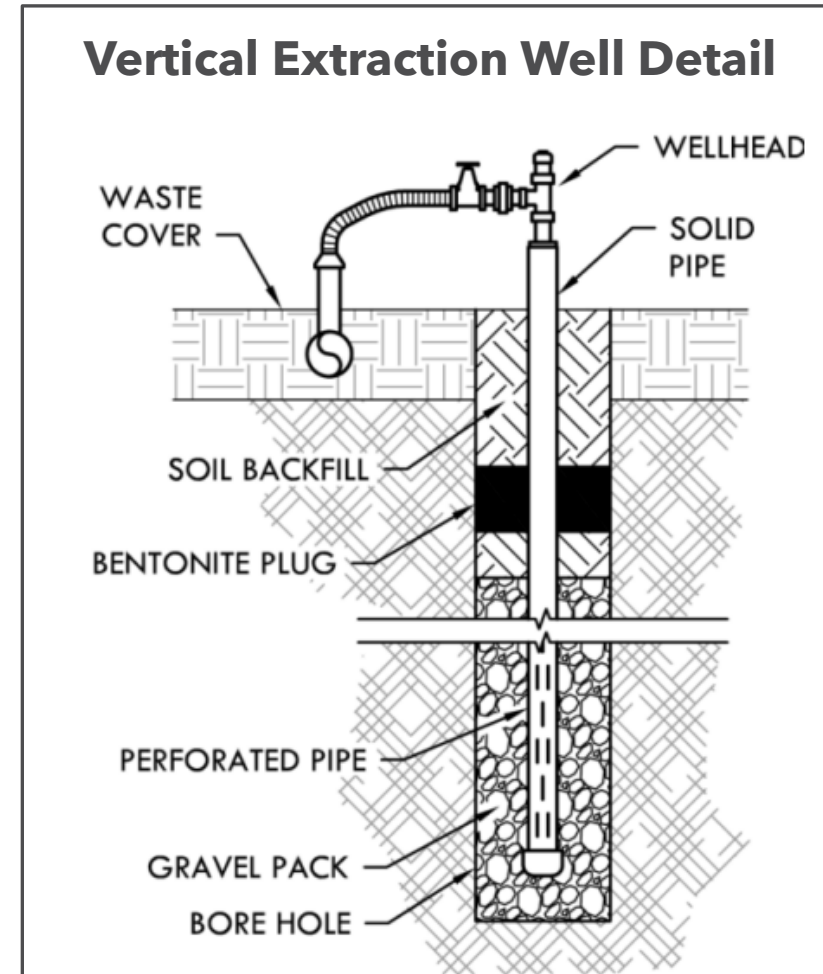
California's Landfill Methane Regulation (LMR)

- Adopted in 2010 as an early action measure under the Global Warming Solutions Act of 2006 (Assembly Bill 32)
- Designed to reduce methane emissions from landfills – also improves air quality and reduces odors
- More stringent requirements for controlling emissions and monitoring for leaks than federal rules
- Most local air districts have agreements with CARB to primarily implement and enforce the LMR in their districts
- Applies to 188 landfills, with 153 required to control emissions

Gas Collection and Control Systems (GCCS)



Source: [EPA 2025](#); some labels added



Source: [LMOP 2024](#)

Existing LMR Requirements

-  Install gas collection and control system (GCCS)
-  Monitor and fix leaks from surface and GCCS
-  Monitor and correct other performance parameters
-  Test control devices for 99% methane destruction
-  Keep records and report compliance data to regulators

Goals and Scope of the Proposed Amendments

Increase
Stringency to
Achieve CA's
Climate Targets



Harness
Technological
Advances



Incorporate
Research and
Lessons Learned



Enhance
Enforceability
and Clarity



Streamline
Reporting &
Support Data
Transparency



Set Example
for Other
Jurisdictions



Robust Public Process



**Three public
workshops**

2022-2024



**Community
meeting in
Southern CA**

July 2025



**Dozens of
stakeholder
meetings**



**Over 75
comment
letters
received**

- Stakeholder meetings included community-based organizations, community members, environmental advocacy groups, landfill operators, industry groups, technology providers, and academic researchers.
- Focused meetings with state and local regulatory partners.

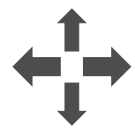
Integrating Remote Plume Detection



Require operator action when notified by CARB | *monitor for leaks on the ground, repair any leaks found, report outcomes*

Additive | *does not replace operator's routine monitoring*

Improving Leak Monitoring



Expand spatial coverage | *limit exemptions and use alternative technologies to monitor areas that are unsafe to walk*



Increase frequency | *conduct monthly monitoring and assess cover integrity and collection system in areas with recurring leaks*



Require faster repairs | *shorten time to initiate and complete repairs*

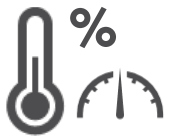


Ensure repairs are working | *1-month confirmation monitoring*



Evaluate advanced technologies | *drones, lasers, fixed sensors, etc. may be used by operators upon evaluation and approval of procedures by CARB*

Expanding GCCS Monitoring



Monthly wellhead monitoring | *add temperature, gas composition, and flow rate to existing pressure monitoring*



New standards and mitigation measures | *actions including cover improvements to correct exceedances*



Enhanced monitoring and assessments | *to address repeated exceedances and subsurface temperatures above 131 °F*



Trend analysis | *identify and respond to changing conditions*



Semi-annual liquid level monitoring | *detect and remove liquid accumulation blocking gas flow*

Strengthening GCCS Operational Requirements

- ▶▶ **Earlier gas collection** | *in areas of new waste deposition to address working face emissions*
- ⌚ **Limits on GCCS downtime** | *whole system and individual components*
- ⊘ **Limit on the number of wells offline at once** | *to minimize the area without active gas capture*
- └─▶ **Maintain steady system vacuum** | *for consistent gas extraction*

Additional Changes



Manage declining gas generation | *strengthened process for GCCS intermittent operation and shutdown at old, closed landfills*



Clarify third-party owner/operator responsibilities | *to ensure monitoring, testing, and reporting are completed*



Enhance reporting | *more information in a standardized format annually; raw monitoring data quarterly | enables meaningful public data sharing*



Additional changes | *to enhance clarity, adjust processes, improve enforceability, and update data*

Benefits



Reduced Methane Emissions

- Staff conservatively estimated nearly 450,000 MT CO₂e/yr quantified reductions



Reduced Co-Pollutant Emissions

- Reduced odors and improved air quality for landfill workers and communities surrounding landfills



Improved Regulatory Oversight

- CARB and air district access to more compliance data, more quickly



Development of Advanced Technology

- Promotes adoption of latest monitoring technologies
- Potential future cost savings for operators



Benefits Exceed Costs

- \$34M social benefits of methane reduction per year
- \$12M cumulative cost to all facilities per year
 - Most costs borne by larger, active landfills
 - No added costs for uncontrolled landfills
 - Retains cost-saving measures for closed landfills

Selection of the Diverse Comments Received

- Improve public data transparency
- Require emerging technologies for advanced leak detection as they become available
- Support for increased data collection, new standards, shorter repair timelines, and increased reporting frequency
- Add flexibility on repair timelines, reduce monitoring & reporting frequency
- Concerns about additional costs for closed landfills

Proposed 15-Day Changes

- Better align timelines throughout the regulation for simplicity and consistency
- Adjust specifics of some provisions to better recognize unique facility characteristics
- Provide additional flexibility for circumstances outside the operator's control, such as public safety power shutoffs
- Clarifications and adjustments to ensure smooth implementation with our regulatory partners

Expected Outcomes and Staff Recommendation

Greater Role for Advanced Technology	Incorporating new and emerging methane leak detection tools
Fewer Methane Leaks	Reduced emissions from the working face, expanded coverage and faster repairs
Improved Performance	Better monitoring and operational standards to support safe and effective gas collection
Stronger Action for Recurring Issues	More frequent monitoring and comprehensive actions to address recurring problems
Enhanced Transparency and Oversight	Improved reporting enabling greater transparency and compliance oversight by CARB and air districts

- **Adopt Resolution 25-14** for approval of the Proposed Amendments