Landfill Gas Emissions Rulemaking

Item I

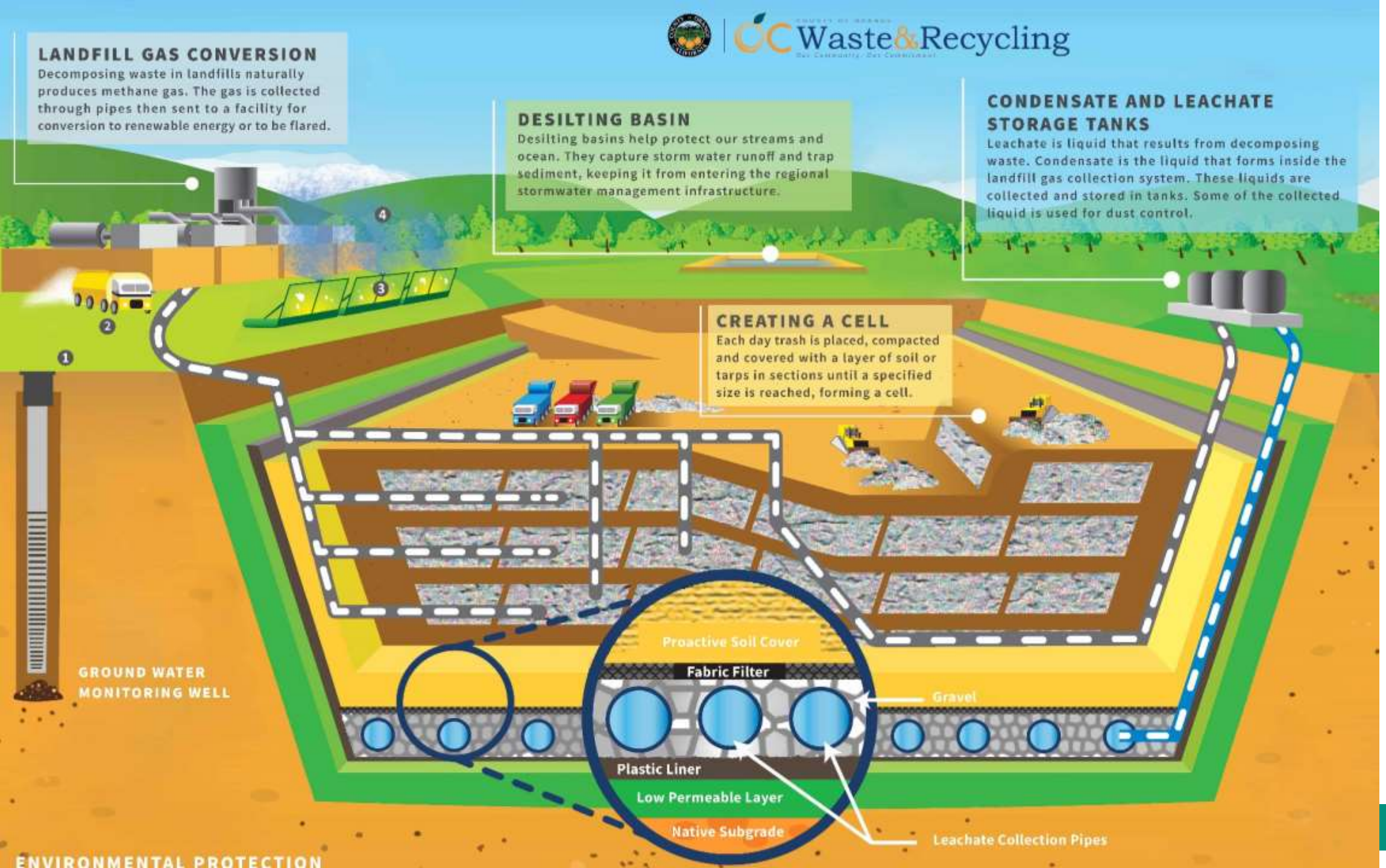
Oct. 1, 2021

Oregon Environmental Quality Commission Meeting

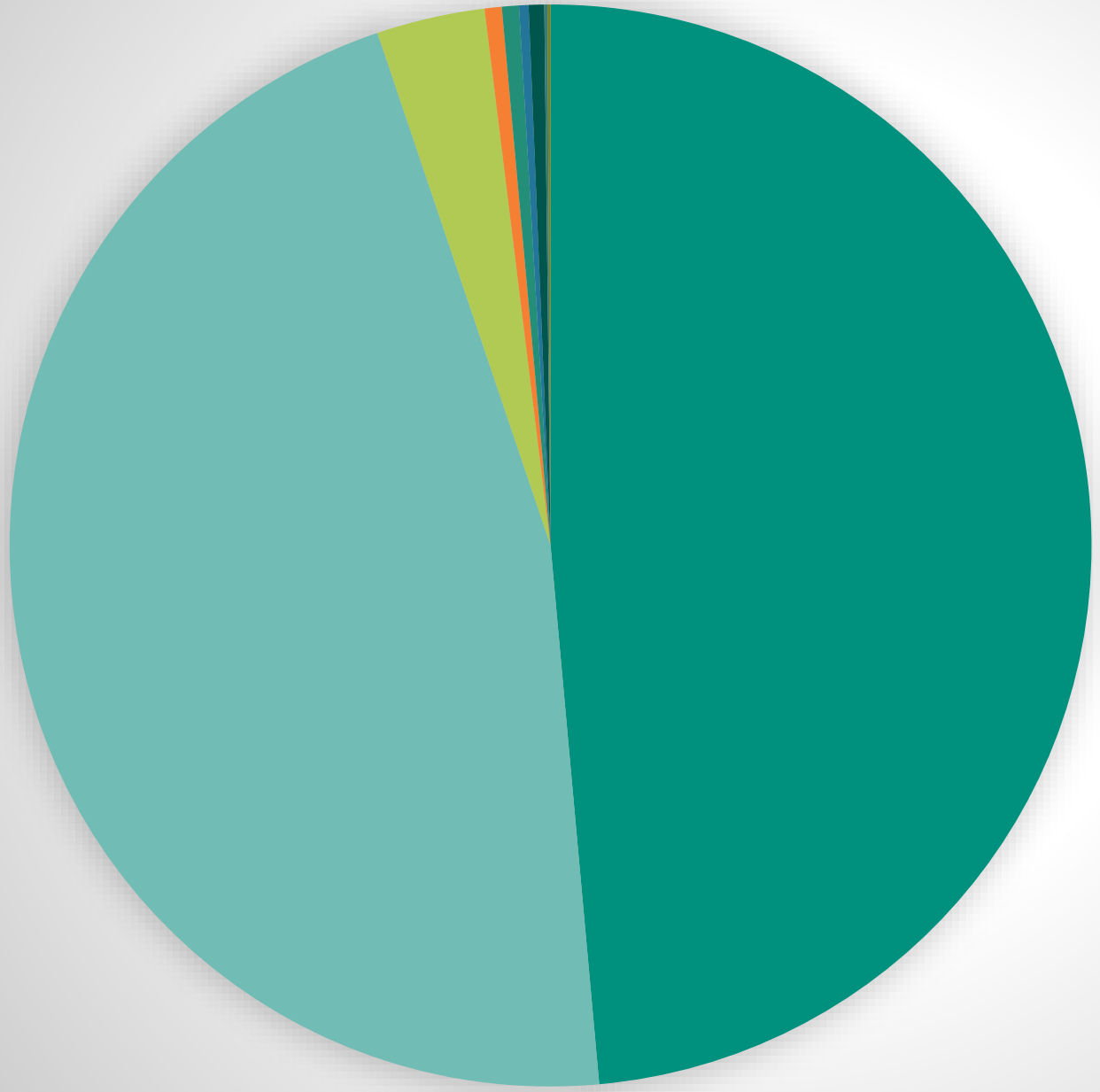
Presentation overview

Landfill Gas Emissions 2021 Rulemaking

- Background
- Rulemaking Process
- Initial Landfill Gas Emissions Rules Proposal
- Public Input
- Proposed modifications to LFG rules
- Questions
- Recommendations

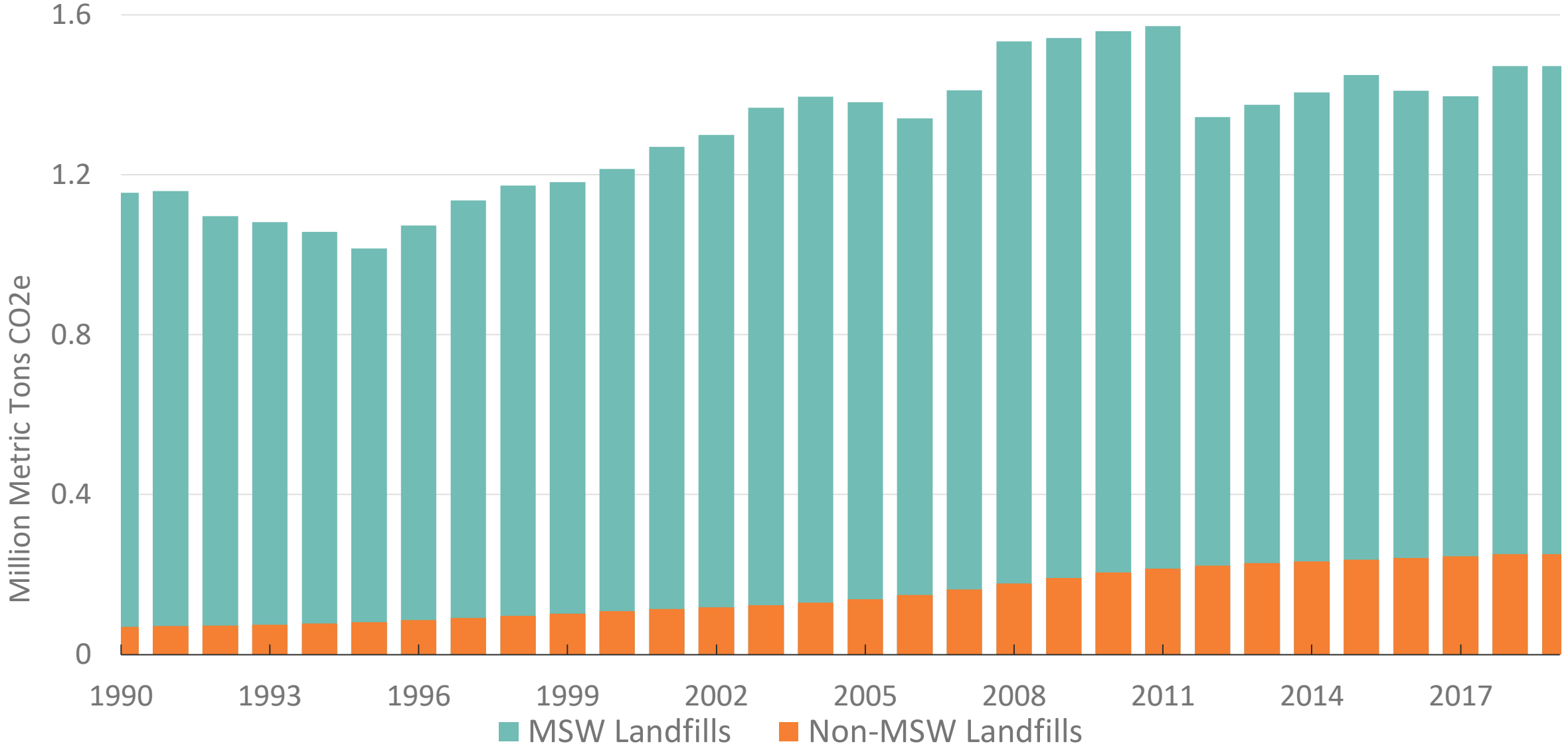

LANDFILL GAS CONVERSION
Decomposing waste in landfills naturally produces methane gas. The gas is collected through pipes then sent to a facility for conversion to renewable energy or to be flared.
DESILTING BASIN
Desilting basins help protect our streams and ocean. They capture storm water runoff and trap sediment, keeping it from entering the regional stormwater management infrastructure.
CONDENSATE AND LEACHATE STORAGE TANKS
Leachate is liquid that results from decomposing waste. Condensate is the liquid that forms inside the landfill gas collection system. These liquids are collected and stored in tanks. Some of the collected liquid is used for dust control.
CREATING A CELL
Each day trash is placed, compacted and covered with a layer of soil or tarps in sections until a specified size is reached, forming a cell.
GROUND WATER MONITORING WELL
Proactive Soil Cover
Fabric Filter
Gravel
Plastic Liner
Low Permeable Layer
Native Subgrade
Leachate Collection Pipes
ENVIRONMENTAL PROTECTION

Landfill Gas Components



- methane 45% –60%
- carbon dioxide 40% –60%
- nitrogen 2% – 5%
- oxygen 0.1% – 1%
- ammonia 0.1% – 1%
- NMOCs 0.01% – 0.6%
- sulfides 0% – 1%
- hydrogen 0% – 0.2%
- carbon monoxide 0% – 0.2%

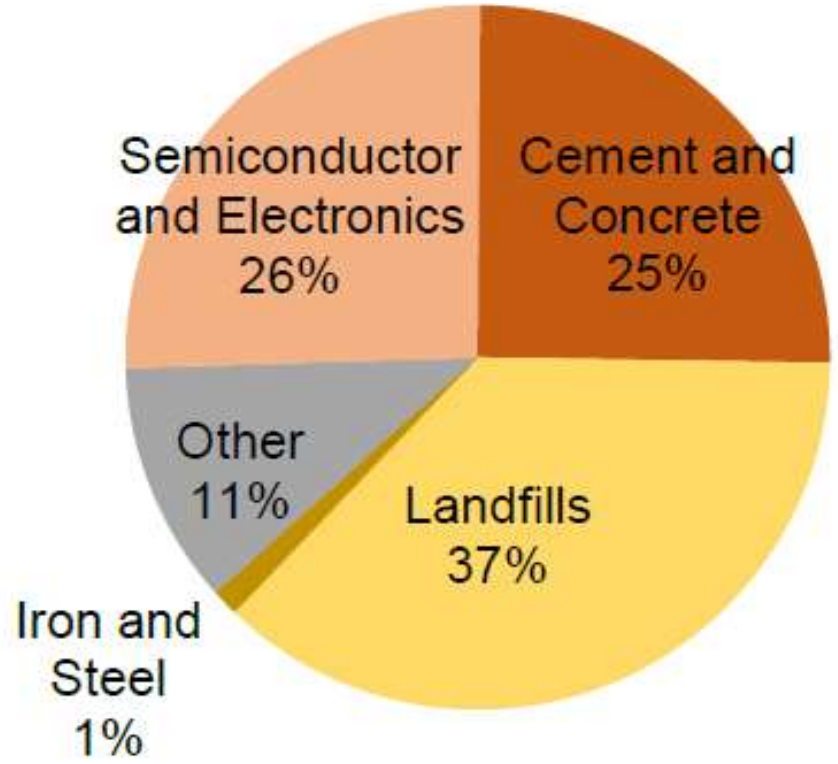
Oregon Landfill Gas Emissions



Process Emissions

(Excluding Electric Generators)

2.4 Million Metric Tons CO_2e in 2019



In 2019, 45 stationary sources reported process emissions

Rulemaking objectives

Climate Change

- Wildfires
- Sea level
- Drought/heat
- Snowpack

Executive Order 20-04

- Clean Fuels Program
- Climate Protection Program
- Food waste
- Landfills

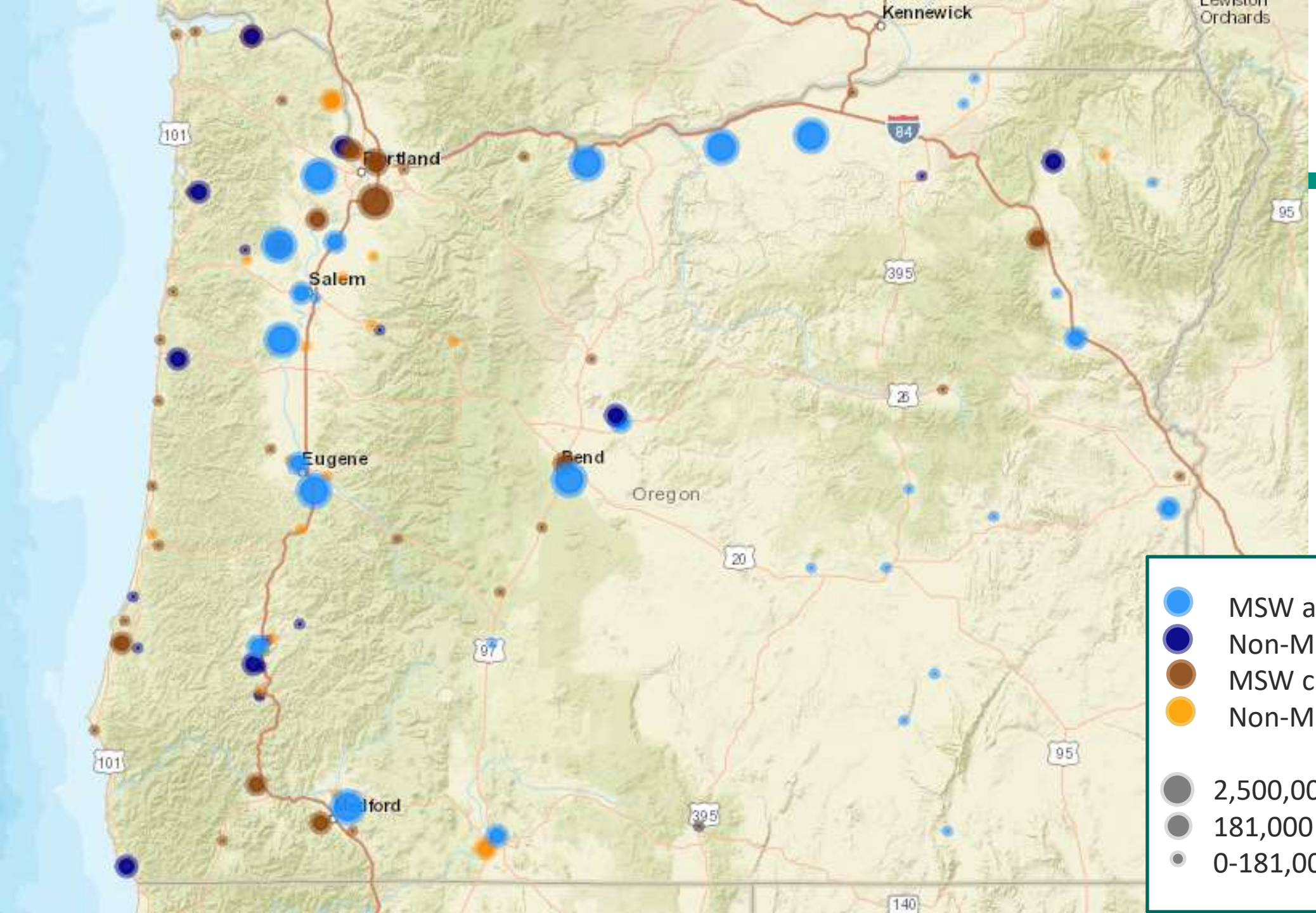
Existing Authorities

- ORS 468
- ORS 468A

Executive Order 20-04

Agencies shall exercise any and all authority and discretion vested in them by law to help facilitate Oregon's achievement of the GHG emissions reduction goals set forth in…this Executive Order.

The EQC and DEQ shall take actions necessary to reduce methane gas emissions from landfills, as defined in ORS 459.005(14), that are aligned with the most stringent standards and requirements for reducing methane gas emissions from landfills adopted among the states having a boundary with Oregon.


Kennewick
Lewiston
Orchards
Portland
Salem
Eugene
Bend
Oregon
Medford
101
84
95
395
26
20
97
140
MSW active
Non-MSW active
MSW closed
Non-MSW closed
2,500,000+ Mg
181,000 -2,500,000 Mg
0-181,000 Mg [200,000 tons]

Rulemaking process

Advisory Committee Meetings

- January 2021 RAC 1: Context, background
- February 2021 RAC 2: Draft rules
- April 2021 RAC 3: Updated draft rules and draft Fiscal Impact Analysis

Public Notice

- June 25 through July 30, 2021
- Nineteen individual comment letters were submitted

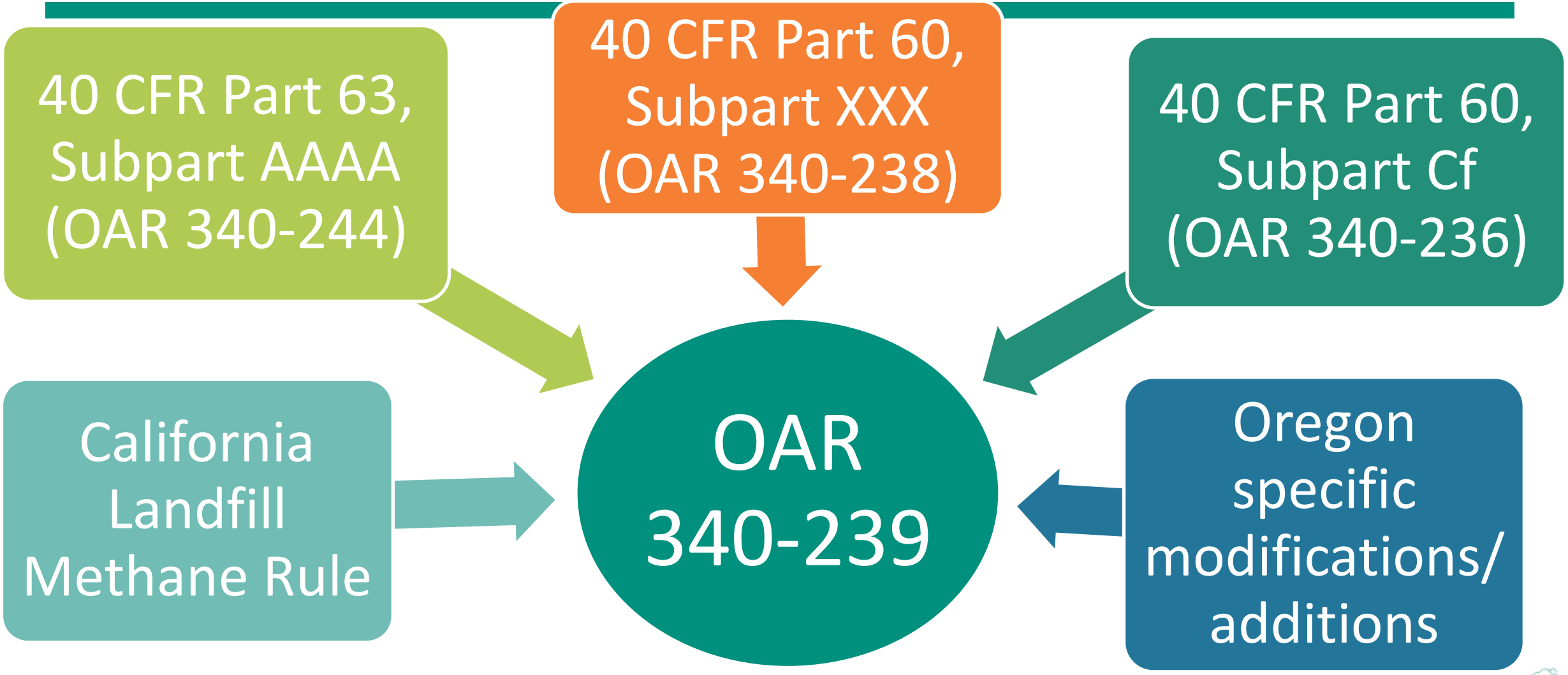
Public Hearing

- July 26, 2021
- Oral comments from four commenters

Rules and Fiscal Advisory Committee

- Local municipality
  - City and county
  - Western and Eastern Oregon
- Public health
- Environment
- Technical expertise
- Industry

Rule elements



Parameter	Current OR rules	CA rules
Landfill type	Municipal solid waste (MSW)	MSW and non-MSW (C&D exempt)
Landfill size	2.5 Million Megagrams (Mg) / 2.5 Million cubic meters (m^3)	450,000 Mg [496,040 tons]
Calculated gas generation rate	34 or 50 Mg/yr non-methane organic compounds (NMOC)	3 million BTU/hr landfill gas heat input capacity
Methane surface emissions	500 ppmv	200 ppmv/500 ppmv
Surface emissions monitoring [SEM] grid	30 meters (98 feet)	25 feet
Gas control system destruction	98% NMOC	99% methane

Oregon-specific additions/modifications

- Include construction and demolition (C&D) landfills
- Lower Waste-in-Place threshold to require methane generation rate calculation
- Simpler methane generation rate calculation
- Continued surface monitoring post closure/removal of the gas collection and control system

Parameter	Current OR rules	Proposed OR rules
Landfill type	Municipal solid waste (MSW)	MSW and non-MSW
Landfill size	2.5 Million Megagrams (Mg) / 2.5 Million cubic meters (m^3)	181,000 Mg [200,000 tons]
Calculated gas generation rate	34 or 50 Mg/yr non-methane organic carbon (NMOC)	664 tons/year methane generation rate
Methane surface emissions	500 ppmv	200 ppmv/500 ppmv
Surface emissions monitoring [SEM] grid	30 meters (98 feet)	25 feet
Gas control system destruction	98% NMOC	99% methane

Original Proposal	ACDP type	# new permits
Active landfills • Report waste received until 200,000 tons of waste-in-place	Basic	24
Active landfills • Greater than 200,000 tons waste-in-place • Report calculated methane generation rate until 664 tons/year	Simple	7
Active and closed landfills • Greater than 200,000 tons waste-in-place • Calculated methane generation rate above 664 tons/year • Report SEM if below 200 ppmv methane	Standard	8
Active and closed landfills • Greater than 200,000 tons waste-in-place • Calculated methane generation rate above 664 tons/year • Report SEM if above 200 ppmv methane • Install and operate gas collection and control system (GCCS)	Standard	

Public comments

20 Commenters

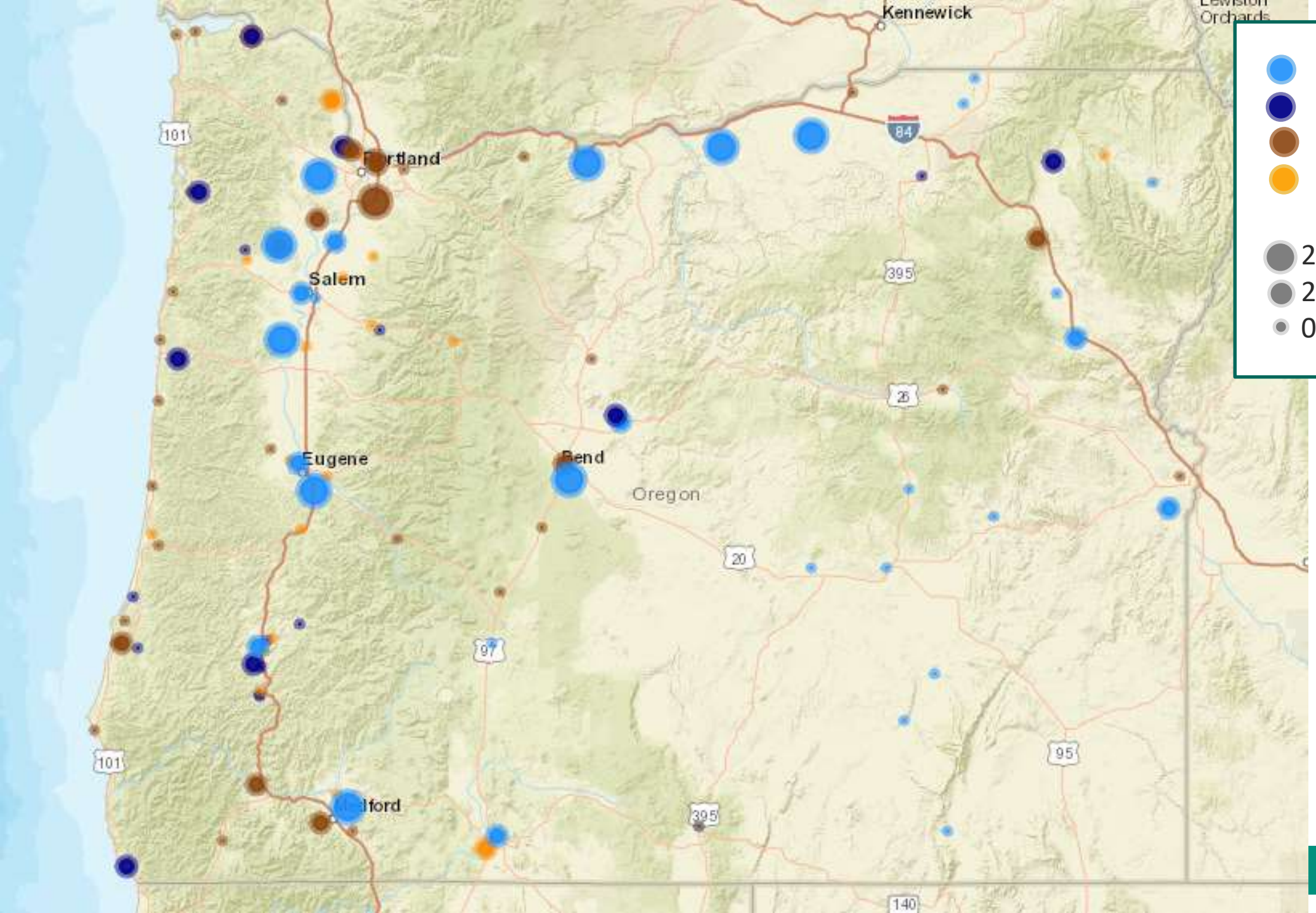
88 individual comments

18 categories

Major changes based on public input

- Removed the requirement to obtain a Basic ACDP for sites with less than 200,000 tons waste-in-place.
- Updated the wind speed requirement for surface emission monitoring to use a wind barrier when wind speeds exceed 4 miles per hour.
- Allow 30 months to install a gas collection and control system.
- Modified rule to require the probe to be within 2 inches of the landfill surface.

Modified proposal based on public input	ACDP	# new permits
Active landfills • Report waste received until 200,000 tons of waste-in-place	NA	~~24~~ 0
Active landfills • Greater than 200,000 tons waste-in-place • Report calculated methane generation rate until 664 tons/year	Simple	7
Active and closed landfills • Greater than 200,000 tons waste-in-place • Calculated methane generation rate above 664 tons/year • Report SEM if below 200 ppmv methane	Standard	8
Active and closed landfills • Greater than 200,000 tons waste-in-place • Calculated methane generation rate above 664 tons/year • Report SEM if above 200 ppmv methane • Install and operate gas collection and control system (GCCS)	Standard	



- MSW active
- Non-MSW active
- MSW closed
- Non-MSW closed

- 2,500,000+ tons
- 200,000-2,500,000 tons
- 0-200,000 tons

Proposed implementation process

Timeline

- New permit applications due Oct. 1, 2022
- Modify existing permits
- Annual rule effectiveness report
- Five-year review

Outreach

- Information requests
- Guidance documents

Coordination

- DEQ Materials Management
- DEQ Office of GHG
- EPA

DEQ recommendation to EQC

DEQ recommends that the Environmental Quality Commission:

- Adopt the proposed new rules for Division 239;
- Adopt the proposed revised rules in Division 12; and
- Adopt the proposed revised Table 1 of Division 216, all as seen in Attachment A of the staff report for this item, as part of Chapter 340 of the Oregon Administrative Rules.