

Landfill Gas Emissions 2021 Rulemaking Advisory Committee Meeting 1

Air Quality Planning

Jan. 19, 2021
Remotely Held Meeting

Introductions

- Hello and welcome
- Purpose of meeting
- Introductions
 - DEQ Staff & Facilitator
 - Advisory Committee members

Webinar Participation Tips

- **Thank you for joining us today!**
- Please join audio by either phone or computer, not both. We encourage RAC members to turn on your video.
- Please keep your audio on mute when not speaking.

Public Input Instructions

- The public input process will be determined by the RAC members during today's meeting
- To submit input after the meeting:
 - Heather.Kuoppamaki@state.or.us

Rulemaking Resources

<https://www.oregon.gov/deq/Regulations/rulemaking/Pages/lfg2021.aspx>

Primary Rulemaking Contact:

Heather Kuoppamaki, PE

Kuoppamaki.heather@deq.state.or.us

503-407-7596

Agenda

Time	Topic
Noon	Introductions and agenda review
12:15 p.m.	Advisory Committee Business
12:30 p.m.	Overview of rulemaking – purpose, schedule, objectives
1:15 p.m.	Break
1:30 p.m.	Landfill basics
2:15 p.m.	Break
2:45 p.m.	Rule comparison
3:15 p.m.	Discussion and next steps
4:00 p.m.	Adjourn meeting

Background Documents

- Advisory Committee Charter
- Policy Primer
- Landfill Gas Primer
- Rules Comparison

Committee Business

See Advisory Committee Charter

Committee Charter

- Review
- Questions

Advisory Committee Schedule

- RAC #1: background, introduction to landfill gas, rule concepts
- RAC #2: draft rules, implementation, equity
- RAC #3: fiscal impact

Scope for Committee Consideration

- Equity, Environmental Justice
- Opportunities to improve rules without being less stringent
- Implementation / Permitting
- Fiscal impact

Overview of rulemaking

See Policy Primer

Why this rulemaking?

- Greenhouse Gases and Climate Change
- Existing authority
- Executive order

Why Reduce Greenhouse Gas Emissions?



- Programs that reduce greenhouse gas (GHG) emissions are a key tool to help address the worsening effects of climate change
- Oregon is already experiencing these effects

Climate Impacts in Oregon

WILDFIRES

More frequent and intense



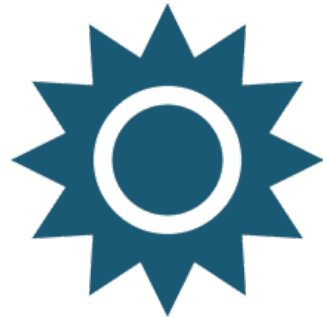
SEA LEVEL RISE

Coastal flooding, impacting habitats and infrastructure



DROUGHT AND HEAT

Stress the environment, human health, and wildlife



REDUCED SNOWPACK

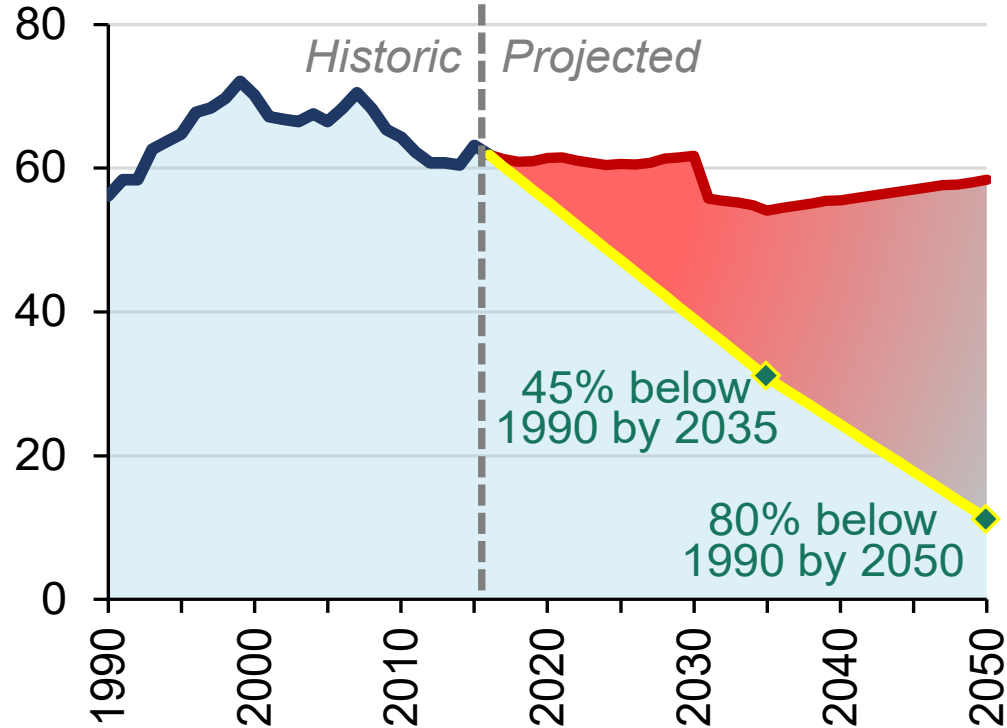
Water supply



Greenhouse Gas Emissions in Oregon

Oregon Greenhouse Gas Emissions

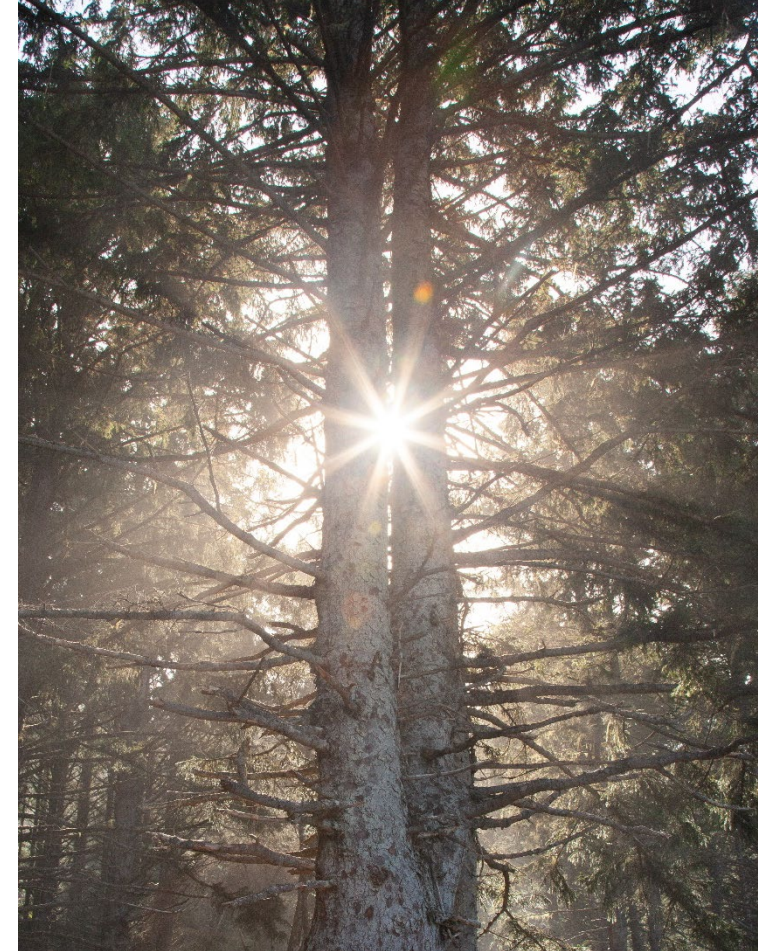
Million Metric Tons of
Carbon Dioxide Equivalent (CO₂e)



- Leader in addressing GHG emissions
- Many programs to reduce GHG emissions
- Oregon is falling far behind the GHG reduction goals Oregon Legislature adopted in 2007, and even further behind more recent science-based targets

Oregon's Response

- Current state initiatives
 - Clean Fuels Program
 - Vehicle electrification
 - Energy efficiency
- Executive Order 20-04
- Individual agency efforts
 - Statewide
 - Coordinated approach
- DEQ and the EQC efforts
 - Continued operations to protect Oregon's air, land and water
 - Expanding existing programs
 - Developing new programs



Existing Authorities - DEQ

468.020 – Rules and Standards

468A.025 - Air purity standards; air quality standards; treatment and control of emissions; rules.

468A.040 - Permits; rules.

468A.050 - Classification of air contamination sources; registration and reporting of sources; rules; fees.

468A.200-260 – Climate Change



EXECUTIVE ORDER NO. 20-04

**DIRECTING STATE AGENCIES TO TAKE ACTIONS TO REDUCE AND
REGULATE GREENHOUSE GAS EMISSIONS**

WHEREAS, climate change and ocean acidification caused by greenhouse gas (GHG) emissions are having significant detrimental effects on public health and on Oregon's economic vitality, natural resources, and environment; and

- D. Regulation of Landfill Methane Emissions. 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.

Anticipated Timeline

Advisory Committee Meetings

Introduction
meeting
1/19/2021



Rules meeting
Feb 2021



Fiscal Impact
meeting
Mar 2021



Notice of
Rulemaking
Mar/Apr 2021



Public Comment
(one month)



EQC
7/2021



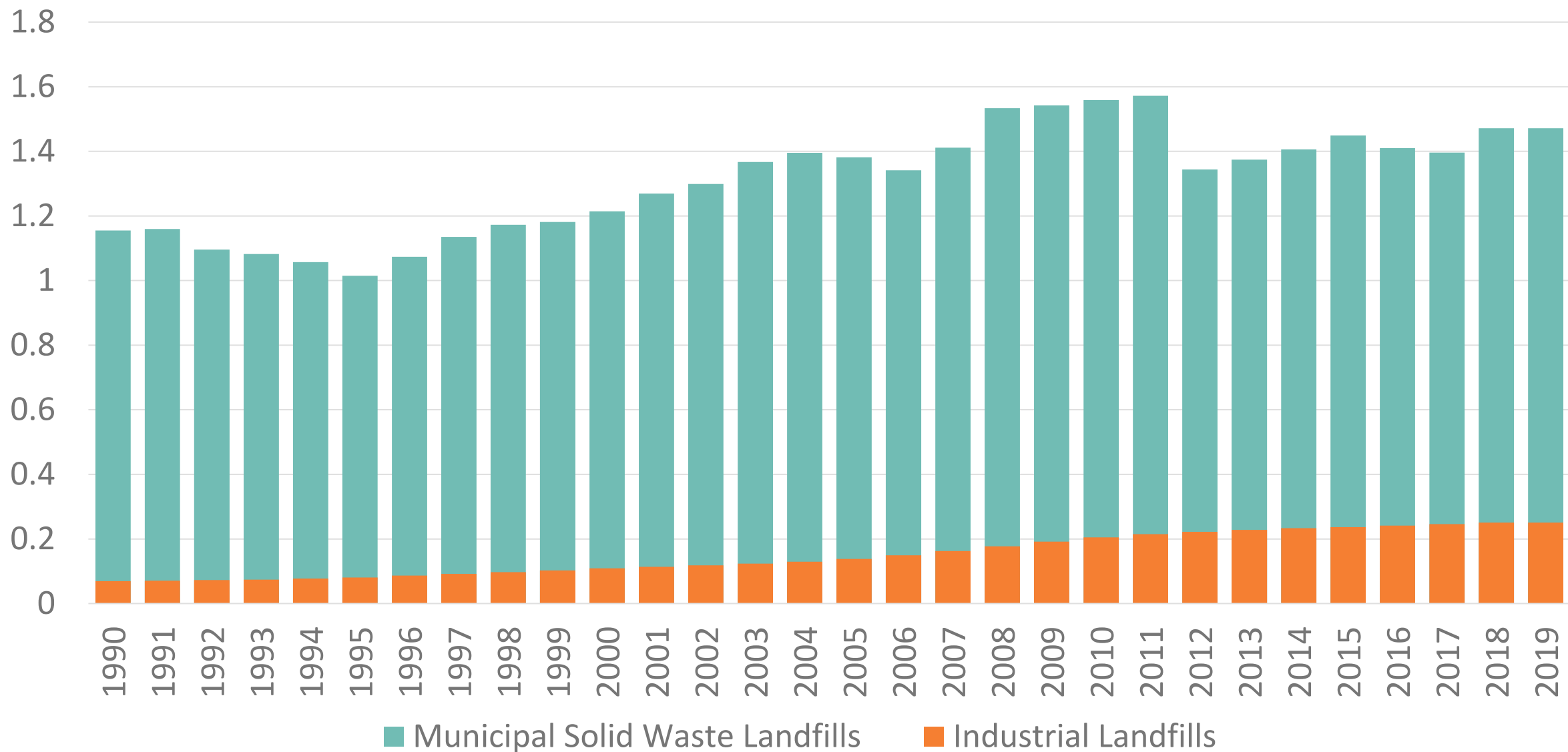
Outreach /
Implementation
TBD

Questions

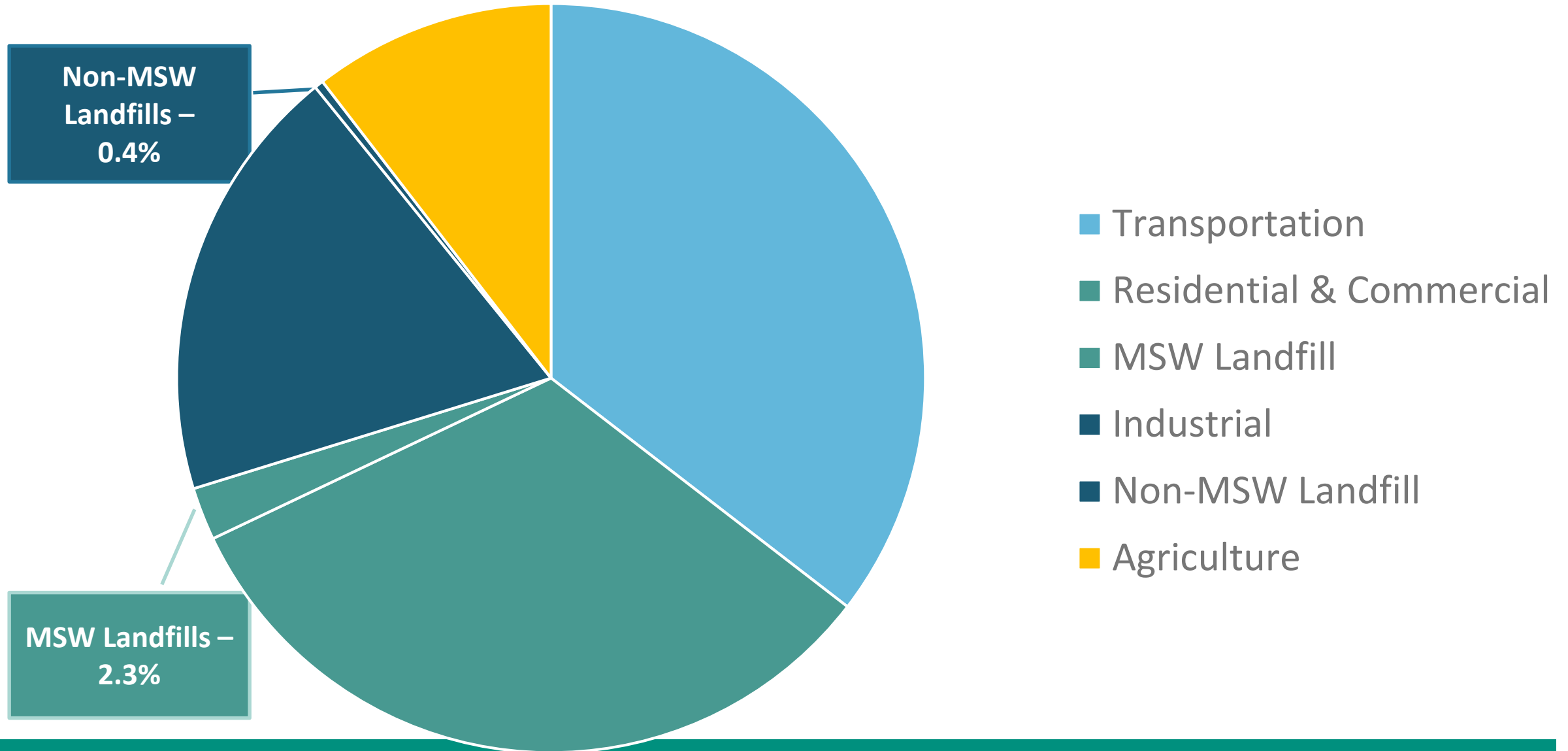
Landfill Gas Emissions in Oregon

Landfill Gas Emissions

Million Metric Tons of Carbon Dioxide Equivalent

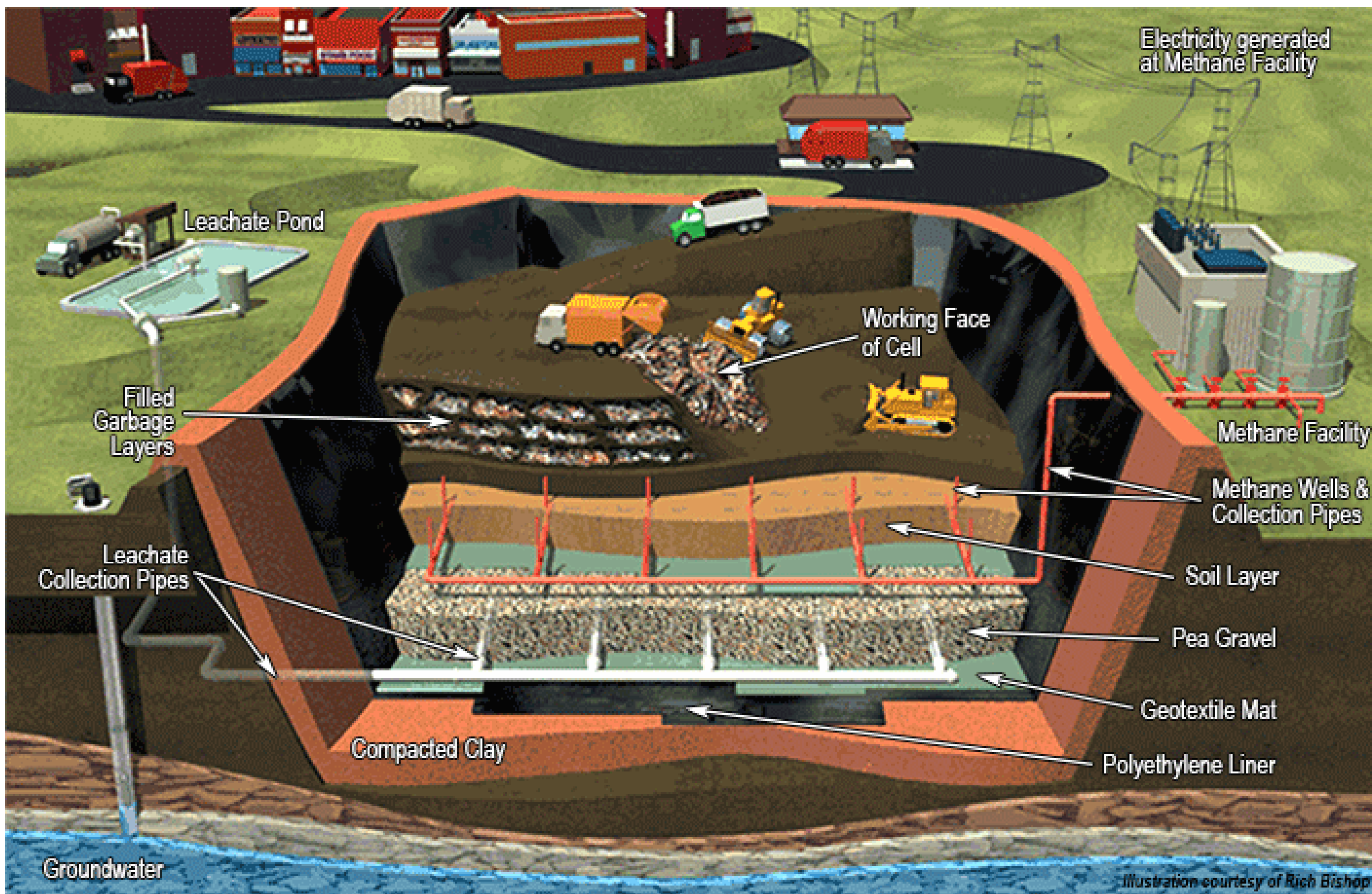


Oregon 2019 Greenhouse Gas Emissions Reporting



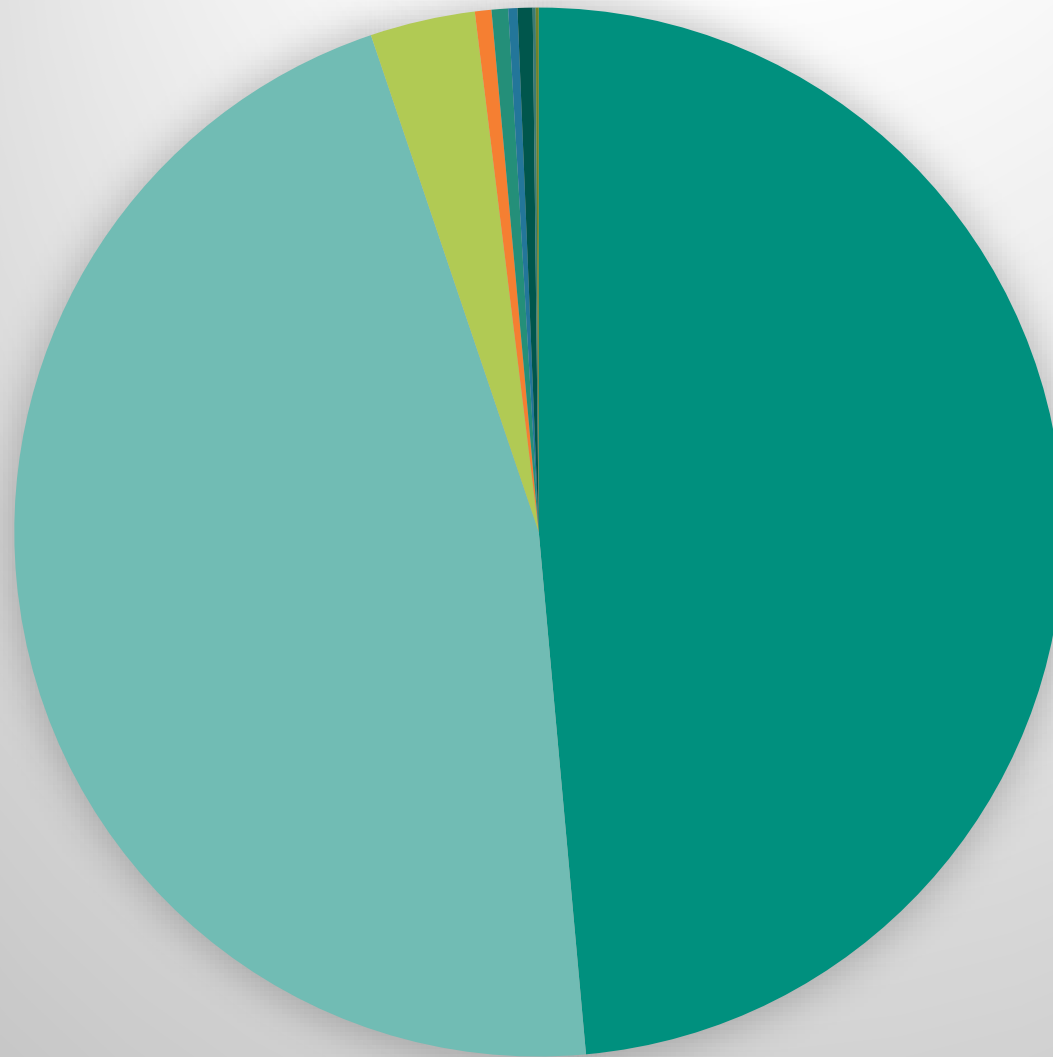
Landfill basics

See Landfill Gas Primer



Source: Metro
Waste Authority:
<https://www.mw.atoday.com/news/garbage/landfill-construction.aspx>

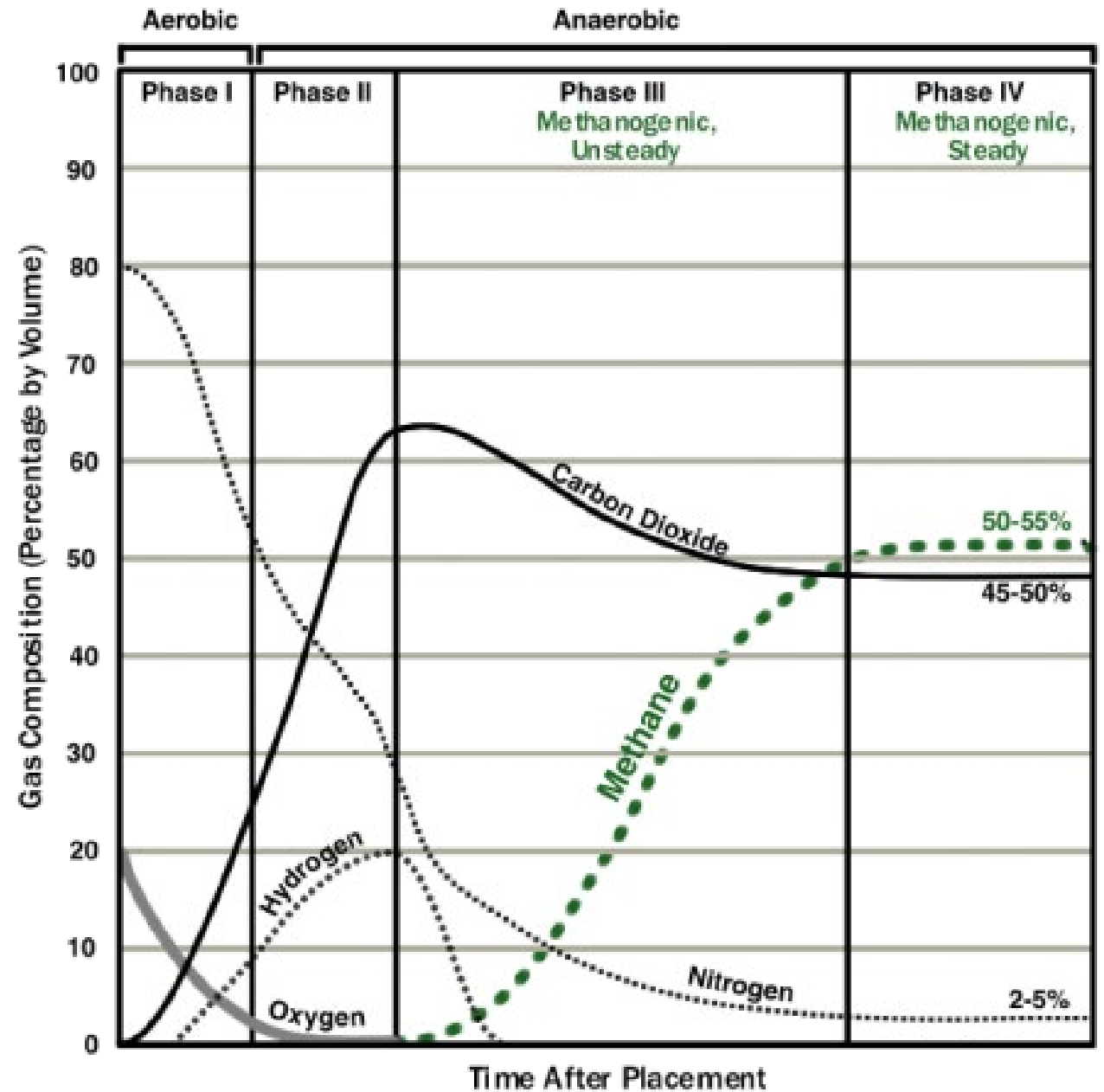
Landfill Gas Components



- 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%

Landfill Gas Generation over time

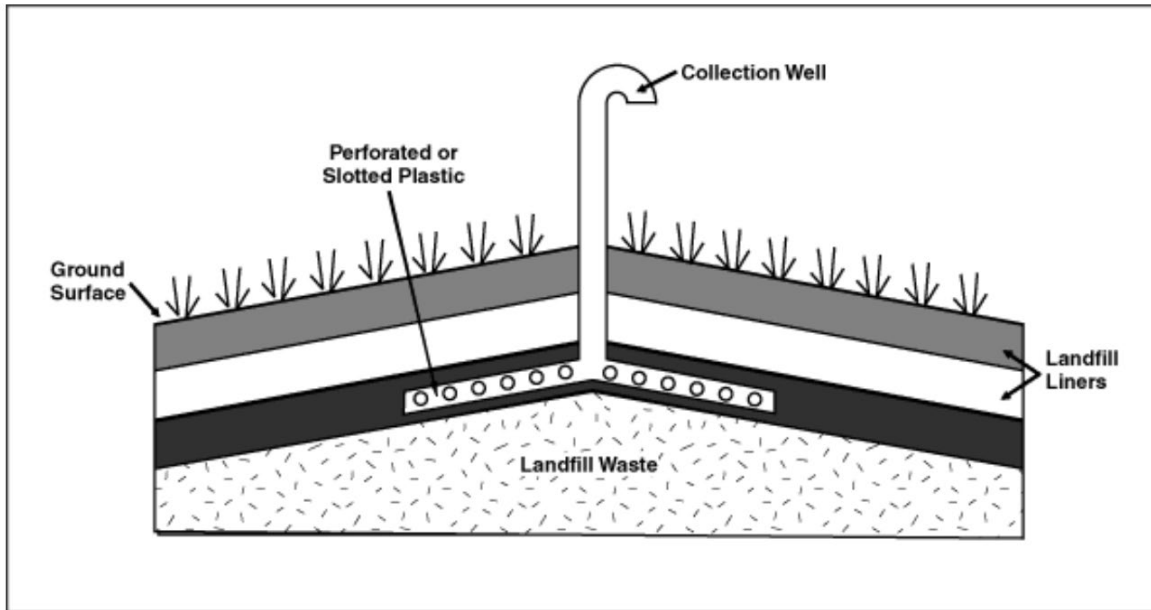
Source: ASTDR Landfill Primer



Landfill Gas Collection and Controls

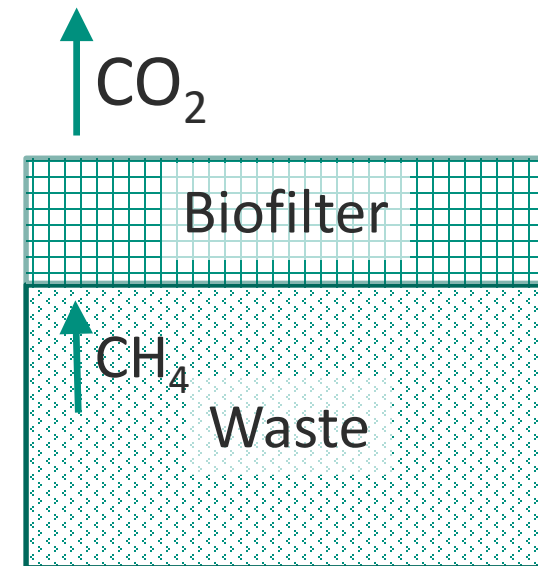
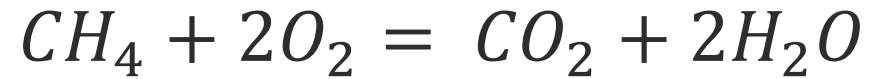
Passive Collection Systems

Venting

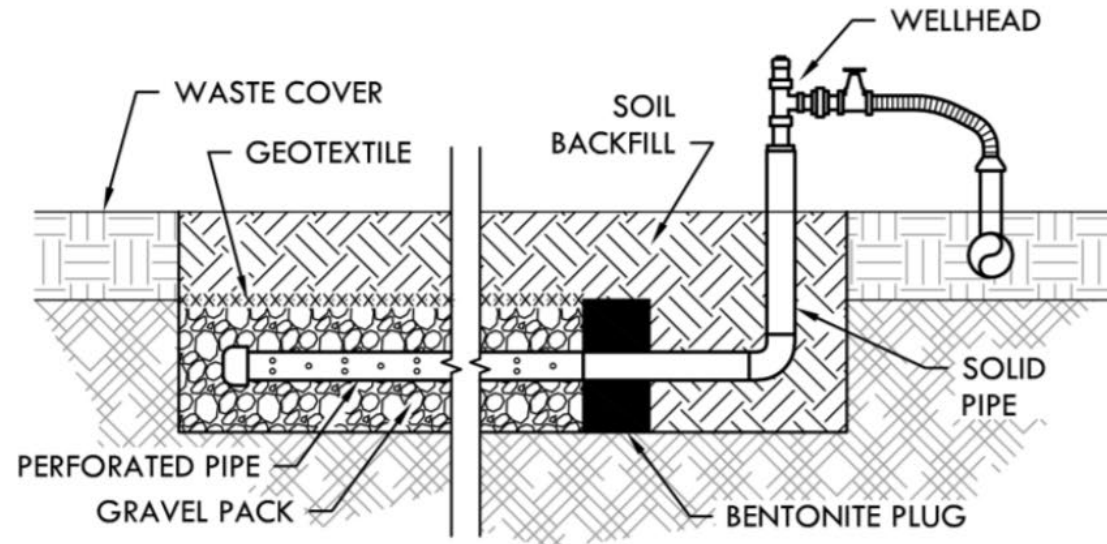
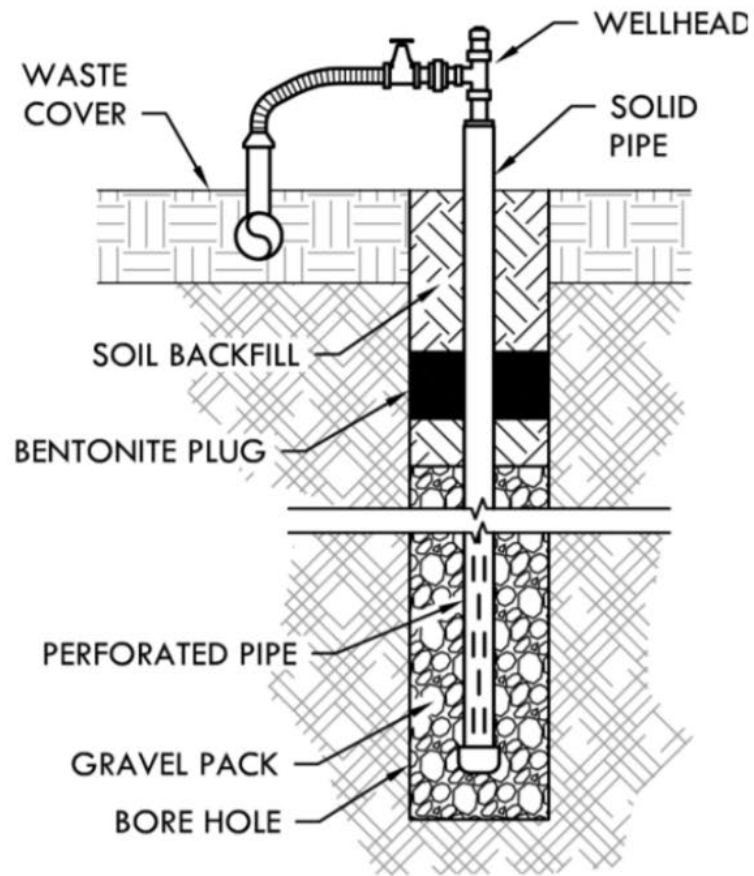


Source: ASTDR Landfill Primer

Methane oxidation (biofilter):

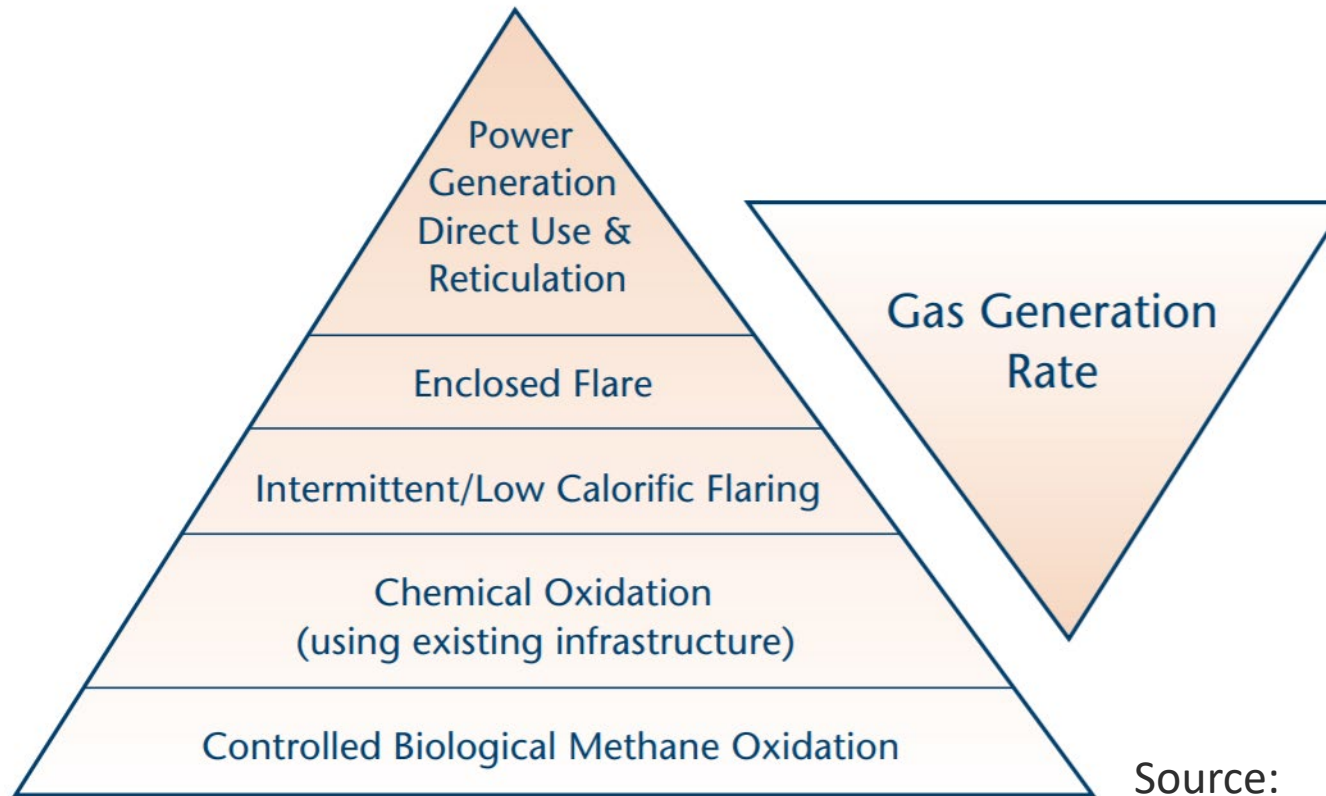


Active Collection Systems



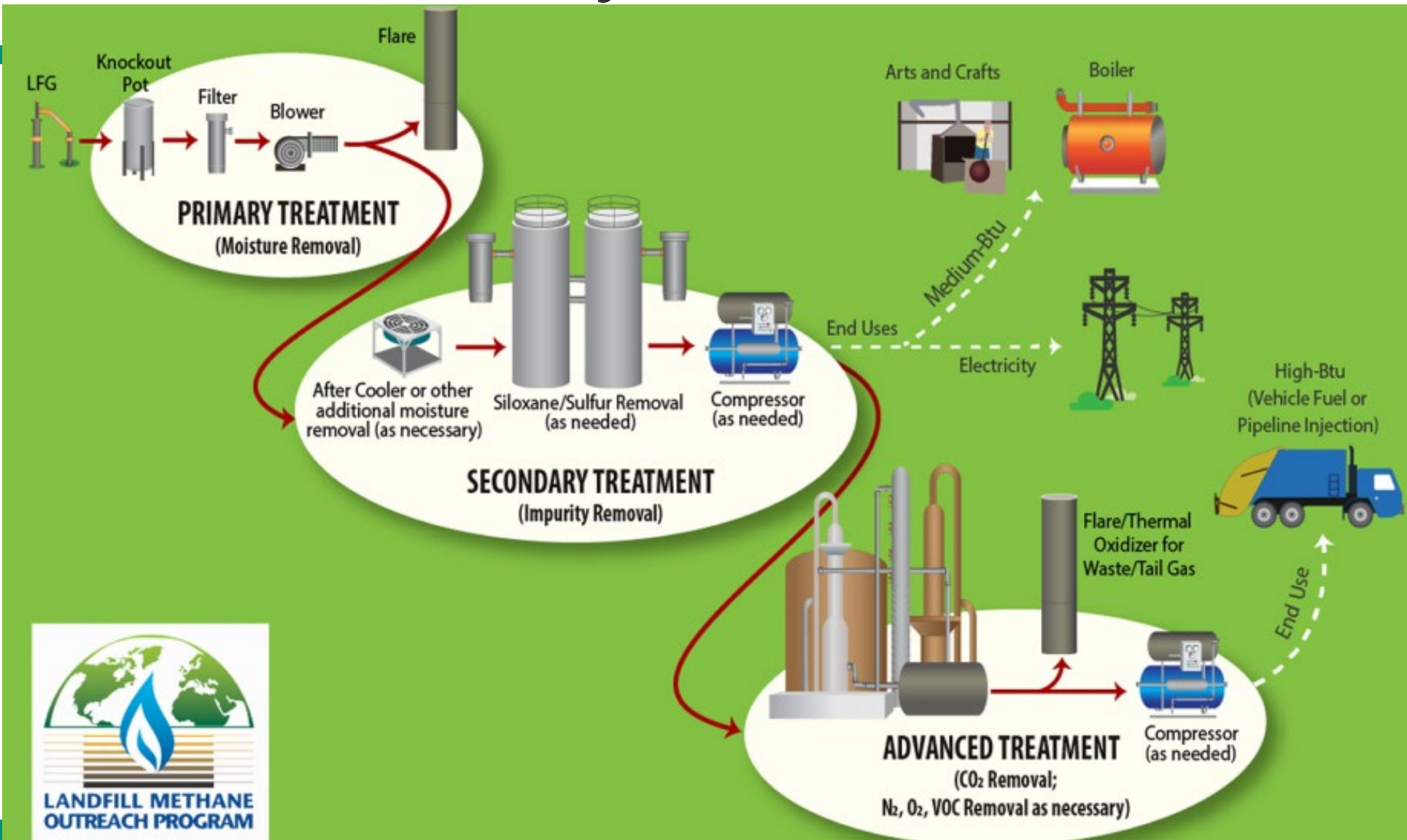
Source: ASTDR Landfill Primer

Landfill gas control options



Source:
<https://www.sepa.org.uk/media/28988/guidance-on-landfill-gas-flaring.pdf>

Active Systems - Control



Combustion by-products

- NO_x and SO_x
- CO
- CO₂
- HCL
- Dioxins / Furans
- PM
- HAPs

Additional benefits to landfill gas capture/control

- Reduce CO₂ emissions
- Reduce other HAPs in LFG
- Potentially create energy / resource
- Reduce tropospheric ozone
- Health and safety
- Reduce odors

Questions

Rules Comparison

See Rule Comparison Document

Existing Regulations Bordering States



- Washington - WAC 173-400
- Idaho - IDAPA 58.01.01
- Nevada - NAC 445B
- **California – 17 CCR 95460-95476**

Existing Regulations – Oregon

OAR 340-236-0500 – Emission Standards for Municipal Solid Waste Landfills

OAR 340-238-0100 – New Source Performance Standards: Municipal Solid Waste Landfills

OAR 340-244-0220 – Oregon Federal Hazardous Air Pollutant Program

OAR 340-222 – Plant Site Emission Limits

Parameter	Current OR rules (federal)	Potential OR rules (neighbor state)
Landfill type	Municipal solid waste (MSW)	MSW and non-MSW
Landfill size	2.5 Million Megagrams (Mg)	450,000 Mg
Calculated generation rate	34 or 50 Mg/yr non-methane organic carbon (NMOC)	3 million BTU/hr Landfill gas heat input capacity
Methane surface emissions	500 ppmv	200 ppmv
Surface emissions monitoring grid	30 meters (98 feet)	25 feet
Gas control system destruction	98% NMOC	99% methane

Regulated landfills - current

Potential Requirement	No. of Landfills
DEQ AQ Permits	12
▪ Annual reports	12
▪ Gas collection and control system	11

Estimated Impacts of CA rules

Potential Requirement	Details	No. of Landfills*
DEQ AQ Permits		56
<ul style="list-style-type: none"> Annual report 	Submit annual Waste-in-Place Reports	31
<ul style="list-style-type: none"> Modeling/monitoring 	<ul style="list-style-type: none"> Calculate landfill gas heat input capacity Surface emission monitoring 	7
<ul style="list-style-type: none"> On-site construction 	Install gas collection and control system	5
<ul style="list-style-type: none"> Update existing gas collection and control systems 	Smaller monitoring grid, improve destruction efficiency	13

*Based off of data from DEQ's Materials Management Program

Discussion

- Other opportunities to limit GHG emissions from landfills
- Oregon-specific factors for consideration
- Equity or environmental justice concerns / opportunities
- Useful information to prepare for rule review
- Questions or comments regarding the California rules
- Implementation recommendations
- Concerns or issues

Next Steps

Advisory Committee Meetings

Rules meeting
Feb 2021



Fiscal Impact
meeting
Mar 2021



Notice of
Rulemaking
Mar/Apr 2021



Public Comment
(one month)



EQC
7/2021



Outreach /
Implementation
TBD

Thank you,

Rulemaking website:

<https://www.oregon.gov/deq/Regulations/rulemaking/Pages/lfg2021.aspx>

Sign up for govdelivery:

<https://public.govdelivery.com/accounts/ORDEQ/subscriber/new>

Primary Rulemaking Contact:

Heather Kuoppamaki, PE

Kuoppamaki.heather@deq.state.or.us

503-407-7596