Maryland
Department of the Environment

Strategies to Reduce Greenhouse Gas Emissions from Maryland's Landfills

2021 Food Recovery Summit

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Topics for Discussion

- Maryland's Progress on Climate Change
- Reducing Methane Emissions from Landfills
- Food Waste Diversion is a Climate Mitigation Strategy (with co-benefits)
- Supporting Regulations and Programs
- Next Steps

Climate Change in Maryland

Addressing Climate Change and reducing greenhouse gas (GHG) emissions has become a major issue in Maryland

To support that effort, MD relies on:

1. The Greenhouse Gas Emissions Reduction Act (GGRA) of 2009 and 2016
   - Reducing leaking methane is a priority
2. The Maryland Commission on Climate Change (MCCC)

Climate Change in Maryland

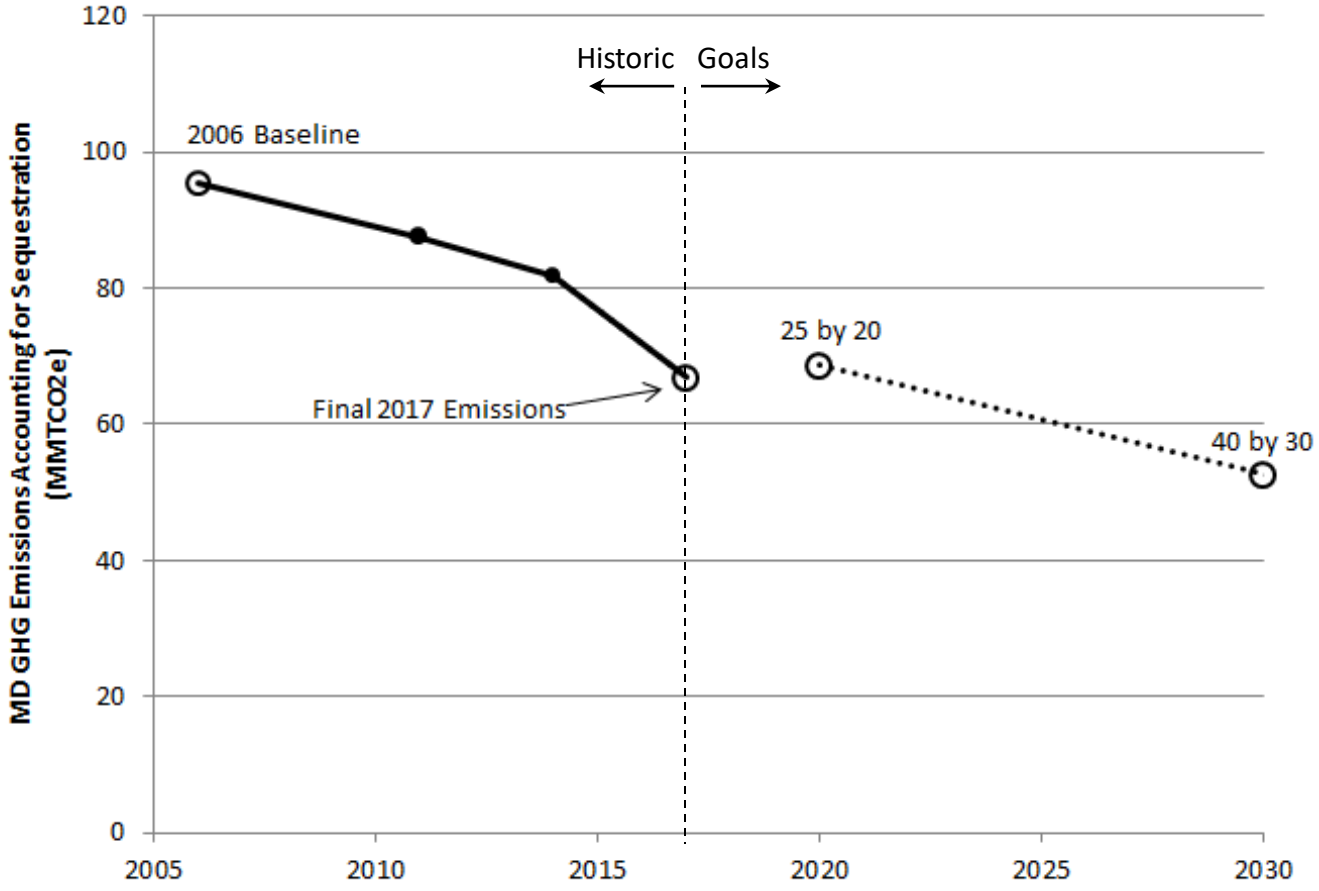
3. Partnerships and Regional Collaborations
   - Regional Green House Gas Initiative (RGGI)
   - The Zero Emissions Vehicles Memorandum of Understanding (ZEV MOU)
   - United States Climate Alliance (USCA)
4. Legal Challenges of some federal policies on the books

The Greenhouse Gas Emission Reduction Acts (GGRA)

- Climate change effort originated in 2007 by Executive Order
  - Resulted in a 2008 “Climate Action Plan”
- This led to the “Greenhouse Gas Emission Reduction Act” of 2009
  - 25% Greenhouse Gas (GHG) Emission reduction by 2020
- And then the reauthorization in 2016, adding new goals
  - 40% GHG reduction by 2030

The Greenhouse Gas Reduction Act

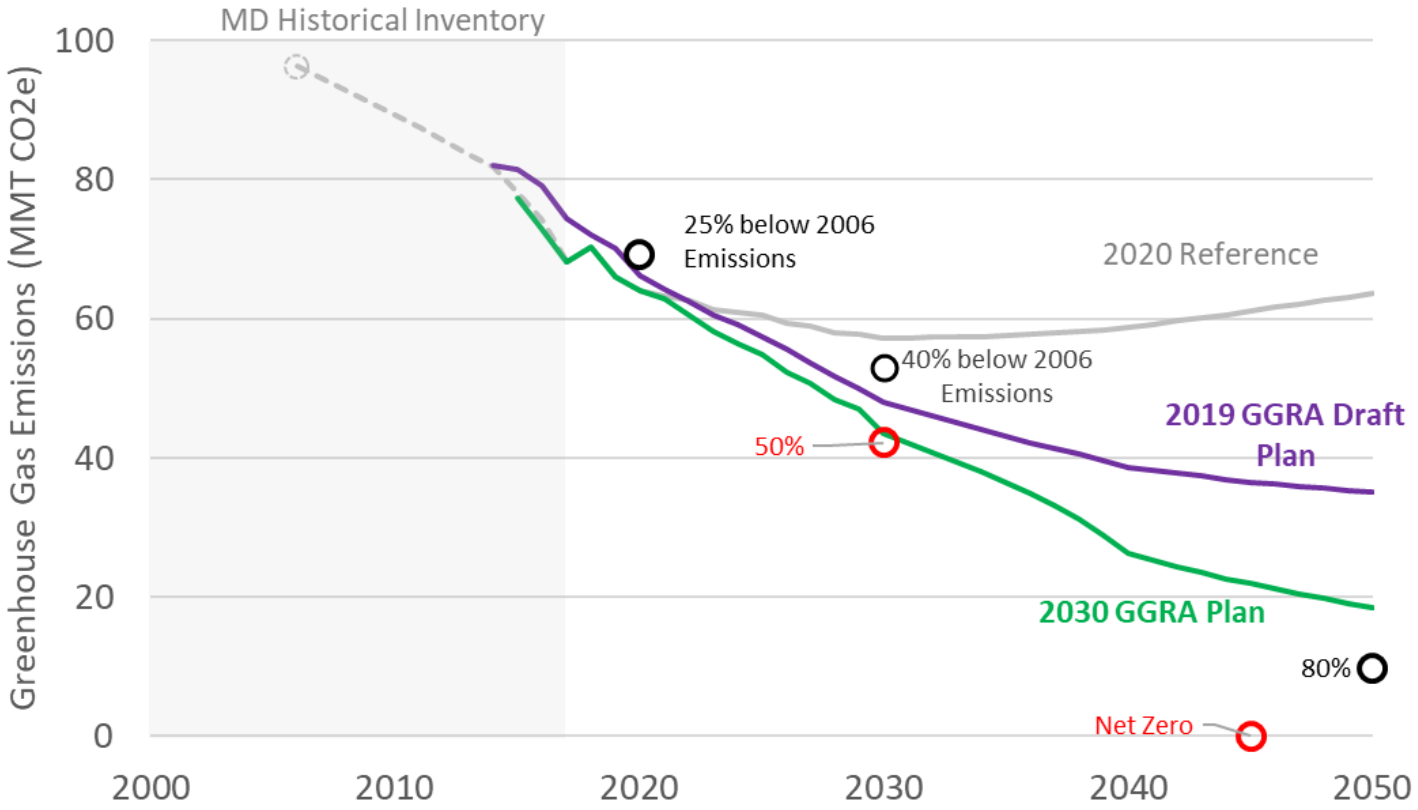
Maryland Law ("GGRA"): Reduce GHGs 25% by 2020 and 40% by 2030



Maryland greenhouse gas emissions, accounting for sequestration. Please note favorable weather drove additional reductions in 2017.

The 2030 GGRA Plan

The 2030 Plan reduces substantially more than the 40-by-30 requirement, and nearly achieves 50-by-30 (~1.4MMT short).
Additional Federal action may make up the difference.



Maryland greenhouse gas emissions, accounting for sequestration. Projections from Draft Plan and 2030 GGRA Plan.

Maryland Commission on Climate Change (MCCC)

- Original Climate Change Commission established through executive order in 2007
- In 2008, the MCCC developed a Climate Action Plan that led to the 2009 GGRA
- MCCC was codified into law in 2015
- Established a balanced, bipartisan Commission:
  - Chaired by MDE Secretary Ben Grumbles
  - Appointed members represent the General Assembly, state and local government, the private sector, environmental advocacy groups, labor, academia, business

Maryland Commission on Climate Change (MCCC)

- Basic charge of the MCCC:
  - Provide recommendations on how to mitigate GHG emissions and adapt to the impacts of climate change

- Reducing leaking methane emissions has been a very high priority for the MCCC

– Landfills

– Oil and Gas Sector

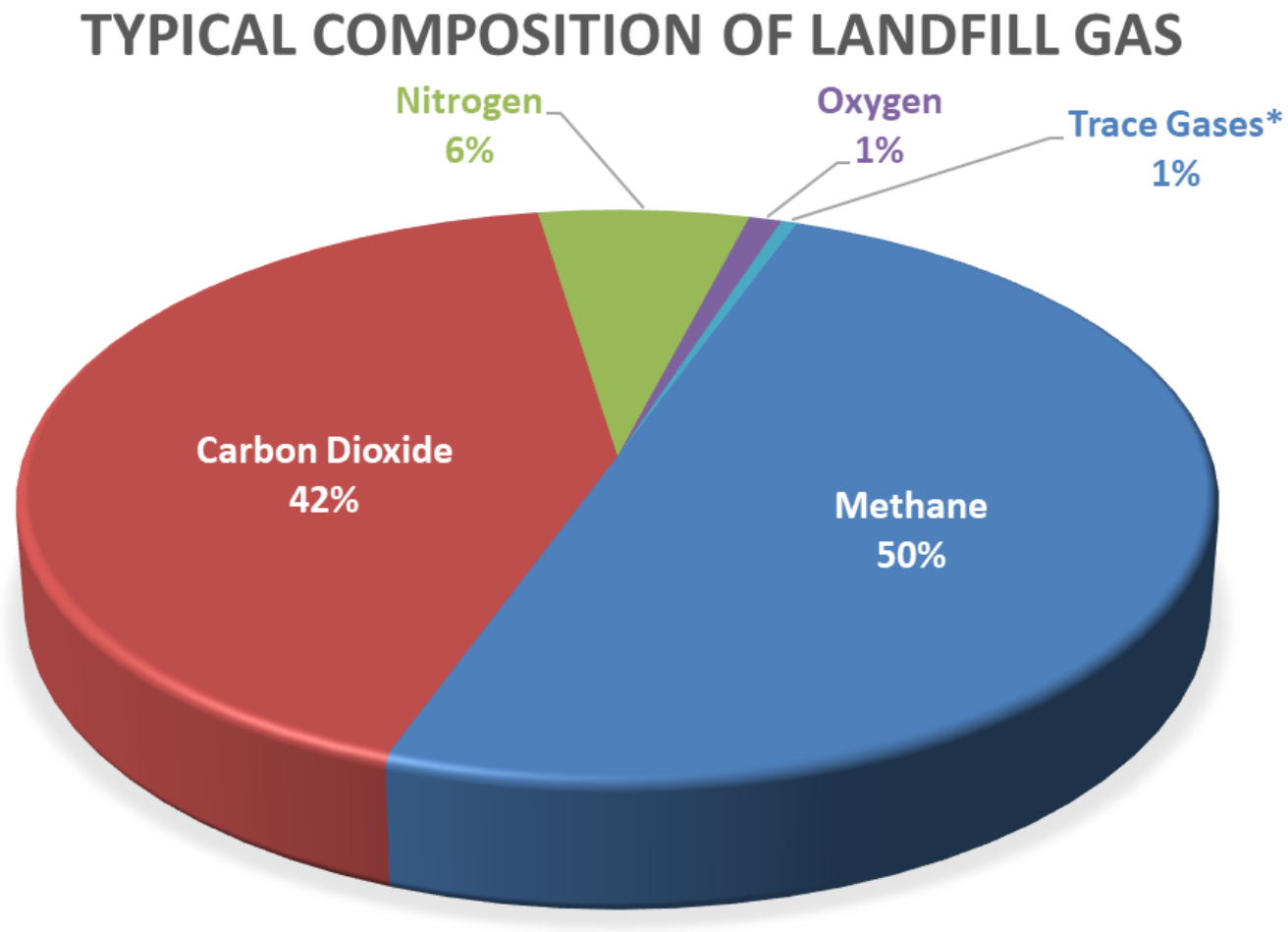
Climate Change – Increasing Urgency

- MDE continues to rely on scientific evidence to guide its regulatory process
- The international research community is urging quicker action to reduce GHG emissions- especially methane emissions
- MDE is making progress on a new regulation aimed at reducing methane from our landfills

MDE's Update to Landfill Regulations

- Two basic drivers:
  - The new federal New Source Performance Standards (NSPS) and Emission Guidelines (EG) for MSW landfills
  - The need for additional requirements to minimize leaking methane emissions as part of the state's climate change efforts
- These two separate, but related drivers will be blended in a proposed regulation
- Some details of the proposed draft regulation are available

Municipal Solid Waste Landfill Emissions

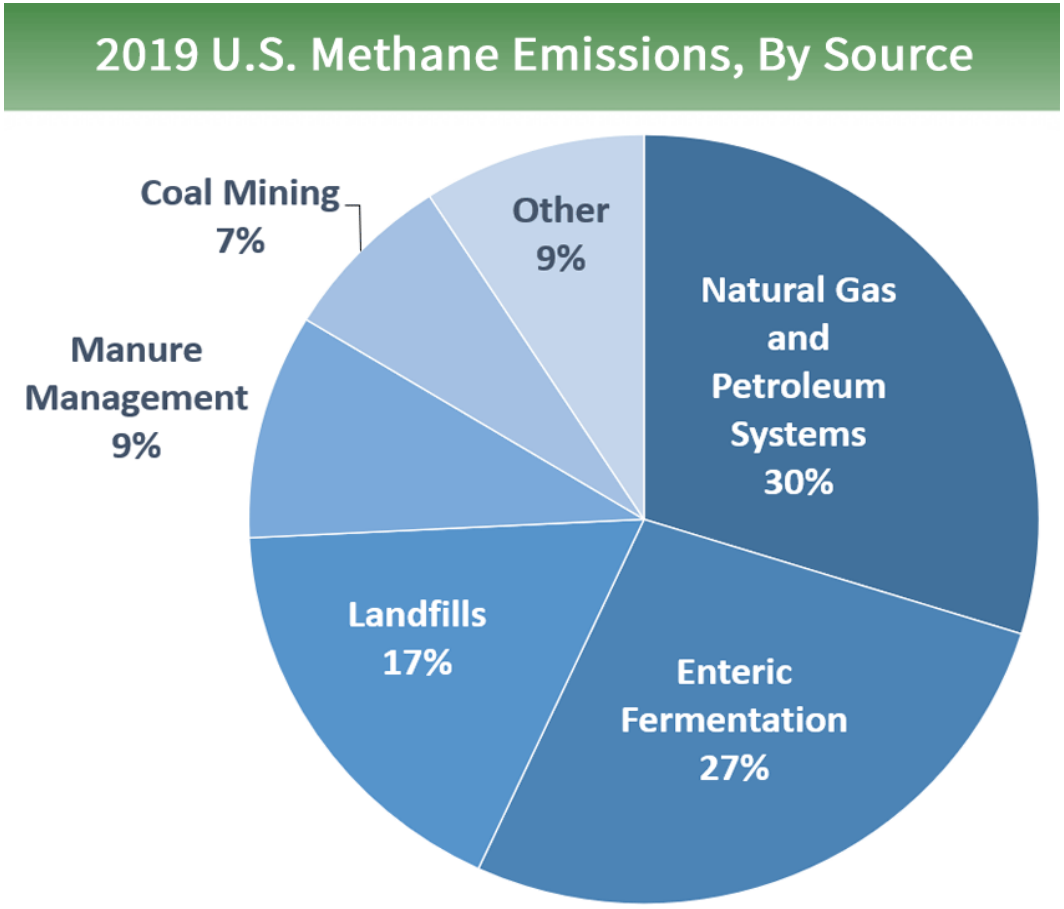


*Trace gases includes ammonia, NMOC (non-methane organic compounds), sulfides, hydrogen, and carbon monoxide

Source: https://www.atsdr.cdc.gov/HAC/landfill/html/intro.html

US Sources of Methane Emissions

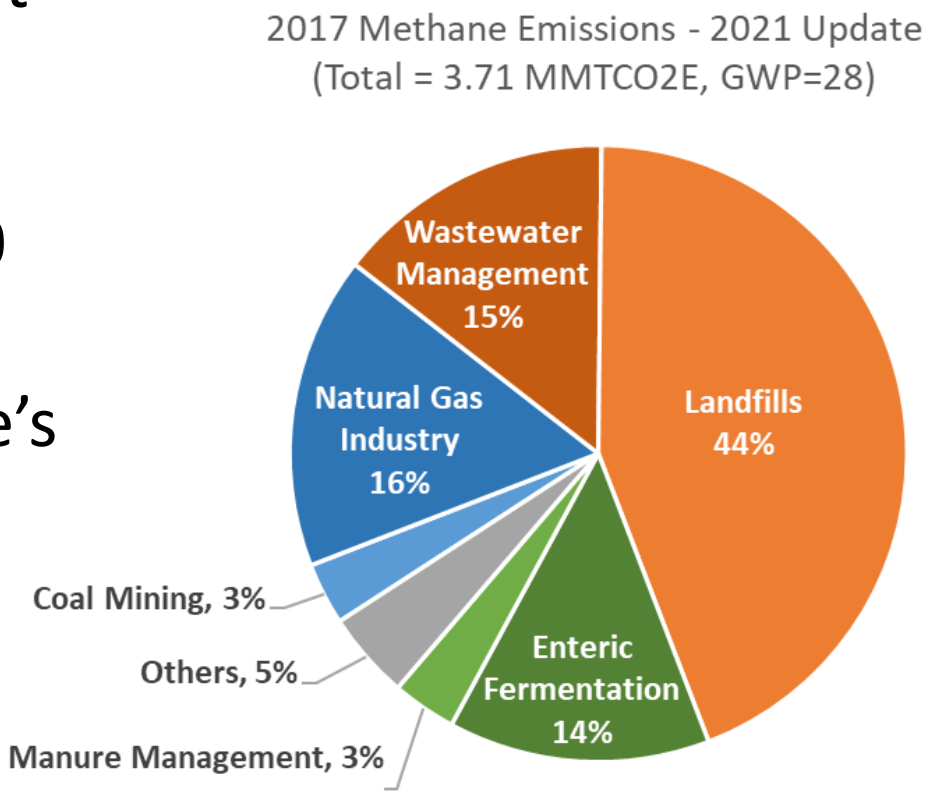
- Where do methane emissions from landfills stand in comparison to other sources in the country?
- Maryland's landfills are a larger contributor to total GHGs compared to other emission sources



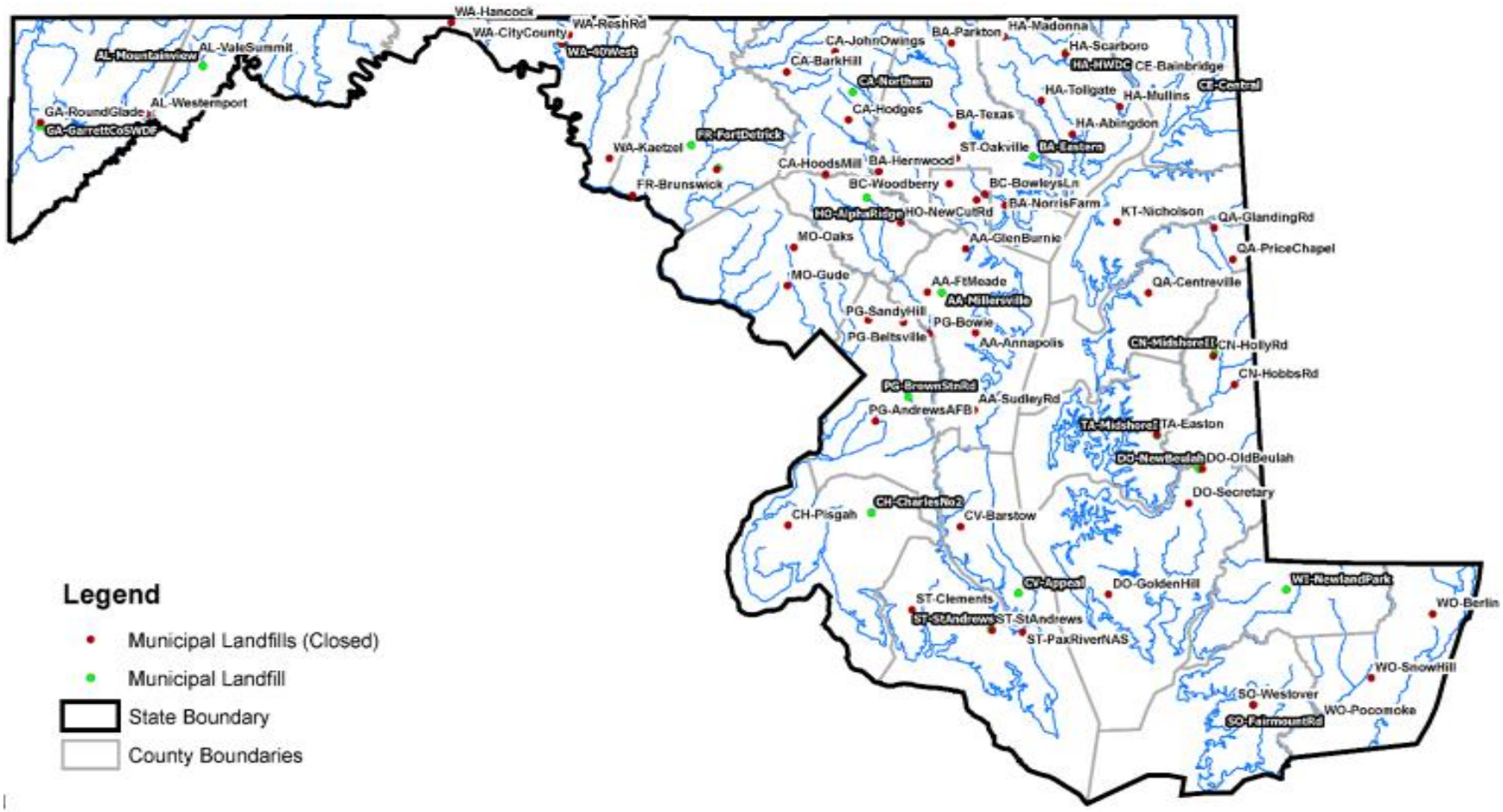
U.S. Environmental Protection Agency (2021). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019

Why the Focus on MD's Landfills?

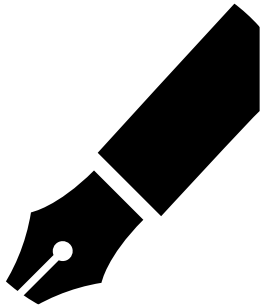
- Methane is a super potent greenhouse gas
  - 28 times the warming impact of CO_2 over 100 years
  - 86 times over methane's 20-year lifetime in the atmosphere
- Landfills are the largest methane emission source in the MDE inventory



Municipal Solid Waste Landfills

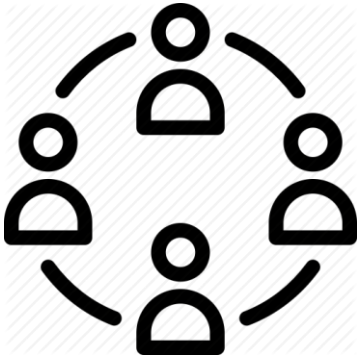


Landfill Regulation Schedule – Proposed Dates



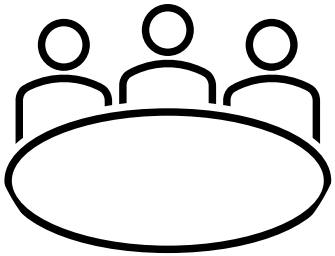
Draft Regulation and Stakeholder Process

Ongoing



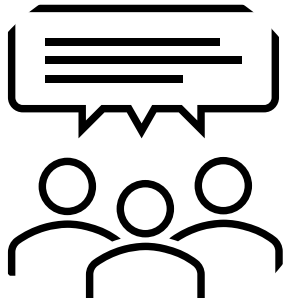
Brief MCCC and MCCC Working Groups

Ongoing



Propose Regulation and Present to AQCAC

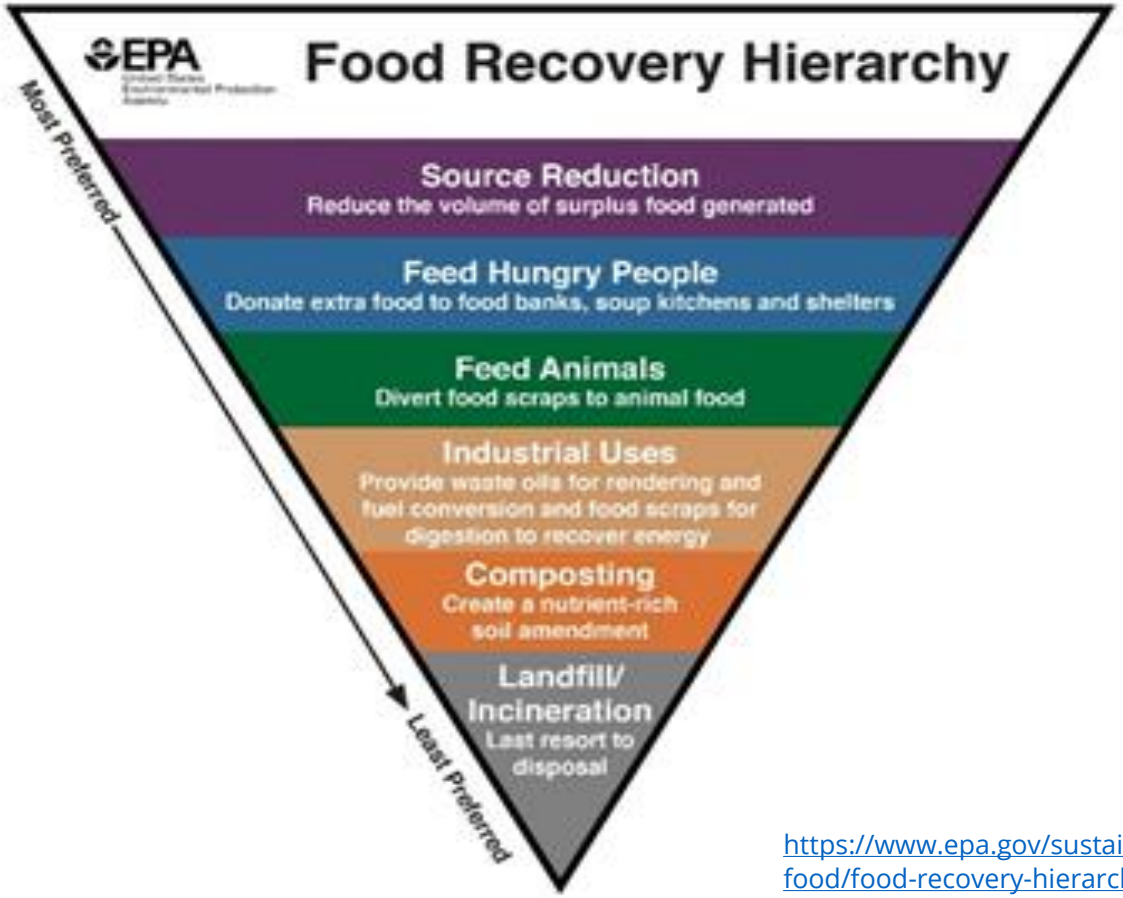
Early 2022



Adoption Process with Hearing

Approximately 9 Months

Other Important Mitigation Measures



https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy

Most Preferred Strategy – Reduce

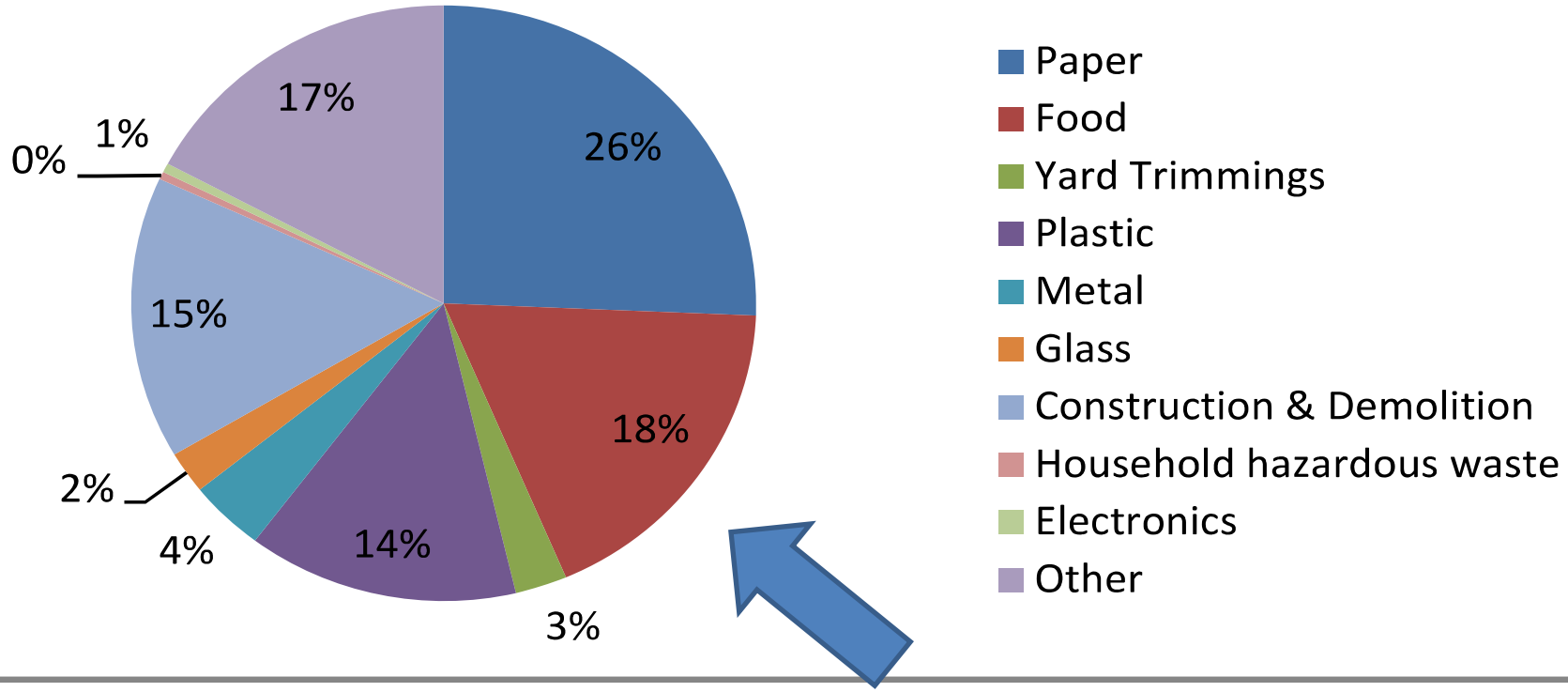
- The best way to reduce climate-related (and other related effects like water usage) resources from food waste is to reduce consumption to begin with
- Food production has a variety of resource needs: including energy, water, fertilizers, herbicides, pesticides, land, and labor
  - "The top levels of the food recovery hierarchy are the best ways to prevent and divert wasted food because they create the most benefits for the environment, society and the economy.

Emissions prior to disposal

- More than 85% of GHG emissions from landfilled food waste result prior to disposal
- Emissions occur during:
  - Production;
  - Transport;
  - Processing; and
  - Distribution
- Food waste is the most common material landfilled and incinerated in the U.S

MD's Waste Stream by Category

Figure 6 - Components of the Disposed Waste Stream



Maryland Food Waste Data

- Food waste is a big part of the waste stream, and has a low recycling rate
- Marylanders generated about 900,000 tons of food waste in 2017
- MDE's statewide waste characterization study indicated that approximately 21% of that food waste was recycled (183,000 tons)
- In 2017, MDE set a voluntary recycling rate of 60% for food scraps

New MD Waste Diversion Regulations

- The Land and Materials Administration is working to implement widespread sustainable materials management, waste reduction, reuse, and recycling to divert waste from landfills in the first place.
- You will hear more about this later today

Supporting Policies to Reduce Food Waste

Disposal Bans and Recycling laws: A new law took effect his year. Starting in 2023, large supermarkets, convention centers and cafeterias that generate two tons or more food waste/week must divert it from landfills, if there is an organic recycling facility within 30 miles

Food Labeling ("sell by, best by, or use by dates"): MD follows federal recommendations but allows milk to be sold 4 days past sell by date. There is no standard date label language that clarifies that most labels are for quality vs safety

Supporting Policies to Reduce Food Waste

Food Donation Liability Protection: MD includes a "presumption of good faith" but does not cover donations directly to needy individuals or donations that are supplied for a fee

Tax Incentives: MD offers a tax incentive deductions that fully offset the costs associated with food donation. Businesses can claim up to 50 percent of the value of the donation for conventional products, and up to 75 percent of the value of certified organic produce donations to charitable organizations.

Supporting Policies to Reduce Food Waste

Grants and Incentives:

Maryland offers a tax credit for food donation by farms and farm businesses but does not provide any other tax incentives for food donation. MD would benefit from sustainable funding to create additional grants and incentive programs that are explicitly aimed at food waste reduction and transportation of usable food

Supporting Policies to Reduce Food Waste

Organics Processing Infrastructure Permitting: MD's permitting process is supportive and efficient. It includes source-separated food waste and has simplified permitting for the addition of food scraps at existing composting facilities for yard trimmings, and exemption from permitting for small-scale and/or community composting operations

Share Tables in Schools: Maryland encourages share tables in school cafeterias through MDE's Food Waste Minimization Toolkit for Maryland Schools

Compost Increases Soil Health - Healthy Soil Sequesters More Carbon

- Diverting food waste from landfills & incinerators to create compost is good for the environment (when done correctly)

- Healthy soil sequesters more carbon which can offset GHGs emissions from the hardest to mitigate sources

- Compost can contribute to soil health by delivering the following benefits:
  - Enhances plant growth
  - Decreases disease and pest issues
  - Retains nutrients and water in soils
  - Helps urban, suburban, and rural soils
  - Stores carbon
  - Reduces landfill methane emissions

Procuring Compost for State Projects

- Maryland's State Highway Administration has developed a specification for compost and compost-based products and identifies compost use as a best management practice to address soil erosion, sediment control, and stormwater management.
- Not only does this provide a broader incentive for use of compost in state projects, but it also helps create an end market for finished compost, acknowledging the importance of compost sales on the sustainability of processing facilities.

MD Policies – Potential Enhancements

- The mandatory organics recycling law currently only applies to food waste generators located within 30 miles of an organics recycling facility. To enhance the efficacy of the law, Maryland could, over time, phase out the distance exemption or increase the radius within which generators are covered.
- Lower the threshold of total organic waste produced to cover more food scraps generators under the current law.
- Cities or counties may establish incentive programs for food donation or waste diversion because they have the power to develop their own solid waste disposal plans.

Next Steps

- MDE's new effort to boost recycling markets will implement requirements for mandatory food scrap recycling at certain organizations

- MDE recognizes that management of organic waste streams can reduce methane emissions

- MDE is drafting proposed regulations to control methane emissions from landfills
  - The regulations will meet the new federal New Source Performance Standards (NSPS) and Emission Guidelines (EG) for MSW landfills and will help the state meet climate change goals

Next Steps

- The Maryland Climate Commission (MCCC) can evaluate measures to reduce food waste and make recommendations in 2022
- The meetings of the MCCC are open to the public
- MDE can partner with local jurisdictions on climate action goals


QUESTIONS … DISCUSSION