CHESAPEAKE CLIMATE ACTION NETWORK

Landfill Methane Regulations
Frequently Asked Questions

Q. Will the regulation apply to the landfill(s) in my county?

A. See here for a table of landfills in Maryland and our best estimate of whether and how they would be impacted by MDE's proposed regulation.

Q. Will the landfill methane regulation prevent the continued operation of solar at landfills?

A. No. First, the proposed landfill methane regulation will not apply to most of the landfills in Maryland where solar projects are operating or planned. The regulation exempts the types of old, closed landfills and small landfills with low gas output where solar makes sense. For example, the regulation will not affect the solar projects proposed for the Glen Burnie Landfill in Anne Arundel County or the Hernwood Landfill in Baltimore County because these landfills closed in the 1980s. The larger, active landfills that are covered by the regulation are mostly unsuitable for solar projects at present—their waste is still settling and shifting, they produce substantial amounts of gas, and their operators may need to install a final cap on the waste.

Of the 17 municipal solid waste landfills in Maryland where solar projects are operating or proposed, at most five will be required to operate a gas control system under MDE's proposed regulation. It's likely that this number is even lower, since at least two of these landfills will probably avoid the regulation's proposed gas control requirements based on a provision in the proposed regulation that exempts landfills with low concentrations of methane at their surface.

Further, all five of these landfills *already have* gas control systems, which hasn't prevented them from installing or proposing solar. Two of these facilities, the Brown Station Road and Sandy Hill landfills, are currently required to operate gas control systems in accordance with EPA's federal air quality regulations for landfills. The operator of these landfills, Prince George's County, has still proposed constructing solar projects at both facilities. MDE's proposed regulation, while stricter than the EPA's, uses the same framework and does not introduce any provisions that would prevent the operation of a solar project. Another Maryland landfill, the Reich's Ford Landfill in Frederick County, currently has a large solar array that it operates in conjunction with an extensive voluntary gas control system. Generally speaking, it is not uncommon for landfills to pair solar arrays with landfill gas collection systems, whether those systems are regulated or unregulated.

In addition, MDE's proposed regulation is very similar to California's landfill methane regulation, which has been in place since 2010. There are multiple solar projects that are planned or operating at landfills subject to California's regulation.

In some cases, the proposed regulation may *promote* the installation of solar projects. Some landfill operators may generate electricity from the gas that is collected by a regulated gas control system. This requires operators to install infrastructure that enables the landfill to supply that electricity to the power grid. Once this infrastructure is in place, solar operators can make use of it, instead of having to pay for and install the equipment on their own.

Q: My county's landfill has a voluntary gas collection system. Isn't that enough?

A: Likely not as the landfills with voluntary gas collection systems have lower average collection rates than those subject to mandatory gas collection.

We have data on 16 of the 17 landfills in Maryland with voluntarily installed collection systems. The gas collection systems at these 16 landfills had a reported collection efficiency of 55% in 2017, which is significantly lower than the 76% average collection efficiency achieved by the systems subject to federal requirements.

The difference in the system efficiency of collection systems that are required by regulations versus those that are installed voluntarily is even more pronounced when considering active landfills (those that continue to accept waste). Systems at closed landfills generally collect gas with a higher efficiency because landfill operators need to add a final cover to closed landfills, which slows the escape of some of the gas, making it easier to collect. Gas is collected with 69% efficiency at the three active landfills that are subject to federal regulations, while gas is collected with only 39% efficiency systems at the 10 active landfills that installed the systems voluntarily.

For example, the chart below shows the gas collection efficiencies that Howard County Department of Public Works reported to MDE for each of the three most recent years for which we have emissions reports.

Year	Collection Efficiency
2019	39.9%
2018	44.5%
2017	41.4%

Improving these low collection efficiencies is one of the primary purposes of seeking stronger regulations.

For more information, see Environmental Integrity Project's report Greenhouse Gas Emissions from Maryland's Landfills, page 19.

Q. Maryland is modeling its rule largely after a rule in place in California. Is California's regulation suitable for Maryland?

A. Yes, for the most part. Maryland's proposed rule is modeled on California's regulation, which is already in place. This rule provides a good starting point for Maryland regulators, who do not have to draft a rule from scratch and can learn lessons from California's experience implementing its rule. Given the difference between Maryland and California in terms of climate and geography, some minor details of California's rule may not be suitable for Maryland. That's exactly what the rule drafting process is meant to uncover and MDE's Air and Radiation Administration (Air) staff is eager to hear this type of feedback.

Oregon has already taken this approach. The state's environmental agency recently finalized a landfill methane regulation that is very similar to California's. Oregon made some adjustments to California's regulation to accommodate state-specific conditions but largely retained the framework and approach that California established.

Q. My county operates a composting facility. Should it be exempt from the regulation?

A. Maybe. California and Oregon exempt new landfills who divert organic waste to composting facilities and therefore contain only "non-decomposable waste." A similar exemption in Maryland, if done right, could encourage composting while also keeping the rule intact for other counties that do not have robust composting programs. Keep in mind, however, that even if a landfill stops accepting organic waste entirely, the organic matter that has already been disposed of at the landfill will continue to decompose, producing gas. Gas production can continue for decades after organic matter is first deposited.

Q: Is MDE's Air program qualified to develop these regulations when they don't specialize in waste disposal?

A: Yes, MDE's Air staff has effectively administered and enforced the federal air quality regulations that apply to landfills since 1998. The Air department is also consulting on this rulemaking with MDE's Land and Materials Administration, which is in charge of solid waste in Maryland. Further, MDE's proposed regulations are based on regulations that are in place and operational in California and Oregon. MDE has these tested models to follow and can also consult with air regulators in California and Oregon.

Q: Will this regulation require flaring and isn't flaring bad?

A. Flaring will result from the regulation, but it is better than allowing landfill methane to escape into the atmosphere.

Maryland's proposed rule will require operators of landfills of a certain size that produce enough landfill gas to collect and burn the gas, which contains methane and other compounds that can harm human health and the environment. At some landfills, this will result in flaring of the landfill gas. At others, the gas will be used to produce electricity or heat. For landfills in this latter category, flares will still serve as a back-up if the engines or boilers used in those processes require repair, or can't handle the volume of gas that is collected.

While flaring is not an optimal solution, it is better to combust landfill gas in a flare than to release it into the ambient air. First, flaring eliminates the vast majority of the methane in the landfill gas. Methane is explosive, a potent greenhouse gas, and a precursor to ground-level ozone. Flaring converts methane into carbon dioxide and water vapor. Though carbon dioxide is itself a greenhouse gas, methane is much more effective at warming the globe than carbon dioxide. Any given amount of methane induces 86 times more warming than the same amount of carbon dioxide over a twenty-year period. From a global warming perspective, that means releasing methane into the air is over 30 times worse than flaring it.

Burning landfill gas, in a flare or otherwise, also mitigates the harm caused by other compounds in landfill gas that can present a risk to human health and the environment, including volatile organic compounds and hazardous air pollutants.

Q: Will the proposed regulation disincentivize composting?

A: No. Organic matter such as food waste should not be disposed of in landfills. If organic waste cannot be avoided in the first place, it should be directed to composting facilities, which offer a variety of greenhouse gas reduction, agricultural, and community benefits relative to landfilling. The decomposition of organic matter in a landfill produces methane, which can be collected and used by landfill operators to generate electricity and heat for profit with landfill-gas-to-energy (LFGTE) equipment like engines and boilers. This has the potential to create a perverse incentive, where landfill operators, or county governments that manage waste disposal within their jurisdictions, direct more waste to landfills than to composting facilities to increase profits from landfill gas.

Maryland's proposed regulation will counteract that perverse incentive by accounting for the true costs of landfilling. Mandating efficient landfill gas collection systems through regulation will increase the cost of operating a landfill, which will make composting more cost competitive. The regulation will add costs related to gas collection, monitoring, and methane destruction, requiring landfill operators to address the climate change harms of landfills that, for the most part, have not been properly accounted for. Many landfills in Maryland already operate LFGTE projects voluntarily. The proposed regulation will shift the focus away from operating these systems just for profit towards operating them for comprehensive gas control.

This is not to say that the proposed regulation will be enough. Gas control at landfills is one piece of a larger waste disposal puzzle. The regulation will complement, but cannot replace, efforts to expand composting infrastructure and to prevent organic waste in the first place.