

Considering Landfill Gas Recovery as Recycling

At the July 19, 2007 Policy Committee meeting, the Committee requested Staff outline the steps necessary to receive recycling credit from Ohio EPA for landfill gas recovery. Staff believes the first step is to determine if the Committee is in consensus on landfill gas recovery being counted towards the state-mandated recycling goals.

This report provides an overview of landfill gas recovery and summarizes the benefits and concerns of allowing solid waste districts to count landfill gas recovery as recycling.

Background on Landfill Gas

What is landfill gas (LFG)?

Landfill gas is created when organic waste in a municipal solid waste landfill decomposes. This gas consists of about 50% methane (CH₄), the primary component of natural gas, about 50% carbon dioxide (CO₂), and a small amount of non-methane organic compounds. Instead of allowing LFG to escape into the air, it can be captured, converted, and used as an energy source. Capturing LFG helps to reduce odors and other hazards associated with LFG emissions, and helps prevent methane from migrating into the atmosphere and contributing to local smog and global climate change. (USEPA)

How is landfill gas generated?

Landfill gas is generated during the natural process of bacterial decomposition of organic material contained in MSW landfills. A number of factors influence the quantity of gas that a MSW landfill generates and the components of that gas. These factors include, but are not limited to, the types and age of the waste buried in the landfill, the quantity and types of organic compounds in the waste, and the moisture content and temperature of the waste. Temperature and moisture levels are influenced by the surrounding climate. (USEPA)

What are the environmental benefits of using landfill gas as an energy resource?

Converting LFG to energy offsets the need for non-renewable resources such as coal and oil, and reduces emissions of air pollutants that contribute to local smog and acid rain. In addition, LFG projects help curtail global climate change, because they reduce emissions of methane, a greenhouse gas more potent than carbon dioxide. (USEPA)

Landfill Gas Recovery in Hamilton County

Montauk Energy Capital operates three methane gas recovery facilities at Rumpke Sanitary Landfill. The plants convert the methane gas into natural gas energy. The first landfill gas recovery facility at Rumpke Sanitary Landfill opened in 1986, the second plant opened in 1995 and the third plant opened in 2007. The facilities have the potential to recover approximately 15 million standard cubic feet of landfill gas daily, making the recovery operation the largest LFG-to-direct-pipeline facility in the world. The plants combine to provide enough natural gas energy for about 25,000 homes and businesses. The natural gas is distributed by Duke Energy Corp. (www.rumpke.com)

The District commends Rumpke for implementing three methane gas recovery facilities. The environmental benefits of LFG-to-energy include: reducing air pollution, reducing greenhouse gas emissions, reducing the need to use non-renewable resources such as coal, oil, or natural gas to produce the same amount of energy, and providing an alternative form of energy.

Landfill Gas Recovery at Other Landfills Servicing Hamilton County

In addition to Rumpke Sanitary Landfill, Bavarian Landfill, located in Kentucky, has developed a LFG-to-energy system. Bavarian Landfill disposes of approximately two percent of Hamilton County waste. Staff continues to research other landfills receiving Hamilton County waste that are converting landfill gas to energy.

Landfill Gas Recovery Counted as Recycling

District Staff researched the issue of allowing LFG recovery to be credited as recycling. There are several benefits and concerns that Policy Committee members should be aware of and discuss.

Benefits

Measurable Results

Rumpke is converting approximately 12 million cubic feet of landfill gas each day. This is equivalent to approximately 131.6 tons. On an annual basis, that is roughly equivalent to 48,036 tons. The District could not claim all of this tonnage because not all of the waste entering Rumpke Sanitary Landfill originates in Hamilton County. Based on the percentage of material entering Rumpke Sanitary Landfill from Hamilton County, the total amount of recovery is equivalent to approximately 22,298 tons per year.

Solid Waste Association of North America Recommendations

In 2003, the Solid Waste Association of North America (SWANA) issued a report entitled “Pushing the Envelope on Waste Reduction and Recovery.” In this report, SWANA supports “... a broad definition of solid waste reduction and recovery consistent with the practice of integrated solid waste management. Integrated solid waste management involves a series of complimentary actions to reduce and recover value from wastes through source reduction, reuse, product stewardship, materials recycling, composting, anaerobic digestion, conversion technologies, waste-to-energy, landfill gas recovery, and landfill mining.”

Assist the District in Exceeding State-Mandated Recycling Goals

Crediting LFG recovery towards the state-mandated recycling goal could assist Hamilton County in exceeding the goals.

Concerns

House Bill 592

In 1988, the Ohio General Assembly passed House Bill 592, the State’s comprehensive Solid Waste Management Law. This legislation created solid waste districts and gave more authority and responsibility to state and local government. Specifically, the law sought to:

- Reduce reliance on landfills
- Maximize limited disposal capacity through state and local planning
- Encourage waste reduction, reuse, and recycling
- Protect public health and the environment by upgrading solid waste regulations

Crediting LFG-to-energy as recycling does not appear to fall under the intent of HB 592 to reduce reliance on landfills.

Public Awareness

Since its inception, the District has taught residents, businesses, and schools to separate recyclables. There is concern that counting landfill gas recovery as recycling could discourage

residents from recycling because the District is publicly stating that the material is being “recycled” at the landfill.

Organics Diversion

For the past several years, the District has focused on organics diversion. For example, the last two District Priority Grants have focused on organics, the District contracted with RW Beck for an organics study, and the District continues to fund backyard compost bin sales and yardwaste drop-off sites. By allowing landfill gas recovery to be credited as recycling, there is concern that it could discourage separation and composting of organics, which is contrary to the District’s history of targeting yardwaste and organics for diversion from landfill disposal.

Definition of Recycling

The Ohio EPA’s definition of recycling is “the process of collecting, sorting, cleansing, treating, and reconstituting solid waste that would otherwise be disposed in a solid waste disposal facility and returning the reconstituted materials to commerce as commodities for use or exchange.”

The USEPA adopted the National Recycling Coalition's definition of recycling: "the series of activities by which materials that are no longer useful to the generator are collected, sorted, processed, and converted into raw materials and used in the production of new products." This definition excludes the use of these materials as a fuel substitute or for energy production. (USEPA)

Under both definitions, landfill gas to energy recovery is not included as recycling.

Measuring Recycling Goals

Each year, the District submits an annual report to Ohio EPA on the amount of material recycled. These measurements are based on the amount of material diverted from landfills. Landfill gas-to-energy recovery is not diverting material away from landfills; instead it is using the waste already in the landfill.

Long-Term Implications

If the District were allowed to count landfill gas recovery towards the state-mandated recycling goals, there is concern about the effect this will have on traditional recycling programs. For example, if Hamilton County or other counties in Ohio are exceeding the state-mandated goals due to counting landfill gas recovery as recycling, there may be the potential to reduce funding in the future for traditional recycling and composting programs.

Impacts on Ohio Solid Waste Management Districts

If Hamilton County were to pursue recycling credit for landfill gas to energy projects, it could have an impact all solid waste districts in Ohio as it would require changing the definition of recycling. Because of this, the District recommends that it is essential to receive formal input from Ohio solid waste management districts.