



Department of Public Works Waste-to-Energy, Greenhouse Gases, and Renewable Energy Issue Brief

Issue:

The possibility of legislation related to renewable energy standards and climate change are once again on the agendas of lawmakers and other policymakers both locally and nationally. In particular, how waste-to-energy fits into the discussion of these topics is an item of interest and concern for the County.

Background and Findings:

Marion County has utilized a waste-to-energy facility (WTEF) to process the solid waste generated within the county since 1986. The facility combusts the waste while generating approximately 13 MW of electricity (enough to power about 13,000 homes) that is sold to PGE, reducing the volume of material to be ultimately disposed by 90%. The funds derived from this sale help to fund the County's integrated solid waste management program. This program includes extensive waste reduction, reuse, recycling, and composting programs, which have enabled Marion County to have the highest recovery rate in the state for several years, the most recent being 56.5% for 2007.

The WTEF must comply with strict air permit requirements imposed by both the US Environmental Protection Agency (EPA) and the Oregon Department of Environmental Quality (DEQ). For such high priority pollutants such as mercury, lead, and dioxin, the WTEF typically emits from 1/10th to 1/30th of their permitted allowance.

Currently, the discussion regarding renewable energy and greenhouse gas production have become hot topics of discussion both locally, nationally, and worldwide.

Renewable Energy Portfolio Standards

A renewable energy portfolio standard is legislation that would require electric utilities to provide a certain percentage of the power they offer to their customers from renewable energy generation sources by certain dates. Waste-to-energy meets the two basic criteria for establishing what a renewable energy resource is—its fuel source (trash) is sustainable and indigenous. Waste-to-energy facilities recover valuable energy from trash after efforts to “reduce, reuse, and recycle” have been implemented by households, businesses, and local governments. .

Power produced by waste-to-energy is base load power, meaning it enters the energy grid around the clock, not reliant on the vagaries of weather. Unlike other renewable energy sources, it is typically located closer to population centers and electrical transmission infrastructure, and requires dramatically less land area than some other technologies, such as wind and solar.

In virtually all enactments of renewable energy portfolio standards to date, the combustion of landfill gas for energy generation is included under the definition of “renewable” power. Landfill gas conversion

loses most of the energy potential in the waste. Landfill gas typically nets about 100-200 kW/h per ton of waste disposed, while WTE captures approximately 550 kW/h per ton.

A renewable portfolio standard that excludes waste-to-energy would discourage homegrown renewable energy generation. In addition, it is inconsistent with state laws in nearly half the states which recognize waste-to-energy as renewable, as does the EPA.

Greenhouse Gases & Climate Change

Both the EPA and DEQ have made the determination that WTE is a net greenhouse gas (GHG) reducer. This is primarily due to the fact that it offsets the greenhouse gases that would be emitted if that waste were taken to a landfill. According to the Governor's Advisory Group on Global Warming report (December 2004), landfills account for approximately 25% of the methane released into the environment in Oregon, the second largest source behind agriculture (livestock). Methane is a 20 times more potent greenhouse gas than carbon dioxide (CO₂), the primary output of a WTEF. From the report mentioned above, waste combustion accounts for only 0.5% of the total CO₂ output per year. Approximately 99% of CO₂ production comes from fossil fuel combustion, such as vehicle emissions and coal-fired power plants. While many landfills perform gas extraction for energy production, a well run system would be fortunate to capture 50% of the methane generated, with the rest escaping into the environment.

Additionally, if the waste generated within the county were to be hauled to an out-of-county landfill disposal site, it would generate from 740,000 truck miles to 3.5 million truck miles per year, depending on the landfill location (Coffin Butte or Columbia Ridge, respectively). This would have a significant impact on both area roads as well as air quality and greenhouse gases produced due to the additional vehicle traffic.

Summary

Waste-to-energy is a keystone in the County's integrated solid waste management system, which actively attempts to increase waste reduction, reuse, recycling, and composting first, and then manage the remaining materials by recovering the energy in a manner that is protective of public health and the environment. By utilizing this technology, we are also helping to produce renewable power which will help us to reduce our dependency on imported energy resources, as well as reduce the overall amount of greenhouse gases that are emitted into the environment.

Contact Information:

Sam Brentano, Marion County Commissioner - 503-588-5212

Jeff Bickford, Public Works Department - 503-588-5169 ext.5992