Utah Department of Environmental Quality
Division of Air Quality

Fact Sheet

January 2015

Navitus South Valley Recycling and Renewable Power

Navitus, a renewable energy company based in California, intends to construct and operate an industrial byproduct recovery facility in Sandy, Utah. The plant will utilize a thermochemical process called pyrolysis to convert mixed solid waste (MSW), mixed industrial waste, land-clearing debris, and yard waste into a synthetic gas (syngas) that is 90 percent methane. This syngas will be fed into four internal combustion engines to generate energy for the local energy grid. The proposed facility will process 350 tons of MSW and mixed industrial waste per day.

Waste-to-Energy (WTE) Facilities

The proposed Navitus facility uses a waste-to-energy (WTE) method to process municipal waste. Pyrolysis (gasification) converts MSW into steam by chemically decomposing organic material at high temperatures. It differs from combustion or incineration because the conversion to gas takes place in the absence of oxygen. The steam, which is mostly methane, is used to power engines that generate electricity. WTE facilities are strictly regulated under Clean Air Act (CAA) requirements, including annual stack tests, Best Available Control Technology (BACT) for facility equipment, and Maximum Achievable Control Technology (MACT) for hazardous air pollutant (HAP) emissions. Municipalities have begun to turn to WTE facilities as an alternate way to manage MSW, control waste emissions, and generate power.

Municipal landfills produce a significant amount of methane, a volatile organic compound (VOC) that can react with nitrogen oxides to form fine particulates. According to the Environmental Protection Agency (EPA), MSW landfills are the third-largest source of human-related methane emissions in the United States; fifty percent of the gas produced during decomposition of the organic material in landfills is methane and fifty percent is carbon dioxide. While landfill gas (LFG) collection systems can capture some of these emissions, the EPA has found that there are still significant methane releases from landfills. Quantifying methane emissions from landfills is complicated by the large disposal area and the uncertainty inherent in the biological processes responsible for waste decay and gas generation, while emissions from the gasification conversion of waste can be measured with greater accuracy.

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Public Comment

The public comment period runs January 5, 2015 to February 4, 2015

E-mail your written comments to Jon Black at jblack@utah.gov or by standard mail to:
Public Comment
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Navitus Permit Documents

www.deq.utah.gov/businesses/N/Navitus/apporderreq.htm

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Navitus Facility

The proposed facility will store the MSW and mixed industrial waste that is transported to the site within an enclosed structure to control PM10 and PM2.5 fugitive dust emissions. An internal dust collection system equipped with a baghouse will trap particulates in the material handling area. A feedstock grinder will crush the waste so it will be small enough for the pyrolysis to convert it to gas. This thermochemical process will convert more than 90 percent of the MSW into methane gas. This gas will then be fed into the internal combustion (IC) engines to generate electricity.

Emissions

The proposed plant would be located in a nonattainment area for particulate matter (PM10 and PM2.5) and sulfur dioxide (SO2) and a maintenance area for ozone. The table below is an estimate of the total potential emissions from the proposed facility.

A netting analysis comparing the emissions from waste disposed in landfills to emissions from waste processed through gasification would find a net emissions reduction from the processing of waste through a WTE facility rather than landfilling. These emission reductions would offset permitted emission levels from the facility over the short- and long-term.

Permit Conditions

The facility is required to use BACT to control emissions from the processes. Internal combustion engines to generate electricity will use "lean burn" technology, an electronic air/fuel ratio controller, and selective catalytic reduction (SCR) equipment to reduce nitrogen oxide (NOx) emissions by 90 percent. The permit requires oxidation catalyst technology along with combustion controls to reduce VOC emissions. Fugitive dust will be captured by the baghouse in the enclosed material area and no emissions will be released into the atmosphere. Hazardous air pollutants (HAPs) will be controlled to meet EPA established MACT standards. Modeling shows that HAP concentrations fall below DAQ Toxic Screening Levels (TSL).

The Potential to Emit (PTE) in Tons Per Year	
Particulate Matter (PM) 10	0.03
PM2.5	0.03
Nitrogen oxides (NOx)	7.60
Carbon monoxide (CO)	33.02
Sulfur dioxide (SO2)	0.16
Volatile organic compounds (VOCs)	11.95
Total hazardous air pollutants (HAPs)	1.78
Carbon dioxide equivalent (CO2e)	77,561.27