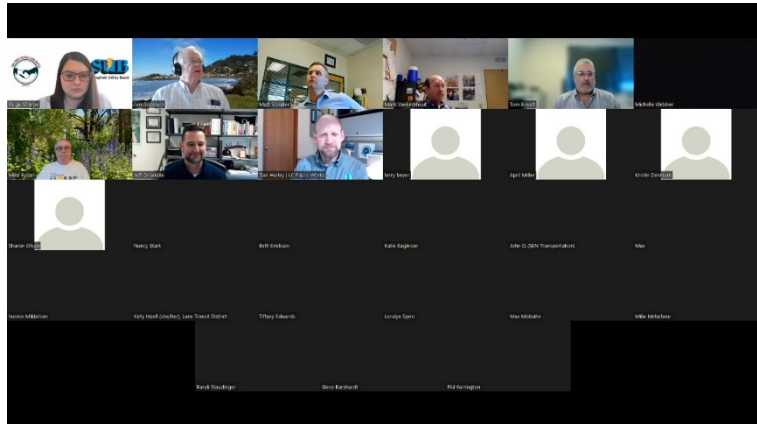



Heat and power from sewage! A fanciful idea, perhaps, but one that became reality in November when the Metropolitan Wastewater Management Commission (MWMC) staff opened the valve on its facility to transfer methane to NW Natural for it to distribute and sell to its customers. The \$14.5 million project, which began in 2012, delivers methane that will primarily be used for transportation purposes, but could, were it dedicated to home heating, deliver enough gas every day to heat over 1,300 homes for a month. MWMC Staff gave City Club a briefing on the history of the project and how it will move forward at the February 17 program.

MWMC staff was joined by staff from Lane County Public Works which is now embarking on a study on how to improve their resource recovery at the Short Mountain landfill. That study could ultimately lead to a similar sort of project at the landfill in the future. All the panelists described these approaches as “leading edge” not “cutting edge.” They noted that although there are a limited number of facilities in the United States, the process of converting waste methane to renewable natural gas are more common in Europe.



First, a brief chemistry lesson. Natural gas is methane. For the most part, like other fossil fuels, it is produced deep under the earth where organic material decays in the absence of oxygen, a process called anaerobic digestion. A similar process occurs at a wastewater treatment plant, where organic solids are contained in an oxygen free environment to which bacteria are added to accelerate decay. At MWMC the residual solids that are left over after this process are transferred to drying beds and sold as a type of fertilizer.

## Current Project Status



- RNG System Start Up
  - Start Up – Continuing to Tune and learn system
  - System Communications Troubleshooting
  - RNG Produced meets Northwest Natural (NWN) standards
  - Delivered:
    - Nov. 2021 – 100 Dekatherm (Dth)
    - Dec. 2021 – 800 Dth
    - Jan. 2022 – 4,000 Dth
    - Feb. 2022 to date ~2,000 Dth
- BlueSource
  - Working to register MWMC RNG Environmental Credits
  - Ongoing discussions regarding D3/D5 Gas Quality
    - May be impacted by Fats Oils and Grease (FOG)

Some of the gas that is produced, methane, has been historically used to power facilities at the treatment plant; the balance has been burned or “flared” (in the past those who drove by the plant would see the pipe with flames). Those pipes still exist but now will only be used if the gas produced exceeds N Natural’s capacity to use it or if, for some reason, the gas does not meet quality standards. Mark van Eeckhout an MWMC engineer said he hoped “2022 will be year the flares go dark.” He explained that now that gas is diverted to a system where it is cleaned of contaminants like hydrogen sulfide, and then transferred at high pressure into a NW

Natural pipeline as renewable natural gas, where it becomes part of NW Natural’s natural gas supply. MWMC General Manager Matt Stouder said that this is the first operating facility of its kind in the state. Portland is working on constructing a similar facility which it hopes to open this summer.


MWMC originally started the project to eliminate the need to flare the methane that was generated but could not be used to support plant operations. Originally it was thought that MWMC could generate electricity from the methane, but cost recovery for the project was an important consideration. After more study the Commission concluded that feeding the gas to NW Natural and taking advantage of the value of the methane plus taking advantage of available energy credits was a better approach to recovering the costs

## RNG Plan View with Receipt Point Facility (Spring 2021)




of the project. There are two revenue streams that will provide revenue to help recover all costs within a six-to-10-year period. First, there is the value of the payments made by NW Natural for the delivered gas. A much larger component is the value of renewable energy standards credits offered by the federal government. These credits are available for renewable fuels dedicated to transportation purposes – like fueling vehicles – a project now under study by Lane Transit District. These credits can be sold. The current financial assumptions indicate that cost of the project will be recovered over a 6–10-year period. After that, the revenue generated either by selling the gas or the credits, can be used to ameliorate future rate increase.

### 3 | Anaerobic Digestion Feasibility Study



*To investigate the feasibility of installing anaerobic digestion technology as a way to manage and reduce methane generated by organic materials at Short Mountain Landfill.*



**Deliverables:**

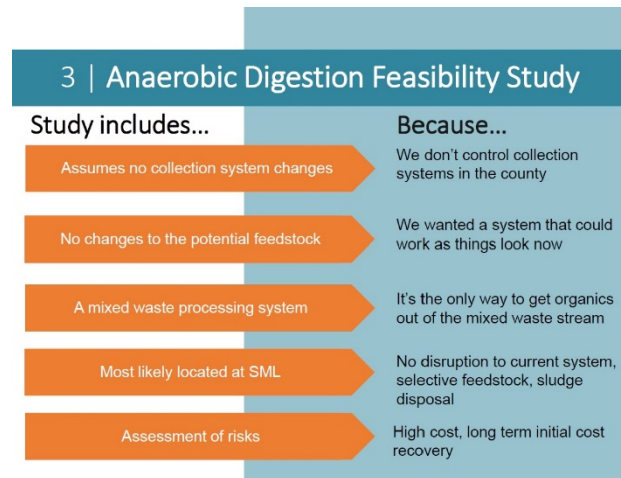
- Task 1 – Kick-off meeting, refine deliverables and assumptions - Completed;
- Task 2 – Estimate the Range of Feedstock Quantities – Completed;
- Task 3 – AD Facility Sizing- Completed;
- Task 4 – Capital Cost Estimate – Completed;
- Task 5 – Environmental Attributes & Benefits - Completed;
- Task 6 – Assessment of Risks – Completed
- Task 7 – Final Report – *Due February*

28

The Lane County effort is part of a much larger study of how to improve resource recovery. Although Lane County recovers about 53% of all waste of residents, a figure that is among the highest in the state, the county has set a goal of 63% and Public Works Director Dan Hurley said a more effort is needed to capture that last 10 percent. The most recent waste composition study by the county (in 2016) indicated that the largest categories of waste were food, yard debris and wood. Mr. Hurley expects the new study, to be done this spring, will

not significantly change the composition of waste. The high proportion of organic waste has led the County to the potential for an anaerobic digestion system to deal with that organic waste. Mr. Hurley said the current study could lead to either a new mixed processing facility or perhaps to a standalone anaerobic digestion system, presumably located at the landfill.

The potential of a county facility may be less than that of the MWMC facility. Jeff Orlandini, the Manager of the Waste Management Division, said the current thinking is that it could fuel 3-3.5 busses per year. In response to a question, he said that a new system would capture and treat the waste on the “front end” of the disposal process and would not immediately affect the current arrangement with the Emerald Peoples Utility District which now captures a small amount of methane from organic material that has been in the landfill for some time and generates some methane. One risk he pointed to was that if the cities, who control the waste collection system, move ahead with diverting food waste to a composting process (which he said is aerobic digestion and generates CO<sub>2</sub>, not methane) it could adversely affect the economics of a County processing system.



Several questions from the audience focused on whether there were political issues which might interfere with the success of the two projects. Mr. Orlandini pointed out that the Lane County effort is consistent with the climate action plans of both Lane County and the City of Eugene. He added that it would probably be necessary to support some changes in local policy (like the issue of composting food waste) if the project is to be successful, but that the major issue would be the cost/benefit analysis that comes out of the current studies. He added there are several similar projects in California.

Mr. Stouder said that MWMC has long had the goal of not flaring off the methane gas generated in its processes. Ending that would remove from the atmosphere about 7500 metric tons of CO<sub>2</sub> emitted by the treatment plant. He said that this benefit, and the other environmental benefits associated with the project, combined with the positive revenue impact once the initial costs are recovered, should make the project publicly supportable. He also pointed out that NW Natural is aggressively seeking other ways to make its gas supply come more from renewable sources, including working particularly with dairy and poultry farms who are large generators of organic waste.

To view the full presentation by each agency, please click below:

[MWMC Presentation](#)

[Lane County PW Presentation](#)

Both projects produce gas at a cost that is higher than the cost of production of gas from fossil sources, including hydraulic fracturing.

Mr. Orlandini said it was unlikely that the direct cost of production would fall below that of fossil source extraction, but Mr. Stouder said that once the environmental benefits are factored in the cost is certainly competitive.