



To: Portland Utility Board (PUB)

February 29, 2016

From: Janice Thompson, Consumer Advocate for Portland Public Utilities

Re: Biogas Utilization Project and Organic Waste Receiving Facility Update

Digesters like those at Columbia Boulevard Waste Treatment Plant (CBWTP) are a common feature of treatment plants that produce methane which is flared to reduce its greenhouse gas impact. Currently all but 23 percent of the methane produced at CBWTP goes to a cogeneration unit for onsite electricity use or is sold to a nearby industry. BES proposes a biogas utilization project so the un-used methane can be turned into marketable renewable natural gas (RNG). CUB identified concerns about this project in our January 5th memo to BES related to their budget development and since then communication with BES has continued. CUB's review is ongoing and this memo summarizes for PUB members the key factors in our analysis.

Interrelated Analysis

During 2015, biogas project planning indicated high costs for storage capacity needed to handle fluctuating levels of methane production in the digesters prior to treatment to become RNG. To be economically viable, the project would require a significantly higher than planned sale price for the RNG or a longer payback window. Increasing the amount of biogas production, however, avoids the need for expensive storage capacity but requires additional digester feedstocks. A particularly attractive feedstock option is processed food waste which is currently a solid waste industry disposal problem that could be transformed into a revenue source for BES through tipping fees and sale of more biogas. For this reason BES added an organic waste receiving facility to its CIP for FY2016-17.

The biogas project does not appear to have an adequate payback unless the organic waste receiving facility is built. Therefore, CUB's view is that these two projects need to be analyzed as one interrelated project comprised of the following elements:

- Biogas production unit including conditioning to convert methane to RNG
- An interconnection to transport RNG to NW Natural pipeline along Columbia Boulevard
- CRNG fueling station with two components – compression unit and fueling site
- Organic waste receiving facility

It is less clear, however, that the organic waste receiving facility's economic viability relies on the biogas project. BES's analysis seems to indicate that tipping fee revenue from a stand-alone receiving facility may provide a reasonable payback schedule, though CUB is recommending additional review. However, if the organic waste receiving facility is built but not the biogas project, the original issue – flaring of un-used methane gas – is not addressed and, in fact, more methane would be produced.

Partnerships Are Great Opportunities But There Are Significant Challenges

Oregon Department of Energy

An economic incentive for the CRNG fueling station is a \$2 million Oregon Department of Energy (ODOE) tax credit that will expire in March of 2018. The CRNG fueling station would be required to have 1,080 diesel gallon equivalents (DGE) per day capacity. Building capacity to facilitate growth in CRNG use is ODOE's goal but there is a significant gap between that capacity level and DGE use by likely fleet conversions. This gap is acceptable given the ODOE capacity goal, but economic analysis still needs to consider the timeframe for CRNG demand to meet that capacity. The March 2018 expiration date seems to be a major driver of the timing of the economically interrelated biogas and organic waste receiving efforts.

Given how many project elements need to be sorted out with other partners this timing is a concern and CUB is recommending that BES explore the possibility of an extension from ODOE.

Waste Management and Metro

The organic waste receiving facility relies on a source of processed food wastes and Waste Management is considering building a processing plant relatively close to CBWTP. Current economic analysis by BES assumes that all the processed food waste from food service establishments (FSEs) in the three-county area would end up at CBWTP as a feedstock for biogas production. Partnerships between Waste Management and wastewater treatment plants in other cities provides an opportunity to leverage lessons from previous projects but there still unresolved details. Metro wants better utilization of organic food wastes from FSEs and has issued a request for proposal due in March regarding a commercial food waste processing facility. The timing and scale of such a facility and whether or not CBWTP would receive all the processed food waste in the Metro area for use as a biogas feedstock, however, is not yet clear.

NW Natural

Initial conversations with NW Natural as a buyer for biogas have been used as the basis for economic analysis by BES, but original assumptions about a \$10 per MMBtu RNG purchase price and cost-sharing for the interconnection unit do not reflect their updated approach. Now NW Natural plans to use a receipt tariff approach that would allow use of NW Natural's pipelines for transport, but BES would have to negotiate sales agreements with other buyers. NW Natural would not purchase any of the RNG and BES would need to cover all costs associated with biogas conditioning to become RNG and the interconnection needed between CBWTP and the nearby NW Natural pipeline.

There is a robust RNG market in California with an emphasis on the economic value of environmental benefits to using RNG and prices about equivalent to the \$10 per MMBtu that is a key element in the economic viability of the BES biogas effort. Contracts that provide fixed prices in that ballpark, however, would probably only be for two or three years. Whether or not the current higher prices in California would last the ten years or so that seems to be required in the current economic analysis is a concern.

NW Natural may be interested in future purchase of RNG, but at a lower price than they have discussed in the past with BES. The higher prices currently available in California, then, may serve as a bridge to meet the price point required by BES with NW Natural possibly paying a future role as lower price buyer. The likely scale of possible future NW Natural purchases of RNG is about 100,000 dekatherms annually, the production level originally anticipated. With the addition of processed food waste as a feedstock, however, the annual RNG production capacity is now estimated to be 240,000 dekatherms. Selling approximately 140,000 dekatherms of RNG per year to non-NW Natural entities, therefore, will be an ongoing dynamic for BES to consider in terms of staff capacity and risk.

The new dynamics presented by NW Natural's receipt tariff approach and uncertainty about their possible future RNG purchases has led CUB to request revised payback and related economic analysis from BES.

Digester Gas Piping and Future Costs Question

Last fall, CUB was told that digester capacity was adequate for additional feedstocks and increased RNG production. The new \$135,000 request for replacing valves and flex lines and inspection of digester gas piping raises concerns about other possible future costs. The current piping system can evidently sustain an increase in methane production, but a preliminary estimate of possible replacement of the digester piping system is several million dollars. Digester pipe replacements may be needed even if the biogas project does not occur. This digester asset management step, however, should perhaps be a higher priority than the biogas project. The possibility of other future digester costs also merits a due diligence review.

Next Steps

CUB is in continued conversations with BES and anticipates recommending at least a revised timeline for these projects in the FY2016-17 CIP. CUB is keeping Melissa Merrell in the loop and appreciates her input as well as input from PUB members.