**Notes**

**Northeast Digestion Roundtable #3**

**Friday, October 7, 2016**

**Presentation: Co-Digestion Results in Net Energy Producer**

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*Available at the NEDR webpage:* [*http://www.nebiosolids.org/ne-digestion-roundtable*](http://www.nebiosolids.org/ne-digestion-roundtable) *.*

**Key Additional Points & Discussion**

* Managing outside wastes for co-digestion
  + EBMUD is quite dependent on high-strength outside wastes. Competition for these materials is real. Need to be adaptive and not complacent in that arena.
  + Food waste is a small portion of the total feedstock right now, and it requires a lot of pre-processing, cost, and attention to avoid excess contamination (e.g. plastics, dinner ware, etc.). But it is worth investing in because more of it is likely to be produced and competition from other WRRFs / digesters is taking some of the other feedstocks away from EBMUD.
  + Incoming hauled waste should be evaluated carefully and tested at the beginning and occasionally, randomly, at other times.
  + Pilot tests at EBMUD showed that food waste can be up to 100% of what is in a digester, although there may be some nutrient deficiency issues at that high a level. EBMUD has little concern about adding a significant percentage of food waste. Currently, however, it is a small percentage of the digester load.
  + EBMUD did not heat outside wastes initially, but does now. This does not really change the biogas production, but it is important for keeping grease from congealing and blocking systems.
  + How is food waste slurried & managed? With current pilot operation trying to capture organic portion of MSW, deliveries have been intermittent – 10-20 tons/day a couple of days a week. The pre-processor has been piloting and working out kinks in their system. When it arrives at EBMUD as semi-solid mash, the material is slurried and put through preprocessing paddle finisher to get contaminants reduced.
  + How do you keep the COD loading to the digesters constant? EBMUD limits some deliveries from big generators that could upset the system with excessive loading. But, dozens of customers deliver every day, creating a diversity of wastes that even each other out. They don’t end up worrying about the variation in COD too much. But, late-in-in-the week excess deliveries create excess sometimes. They are considering a pricing incentive to encourage more deliveries earlier the week, to even out the load. The blend tanks are also key in smoothing out the COD loading.
  + Food waste being brought to EBMUD comes from commercial and institutional sources, not residences (except there is one community in the area that has started to require residents to separate out organics).
* Some wastes get tested more often.
* Testing regimen and tip fees are set based on the nature of the material.
* Storage capacity for trucked-in wastes:
  + Large blend tanks where the full variety of wastes (including primary and WAS) are mixed well before being fed to digesters are key. They moderate gas production and reduce the potential of shocking or upsetting the biology in the system.
* Customer service
  + Being open all the time for deliveries helps ensure continued participation by haulers.
* Costs and electricity management
  + Selling electricity to the Port of Oakland, which is next door, provides a stable and quality price.
  + EBMUD’s marginal cost fo treating liquid wastes is minimal. Biggest cost is adding Fe chloride for the higher-protein wastes. Most of the outside wastes generate more gas than sludges. The benefits outweigh the costs; benefits include green power RECs and tipping fees.
  + Tipping fees: 90% of the EBMUD resource recovery program revenue is from tip fees. There is a range of tip fees, depending on the kind of waste. Typically, they charge 4 – 8 cents per gallon; the lower rate is for higher-strength wastes that won’t produce sulfides and the higher fees are for protein-rich wastes.
  + See fee schedule by scrolling down this page to “FY16-17 Rates for Resource Recovery Material” - <http://www.ebmud.com/wastewater/rates-and-charges/>
  + Electricity income: $1 million in energy revenue per year: RECs are 50%; they are worth 1/3 what they used to be as more solar and wind come online. The other 50% is renewable power sales to Port of Oakland at 7 centd a kWh.
  + PG & E is the local electric utility; EBMUD has an interconnection agreement with them as a small generator. It has been quite expensive to meet PG&E requirements – $1 million cost was for meeting their requirements during the most recent upgrade power generation upgrade in 2012.
  + EBMUD was selling to PG & E, but PG & E was not paying for RECs. So EBMUD looked for another customer for its electricity and found that Port of Oakland would pay for RECs… much better deal.
* EBMUD has considered treating biogas to pipeline quality, in part because of the reduced premiums from electricity sales. There may be a greater green premium in the future for putting into the pipeline for transportation fuel. Point Loma in San Diego is the one facility in CA that does pipeline injection. Would have to work through pipeline quality requirements of PG & E’s natural gas business.
* Biosolids management
  + Any concerns with the outside wastes affecting biosolids quality? 60% of EBMUD’s biosolids go to land application to non-food crops; 40% is used as Alternative Daily Cover (in wet season in winter). Liquid organic waste streams do not create issues re metals in biosolids, etc. They do sample and test carefully for impacts to biosolids, e.g. potential elevating metals concentrations. As part of current pilot of capturing the organic fraction of MSW, they are doing a lot of metals and other testing and thinking of potential impacts on biosolids quality.
* What’s driving source separation & food waste use? A regional waste jurisdiction is requiring food waste diversion & source separation. And there is some state-wide effort to divert food waste and other organics from landfills; as in New England states, there are now requirements for larger generators to divert organics from landfill. And the governor just signed a methane reduction bill that requires more diversion of organics.
* How are odors managed around digestate and blend tanks? Digestate has odor control in dewatering, etc. Blend tank odors go through Fe sponge and bio unit for sulfides and then carbon polisher. They pay close attention to odors, and currently they know the system could be optimized to perform better than it is.
* Is there concern about having added outside wastes jeopardize being able to meet required VSR? Not really. EBMUD meets Class B standard in the aggregate, with all the wastes together; adding organic waste has improved VSR of the whole blend overall.

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