NOTES – Northeast Digestion Roundtable - NEDR #7

October 6, 2017

These notes are rough and may contain inaccuracies. For important details, contact those who spoke.

Present: maximum of 22, including the sponsor, the producer (NEBRA), and the presenters

1. Sponsor: This webinar was sponsored by Wangen America, who presented information on their products. *The sponsor provides support that allows NEBRA to continue offering this free webinar series.*

2. Massachusetts – AD Update – James Doucett, Clean Energy Results Program, MassDEP, Boston.

- See the slides from this presentation at https://www.nebiosolids.org/ne-digestion-roundtable
- Energy Results is Mass DEP working on clean energy and efficiency in collaboration with Mass Dept. of Energy Resources and Mass Clean Energy Center.
- First, looking at the demand side, James noted that there has been a growth or stability of AD processing capacity at farms, commercial and food operations, and water resource recovery facilities (WRRF).
- New capacity has been or is being permitted at farms with existing digesters and new farm projects, as well as at Greater Lawrence Sanitary District (GLSD). 2 of the farms are getting 2nd engines to allow for more biogas production and utilization. GLSD is building a 4th digester specifically to allow for taking in preprocessed food scrap slurry. They are currently taking a truck and a half of food scrap slurry from off-site. No other wastewater facilities are currently looking at taking in offsite waste. MWRA looked into it, but cannot truck in material, making transport to the digesters challenging or costly.
- Current commercial & Food Manufacturing AD facilities:
    - Stop & Shop in Freetown has been operation AD for about a year.
    - Ken's Food had a digester, but has now installed CHP to use the biogas.
    - Garelick Farms in Lynn and Franklin – Microturbines are being installed to use the biogas.
- New Capacity permitted:
    - Jordan Farm and Crescent Farm are Vanguard facilities.
    - Rockwood & Belden are AGrid facilities
    - Rockwood has started construction
    - GLSD goes full scale in 2018. They were able to proceed in part because of grants from DOER, DEP, and CEC. They will be able to operate off the grid when the new digester and engines are online, creating reliability & resiliency.
- There are just a few projects in the pipeline still, for which pre-permitting meetings have been held with MassDEP. Quantum Biopower is talking with Holyoke about siting at the WRRF. Yarmouth got a recycling grant to consider putting in an AD facility; Bourne next door had looked at AD, but that project fell apart, and so Yarmouth is picking up the ball.
- Food scraps are also going to animal feed producers, such as Troiano (https://recyclingworksma.com/recycler/troiano-trucking/).
- The activity in building AD capacity is due, in part, to the modifications of solid waste regulations in 2012, which provided a clear pathway for AD projects to be permitted.
- Problems & issues:

- Will we be overbuilding our AD capacity?
- Electric utility interconnections remain challenging; Baraway Farm has been operating for a year or so and is just now getting interconnected.
- Net-metering caps in some service territories are at their limit. Legislation has been proposed to carve out higher caps for AD specifically. Solar energy is filling net-metering caps quickly.
- What happened with the idea of siting some AD capacity on state-owned lands? James noted that three 3-state owned sites were seriously considered for AD, including MCI Shirley and UMass Amherst. The Amherst site turned out to be wetland. The state posted an RFR for the Shirley site, but no one bid on that; likely the situation seemed too complicated for any developer to be interested.
- Have there been any issues with odors or vector at any of the operating AD sites? James is not aware of any big problems with odors at any facilities; but he noted that complaints go to the regional MassDEP offices. Seems to be going okay. In some instances, the farms no longer have open manure pits, so odors have acuatlly been reduced some.

3. CORe food scraps processing facility, Charlestown – an upate (Brendan Kuhn, Waste Management):

- The Charlestown facility started processing food waste in Jan. 2017. Have been taking in more every week. The processed slurry is shipped to GLSD in steady and consistent deliveries to keep the digester happy.
- 5,000 tons processed so far. Taking in about 300 tons of food scraps/week now. Can manage 120 tons/day on one shift. There is a lot of capacity still – can have 2nd shift. The equipment operating well.
- Any issues with odors or vectors? Not so far. The facility is carefully designed with negative aeration, carbon filters and misting (on timer, on and off), and high-speed roll-up doors. There are only short times when the interior atmosphere is exposed directly to the exterior air (when trucks are entering and leaving).

4. BlueSphere – NEBRA helped with a tour of this new digester complex near the landfill in Johnston, Rhode Island on Oct. 16th. See slides for some photos of this new facility.

5. Lewiston-Auburn Water Pollution Control Authority – Municipal AD – an update
(Mac Richardson, with backup by Travis Peaslee and Isaiah Lary)

- Taking in some outside waste now; experimenting with it.
- Have been able to keep both co-gen engines running for the past 2 months; the engines have been a challenge since start-up a few years back.
- Have had activated carbon for siloxane removal for more than a year; that is key in protecting the engines. The engine manufacturer blamed siloxanes, but LAWPCA staff think that piston misfires caused problems too. Have installed anti-detonation sensors, and that seems to help too.
- Biggest ongoing headache is materials handling – pumping primary sludge and feedstocks out to the digesters, keeping pipes clean and obtaining decent measurements of flow. Sensors get fouled quickly and easily.
- They are taking some food waste – about 52,000 – 55,000 gals a week – from Harvey and some from Waste Management.

- Have also taken some de-icing fluid from Bangor Airport; have talked about other de-cing fluid sources. Were taking some waste from a biodiesel facility. Also some fryolater waste, whey, brewery waste, and FOG from chicken processing.
- Did one time get some strong waste and fed it too quickly, creating some digester upset. Key point to emphasize: if you feed too much and an upset seems to be starting, first back off the feeding and watch the alkalinity; as long as you still have alkalinity, you can ride it out and allow the digester to correct itself rather than intervene excessively.
- For now, they are limiting their outside feedstocks to a relatively low level, focusing more on keeping the reciprocating engines running.
- Have shared experiences and information with GLSD.

6. Greater Lawrence Sanitary District – an update (Cheri Cousens and Richard Weare)

- Contamination in food waste slurry does happen sometimes – e.g. bone fragments. Have to take rotary load pumps apart now and then.
- But, generally, have had excellent success in adding food scrap slurry from Waste Management to the 3rd digester. They premix it with sludges prior to putting into digester… have had no upsets…. The food waste is very consistent, so they can make the feed consistent, which is important. "The consistency has allowed us to load digesters a bit heavily," said Weare.
- They have not changed biosolids handling at all; there is enough capacity in the pelletizing operation to handle any increase in digested solids production.
- Taking in about 13,000 gals / day of food slurry and have not seen any increase in biosolids production and no increase in biogas use in boilers, etc. This is consistent with other facilities that see little biosolids increase when taking in a moderate amount of food scraps for co-digestion. Published research is showing that VSR increases above the sum of separate VSRs of the sludge and the food scraps. There is synergistic effect, which creates more VSR in the combined material and more biogas than you would get digesting them separately. This also means that biosolids volume does not increase.
- The maximum percentage food scrap slurry compared to sludge that they have used so far is about 10%, gallon for gallon (volume basis). On a volatile solids basis, it is a higher percentage, because the food is richer than the sludge.
- GLSD also experiences challenges with metering probes – they get fouled and stop working. And coating of interior of pipes requires more frequent flushing.
- Matt Higgins (Buckness Univ.) noted on the call that his research shows that loading digesters with food scraps with up to 20 – 30% more volatile solids did not result in more biosolids. Increased biosolids only happened above 30%. Polymer demand went up a little, however. Odors in the cake were also lower after co-digestion. His research project report will be published soon by WE&RF. Dr. Higgins will present at a future NEDR.

7. Agri-Energy AD Facility, Exeter, ME: John Forcier sent an email noting that he is involved in the AD upgrade from 1 MW to 3 MW at this facility. "We started construction on 5/15/17 and currently have materials in the AD tank and are ramping up in the next month or two to full output." He sent a photo, which was added to the NEDR #7 slides.

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