

**Notes**  
**May 4, 2018**

The Wastewater Advisory Committee to the MWRA toured the Greater Lawrence Sanitary District Co-Digestion Project

**Attendees/Contributors:**

**WAC:** Craig Allen (chair), Karen Lachmayr (vice chair), Mary Adelstein, Philip Ashcrofr, Adriana Cillo.

**Guests:** Bill Kiley (BWSC), Debra Darby (Organix), Lou Taverna (AB), John Dempsey (Brookline SWAC), Waneta Trabert (Newton DPW), Wendy Leo, Caitlin Hunt, Lisa Wong, Nick Zechello (MWRA)

**WAC Staff:** Andreae Downs

**FUTURE MEETING DATES/TOPICS**

**NEXT:** Friday, June 1, 10:30 am, Fiscal 2019 Planning, MAPC third floor conference room, 60 Temple Place, Boston

**PRESENTATIONS & DISCUSSION:**

Cheri Cousens, Director GLSD, Richard Weare, Capital Projects Manager, GLSD

GLSD is 1/10th the size of Deer Island—52mgd average/135mgd peak design. Went online in 1977. Is among the largest wastewater treatment plants in MA, competing with Worcester and Springfield for second after DI. System includes 9 miles of interceptors. Takes flow from Salem, NH, Methuen, Lawrence, parts of Dracut, Andover, North Andover. Discharges to the Merrimack River.

When DEP instituted the ban on food waste for generators of over 1ton/week, it estimated about 350tons/year would be diverted from incinerators/land fill. There are six wastewater treatment plants that have digesters suitable for co-digestion in Massachusetts. There are also 5 farm digesters. In NH there are 3 wwtps with digesters, RI has one.

Near I-495, GLSD can take the slurry trucks (unlike Deer Island, which would need a barge). Studied co-digestion in 2013 with the help of a Clean Energy Center grant. According to the study, with 3 digesters & co-digestion, GLSD could produce 30% of the power it uses. Currently, GLSD spends \$2.5 million on energy every year. Save 34-35% of earlier energy usage through efficiency measures. If add a 4<sup>th</sup> digester, study said, they could meet 100% of the plant's energy needs. Capital costs were \$25m, mostly for a fourth digester and a new Combined Heat & Power plant. A combination of grants energy credits and savings helped fund the project.

As designed, the CHP plant (not yet online) will heat the digesters to the required 97 degrees F and generate power, some of which will be fed back to the grid when not needed at the plant. Eventually, the heat could also extend to warm GLSD's other buildings in the winter. In the summer, waste heat is sent into the air via radiators.

GLSD's break-even point with food waste co-digestion is 60% organics. That covers costs, maintenance and treatment. Tipping fees, while minimal, will also help, along with net metering credits. Energy uses include net metering to off-site sewer pumps, and fuel for pelletizing of dewatered sludge. So far, the organics have been producing more gas (energy) than predicted in the study, so at design capacity, the plant might even earn several hundred thousand dollars with renewable energy credits.

They issued an RFP for processed organic slurry (14% solids). Waste Management won the contract, but there were several other bidders. Their plant in MA is located in Charlestown. They remove contaminants, such as wrapping and utensils, and grind and screen materials to GLSD's specs.

While the fourth digester was being constructed, GLSD piloted co-digestion in the three existing digesters, which had excess capacity. Added organics slowly, so as not to upset the digesters. Food waste cannot be more than a week old, to ensure enough energy is in the waste. Ph is roughly 4, so acidic. A small amount of grease is allowed in the mix, but no yellow grease. Pure fats, oils and greases go through a different process to become fuel and are not accepted as a stand-alone liquid stream.

The pilot started at 3,000 gallons/day. It is now up to 26,000 gallons/day. Sources at first were Boston-area schools, college cafeterias and the Cambridge municipal compost collection. Waste Management is still finding new sources of food waste to get to the 92,000 gallons/day the plant is designed for. Will not take slaughterhouse waste—have a limit on meats & bones. Most food processors send their wastes to farm digesters. At some point there will be competition for the wastes.

Currently, the new generators are not running—they will probably be started up this summer, with enough slurry digestate. GLSD's holding tanks for slurry can be emptied in 3 days. GLSD samples all incoming trucks' contents against their manifests. One tank takes about 12 truckloads. Each tank holds 119,000 gallons. The slurry is mixed to keep the slurry consistent. Another mixer and two pumps were installed in order to accept and transfer the PSSO to the sludge mix tank prior to being pumped to the digesters. Currently, the mix is 15% organics. It will eventually reach 35%.

The dewatered sludge is pelletized by New England Fertilizer Company (NEFCo, the same contractor as MWRA). They have capacity to produce 38 dry tons of pellets. The pilot has contributed to a small uptick in solids. Pellets are sent within MA to fertilize hay fields or to reclaim quarries. Casella Organics does the marketing.

The gas is treated in two filters to remove Siloxane (carbon filter) and H<sub>2</sub>S (wood chips treated with an iron oxide). Other new equipment added to the plant was a waste methane burner (for when engines are shut down for maintenance), switch gear (which were original & probably should have been replaced anyway).

Other new equipment were air quality controls mandated by DEP—cost \$3 million plus additional operations & maintenance--and almost killed the project. But Cousens is now happy to say they have the best available air pollution controls available on the plant.