Food Waste Recycling Program
Update: Processing, Co-digestion, and Energy Recovery

Mark McDannel, P.E. BCEE

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Presentation Overview

Program Background

Pre-processing

Co-digestion

Energy Recovery

Current Status and Future Plans
Program Timeline

- 2011-2013 – Feasibility studies and bench scale research
- 2014-2018 – Full-scale demonstration program with Waste Management
- 2018-2019 – Commercial food waste receipt at plant headworks
- 2019-2020 – Construction of Phase I energy and food waste receiving projects
What Did We Prove With the Demonstration Project?

![Graph showing gas production over time with two lines, one for control digester and one for test digester. The graph indicates an increase in gas production from January 2014 to January 2017, with a significant rise starting in late 2016.]

Start of Food Waste Addition
Now That We Know it Works…Develop Commercial Program

- Comprehensive solution for our member cities
  - Pre-processing, Receiving and Feed-in, Energy Recovery
- 4,000 TPD generated in Los Angeles County
- Districts Capacity
  - Food Waste Processing 165 tpd
  - Food Waste Digestion Today: 250-350 tpd
  - Food Waste Digestion Future: 250-550 tpd
The Districts’ Comprehensive Solution to Food Waste

Food Waste

Pre-Processing

Anaerobic Digestion

Post-Treatment

Digester Gas

- Heat/Steam
- Electricity
- Biomethane
- Vehicle Fuel

Fertilizers/Composting
Food Waste Recycling Steps

Food Waste

Pre-Processing

PHMRF

Puente Hills Materials Recovery Facility
Preprocessing at Puente Hills MRF
DODA Bioseparator

Feed Hopper
(Bioseparator 1 Feeding Hopper)

Primary Bioseparator
(Bioseparator 1)

Secondary Bioseparator
(Bioseparator 2)
How Does the Bioseparator Work?

Food Waste Inlet from feed hopper

Dilution Water

Inorganics move up inside screen

Organics drop to bottom
Bioseparator Cleaning
Food Waste Slurry

- Currently the MRF delivers 10 – 15 loads of slurry per week to the Joint Plant
- A typical load is around 4600-4800 gallons
The Second Step Is Food Waste Co-Digestion

Food Waste

Pre-Processing

PHMRF

Anaerobic Digestion

JWPCP
Ideally, Food Waste is Delivered to the Digesters
For Now, Feeding Food Waste at Treatment Plant Headworks

JWPCP Liquid Waste Disposal Station
Contamination and Digester Cleaning
Much of the Contamination Was Glass

- Spec is <0.5% dry wt
- Significant pump repair costs
- Incremental digester cleaning cost was $0.75 per ton slurry
- Decision made not to clean received slurry
Co-digestion Timeline

- Receive all food waste at Liquid Waste Disposal Station – 2018-2020
- Receive 124 tpd and feed into two digesters – start 2020
- Receive 320 tpd and feed into five digesters – project on hold
The Third Step is Energy Recovery From The Biogas

1. Food Waste
2. Pre-Processing (PHMRF)
3. Anaerobic Digestion (JWPCP)
4. Post-Treatment (Tulare Lake)
5. Digester Gas
6. Fertilizers/Composting
Phase 1 Energy Recovery Project – Digester Gas to Vehicle CNG

Proposed Biogas Conditioning System (BCS) Location

Existing CNG Station

Sepulveda Blvd

Figueroa St.
How does it work?

- Single-pass membrane filtration system to integrate with existing CNG station to utilize 100% biogas
- Produce up to 2,000 GGE’s per day of RNG @ the CNG Station

Biogas
- 62% CH$_4$

RNG
- 90% CH$_4$
New Pipelines Are Needed To Transport the Biogas

24” Diameter HDPE Biogas Supply Line: 550’ Length

18” Diameter HDPA Tail Gas line: 1,250’ Length
Energy Recovery Timeline

● Energy Recovery Phase I – Vehicle CNG
  – In construction, startup mid 2020

● Energy Recovery Phase II
  – Feasibility study being conducted for electricity vs RNG, complete in 2019
  – Decision to proceed 2020-2021
  – Startup 2021-2023
Business Challenges Remain

- Locking-in food waste delivery contracts
- Tip fees to help recover capital investment
- Regulatory and market uncertainty
- Maximizing biogas value
Thank You
Mark McDannel
mmcdannel@lacsd.org