SANITATION DISTRICTS OF LOS ANGELES COUNTY

Recycling Food Waste by Codigestion at Wastewater Treatment Plants

SoCalGas Renewable Natural Gas Workshop

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Do you know…

How much of the pie goes in the trash at your favorite restaurant?

Pie Chart

Presentation

- Who we are and what we do
- How food waste digestion fits into solid waste management
- Project details…
  - Program design
  - Integration into wastewater treatment plant
  - Results to date

Organics in LA County Waste

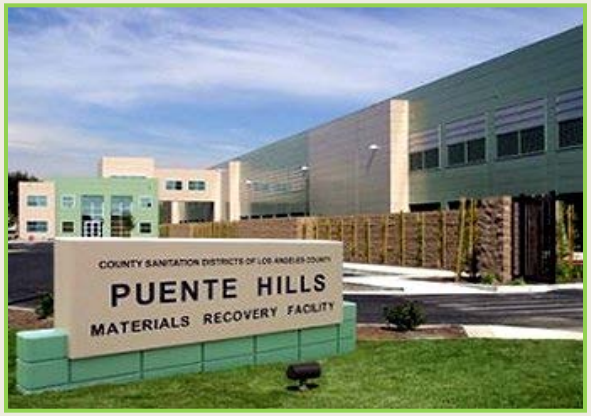
- LA County generated 21 million tons of solid waste in 2012…
- 32% of solid waste is organic
- 50% of organics is food waste
  - 3.5 million tons/year of food waste

Mixed Wet Commercial MSW

Source Separated Food Waste

Districts' Solid Waste Facilities

- Materials Recovery Facilities/Transfer Station…
  - Puente Hills MRF
  - Downey Area Recycling & Transfer
  - South Gate Transfer Station
- Refuse-to-Energy Facilities…
  - Commerce REF
  - SERRF
- Landfills…
  - OPEN: Calabasas, Scholl Canyon
  - CLOSED: Puente Hills, Spadra, Palos Verdes, Mission Canyon

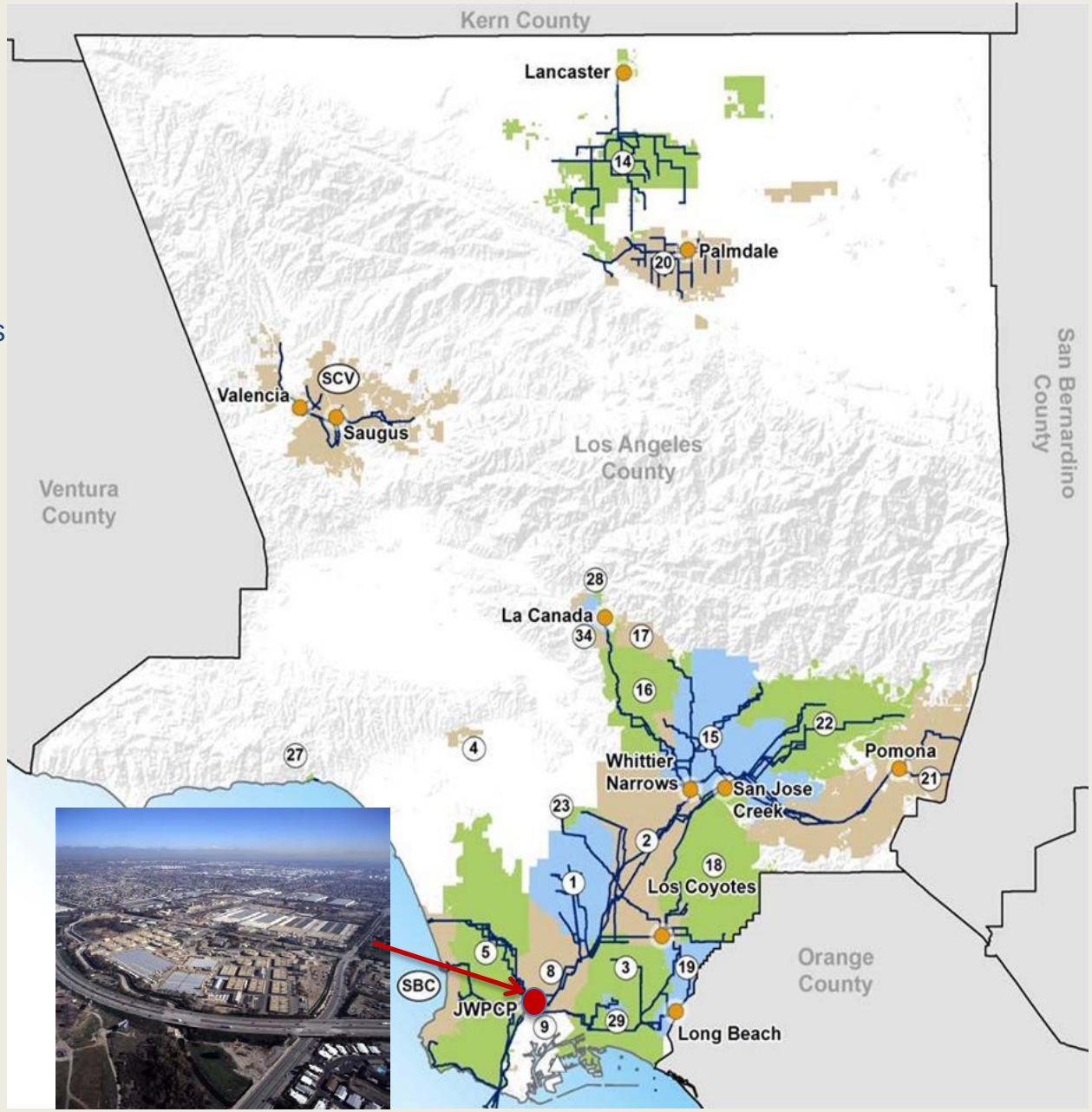


Commerce Refuse to Energy Facility

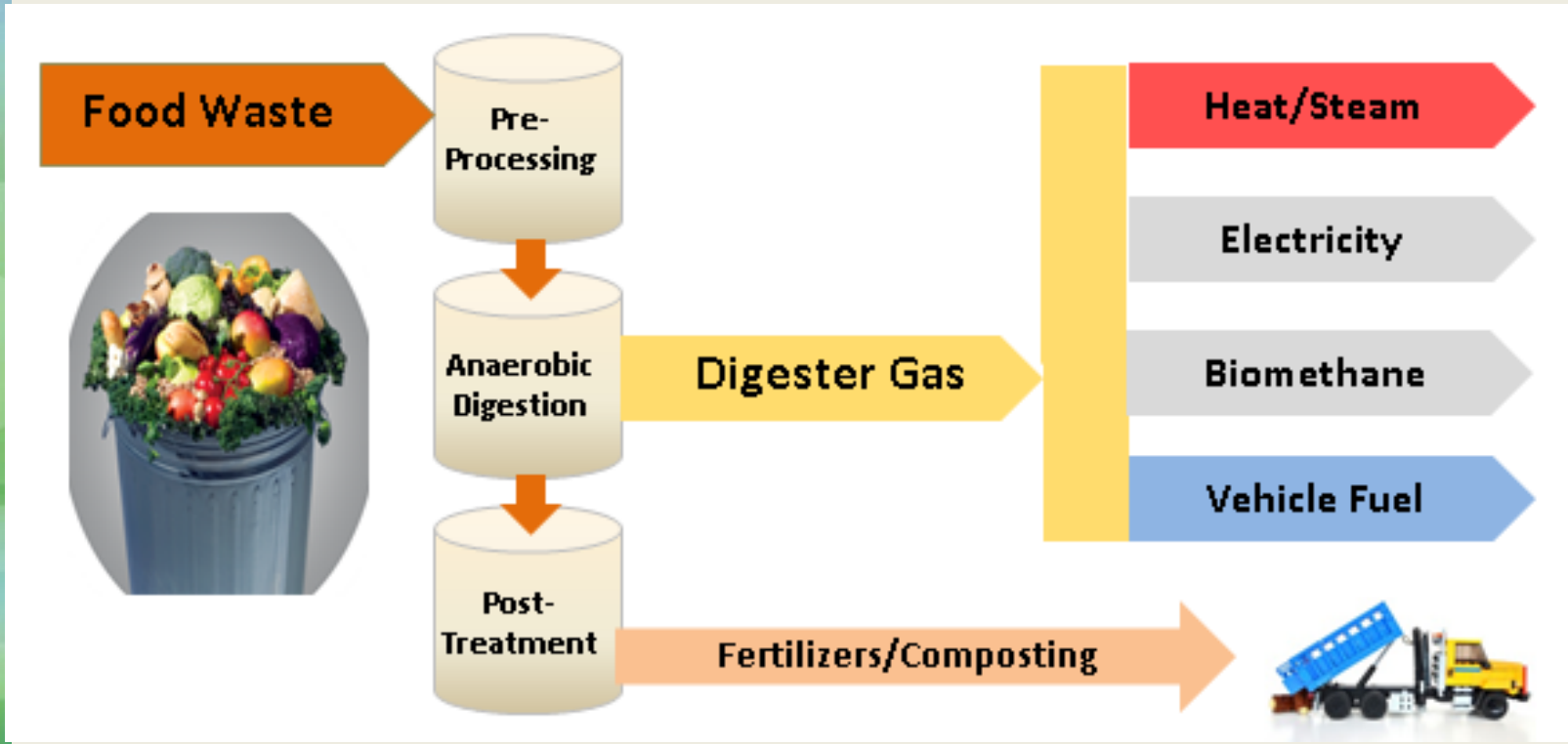
Calabasas Landfill

Districts' Wastewater Facilities

- Joint Water Pollution Control Plant…
  - 280 mgd treated
  - 24 active digesters
- Ten water reclamation plants
- Approximately 1,445 miles of main trunk sewer lines
- Districts operate 49 active pumping plants

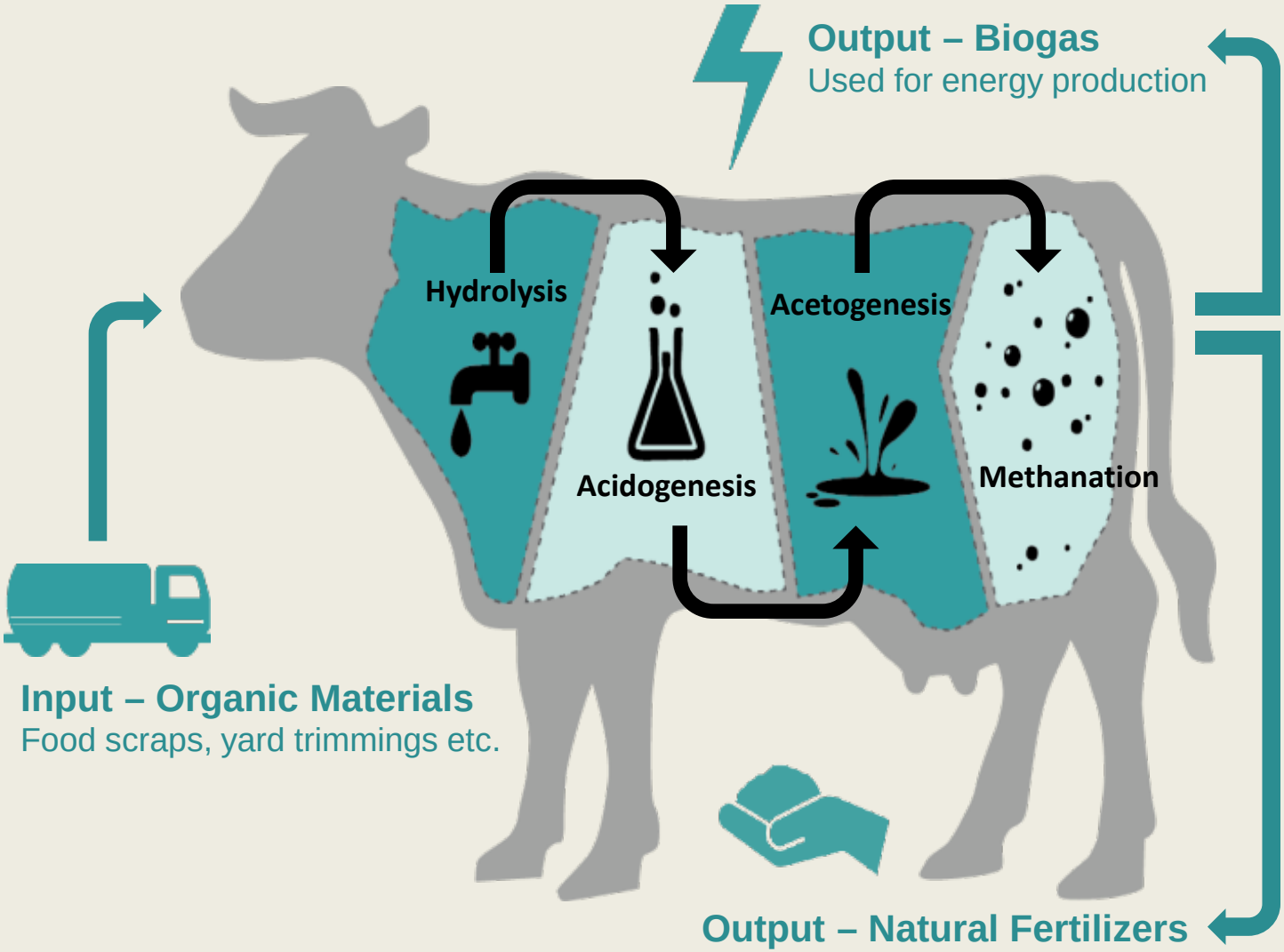


Food Waste Recycling Steps



What a Digester Looks Like

How a Digester Works



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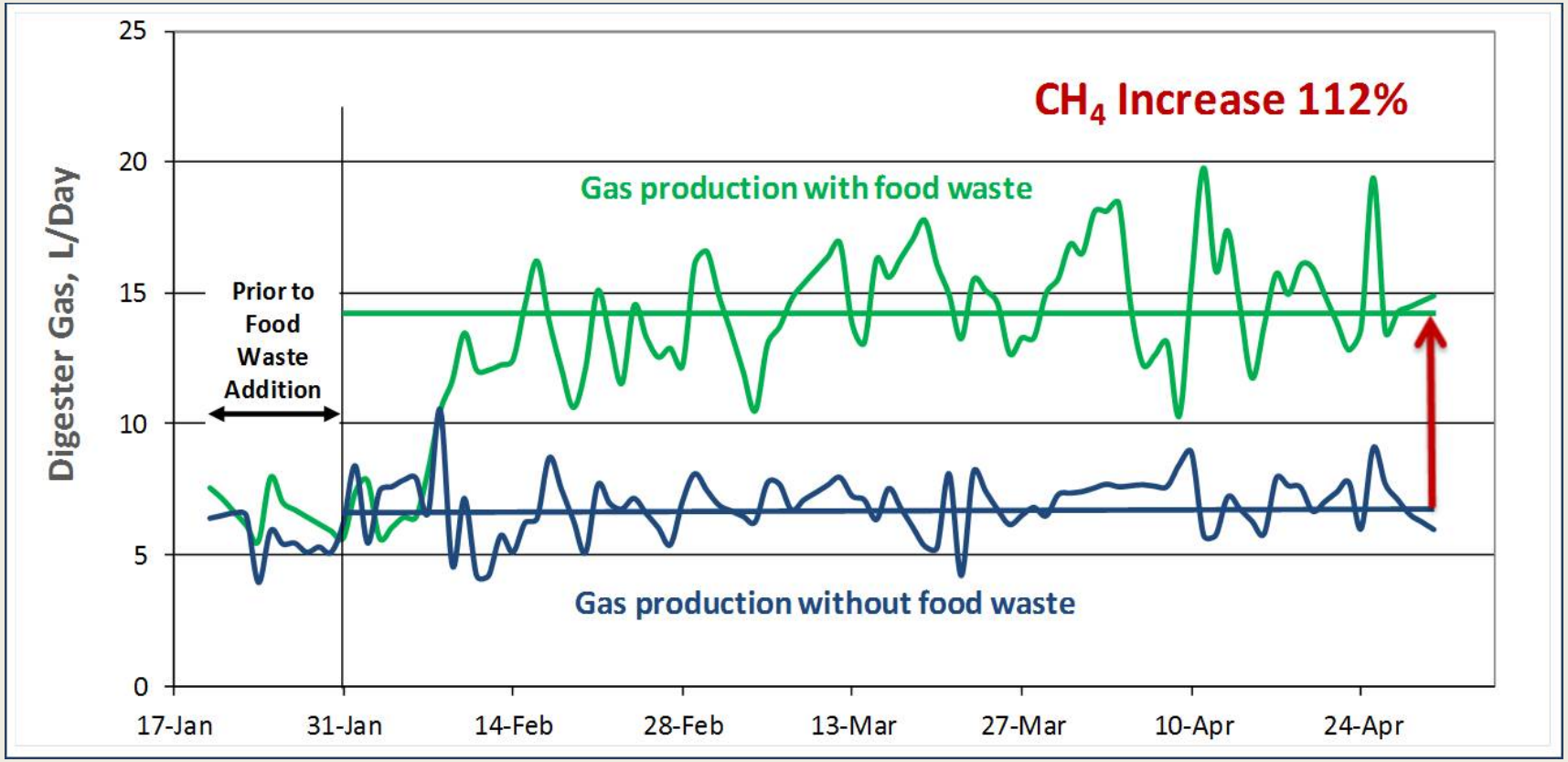
Food Waste Bench Scale Testing Biogas Production



Adding 10-12% (v/v) food waste slurry to sludge could <u>double</u> biogas production

Food Waste Slurry characteristics: Total Solids ~ 14% by wt., Volatile Solids ~ 92% by wt., COD ~ 222,000 mg/L

Digesting Organic Waste Streams at Wastewater Treatment Plants (WWTPs)

- Advantages:
  - Digester already exists
  - Energy recovery equipment already exist
  - California WWTPs have capacity for up to 75% of California's food waste stream
- Concerns and challenges:
  - Can accept only relatively clean feedstock
  - Impact of additional residuals on biosolids
  - WWTPs have an important public health mission

Program Summary

- The Districts and Waste Management entered into a program agreement, with food waste specifications being a key development
- WM processes food waste slurry at off-site location and delivers to JWPCP, with target feed rate of 61 diverted tons (or 20,000 gallons-slurry) per day
- AT JWPCP, the slurry is injected into one digester for co-digestion at 9% food waste slurry on a liquids basis and 30% food waste on a solids basis
- WM and JWPCP's testing team are monitoring the program to evaluate the impacts and performance of food waste when co-digested at a WWTP

WM's CORe® Solution in Orange

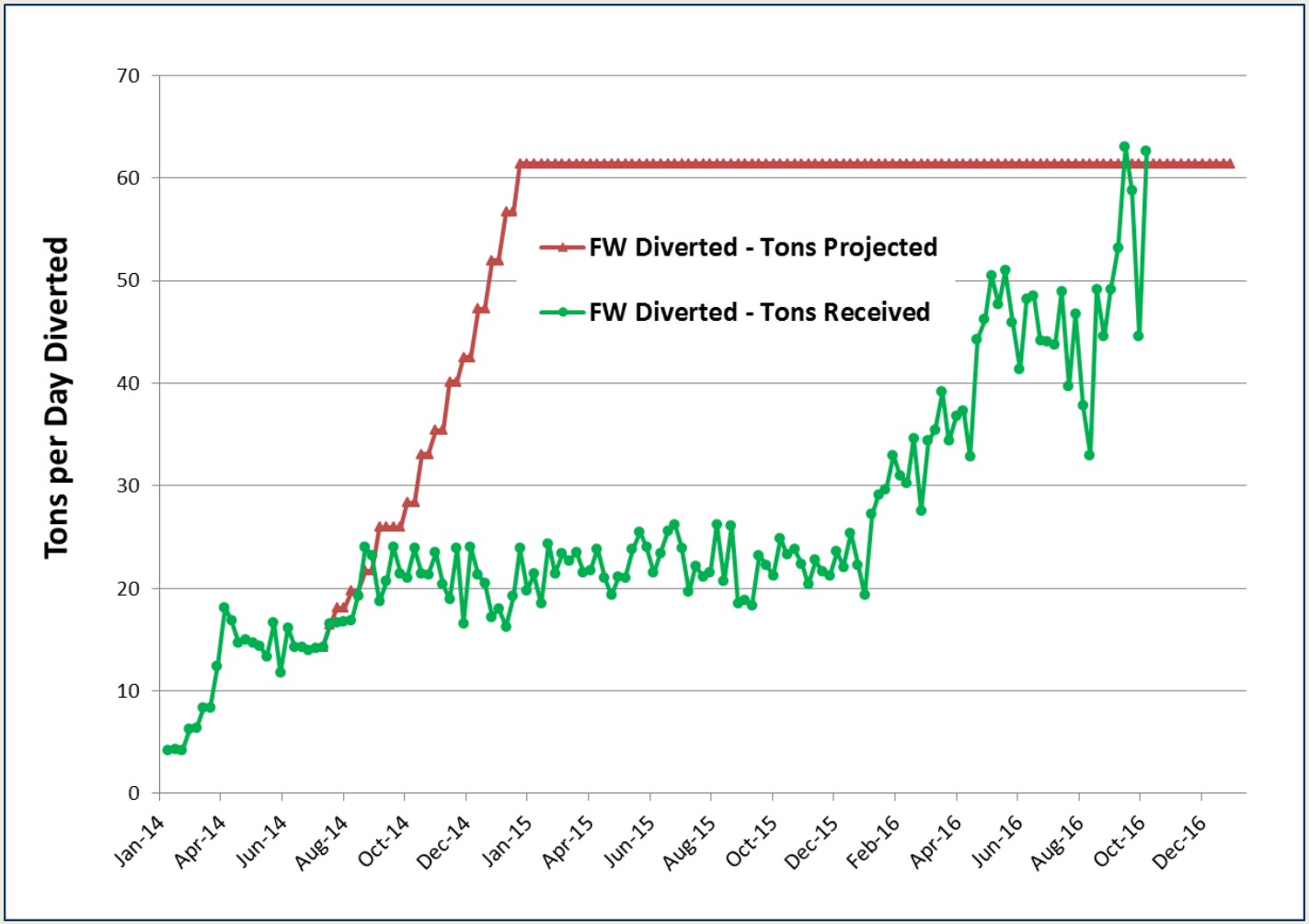
- WM collects food waste from sources such as restaurants, food processing plants, cafeterias and grocery stores. Tipped material is inspected prior to processing.
- Food waste is processed to remove physical contamination (e.g., utensils, cans, packaging, and heavies) using WM's patented CORe® process.
- The processed food waste is blended and tested to manufacture a high quality, consistent Engineered BioSlurry (EBS™) product.
- Manufactured EBS™ is loaded into tanker trucks for delivery to JWPCP.

Food Waste Receiving

Food waste is pumped from WM tanker trucks into closed, sealed storage tanks, controlling odors.

JWPCP Demonstration Update

Food Waste Tonnage



Use of Digester Gas from Food Waste

- Current usage of digester gas
  - Treatment plant is currently using some of the additional biogas for electricity generation
  - As food waste receipts increase, we will need to add more energy recovery capacity
- Future options…

Electricity

Vehicle Fuel

Biomethane

Biosolids Drying

Key Results to Date

- Food waste handling and storage systems have worked as designed
- No major impacts on treatment plant operation seen to date
- Biogas production has increased as expected
- Districts developing plans for expansion to accept up to 500 tpd diverted food waste

Thank you.

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"So, this Humpty Dumpty guy falls off the wall and I think, Dang, ain't lettin' this go to the food waste bin."