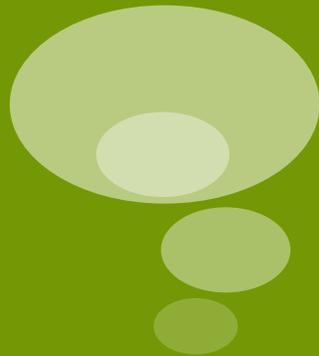


*Marin Sanitary Service &*

# **Central Marin Sanitation Agency**



## **Central Marin Commercial Food-to-Energy (F2E) Program**

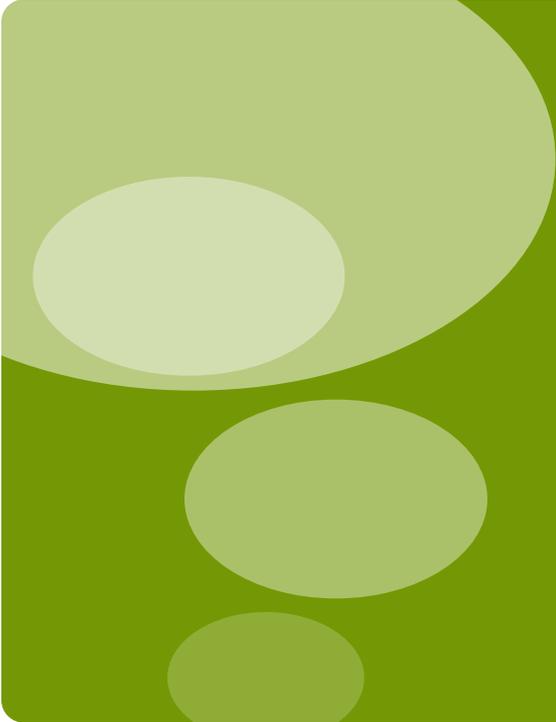
**BAYWORKS  
Presentation**

**November 14, 2013**

# Presentation Outline



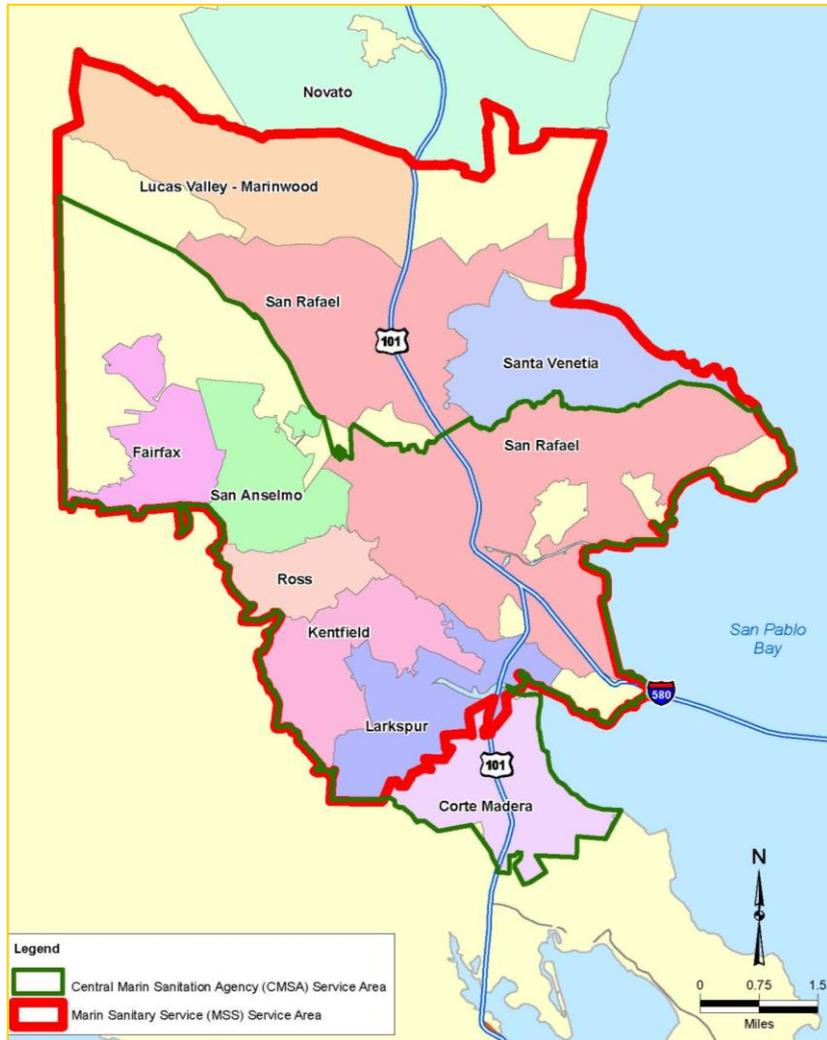
- **Central Marin’s Commercial Food-to-Energy (F2E) Initiative**
  - Public-Private Partnership – CMSA and Marin Sanitary Service
  - History of F2E initiative
  - What is F2E?
  
- **Marin Sanitary Service Project Elements**
  - Roll-out plan
  - Transfer Station Improvements
  
- **CMSA Project Elements**
  - Treatment plant F2E/FOG facility
  - Anaerobic Digestion and Energy Production
  
- **Program Benefits and Status**
  
- **Questions**



Commercial  
Food Waste  
to  
Energy Program



# Public-Private Partnership



**Central Marin Sanitation Agency**



# F2E History

- 2008-2009
  - Methane Capture Feasibility Study completed - joint project by CMSA/City of San Rafael/MSS
  
- 2009-2010
  - F2E Workplan approved by Board
    - Engineering predesign completed – focus on CMSA facilities
    - CEQA initial checklist completed – no impacts identified
    - Presentation to Central Marin city and town councils
  
- 2010
  - F2E integrated into CMSA Digester Improvement Project's FOG facility
  
- 2011
  - MoU for F2E program executed between MSS and CMSA

# Commercial Food Waste to Energy



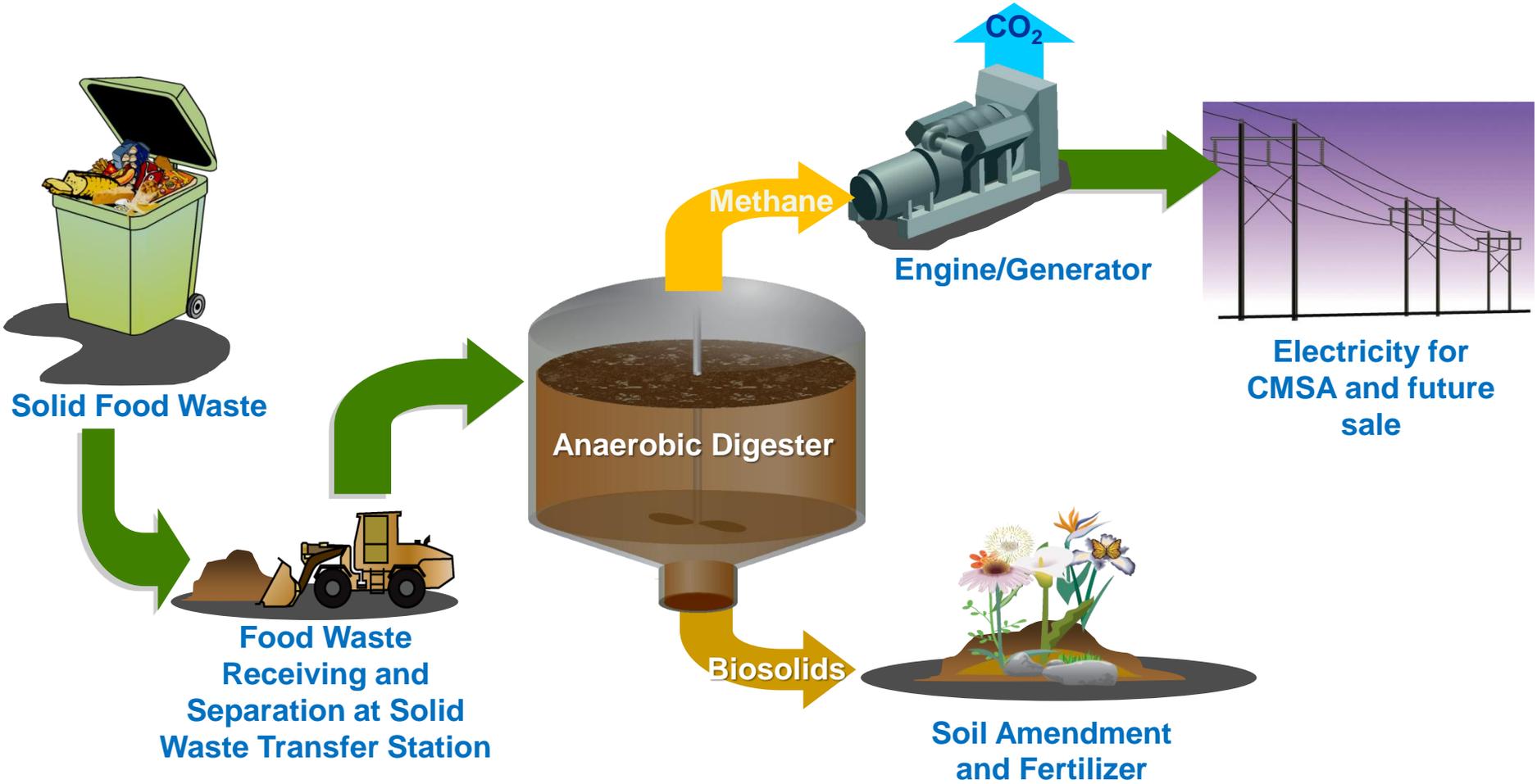
Central Marin Food Waste

**Process:**  
Anaerobic digestion



Biogas (methane)

# What is Food to Energy?





# MSS Project Elements

# Food Waste to Energy



- Food is the **largest single source of waste in California**
  - It is ~16% percent of the Commercial waste stream
  - And ~25% of the Residential waste stream
- In a 2008 Marin Sanitary Service (MSS) Waste Characterization study performed by Cal Recovery it was found that **27.1 %** or 4,700 tons of solid waste sent to Redwood Landfill by MSS, is **food waste**.
- There are over 500 food waste generators (restaurants, delis, grocery stores) in the MSS service area.
- The estimated amount of food waste that cold be collected if all generators participate in the Program is up to 20 tons per day.

# MSS Roll Out Plan



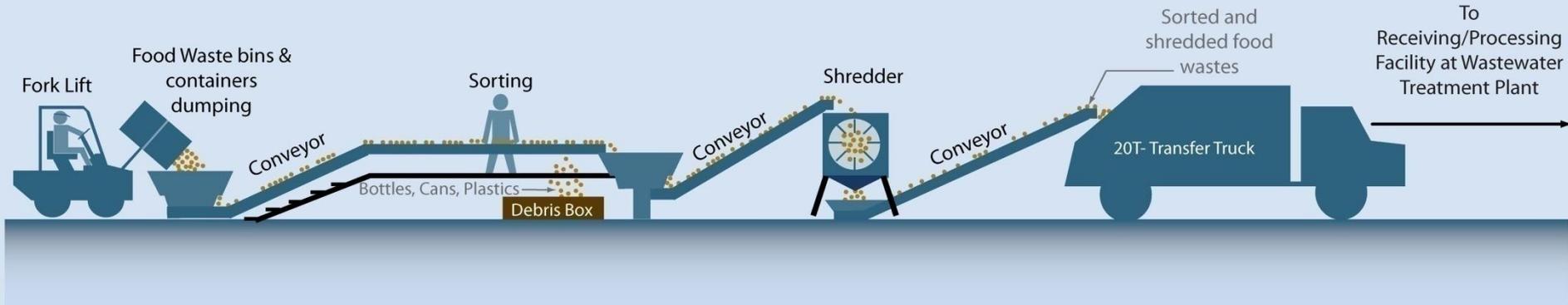
- **Pre-consumer** commercial food waste would be collected and then transferred to the MSS Transfer Station for processing to remove contamination and then transported to CMSA.
  - Eventually include **post-consumer** food waste



- **Roll-out plan**
  - **Recruit** up to 50 commercial food waste producers
    - Continue adding more participants incrementally (3-yr plan)
  - **Program outreach**
    - Kitchen staff training
    - Frequent monitoring



# Improvements at the MSS Transfer Station



- Food waste will be collected and transported to MSS where it will be emptied into a collection bunker which will feed a series of processing belts allowing MSS staff to remove contaminants.
- Clean food waste will be ground to <math><1\text{''}</math> and loaded into watertight dumpsters for transport to the CMSA.





# MSS Equipment Installation

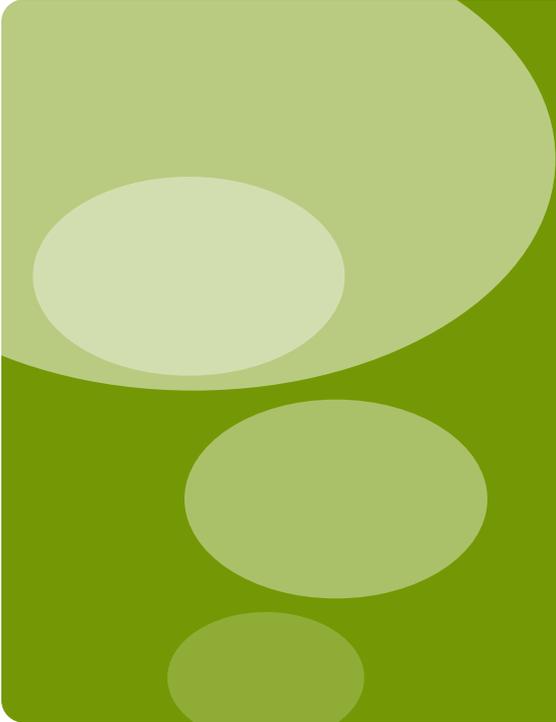


- MSS transfer station permitted to receive and store food waste
- All solid waste franchisors have approved the FY 14 rate increase
- Over 40 restaurants want to participate in the Program's initial roll-out
- Equipment procurement in near future – has contracted with the supplier
- Developing restaurant staff training program and materials

# MSS Program Status



- MSS transfer station permitted to receive and store food waste
  - CalRecycle's LEA – Marin County LEA
- San Rafael building permit approved
- Solid waste franchisors have approved the FY14 rate increase
  - County of Marin, Cities and Towns in service area, LGVSD
- Over 125 food generators want to participate in the Program's initial roll-out phase
- Food Waste equipment procured and is being installed
- Developed restaurant staff training program and materials
  - Training has started in downtown San Rafael and Larkspur County Mart



# CMISA Project Elements

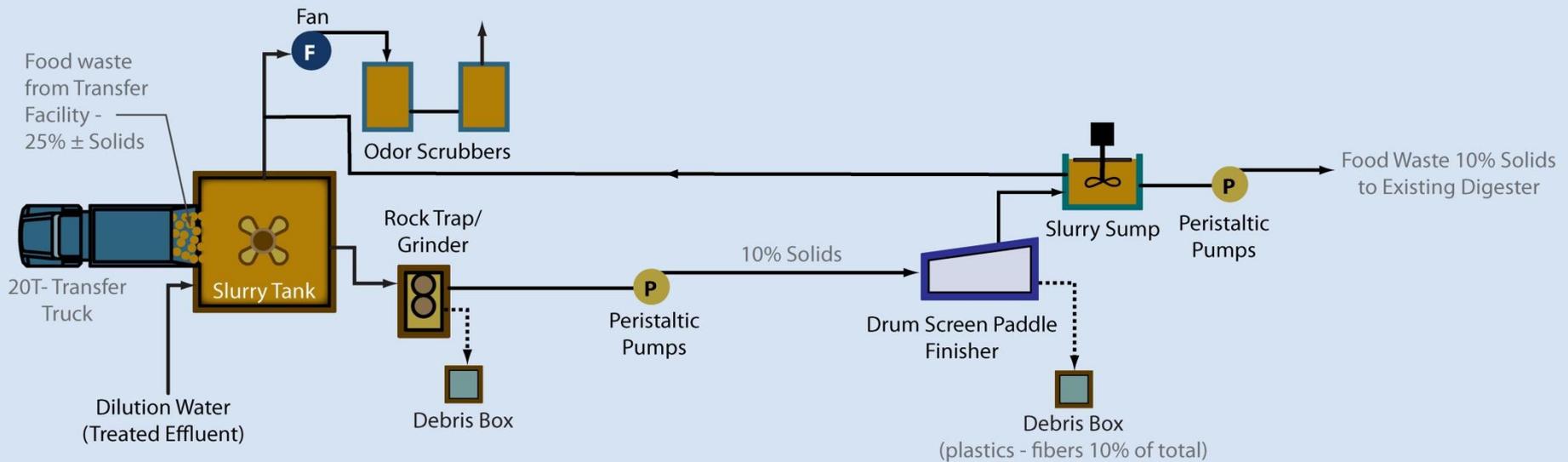
# CMSA – Aerial View



# Improvements at CMSA's Wastewater Treatment Plant



## New Receiving/Processing Facility at Wastewater Treatment Plant



# F2E/FOG Facility



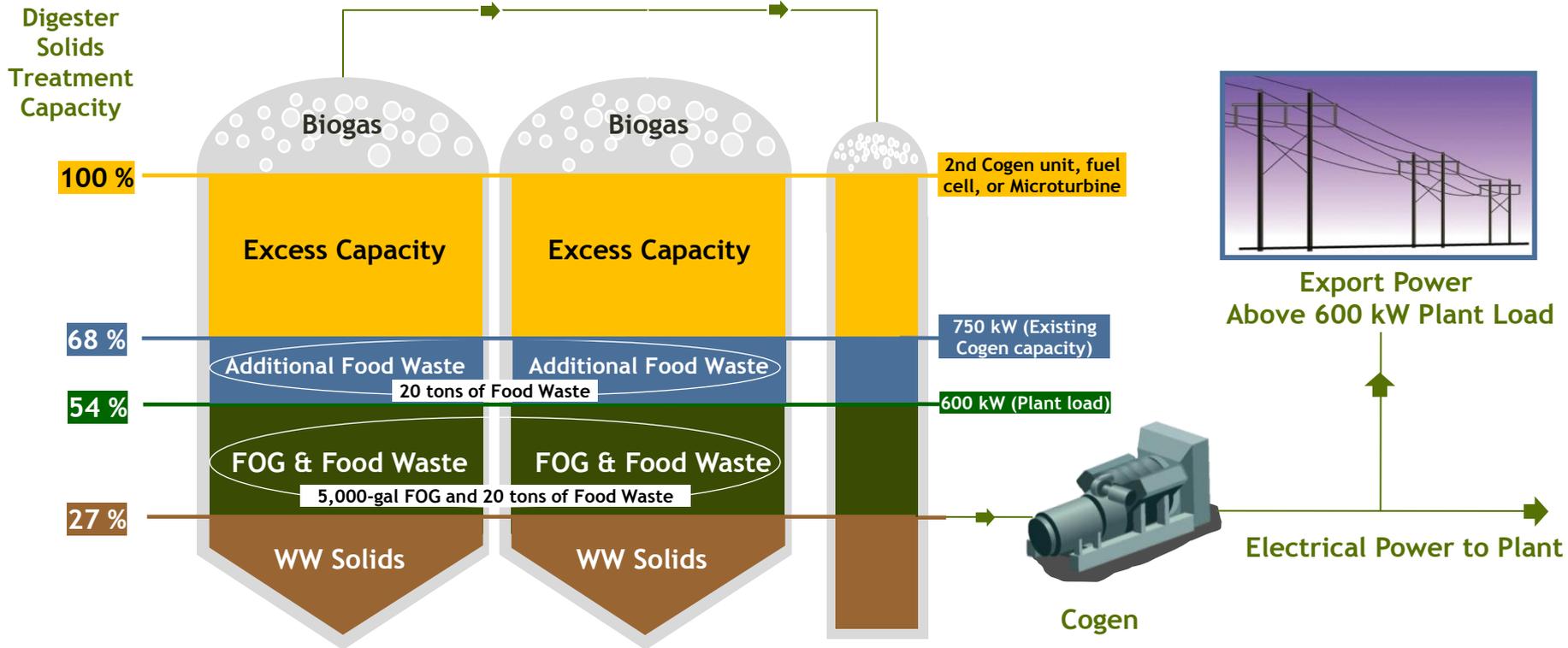
# Drum Screen Paddle Finisher



# Digestion - Anaerobic Digesters



# CMSA Capacity for FOG and Food Waste



# Biosolids Residuals



# 750 kW (1000 hp) Engine Generator



# CMSA Program Status



- CalRecycle's LEA approved a Limited Volume Transfer Operation permit
- Acceptance of Hauled Waste Policy revised
- F2E facility built and staff received equipment vendor and design engineer system training
- Informed RWB that the facility is operational
  - NPDES permit Standard Operation Procedure (SOP) developed
- Internal SOP developed
- FOG delivery testing period stated in November
- Food Waste delivery in late December/early 2014

# First FOG Load





# Program Benefits

# Benefits of F2E Program



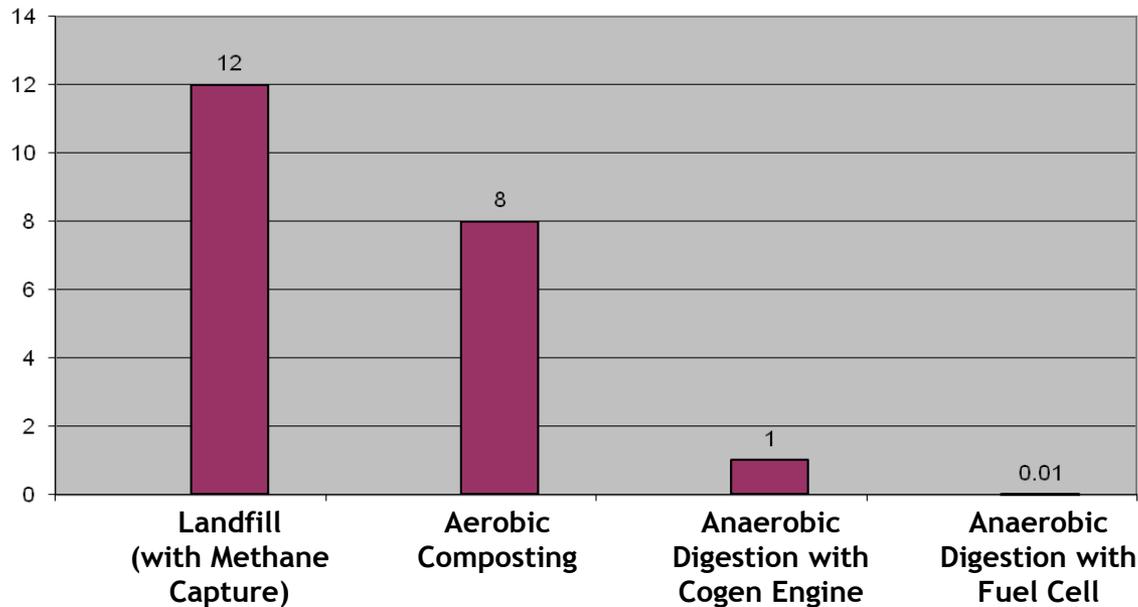
- A local renewable energy project
- Increases CMSA's energy self sufficiency
- Utilization of existing CMSA infrastructure and equipment capacity
- Potential for CMSA to export energy (future)
- Reduces greenhouse gas emissions – about *2,000 metric tons per year (Cap and Trade value?)*
- Reduces landfilling of food waste
- Helps achieve County of Marin zero-waste goals

# Benefits: Reduces Carbon Footprint



- Less CO<sub>2</sub> than landfill or composting
- Less CO<sub>2</sub> from shorter truck hauls
- Renewable energy replaces energy from fossil fuels

**Greenhouse Gas Carbon Dioxide Equivalent of Commercial Food Waste**



A green rectangular background with rounded corners. On the left side, there are several overlapping white circles of varying sizes, creating a bubble-like effect. The text is positioned on the right side of the background.

# Questions or Comments?

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