

# SBWMA CASE STUDY

## *ORGANIC TO ENERGY (O2E)* AD PARTNERSHIP WITH WASTEWATER TREATMENT PLANTS

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**A Public Agency**

# SBWMA / RethinkWaste

## (South Bayside Waste Management Authority<sup>2</sup>)

- Public Agency / JPA Solid Waste Utility
- Provides waste services for 11 Peninsula cities
  - 500,000 residents & 10,000 businesses
- Handles 500,000 tons/year (50% diversion rate)
- Owns the Shoreway Environmental Center
- Contractual oversight of Collection Services and Shoreway Operations
- Manages all recycling, disposal, and processing contracts
- Directs and manages public outreach efforts

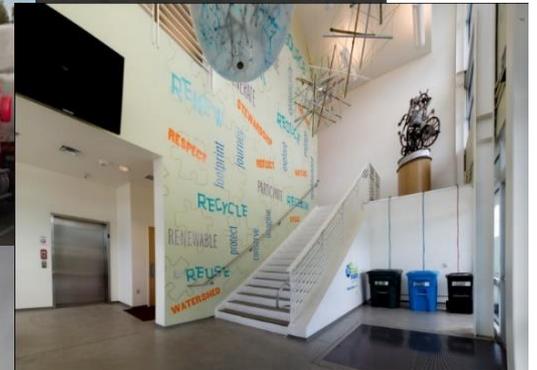


#### Member Agencies:

Burlingame Hillsborough  
San Mateo  
Foster City  
Belmont  
San Carlos  
West Bay  
Redwood City  
Menlo Park  
Atherton  
San Mateo County  
East Palo Alto



# Shoreway Environmental Center



# Organics Diversion Process





# SBWMA Organic Programs

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- Existing Residential Organics
  - Green Waste = 100,000 tons per year to compost (~380 tpd)
  - Added FW to green cart in 2010
- Existing Commercial Organics (SSO/Food Waste)
  - Large generators FW SSO collection initiated in 2005
  - 35,000 tons per year to compost (~100 tpd)
- Expanding **SB1383** Commercial Organics Collection
  - Virtually all food waste generators **by 2024**
  - Expect FW tonnage to double to 70,000 tons per year



# Growing Organics Diversion

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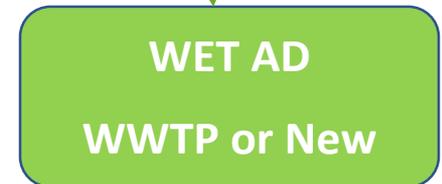
- **Problem of Expanding Organics Diversion:**
  - SSO collection cost
  - Cost of composting (over \$100 per ton T&D)
  - Regional capacity for food waste volumes
  - Contamination in FW/SSO

# Food Waste Processing Options

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California SB1383  
Ban organics from  
landfill



# Food Waste?

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# California Defined “Organics”

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# WWTPs Process Liquid Organics



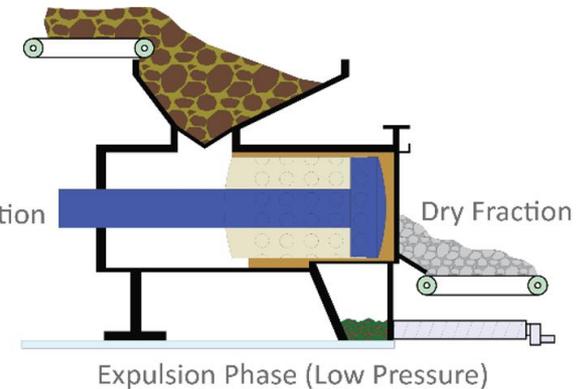
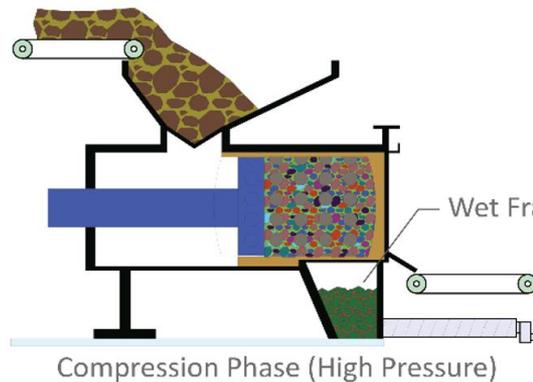
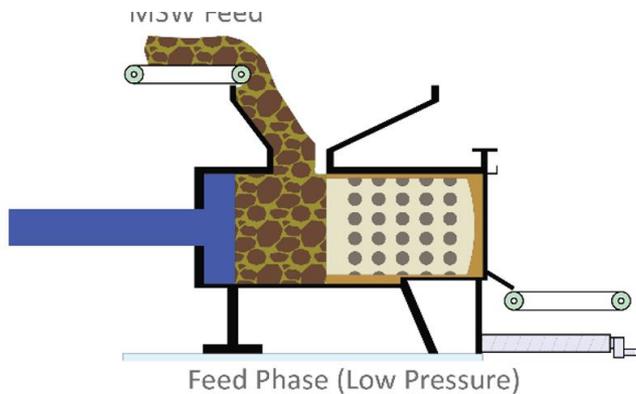
# Technology Partner Anaergia Organics Processing System

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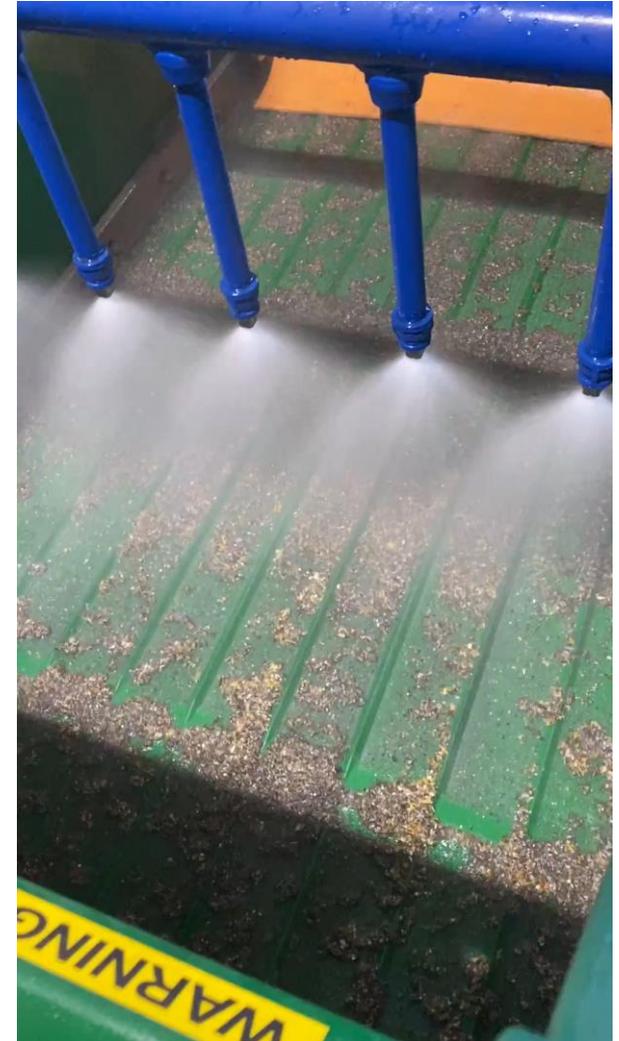


# OREX System

## Extracting Contamination



# Organics Polishing System



# Liquid Organic Slurry

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# Benefits of Food Waste AD at WWTPs

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- Power-consumers to power-generators
- Publicly owned infrastructure
- Regulatory/mandate driven to serve community
- Most WWTPs have excess capacity
- Readily deployable
  - Existing infrastructure
  - Permitted
- Located near generators

# Project Development Milestone Commitments and Timeline

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- Agency Board Zero Waste/GHG Goals & Funding
- 2017-2018 - Grant from Cal Recycle & San Mateo County

- 2019 - WTPP MOUs

- 2019-2020 - Anaergia System Installation & Startup

- COVID suspension of project (March 2000 – March 2021)

- Restart SSO to WWTP / Testing of MSW-MRF organics



# Applying Feedstock-Appropriate Technology

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- Feedstock Type
  - Moisture content
  - Carbon to Nitrogen ratio
- Feedstock Quantity/Quality
  - Small quantities
  - Mixed-in?
  - Contamination levels and types
- Market Outlets
  - Consistency and reliability
  - Sensitivity to Contamination “Goose & Golden Egg”

# Feedstock-Appropriate Technology

## Technology

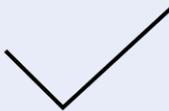
Combustion/Gasification	Composting	Anaerobic Digestion
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## Feedstock Characteristics

Dry Carbonaceous	Moist Balanced <u>C:N</u>	Wet Nitrogenous Putrescible
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## Feedstock Types

Wood Paper	Yard waste Agriculture waste	Bio waste Food waste High-protein content
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<b>Performance Criteria</b>	<b><u>Landfill</u></b>	<b><u>Compost</u></b>	<b><u>Dry AD</u></b>	<b><u>Wet AD</u></b>
<b>Environmental Benefit</b> - Methane Capture - Bio Energy	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>High</b>
<b>Regulatory Compliance</b>	<b>Not CA compliant</b>			
<b>Cost – Pre Processing</b>	<b>None</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Cost - Transport</b>	<b>?</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>
<b>Cost – Tipping Fee</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Medium</b>
<b>Contamination Management</b>	<b>No Concern</b>	<b>Problematic in Products</b>	<b>Problematic in Products</b>	<b>Removed at waste facility</b>

Situational Analysis of Technology Performance Criteria	<u>LANDFILL</u> <i>Ox Mtn Landfill</i>	<u>COMPOST</u> <i>Allied-Newby Recology- BVON</i>	<u>DRY AD</u> <i>ZWE SSF ZWE SJ ZWE Monterey</i>	<u>WET AD</u> <i>WWTP Pilots</i>
<b>Environmental Benefit</b> - Methane Capture - Bio Energy	<b>Gas Recovery</b>  IC power gen. (6MW)	<b>Compost emissions</b>  No-Bioenergy	<b>Methane capture</b> Biogas to fuel and power	<b>Methane capture</b> Biogas to fuel and power
<b>Regulatory Compliance</b>	<b>Not CA compliant</b>	<b>Issue of compost overs use as ADC</b>	<b>Issue of compost overs use as ADC</b>	<b>Issue of biosolids used as ADC</b>
<b>Cost – Pre Processing (CapEx + OpEx)</b>	<b>None</b>	<b>Low cost</b>	<b>\$50?</b>	<b>\$50? TBD</b>
<b>Cost - Transport</b>	<b>\$15</b>	<b>\$25</b>	<b>\$15 +\$20</b>	<b>\$20</b>
<b>Cost – Tipping Fee</b>	<b>\$55</b>	<b>\$80 per ton</b>	<b>\$100</b>	<b>\$30 - \$60</b>
<b>Contamination Management</b>	<b>No Concern</b>	<b>Problematic in Products</b>	<b>Problematic in Products</b>	<b>Removed at waste facility</b>

The background features a white central area with blue geometric shapes on the left and right sides. The shapes are composed of overlapping triangles and polygons in various shades of blue, creating a modern, abstract design.

**Thank you**

Hilary Gans

SBWMA / [Rethinkwaste.org](http://Rethinkwaste.org)

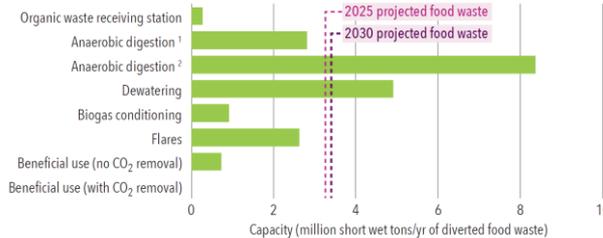
# Digestion is Key

## Key Takeaways:

- Wastewater plants have half the capacity needed for 1383.
- Wastewater community can play key role in landfill diversion of organics.
- Retrofitting infrastructure can increase capacity and resiliency.
- Largest hurdle is pre-processing for feedstock security (Anaergia OREX solves this).

## DIGESTING CALIFORNIA'S CO-DIGESTION CAPACITY

A new report assessed statewide co-digestion capacity at WWTPs, including AD capacity under two operating scenarios. Ancillary infrastructure such as waste pre-processing will require the most investment.



<sup>1</sup> Design solid residence time; largest unit out of service  
<sup>2</sup> 15-day solid residence time; all units in service

Source: SWRCB

panies to develop third-party merchant facilities. Anaergia is developing a bioenergy facility in Rialto, CA, and is known to be targeting further BOO arrangements in the state (see GWI April 2020, p28).

While co-digestion at wastewater treatment plants could go some way towards meeting the state's landfill diversion tar-

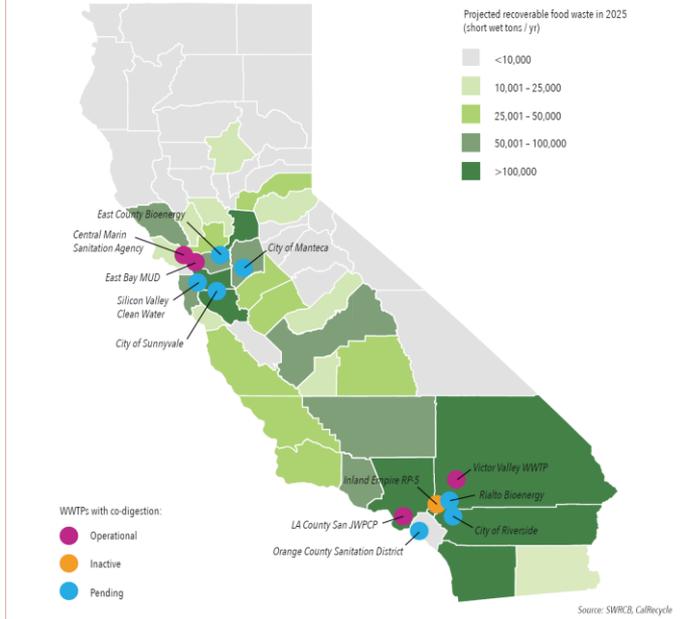
Synagro, for instance, currently has a series of merchant composting facilities in California that it is looking to permit for post-consumer food waste, the company's director of legislative and regulatory affairs, Layne Baroldi, told GWI this month.

Likewise, the processing of organic waste at wastewater treatment plants would

developed under SB1383 – which are due to be adopted later this year – will help ensure that land application of biosolids in California is unhindered by local ordinances. From January 2022, counties such as Stanislaus and San Joaquin will no longer be able to prohibit the land application of lower-quality 'Class B' biosolids. ■

## MAPPING OUT CO-DIGESTION IN CALIFORNIA

A dozen wastewater and organic waste co-digestion schemes are either underway or in the planning stages in California. WWTPs have the advantage of already being located where food waste is generated.



# Pre-Consumer Food Waste

