SBWMA CASE STUDY

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

Gladstein Neandross & Associates Webinar

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Rethink waste
South Bayside Waste Management Authority
A Public Agency

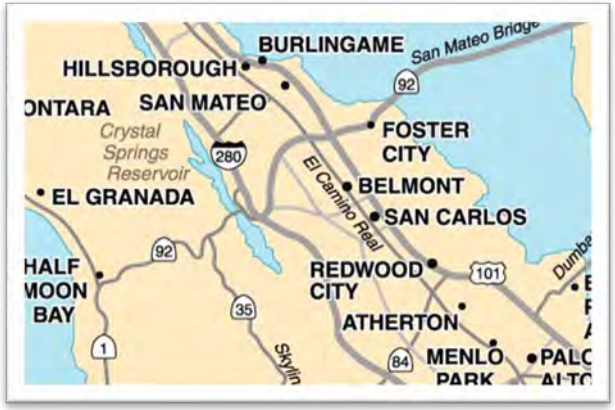
Shoreway Environmental Center

SBWMA / RethinkWaste
(South Bayside Waste Management Authority)

- Public Agency / JPA Solid Waste Utility
- Provides waste services for 11 Peninsula cities
  - 500,000 residents & 10,000 businesses
- 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

Rethink waste
South Bayside Waste Management Authority
A Public Agency

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



Organics Diversion Process

Existing SBWMA Organic Programs

- 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 in 2005
  - 35,000 tons per year to compost (~100 tpd)
- Expanded SB1383 Commercial Organics Collection
  - Virtually all food waste generators 2024
  - Expect FW tonnage to double to 70,000 tons per year

Growing Organics Diversion

- Problem of Expanding Organics Diversion:
  - SSO Collection Cost
  - Cost of composting over $100 per ton T&D
  - Food waste volume
  - Contamination in SSO

Food Waste Processing Options

~~LANDFILL~~

California SB1383
Ban organics from
landfill

COMPOST

Windrow

ASP

In-vessel

ANAEROBIC DIGESTION

DRY AD

W/ COMPOSTING

WET AD

WWTP or New

Food Waste?

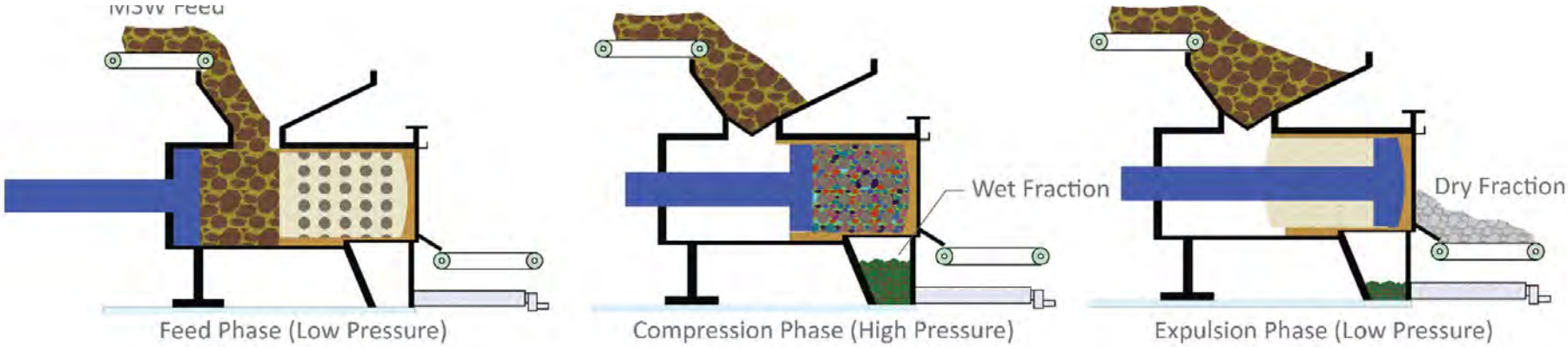
California Defined “Organics”

WWTPs Process Liquids

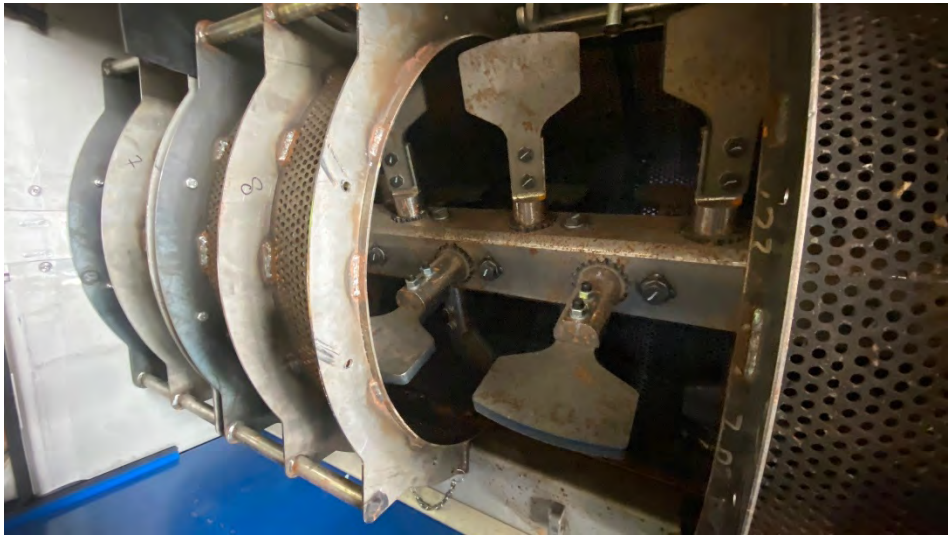
Anaergia Processing System

Anaergia OREX System

Extracting Contamination

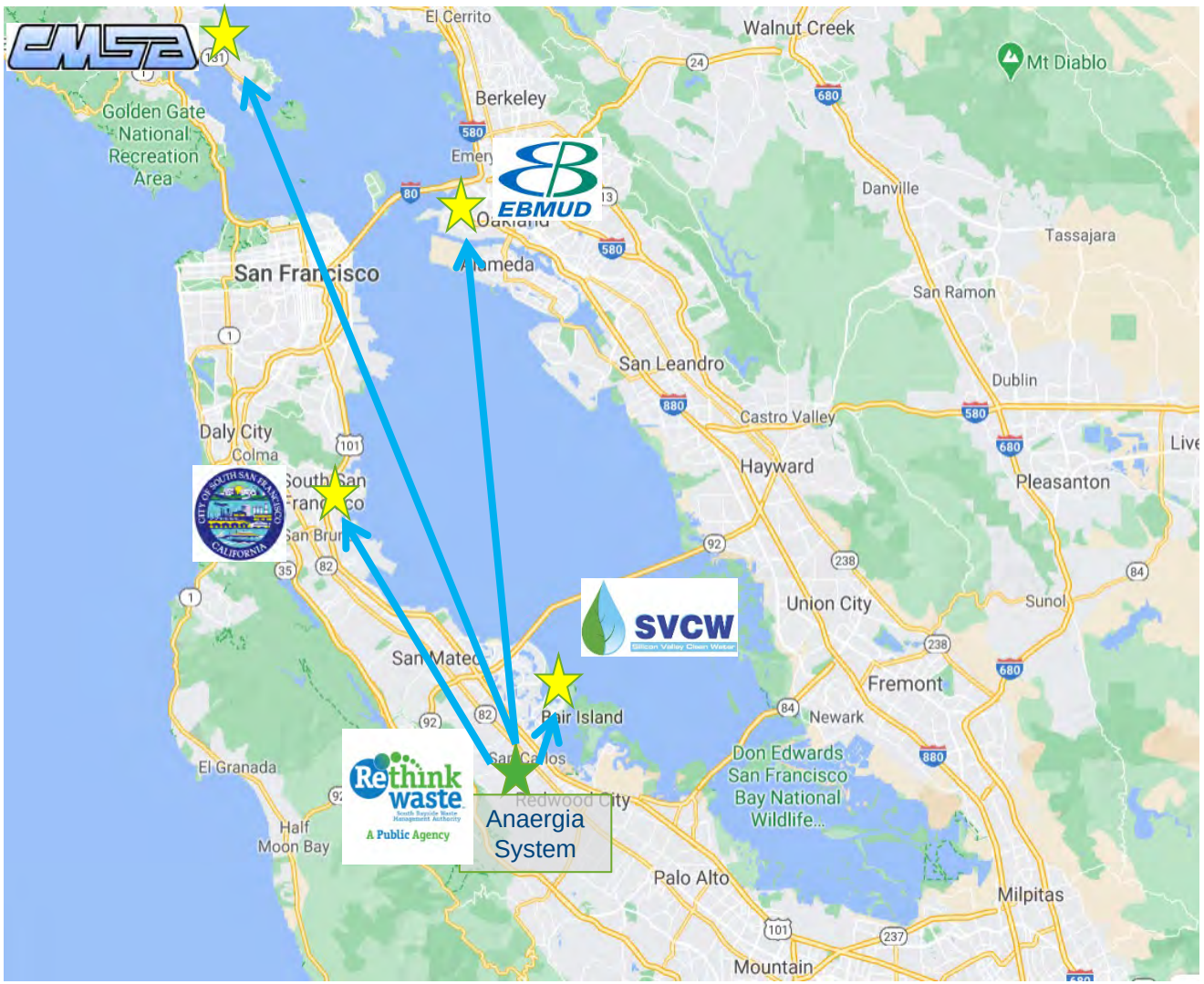


Organics Polishing System



Liquid Organic Slurry

WWTP Partners



Benefits of Food Waste AD at WWTPs

- Most WWTPs have excess capacity
- Readily deployable
  - Existing infrastructure
  - Permitted
- Located near generators
- Large(est) power consumers
- Publicly owned infrastructure
- Regulatory/mandated driven to serve community

Project Development Milestone Commitments and Timeline

- Agency Board Zero Waste/GHG Goals & Funding
- 2017 - 2019 - Grant from Cal Recycle & San Mateo County

- 2020 - WTPP MOUs

- 2020 - Anaergia System Installation & Startup

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

- Restart SSO to WWTP / Testing of MSW MRF organics

Applying Feedstock-Appropriate Technology

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

Feedstock-appropriate Technology

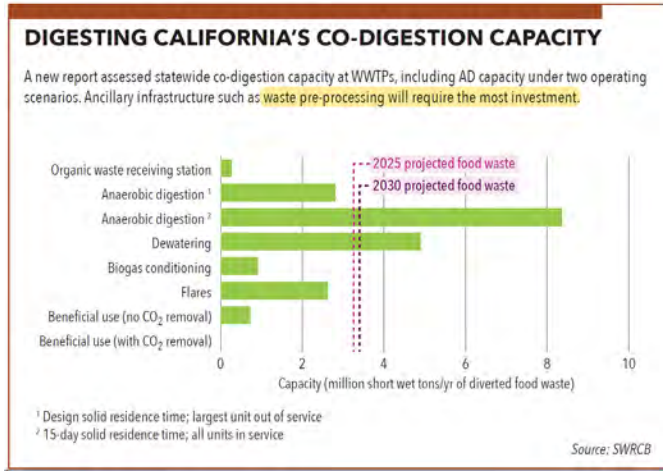
Technology		
Combustion/Gasification	Composting	Anaerobic Digestion
Feedstock Characteristics		
Dry Carbonaceous	Moist Balanced C:N	Wet Nitrogenous Putrescible
Feedstock Types		
Wood Paper	Yard waste Agriculture waste	Bio waste Food waste High-protein content

SBWMA Situational Analysis of Technology Performance Criteria	LANDFILL *Ox Mtn Landfill*	COMPOST *Allied-Newby* *Recology-BVON*	DRY AD *ZWE SSF* *ZWE SJ* *ZWE Monterey*	WET AD *WWTP Pilots*
Environmental Benefit - Methane Capture - Bio Energy	Gas Recovery IC power gen. (6MW)	Compost emissions No-Bioenergy	Methane capture Biogas to fuel and power	Methane capture Biogas to fuel and power
Regulatory Compliance	Not CA compliant	Issue of compost overs use as ADC	Issue of compost overs use as ADC	Issue of biosolids used as ADC
Cost – Pre Processing (CapEx + OpEx)	None	Low cost	?????	*TBD* *$40?*
Cost - Transport	Site specific	$25	$15	$20
Cost – Tipping Fee	Low	$83 per ton	$100 - 150	$30 - $60
Contamination Management	No Concern	Problematic in Products	Problematic in Products	Removed at waste facility

Performance Criteria	Landfill	Compost	Dry AD	Wet AD
Environmental Benefit - Methane Capture - Bio Energy	Low	Medium	High	High
Regulatory Compliance	Not CA compliant	✓	✓	✓
Cost – Pre Processing	None	Low	Medium	High
Cost - Transport	?	High	Medium	Low
Cost – Tipping Fee	Low	Medium	High	Low
Contamination Management	No Concern	Problematic in Products	Problematic in Products	Removed at waste facility

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).



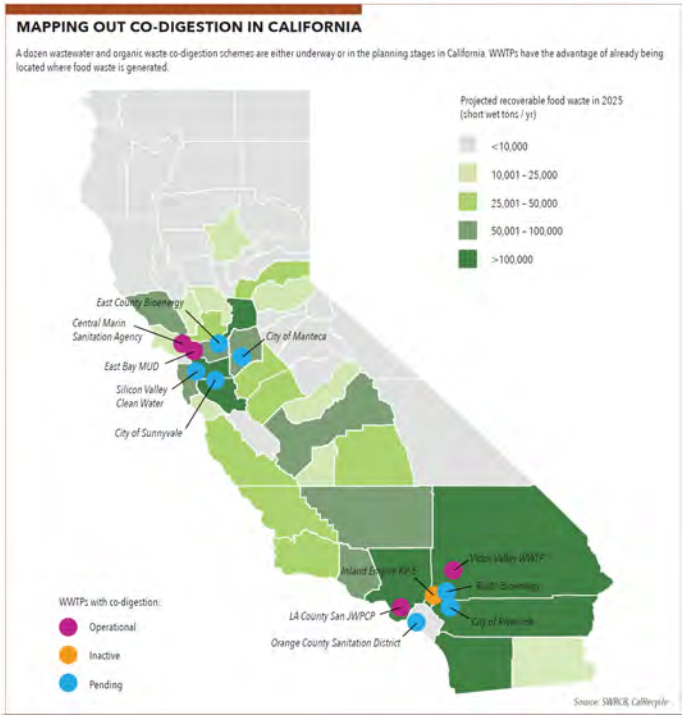
panies to develop third-party merchant facilities. Anaergia is developing a bioenergy facility in Rialto, CA, and is known to be targeting further BOO arrangements in the state (*see GWI April 2020, p28*).

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. ■



Anaergia

Pre-Consumer Food Waste