



# ***Integrated MRF and Organics Recycling***

***Southern California Conversion Technology Conference***

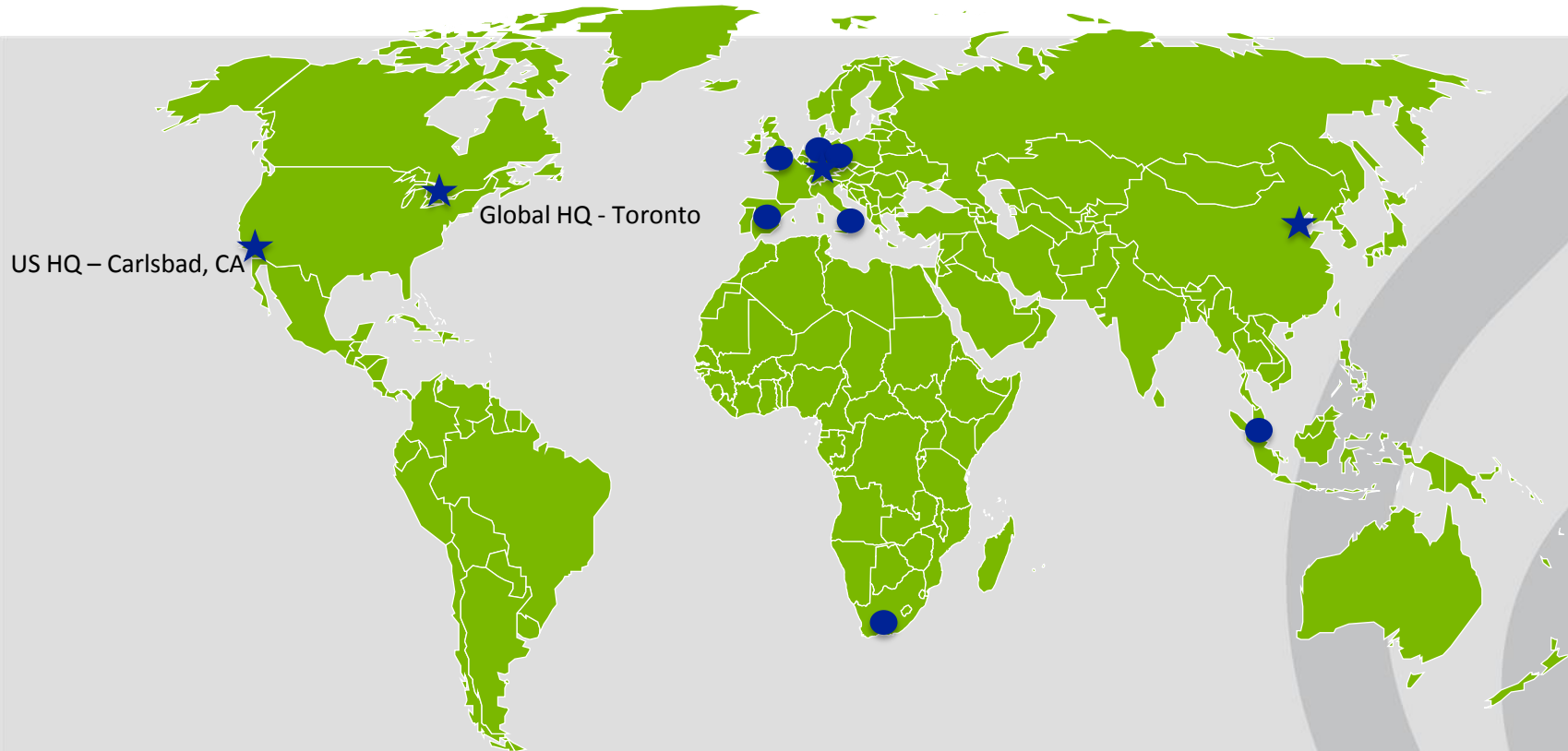
**July 29<sup>th</sup>, 2016**

# Agenda

1. Anaergia Introduction
2. CA Organics Regulations
3. Integrated MRF and Organics Recycling Solutions
4. Organics Recycling Recovery – Key Technologies
  - a) Organics Extrusion Press (OREX)
  - b) Polisher (Minor contaminant removal)
5. Integrated MRF Facility Design with Organics Recycling

# Anaergia Offices

Global Leader in Organics Recycling Infrastructure



**1,600 Projects, 380 MW, 29 Patents, 20 Years**

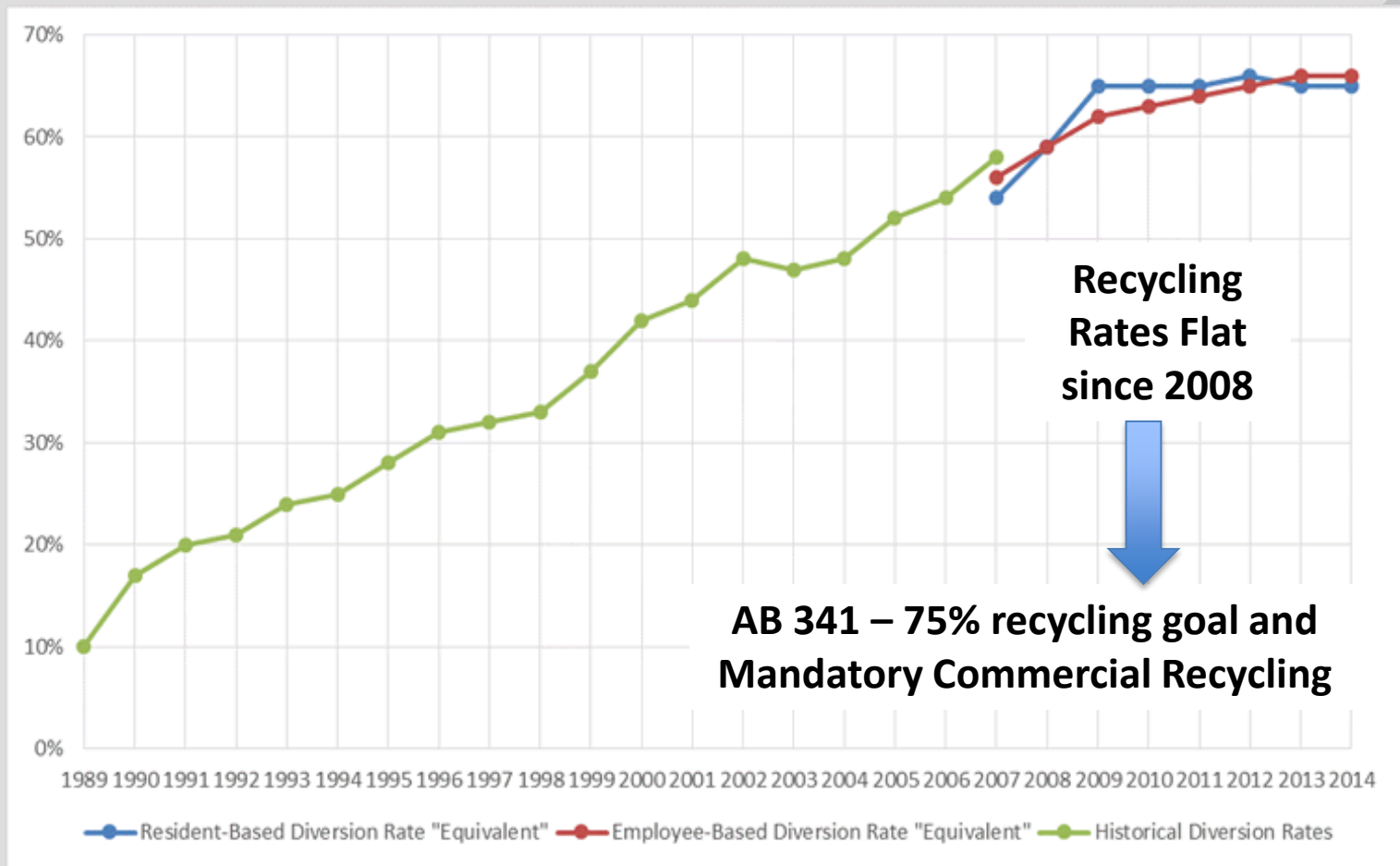




# California Organics Recycling Drivers

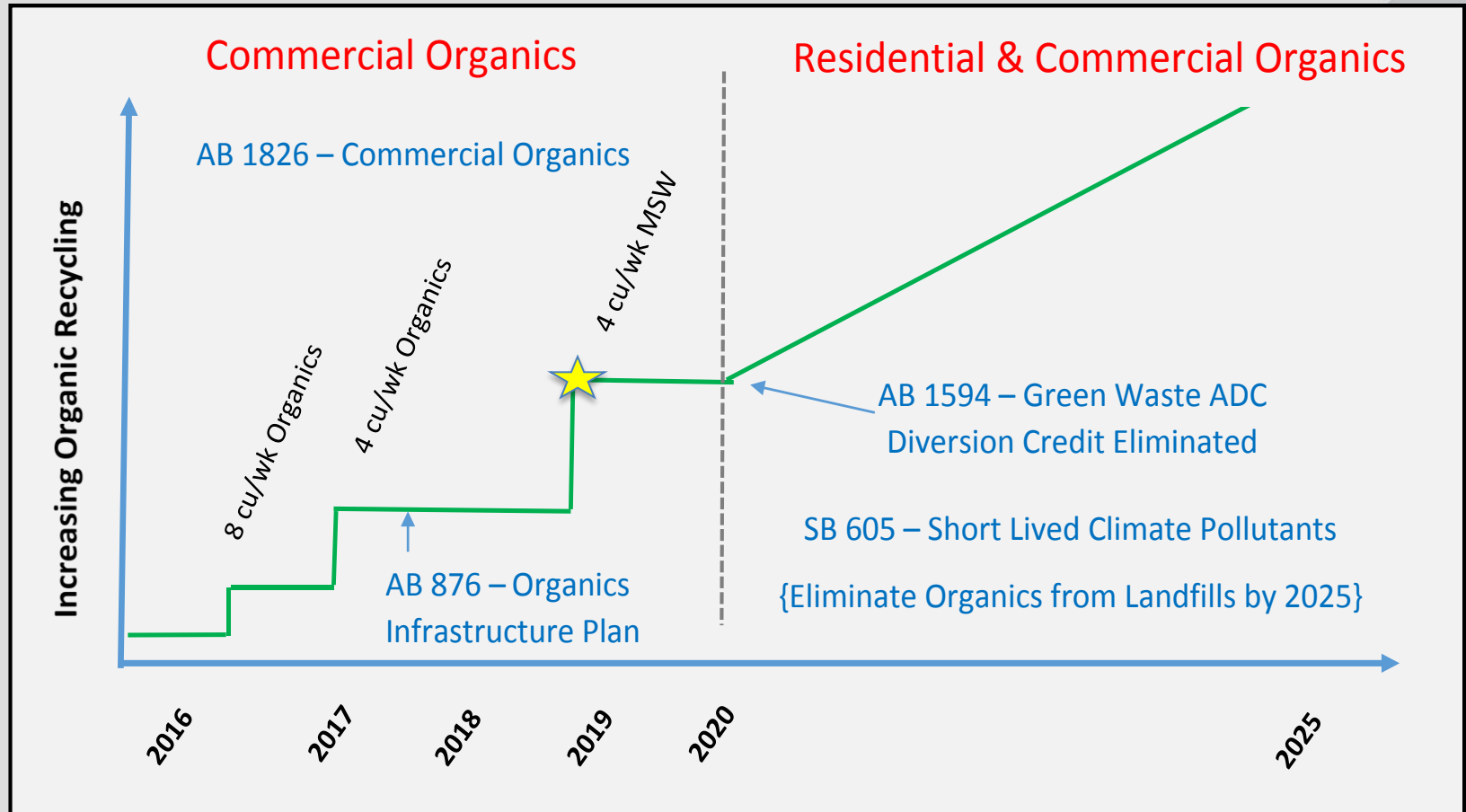
## Regulatory Framework – Sticks & Carrots for organics recycling infrastructure development

# AB 939 – California Leading the Way in Recycling



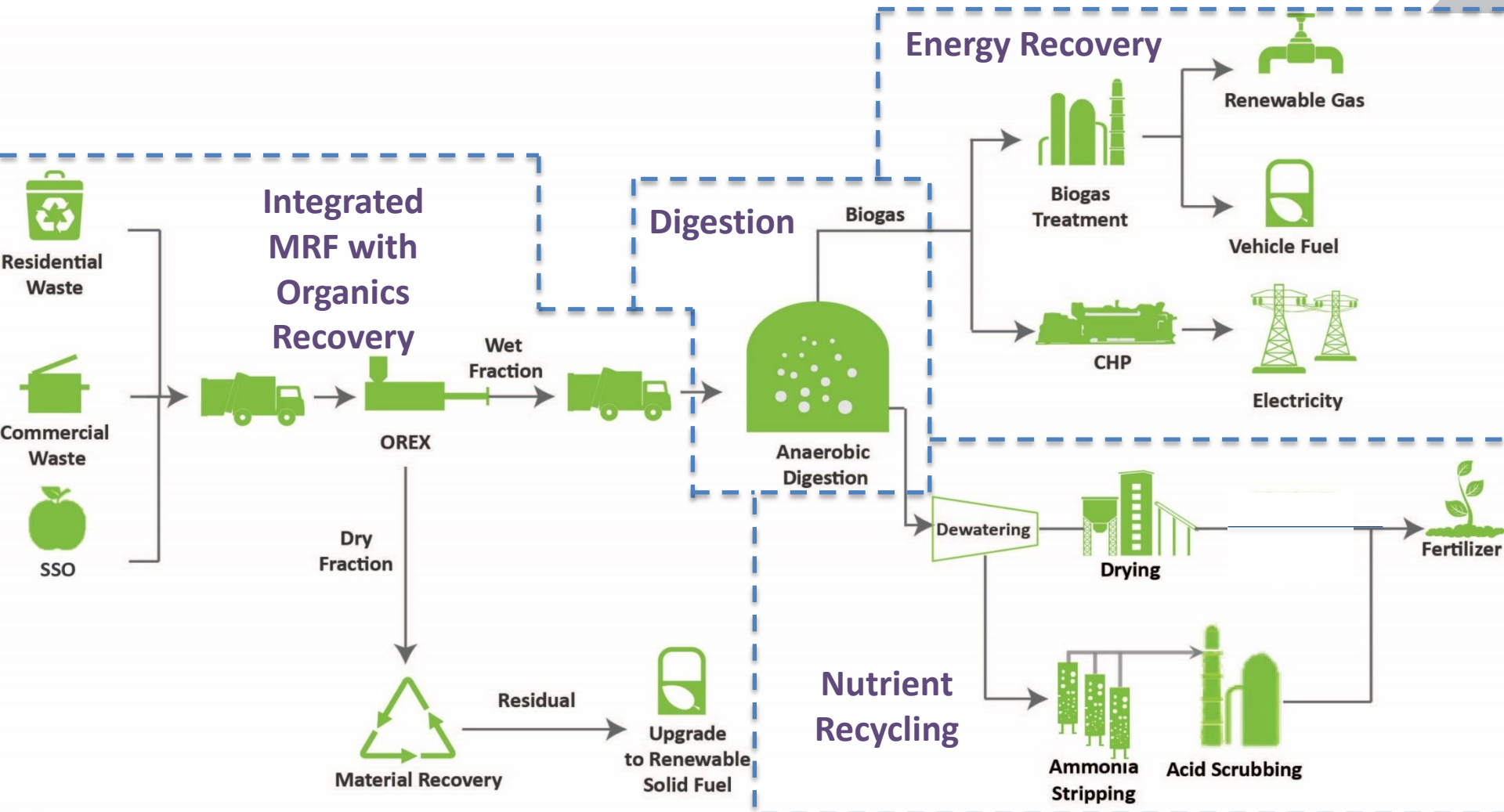
# California Organics Regulations

## Everything is driven by Climate Change



# Integrated MRF and Organics Recycling Solution

Digestion supported by Calrecycle as ideal solution



# Anaheim Sustainability Center

## *Example of Integrated Organics Solution*

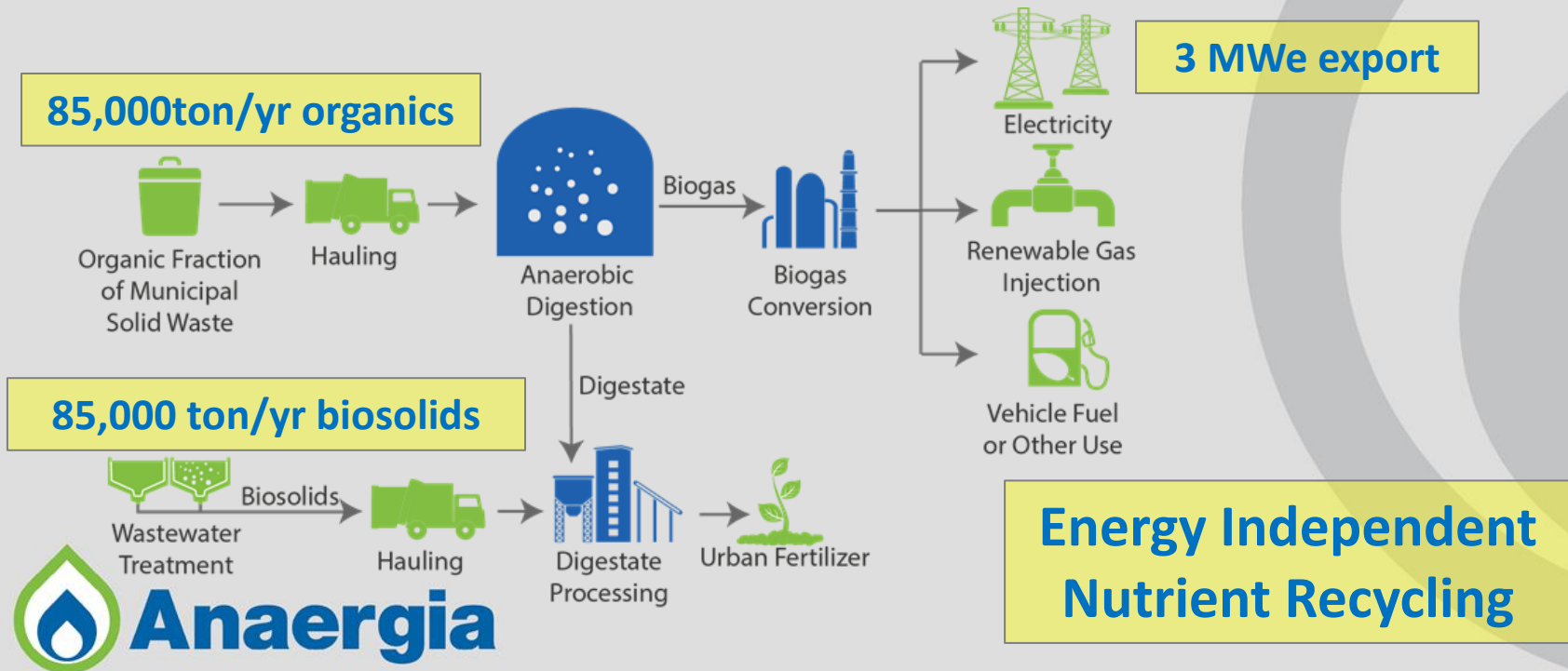


- Phase I: 85,000 TPY wet fraction, Phase II: 170,000 TPY food waste digestion
- 4 MW PPA with Anaheim Public Utilities, Organics extracted from MSW
- Digester Site on < 2 acres



# Rialto Bioenergy Facility

## Example of Integrated Organic Solution



# Food Waste Digestion – London

*Integrated within Resource Recovery Park*



- **Dagenham, UK (London)**
- **Feedstock:** Municipal Source Separated Organic Waste
- **Capacity:** 30,000 TPY
- **Energy Output:** 1.4 MWe, 2.8 MW Total



# Integrated MRF and Organics Recycling

Proven Technologies enabling  
highest recovery at lowest cost

# Organic Waste Processing from MSW

## Organics Extrusion Press (OREX)

*Generation 1*

*Generation 2*

*Generation 3*



**Kaiserslautern, Germany**

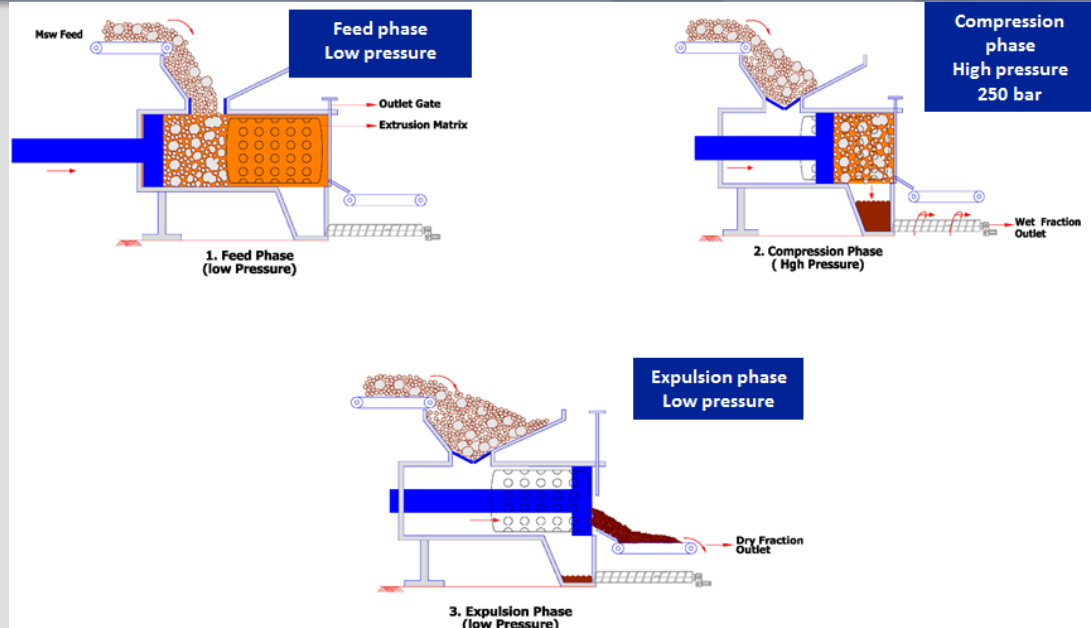


**Ventspils, Latvia**



**OREX 500 San Francisco, CA**

- Extracts Organics (wet fraction) from MSW under high pressure.
- 90% putrescible organics recovery.
- Does not rely on Source Separated Organics Collection.
- No Water Added!!!



# OREX Commercial Operating Units

Description of experience/ reference	Country	Capacity	Year
Sorting and treatment of mixed MSW	Kaiserslautern (Germany )	50,000 Mt/a	2006
Sorting and treatment of mixed MSW	Alessandria (Italy)	100,000 Mt/a	2007
Treatment of separately collected bio-waste	Castelceriolo (Italy)	25,000 Mt/a	2008
Treatment of separately collected bio-waste	Viareggio (Italy)	20,000 Mt/a	2008
Sorting and treatment of mixed MSW / industrial waste	Premier Waste (UK)	100,000 Mt/a	2008
Treatment of mixed MSW, RDF production	VamWijster (Netherland)	200,000 Mt/a	last changes 2009
Vagron (MBT) anaerobic digestion of organic fraction from MSW	Groningen (Netherland)	100,000 Mt/a	last changes 2009



**1<sup>st</sup> OREX Line in North America installed in San Francisco**

**Anaergia**

# Mini OREX Testing in North America



OREX Test Press

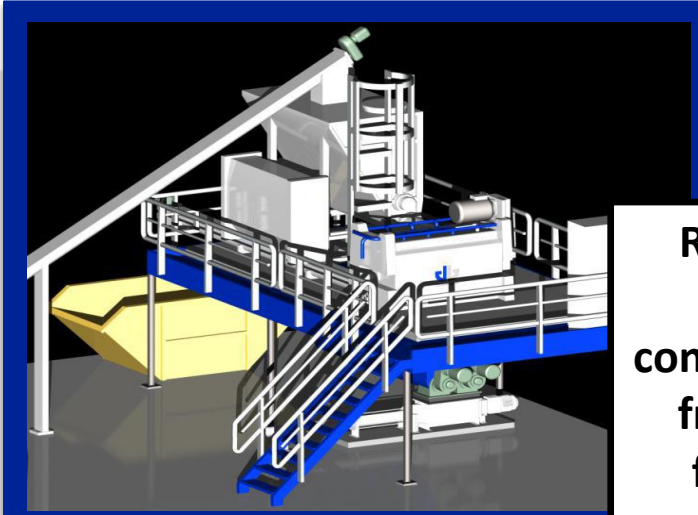


Waste to be Sampled

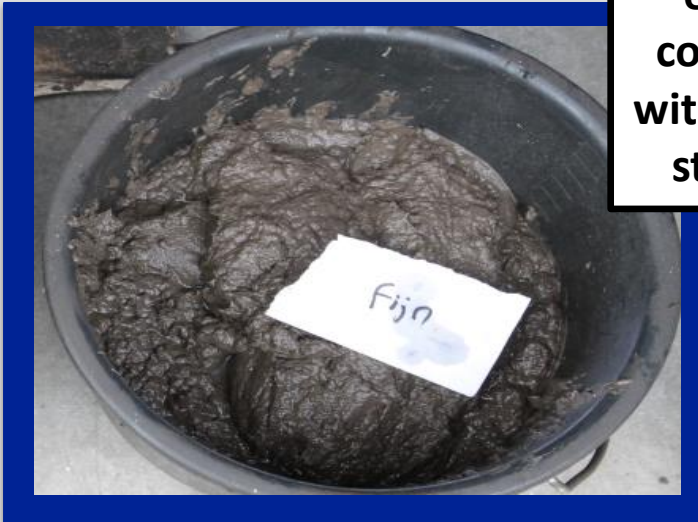
- Anaergia tested at eight sites in North America
- 7 test sites in CA (performed at LACSD in 2016)
- Complements *standard* waste characterization and facilitates MRF equipment design with OREX

# Organics Polishing System (OPS)

*Two stage plastic film and grit removal system*

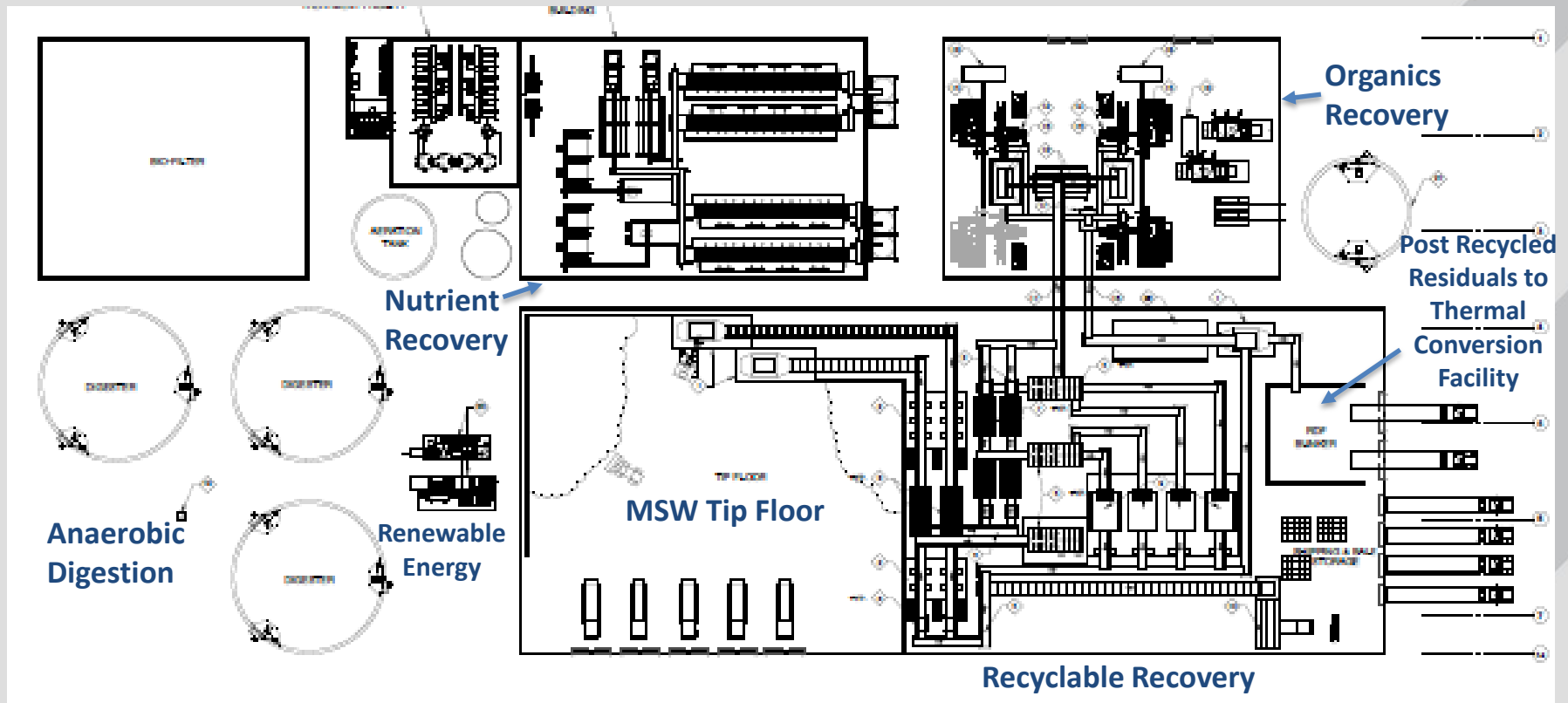


**Removes  
minor  
contaminants  
from wet  
fraction  
ensuring  
compliance  
with compost  
standards**



# OREX Integration in Integrated MRF

## Maximizing Recycling and Organics Recovery



1000 Ton Per Day Integrated MRF and Organics Recycling Facility design based on LADPW Whitepaper requirement



# Summary

- OREX and Polisher are key technologies within the Integrated MRF Concept enabling maximum organics recycling at the lowest cost.
- All technologies proposed are commercially proven at multiple facilities globally and the basis of several California projects in development.
- Digestion permitting pathway enabled by Calrecycle.
- Complements thermal conversion technologies by following waste hierarchy by processing waste for maximum recovery. Only post recycled residuals provided to thermal conversion facility.
- Integrated MRF and Conversion Technology Solution provides highest greenhouse gas mitigation with proven technologies; however it is dependent on good policy to enable investment.

# Thank You

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# OREX Flexible to Any Level of Contamination



Wet Fraction from MSW or WCW  
30-35% TS

**30 to 50% recovery from MSW**  
**50 to 70% recovery from WCW (wet commercial waste)**

Wet Fraction from SSO  
20 – 25% TS

**70 to 95% recovery from SSO**