



East Bay Municipal Utility District

EBMUD Food Waste Digestion

May 19, 2011



Presentation Overview

- EBMUD and Food Waste
- Food Waste to Energy Program Benefits
- Processing Challenges
- The Future of Food Waste

East Bay Municipal Utility District

- Regional water and wastewater public agency serving the east San Francisco Bay
- Drinking water system serves 1.3 million people
- Wastewater system serves 650,000 people



EBMUD's WW Treatment Plant

- EBMUD has excess digester capacity:
 - Plant originally designed to accept waste from 20 canneries in the service area
 - No canneries currently in operation in service area
 - Capacity to treat 168 MGD
 - Average influent flow is 70 MGD

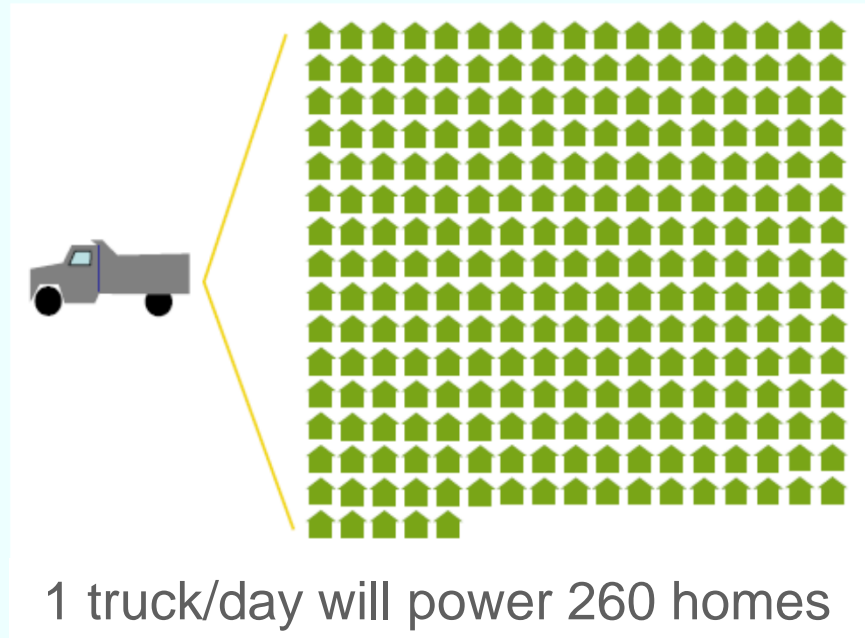


EBMUD's Resource Recovery Program

- Program intent is to utilize excess capacity of treatment plant
- Excess capacity in the digesters allows direct discharge of high strength wastes to produce methane at a low cost
- Program accepts wide variety of trucked wastes such as dairy waste, winery waste, and food processing wastes
- Generates fees to keep rates low while providing an environmental benefit

Why Food Waste?

- At 19% of organic waste, largest organic fraction currently not addressed.
- Food Waste creates 3 to 3.5 times the amount of energy as the same volume of municipal sludge
- Local sustainable feedstock for EBMUD excess digester capacity

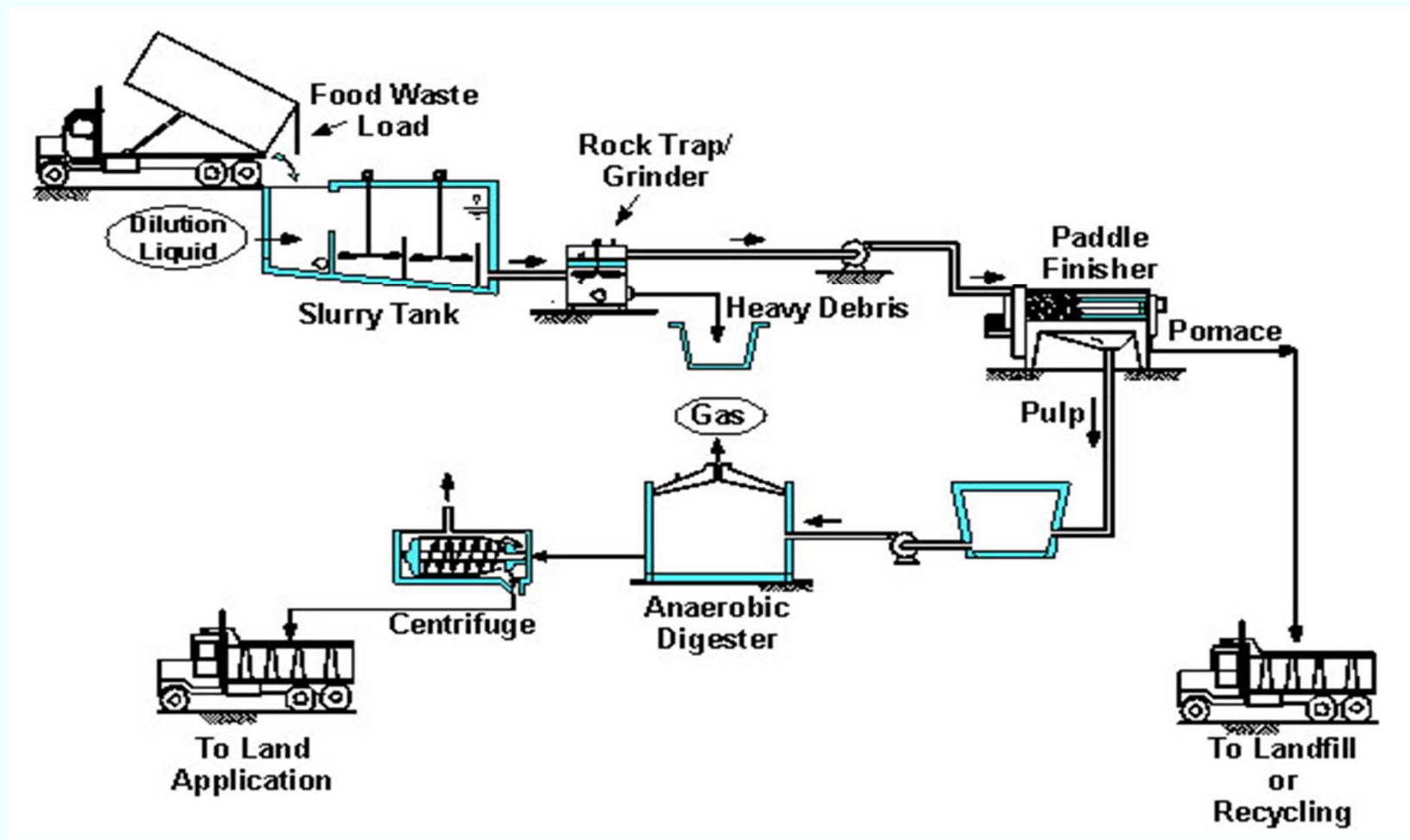


District Food Waste Pilot

- Commercial food waste is collected, pre-sorted, and ground by hauler before delivery
 - Recology
 - CCCSWA
- Material is discharged into underground tanks, processed and anaerobically co-digested with biosolids
- Food waste pilot started in 2004



Food Waste Processing



Food Waste Delivery

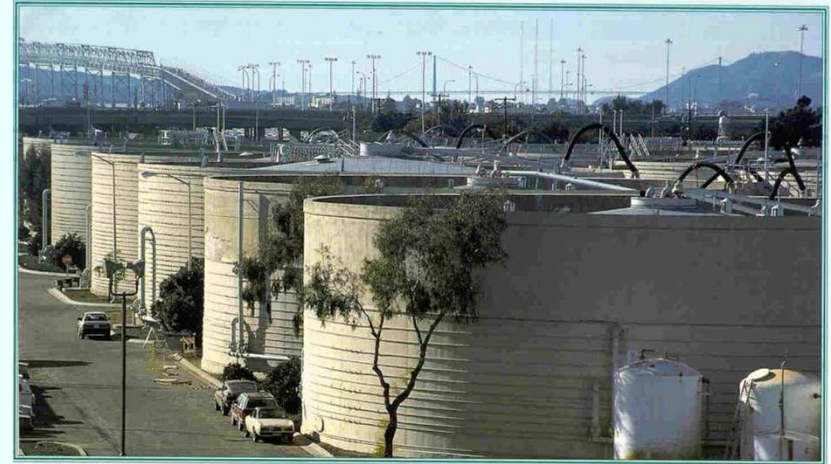


Food Waste Delivery



Digestion and Energy Production

- Organic-rich food waste added directly to existing digesters to increase methane production
- Methane gas, a renewable green energy source, fuels existing 6MW on-site power plant; new 4.5 MW turbine planned for start-up in 2010
- Provides robust waste treatment and produces energy from organic materials



Food Waste Processing Streams

- Digestate – Currently treated with biosolids, but in the future with segregated digestion and dewatering, material could be composted
- Process Reject – Currently composted



Benefits of Food Waste Processing & Digestion

- 💧 Uses existing EBMUD facilities
 - Anaerobic digesters
 - Gas recovery & energy generation
- 💧 Provides for methane destruction
- 💧 Reduces volume of waste materials by up to 90%
- 💧 Supports local goals of:
 - Oil independence
 - Zero Waste
 - Landfill diversion

Processing Challenges

- ◆ Engineering specification for a grinder used in the process:
 - “Fluid to be processed by the grinder contains organic and inorganic particles, grease, rubber goods, vegetable parts and pits, wood fragments, plastics, and metallic objects”

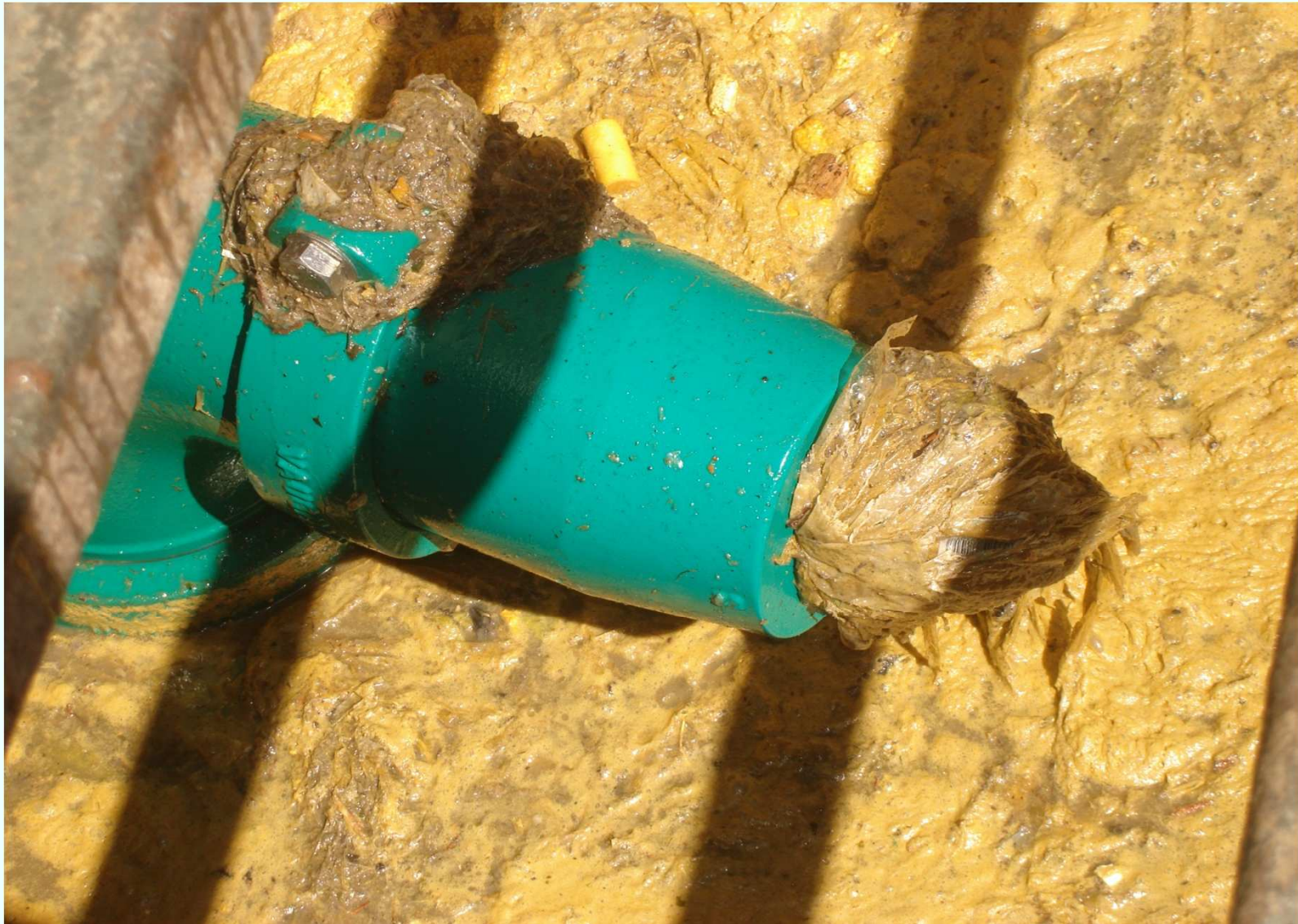
Source Separated Organics



Inside the Crypt



Inside the Crypt



From Rotacut Grinder



From Food Waste Moyno Pump



So Why Not Put It Down The Garbage Disposal?

- Garbage disposals require energy and uses potable water
- Grease from food can contribute to blockages/SSOs
- Energy value of food waste coming through the sewer system is largely lost (~70% lost) as aerobic biological treatment is an energy consumer and CO₂ producer

So Why Not Put It Down The Garbage Disposal?

- 💧 Energy capture of Direct Digestion nets significant GHG gain

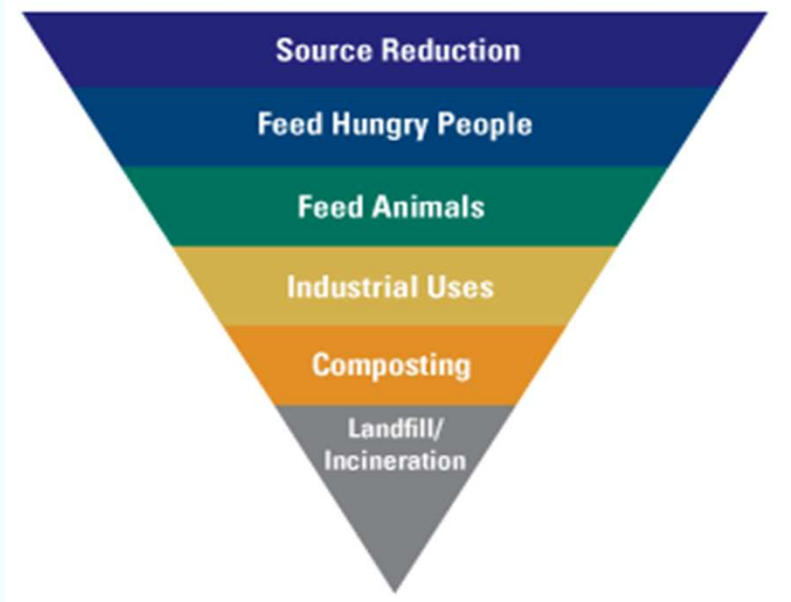
Method	Metric Tons CO ₂ e/1 Ton Food Waste*
Landfill	0.17
Via Garbage Disposal/Sewer	0.03
Compost	-0.01
Trucked to Digester	-0.19

*Analysis performed by Presidio School of Management, SF for EBMUD

The Future of Food Waste

- Exciting opportunity to bring post-consumer food wastes to wastewater treatment plants
- Provide a regional solution with local benefits

- EPA Food Waste Hierarchy



The Future of Food Waste



- Many challenges remain
- 200 ton/day commercial food waste facility with dedicated digestion expected to be operational Summer 2013
- Generation of 2 MW of high-grade product - renewable green energy