

# Sunnyvale's Food Scraps Collection and Processing

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# Today's Topics

- Sunnyvale's FoodCycle Program
- Food Scraps Processing at Sunnyvale Materials Recovery and Transfer Station (SMaRT Station®)
- Food Mash Processing
- Benefits and Challenges
- Future



# Why Collect Food Scraps Separately?

- GOAL - Divert organics disposed in the garbage
- DRIVERS
  - City's Zero Waste goal (2008)
  - State Mandates
    - AB 1826
    - SB 1383
- Higher value recycled food products
- More recycled food markets
- Lower yard trimmings tip/composting fees and higher value compost with clean green





# Sunnyvale Food Scraps Collection Timeline

- 2011 - Commercial collection begins
- 2017 - Introduced FoodCycle collection program to single-family households
  - All food including meat, bones, pits, peels, dairy, leftovers, spoiled food, even pet food
  - **NO** paper products (e.g. napkins, paper towels, coffee cups)
- Prevents ~8,000 tons per year of food going to landfill



# The Commercial Program Started as a Compostables Program...





# But Market Signals Led to a Food-Only Collection Program...

Compost facilities wanted this



We offered this



# We piloted our unique split cart food scraps program in 2016

- 9-month pilot in 2015 - 500 households, 5 diverse neighborhoods
- Cart exchange and rollout
  - 64-gallon split cart (50/50)
  - Extensive outreach & instructions
  - Countertop Pail and 2 boxes of compostable liners
- Extensive Data collection -
- Survey Results - 62% of available food captured, Average of 8.1 lbs. of food collected/household/week
- Council approved city-wide expansion in September 2016



# Then rolled out city-wide to all SF households in 2017



- 29,000 single family and mobile home households
- Cart ratio changed - 70% garbage, 30% food scraps
- 12 week rollout
  - Issues -
    - Cart exchange challenges
    - Cart assembly issues
    - Some confusion over use of countertop pail
- Split-carts
  - 27 gal garbage + food
  - 43 gal garbage + food
  - 64 gal garbage + food
- Split-body trucks keep materials separate



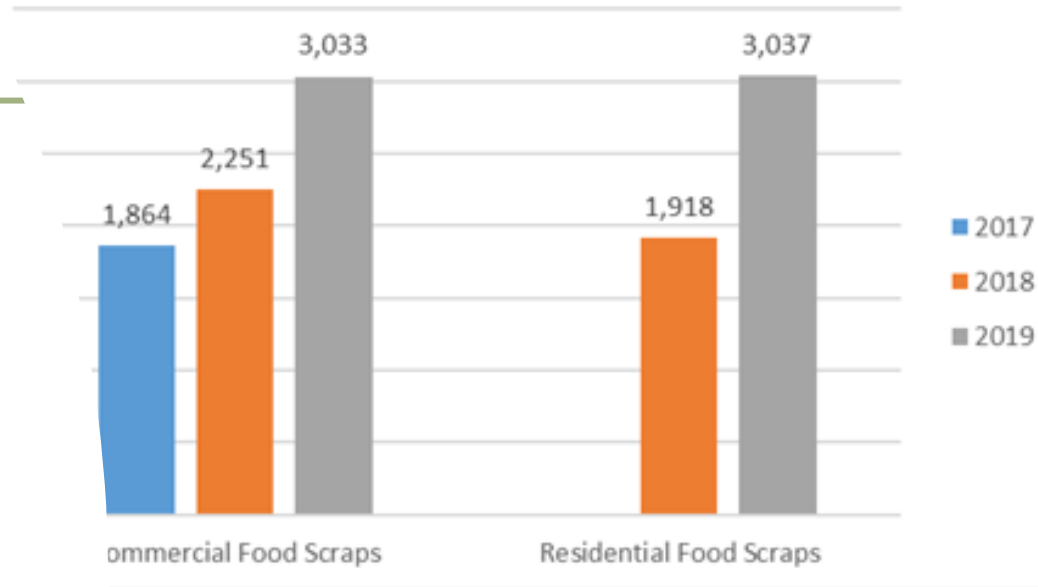
# Residents had both creative & confused responses!



# Positive Results from FoodCycle!

- Diverted over 3000 tons of residential food scraps from disposal in 2018
- Decreased residential garbage tons by 18%
- Used food for animal feed or energy production instead of landfill
- Decreased garbage processing and landfill costs by \$212,810

Tons Collected Food Scraps 2017-2019





# Ick Factor







# Sunnyvale Materials Recovery and Transfer Station (SMaRT Station®)



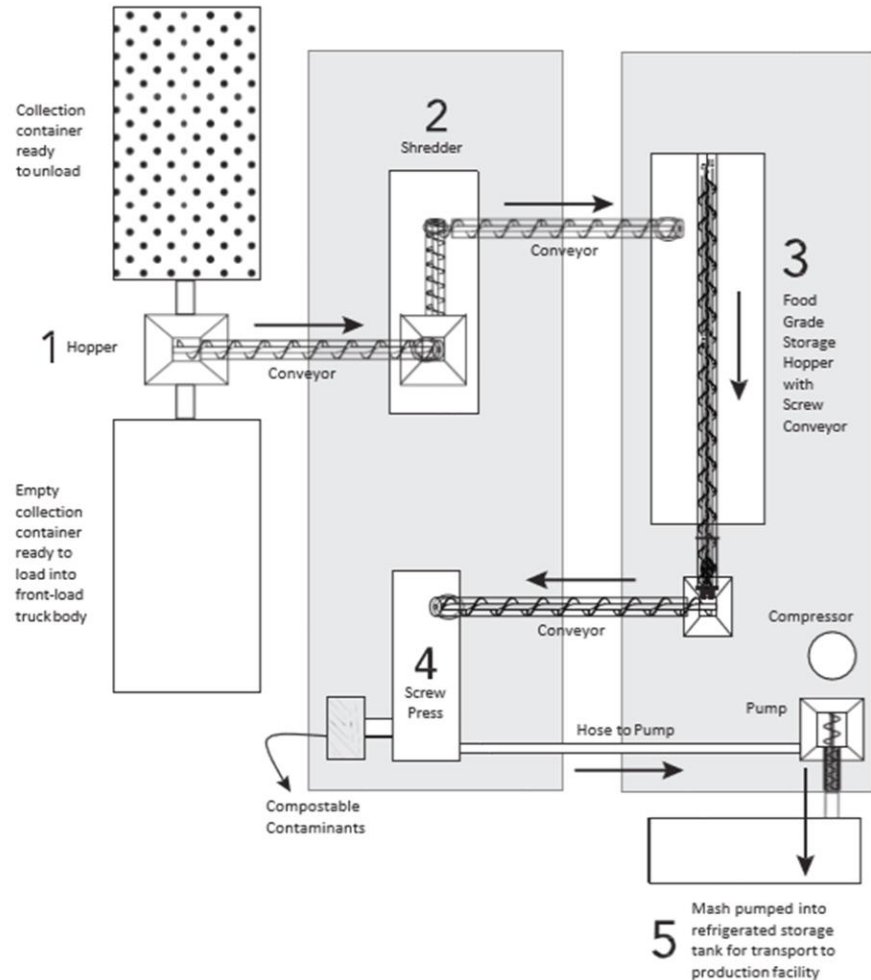
# SMaRT Food Scrap Processing

- Source separated food scraps from commercial and residential routes
- Commercial collection in front load trucks & residential in 70/30 split side load trucks
- Commercial sources initially from restaurants, grocers, businesses with food service & large employee cafeterias



# How food scraps are converted to nutrient-rich food mash

## SAFE EXTRACTION PROCESS



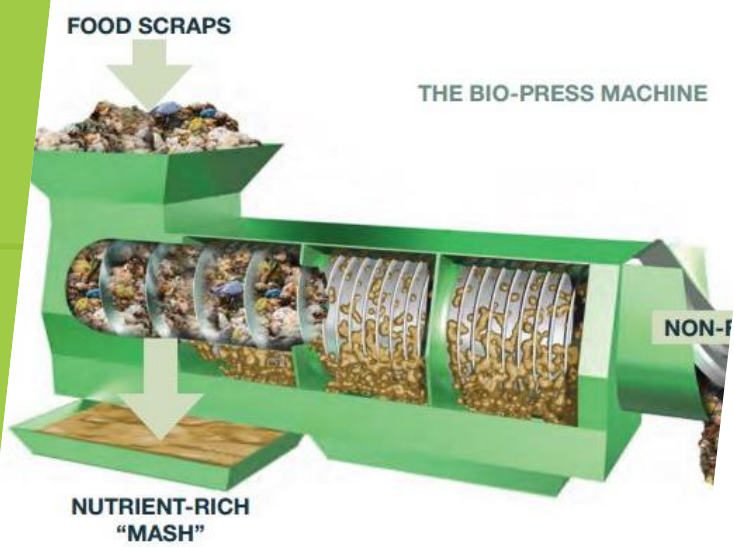
1. Collection container positioned to empty into hopper with screw conveyor.
2. Material conveyed to shredder, removing contaminants and preparing material for screw press.
3. Food grade storage hopper conveys material to screw press.
4. Screw press separates compostable contaminants and produces liquid mash.
5. Liquid mash pumped to refrigerated storage tank for transport to production facility.



# SMaRT Food Scrap Processing

Truck dumps material into a hopper





# SMaRT Food Scrap Processing



- ▶ Clean “mash” goes to SOS - dehydrated mash into pellets
- ▶ Pellets used as an ingredient in animal food and fertilizer.
- ▶ FOG - biodiesel.



## Further Processing



# We completed food scraps collection to MFDs in 2022

- Multi-family dwellings (MFDs)  
27,600 cart/bin customers &  
800 homes underway
- Slight delay - due to  
COVID/supply chain  
disruptions
- Commercial complete by  
September 2023



# Future Planning Organics to Energy in 2025-26!

- Closed landfill gas production↓
- Energy demand ↑

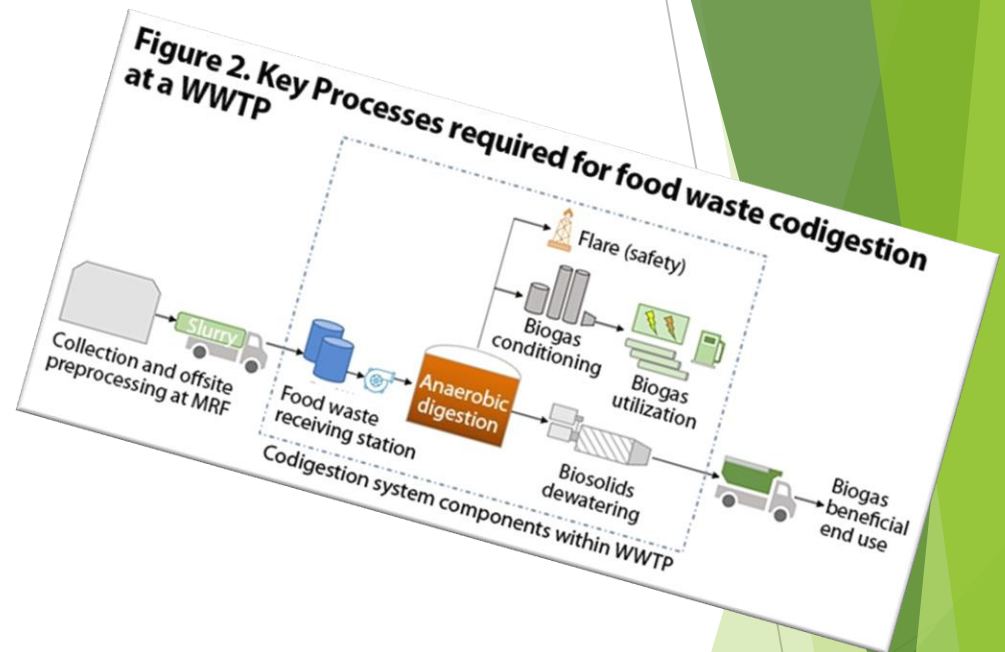
6- month pilot - Blend food waste with POTW solids generated before digestion.

- Sufficient digester capacity? Yes!

## Results

- 35% increase in digester gas
- 1 wet ton food scraps= 117kWh of energy
- Improvements - Upgrade Co-gen engines, excess ammonia removal, and solids thickening process modifications.

Total Cost ~\$18- \$20M






# Co-Benefits

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CO<sub>2</sub>

- Meets California SB1383 procurement requirement
  - GHG emission reduction
  - Less Transportation Cost/Tip Fee
  - Renewable energy source
  - Less dependency on PG&E
  - Perfect candidate for grants
- 



# Organics Grant Award

## Composting and Anaerobic Digestion Project

- \$3 million award
- 26,196 tons diverted (projected)
- 12,500 trash truck miles/yr. reduced (projected)



Sunnyvale



## CalRecycle Organic Grant Recipient FY 21-22

# Thanks! Questions?



Sunnyvale

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