Blue Line Transfer AD Facility Project Update

Natural Gas Vehicle Technology Forum 2016

October 19, 2016

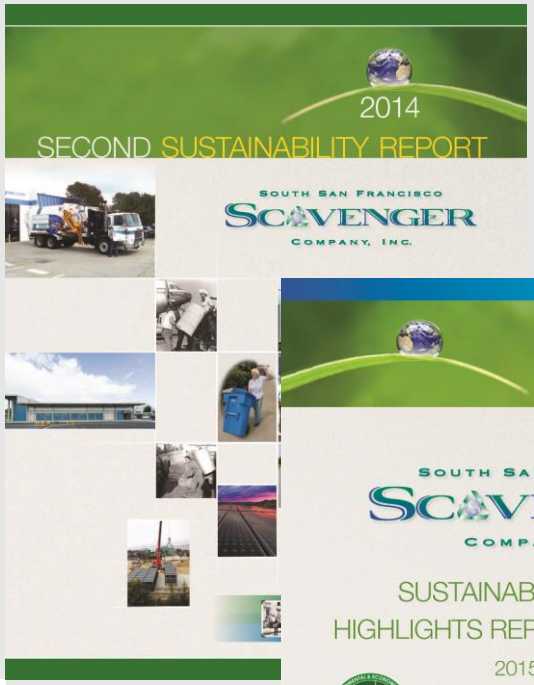
Project Concept

- Divert wasted organics to their highest and best use.
- Create carbon negative fuel
- Create Compost

Local organics, local production, local benefits

Goals

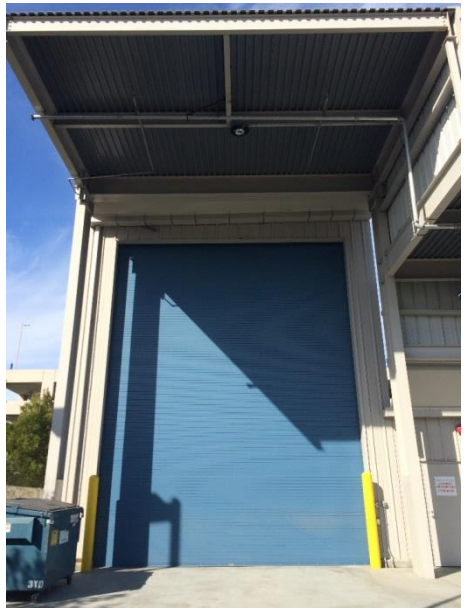
- Prepare our operations for the future
  - Low Carbon Fuels
  - Organic Diversion
  - Increasing Recycling Goals
- Internalize our fueling and organics management
- Meet our Sustainability Goals
- Assist out Cities with their climate change goals
- SSFSC is getting recognized!
  - GEELA Award Winner in 2015



South San Francisco, Brisbane, Millbrae, Colma, San Francisco International Airport, and the County of San Mateo

Food waste material is cleaned and sorted by a trained employee for eight hours a day

Greenwaste has very low levels of contamination



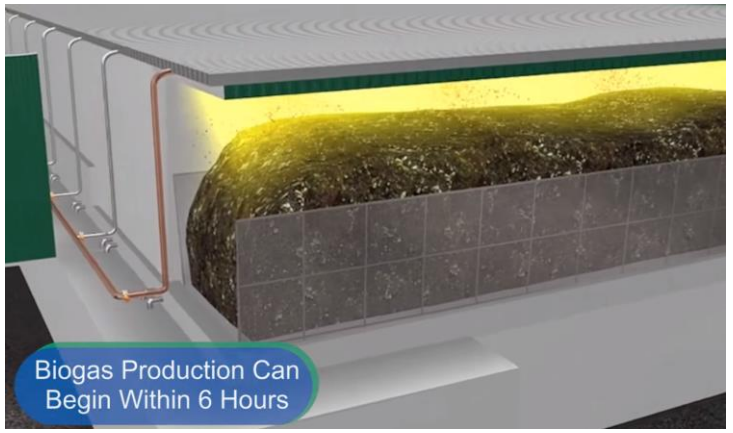
Aeration Bay for 2-3 days under negative pressure

Transferred to one of eight digesters

Overview of Operations

Loaded with 62 tons on average

Design is 81 tons per batch



Aerated through the floors, sprayed with percolate through ceiling (first 12 hours)

Assists in decomposition and biogas production

Once conditions are safe (H_2S is non-detect and CH_4 drops below 1%) materials are moved to IVC

Occurs from 12am to 4am to reduce impacts

Anaerobic Digestion

Acid Scrubber

Uses sulfuric acid to cleanse gas coming from aeration bay and IVC

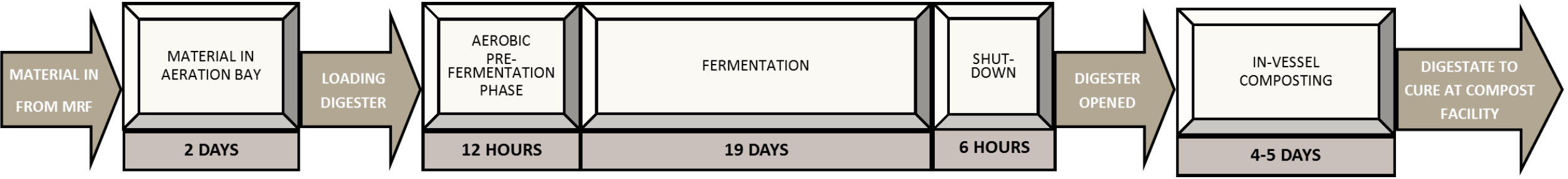
Produces Ammonium Sulfate

Biofilter

Gas from acid scrubber is passed through the biofilter to mitigate emissions.

The biofilter is filled with a wood chips, which are maintained in a moist condition.

27 Days from Start to Finish

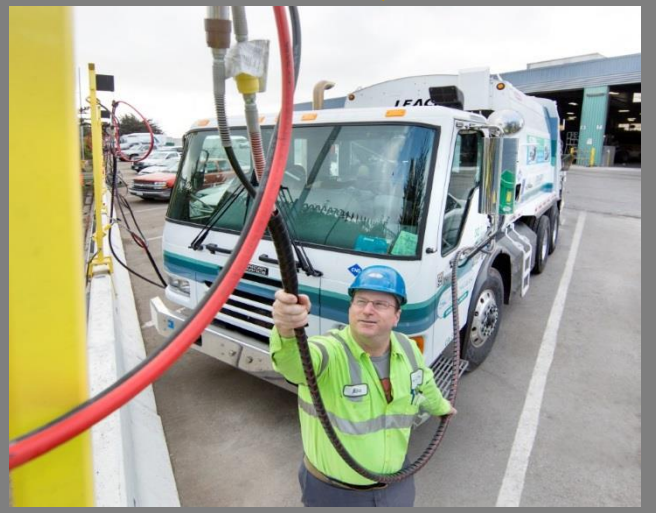


BioGas to RNG Fuel Process

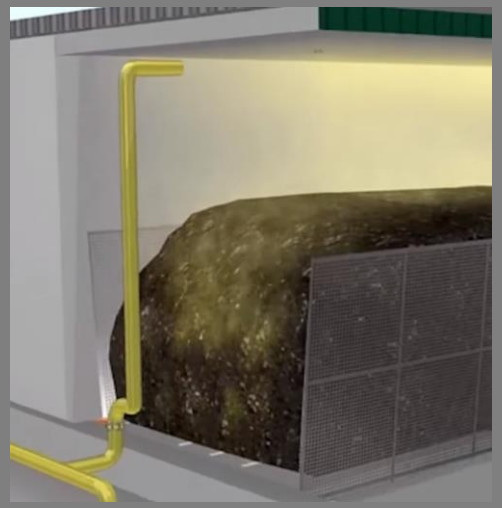
Upgrading

Compression

Storage



Fueling



Biogas Production

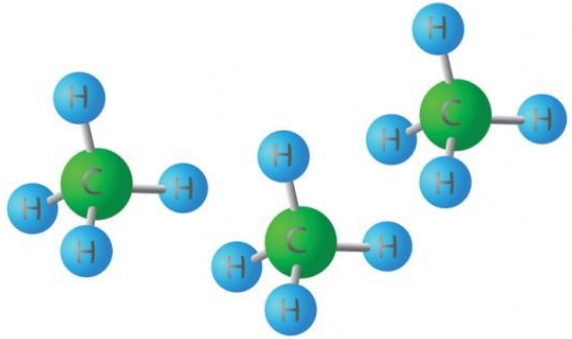
Total 2015 Production Start up year

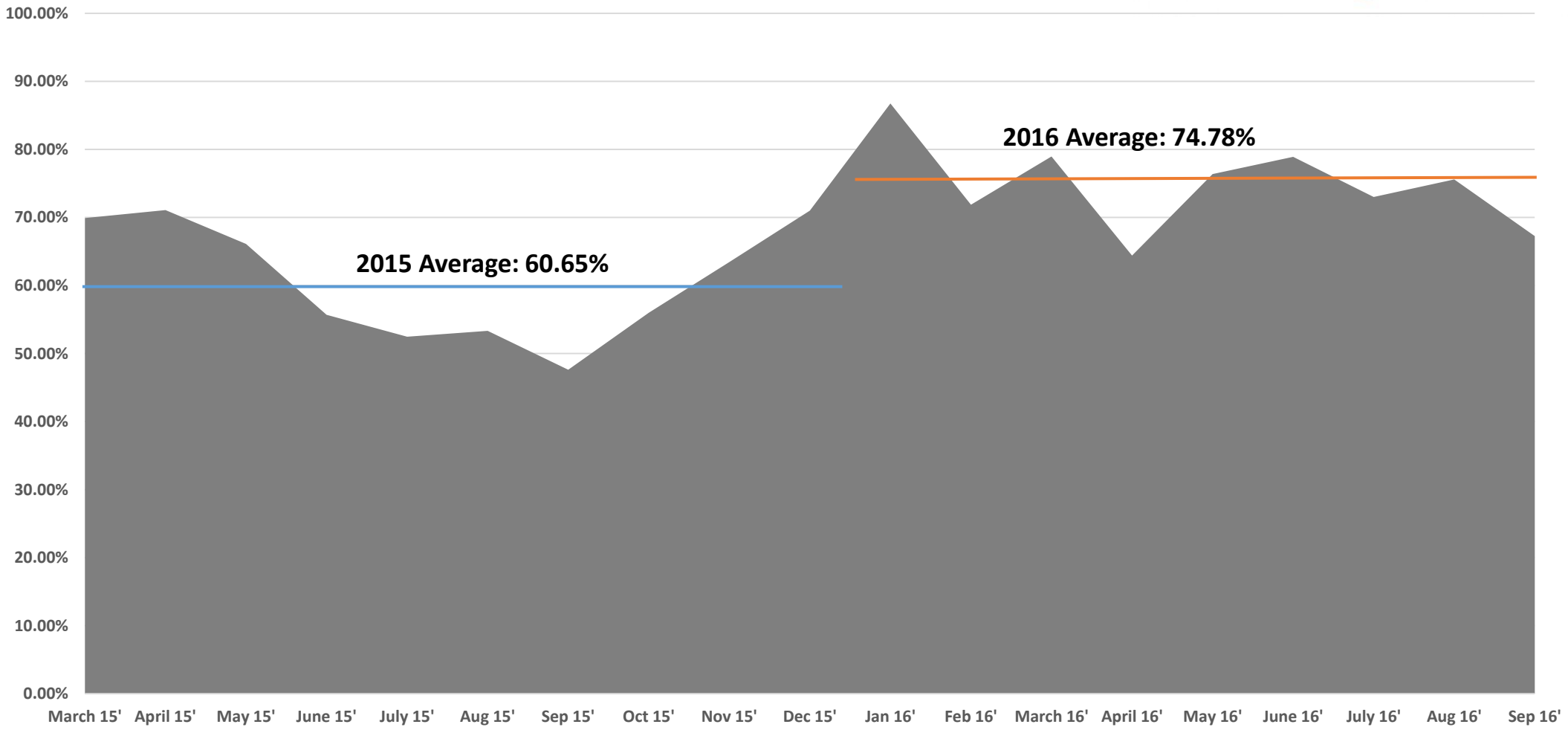
- 7.7 mill scf biogas
- 30% of CNG fuel use
- 4.9 mill scf of gas for boiler (55% total)
- 8,051 tons of green and food waste diverted from landfill

2,592 MT GHGs avoided

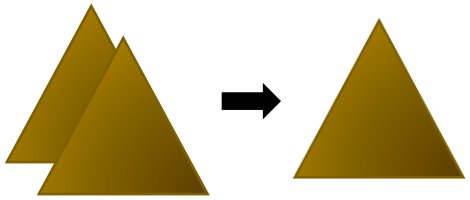
And we are getting better!

% Methane recovery over time





Cost Benefits *Offsets*



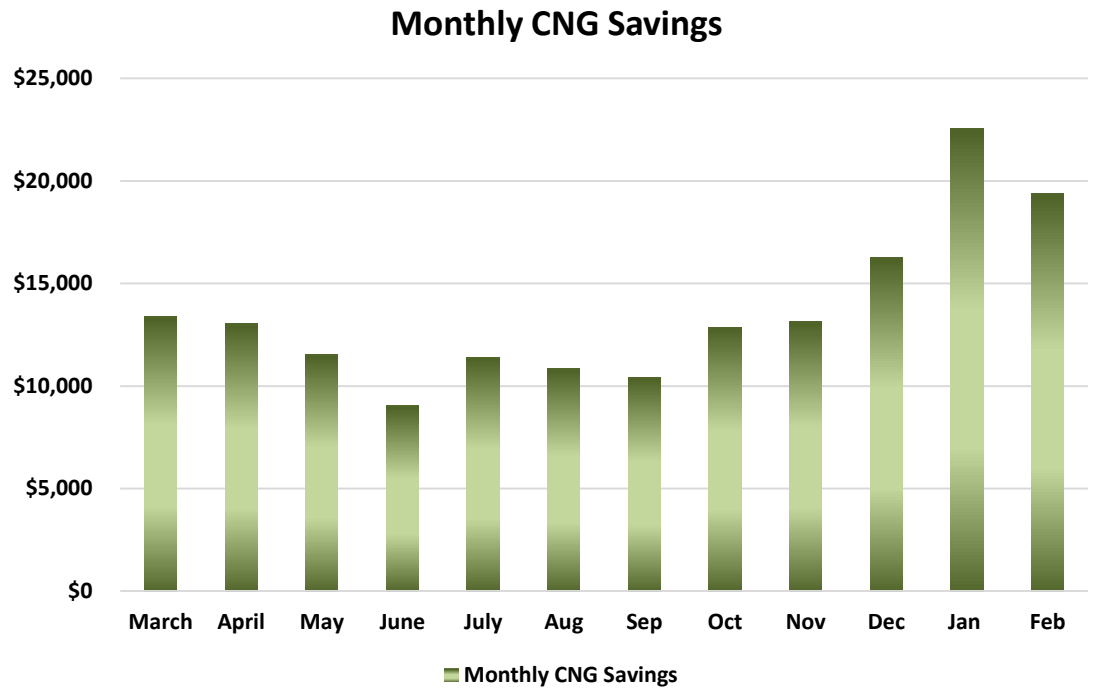
Outbound digestate weighs less than half of the weight of feedstock

Savings from reduced composting tip fee costs and transportation costs.

$80/ton.

8,000 Tons Per Year of Inbound Feedstock -
4,000 Tons Per Year of Outbound Feedstock
$320,000 *Disposal Savings Annually*

Fueling vehicles on-site overnight
Labor savings of **$170,000** each year.



At $2.25/DGE, the facility saves approximately **$160,000/year** in fuel costs.

Once operating at full design capacity, this saving could reach $300,000/year

Cost Benefits *Revenue*

Tip Fees

$90-100 per ton

Upcoming regulation will drive organics away from landfills

RINS

D5 Advanced RINS Biofuel Classification

$1.00 price per RIN

Estimated $12,750 per month

HSAD

RNG

CI = <22.9>[2]

LCFS

$119.73 per credit

(approx. $0.56 per DGE)

Estimated $13,865 per month

Local Benefits

Reduce local air quality pollutants by transitioning from diesel to RCNG/CNG

Assist Cities in meeting Climate Action Plan goals

- ✓ Landfill diversion
- ✓ Reduced transportation emissions

Local organic processing locations

Expanding CNG and RCNG fueling infrastructure

Meeting State diversion goals

Statewide Benefits

Goals

- ✓ 50% Organics Diversion by 2020
- ✓ 75% Organics Diversion by 2025

Community-Scale Model

100 are needed by 2020 to meet state policies

33.7 million DGE/year

3,500 heavy-duty vehicles

10,000 TPY of registered organic compost

1,000,000 tons of compost by 2020

Partners in Success

SOUTH SAN FRANCISCO
SCAVENGER
COMPANY, INC.

San Francisco
International
Airport

BLUE LINE
TRANSFER, INC.

Thank you!

Any questions??

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