ZeroWaste™
ENERGY, LLC.
Recovery and Energy with Zero Waste

Dirk Dudgeon
SVP-Business Development

LA County Integrated Waste Management Task Force

February 20, 2014

Mario Gutierrez
VP – Operations

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Zero Waste Energy Company Overview

- ZWE founded by an experienced management team with strong backgrounds in the waste services industry

- <u>Our Company's Mission</u>: To design, build, and operate advanced solid waste processing facilities that optimize resource recovery and the generation of renewable energy in an efficient and environmentally sound manner

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Zero Waste Energy Technology Partners

- **Best-in-Class** waste sorting systems at lowest available rate as established by preferred vendor agreement
- **Customized Systems for ZWE** through preferred vendor agreement that reduces labor costs and increases material throughput and recovery rates

- **Equipment Manufacturer** for *SMARTFERM* for ZWE. Collection equipment under Heil and Marathon brands
- **Division of $8 B Dover** Industries with manufacturing and distribution throughout the world

Zero Waste Energy

SMARTFERM Process Flow

Solid Waste Collection

Mixed Materials Processing Platform (MMPP)

Dry Residual Waste

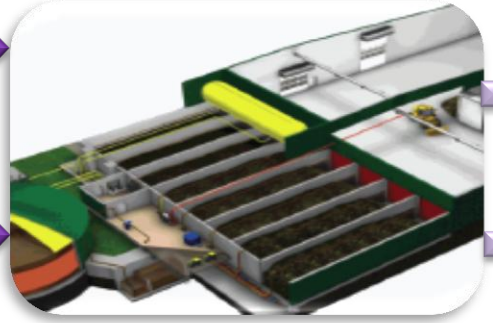
Recyclables

Organic Recovery

Anaerobic Digestion

Food Waste

Yard Waste



Biogas

Compost

Electric Power

CNG

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ZWE Difference

- Systems and approaches that generate a solid return on investment
- Technology built in the US specifically for the Waste Industry
- US Operating References for all size operations
- Flexible approaches from design – build to own-operate

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SMARTFERM Feedstock

Acceptable Materials

- Food waste, organic fraction of MSW (OFMSW) and green waste
- Inorganic and inert materials are generally acceptable
- Shredding/size reduction not required

Source Separated Organics – Monterey Regional Waste Management District - Marina, CA

OFMSW – Republic Industries Newby Island Resource Recovery Park - Milpitas, CA

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SMARTFERM

Value Add Proposition

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ZWE – Financial Return

25,000 AD to CNG

	5 Digester Concrete 25,000 TPY	$s Per Ton 25,000 TPY
Revenue Opportunities		
Tip Fees/Landfill Avoidance		
Tip Fees/Landfill Avoidance and Transportation - Organic Materials @ $55/ton	$ 1,375,000	$ 55.00
Biogas Upgrade		
CNG @ $2.50/DGE - 298,981 DGE for 5 concrete digesters	$ 747,453	$ 29.90
Compostable Material		
Compostable Material 22,848 @ -$10	$ (228,480)	$ (9.14)
Environmental Attributes - (Carbon + RINs + LCFS)	$ 639,169.00	$ 25.56
Total Revenue Opportunities	$ 2,533,142	$ 101.32
Total Operating and SG&A Costs	$ (560,861)	$ (22.43)
Net Available Contribution for Capex, Financing Costs and Profit	$ 1,972,281	$ 78.88
Principal (Total SMARTFERM cost $9.8M)	$ (687,499)	$ (27.50)
Pre-tax cash flow	$ 1,284,782	$ 51.39

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SMARTFERM

Project Examples

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Zero Waste Energy – ZWEDC

zero waste energy development company
A GreenWaste/Zanker Project

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90,000 TPY Organic Waste Conversion to CHP

Zero Waste Energy Development Company

San José, CA

Scheduled Start-Up in November, 2013

Process	Results
Annual Volume (TPY)	90,000
Digester Dimensions	97’ (L) x 18.2’ (W)
Concrete Digesters	16
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000-3,200
Methane Content (%)	58
Electrical Output	1.6 MW
Finished Compost @ 40% MC (TPY)	34,000
Total Diversion	+84.5%

zero waste energy development company
A GreenWaste/Zanker Project

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225,000 TPY Advanced Mixed Materials Recovery Facility
12,500 Organic Waste to CNG Conversion

IREP @ Montgomery - Montgomery, AL
Scheduled Start-Up in 2nd Quarter 2014

Process	Results
Annual Volume (TPY)	12,500
Digester Dimensions	48’ (L) x 12’ (W)
Steel Digesters	8
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000-3,200
Methane Content (%)	58 – 60
CNG (DGE/YR) Output	130,000 – 150,000
Finished and Screened Compost @ 40% MC (TPY)	4,200
Total Diversion	+95%

IREP @ MONTGOMERY

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Zero Waste Energy – IREP

IREP @ MONTGOMERY

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11,200 TPY Organic Waste Conversion to CNG

Blue Line Transfer/ South San Francisco Scavenger Co.
South San Francisco, CA
Scheduled Opening 2nd Quarter 2014

Process	Results
Annual Volume (TPY)	11,200
Digester Dimensions	45’ (L) x 12’ (W)
Steel Digesters	8
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000 – 3,200
Methane Content (%)	58 – 60
Compressed Natural Gas (DGE/yr)	120,000 (will fuel approx. 12 routes/year)
Finished Compost @ 40% MC (TPY)	4,400
Total Diversion	+95%

BLUE LINE TRANSFER, INC

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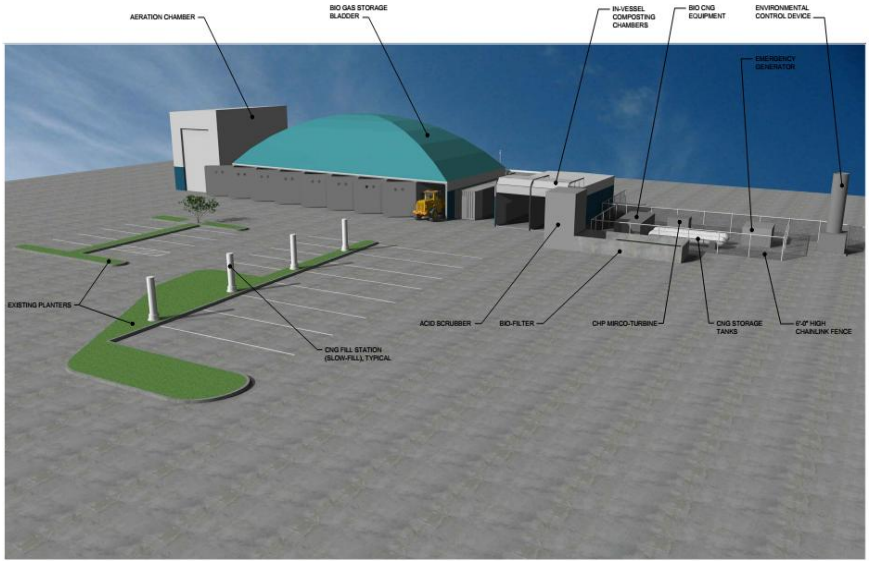
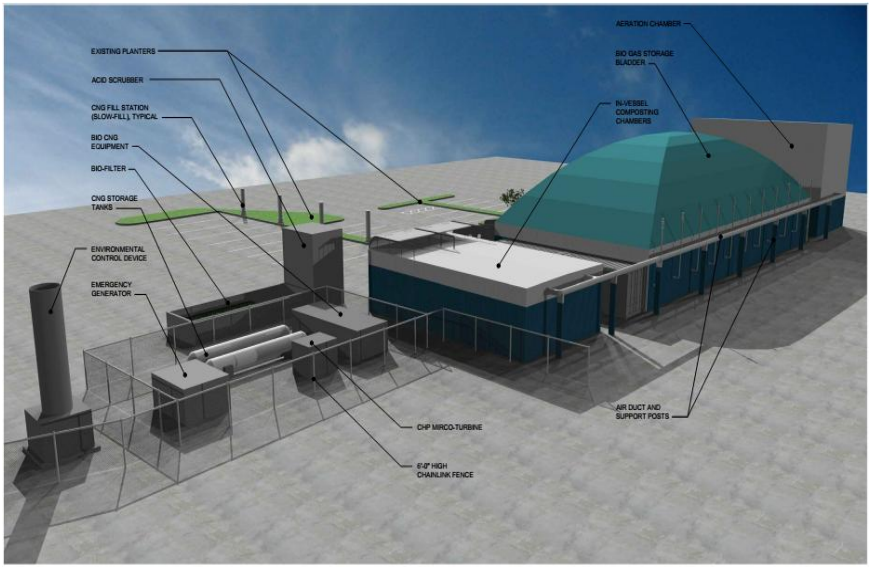
Zero Waste Energy – Blue Line





BLUE LINE TRANSFER, INC.

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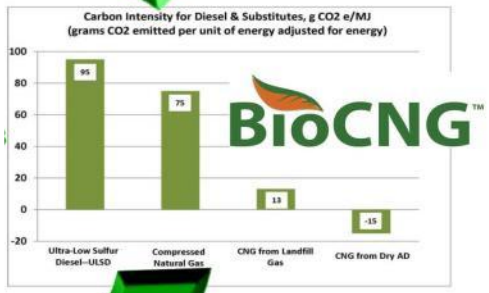
Zero Waste Energy Carbon Negative Fleets

ANAEROBIC DIGESTION FACILITY

BIOGAS CONDITIONING AND COMPRESSION



CARBON NEGATIVE FLEETS

FOOD WASTE/ GREEN WASTE

CNG GARBAGE TRUCK

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5,000 TPY Biogas to CHP

Monterey Regional Waste Management District
Marina, CA
Opened February 2013

Process	Results
Annual Volume (TPY)	5,000
Digester Dimensions	40’ (L) x 12’ (W)
Steel Digesters	4
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000 – 3,200
Methane Content (%)	58 - 65
Electrical Output	100 kW
Finished Compost @ 40% MC (TPY)	2,200
Total Diversion	+99%

First U.S. SMARTFERM Project

Since 1951 REDUCE REUSE RECYCLE MRWMD Service, Stewardship and Sustainability

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Zero Waste Energy – MRWMD

5,000 TPY Biogas to CHP

Agromin Project
Oxnard, CA
Scheduled Opening April, 2014

Process	Results
Annual Volume (TPY)	5,000
Digester Dimensions	40’ (L) x 12’ (W)
Digesters	4
Residence Time	21 Days
Mode of Operation	Thermophilic (125-131°F)
Biogas Yield (CF/Ton)	3,000 – 3,200
Methane Content (%)	58 - 60
Electrical Output	100 kw
Finished Compost @ 40% MC (TPY)	2,200
Total Diversion	+99%

First Dover-ESG Built US SMARTFERM Project

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Recovery and Energy with Zero Waste

ZWE : Project Partner with the experience resources and technology to fully execute your project!

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