



CR&R
INCORPORATED

environmental services

the face of a greener generation 

CR&R Anaerobic Digestion Facility
Renewable Fuel from Organic Waste Recycling
-Organics Infrastructure Development in California

CBA Symposium – Sacramento- November 2, 2018

Clarke Pauley - Vice President, Organics & Biogas Division

CR&R Environmental Services – Company Snapshot

- Over 50 Municipal Contracts
- 12 Processing Contracts
- 900 Trucks – 350+ CNG Vehicles
- 1,500 Employees
- 3 Million Customers served
- 25,000 businesses served
- 10 Solid Waste Service Centers
- 5 Transfer Stations / MRFs
- 2 Landfills
- Over 500,000 tons recycled/year



CR&R AD FACILITY VITAL STATISTICS

PRODUCTS:

4MM gallons (dge) Renewable Natural Gas (RNG) for vehicle fuel and pipeline injection

SOIL PRODUCTS

Screw Press Solid

35,000 tons per year/ phase

Liquid Soil Amendment

10MM gallons per year/phase

Full Build out

Solids: 140,000 tons per year

Liquids: 40MM gallons per year



ANAEROBIC DIGESTION TECHNOLOGY

EISENMANN

BIOGAS UPGRADING TECHNOLOGY



CONSTRUCTION MANAGEMENT



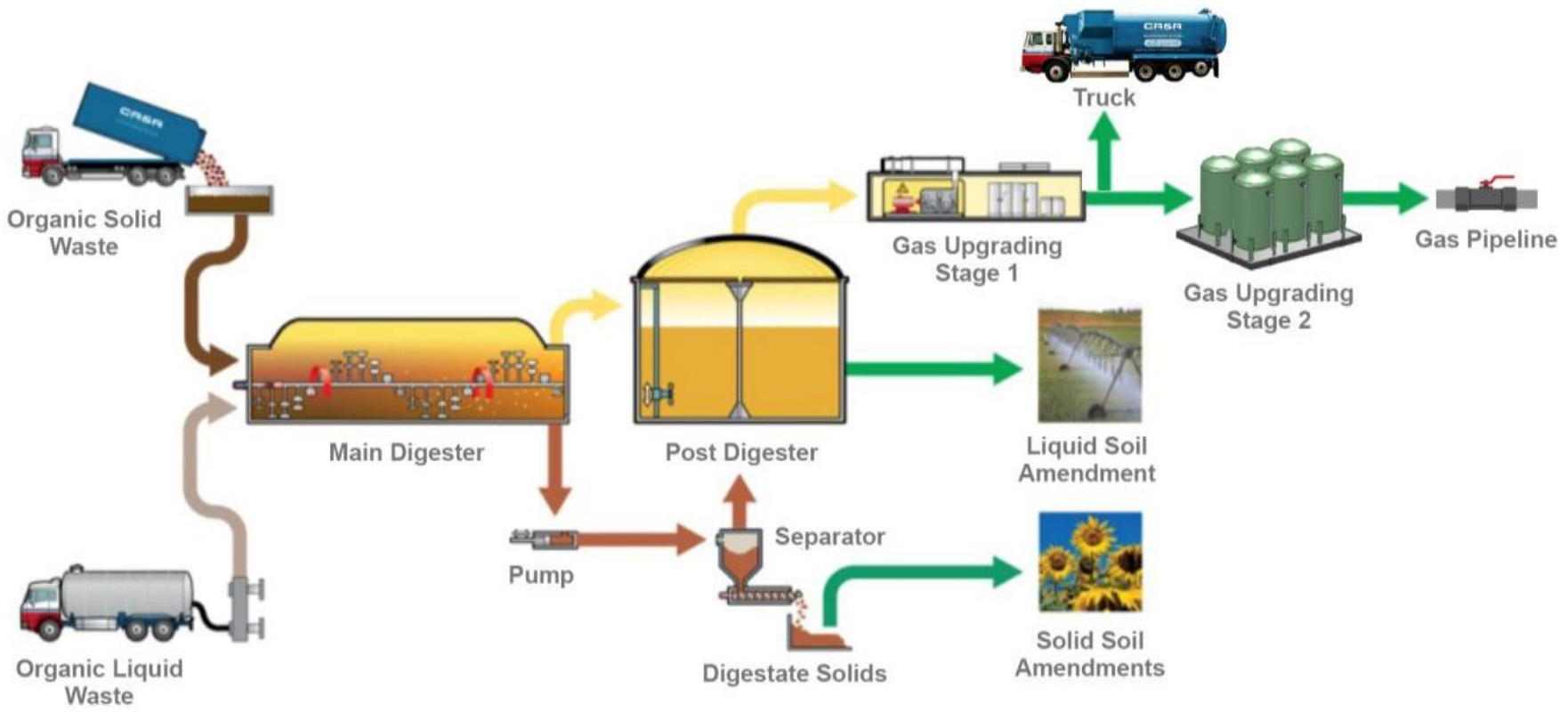
RELIABLE NATURAL GAS DISTRIBUTION



PROJECT ENGINEER



ANAEROBIC DIGESTION - FLOW CHART





- CR&R Anaerobic Digestion Facility**
- Phase 1 - Operational
 - Phase 2 - Commissioning November 2018

ANAEROBIC DIGESTION PROJECT OVERVIEW



Our process runs 24/7 – 365 days/year and is fully automated.



Our process provides maximum flexibility – waste mix, solids and liquids, different temperatures. Four different mixes and temperatures can be run simultaneously.



The system will generate enough renewable natural gas to run our entire fleet of CNG vehicles, with a surplus, entirely from our collected green and food wastes.



Our process is fully enclosed with zero untreated emissions and has a very high energy conversion rate due to its design and controls.

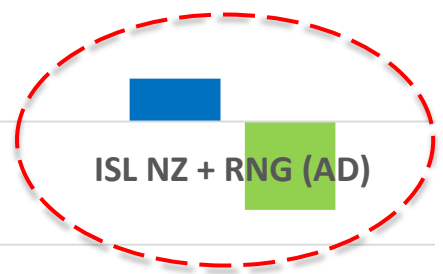


The plant will handle 335,000 tons per year, generate 4 million gallons per year (DGE) of RNG, and create about 250,000 tons of soil products per year.



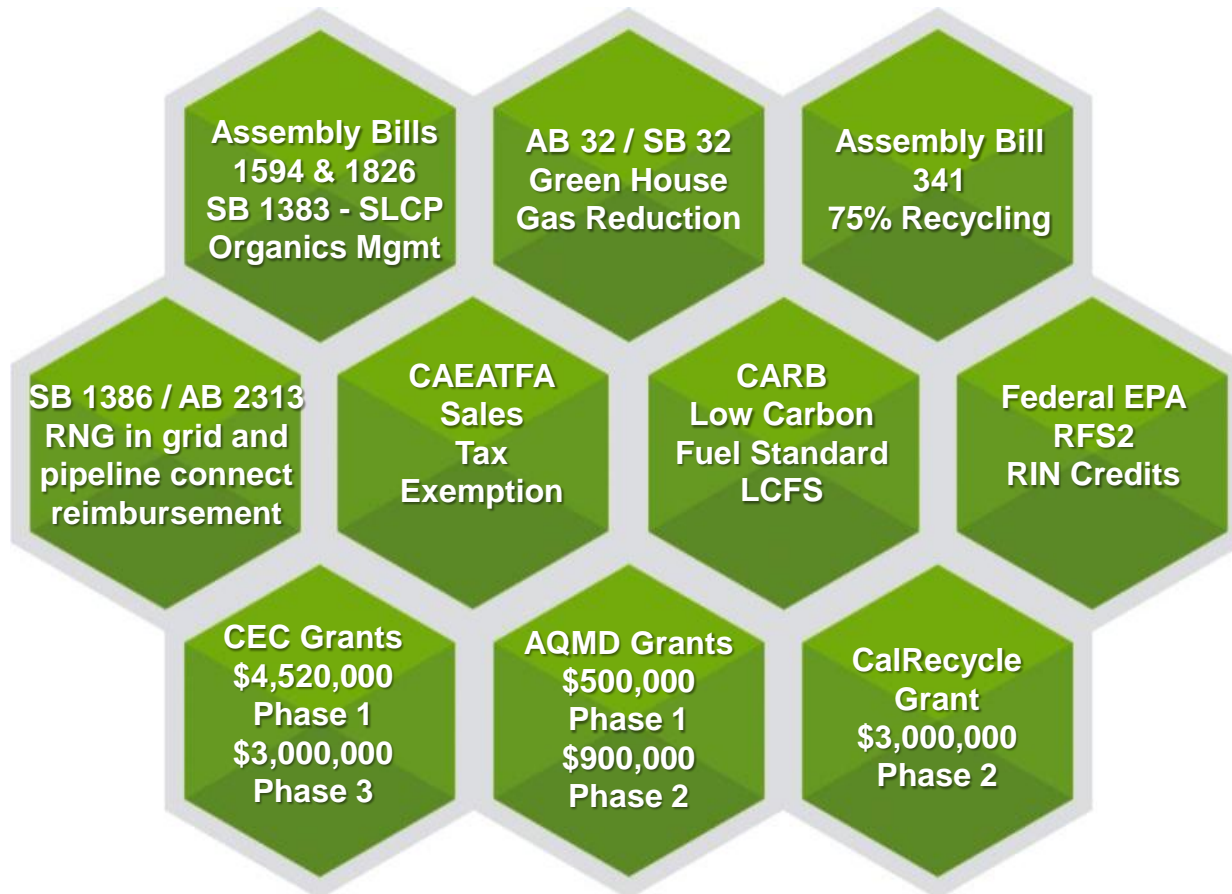
Fleet-wide goal of 100 percent RNG vehicles by 2020

REFUSE TRUCK EMISSION COMPARISON



Natural Gas Trucks Have ZERO Diesel PM Emissions

FINANCIAL/REGULATORY DRIVERS





CNG/RNG Filling Station

- Time fill station for CNG trucks
- System capable of fuelling CR&R's entire fleet of CNG vehicles with carbon **negative** R-CNG



Infrastructure Cost Hurdles

- SoCalGas Pipeline interconnect
- 1.5 miles of pipeline to connect to the SoCalGas grid + Point of Receipt
- High Interconnection cost make injection less attractive



Infrastructure Cost Hurdles

- Rule 30 Gas Specification
- Basic Gas conditioning system 97% pure Biomethane
- Additional Gas Conditioning required to meet spec. \$\$



Infrastructure Cost Hurdles

- Physical contamination handling
- Dedicated organics tipping floor and sorting facility to provide clean feed-stock
- High CAPEX to remove contamination: SB1383?



Infrastructure Cost Hurdles

- Soil Product management
- Compost site permitting time and costs?
- Soil product processing equipment costs?

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