CALIFORNIA BIOENERGY

Plugging dairies into a renewable future

Securing Finance for Agricultural Biogas Projects

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Chairman and CEO

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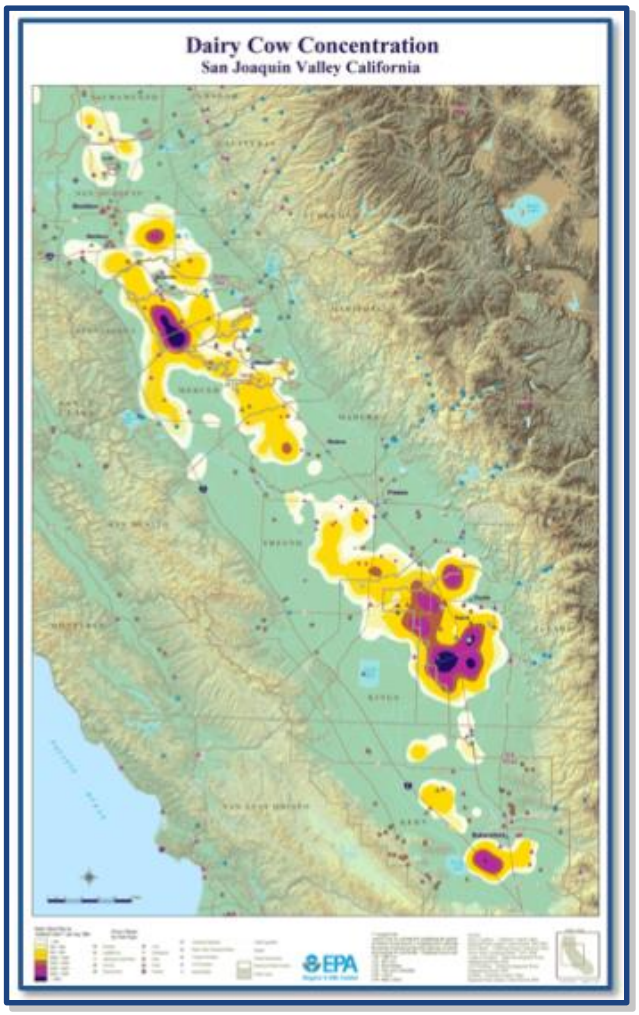
About California Bioenergy LLC ("CalBio")

- Established in 2006: Focused on dairy biogas in California
- Partner with dairy farmer (feedstock/manure supplier)
- Design, finance, build, own (jointly) and operate projects
- Digester technology neutral – build lagoon, tank/cement systems reflecting site specific needs
- Expertise across disciplines, with dairy farmer co-founder
  - Dairy waste-management and nutrient-handling systems
  - Electricity, gas pipeline and fuel (R-CNG and H) generation
  - Project finance, construction, environment, policy
  - Project operations and maintenance, 24 x 7 uptime focus

California Dairy Industry Key Statistics



- Largest dairy producing state in the nation, 20% of America's milk
- Dairy is largest ag. industry in CA
- 1.8M milk cows, 1,500 dairies, concentrated in San Joaquin Valley
- Dairies generate > 50% of the states total methane emissions, half of that from manure lagoons
- Dairy methane capture potential:
  - 350 MW base load (750 MW peaking)
  - 170M diesel gallon equivalents of fuel
- *Only 14 active digesters in state!*

California Greenhouse Gas Legislation

2030: REDUCE GHGs 40% or by 150 MMTCO2e/Year

* ARB 2030 TARGET SCOPING PLAN UPDATE CONCEPT PAPER June 17, 2016. SB32 LEGISLATION , SEPT. 2016, REQUIRES 40% BY 2030

Short-Lived Climate Pollutant is the Focus

California SLCP Emissions and Proposed Target Emission Levels (MMTCO2e)*

Pollutant	2013	2030 BAU**	2030 Proposed Strategy
Black carbon (non-forest)	38	26	19
Methane	118	117	71
Hydrofluorocarbons (HFCs)	40	65	24

*Using 20-year GWPs from the 4th Assessment report of the IPCC for methane and HFCs, and 5th Assessment report for black carbon (the first report to define a GWP for black carbon)

**Business As Usual (BAU) forecasted inventory includes reductions from implementation of current regulations

2/3 OF CALIFORNIA'S 2030 GHG GOAL FROM SLCPs

REDUCING METHANE IS THE TOP SLCP FOCUS

* ARB Proposed Short-Lived Climate Pollutant Reduction Strategy - April 2016. Adopted into law with SB 1383 September 2016.

Dairy GHGs are More Cost Effective*

Program	Cost Per Ton[a]
Organics and recycling loans	$4
Forest health	4
Dairy digester research and development program	8
Organics composting/digestion grants	9
Forest legacy	10
Recycling manufacturing	15
Delta and coastal wetlands restoration	30
State water and efficiency and enhancement program	33
Clean vehicle rebates	46
Sustainable agricultural lands conservation	59
Mountain meadow ecosystems restoration	113
Urban and community forestry	116
Water-energy grant program	141
Affordable housing and sustainable communities	191
Single-family solar photovoltaics[b]	209
Transit and intercity rail capital	259
Single-family energy efficiency and solar water heating[b]	282
Large multifamily energy efficiency and renewables[b]	343
Enhanced fleet modernization program "plus-up"	414
Truck and bus voucher incentives	452
Incentives for public fleets pilot project for DACs	725
Overall Average	**$57**

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April 2016 Report

* Based on 100 yr GWP

Dairy Methane is a CA Top Priority

- Dairy industry generates 50% of CA methane emissions
  - #1 Ag industry in State, farmer sales = $9 billion per year
- ARB plan for 40% dairy methane reduction by 2030
  - Need to reduce and not force emissions to move out of State
- Requires digesters on the 300 largest dairies (top 20%)
  - < 1% of CA's 1,500 dairies currently destroy methane
- $2.5 billion capital investment to achieve 40% reduction
  - Approx. $300 CAPX/permanent annual GHG tonne reduction

WHO PAYS FOR THIS? CAN IT BE PRIVATELY FINANCED?

Significant Recent CA GHG Legislation

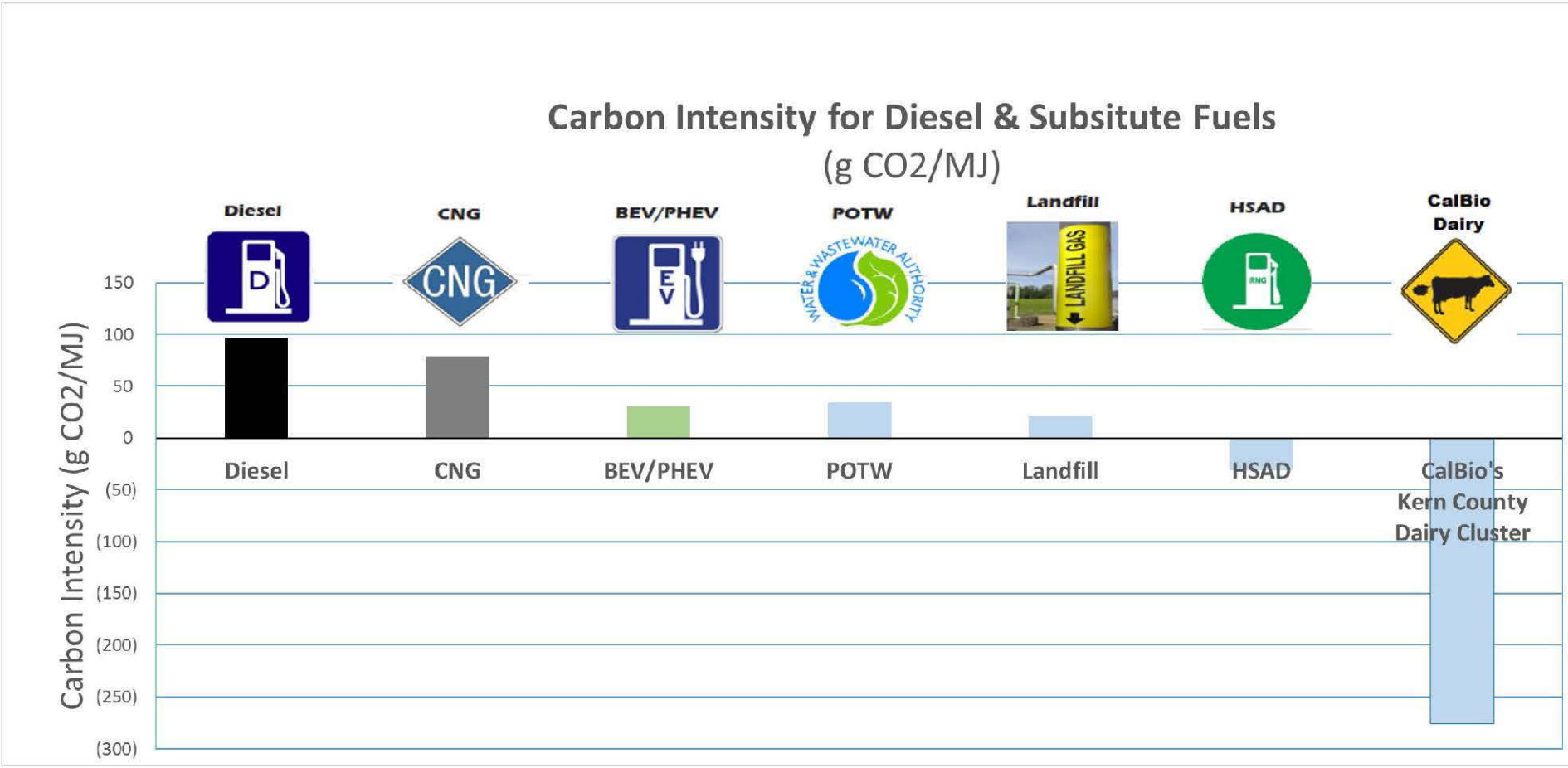
October 2015

- SB 350: Utilities must be 50% Renewable Energy x 2030

September, 2016

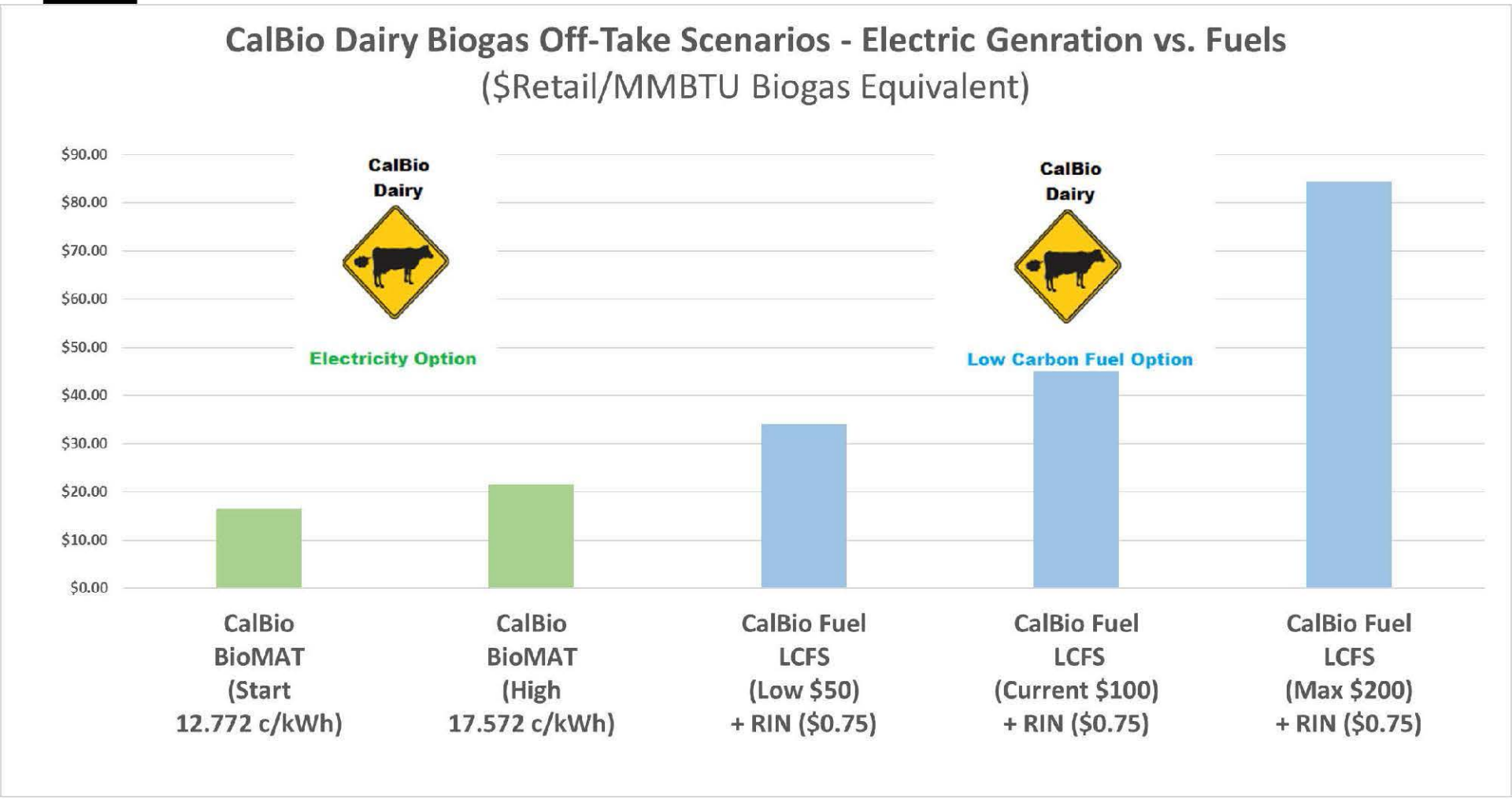
- SB 32: 40% GHG Reduction x 2030 & Low Carbon Fuels Std.
- SB 1383: 40% Less Short Lived Climate Pollutants x 2030
- AB 197: Creates ARB Oversite Ensures Compliance by 2030
- SB 830: Authorizes CDFA Grant Funding for Dairy Methane
- SB 859: Expands Eligible Dairy Methane Mgt. Practices
- AB 2313: Establishes Dairy Biogas Pipeline Grants
- SB 840: Requires CPUC Simplify Pipeline Biogas Standards

Dairy Biomethane Fuel Carbon Intensity

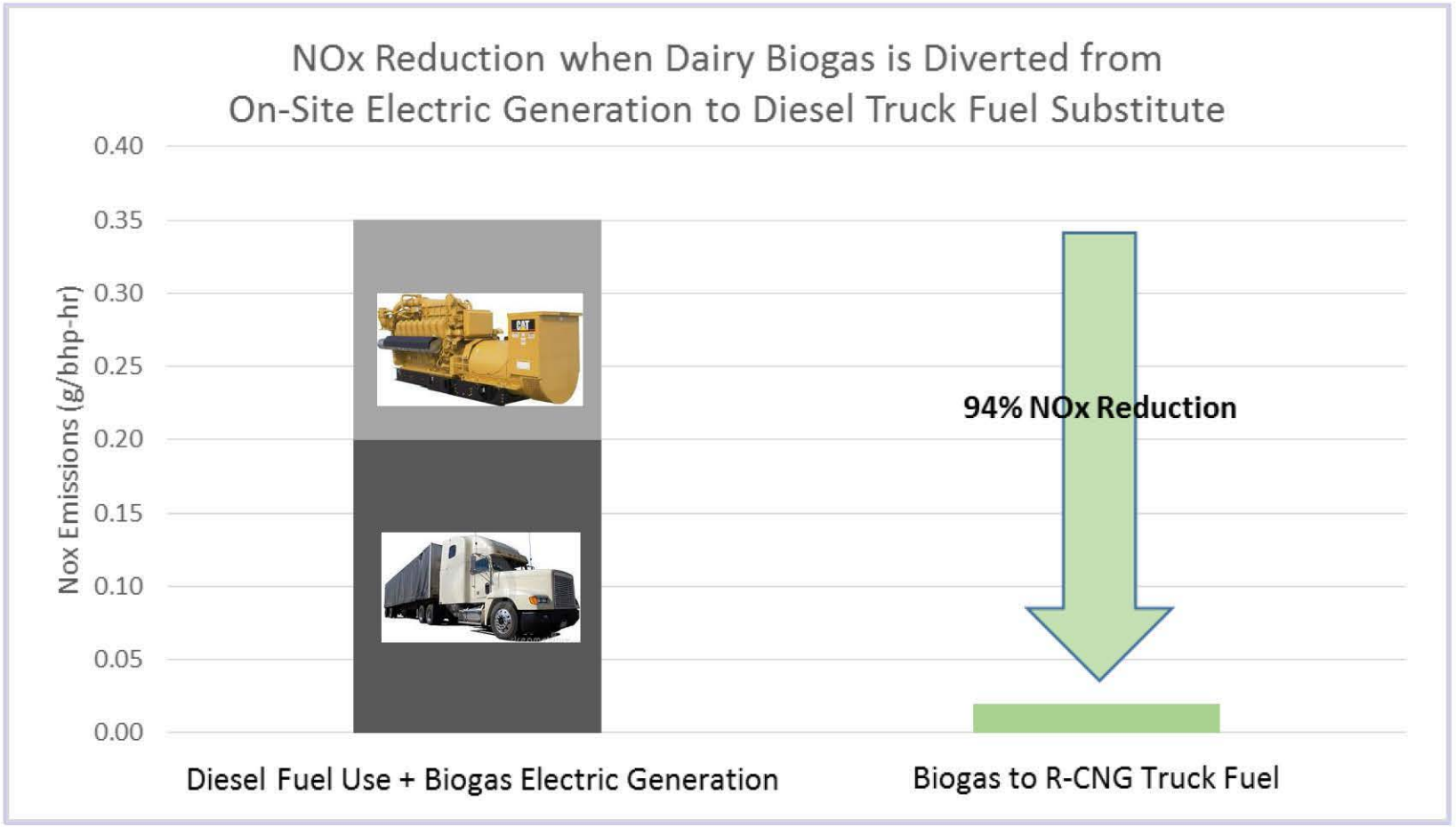


* California Bioenergy LLC: California Dairy Digester Biogas to CNG GREET 2.0, LCFS FP: CNG056, CI: -276.24

Dairy Biomethane Value per MMBTU



Dairy Biomethane for Fuel Reduces NOx



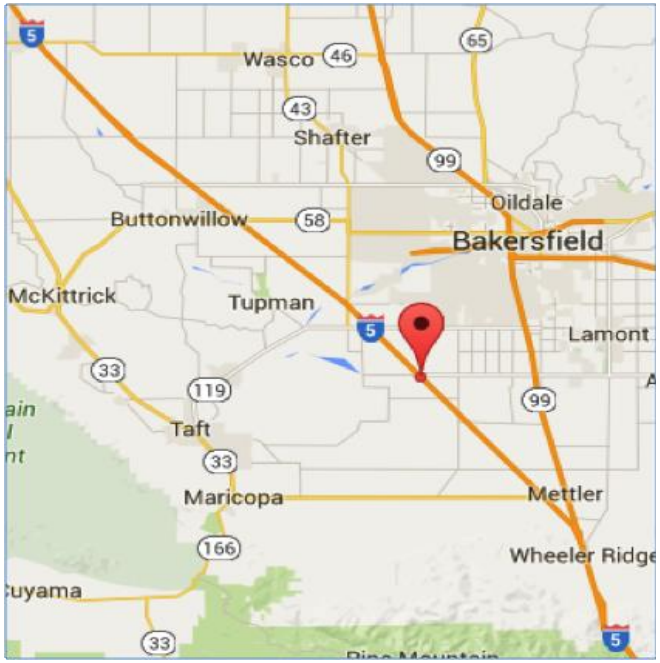
* Heavy-duty diesel engine at 0.2 g/bhp-hr NOx. Heavy-duty "NZ" NG engine at 0.02 g/bhp-hr Nox. Electric gen. at 0.15 g/bhp-hr BACT

California & Central Valley NOx Pollution

"Meeting these new standards requires a virtual ban on fossil-fuel combustion or emissions"*

* Ozone Standards Implementation Act of 2016. Testimony of Seyed Sadredin, ED, San Joaquin Valley Air Pollution Control District to U.S. House of Representatives Committee on Energy and Commerce Subcommittee on Energy and Power. April, 2016

Kern Co Cluster – Sustainable Freight Plan



- Kern County, near Bakersfield
- Adjacent to I-5 near Highway 99
- Composed of 16 modern dairies
- Approximately 50,000 milkers, 100,000 cows
- SoCal Gas and PG&E pipelines
- 1B SCF/Yr of Biogas or 3 MM DGE potential

Dual RCNG + Electricity Approach

- Dairies divert biogas to R-CNG as scale builds over time
  - Finance digesters with electric generation & BioMAT PPAs
  - As clusters of dairy digesters form, switch to pipeline & fuels
- Two drivers of dual-generation model
  - Pollution avoidance
    - Wide scale adoption of digesters put SJVAPCD gains at risk
    - Migrate on-site gen to diesel replacement reduces NOx
  - Financially complementary – “hedging”
    - Electricity long-term contracts, stable price
    - RCNG currently higher revenue (LCFS +RINs) but volatile

Dairy Methane Project Financing Hurdles

- Requires very large dairies (and dairy clusters) to be viable
- Require a long 15 - 20 year financial model, unforeseen risks
- Dairy's longevity/ability to supply manure often questioned
- Capital intensive & site specific infrastructure is a sunk cost
- Interconnection costs (gas and electricity) are high and sunk
- Biogas projects don't enjoy as many tax benefits as solar
- High OPX for gas conditioning, engines compressors
- Natural gas is cheap, biogas can't compete on BTU value
- High regulatory risk, carbon offsets may be void or worthless
- Grants are a required, time consuming and un-predictable

Our Roll in Re-Tooling CA Dairy Industry

- Raise deploy private capital to leverage state cap & trade grants/incentives to modernize the CA dairy industry
  - $1.5 billion of private capital needed
- Build and operate 300 large CA dairy methane capture projects producing:
  - 72 million diesel gallons/year fuel or 300 MW of electric generation
- Reduce dairy Greenhouse Gas Emissions by 40% by 2030
  - Take the CA technology and business model global

"Difficulties mastered are opportunities won"

Winston Churchill

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