

Subgroup #2: Fostering Markets for Digester Projects

Mission Statement

- Establish a roadmap to significantly expand the number of livestock digester projects in California that support the state's climate and air quality goals
- Assemble comprehensive overview and discussion of dairy digester projects, including identification of potential impacts, benefits, and barriers to scaling up digester projects.

Subgroup #2: Initial Membership ²

- Michael Boccadoro (Co-Chair), West Coast Advisors
- Ryan Schuchard (Co-Chair), Calstart
- Kevin Abernathy, Milk Producers Council
- Lynne McBride, California Dairy Campaign
- Neil Black, CalBio
- Geovany Osorio, Maas Energy
- Brian Gannon, BioGas Energy
- Jim Lucas (Co-Chair), SoCal Gas
- Grant Zimmerman, CNG
- Peter Drasher, Black Bear Assets
- Steve Larsen, Ruan Transport
- Thomas Lawson, CA Natural Gas Vehicle Coalition
- Chris Shimoda, CA Trucking Association

Subgroup #2: Initial Membership³ (cont.)

- Moses Stites, Fresno County Rural Transit Agency
- Bill Magavern, Coalition for Clean Air
- Kevin Hamilton, Central California Asthma Collaborative
- Rey Leon, City of Huron
- Lorelei Oviatt, Kern County Planning
- Bill Zobel, Trillium
- Cliff Gladstein, GNA
- Amy Myers Jaffe, UC Davis

Subgroup #2: Key Question Areas

- Existing Policies and Programs. Identification and improved integration of existing policies, incentives, and programs
- Infrastructure Policies. Identify policies needed to support rapid development of dairy digester projects
 - CEC (recommendations for renewable gas for 2017 IEPR)
 - ARB (energy infrastructure development to encourage projects)
 - CPUC (direct gas companies to implement \geq five dairy biomethane pilots to demonstrate interconnection)
- Procurement Policies. Address need for long-term procurement contracts for digester projects
 - ARB (energy infrastructure development to encourage projects)
 - ARB (pilot financial mechanism to reduce economic uncertainty with environmental credits)

Subgroup #2: Key Question Areas (cont.)

- Funding Sources. Address need and requirement(s) for additional incentive funding for rapid development of projects
- Environmental Policies. Characterize emissions and identify potential emission reduction opportunities for GHGs, criteria, toxic, and noxious pollutants
- Permitting Policies. Identify permitting challenges to sustainable dairy digester projects and recommendations for overcoming them
- Other Topics.
 - Consideration of tradeoffs of different biogas uses, such as transportation fuel and electric power generation.
 - Actions needed to further develop markets for vehicle fuel, energy, soil amendments, and other digestion products

California Dairy RNG to Low NOx NGVs: Success Factors

Supply Side

Expansion of RNG production & filling networks with competitive fuel prices



Substantial production or dairy RNG fuel



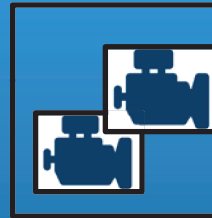
Cost-effective pipeline (or ?) connection



Broad NG filling station network

Demand Side

Increased number of ≤ 0.02 g/bhp-hr ("Low NOx") NG MHDVs on the road



Immediate purchasing of 8.9L engines



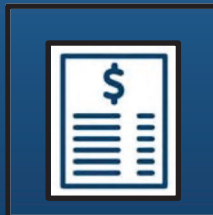
Commitments to purchase 12L engines



Payload variance for LN MHDVs

Investor Side

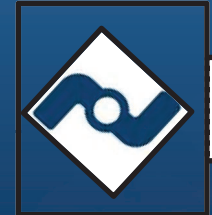
RNG fuel prices that allow 18-mo fleet payback and investment conditions that encourage CapEx with 10-20 year amortization



Availability of competitive fuel contracts



Reliable credit prices



Stable policy climate

Subgroup #2: Process and Timeline

- Process
 - Focus on achieving consensus among subgroup members where possible and identify recommendations where full consensus was not reached
 - Meetings open to the public with minutes recorded
 - Bring agencies and stakeholders together to identify and recommend the necessary:
 1. Infrastructure and procurement policies
 2. Funding sources
 3. Policies to achieve a sustainable livestock industry.
- Timeline
 - Initial recommendations will be provided to the Working Group in Fall 2017

Subgroup #2: Deliverables

- Pipeline-injected biomethane
 - Recommendations that can increase pipeline injection of biomethane, including market development incentives, cluster identification, policy development, regulatory or legislative action, and support the SB 1383 pilot project process.
- Electricity generation and grid interconnectivity
 - Recommendations that aid in overcoming barriers to on-site electricity generation, including market development incentives, cluster identification, policy development, regulatory or legislative action, and explore cost-effective ways to further reduce emissions.

Subgroup #2: Deliverables (Cont.)

- Natural gas vehicle fuel markets
 - Recommendations that can increase biomethane access to CNG/LNG vehicle fuel markets, including market development incentives, policy development, regulatory or legislative action, and strategies to identify potential CNG/LNG fleets and fuel networks/retailers.
- Markets for digestate and other value added products
 - Recommendations that aid in developing and expanding markets for digestate and other value added products from anaerobic digestion including non CNG/LNG transportation fuel