Agricultural Energy Consumers Association

Submitted online

June 12, 2015

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Short-lived Climate Pollutant Reduction Strategy Concept Paper

Dear Chair Nichols,

On behalf of the Agricultural Energy Consumers Association (AECA), thank you for the opportunity to submit comments on the California Air Resources Board's (CARB) May 7, 2015 "Short-Lived Climate Pollutant Reduction Strategy Concept Paper (Concept Paper)."

AECA represents the state's leading agricultural groups and a number of individual farming operations on energy issues. Formed in 1991, AECA has been active on energy, environmental and resource related issues before various state agencies, the CPUC, CEC and state legislature.

I. INTRODUCTION

AECA recognizes the importance of reducing greenhouse gases (GHGs) in California and elsewhere as a strategy to slow climate change. AECA also recognizes the importance of reducing SLCPs and has been at the forefront of efforts to encourage electrification of diesel water pumping engines, promotion of agricultural bioenergy projects including dairy digesters, and promotion of renewable energy adoption, including solar, in the agricultural community.

AECA comments will focus on two primary areas:

Biogas Digesters – Expansion and acceleration of existing incentive-based programs to develop dairy digesters funded by the Greenhouse Gas Reduction Fund (GGRF)

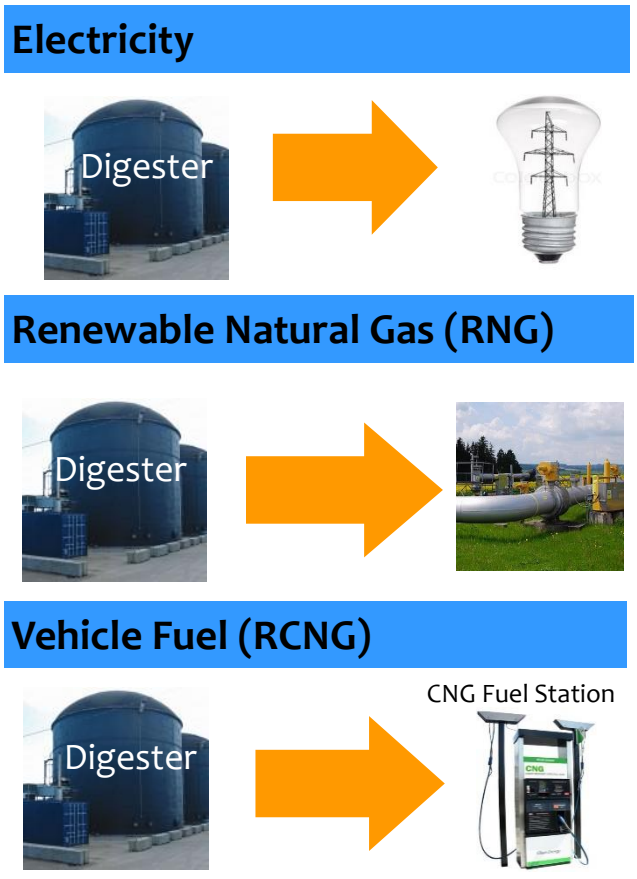
Diesel to Electric Irrigation Pump Conversion – Development of a new incentive-based program to encourage conversion of agricultural diesel pumping engines.

II. BIOGAS DIGESTERS

As the concept paper notes, methane emissions from manure management can be significantly reduced by capturing and destroying methane from dairy operations. AECA strongly believes that utilizing methane should be the priority as methane provides a valuable renewable energy resource that can replace fossil fuel.

Dairy digesters clearly represent one of the state's best and most cost-effective opportunities to reduce SLCPs.

California is home to the nation's largest dairy industry, which produces substantial quantities of dairy manure that can be processed by anaerobic digesters to produce biogas, a flexible renewable source of energy. Once produced, raw dairy biogas can be converted into renewable electricity, cleaned and conditioned into biomethane for use as renewable natural gas (RNG) or upgraded for use as a transportation fuel (RCNG) for use in heavy duty natural gas vehicles.



Despite a regulatory environment encouraging renewable energy production and greenhouse gas reductions, dairy digester development has lagged in California. While

permitting obstacles have been improved, high costs, interconnection obstacles, lack of energy procurement opportunities and inconsistent government assistance programs continue to limit development. Future development will continue to be limited and "spotty" unless a major policy commitment and financial assistance is provided by the state.

Farm industry stakeholders have been working closely with the California Department of Food and Agriculture (CDFA), CARB and other state agencies to plan, design, and implement a California Dairy Digester Incentive Program that will transform the industry in California, help establish economies of scale, and begin to bring down the high cost of digester development in the state.

The overall goal of such a program should be to build 100-200 new dairy digesters in California over the next 5-7 years.

Total investment: $1,000,000,000 - $1,250,000,000

GGRF Investment Required: Up to $500,000,000 over 5 – 7 years

The program should be developed in two phases, as discussed below, and informed by immediate research to better design the goals, metrics, and structure of the program.

RESEARCH

Key research objectives include, but are not limited to, the following:

- Identification of incentive program goals and measurable milestones
- Determination of incentive levels needed
- Efficient and effective use of existing state and federal incentives and programs
- Incentive program structure
- Identification and documentation of program benefits including direct and indirect benefits
- Identification and facilitation of markets for energy production, including directed RNG and transportation fuel
- Identification of program obstacles and proposed solutions

PHASE I (2015 – 2017)

Planning, design and build-out of Kern Dairy Cluster as a research, innovation and demonstration hub. The Kern Dairy Cluster is a well-positioned cluster of existing large dairies in Kern County just south of Bakersfield. The cluster is ideally positioned for numerous reasons including, but not limited to, the following:

- Existing cluster of large, modern dairies with roughly 50,000 milk cows
- Close proximity to Hwy 99 and Interstate 5
- Access to natural gas transmission pipelines
- Location in a county with favorable renewable energy resource policies and local permitting requirements
- One existing state-of-the-art dairy digester and several others that have recently received significant state grants for digester development

The research, innovation and demonstration hub will focus on the following activities:

- Establishing economies of scale and other actions to reduce long-term digester costs
    - Maximize the efficiency of lagoon digesters
    - Test hybrid covered lagoon and steel tank digester design
    - Develop co-digestion opportunities and capabilities
    - Build clustered/centralized generator facilities to decrease costs
    - Demonstrate advanced-technology, including ultra-low NOX engines and potentially fuel-cells
    - Demonstrate energy storage potential
- Fuel Program development, including
    - Vehicle fuel (RCNG) production including development of a local fueling station to service diesel dairy hauling truck replacement with CNG heavy-duty trucks
    - Pursue diesel farm equipment to RCNG
    - Explore potential to support hydrogen-fueling station
- Pipeline injection
- Advanced management of dairy waste, including improved efficacy of application to adjacent farmlands, integration into drip irrigation, and/or development of exportable organic fertilizer and soil amendment production
- Energy efficiency initiatives and integration with dairy operation, including CHP for milk cooling, demand response, LEDs, and potential solar energy development

- GHG and LCFS credit production

Cluster Goal:

- 6-8 additional digesters
- Replacement of diesel milk hauling trucks serving cluster to RCNG, including delivery into LA Basin
- Proving financially viable projects integrating electricity and fuel production

Cluster Benefit:

- Significant GHG reduction – approximately 150,000 – 200,000 metric tonnes of carbon equivalent per year (CO2e)
- Significant clean energy production
  - Over 50,000,000 kWh/year, or
  - Over 500,000 MMBtu of renewable natural gas (RNG), or
  - Over 3.5 million DGE of carbon negative transportation fuel (RCNG)
- Significant reduction in Short-lived Climate Pollutants (SLCP) (methane)
- Significant criteria pollutant reductions from replacement of diesel trucks and other farm equipment
- Significant water quality benefits from replacement of existing manure lagoons/holding ponds with steel tanks or new double-lined in-ground ponds, and improved nitrogen profile of dairy effluent.
- Decarbonization of natural gas system
- Significant benefits to disadvantaged communities including:
  - Criteria pollutant reduction
  - Water quality protection
  - Odor and nuisance reduction

GGRF Investment – UP to $50,000,000 (2015 – 2017 State Budget)

PHASE II (2017 – 2021)
Goal: Development of an additional 100-200 state-of-the-art dairy digesters throughout the state over a 5-year period.

Energy production potential ≈ 500 million kWh or 5 million MMBtu or 35 million DGE

Air quality benefits – significant but varies based on end-use of energy (see above)

Water quality benefits – Significant benefits including enhanced groundwater protection and improved nitrogen profile of dairy effluent (see above)

GHG and SLCP reduction benefits – 1.5 - 2.5 million metric tons of CO2e per year mostly methane. 60-75 million metric tons of CO2e over the 30-year useful life of the projects

Total Investment: $1.0 – $1.2 billion

GGRF Investment: Up to $500,000,000

III. ELECTRIFICATION OF DIESEL IRRIGATION PUMPS

Approximately 10 years ago the CPUC approved a joint incentive program between the farm community and the state's primary investor-owned utilities, Pacific Gas & Electric Company (PG&E) and Southern California Edison (SCE). The Agricultural Internal Combustion Engine Program or (Ag-ICE) was highly successful and resulted in the conversion of over 2,000 IC engines to electric motors in the Central Valley, primarily the San Joaquin Valley. As a direct result, substantial GHG and criteria pollutants reductions were achieved.

According to the San Joaquin Valley Air Pollution Control District (SJVAPCD) over 2000 IC engines still operate in the San Joaquin Valley. Conversion of these remaining engines represents an important opportunity to further reduce GHG in the San Joaquin Valley and provide additional significant reductions in criteria pollutants. Estimated potential emission reductions include:

Approximately 500,000 tons per year of GHG reduction

Approximately 215,000 tons per year of black carbon

Achieving these reductions will require a well-designed program to incentivize additional conversion. The existing Ag-ICE program has been closed to new applicants for well over 5 years, and the 10-year reduced energy charges will sunset at the end of 2016. Development of a new program will require different levels of incentives to encourage conversion and additional research to better understand the cost and benefits of such a program and potential prospects for conversion.

AECA is prepared to work with CARB and the SJVAPCD over the next several months to research and develop an appropriate incentive program. The potential benefits are significant and this opportunity should not be lost. However, the remaining diesel engines are more remote and may operate in areas requiring longer line extension and electric system upgrades to enable conversion. Most of the easy-to-convert engines were converted

in the existing program. Despite these issues, the significant GHG, black carbon and criteria pollutant reduction (including NOx) potential in the San Joaquin Valley appears to suggest the cost-benefit potential is still warranted.

IV. CONCLUSION

AECA looks forward to working with CARB and CDFA to develop successful programs to incentivize and accelerate dairy digester development in California. We are also prepared to work closely with CARB and SJVAPCD to develop an appropriate agricultural water pumping electrification program.

Sincerely,

Michael Boccadoro
Executive Director