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Michael Tollstrup
Chief of Project Assessment Branch
Industrial Strategies Division
Air Resources Board
1001 I Street
Sacramento, CA 95814
(comment submitted electronically via ARB website)

June 12, 2015

RE: Short-Lived Climate Pollution Reduction Strategy Concept Paper

Dear Mr. Tollstrup

Sierra Energy appreciates the opportunity to provide comments regarding the concept paper developed by the Air Resources Board ("ARB"), Short-Lived Climate Pollutant Reduction Strategy ("Reduction Strategy"). Sierra Energy is engaged in multiple business activities that reduce short-lived climate pollutants ("SLCP"). We are therefore strongly supportive of ARB's Reduction Strategy. In addition, we are aware of private sector business opportunities that will enhance the Reduction Strategy. This letter provides a series of concrete actions that ARB can take to fully leverage the capabilities of California's businesses to deliver substantial SLCP reductions cost-effectively. These actions may be summarized as follows:

- Expand the Reduction Strategy's goal of maximizing the capture and conversion of organics to encompass contaminated organics;
- Provide estimates of SLCP sources and emissions inventory on a categorical and granular basis as these figures are available; and,
- Resume the SB 1505 rulemaking to ensure that the state's expanding hydrogen economy reduces rather than increases the release of SCLP's.

If adopted, these actions will enable ARB to execute its SLCP Strategy more rapidly and cost-effectively. The remainder of this letter describes Sierra Energy's contributions to the reduction of SLCP's, and provides further detail regarding the reasons the recommended actions are necessary and likely to be effective.

Sierra Energy's Expertise

Sierra Energy and Sierra Northern Railway are both companies within the Sierra Industrial Group. Sierra Energy is a waste gasification and renewable energy company founded in Davis, California in 2004. Sierra Northern Railway was formed in August 2003 through the merger of two Northern California shortline railroads: the Sierra Railroad Company and the Yolo Shortline Railroad. As a

result, Sierra Energy has relevant experience and capabilities that range from the conversion of methane-emitting municipal solid waste ("MSW"), to the reduction of black carbon from locomotives.

Sierra Energy's FastOx Gasifier is a robust and flexible technology, capable of processing MSW, hazardous waste, medical waste, construction and demolition waste, and other waste streams. The application of Sierra Energy's waste gasification technology reduces the air, soil and water pollution created by landfills; and produces clean, low carbon energy for power and transportation.

Sierra Energy is currently installing a modular, community-scale waste gasification system at U.S. Army Garrison Fort Hunter Liggett in Monterey County. Sierra Energy's technology was selected by the US Department of Defense's ("DoD") Environmental Security Technology Certification Program to help increase DoD energy security, reduce waste and energy costs, drastically reduce greenhouse gas emissions, and help meet the U.S. Army's net-zero initiatives. The project has also received grant support from the California Energy Commission to convert the resulting syngas into Fischer-Tropsch diesel fuel for transportation applications.

Sierra Northern Railway has been at the forefront of reducing black carbon emissions from locomotives. Shortline railroads are typically exempted from state regulations by federal preemption. Nonetheless, Sierra Northern Railway has worked with local air districts on a number of projects to retrofit locomotives and reduce emissions.

Recommendations

Expand the Reduction Strategy's goal of capturing and converting organics to encompass contaminated organics.

The Reduction Strategy recognizes the opportunities inherent in the capture and conversion of organics to energy via anaerobic digestion and other means. The Reduction Strategy plans to build on the existing foundation of state policies to eliminate disposal of organic materials at landfills. In addition, "the Strategy will explore additional measures to accelerate organics diversion and GHG emission reductions to meet an initial goal of diverting 75 percent of organics from landfills through source reduction and organics recycling by 2020."

The Concept Paper goes on to recognize, however:

"Even if we eliminate new organics in landfills, existing organic waste in landfills will remain a source of methane emissions for years to come. In developing the Strategy, ARB will work with CalRecycle, stakeholders, and experts to identify research needs

and other efforts to develop potential measures to expand the use of best management practices and further reduce methane emissions from landfills by 2020 and through 2030. These measures could include upgrading landfill gas collection systems, improved post-closure maintenance, improved monitoring, and phased closure."[1]

To be effective, the Reduction Strategy needs to be more than simply an accelerated version of existing California policy. For a variety of historical reasons, California has developed a waste treatment and diversion policy that prohibits some methods that could otherwise reduce the methane released from MSW. In particular, existing policies preclude the development of gasification techniques that would otherwise better enable the state to achieve GHG, petroleum and criteria pollutant reduction goals while maintaining air, water and soil quality, and attaining renewable energy standards.

These ambitious goals and standards can be met by leveraging California's innovative companies engaged in the clean energy economy but only to the extent that the state is willing to embrace technology neutral performance requirements rather than definitions that favor particular industries or technologies. Perhaps the clearest example of this bias is provided by the impossible standard imposed on MSW to qualify under the state's renewable portfolio standard:

(b) "Municipal solid waste conversion," as used in subdivision (a), means a technology that uses a noncombustion thermal process to convert solid waste to a clean-burning fuel for the purpose of generating electricity, and that meets all of the following criteria:
(1) The technology does not use air or oxygen in the conversion process, except ambient air to maintain temperature control.
(2) The technology produces no discharges of air contaminants or emissions, including greenhouse gases as defined in Section 38505 of the Health and Safety Code.
(3) The technology produces no discharges to surface or groundwaters of the state.
(4) The technology produces no hazardous wastes.
(5) To the maximum extent feasible, the technology removes all recyclable materials and marketable green waste compostable materials from the solid waste stream prior to the conversion process and the owner or operator of the facility certifies that those materials will be recycled or composted.[2]
(…)

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[1] Air Resources Board, Short-Lived Climate Pollutant Reduction Strategy, Concept Paper, May 7, 2015, at p. 20-21.
[2] Public Resources Code §25741(b)(1)-(5).

In order to capture the existing organic waste at landfills that will be a source of methane for years to come, ARB needs to consider and examine existing and future technologies that are capable of converting MSW to energy and fuel, without harmful environmental impact. In addition to organic waste in landfills, this material will also include contaminated organic waste that is impractical to separate from MSW. Sierra Energy looks forward to assisting ARB in developing a strategy that reduces methane from all sources, not just methane sources that can be reduced under existing policies.

Provide estimates of SLCP sources and emissions inventory on a categorical and granular basis as these figures are available.

There are significant opportunities to achieve great SLCP reductions if ARB make its SLCP Strategy more transparent in terms of SLCP inventory and sources. This is fully consistent with the mandate of SB 605 which ultimately requires ARB to develop a complete inventory of sources and emissions of SLCP's. Sierra Energy recommends that earlier in the process ARB disclose more fully its inventory, even though it is still in the development stage. This disclosure will enable California businesses, other stakeholders, and the general public to better understand the nature and scope of the SLCP challenge. In addition, it will enable ARB and stakeholders to more effectively craft a SLCP Strategy that is informed by the known emissions inventory from the various sources.

This data should be made available in a format that is as granular as ARB has available and should also be categorized by industry, county and type of equipment. In particular, Sierra Energy requests that ARB disclose the following types of information:

- Estimates of overall SLCP inventory and emissions such as:
    - Emissions per locomotive unit,
    - Emissions per locomotive type,
    - Emissions per acre of wildfire,
    - Counties with highest amount of slash, topping and other high fire risk materials, and,
    - Other priority items in terms of SCLP reduction potential.

Resume the SB 1505 rulemaking to ensure that the state's expanding hydrogen economy reduces rather than increase the release of SCLP's.

As is recognized in the Concept Paper,

"The Strategy fits within a wide range of ongoing planning efforts throughout the State to advance economic and environmental priorities. Integrated planning to achieve multiple objectives requires coordination among planning agencies and

across sectors, systems, and government jurisdictions. Development of the Strategy will be closely coordinated with other relevant planning efforts."[3]

In one particular area, ARB has an immediate opportunity to better integrate the state's objectives. Passed in 2006 as a cornerstone of California's planned hydrogen economy, SB 1505 mandates that the ARB:

"(A)dopt regulations that will ensure that state funding for the production and use of hydrogen fuel, as described in the California Hydrogen Highway Blueprint Plan, contributes to the reduction of greenhouse gas, criteria air pollutant, and toxic air contaminant emissions, and would require these regulations to meet minimum requirements, as specified."

As stated in the SB 1505 at Section 1(l):
"According to the California Hydrogen Highway Blueprint Plan, the absence of specific goals for reducing emissions and using renewable resources to produce hydrogen fuel might actually increase greenhouse gas and particulate matter emissions relative to petroleum fueled vehicles."

This same concern is properly reflected in the SLCP Concept Paper:
"As we increase the number of facilities producing and using renewable supplies of natural gas, hydrogen, or any other potential source of methane emissions in a cleaner energy economy, we must also take steps to minimize potential methane leaks from those facilities.[4]

SB 1505 was intended to enable the production of hydrogen from clean and reliable sources, and to ensure that hydrogen production from natural gas did not result in increased fugitive methane emissions. ARB commenced its rulemaking in 2007 and held a series of workshops. The last scheduled workshop, to be held on April 19, 2010, was cancelled without explanation and never rescheduled.[5] ARB has missed several January 1, 2010, deadlines established by the bill that are now codified at Health and Safety Code §§43868-43869. As part of its SLCP Strategy, ARB should resume and complete its SB 1505 rulemaking.

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[3] Reduction Strategy at 11.
[4] Reduction Strategy at 18.
[5] See http://www.arb.ca.gov/msprog/hydprod/hydprod.htm and related links (last viewed June 12, 2015).

Conclusion

Thank you for your consideration of our input. Please contact our attorney, Graham Noyes of Keyes, Fox & Wiedman, if any further input would be helpful. We look forward to continuing to participate in this proceeding.

Sincerely,

Michael Hart

Cc: Graham Noyes
Gerard Achtelick