



July 12, 2013

Ms. Caroll Mortensen, Director
CalRecycle
1001 I Street
Sacramento, CA 95812

Re: Comments on Waste Sector Plan to Reduce Greenhouse Gas Emissions (June 18, 2013 Draft)

Dear Ms. Mortensen:

The Bioenergy Association of California appreciates the opportunity to comment on CalRecycle's Draft Waste Management Plan to reduce greenhouse gas emissions. We are very grateful for CalRecycle's leadership in developing this plan and providing an opportunity for public input early in the process. The Draft Plan provides a helpful framework for the solid waste sector. We offer the recommendations below on the findings and strategies related to bioenergy development in reducing greenhouse gas emissions from the solid waste sector.

The Bioenergy Association of California (BAC) is a non-profit association of companies, public agencies and individuals interested in promoting sustainable bioenergy development. BAC's industry members include waste producers and managers, bioenergy developers and producers, investors, technical experts, suppliers and others. BAC's public agency members include solid waste and wastewater treatment agencies, air quality and environmental protection agencies, local governments and more.

BAC's members strongly support CalRecycle's twin goals of reducing greenhouse gas emissions and increasing organic waste diversion. We agree that the AB 32 Scoping Plan Update is an important opportunity to advance both these and other important state policies to protect public health and safety, provide an instate source of renewable energy and transportation fuels, create jobs, grow California businesses, and more.

We offer the comments and recommendations below to accelerate bioenergy development as an important means to reduce greenhouse gas emissions from the solid waste sector.

I. OVERALL COMMENTS

We thank CalRecycle for its leadership in developing a framework to reduce greenhouse gas emissions from the solid waste sector. Providing this framework early in the development of the overall AB 32 Scoping Plan will help to ensure greater success in the waste sector. Releasing the draft technical papers is also very helpful to enable experts and stakeholders to provide meaningful input into the solid waste plan.

BAC also agrees with CalRecycle's premise that the issues, especially around organic waste, are highly interconnected and must be addressed together, rather than in silos. There are numerous, interconnected opportunities, benefits and challenges of addressing organic waste issues. Maximizing the utility of organic waste in a cost-effective manner will require a cross-sector and integrated plan, as CalRecycle has recognized.

While the solid waste sector is a relatively small contributor to California's overall greenhouse gas emissions, it provides an opportunity for much more significant greenhouse gas reductions by producing carbon negative transportation fuels, renewable electricity, opportunities for energy storage, displacement of fossil fuel based fertilizers and more. Achieving these larger, cross-sector reductions will require a much more detailed implementation plan and significant financial incentives to truly transform California's waste infrastructure into clean, distributed generation and low carbon fuel production.

While BAC appreciates the comprehensiveness of the Draft Plan for the solid waste sector, there are some important gaps. Our recommendations in each of the technology sectors are below, but in general we recommend that:

- The Plan should include an explicit goal to maximize cost-effective greenhouse gas reductions in the solid waste sector. Neither CalRecycle's Overview nor its June 18 presentation include maximizing greenhouse gas reductions as an explicit goal.
- The Plan should provide much more detailed recommendations to achieve greenhouse reductions in or related to the solid waste sector, including identification of facility costs and how to fund those facilities and related infrastructure
- The Plan should provide specific recommendations related to carbon offset protocols for bioenergy development and waste reduction that included detailed assessments of greenhouse gas reductions and the role that additional offset protocols could play in driving the reduction and beneficial use of organic waste

- The overview and technical papers are inconsistent about the availability of organic waste, in some places referring to 10 million tons per year and in other places referring to 15 million tons per year. This should be consistent.
- Some of the tables and calculations require greater explanation for readers to better understand what assumptions are included. For instance, in several places the Draft presents estimates of greenhouse gas reductions from solid waste diversion, but does not explain what is included in the estimates. In the areas of anaerobic digestion and composting, the estimates do not appear to be life cycle estimates.
- The Plan should provide a clearer assessment of greenhouse gas reductions for different options to divert and beneficially use organic waste. For instance, what are the emissions reductions if organic waste is used for anaerobic digestion and then composting (rather than one or the other as presented in the Draft) or AD and then use of the biogas as a transportation fuel and use of the digestate to make compost.
- The recommendations need more detail, including timelines, responsible agencies, greenhouse gas reductions per strategy, etc.
- Although we agree with the Draft Plan that in most areas, the challenge is technology deployment rather than technology development,¹ the important exception is in the area of pollution control technology for bioenergy production. Without the development of more effective (and cost-effective) technologies, landfills and wastewater treatment facilities will resume flaring their biogas rather than using it to generate energy. This is a significant barrier to greater deployment of anaerobic digestion and biomass and will be a huge missed opportunity if that technology is not developed.

II. ANAEROBIC DIGESTION AND COMPOSTING

CalRecycle is correct to highlight the role of Anaerobic Digestion (AD) in reducing emissions from the solid waste sector. We offer the recommendations below to further refine the strategies to expand the use of AD in California.

A. Research and Development

We agree with CalRecycle's Draft Technical Paper on Anaerobic Digestion that California needs to better quantify the greenhouse gas reduction benefits of AD, but recent studies by the Air Resources Board and others demonstrate that AD can be a game-changer for greenhouse gas reduction strategies. Transportation fuels from landfill gas and the anaerobic digestion of diverted organic waste are carbon negative. CalRecycle should include recent assessments from the Air Resources Board in its Technical Paper and plan for the solid waste sector so that the GHG reduction synergies are understood.

¹CalRecycle presentation on the Draft Plan, June 18, 2013, slide 8.

In addition, we recommend that CalRecycle include a more detailed comparison of different pathways for organic waste diversion. The AD pathway should include not just the avoided landfill emissions, but fossil fuel displacement and further emissions reductions from composting of the digestate produced by AD. CalRecycle should also quantify the lifecycle greenhouse gas emissions from composting, not just the avoided emissions from organic waste diversion.

Another critical area of R&D is pollution control technologies to meet new air quality standards in the South Coast and San Joaquin Valley Air Districts. As noted above, the solid waste and wastewater treatment industries may resume flaring their biogas unless new and less expensive pollution control technologies are developed.

B. Financial Incentives Needed

Financial incentives are perhaps the most critical component in developing the infrastructure needed to significantly reduce greenhouse gas emissions from the solid waste sector. The incentives must be multi-year to reflect the large capital investments that are required for AD. Incentives are needed to:

- Develop new and expanded AD facilities;
- Develop and deploy new pollution control technologies;
- Enable pipeline and transmission line interconnection; and
- Condition (clean) raw biogas so that it can be injected into common carrier pipelines.

Some financing options include:

- 1) CalRecycle and ARB should create a revolving loan fund to finance or bring down the cost of capital for pollution control technologies, gas conditioning equipment, utility interconnection (pipeline or transmission line) and repowering or expansion of facilities.
- 2) ARB should adopt carbon offset protocols for organic waste diversion, for anaerobic digestion and composting of organic waste.
- 3) AB 118 funds, if reauthorized, should focus on the use of organic waste to generate carbon negative transportation fuels, most likely the greatest carbon reductions per dollar invested by the program.
- 4) The CPUC needs to adopt a feed-in tariff under SB 1122 that stimulates sufficient bioenergy development to begin to bring down costs, encourage competition and spur innovation in the bioenergy industry.
- 5) CalRecycle and ARB need to consider a market/purchase requirement post SB 1122.

C. Regulatory Changes Needed

California enacted AB 1900 and AB 2196 in 2012 to encourage in-state development and use of pipeline biomethane. The CPUC, ARB and OEHHA are

currently developing the standards for pipeline injection of biomethane pursuant to AB 1900. Ensuring that the new standards treat biomethane and natural gas equally, and that the CPUC allocates costs appropriately, is critical to reducing emissions from the solid waste sector. For many landfills and other solid waste producers and managers, pipeline injection is the only beneficial use of their biogas possible. Pipeline access for biomethane is critical to maximize its use for transportation fuels and other beneficial uses that will significantly reduce greenhouse gas emissions from the solid waste sector.

III. BIOMASS CONVERSION

The Draft Technical Paper on Biomass, while helpful on some issues, leaves out important biomass technologies and opportunities in California. In particular, it omits biomass gasification altogether. This is a significant omission among current facilities and in assessing the potential for additional biomass conversion in California. In addition, the Draft Technical Paper does not include information about the avoided greenhouse gas emissions and other benefits of avoided catastrophic wildfires (the risk of which is reduced with increased, community-scale biomass facilities located in or near high fire risk areas). The paper openly acknowledges that many aspects of a full life-cycle analysis are not included in the analysis including transportation, processing, and delivery emissions, avoided landfill emissions, or avoided emissions from open-burning. The paper has limited applicability when assessing the GHG impacts and benefits of biomass conversion when many aspects of a complete life-cycle analysis are ignored.

Biomass conversion faces many of the same challenges as anaerobic digestion: the need for financial and regulatory incentives to develop new infrastructure, ability to interconnect to the transmission and distribution network, better monetization of greenhouse gas reductions and other benefits of biomass, and research and development of new pollution control technologies. Biomass also required long-term power purchase agreements that can be adapted to changes in feedstock costs and are adjusted appropriately based on the price of diesel, labor rates, and environmental compliance regulations.

A. Need to Include Biomass Gasification

CalRecycle's assessment of and plans for greenhouse gas reductions from the solid waste sector need to include biomass gasification as well as other community-scale bioenergy technologies. California currently has at least two biomass gasification facilities in operation and several more in development. The Draft Technical Paper omitted any mention of these facilities in its assessment of current capacity or future potential for biomass, despite the fact that they are providing distributed generation from organic waste, providing jobs and income in

rural communities, and likely to be replicated in other communities, including agricultural and forest communities in California.

Current and planned biomass gasification facilities provide distributed generation, serving both onsite load and exporting power to the grid. Existing and planned facilities can help to meet the Governor's goal of 12,000 megawatts of distributed generation by 2020. Sized to address local waste, they do not require the relatively long transport of feedstock that larger facilities require, thus reducing air emissions from transport related equipment and reducing delivered feedstock costs. They can also accept a wide range of organic feedstocks, from agricultural waste to urban wood waste.

B. Need Financial Incentives

Much like anaerobic digestion, distributed generation biomass facilities need financial incentives to develop, repower or upgrade. Those incentives could include:

- A Feed-in Tariff price under SB 1122 that is high enough to stimulate new development and innovation at a large enough scale for the industry to gain experience, improve economies of scale (equipment, management, etc.) and reduce financing rates.
- A revolving loan fund that provides loans, buys down costs of capital or provides other financial incentives.

C. Need to Accelerate Interconnection

One of the biggest barriers facing new distributed bioenergy facilities is interconnection to the distribution and transmission grid. The CPUC has a rulemaking underway to address these challenges, which is critical for California to achieve significant growth in bioenergy facilities. In particular, the proceeding needs to ensure that costs, timelines and technology requirements for interconnection are predictable, reasonable and feasible. Currently, interconnection requirements, timelines and costs are wildly unpredictable, at the discretion of the utilities, and a huge barrier to new bioenergy development.

D. Need Better Quantification of Greenhouse Gas and Other Air Quality Benefits

Although the Draft Technical Paper presents some of the greenhouse gas reduction benefits of biomass, it leaves out several important ones. In addition to offsetting fossil fuel use, biomass can reduce greenhouse gas emissions by reducing the risk and severity of catastrophic wildfires, producing biochar and other beneficial soil amendments that sequester carbon and reduce the need for fossil fuel based fertilizers, and reducing open field or other uncontrolled burning of organic waste.

Placer County Air Pollution Control District conducted a demonstration project and study comparing forest biomass used to produce energy and forest biomass that was open pile burned. The study, which is summarized in the attached article, found that forest biomass to energy projects can significantly reduce particulate matter, greenhouse gases, and other air pollutants because the burn is occurring in a controlled environment. Although some of these greenhouse gas reductions may be accounted for in the RPS, if the energy is used to generate combined heat and power or energy of any kind for a non-regulated facility, then the value of the greenhouse gas reductions is not accounted for or monetized.

E. Need R&D of New Pollution Control Technologies

Like anaerobic digestion facilities, new and existing biomass facilities will need more effective and less expensive pollution control technologies. Investing in the R&D to develop cost-effective pollution control technologies is critical to expand bioenergy development in large parts of California.

IV. IMPLEMENTATION

While the solid waste sector is a relatively small contributor to California's overall greenhouse gas emissions, it provides an opportunity for much more significant greenhouse gas reductions by producing carbon negative transportation fuels, renewable electricity, opportunities for energy storage, displacement of fossil fuel based fertilizers and more. Achieving these greenhouse gas reductions will, however, require a much more detailed plan than CalRecycle's June 18 draft. The detailed plan will need to identify the overall costs of transforming California's waste sector, not just to divert waste but to convert organic waste into fuels and power production. The costs will be in the billions of dollars, but the potential greenhouse gas reductions and other benefits to public health, safety and California's economy are enormous.

As noted above, significant expansion of bioenergy – both anaerobic digestion and biomass – will require major infrastructure investments, improved access to pipelines and transmission lines, and a clear roadmap that incentivizes the most beneficial uses of landfill gas and diverted organic waste.

The solid waste to energy roadmap should include at least the following elements:

1. Full lifecycle analysis of the greenhouse gas reduction benefits of different diversion options, including when different options can be combined (ie, anaerobic digestion plus composting). The analysis should also compare the lifecycle benefits of producing electricity versus transportation fuels or other end uses of the biogas produced from solid waste.
2. Quantify the full costs of transforming California's waste infrastructure

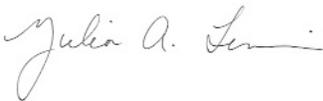
to generate low carbon fuels, power, compost and other beneficial products.

3. Identify current programs available to help cover the costs of conversion and gaps in available funding.
4. Identify new financial incentives that reflect the greatest greenhouse gas reductions, including infrastructure financing, additional carbon offset protocols, utility purchase requirements, feed-in tariffs and/or greenhouse gas reduction adders to utility pricing, etc.
5. Ensure simplified, predictable and affordable access to gas pipelines and transmission lines to ensure that biogas is used in most beneficial way possible.
6. Establish enforceable goals for bioenergy from the solid waste sector, including goals for greenhouse gas reductions, transportation fuels produced, electricity generation, etc.

V. CONCLUSION

We thank CalRecycle for developing and releasing its Draft Plan and draft technical papers. Doing so early in the development of the overall AB 32 Scoping Plan is very helpful and will help to ensure a better plan for the solid waste sector. We look forward to continuing to work with CalRecycle and other agencies to refine and implement the plan for the waste sector.

Sincerely,



Julia A. Levin
Executive Director