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November 4, 2016

California Air Resources Board
1001 I Street
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Re: CARB's Cap and Trade Workshop, Convened October 21, 2016

Thank you for the opportunity to provide comments in response to the California Air Resources Board's (CARB's) October 24th Cap and Trade workshop. We fully support CARB's work to reduce greenhouse gas emissions in the state. Covanta is a national leader in developing, owning and operating facilities that convert municipal solid waste ("MSW") into renewable energy (energy-from-waste or "EfW" facilities). We operate two such facilities in California, one located in Stanislaus County and the other located in the City of Long Beach.

We believe that CARB should retain the limited exemption for Waste-to-Energy (WTE) facilities through the end of the 2nd compliance period contained in this year's 45-day amendments to the regulation. We were surprised to see the sudden reversal in direction, as the initial reason for the exemption, that WTE facilities actually reduce GHG emissions relative to landfilling, an uncapped sector, has not changed. In fact, the scientific & policy recognition of the GHG benefits achieved through the diversion of waste from landfill to WTE is stronger than ever.

WTE facilities were initially exempted on the basis of science and to ensure parity of treatment across the waste management sector. With CalRecycle's recognition of the GHG benefits of WTE relative to landfilling (see excerpt below), it was clear that including WTE in the cap and trade program while landfills were excluded would result in unequal treatment within the waste sector, and potentially result in leakage of GHG emissions from a capped source, WTE, to an uncapped source, landfilling.

> "Published LCA studies and best available published direct measurement data support CalRecycle staff's general conclusions. CalRecycle staff concludes that the three existing California WtE facilities provide net avoided methane emissions over waste otherwise disposed in a California landfill. The net avoided emissions exceed non-biogenic emissions from burning of the fossil fuel based components such as plastic in the WtE facility."[1]

Since the initial exemption of the existing WTE facilities in 2012, the recognition of WTE as a source of GHG mitigation has grown. In 2014, CARB itself, concluded that WTE offers GHG reductions relative to landfilling:

> "Preliminary staff estimates … indicate that combusting waste in the three MSW Thermal facilities in California results in net negative GHG emissions, ranging from -0.16 to -0.45 MT CO2e per ton of waste disposed, when considering that the waste would otherwise be deposited in landfills resulting in higher emissions."[2]

In 2013 and 2014, the Center for American Progress and Third Way have both reviewed WTE and validated its GHG benefits.[3,4] In addition, the Joint Institute for Strategic Energy Analysis (JISEA) operated on behalf of the U.S. Department of Energy's National Renewable Energy Laboratory, the University of Colorado-Boulder, the Colorado School of Mines, the Colorado State University, the Massachusetts Institute of Technology, and Stanford University published a report in 2013 after a review of solid waste management options for Boulder's municipal solid waste concluded WTE was a better option than landfilling:

> "We find that MSW combustion is a better alternative than landfill disposal in terms of net energy impacts and carbon dioxide (CO2)-equivalent GHG emissions.
>
> "Life cycle assessment studies published in the literature have generally been consistent in suggesting that MSW combustion is a better alternative to landfill disposal in terms of net energy impacts and CO2-equivalent GHG emissions. The results from this study match that expectation. In this report, WTE leads to a higher reduction in emissions compared to landfill-to-energy disposal per kWh production."[5]

Here in California, Berkeley Law released a report earlier this year in response to a request from the Governor's office, looking at the merits and demerits of energy recovery options for wastes remaining after reaching the state's 75% recycling goal. The authors conclude that:

> "Harvesting these leftover materials as solid waste energy sources could provide multiple environmental benefits:
> – complementing intermittent renewable energy, such as wind and solar, to offset fossil fuel-based energy sources and associated greenhouse gas emissions; [and]
> – avoiding landfill emissions of methane (a potent greenhouse gas that is 28-34 times as strong as carbon dioxide over 100 years) by diverting wastes to energy, particularly organic wastes;"[6]

Especially relevant, given California's dependence on the cap & trade program in developing its state measures plan to meet the EPA's new Clean Power Plan requirements, is the U.S. EPA's treatment of WTE under those requirements. In contrast to a public comment made at the September Board meeting, WTE <u>is not</u> a covered source.[7] In fact, WTE is a compliance option for

reducing GHG emissions from electricity generation under the CPP: WTE facilities are considered zero carbon power under the CPP's accounting structure and new EfW facilities are eligible to generate Emission Rate Credits (ERCs).[8] Inclusion of WTE in California's cap and trade program would put it in direct conflict with the CPP.

Concurrently, new data show that the methane emitted by landfills and other sources is even more damaging than previously thought. Methane is the second largest contributor to global climate change.[9] A short lived climate pollutant (SLCP) increasingly under international scrutiny, methane has a much larger climate impact than previously reported and its atmospheric concentrations continue to rise (Figure 5).[10] According to the IPCC's 5th Assessment Report, methane is 34 times stronger than CO_2 over 100 years when all of its effects in the atmosphere are included and 84 times more potent over 20 years.[11]

In response to the growing concern about methane, CARB has developed a *Proposed Short-Lived Climate Pollutant Reduction Strategy* for California. The use of a the 20-year global warming potential of 72, nearly three times larger than the GWP used in CalRecycle's 2012 analysis, further underscores the benefits of EfW relative to landfilling:

> "The use of GWPs with a time horizon of 20 years better captures the importance of the SLCPs and gives a better perspective on the speed at which SLCP emission controls will impact the atmosphere relative to CO_2 emission controls."[12]

California's WTE facilities provide other important benefits as well. The facilities in Long Beach and Stanislaus are the only two locations in California permitted to destroy narcotics. Since 1988, SERRF has destroyed 11.2 million pounds of confiscated narcotics and drug paraphernalia for over 121 cities, counties, state, and federal law enforcement agencies. Stanislaus has processed over 216 tons of confiscated narcotics, firearms and drug paraphernalia in 2016 for over a 100 cities, counties, state and federal law enforcement agencies.

We recognize that the steps the California Legislature and CARB have taken to divert organics from landfilling will impact the composition of the waste stream that is managed in WTE. However, we do not think it is appropriate to presume the results of these actions, or their effect on the GHG benefits of WTE relative to landfilling. Most importantly, the benefits of WTE and other diversion technologies like anaerobic digestion and composting is not diminished by the success achieved in landfill diversion, particularly when these technologies will likely play the largest role in that success. Instead, the GHG benefits of these technologies should be evaluated against the baseline scenario without policy actions like SB 1383. Additionally, while SB1383 has set a target to reduce organics disposal by 50% by 2020 relative to 2014, it expressly forbids even the adoption of regulations that would implement that target until 2025.

We agree that a long-term strategy and solution is necessary. We only ask that in developing such a solution, CARB treat landfills and WTE on a level playing field based on their relative lifecycle GHG emissions for the waste streams they receive. Since our initial exemption was based on science and the objective for a level playing field, our ultimate inclusion in the cap and trade program should be assessed similarly. Such an assessment should be based on the latest available science and data, including those changes in the waste stream measured and observed as a result of successful implementation of organics diversion.

Thank you very much for the opportunity to comment. Please let us know if you have any additional questions and thank you for your work on this important issue.

Sincerely,

Michael E. Van Brunt, P.E.

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[1] CalRecycle. 2012. CalRecycle Review of Waste-to-Energy and Avoided Landfill Methane Emissions. Available at: http://www.calrecycle.ca.gov/Actions/PublicNoticeDetail.aspx?id=735&aiid=689

[2] See Table 5 of California Air Resources Board (2014) *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework, Appendix C – Focus Group Working Papers, Municipal Solid Waste Thermal Technologies*

[3] Center for American Progress (2013) Energy from Waste Can Help Curb Greenhouse Gas Emissions http://www.americanprogress.org/wp-content/uploads/2013/04/EnergyFromWaste-PDF1.pdf

[4] Third Way (2014) *Power Book*: *Energy from Waste*, http://powerbook.thirdway.org/filter-web-app/energy-from-waste, accessed November 26, 2014.

[5] Joint Institute for Strategic Energy Analysis (2013) *Waste Not, Want Not: Analyzing the Economic and Environmental Viability of Waste-to-Energy (WTE) Technology for Site-Specific Optimization of Renewable Energy Options*. http://www.nrel.gov/docs/fy13osti/52829.pdf

[6] Berkeley Law Center for Law, Energy & the Environment (2016) *Wasting Opportunities: How to Secure Environmental & Clean Energy Benefits from Municipal Solid Waste Energy Recovery*. https://www.law.berkeley.edu/research/clee/research/climate/waste-to-energy/

[7] 40 CFR 60.5845

[8] 40 CFR 60.5800

[9] See Figure SPM.5 of IPCC (2013) *Summary for Policymakers*. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., *et al.* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf

[10] World Meteorological Organization (2014), *WMO Greenhouse Gas Bulletin: The State of Greenhouse Gases in the Atmosphere Based on Global Observations through 2013*, 10, September 9, 2014. Available at: https://drive.google.com/file/d/0BwdvoC9AeWjUd0lPWXBMU1VmNGc/view

[11] The IPCC concluded that "it is likely that including the climate-carbon feedback for non-CO_2 gases as well as for CO_2 provides a better estimate of the metric value than including it only for CO_2." See p714 & Table 8-7 of Myhre, G. *et al.* (2013) *Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., *et al.* (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

[12] CARB (2016) *Proposed Short-Lived Climate Pollutant Reduction Strategy* https://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf