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January 11, 2010

Kevin Kennedy, Assistant Executive Officer
California Air Resources Board
1001 I Street
Sacramento, California 95814

Subject: Comment Letter – November 24, 2009 Preliminary Draft Regulation For A California Cap-And-Trade Program

Dear Mr. Kennedy:

Thank you for the opportunity to submit comments on the Preliminary Draft Regulation for a California Cap-and-Trade Program.

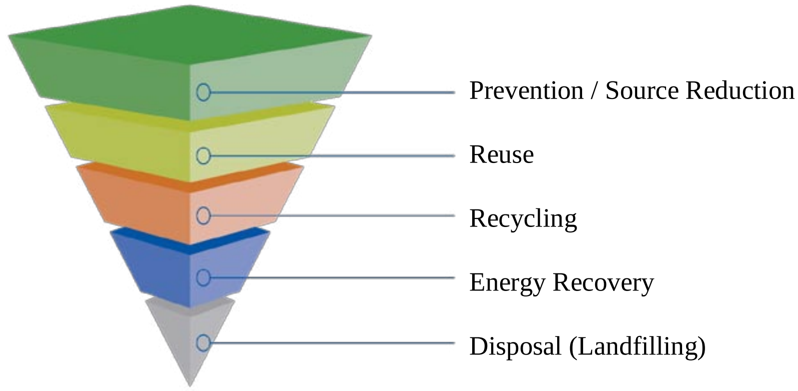
Covanta is a recognized owner and operator of energy from waste ("EfW") facilities, which convert municipal solid waste ("MSW") into steam and/or electrical energy. In California, we own and/or operate the Stanislaus EfW facility and the Southeast Resource Recovery Facility ("SERRF") in Long Beach. Both facilities are permitted as solid waste facilities.

EfW is an important technology that safely manages post-recycled municipal solid waste, provides a revenue stream to support recycling programs and generates clean renewable energy. The benefits of EfW as a net green house gas ("GHG") reducing source of renewable energy are widely recognized by the Nobel prize winning Intergovernmental Panel on Climate Change ("IPCC"), the United Nations Framework Convention on Climate Change ("UNFCCC"), the European Union and the European Environmental Agency, the Global Roundtable on Climate Change ("GROCC") convened by Columbia University's Earth Institute, and the U.S. Conference of Mayors.

Increasingly, waste is being viewed as a resource and an opportunity for reducing GHG emissions. The former US EPA Office of Solid Waste, which is now the Office of Resource Conservation and Recovery, reflects EPA's a new emphasis on sustainability and recovering value from former waste materials.

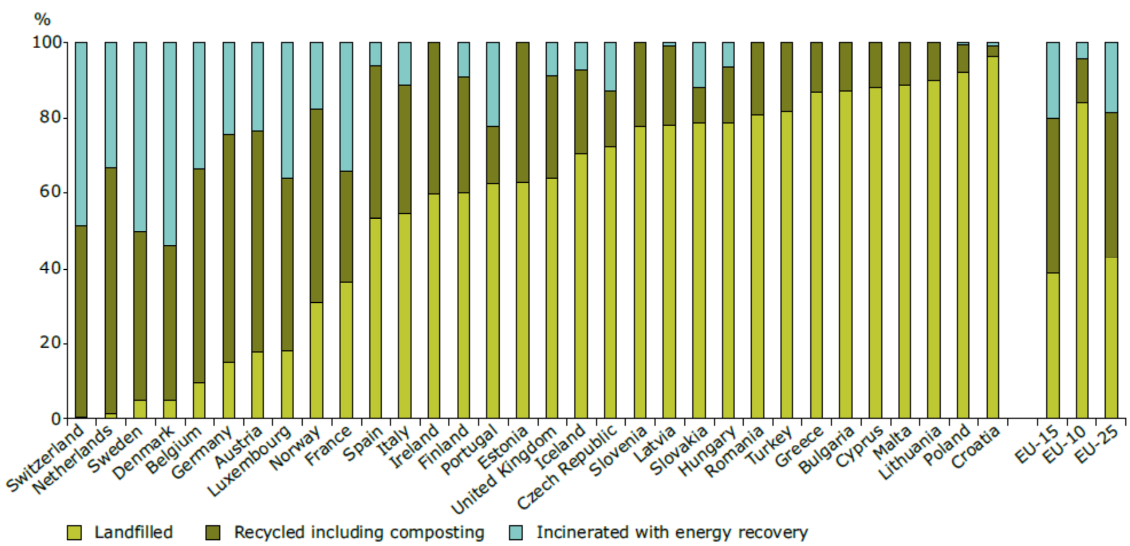
Both the European Union ("EU") and the U.S. EPA have developed waste hierarchies which give preference to recycling and energy recovery over waste disposal in landfills (Figure 1).

Figure 1. US EPA and European Union Waste Hierarchy



Covanta endorses the waste management hierarchy adopted by the European Union and US EPA and the new paradigm where MSW is considered a resource instead of waste when it is correctly managed. A review of available literature demonstrates that the MSW hierarchy illustrates the energy and greenhouse gas hierarchy in that activities at the top save the most energy while also reducing more GHG emissions. Unfortunately, MSW management in the United States is currently heavily weighted to the bottom of this hierarchy. Currently, over 260 million tons of MSW are landfilled annually, over 64% of the waste we generate. Nationally, we recycle and compost only 29% and recover energy from only about 7% of our waste. Even with a 53 percent statewide diversion rate, California still landfills over 43 million tons of MSW each year.

This contrasts sharply to the experience with EfW in other industrialized nations with more aggressive recycling and waste management policies. In Europe, recycling and EfW are viewed as complimentary as can be seen from the following figure. The countries with the highest national recycling rates also exhibit the greatest use of EfW.



Source: EEA-ETC/RWM calculation based on data from Eurostat, 2007d.

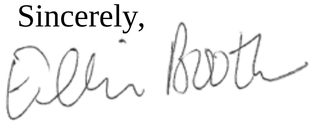
EfW contributes to the overall AB 32 program reduction goals by more effective means. In our comments, we will provide the following three reasons why we should be excluded from the cap.

- CARB's current categorization of EfW in the electric sector suggests that its primary function is electrical generation. EfW facilities are first and foremost solid waste disposal facilities that manage post-recycled MSW for the generation of electrical power; however, no community would build an EfW facility for only electrical power generation. Inclusion of EfW facilities in the electrical sector in CARB GHG inventory is leading to the erroneous treatment of EfW as an electrical generating unit.
- A life cycle assessment ("LCA") is necessary to understand the positive impact of EfW on reducing greenhouse gases. When CARB developed the LCFS under AB 32, it utilized LCA to determine the total benefits of certain fuel sources. Additionally, the recent CIWMB draft study uses LCA to determine appropriate waste management practices to reduce GHG emissions. When LCA methodology is used to evaluate EfW, it is demonstrated to be a GHG reduction technology with or without inclusion of avoided grid CO2e.
- Excluding EfW from a Cap and Trade Program is consistent with other national International regulatory schemes. There are international precedents that establish the GHG mitigation nature of EfW. The European Union is currently using the avoided landfill methane as a step towards meeting their Kyoto protocol reductions.

The three EfW facilities in California safely manage post-recycled municipal solid waste, provide a revenue stream to support recycling programs, generate clean renewable energy and reduce GHG emissions. An LCA adequately recognizes the GHG benefits of EfW. Inclusion of EfW in the CARB Cap and Trade Program ignores these benefits and will ultimately result in more GHG emissions generated in California.

Thank you for the opportunity to comment on this draft regulation. We look forward to the opportunity to discuss these points with you in more detail.

Sincerely,



Ellie Booth
Director, State Government Relations

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Attachment

Comment Letter
On November 24, 2009 Preliminary Draft Regulation
For A California Cap-And-Trade Program

Background

Table 1 provides an overview of the major process parameters for the two energy from waste (EfW) facilities operated by Covanta in California. This operating data is provided as the basis for CARB to fully understand the benefits offered by this sector and why EfW should not be included as a entity in the proposed Cap-and-Trade Program.

Table 1. GHG Mitigation Factors for Two EfW Facilities in California

2008 Information	**Stanislaus**	**Long Beach**
Reported Operations		
MSW/year	239,644	474,341
Electrical generation as MW-hrs	119,548	222,768
CO_2e emissions reported to CARB as tons	81,931	145,932
Avoided emissions as tons CO_2e		
Methane avoidance and avoided CO_2 from Ferrous and Aluminum recovery	-193,161	-390,143
Avoided grid electricity	-58,728	-109,435
Total Avoidance	-251,889	-499,578
Net calculation (CO_2e reported to CARB – Total Avoidance)	-169,958	-353,645

Each of the EfW facilities has been providing reliable disposal of MSW for a proximate 20 year period. The fuel that is converted to electrical power is post-recycled MSW that would have otherwise been landfilled. There are many advantages when comparing EfW to the alternative of landfilling, including:

- EfW generates ~ 10 times more electrical power per ton of MSW[1].
- EfW avoids all of the methane generation potential of MSW.
- EfW facilities provide recovery of ferrous and nonferrous metals.
- Ash residue is about 10 % of the volume of MSW, thereby extending the effective life of landfills.
- The close proximity of EfW to the point of generation avoids the need to long-haul MSW to distant landfills.
- EfW reduces greenhouse gas emissions when both direct and avoided emissions are included in a methodology such as a life cycle assessment (LCA).

[1] Kaplan, P.O, J. DeCarolis, and S. Thorneloe, 2009, Is it better to burn or bury waste for clean electricity generation? *Environ. Sci. Technology* 43 (6) pp1711-1717

Greenhouse Gas Emissions from EfW

The proposed Cap-and-Trade Program identifies point sources in California with at least 25,000 metric tons of GHG emissions annually as a point of regulation under a cap and trade program. The rule essentially treats each and every entity in the energy sector as a point source with CO_2 stack emission factors being determined solely by stack emissions, regardless of benefits realized in other sectors. This approach is not appropriate for EfW because it does not consider several facts. From a qualitative perspective;

- EfW facilities are primarily solid waste disposal operations. The communities did not sponsor EfW for electrical power production but instead decided to use this technology instead of a landfill for managing MSW that is not recycled. As a result, methane emissions are avoided.
- EfW facilities produce about 10 times more electrical power than a landfill gas to energy facility but no one would build an EfW facility for only power generation. The revenue from power generation helps to minimize the cost of the EfW facility but this revenue would never by itself subsidize construction and operation costs.

The "point source" only perspective inherent in CARB's mandatory reporting rule yields an erroneous conclusion that EfW facilities are net GHG sources because anthropogenic stack CO_2 emissions greater than 25,000 tons. This approach does not recognize that an EfW facility provides a reduction in GHG emissions by avoiding methane from landfills, avoiding electrical grid $CO_{2,}$ and saving emissions through the additional recovery of ferrous and non-ferrous metals. The results in table 1 are considered to be a conservative (i.e. low) estimate because they do not include:

- Methane emissions associated with production or transportation of fossil fuels,
- CO_2 associated with long hauling MSW to landfills, and
- Calculations are based on the 100 year methane Global Warming Potential (GWP) of 21. The Intergovernmental Panel on Climate Change (IPCC)'s Fourth Assessment Report, identified a 100-year methane GWP of 25 with subsequent research showing a 100-year GWP of 34 when its synergistic effects are included[2].

The calculations behind Table 1 are provided in Attachment 1, a preliminary version of which was provided to CARB at our December 21, 2009 meeting. As shown in both the Table above and Attachment 1, the net GHG emissions, with or without accounting for displaced grid electricity, are well below zero, substantiating exclusion of EfW from the Rule.

The avoided grid CO_2 factor is based on EPA's Emissions & Generation Resource Integrated Database for 2007 (eGRID 2007) non-baseload emission factor of 1,083 lbs CO_2 / MWh. The electrical energy generated from EfW is an important benefit and is an order of magnitude greater than the energy generated by landfill gas to energy operations when evaluated on a per ton of waste basis; however, we understand that CARB has reservations about recognizing displaced fossil-based grid electricity generation in a cap and trade program.

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[2] Shindell, Drew T., Greg Faluvegi, Dorothy M. Koch, Gavin A. Schmidt, Madine Unger, Susanne E. Bauer, Improved Attribution of Climate Forcing to Emissions, *Science*, **326**, 716-718.

CARB's concerns are in part due to the listing of EfW in the electricity sector. Understandably, CARB does not want all electrical generators to claim that they displace grid electricity. However, EfW is different than a traditional power plant on two accounts: 1) EfW facilities are built specifically to manage wastes remaining after recycling, not to generate electricity and 2) the anthropogenic emissions from a EfW facility are from the combustion of fossil-based wastes and reduce our consumption of, and dependence on, fossil fuels.

A win-win for California and the United States is to exclude EfW from the Cap-and-Trade Program as a mechanism to avoid methane emissions. While this would create the potential for EfW to become eligible as a source of carbon credits, that is not being proposed in this comment document. We are simply demonstrating that EfW should not be considered as a source of GHG emission due to a man-made decision to only look at stack emissions.

International precedents

The GHG mitigation characteristic of EfW has been recognized on an international basis with several examples being provided below:

EU Directive References

- The EU Emissions Trading Scheme (EU ETS) does not require a permit for EfW facilities (Directive 2003/87/EC).
- The "Landfill Directive" recognizes EfW as a viable technology to reduce landfilling of biodegradable waste and to reduce negative effects including GHG emissions (Directive 1999/31/EC).
- The "Packaging and Packaging Waste Directive" recognizes recycling and EfW as recovery (Directive 94/62/EC).
- The 5 stage waste hierarchy includes; 1) prevention, 2) re-use, 3) recycling, 4) other recovery with recovery including EfW and 5) disposal.

Intergovernmental Panel on Climate Change (IPCC)

- Waste incineration with energy recovery is a key GHG mitigation technology (AR4, p60).
- GHG generation from management of MSW can be largely avoided through controlled aerobic composting and thermal processes such as incineration with energy recovery (4^{th} Assessment Report (AR4), p588).
- Incineration reduces the mass of waste and can offset fossil fuel use; in addition, GHG emissions are avoided, except for the small contribution from fossil carbon (AR4, p601).

Kyoto - Clean Development Mechanism (CDM)

- EfW is included in the approved CDM methodology "Avoided emissions from organic waste through alternative waste treatment processes," (AM0025,v 11).

The EU ETS is the world's largest trading scheme and serves as an excellent example for how EfW can be managed in a cap and trade program. Anthropogenic CO_2 emissions from EfW facilities are reported for inventory purposes (same as CARB); however, these same emissions are exempt from the cap (different than CARB). EU Member States are using methane reduction attributable to decreased landfilling as progress towards meeting their respective Kyoto reduction targets.

If the CARB Cap-and-Trade Program was implemented as proposed, municipalities and counties in the United States could not realize the same opportunity as the EU. Exempting EfW from the Cap does not automatically qualify the operation for carbon credits but it would at least put the United States on the same playing field as the EU.

Attachment 1. Energy-from-Waste (EfW) Life Cycle Calculation

Key Default Factors & Inputs					**Source / Notes**
Lo, methane generation potential (m^3 CH_4 / t MSW)	100				US EPA GHG Inventory Default: AP-42 & LandGEM
Soil Oxidation Factor (%)	10%				CARB Default, Landfill CH_4 Emissions Methodology
Global Warming Potential (GWP)	21				CARB GHG Reporting Rule, IPCC SAR (1995)
1st Order Decay Rate Constant, k (/ year)	0.02				CARB Default (<20" precip. / yr)
Time from placement of waste to collection of LFG (years)	1.5				Estimate based on CARB Early Action Measure
Facility Information	**Stanislaus**		**Long Beach (SERRF)**		
MSW Throughput (tons)	239,644		474,341		Facility Operating Records
Ferrous Recovery (tons)	4,794		13,835		Facility Operating Records
Non-Ferrous Recovery (tons)	0		0		Facility Operating Records
Anthropogenic GHG Emissions (t CO_2e)	81,931		145,932		2008 CARB Mandatory GHG Reporting
Steel recycling GHG emission savings (t CE / ton steel)	0.49		0.49		EPA Waste Management GHG Report (2006)
Aluminum recycling GHG emission savings (t CE / ton Al)	3.70		3.70		EPA Waste Management GHG Report (2006)
Landfill Gas Collection - Inputs					
Collection system efficiency	75%		75%		CARB Default, Landfill CH_4 Emissions Methodology
Destruction Efficiency	99%		99%		CARB Default, Landfill CH_4 Emissions Methodology
# of Years of LFG Collection	30	45	30	45	
Landfill Methane Collection & Emissions - Results					
Methane generated (t CH_4)	14,460	14,460	28,622	28,622	
Methane Collected (t CH_4)	4,749	6,246	9,399	12,362	
Oxidizing through soil cap (t CH_4)	971	821	1,922	1,626	
Methane Combusted (t CH_4)	4,701	6,183	9,305	12,239	
Methane Emitted (t CH_4)	8,788	7,456	17,395	14,757	
Avoided GHG Emissions (without Displaced Grid Electricity)					
Avoided Landfill Methane (t CO_2e)	-184,548	-156,568	-365,286	-309,903	
Ferrous & Non-Ferrous Recycling (t CO_2e)	-8,613	-8,613	-24,857	-24,857	
Net GHG w/o Avoided Grid Electricity (t CO_2e)	**-111,230**	**-83,250**	**-244,211**	**-188,828**	
Avoided GHG Emissions (Full Life Cycle Calc.)					
eGRID Non-Baseload Emission Factor (lbs CO_2 / MWh)	1,083		1,083		eGRID 2008 (2005 data)
Net electrical generation (MWh)	119,548		222,768		
Avoided Grid Electricity (t CO_2e)	-58,728		-109,435		
Net GHG w/ Avoided Grid Electricity (t CO_2e)	**-169,958**	**-141,978**	**-353,645**	**-298,263**	
tons CO_2e / ton MSW	-0.78	-0.65	-0.82	-0.69	

Units: ton = short ton, t = metric tonne