Barron County Waste-to-Energy and Recycling Facility (Almena, Wisconsin)

Bristol Resource Recovery Facility Operating Committee (Bristol, Connecticut)

Ecomaine (Portland, Maine)

City of Harrisburg, Pennsylvania

City and County of Honolulu, Hawaii

City of Huntsville Solid Waste Disposal Authority (Huntsville, Alabama)

County Sanitation Districts of Los Angeles County (Whittier, California)

Kent County, Michigan

Lancaster County Solid Waste Management Authority (Lancaster, Pennsylvania)

Marion County, Oregon

Mid-Maine Waste Action Corp. (Auburn, Maine)

Northeast Maryland Waste Disposal Authority (Baltimore, Maryland)

Pollution Control Financing Authority of Camden County (Camden, New Jersey)

Spokane Regional Solid Waste System (Spokane, Washington)

Union County Utilities Authority (Rahway, New Jersey)

Wasatch Integrated Waste Management District (Layton, Utah)

York County Solid Waste Authority (York , Pennsylvania)

** In coordination with the U.S. Conference of Mayors/ Municipal Waste Management Association*

LOCAL GOVERNMENT COALITION FOR RENEWABLE ENERGY

January 22, 2010

Via E-mail

Kevin Kennedy, Assistant Executive Officer
Lucille Van Ommering, Manager
Office of Climate Change
California Air Resources Board
1001 I Street
Sacramento, CA 95812

Re: **Waste-to-Energy and ARB's Cap-and-Trade PDR**

Dear Mr. Kennedy and Ms. Van Ommering:

This letter (together with the attached support documents) is submitted by the Local Government Coalition for Renewable Energy (Coalition), an alliance of local government entities that own state of the art waste-to-energy (WTE) facilities. Working in coordination with the U.S. Conference of Mayors/Municipal Waste Management Association, the Coalition is actively engaged in federal energy and climate change legislation. That is the context for this letter, which concerns the treatment of WTE under the preliminary draft regulation (PDR) the Air Resources Board has proposed to implement California's cap-and-trade law, the Global Warming Solutions Act (AB 32). Although WTE is the more capital-intensive alternative for managing the non-recyclable portion of municipal solid waste (MSW), the Coalition's member communities chose WTE because in many cases it is the best environmental solution for managing non-recyclable MSW, including mitigation of greenhouse gas (GHG) emissions. We understand that a significant factor in ARB's tentative decision (in the PDR) to regulate GHG emissions from WTE facilities was the view that WTE should be treated on the same basis as other combustion sources that generate electricity and exceed the PDR's annual 25,000-ton CO_2e emissions threshold. But that point needs to be considered in the context in which WTE is employed, and that context provides compelling reasons to differentiate WTE from other combustion sources of electricity. Moreover, while none of the other electric power categories regulated under the PDR will be disadvantaged by recognizing the environmental benefits that distinguish WTE, failure to recognize those distinctions will discourage WTE and simultaneously encourage more landfilling. In that regard, the U.S. Environmental Protection Agency (EPA) has recently advised congressional staff that WTE yields "significant reductions of CO_2" and has a "better [GHG] profile than landfilling with

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energy recovery." *See* Attachment 1, slides 6, 8 and 25-26.[1] The PDR is difficult to reconcile with those facts because it will increase the cost disparity that already provides significant encouragement to landfilling in California relative to WTE. That, in turn, will mean more waste management sector GHG emissions in California rather than less. These and other related points are discussed below, including the fact that California could reduce its annual GHG emissions by more than 12,000,000 tons if the state utilized WTE in a manner comparable to a number of European Union member states.[2]

Life-Cycle GHG Emissions Are Lower from WTE than Landfills with Energy Recovery. Using life-cycle analysis, EPA's solid waste management planning methodology shows that WTE reduces GHG emissions in three ways by: (i) generating electricity and/or steam, which reduces GHG emissions from fossil fuel sources; (ii) avoiding the potential methane emissions that would result if the same waste is landfilled; and (iii) recovering ferrous and nonferrous metals which, in turn, avoids the additional energy consumption that would be required if the same metals were produced from virgin ores. Attachment 2, pp. 1711-14; *see also* Attachment 3, Part B, Summary and pp. B-23 to B-32. EPA's analysis shows that WTE yields the best results (compared to landfills) on various bases, including maximum energy recovery and lower GHG emissions. Attachment 2, pp. 1711-14, 1716-17. Consistent with EPA's findings, other scientific and engineering analyses show that WTE reduces GHG emissions by 0.5 - 1.3 tons of CO_2e per ton of MSW combusted rather than landfilled – and the low end of that range assumes a modern landfill with landfill gas recovery-reuse and a local electrical grid of relatively low carbon intensity. Attachment 4, p. 1719; Attachment 2, p. 1711.[3] On a national basis, and using an average of 1 ton of CO_2e avoided per ton of MSW processed, diverting to WTE facilities just half of the MSW currently sent to U.S. landfills would reduce CO_2e emissions by 130 million tons. *See The State of Garbage in America*, http://www.jgpress.com/archives/2008_12.html (*BioCycle*, Dec. 2008) (select link entitled "Click here for pdf containing tables from this article" and scroll to Table 3; calculation based on the approximately 260 million tons of MSW landfilled in the U.S. in 2006).

WTE's significant role in mitigating GHG emissions is widely recognized. For example, WTE's mitigation of GHG impacts is expressly recognized by the Intergovernmental Panel on Climate Change (IPCC), a leading forum of independent scientific experts. The IPCC

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1 Attachment 1 is the PowerPoint program for the keynote address presented by Rick Brandes, Chief, Energy Recovery Branch, Office of Resource Conservation and Recovery, USEPA, at the 17th Annual North American Waste-to-Energy Conference, May 18, 2009, Chantilly, Virginia.

2 Although the Coalition members employ mass-burn WTE technology, advances in waste conversion technology will continue to evolve and the points noted below can be expected to apply to those emerging technologies as well, insofar as they are potential sources of GHGs.

3 Similarly, the World Economic Forum's January 2009 report, *Green Investing – Towards a Clean Energy Infrastructure*, recognizes WTE as one of eight "key renewable energy sectors" that is "particularly promising in terms of . . . abatement potential" for carbon emissions. Attachment 5, p. 27.

emphasizes WTE's dual benefits of (i) displacing fossil fuel combustion and (ii) avoided landfill methane emissions. Attachment 6, p. 601. Similarly, the Kyoto Protocol's Clean Development Mechanism approves WTE as a source of tradeable GHG emission reduction credits that displaces electricity from fossil fuels and avoids landfill methane emissions from waste. Attachment 7, pp 1-3. And the February 20, 2007 joint statement of Columbia University's Earth Institute Global Roundtable on Climate Change (GROCC) identifies WTE as an important means to reduce carbon emissions from fossil fuel-based electricity and methane emissions from landfills. Attachment 8, pp. 9, 11 (the signatories to GROCC's joint statement range from Dr. James Hansen, NASA Goddard Institute for Space Studies, to Environmental Defense). Moreover, as the Chief of EPA's Energy Recovery Branch recently emphasized, "[i]f you want to have an impact on greenhouse gas mitigation, focus on MSW [because there's] nationally significant energy available from MSW combustion [and] even if you have >50% recycling, you still have a significant amount of energy to recover." Attachment 1, slide 19.[4]

As noted above, one of the three ways in which WTE reduces GHG emissions is by avoiding combustion of fossil fuel to generate electricity and/or steam. *See* Attachment 2, pp. 1711-14. The Coalition has been advised that the policy rationale for ARB's decision not to recognize that mitigating factor inherent in WTE is concern that operators of other types of electric power generation, such as combined cycle power plants, could make a similar argument. That rationale fails to account for several key factors. First, while utilities can choose to avoid fossil fuels, disposing of garbage is not an option – it's a fact of life. Thus, even with California's commendable recycling efforts, the need to dispose of MSW will continue in California for the foreseeable future (and as we discuss below, WTE complements recycling efforts in California and will continue to do so under future diversion requirements). In addition, unlike the process that underlies an electric utility's (or independent power producer's) decision to construct a new power generation facility, the factor that is first and foremost in a community's decision-making when it evaluates possible construction of a WTE facility is not production of electricity, but rather the need to manage the community's non-recyclable MSW in the most environmentally protective manner possible. WTE comes into play thereafter because it is the best option for managing the community's non-recyclable waste while at the same time maximizing environmental protection. In that regard, no one would ever build a WTE facility with the primary motivation of generating electricity – the cost per kilowatt hour of installed capacity is far higher (sometimes by an order of magnitude) than any of the alternatives.[5] Given

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[4] Although a largely untapped resource in the U.S. (only 6.9% of our MSW is directed to WTE while 64.5% is landfilled), WTE has far greater use in many other nations that are at least equally conscientious stewards of the environment. *See The State of Garbage in America*, http://www.jgpress.com/archives/2008_12.html (*BioCycle*, Dec. 2008); Attachment 5, p. 601. This is not to suggest that landfills are not a necessary component of waste management infrastructure, which they are (each of the Coalition members rely on landfills as a component of their integrated waste management systems). But reliance on landfilling should be substantially reduced.

[5] The Department of Energy's most recent data for central station electric power generation technology alternatives (other than WTE) show installed costs per kilowatt of capacity (in 2007 dollars) ranging from $604 for conventional gas turbines to $5750 for solar-photovoltaic. *See* http://www.eia.doe.gov/oiaf/aeo/assumption/pdf/tbl8.2.pdf. In contrast, under the contract for the

(*Continued*)

these facts, the twofold question becomes: (i) will landfilling or WTE processing of California's non-recyclable MSW provide better environmental protection, including lower GHG emissions; and (ii) will the policy choices reflected in the PDR encourage more landfilling in California relative to WTE? The answers are clear: while science and engineering demonstrate that WTE is better for the environment than landfilling, the PDR will have the effect of encouraging more landfilling and discouraging WTE.[6]

Finally, although California's statewide diversion rate has been increasing, disposal tonnage continues to be quite substantial, e.g., 35,500,000 tons for 2008. *See* http://www.calrecycle.ca.gov/LGCentral/GoalMeasure/DisposalRate/2008/default.htm. Less than 2.3% (approximately 800,000 tons) of that amount was processed at California's WTE facilities for energy recovery, however, and the balance was disposed in landfills. Although landfill methane emissions represent a small percentage of California's GHG inventory (and are subject to demanding state regulation), reducing reliance on landfilling will have a significant impact on California's overall GHG emissions profile. For example if California were to achieve the 23% WTE rate of the EU15 (the European Union's reliance on WTE continues to increase),[7] the corresponding reduction in landfilling would reduce California's annual GHG emissions by over 12,000,000 metric tons of CO_2e on a life cycle basis (that figure relies on California-specific data for avoided landfill methane, and also reflects the GHG reduction benefits of WTE-produced electricity, i.e., displacing fossil energy, as well as WTE-facilitated recovery of ferrous and non-ferrous metals). The 12,000,000 metric-ton GHG reduction would be equivalent to removing more than 2,000,000 automobiles from California's roads and highways.

WTE Has Numerous Additional Environmental Benefits. Aside from lower GHG emissions, WTE has many additional environmental benefits that further underscore WTE's advantages over landfilling. In that regard, WTE is a very clean and reliable energy source. Reflecting state and federal requirements for the most advanced emissions control technology, WTE emissions have plummeted since the late 1980's (e.g., annual WTE emissions of dioxin have decreased by a factor of 1,000 to less than 12 grams), Attachment 4, p. 1722, and WTE emissions are lower than landfill emissions for 9 of 10 major air pollutants. Attachment 3, p. B-30. As a result, EPA recognizes WTE as a renewable energy source that "produce[s] 2800 megawatts of electricity with less environmental impact than almost any other source of electricity." *See* http://www.energyrecoverycouncil.org/userfiles/file/epaletter.pdf. Moreover, EPA's hierarchy for "integrated waste management" recommends waste combustion with energy

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Northeast Maryland Waste Disposal Authority's new WTE facility in Frederick County, Maryland, the cost per kilowatt of installed generating capacity will be $7,200.

[6] That encouragement is the consequence of several factors, including the additional cost burden the PDR would create for WTE relative to landfilling due to the CO_2e allowance purchase requirement the PDR would impose on WTE but not landfills.

[7] *See* http://epp.eurostat.ec.europa.eu/portal/page/portal/waste/data/sectors/municipal_waste (after selecting the above-referenced link, scroll down to section headed "Additional Data and Statistics on Municipal Waste," and select both "Municipal waste generated (total), 1000 tonnes (update 09/09)" and "Municipal waste incinerated, 1000 tonnes (update 09/09)."

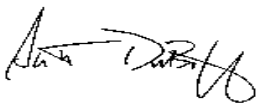
recovery over landfilling (as does the European Union). *See Municipal Solid Waste in the United States: 2007 Facts and Figures*, p. 11 (available at http://www.epa.gov/osw/nonhaz/municipal/pubs/msw07-rpt.pdf). In addition, WTE communities outperform non-WTE communities in recycling, with recycling rates that are typically at least 5 percentage points above the national average (using a very conservative calculation) and in some cases lead the Nation in recycling. Attachment 9, pp. ii, 8.[8] Although recycling rates are driven by state recycling policies that apply equally to WTE and non-WTE communities, WTE communities' recycling rates are generally higher than non-WTE communities in the same state. *Id.*, p. 11 and Figure 3.

Finally, WTE's efficiency and reliability are clear as well. WTE recovers approximately 600 kWh of electricity per ton of waste, which is approximately 10 times the electric energy recoverable from a ton of landfilled waste. Attachment 2, p. 1714; *see also* Attachment 3, p. B-29. WTE is also the paradigm example of distributed, baseload generation that serves nearby load without the need for new long-distance transmission lines – WTE is available at all times (24 hours a day and 7 days each week) and is unaffected by days that are cloudy or calm. Not surprisingly, The Nature Conservancy ranks WTE as one of the most environmentally protective alternative energy sources. *See* Attachment 10, p. 24.

Recap and Conclusion. In short, the fact that the PDR would regulate other electric generation sources of GHG emissions (i.e., those with CO_2e emissions above the PDR's annual 25,000-ton threshold) is not a sound reason to subject WTE facilities to the cap-and-trade regulation. None of the other electric power categories regulated under the PDR will be disadvantaged by recognizing the environmental benefits that distinguish WTE, but the failure to recognize those benefits will discourage WTE and simultaneously encourage more landfilling, which, in turn, will mean more waste management sector GHG emissions in California rather than less.

The Coalition appreciates the opportunity to submit these comments. Please feel free to call either of the undersigned with any questions regarding these matters.

Respectfully submitted,



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[8] The WTE communities' recycling rate omits several recyclables that the national rate includes, and the national rate is a composite that includes WTE communities – the more accurate comparison would exclude WTE communities in calculating the national rate.