

**LOCAL GOVERNMENT COALITION FOR  
RENEWABLE ENERGY**

September 27, 2011

**Via Electronic Submission**

Clerk of the Board  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

**Re: Waste-to-Energy and the Air Resources Board's Proposed  
Rulemaking to Consider the Adoption of a Proposed California  
Cap on Greenhouse Gas Emissions, etc. – September 12, 2011**

Dear Sir or Madam:

This letter responds to the above-referenced notice concerning further revision to the Board's proposed regulations implementing California's cap-and-trade law, the Global Warming Solutions Act of 2006 (AB 32), and is submitted on behalf of the Local Government Coalition for Renewable Energy, a broad 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 various WTE-related state and federal regulatory and legislative matters, and has submitted comments to the Board regarding the proposed cap-and-trade regulations on several previous occasions (e.g., this past August and in December, 2010).

The reason for this letter is the Coalition's serious concern regarding the Board's changed position in which WTE facilities will now be subject to the proposed regulations' CO<sub>2</sub>e allowance purchase requirement, which is contrary to the Board's previous recognition that imposing such a requirement on WTE facilities would increase waste diversion to landfills and result in more rather than fewer greenhouse gas (GHG) emissions in California. *See Notice of Availability of Cap-and-Trade Discussion Draft and Workshop*, July 8, 2011. While the Board's previous conclusion was "based on staff's analysis of the potential economic impacts created by a cap-and-trade program and the potential increase in methane emissions resulting from diversion of waste to landfills even after implementation [by California landfills] of [ARB's] early action measures," *id.* at 15, we understand (based on discussion with Coalition member County Sanitation Districts of Los Angeles County) that Board staff are now suggesting two alternative rationales to justify the Board's about-face. The first rationale is a hybrid approach that uses the CALMIM model's hypothetical oxidation rate for uncollected landfill methane, and, based on the Board's analysis, typically approaches 100% oxidation. The second rationale was developed due to the first rationale's

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acknowledged deficiencies and is based on the assumption that landfill methane collection systems will continue to operate for up to 260 years post-closure, which is the result that ARB's analysis yields for the Sanitation Districts' Puente Hills Landfill. With all due respect, both of these suggested rationales are invalid as well as contradictory. Moreover, the administrative record is otherwise completely lacking any justification for the Board's change of position regarding WTE facilities. Additional discussion of these points follows.

**1. The CALMIM Model's 100% Oxidation Rate Is Irrational**

A life cycle comparison of the GHG impacts of landfills vs. WTE requires, among other things, an estimate of the landfill methane that would result if a given quantity of waste is diverted from WTE processing to landfilling, and one component of that estimate is the amount of methane that is oxidized within the landfill cover and never released to the atmosphere. The widely accepted standard value for such oxidation (in fact, the method used by ARB in its own regulations for control of landfill methane) is 10% oxidation. *See California Regulations on Methane Emissions from Municipal Solid Waste Landfills*, 17 C.C.R. §§ 95460, *et seq.* However, at the 11th hour ARB changed course and decided not to use the 10% standard value. Instead, the Board is relying on its new hybrid approach that uses the CALMIM model to determine fugitive methane emissions post-closure with no landfill gas collection system in operation. Aside from the fact that the CALMIM model is apparently still in development and has a number of technical problems that require correction, CALMIM (as used by ARB to compare life cycle GHG impacts of landfills vs. WTE) yields oxidation rates that typically approach 100%. Such hypothetical oxidation rates cannot, however, be reconciled with the 10% oxidation rate that is the well established regulatory default value for oxidation as methane migrates through a landfill to the surface. In fact, if such oxidation rates were valid, landfill methane collection systems would be unnecessary and serve no purpose.

Furthermore, as already noted, ARB itself relies on the 10% oxidation rate in its recent (June 2010) final regulations, *supra*, for control of landfill methane emissions. The ISOR (Initial Statement of Reasons) prepared for those regulations expressly relies on a "10 percent oxidation [rate] for the uncollected landfill gas as it migrates through the landfill cover into the air." ARB, *Staff Report: Initial Statement of Reasons for the Proposed Regulation to Reduce Methane Emissions from Municipal Solid Waste Landfills* (May 2009), p. C-13 (hereafter "*May 2009 ISOR*"). ARB's explanation for relying on the 10% oxidation rate bears repeating here:

[G]iven the current lack of rigorous, scientifically-based measurement data, staff chose to use the default values established by USEPA. As better data become available through current and future research, staff will update the collection efficiency and oxidation factors for estimating landfill gas emissions.

*Id.* Needless to say, nothing in the administrative record suggests that "better data" is now available to justify departing from the 10% standard value for oxidation, on which USEPA itself continues to rely. *See* USEPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2009*, p. 8-4 ("The amount of CH<sub>4</sub> [methane] oxidized by the landfill cover at both municipal and

industrial landfills was assumed to be ten percent of the CH<sub>4</sub> generated that is not recovered. (IPCC 2006, Mancinelli and McKay 1985, Czepiel et al. 1996).” USEPA’s 10% oxidation rate is well supported in scientific literature, and the published research USEPA cites to support its position includes the following: The Intergovernmental Panel on Climate Change, *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (H.S. Eggleston et al. eds., 2006) (hereafter “*IPCC Guidelines*”); R. Mancinelli and C. McKay, *Methane-Oxidizing Bacteria in Sanitary Landfills*, in *Proceedings First Symposium on Biotechnological Advances in Processing Municipal Wastes for Fuels and Chemicals* 437-450 (A. Antonopoulos, ed. 1985); and P. Czepiel et al., *Quantifying the Effect of Oxidation on Landfill Methane Emissions*, 101 *Journal of Geophysical Research*, 16721-16730 (1996). Significantly, the *IPCC Guidelines*’ default value for oxidation of landfill methane is zero. *IPCC Guidelines* at 3.15.<sup>1</sup>

In addition, the Coalition would be remiss in failing to note ARB’s own recent description of the reasons why its regulations for control of landfill methane emissions are necessary:

Why is ARB proposing to control methane emissions from MSW landfills?

In California, MSW landfills are the second largest anthropogenic source of methane and are an important source of GHG emissions that must be reduced to meet the goals of AB 32. The organic portion of solid waste disposed in MSW landfills decomposes to form landfill gas. Approximately 1.2 billion tons of solid waste has accumulated in the State’s landfills with an additional 40 million tons being added each year. In 1990, GHG emissions from MSW landfills were estimated to be about 6.3 MMTCO<sub>2</sub>E; in 2000 the GHG emission level dropped to 5.8 MMTCO<sub>2</sub>E and returned to 6.3 MMTCO<sub>2</sub>E in 2006. These emissions are forecasted to increase to approximately 7.7 MMTCO<sub>2</sub>E in 2020. Emissions from MSW landfills represent about 1 percent of the statewide greenhouse gas inventory. If not captured, combusted, or treated in control systems, landfill gas can either be released into the atmosphere as fugitive emissions or migrate underground to cause groundwater contamination.

*May 2009 ISOR*, p. ES-2. At the risk of belaboring the obvious, the landfill methane oxidation rate that results from ARB’s use of the CALMIM model typically approaches 100%, and that rate is flatly contradicted by ARB’s own findings in connection with the agency’s recent landfill

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<sup>1</sup> As the *IPCC Guidelines* explain:

The default value for oxidation factor is zero [internal citation omitted]. The use of the oxidation value of 0.1 is justified for covered, well-managed SWDS [landfills] to estimate both diffusion through the cap and escape by cracks/fissures. The use of an oxidation value higher than 0.1, should be clearly documented, referenced, and supported by the data relevant to national circumstances.

*Id.* at 3.15.

emissions control regulations. If the methane oxidation rates yielded by the CALMIM model were valid, ARB's regulations for control of landfill methane would be completely unnecessary and an unlawful exercise of agency authority.

## **2. The Assumption that Landfill Methane Collection Systems Will Operate for 260 Years Post-Closure is Totally Arbitrary**

The second of the two alternative (and contradictory) rationales that we understand was suggested by Board staff is the assumption that landfill methane collection systems will continue to operate for 260 years post-closure. If that were true, a significant portion of the landfill methane that ARB had previously recognized as being released to the atmosphere post-closure would instead be captured and controlled, and the relative GHG impact of landfills vs. WTE would change accordingly. The 260-year assumption is, however, arbitrary in the extreme and contradicts reality.

In that regard, USEPA and ARB regulations allow landfill gas collection systems to shut down permanently if certain performance criteria are met. *See generally* 40 C.F.R. § 60.752(b)(2)(v); 17 C.C.R. § 95467. Additional regulations require landfill operators to provide funding (or alternative financial assurance) to satisfy post-closure maintenance obligations. For example, USEPA's regulations require post-closure care for 30 years, *see* 40 C.F.R. § 258.61(a), and the corresponding financial assurance requirement is keyed to the same period. *See id.* § 258.72(a). Financial assurance regulations adopted in 2009 by ARB's sister agency, CalRecycle (the Department of Resources Recycling and Recovery), are similar. They require landfill operators to submit a 30-year financial assurance plan at the time of closure, which can be reduced to a 15-year financial assurance obligation by participating in CalRecycle's Proactive Monitoring Program. *See* 27 C.C.R. §§ 21090, *et seq.*; 27 C.C.R. § 22211.<sup>2</sup> In addition, CalRecycle's regulations require landfill operators to establish a separate financial assurance mechanism for non-water quality post-closure corrective actions, which would include landfill gas migration. *Id.*, § 22101. Simply put, these federal and state regulations address long-term, post-closure care of landfills, including methane collection systems, as well as reasonably foreseeable corrective actions, and nowhere do they contemplate a requirement for post-closure operation of methane collection systems for anything approaching 260 years. Nor is there any requirement that landfill operators set aside the massive amount of funding that would be necessary to satisfy such a daunting requirement.

The absence of such requirements is quite understandable – they would have no justification, environmental or otherwise. Moreover, if such multi-century post-closure care and financial assurance requirements were to be established, landfill tipping fees would soar, with increases many times current levels. To nevertheless assume, in the face of these facts, that landfill methane collection systems will have 260 years of post-closure operation is completely arbitrary.<sup>3</sup>

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<sup>2</sup> CalRecycle had considered increasing post-closure financial assurance beyond the current 30-year factor, and decided against that alternative. *See* CalRecycle, *Initial Statement of Reasons: Long-Term Postclosure Maintenance, Corrective Action and Financial Assurances* 15 (2009).

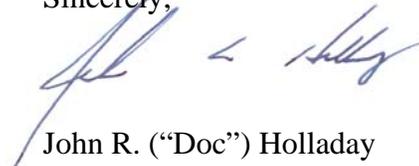
<sup>3</sup> ARB's assumption of 260 years of post-closure operation of methane collection systems also contradicts well-established recognition (developed in the context of nuclear waste management) that

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In sum, nothing in the administrative record supports ARB's changed position in which WTE facilities would be subject to the CO<sub>2e</sub> allowance purchase requirement under the Board's proposed cap-and-trade regulations, and the result of such action will clearly be adverse for the environment, as explained in the comments the Coalition submitted to the Board last month (a copy of the Coalition's August 11 comment letter is attached).<sup>4</sup> Accordingly, the Coalition respectfully submits that the regulations exclude WTE facilities from the proposed CO<sub>2e</sub> allowance requirement. While the exclusion should, at a minimum, apply to California's existing WTE facilities, in the interest of achieving a significant future reduction in waste management sector GHG emissions in California, the same policy should also apply prospectively to new WTE capacity.

The Board's consideration of the Coalition's comments on these matters is appreciated. If you have questions regarding any of the points noted above, please call me (at 256-880-6054 – I am the Executive Director of Coalition member Solid Waste Disposal Authority of Huntsville, Alabama, and serve as an informal chairperson for the Coalition), or our counsel (Scott DuBoff and Matt Schneider, at 202-965-7880).

Sincerely,



John R. ("Doc") Holladay

cc: Coalition Members

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societal "reliance on 'active institutional controls' (such as controlling access to a disposal site, performing maintenance operations, or cleaning up releases)" is limited to no more than 100 years after disposal inasmuch as "no contribution from any of the active institutional controls can be projected to prevent or limit potential releases of waste from a disposal system" beyond the 100-year limit. See USEPA, *Final Rule: Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes*, 50 Fed. Reg. 38066, 38080 (1985).

<sup>4</sup> To avoid duplication, we have not resubmitted the series of attachments that accompanied the Coalition's August 11 comment letter.

# **ATTACHMENT**

## LOCAL GOVERNMENT COALITION FOR RENEWABLE ENERGY

August 11, 2011

### Via Electronic Submission

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California Air Resources Board  
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### **Re: Waste-to-Energy and the Air Resources Board's Proposed Rulemaking to Consider the Adoption of a Proposed California Cap on Greenhouse Gas Emissions, etc. – July 25, 2011**

Dear Sir or Madam:

This letter responds to the above-referenced notice concerning the Board's proposed regulations implementing California's cap-and-trade law, the Global Warming Solutions Act of 2006 (AB 32), and is submitted on behalf of the Local Government Coalition for Renewable Energy, a broad 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 various WTE-related federal legislative and regulatory matters. The Coalition has submitted previous comments (in February and December, 2010) concerning the Board's proposed regulations to implement AB 32, and has a strong and continuing interest in this subject. As the Coalition's earlier comments explained, imposing a CO<sub>2</sub>e allowance purchase requirement on WTE facilities would be the wrong choice on both policy and legal bases, and would result in more rather than less greenhouse gas (GHG) emissions in California. The Board recognized that fundamental reality in its July 8, 2011 *Notice of Availability of Cap-and-Trade Discussion Draft and Workshop*, explaining that such a requirement for WTE facilities would be counterproductive

because including emissions from these facilities in cap-and-trade would cause statewide GHG emissions to increase as a result of diversion of waste to landfills. This exclusion is based on staff's analysis of the potential economic impacts created by a cap-and-trade program and the potential increase in methane emissions resulting from diversion of waste to landfills even after implementation [by California landfills] of [CARB's] early action measures.

We commend the Board's straightforward recognition that an allowance purchase requirement for WTE facilities would be the wrong choice for California, and strongly encourage the Board to implement that position in the new regulations.

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In considering this matter, a point addressed by the Board in the Initial Statement of Reasons (ISOR) that accompanied its October 28, 2010 proposal bears particular emphasis. More specifically, a key underlying principle for the proposed cap-and-trade regulations is the importance of “establish[ing] the price signal needed to drive long-term investment in cleaner and more efficient types of fuels and energy resources.” ISOR at I-4; *see also id.* at ES-1 (same). While that principle is sound as a general matter, it cannot be applied in rote form to WTE facilities given that their fundamental purpose (*raison d’etre*) is to process a specific type of material or “fuel” – municipal solid waste (MSW) – to the extent such MSW is not otherwise recycled. In other words, fuel-switching is not an option. Moreover, while other entities that generate electricity have the option to choose among alternative fuels and energy sources, disposing of garbage is not an option – it’s a fact of life. In addition, although WTE is the more capital-intensive alternative for managing the non-recyclable portion of MSW, the Coalition members (and the communities they serve) invested in WTE technology for one reason – it is the responsible thing to do and the environmentally preferred solution for managing non-recyclable MSW, including mitigation of GHG emissions.<sup>1</sup>

In considering these points it should also be noted that WTE is different in at least one critical respect from virtually every other potential source of energy. That is because waste management is an essential requirement for all societies, and even after maximum efforts have been made to reduce waste and recycle, an enormous amount of material remains which, as a practical matter, can either be buried in landfills or used to produce energy at WTE facilities. While WTE results in significant displacement of fossil fuels and is superior to landfilling from all environmental and energy perspectives, including a net reduction in GHG emissions, WTE facilities cost considerably more and require a far greater initial capital outlay than landfills. The added burden of a CO<sub>2</sub>e allowance requirement would only make a bad situation even worse by increasing 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.

Based on these points as well as other related points discussed below, the Coalition respectfully submits that the Board’s cap-and-trade regulations should exclude WTE facilities from the proposed CO<sub>2</sub>e allowance requirement. While the exclusion should, at a minimum, apply to California’s existing WTE facilities, in the interest of achieving a significant future reduction in waste management sector GHG emissions in California, the same policy should also apply prospectively to new WTE capacity.<sup>2</sup>

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<sup>1</sup> 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.

<sup>2</sup> In Resolution 10-42, Dec. 16, 2010, the Board refers (at p. 11) both to the mandate in Section 41516(d) of the Health and Safety Code that “resource recovery projects should be encouraged as a matter of State policy” as well as “the risk of emissions leakage” where waste is diverted to landfills for disposal. While excluding California’s existing WTE facilities from the CO<sub>2</sub>e allowance requirement is necessary to avoid such leakage in the immediate future, excluding future facilities will encourage expanded use of WTE in California with the benefit of a substantial reduction in future GHG emissions in the state.

## **A. Background – Factual Context**

### **1. WTE Facilities’ Life-Cycle GHG Emissions Are Lower than GHG Emissions from Landfills with Energy Recovery**

Using life-cycle analysis, the U.S. Environmental Protection Agency’s (USEPA) 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 1, pp. 1711-14; *see also* Attachment 2, Part B, Summary and pp. B-23 to B-32. USEPA’s analysis shows that WTE yields the best results (compared to landfills) on various bases, including maximum energy recovery and lower GHG emissions, Attachment 1, pp. 1711-14, 1716-17, and relying on those facts and others, USEPA has advised congressional staff that WTE yields “significant reductions of CO<sub>2</sub>” and has a “better [GHG] profile than landfilling with energy recovery.” *See* Attachment 3, slides 25-26; *see also id.* at slides 6, 8.<sup>3</sup> Consistent with those findings, other scientific and engineering analyses show that WTE reduces GHG emissions by 0.5 - 1.3 tons of CO<sub>2</sub>e per ton of MSW combusted rather than landfilled – and the low end of that range assumes a modern landfill with landfill gas recovery-reuse as well as a local electrical grid of relatively low carbon intensity. *See generally* Attachment 4, p. 1719; Attachment 1, p. 1712. Although a largely untapped resource in the United States (only 7% of our MSW is directed to WTE while 69% is landfilled), federal policy makers have indicated that an evolving “best integrated material management strategy” would consist of 45% recycling, 10% landfilling and 45% WTE, *see* Attachment 3, slide 30, and diverting half of the MSW currently sent to U.S. landfills would reduce annual CO<sub>2</sub>e emissions by 135 million tons (based on an average of 1 ton of CO<sub>2</sub>e avoided per ton of MSW processed). *See The State of Garbage in America*, [http://www.jgpress.com/images/art/1010/bc101016\\_s.pdf](http://www.jgpress.com/images/art/1010/bc101016_s.pdf) (*BioCycle*, Dec. 2010) (Table 3; calculation based on the approximately 270 million tons of MSW landfilled in the U.S. in 2008).

WTE’s significant role in mitigating GHG emissions is well established. That is not an opinion or aspiration, but rather an established fact, and is confirmed by USEPA’s *Municipal Solid Waste Decision Support Tool* as well as a diverse range of highly respected national and international authorities. *See, e.g.*, Attachment 1, pp. 1711-14; Weitz, Keith A., *A Decision Support Tool For The Life Cycle Management of Municipal Solid Waste*, available at <http://www.lcacenter.org/lca-lcm/pdf/SolidWaste.pdf>, slides 22, 25. 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 emphasizes WTE’s dual benefits of (i) displacing fossil fuel combustion and (ii) avoided landfill methane emissions. Attachment 5, p. 601. Similarly, the Kyoto Protocol’s Clean Development Mechanism approves WTE as a source of tradeable GHG emission reduction credits that

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<sup>3</sup> Attachment 3 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.

displaces electricity from fossil fuels and avoids methane emissions from landfilled waste. See Attachment 6, pp. 1-3. In addition, 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 landfill methane. See Attachment 7, pp. 6, 9 and 11 (the signatories to GROCC's joint statement range from Dr. James Hansen, NASA Goddard Institute for Space Studies, to Environmental Defense). Another example is the World Economic Forum's January 2009 report, *Green Investing – Towards a Clean Energy Infrastructure*, which recognizes WTE as one of eight "key renewable energy sectors" and "particularly promising in terms of . . . abatement potential" for carbon emissions. Attachment 8, p. 27.

Finally, these benefits have been recognized by the Board. In that regard, information available on the Board's website projects a significant net reduction in California's GHG emissions – 12,200,000 metric tons of CO<sub>2</sub>e over a thirty-year period – as a direct benefit of California's three existing WTE facilities. See <http://www.arb.ca.gov/cc/capandtrade/capandtrade/wte%20ghg%20emissions%20calcs.xlsx> (select the "Calcs-09" tab). That said, it is also important to note that even with the state's commendable recycling efforts, California's landfill disposal of MSW continues to be quite substantial, e.g., 31,100,000 tons for 2009, see <http://www.calrecycle.ca.gov/LGCentral/GoalMeasure/DisposalRate/2009/default.htm>, and reduced reliance on landfilling would have a significant beneficial impact on California's overall GHG emissions profile. In short, as the-then Chief of USEPA's Energy Recovery Branch emphasized at a recent national forum on WTE, "[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 even if you have >50% recycling." See Attachment 3, slide 19.

## **2. WTE Has Numerous Additional Environmental Benefits**

Aside from lower GHG emissions, WTE has many additional environmental benefits that further underscore its advantages. In that regard, WTE is a very clean and reliable energy source, reflecting state and federal requirements for the most advanced emissions control technology. Thus, as USEPA has emphasized, the level of emissions control achieved by modern WTE facilities "has been outstanding," with emission reductions for various pollutants in the 96-99% range subsequent to implementation of MACT (Maximum Achievable Control Technology) standards in the early 1990's, together with subsequent increases in the stringency of those MACT standards. See <http://www.regulations.gov/contentStreamer?objectId=0900006480276e8a&disposition=attachment&contentType=pdf>. Given that record, USEPA has recognized 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>. In addition, EPA's hierarchy for "integrated waste management" recommends waste combustion with energy 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>). It is also important to note that 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.<sup>4</sup> 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.<sup>5</sup>

WTE's efficiency and reliability are also very clear. Thus, 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 1, p. 1714; *see also* Attachment 2, p. B-29. In addition, WTE is the paradigm example of distributed, baseload generation. That is because (i) given WTE facilities' location within the areas where their electric power is used, the facilities can provide power to consumers without the need for new long-distance transmission lines, (ii) WTE is available at all times (24 hours a day and 7 days each week) and (iii) WTE is unaffected by days that are cloudy or calm. Finally, unlike landfills, WTE facilities "do not have a continuing cost in land." *See* Attachment 4, p. 1721. That is because landfills require vast expanses which, for all practical purposes, cannot be reused. In contrast, WTE facilities have very modest footprints that are miniscule compared to landfills. Not surprisingly, The Nature Conservancy ranks WTE as one of the most environmentally protective alternative energy sources. *See* Attachment 10, p. 24.

### **3. WTE's Substantial Cost Disadvantage**

Despite its substantial environmental advantages, WTE is considerably more expensive than landfilling. For example, in 2000 the national average WTE and landfill tipping fees in the United States were, respectively, \$56.20 and \$35.50 per ton (source: Waste Business Journal – *see* Attachment 11). The disparity continues, and in 2010 the respective national average WTE and landfill tipping fees were \$66.20 and \$44.20 per ton. Considering the period 2000-2011 on an overall basis, average WTE tipping fees in the United States were approximately 58% higher than landfill tipping fees. In addition, analysis by the U.S. Department of Energy, Energy Information Administration (EIA), shows that WTE receives, by far, the lowest federal financial inducement among all electric power generation source categories in the U.S. *See* Energy

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<sup>4</sup> The conservative bias in the WTE communities' recycling rate relates to the fact that the rate omits several recyclables that the national rate includes, and the national rate is a composite which includes WTE communities – the more accurate comparison would exclude WTE communities in calculating the national rate.

<sup>5</sup> The same point is evident in Europe, which has far greater reliance on WTE than the United States, and the EU countries with the greatest reliance on WTE also have the highest recycling rates (e.g., Germany, the Netherlands, Sweden, Belgium, Denmark and Austria). *See* [http://www.cewep.com/storage/med/media/energy/288\\_EEF\\_debate\\_final.pdf?fCMS=f6750c75ad80c7b28591efd56e27ee86](http://www.cewep.com/storage/med/media/energy/288_EEF_debate_final.pdf?fCMS=f6750c75ad80c7b28591efd56e27ee86), Slide 6.

Information Administration, SR/CNEAF/2008-01, *Federal Financial Interventions and Subsidies in Energy Markets 2007*, p. xvi (2008).<sup>6</sup>

It should also be noted that the cost of installed WTE capacity is far higher on a kilowatt hour basis (sometimes by an order of magnitude) than essentially any other available source of electricity. Thus, the U.S. Department of Energy's most recent data for central station electric power generation technology alternatives show installed costs per kilowatt of capacity (in 2008 dollars) ranging from \$617 for conventional gas turbines to \$5879 for solar-photovoltaic. See <http://www.eia.doe.gov/oiaf/aeo/assumption/pdf/electricity.pdf>, Table 8.2. In contrast, under the contract for the 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.

In short, WTE confronts a steep financial disadvantage in the United States. The consequences are quite real and are reflected, among other things, in the nation's underutilization of this environmentally preferred technology (as noted above, only 7% of our MSW is directed to WTE while 69% is landfilled). Although in some cases local governments are able to meet the higher cost of WTE through a combination of user fees and general fund revenues, the WTE vs. landfilling cost differential is obviously a discouraging factor, and ultimately there is a limit to the ability of local governments to support WTE's higher cost. Moreover, that cost disparity would only be exacerbated by the additional burden of a CO<sub>2</sub>e allowance purchase requirement. The result would be to further discourage WTE and simultaneously increase landfilling together with the significantly higher GHG emissions that will result. That would be a major step backward for the environment and forward-thinking environmental policy.

<sup>6</sup> The referenced report, which is based on data for 2007, shows the following federal subsidies for the broad range of electric power sources listed:

Energy Source	Net Generation (billion kWh)	Subsidy and Support (million \$)	Subsidy and Support per Unit of Production (\$/MWh)
Refined Coal	72	2,156	29.81
Solar	1	14	24.34
Wind	31	724	23.37
Nuclear	794	1,267	1.59
Landfill Gas	6	8	1.37
Geothermal	15	14	0.92
Biomass (and biofuels)	40	36	0.89
Hydroelectric	258	174	0.67
Coal	1,946	854	0.44
Natural Gas and Petroleum Liquids	919	227	0.25
Municipal Solid Waste	9	1	0.13

A subsequent EIA report, Energy Information Administration, *Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2010* (2011), suggests that the minimal WTE subsidy shown in the previous report has essentially been eliminated, see *id.* Tables ES-2, ES-4 and 13, which was confirmed by an EIA representative on August 10, 2011 (personal communication).

## **B. The Policies That Underlie AB 32 Are Inapposite to WTE Facilities**

As noted above, California's cap-and-trade program is intended to serve as "the price signal needed to drive long-term investment in cleaner and more efficient types of fuels and energy resources" while at the same time "afford[ing] covered entities flexibility to seek out and implement the most cost-effective options to reduce emissions." ISOR at I-4; *id.* at ES-1 (same). *See also id.* at II-51 and II-52 ("By establishing an overall limit on GHG emissions, the program establishes the price signal needed to drive long-term investment in cleaner and more efficient types of fuels and energy sources, while affording covered entities flexibility to seek out and implement the most cost-effective options to reduce emissions."). Similarly, the objective of the proposed regulation is to provide a "cost-effective" means "to reduce our dependence on fossil fuels, stimulate investment in clean and efficient technologies, and improve air quality and public health." *Id.* at ES-1, ES-3; *see also id.* at VIII-3 ("The cap-and-trade program does not specify how or where emissions reductions will be made. Reductions will be made by covered sources if the cost of making reductions is less than the cost of acquiring allowances and offsets."). The quoted statements would appear to be intended to respond to AB 32's mandate, codified at Cal. Code § 38562(b)(6), that the Board's implementing regulations are to consider overall societal benefits, including reductions in other air pollutants in addition to CO<sub>2</sub>e, diversification of energy sources, and other benefits to the economy, the environment and public health.

As shown above (point A), WTE clearly meets those objectives. Without repeating all of that information, WTE has lower pollutant emissions and recovers far more energy per ton of waste – approximately 10 times more – than the alternative of landfilling with methane recovery and reuse. In addition, AB 32 requires consideration of the relative impact of a source category's GHG emissions, *see* Cal. Code § 38562(b)(9), and the GHG emissions from California's WTE facilities comprise only about 0.1% of the state's GHG emissions inventory. *See* <http://www.arb.ca.gov/cc/inventory/data/data.htm>. Moreover, a point that has particular relevance here is the reality that the concept of "cost-effective" allowance trading is not an option in the case of WTE facilities. Instead, WTE facilities will confront a continuing, long-term requirement to purchase CO<sub>2</sub>e emission allowances at substantial additional cost, which is a requirement that will not apply to landfill CO<sub>2</sub>e emissions (the alternative of curtailing WTE operations and not processing waste would be self-defeating – the diverted waste would have to be landfilled, with the result that GHG emissions would increase significantly above the level emitted by WTE). The Board addressed this precise point in its July 8, 2011 *Notice of Availability of Cap-and-Trade Discussion Draft and Workshop*, *supra*, explaining that "including emissions from [WTE] facilities in cap-and-trade would cause statewide GHG emissions to increase as a result of diversion of waste to landfills."<sup>7</sup>

Finally, a point noted at the outset of this letter bears repeating here: the purpose of a WTE facility is to process a specific type of fuel – MSW – insofar as the fuel cannot otherwise be recycled, and the various "abatement options" the proposed cap-and-trade program

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<sup>7</sup> This comment letter is not intended to suggest that landfills should be subject to the requirement to obtain CO<sub>2</sub>e emission allowances, but rather that WTE should also be excluded from that requirement.

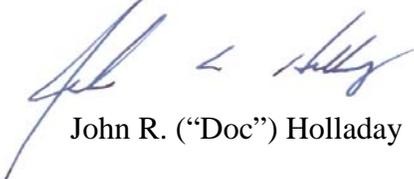
contemplates for facilities in the industrial and power sector categories (e.g., changes in fuel mix and fuel switching) are inapposite to WTE. That is because neither the use of a different fuel or using less fuel than the affected communities deliver for processing is a feasible alternative for WTE facilities. In addition, WTE facilities are already highly efficient, and efforts to increase efficiency will continue entirely independent of the cap-and-trade program since efficiency improvements increase energy production (e.g., electric power) and thereby reduce the net cost of recovering energy from waste. But more important for present purposes is the fact that although improved efficiency increases energy production, it does not reduce the amount of material that requires WTE processing or the CO<sub>2</sub>e emissions that result. Again, unlike other stationary combustion sources, the purpose of a WTE facility is to make full use of a particular fuel, that is, to manage non-recyclable MSW through combustion with energy recovery, which is the best use for the portion of the waste stream that cannot be recycled. Consistent with these realities, none of the proposals considered by the 111th Congress for cap-and-trade regulation of GHGs would have applied to WTE facilities. Similarly, the Regional Greenhouse Gas Initiative also excludes WTE from cap-and-trade regulation.

In short, unlike the combustion sources that are a primary focus of AB 32, for all practical purposes WTE facilities' only means to reduce their GHG emissions would be to curtail service to their communities. That course of action would mean more waste disposal in landfills, however, and higher GHG emissions compared to processing the same waste at WTE facilities. The only other alternative – purchasing CO<sub>2</sub>e allowances – will mean a substantial permanent addition to the cost of WTE, the environmentally preferred method for managing non-recyclable MSW, which is already more costly than the less preferred alternative, landfilling. Of particular importance, and as explained in other comments, that sizeable new cost burden will jeopardize the ability of California's WTE facilities to continue to operate. Each of the scenarios just noted is clearly inconsistent with Cal. Code § 41516, which encourages WTE facilities as a means to “help alleviate the environmental and economic problems associated with municipal waste disposal, while at the same time producing additional supplies of energy and raw materials.” For each of these reasons, the Board's proposed cap-and-trade regulations and CO<sub>2</sub>e allowance requirement should be modified to exclude WTE facilities' (at a minimum, the exclusion should apply to California's existing WTE facilities).

\* \* \*

Thank you for considering the Coalition's comments on these matters. If you have questions regarding any of the points noted above, please call me (at 256-880-6054 – I am the Executive Director of Coalition member Solid Waste Disposal Authority of Huntsville, Alabama, and serve as an informal chairperson for the Coalition), or our counsel (Scott DuBoff and Matt Schneider, at 202-965-7880).

Sincerely,



John R. (“Doc”) Holladay

cc: Coalition Members