WATER RECLAMATION
SOLID WASTE MANAGEMENT

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OF LOS ANGELES COUNTY

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Air and Radiation Docket and Information Center
Environmental Protection Agency
Mailcode: 2822T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Ladies and Gentlemen:

Subject: Docket ID No. EPA-HQ-OAR-2005-0161

The Sanitation Districts of Los Angeles County (Sanitation Districts) appreciate this opportunity to comment on EPA's Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program; Proposed Rule (RFS2 Proposed Rule), 74FR(24904-25143). The Sanitation Districts provide environmentally sound, cost-effective wastewater and solid waste management for about 5.3 million people in Los Angeles County and, in the process, convert wastes into resources such as reclaimed water, energy, and usable recycled materials. The Sanitation Districts' service area covers approximately 800 square miles and encompasses 78 cities and unincorporated territory within the County through a partnership agreement with 24 independent special districts. The Sanitation Districts have also played a significant role over the years reducing air emissions and developing many state-of-the-art emissions controls and programs for our solid waste management and wastewater treatment operations that are now industry standards.

The Sanitation Districts participated extensively in the regulatory development of the California Low Carbon Fuel Standard (LCFS) regulation from its initial proposed concept outline in March 2008 to its final adoption in April 2009. The Sanitation Districts submitted four comment letters to the California Air Resources Board (CARB) and provided testimony at the adoption hearing, strongly advocating the explicit inclusion and incentivization of waste-derived renewable fuels in the LCFS regulation, which aims to reduce carbon intensity of California's fuel supply by ten percent by 2020. Similarly, the Sanitation Districts believe that waste-derived feedstocks, particularly biosolids from sewage treatment plants and municipal solid waste (MSW) are viable resources to produce renewable fuels and should be included within the definition of renewable biomass in the RFS2 Proposed Rule. In addition, producers, importers and suppliers of renewable energy and fuels, both public and private, that utilize waste-derived

feedstocks should be allowed to generate renewable identification numbers (RINs) and participate in the RFS2 credit trading system.

Waste-derived feedstocks are abundant, locally produced, renewable resources that do not have the limiting factors in production like petroleum-based fuels and crop-based fuels. Unfortunately, waste-derived feedstocks have been overlooked in previous and existing state and federal regulations for renewable fuel and energy, but they should be closely examined and strongly endorsed in the RFS2 Rule. The emerging waste-to-fuel industry needs additional incentives to improve the economic feasibility of such projects. Incentivizing emerging waste-to-fuel industries will help EPA achieve the RFS2 volume mandates of 36 billion gallons of renewable fuel by 2022 with even lower carbon footprints than what is envisioned in the cited Federal Register publication. The remainder of this letter will provide supporting arguments that highlight the substantial benefits of using waste-derived feedstocks to produce both renewable energy and fuel.

MSW as Renewable Biomass

The preamble states that the renewable fuel requirements required in RFS2 represent "nearly a five-fold increase" from earlier requirements and will "push the market to new levels." For this very reason EPA should not limit any qualifying renewable biomass, but include every possible renewable source to help meet this tough mandate.

EPA has requested comment on whether the definition of "renewable biomass" should be interpreted as including or excluding MSW from the definition of renewable biomass. While reference is made in the Energy Policy Act of 2005 to "separate yard waste and food waste" language, as EPA has pointed out, this should not be interpreted to exclude MSW. This is evident when one considers that EPA has included landfill gas in the definition of "advanced biofuel" and this gas is generated from the mix of MSW that includes yard and food waste. By excluding MSW from the definition of "renewable biomass" EPA may inadvertently be excluding innovative technologies for processing MSW, such as the newer conversion processes that produce a syngas that may qualify as a transportation fuel.

EPA has expressed concern that including MSW in the definition of landfill could allow renewable fuels to be in part produced from "certain plastics" in the MSW waste stream, with the concern that plastics are fossil-fuel based. EPA also asks for comment on whether the non-fossil fuel portion of MSW should be included as a renewable biomass. We believe MSW generation *as a whole* should be considered as "renewable" for the very practical consideration that, in the landfill environment, only the biogenic portion of the waste will be broken down biologically thereby producing landfill gas. Some processes, other than landfilling, may also break down waste components such as plastics. In general, these components should only make up a small portion of the MSW waste stream; it does not seem reasonable to exclude an entire valuable energy source category because of these constituents given the goals stated in the preamble. The

Sanitation Districts strongly believe that as long as there is no attempt to "spike" the waste with plastics beyond what is considered normal disposal for a community, the *entire* MSW waste stream should be defined as a "renewable biomass." EPA can ensure that plastics and other components of concern are present at the lowest levels possible. One approach could require that in order for a community's MSW to qualify as renewable biomass, that community shall have a recycling program that achieves diversion rates at least as great as the national average for the year of qualification.

EPA also expressed concerns that inclusion of MSW as a renewable biomass could reduce the recycling of paper wastes. Similar to our recommendation above on plastic waste, if the eligibility of the MSW waste stream as a renewable biomass is tied to a recycling program in the community where the MSW was generated, then any impacts on paper waste recycling should not occur.

Co-Management of Continuous Waste Streams and Potential Contribution to Renewable Fuel Volume is Desirable

Waste streams such as biosolids from wastewater treatment plants and MSW from municipal landfills are continuously generated in relatively high volumes. The use of waste streams as feedstock for renewable fuel provides a rare co-management option for heavily regulated waste streams: reliable waste management and sustainable domestic energy production.

These waste streams that could serve as potential feedstocks and contribute to a significant fraction of the RFS2 mandated volumes. According to the U.S. EPA report, Biosolids Generation, Use and Disposal in the United States, the projected volume of biosolids generation by publicly owned treatment works (POTWs) in the U.S. for calendar year 2010 is 8.2 annual million dry tons (a nineteen percent increase from the 1998 biosolids annual volume).[1] Since it is not realistic to assume all the biosolids tonnage can be converted to renewable fuel, if we used only one percent of the projected tonnage to estimate the potential volume of fuel that could be produced, the potential energy that might be extracted is approximately 8.675×10^{11} BTUs, which is equivalent to 6.2 million gallons of diesel fuel per year[2]. According to the State of Science Report: Energy and Resource Recovery from Sludge,[3] feedstock in the form of lipids could be extracted from the biosolids for diesel oil production, and if fifty percent of municipal wastewater treatment plants in the U.S. were outfitted for lipid extraction and trans-esterfication, 185 million gallons[4] of biodiesel per year could be produced. Less optimistically, if we assume

[1] Table 4-1, Projections of Biosolids Generation for Use or Disposal in 2000, 2005 and 2010, Biosolids Generation, Use and Disposal in the United States, U.S. Environmental Projection Agency, Municipal and Industrial Solid Waste Division, Office of Solid Waste, EPA530-R-99-009, September 1999.

[2] Calculation: 6.2 million gal eq. Diesel = 82,000 tons x 2,000 lbs/ton x 5,290 BTU/lb / 139,000 BTU/gal

[3] State of Science Report: Energy and Resource Recovery from Sludge, the Global Water Research Coalition (members include Water Environmental Research Foundation, and UK Water Industry Research Limited), 2008

[4] Volume conversion to equivalent gallons of biodiesel based on standard temperature and pressure.

only one percent of the wastewater treatment plants are modified, there is still a potential volume of 3.7 million gallons of biodiesel per year.

Similarly, according to a U.S. EPA report, Municipal Solid Waste in the United States: 2007 Facts and Figures, 254 million dry tons of MSW as generated in the U.S. in 2007, of which, approximately 63.6 percent could be classified as renewable biomass (160 million dry tons), consisting of 12.8 percent yard trimmings, 12.5 percent food scraps, 5.6 percent wood, and 32.7 percent paper and paperboards.[5] Assuming only one percent of the biomass MSW (1.6 million dry tons) can be used to produce renewable fuel, the potential energy that can be produced is approximately 1.84×10^{13} BTUs, which is equivalent to 159 million gallons of ethanol per year[6].

The potential volumes of renewable fuels that can be produced from biosolids and biomass MSW are significant and should be weighed equally with other renewable fuel feedstocks that are deemed potential contributors to the mandated volumes in the RFS2 Proposed Rule. Due to the magnitude of this available renewable energy, we request that the RFS2 Proposed Rule recognize and encourage waste-derived renewable fuel feedstocks.

Very Low Direct and Indirect Land-Use Change Effects for Waste-Derived Feedstocks

The highly charged controversy over the direct and indirect land-use change effects of displacing farmland used for food crops and the clearance of tropical rainforests for biofuel crops is well known. The April 7, 2008 Time Magazine cover showing the Brazilian rainforest completely cleared, except for one square, to plant soybean crops has brought this issue into full media and public view. The Energy Independence and Security Act (EISA) of 2007 requires the RFS2 rule to evaluate the full lifecycle emissions impacts of fuel production including both direct and indirect emissions, including significant emissions from land-use change to address these concerns. However, the estimation of these indirect effects are so complicated and intertwined that EPA had to evaluate eleven different modeling and data analysis tools in order to formulate an estimation of the potential impact.

Unlike biofuel crops, waste-derived feedstocks, such as biosolids from wastewater treatment plants and MSW from landfills, have very low direct or indirect land use change effects because they do not displace much land at all. In fact, CARB determined in the California Low Carbon Fuel Standard Regulation that the full lifecycle fuel pathway for waste-derived fuels serving as substitutes for gasoline and diesel fuels, including CNG and LNG from landfill gas, compressed hydrogen from renewable feedstocks, CNG from dairy digester biogas, and biodiesel

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[5] Table ES-1, Generation, Material Recovery, Composting, Combustion with Energy Recovery, and Discards of Municipal Waste, and Figure ES-3: Materials Generated in MSW, 2007, Municipal Solid Waste in the United States: 2007 Facts and Figures, November 2008.

[6] Calculation: 159 million gal eq. ethanol = 1.6M ton x 2000 lb/ton x 5750 BTU/lb / 115,500 BTU/gal

from waste oils, all resulted in zero land use change and zero other indirect effects[7]. This conclusion from CARB offers some verification that waste-derived feedstock have much less potential impact on land use than other renewable biomass feedstock, and therefore should be provided equal, if not more, consideration and incentive in the RFS2 rule.

Spurring Technology Advancement in Waste-Derived Renewable Fuels and Energy

EPA can incentivize the waste-derived renewable fuels and energy industry by allowing producers, importers and suppliers to generate RINs and participate in the credit trading system in the RFS2 Rule, which will directly and indirectly spur interest among stakeholders to invest in advancing technology to produce greater volumes of waste-derived renewable fuels.

The Sanitation Districts have already implemented such waste-derived energy projects at many of our facilities. These alternative power facilities are largely self-sustaining and reduce greenhouse gas emissions by minimizing the use of conventional power plants. Examples of our waste-derived power producing facilities include:

Sewage Digester Gas-to-Energy Facilities:

1. Combined Cycle Gas Turbine-Cogen (18 MW) at Joint Water Pollution Control Plant
2. Microturbine with Waste Heat Recovery (0.2 MW) at Lancaster Water Reclamation Plant

Landfill Gas-to-Energy Facilities:

3. Steam boiler and turbine (46 MW), gas turbine generator (1 MW), IC engine facility (5.4MW) at Puente Hills Landfill
4. Steam boiler and turbine (5.5 MW) at Spadra Landfill
5. Steam boiler and turbine (2.7 MW) at Palos Verdes Landfill
6. Gas Turbines (13.8 MW) – in construction at Calabasas Landfill

Refuse-to-Energy Facilities:

7. Mass Burn/Steam Turbine (30 MW) at Southeast Resource Recovery Facility
8. Mass Burn/Steam Turbine (10 MW) at Commerce

According to the report, State of Science Report: Energy and Resource Recovery from Sludge,[8] waste byproducts such as biosolids are emerging as a potential revolutionary source for renewable fuel and power. The report summarizes the current technological advances of energy

[7] Table 6: Carbon Intensity Lookup Table for Gasoline and Fuels that Substitute for Gasoline and and Table 7: Carbon Intensity Lookup Table for Diesel and Fuels that Substitute for Diesel, Modified Regulation Order, California Low Carbon Fuel Standard, April 2009.

[8] State of Science Report: Energy and Resource Recovery from Sludge, the Global Water Research Coalition (members include Water Environmental Research Foundation, and UK Water Industry Research Limited), 2008.

and resource recovery from municipal wastewater biosolids. The report surveys the myriad processes that be employed to convert biosolids into electricity, heat, hydrogen, CNG, LNG alcohols and biodiesel. The report outlines existing and emerging technologies for the recoverable energy from biosolids, a few of which are:

1. Sludge-to-biogas through anaerobic digestion (Bioterminator), thermal hydrolysis (Cambi®, BioThelys®), and physical-chemical cell destruction (MicroSludge™, Ultrasonic, Ozonation, Pulse Electric)
2. Sludge-to-syngas through gasification (KOPF, EBARA) and incineration (Thermylis®, HTFB)
3. Sludge-to-oil through pyrolysis (Enersludge™, SlrryCarb™) and hydrothermal (STORS)
4. Sludge-to-liquid through super critical water oxidation (Aqua Reci®, Aqua citrox®, Athos®).

Waste-to-fuel advanced technologies such as those listed above have potential to produce significant volume of renewable fuels that could help EPA achieve the RFS2 volume mandates of 36 billion gallons of renewable fuel by 2022. However, the emerging waste-to-fuel industry needs additional incentives to improve the economic feasibility of such projects. Credit trading systems for renewable fuels such as the trading system in the RFS will help the emerging waste-to-fuel industry gain economic stability and promulgate long-term investments. Therefore, we again request that waste-derived renewable fuels be included in the RFS2 in order to participate in the credit trading system.

Generate Full Lifecycle for Waste-Derived Renewable Fuels

Currently, the RFS2 Propose Rule contains only fifteen full lifecycle fuel pathways, and no pathways for renewable fuels or energy projects that utilize waste streams as feedstock. It is important for EPA to generate these waste-derived renewable fuel pathways because of the potential fuel volumes that could be produced, and because they will also provide good baseline comparison of the land use change and other indirect significant effects of waste-derived feedstock versus other renewable biomass feedstock such as biofuel crops. Accordingly, the Sanitation Districts request the following fuel pathways to be generated and incorporated into the Look-Up Table for the RFS2 final rule.

Fuel Type	Feedstock	Category
Biodiesel	Biosolids	Renewable fuel
Cellulosic ethanol	MSW	Cellulosic fuel
NG,CNG,LNG	Landfill gas	Natural gas
NG,CNG,LNG	Digester gas	Natural gas
Electricity	Landfill gas	Electricity
Electricity	Digester gas	Electricity

It is important that EPA generate these additional pathways to lend credibility to the potential use of these waste-derived fuels to make them more attractive to project developers.

The Sanitation Districts have long been an advocate and poster-child supporting, investing and further advancing technology in the energy production-from-waste arena. We request the terms "biosolids" and "municipal solid waste" be included within the definition of "renewable biomass" in the RFS2 Proposed Rule. This inclusion will strongly encourage the utilization and production of waste-derived alternative fuels. Thank you for your attention and affording us the opportunity to comment.

If you have any questions regarding this transmittal, please contact Mr. Frank Caponi on MSW issues at (562) 908-4288, extension 2460, and Ms. Madison Le on biosolids issues at (562) 908-4288, extension 2425.

Very truly yours,

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