July 15, 2013

Air and Radiation Docket
U.S. Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460
Via email: *a-and-r-docket@epa.gov*

Re: Docket ID No. EPA-HQ-OAR-2012-0401, Regulation of Fuels and Fuel Additives: RFS Pathways II and Technical Amendments to the RFS 2 Standards

The National Association of Clean Water Agencies (NACWA) appreciates the opportunity to comment on EPA's notice of proposed rulemaking (NPRM) on Regulation of Fuels and Fuel Additives: RFS Pathways II and Technical Amendments to the RFS 2 Standards. NACWA represents the interests of nearly 300 public wastewater treatment agencies, which treat and reclaim a majority of the wastewater generated nationwide. Protecting public health and the environment through appropriate management of wastewater – and the sludges, biosolids, and biogas produced from treating it – has traditionally been the primary function of publicly owned treatment works (POTWs). However, POTWs are now evolving into resource recovery facilities that reuse water, extract nutrients, and produce energy. NACWA is committed to preserving and enhancing the ability of municipalities to choose the most effective method of managing these materials for each community, which increasingly includes the use of advanced technologies to cost-effectively optimize the amount of energy recoverable from these "must-manage" resources.

NACWA commends EPA for proposing the amendments to the RFS program. The proposed revisions, if finalized, will provide important market-based incentives, expand conversion of renewable fuel feedstocks, and increase development of advanced transportation technology infrastructure. The proposed revisions also come at a pivotal time in the RFS2 program and strengthen its ongoing viability by enabling more qualifying Renewable Identification Numbers (RINs) to be brought to the market for refiner compliance.

NACWA agrees with the proposed RFS2 amendments that would allow landfill biogas to qualify as a cellulosic feedstock for the generation of renewable electricity, compressed or liquefied natural gas (CNG/LNG), and cellulosic diesel – and associated RINs, with D Codes 3 or 7. However, NACWA believes that the scope of the amendments should be broadened to include biogas generated by POTWs

National Association of
Clean Water Agencies
1816 Jefferson Place, NW
Washington DC 20036-2505

p 202.833.2672 f 202.833.4657
www.nacwa.org · info@nacwa.org

through the wastewater treatment process as a qualifying cellulosic feedstock, just like landfill gas, for the production of cellulosic fuels and RINs. In support of this belief, these comments provide the following:

- Background information on the generation of renewable fuel at POTWs;
- A discussion about why renewable fuel produced at POTWs is functionally equivalent to fuel produced by landfill gas and should therefore also be determined to qualify as cellulosic biofuels;
- Additional comments on the proposed RFS2 amendments; and
- Specific amendments to the proposed regulatory language to address the changes suggested in these comments.

Generation of Renewable Fuel at POTWs

The proposed RFS2 amendments, particularly the revised definition of biogas and expanded eligibility of certain types of biogas derived from cellulosic materials to generate cellulosic RINs, could have far-reaching impacts on the economics of renewable compressed and liquefied natural gas (CNG/LNG), biogas-to-electricity, and electric vehicle charging infrastructure projects. The availability of an additional revenue stream from saleable RINs could incentivize project developers and financing entities to build, own, and operate clean energy projects at a time of uncertain federal tax incentives.

Such market-driving regulations are particularly important for POTWs across the country that seek to develop innovative methods to recover energy from their continuous, renewable supplies of municipal wastewater. The upfront capital costs for enhanced energy recovery methods is often difficult to obtain through traditional project financing or is hard for POTWs to justify given the payback time for the projects. POTWs also face limitations on the use of tax-exempt bonds for energy projects.

Despite such hurdles, many NACWA members and other utilities around the U.S. are already undertaking energy recovery projects because of the myriad economic and environmental benefits. Biosolids are an organic byproduct of the wastewater treatment process, and anaerobic digestion of biosolids is the most commonly used technology to produce energy at POTWs. Over 1,400 POTWs use anaerobic digesters to process their biosolids, generating biogas that consists primarily of methane (60-65%) and carbon dioxide (30-40%). Over 800 POTWs use biogas for energy, and nearly 300 of these produce electricity from biogas. While anaerobic digestion of biosolids is a successful energy generation method, additional deployment of energy generation equipment to all POTWs using anaerobic digesters would increase production. In addition, energy production associated with anaerobic digestion could be increased (if market and project economics change) through implementation of methods not yet commonly used in the U.S., such as co-digestion of organic wastes, pretreatment of the biosolids, and improved primary treatment of the wastewater.

Examples of POTWs in the U.S. that are currently using or developing waste-to-energy projects include the following:

- **Dallas Water Utilities, Texas.** The Southside Wastewater Treatment Plant utilizes an energy recovery and co-generation system that pulls more than 1 million cubic feet of biogas per day from anaerobic digesters and converts it to energy that powers the plant. With more than 4 megawatts (MW) of energy generated daily, the co-generation system offsets Dallas Water Utility's energy consumption by up to $1.5 million annually, reduces carbon emissions, and also provides a hot water byproduct that heats buildings and digesters at the Plant.

- **East Bay Municipal Utility District (EBMUD), California.** EBMUD blends community food waste (including food waste from wineries and farms) with their biosolids to produce enough methane-generated electricity to meet their facility's demand and send excess to the local grid. This 55,000 MW-hour/year, $31 million biogas project saves the utility $3 million a year in energy and contributed to EBMUD's reduction of 13,300 metric tons of carbon from its 2010 baseline.

- **Janesville Wastewater Treatment Plant, Wisconsin.** Janesville partnered with BioCNG to install a biogas conditioning system which produces biogas-based fuel to power compressed natural gas (CNG) vehicles from the wastewater digester. The BioCNG 50 system went online in February 2012 and now fuels the plants' vehicles, with the goal of fueling more than 40 vehicles within the next decade.

- **DC Water, Washington, D.C.** The Blue Plains Advanced Wastewater Treatment Plant is constructing a combined heat and power (CHP) plant that will run on biogas generated from anaerobic digestion, and a thermal hydrolysis process will use high-pressure steam from the plant to increase the rate of biogas production. The CHP component will produce at least 14 MW of power, enough to supply the facility with nearly 30 percent of its average power demand.

- **San Antonio Water System (SAWS), Texas.** SAWS, in partnership with an energy services company, sends natural gas generated from its biosolids onto the natural gas grid. Each day, nearly 1 million cubic feet of biogas, which is processed to be chemically identical to natural gas currently in pipelines, is now transferred to a natural gas pipeline for beneficial reuse in homes and businesses.

Cellulosic Classification of POTW Biogas

NACWA fully supports EPA's proposed interpretation of the definition of "cellulosic biofuel"[1] at § 211(o)(1)(E) when read in the context of the definition of "renewable biomass" at § 211(o)(1)(I) to conclude that landfill gas[2] meets the statutory threshold as an eligible fuel. EPA determined later in the proposed RFS2 amendments that fuels produced from landfill biogas as a feedstock are derived from cellulosic materials and meet a 60% greenhouse gas (GHG) emissions reduction threshold to generate a D Code 3 or 7 RINs for cellulosic biofuels.

---

1 *See,* NPRM, p. 36044 "For purposes of the RFS program, cellulosic biofuel is defined as 'renewable fuel derived from any cellulose, hemicellulose, or lignin that is derived from renewable biomass and that has lifecycle greenhouse gas emissions, as determined by the Administrator, that are at least 60 percent less than the baseline lifecycle greenhouse gas emissions.' See also, NPRM 36046 "Thus, EPA has interpreted the definition of cellulosic biofuel as including in some cases a renewable fuel that is produced from both the cellulosic and incremental amounts of non-cellulosic components of the feedstock."; "EPA is proposing to approve certain fuels as cellulosic biofuel where the cellulosic components account for a predominant percentage of the biogenic material in the renewable biomass feedstock used to produce the fuel, even where the noncellulosic components of the renewable biomass could be reasonably identified or estimated." NPRM 36047. "Based on questions from companies, EPA is also modifying the existing biogas pathway to specify that compressed natural gas (CNG) or liquefied natural gas (LNG) is the fuel and biogas is the feedstock."

2 "When waste materials are buried in a landfill, decomposition of the organic materials consumes all of the oxygen present within roughly one year, leaving the bulk of the material to undergo slower, anaerobic decomposition. This process produces large amounts of methane for several decades, as well as other products, with the gases released as "biogas." Biogas from landfills typically contains approximately 50% methane and 50% carbon dioxide, with small or trace amounts of other gases. Methane is a potent greenhouse gas (GHG), with a global warming potential of 21 times that of carbon dioxide, and landfills are the third-largest anthropogenic source of methane to the atmosphere in the United States. [NPRM 36048, Citing U.S. Environmental Protection Agency, 2013. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2011, Chapter 8: Waste. EPA 430–R–13– 001, *available at http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHGInventory-2013-Main-Text.pdf.*]

While NACWA supports this conclusion and understands that EPA was responding to several *landfill* gas petitions only,[3] there is no explanation why EPA did not at the same time also examine biogas fuel production processes for POTW biogas from a cellulosic content perspective. EPA arbitrarily limits the amended biogas pathway for cellulosic fuel categorization purposes by listing only renewable CNG/LNG, naphtha, and electricity from landfill gas, stating without explanation, "biogas from waste treatment plants and waste digesters is still classified as an advanced biofuel." [See NPRM, 36049] EPA seems to have chosen to sidestep this feedstock production pathway to focus only on landfill gas, based on an EPA report,[4] at the expense of POTW biogas.[5]

NACWA agrees with EPA's proposal that 100% of the volume of qualifying fuel derived from cellulosic feedstock be deemed "cellulosic" for purposes of RIN generation. However, in response to EPA's request under NPRM Section V.A.4,[6] NACWA proposes an alternative clarification to EPA's related proposal to employ a "predominance" test in determining whether a given feedstock is cellulosic in origin (and thus eligible to generate cellulosic RINs). NACWA proposes that EPA utilize a "plurality" test; i.e., feedstocks can be deemed 100% cellulosic if a plurality of the fuel can be demonstrated to come from cellulosic materials.[7] Setting a standard based on plurality provides administrative efficiency and promotes the intent and purpose of EPA's "derived from" approach. For example:

- Wastewater, sludge and biosolids can be used to produce a useful biogas through different anaerobic digestion, gasification or pyrolysis technologies. That biogas can then be delivered to a CNG compressor or used to generate electricity. The biogas derived from wastewater has multiple cellulosic origins that vary around the country.

- Under the plurality approach NACWA would be able to submit the detailed information necessary for EPA to conclude that cellulosic material forms the plurality of the material in municipal wastewater, sludge and biosolids. In contrast, the predominance test could engender the need for biogas generated from wastewater, sludge or biosolids to be evaluated on a city by city, POTW by POTW basis.

---

3 "EPA states in the NPRM: "For this proposal, EPA considered both the cellulosic origin of landfill biogas and the lifecycle GHG impacts of three types of fuel produced from landfill-derived biogas. In the final RFS2 rule, EPA established biogas as a fuel type when derived from landfills, sewage waste treatment plants, and manure digesters." [See NPRM, 36048].

4 "Support for Cellulosic Determination for Landfill Biogas and Summary of Lifecycle Analysis Assumptions and Calculations for Biofuels Produced from Landfill Biogas," placed in docket EPA–HQ–2012–0401.

5 "For the reasons discussed above, we are proposing to amend the existing biogas pathway to clearly state that only CNG and LNG produced from biogas from landfills, waste treatment plants and waste digesters, and used as transportation fuel, qualify as a cellulosic or advanced biofuel for RIN generation under the RFS2 program." [NPRM, 36053]

6 "EPA seeks comment on two alternative approaches to assigning cellulosic RINs to fuels produced from the cellulosic feedstocks discussed above. Separate from the specific pathways addressed in this proposal, EPA also seeks comment on potential approaches for assigning cellulosic RINs for anticipated future pathways for renewable fuels produced from feedstocks that contain lower cellulosic content than those discussed in this rulemaking."

7 Nothing in the language of the Energy Independence and Security Act (EISA) of 2007 prohibits using a "plurality" test. 42 USC § 7475(o)(1)(E). EPA acknowledges at 78 Fed. Reg. 36046 that "the statutory requirement that cellulosic biofuel be 'derived from cellulose, hemicellulose, or lignin' does not mandate that in all cases the renewable fuel must be produced solely from the cellulosic material in the renewable biomass."

Cellulosic Content of Biogas from POTWs

Biogas produced from municipal wastewater, sludge, or biosolids is functionally identical to landfill biogas in terms of fuel production processes.[8] NACWA therefore requests an assessment and determination on (1) the cellulosic content of biogas derived from wastewater, sludge and biosolids that must be managed by POTWs, and (2) the GHG lifecycle pathway of qualifying biogas from POTWs as meeting the 60% reduction threshold.

NACWA believes the production of renewable electricity or renewable diesel and naphtha from biogas from POTWs or waste digesters is, *just like landfill gas,* "derived" from cellulosic materials in accordance with EPA's proposed criteria for landfill gas. In fact, a substantial percentage of wastewater biosolids (approximately one third of the eight million dry tons of biosolids produced annually) is currently sent to landfills around the country, the resulting biogas of which EPA has already proposed to characterize as "cellulosic." If EPA assessed the fuel production pathways for biogas from POTWs and waste digesters, it would necessarily conclude that the pathways are functionally equivalent, in all relevant respects, to those derived from landfill gas. EPA proposes to list renewable CNG/LNG, electricity, and diesel generated from landfill biogas as cellulosic fuel for purposes of fuel type listing under Table 1 to § 80.1426(f). NACWA therefore requests that renewable CNG/LNG and electricity utilizing biogas derived from municipal wastewater, sludge, and biosolids also be entitled to qualify as cellulosic biofuel.

60% Greenhouse Gas Reduction Threshold for POTW Biogas

EPA proposes that flare-controlled landfills serve as the GHG baseline for landfill gas because they are "the ones most likely to convert to gas-to-energy projects, since they already have gas collections systems in place." 78 Fed. Reg. 36049. For POTWs, there are three widely-used methods of biosolids management: landfilling, land application, and incineration. To maintain consistency with EPA baseline for landfill, NACWA proposes EPA consider incineration or landfilling as the appropriate baseline.

An Oregon Department of Energy Report, *Bioenergy Optimization Assessment at Wastewater Treatment Plants*,[9] included a GHG Life-cycle Analysis for the use of biogas at four POTWs in Oregon with anaerobic digesters that produce biogas. At all four POTWs, the biogas generated is currently being used to meet several energy needs at the facility, and the excess biogas is flared. The GHG Life-cycle Analysis of the current condition – which includes beneficial use of only some of the biogas – shows that GHG emissions are reduced by approximately two-thirds of the GHG emissions without the beneficial use of the biogas. Optimizing the biogas use through vehicle renewable natural gas, cogeneration, or CNG sales would result in even greater GHG emission reductions.

---

[8] "Landfills can generate electricity by combustion of the methane in their biogas. Generating electricity at landfills requires collection of the biogas (using wells, piping and blowers), purification and compression of the biogas and electricity generation. Most landfills use internal combustion engines to generate the electricity, but a significant proportion also use gas or steam turbines or combined cycle systems. Once generated, the electricity enters the electrical grid. In determining the lifecycle GHG analysis of renewable electricity, we examined two main factors. The first involved determining by how much emissions at the landfill (from flaring) would change upon installation of a gas-to-energy project. For this calculation, we used emission factors from the GREET model. The second involved calculation of the decrease in GHG emissions caused by powering the gas blowers already in use with biogas derived electricity rather than grid electricity upon installation of a gas-to-energy project. This calculation used data from the EPA Landfill Methane Outreach Project (LMOP). For each factor, we needed to first calculate how much electricity could be generated and delivered to the consumer." [NPRM, 36050]

[9] *Available at* http://www.oregon.gov/energy/RENEW/Biomass/docs/ODOE%20Report%20Final%203-20-2012%20%28submitted%29.pdf

Because of this reduction in GHG emissions and the identical processes used to create renewable fuels from POTW biogas and landfill gas, NACWA believes the production of renewable electricity, CNG/LNG, and renewable diesel and naphtha from biogas from POTWs or waste digesters (1) are "derived" from cellulosic materials, and (2) meet the statutory 60% lifecycle greenhouse gas (GHG) emissions reduction threshold. Therefore, NACWA requests that EPA make a new determination without a new rulemaking confirming such information and include in Table 1 to § 80.1426(f) these fuels as eligible to generate cellulosic RINs.

In the alternative, NACWA requests EPA explain why production of renewable electricity or renewable diesel and naphtha from biogas from POTWs or waste digesters should not be classified as meeting the requirements to be added to D Codes 3 and 7. NACWA also requests EPA immediately establish a consolidated process under § 80.1401 to re-evaluate the potential renewable fuel pathways for biogas from waste treatment plants and waste digesters.

Additional Comments to Proposed RFS2 Amendments

NACWA provides the following additional comments regarding other aspects of the proposed RFS2 amendments.

Fuel Production: Transport and Tailpipe Emissions for Renewable Diesel and Naphtha

NACWA supports the new cellulosic landfill biogas to renewable diesel and naphtha pathways.

Renewable Electricity – RIN Generation, Administration, and Verification

The proposed regulations do not provide adequate explanations of how renewable electricity – and renewable CNG/LNG – will be "tracked to use in the transportation sector" and documented as "used for transportation purposes." The producer (and RIN generator) should be required to produce reasonable documentation for transportation use, measured at the point of delivery (e.g., power contracts measured on charging stations meter, CNG production sales under contract, inside the fence consumption triggered off baseline load).

NACWA supports the GHG emissions credit for avoided use of grid electricity,

The NPRM alternately speaks of "use in the transportation sector" and "use in electric vehicles." NACWA supports the broader formulation, "use in the transportation sector." Thus, for example, renewable electricity, used to power compressors for producing CNG for the transportation sector, would be RIN-eligible.

The proposed approach does not *expressly* explain or clarify the basis upon which RINs will be generated from qualifying cellulosic biofuel. This creates difficulties and uncertainties in calculating net amount of electricity delivered to the consumer (NPRM Table V.B.-1).

EPA should consider a more detailed attestation and tracking system similar to that used by the California CEC for purposes of validating delivery and use of pipeline biomethane under the state RPS.

Registration Requirements for Qualifying Renewable Electricity

EPA contemplates that qualifying renewable electricity could be used on-site to power fleet vehicles, but states that credit for renewable electricity would be given only to those companies that "load the renewable electricity to a power grid shared by the second company that withdraws the electricity, such that the two companies must be physically connected to the same grid or located within the same area." This seems to contradict language

elsewhere in the NPRM, particularly in the discussion regarding the revised definition of "producer," suggesting that on-site use of electricity is acceptable. NACWA supports pragmatic limitations on grid connectivity to avoid cross-country transactions with different GHG profiles, but recommends caution on limitations if the generator of the fuel can demonstrate seamless chain of ownership to the end user.

For biogas facilities that generate electricity for vehicles used on-site, it is inappropriate to use a generic "distribution loss" factor in determining lifecycle GHG emissions. This factor is biased against self-use inside the fence of the facility.

Advanced Butanol Pathway
NACWA supports EPA's proposal to alter the volatility standards to allow biobutanol to be effectively incorporated into transportation fuel.

Suggested Amendments to Proposed Regulatory Language

Based on the comments above, NACWA suggests the following specific changes to the language of the proposed RFS2 amendments:

- Revise Table 1 to § 80.1426(f) (Applicable D Codes for Each Fuel Pathway for Use in Generating RINs) entries U through AA to add "Biogas from waste treatment plants and waste digesters."

- § 80.1426(10)(i)(B) should be amended to include the following underlined language: "The fuel producer has entered into a written contract for the sale of a specific quantity of renewable electricity as transportation fuel, has used a specific amount of renewable electricity to power its own fleet of electric vehicles, or has used a specific amount of renewable electricity to produce other types of renewable fuel (e.g., CNG) used as transportation fuel."

- § 80.1450(C)(1) should be amended to include the following underlined language: "The energy source, equipment and/or process used to generate the electricity. Permitted sources are raw landfill gas, waste heat from the production process, unconverted syngas from the Fischer-Tropsch process, fuel gas from the hydroprocessing, biogas from wastewater treatment plant energy recovery processes, or combined heat-and-power (CHP) units that use non-fossil fuel based gas or other renewable sources."

- § 80.1454(k)(1)(ii) should be amended to include the following underlined language: "Permitted sources are raw landfill gas, waste heat from the production process, unconverted syngas from the Fischer-Tropsch process, fuel gas from the hydroprocessing, biogas from wastewater treatment plant energy recovery processes, or combined heat-and-power (CHP) units that use non-fossil fuel based gas or other renewable sources."

Thank you for your consideration of these comments. Please contact me at 202-533-1836 or *cfinley@nacwa.org* if you have any questions.

Sincerely,

Cynthia A. Finley, Ph.D.
Director, Regulatory Affairs