

September 25, 2009

Air and Radiation Docket
U.S. Environmental Protection Agency
Mailcode: 2822T
1200 Pennsylvania Avenue
Washington, DC 20460

Re: **Docket ID No. EPA-HQ-OAR-2005-0161, *Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program***

Dear Docket:

The Northeast States for Coordinated Air Use Management (NESCAUM) is pleased to submit comments on the U.S. Environmental Protection Agency (EPA) Notice of Proposed Rulemaking entitled *Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program*. NESCAUM is an association of the air pollution control programs in the eight Northeast states, including: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. NESCAUM has provided technical and policy support to our member states for over 40 years. NESCAUM supports the Agency's efforts in this rulemaking to fulfill its obligation under the Energy Independence and Security Act (EISA) to reduce the nation's dependence on petroleum fuel and establish greenhouse gas (GHG) emission reduction requirements for renewable fuels.

We focus on three main points in our comments below. First, we strongly support EPA's work to establish a robust lifecycle accounting method for renewable fuel GHG emissions and the inclusion of impacts associated with indirect land use change; 2) we are concerned that EPA in this proposal has interpreted the Energy Security and Independence Act requirements for renewable fuels as if it were an ethanol mandate and we believe a broader interpretation is needed; and 3) We urge EPA to assess the potential criteria air pollutant, toxics, GHG, and water quality impacts which could result from implementation of the RFS. Our specific comments on the proposal follow below.

Inclusion of the Impact of Indirect Land Use Change in GHG Emissions Accounting

We fully support EPA's use of lifecycle analysis of biofuels, which evaluates GHG emissions on a full fuel lifecycle basis, including "direct emissions and significant indirect emissions such as significant emissions from land use changes." Land use change, particularly from clearing and degradation of tropical forests, is responsible for approximately one-fifth of annual global GHG emissions. Given the volumes of biofuels proposed to be required under the proposed renewable

fuel standard (RFS), the rule – when finalized – could potentially add substantial pressure to world markets for agricultural and forest-based biomass. As such, EPA must consider the degree to which demand for biofuels may increase the rate of land use change and GHG emissions on a global scale.

We strongly disagree with stakeholders who assert EPA should not include an accounting of the emissions impact associated with indirect land use change. The stated rationale for excluding the impacts of indirect land use change is scientific uncertainty surrounding the magnitude of these effects. While estimating such effects is undoubtedly challenging, excluding them from consideration because of analytical barriers could cause transportation fuel-related GHG emissions to increase.

Inclusion of emissions associated with indirect land use change in lifecycle GHG emissions accounting is consistent with the “precautionary principle,” which states that in the absence of perfect information, policymakers should enact measures that prevent unintended and irreversible outcomes. As EPA stated in the preamble for the proposed rule: “It would be far less scientifically credible to ignore the potentially significant effects of land use change altogether than it is to use the best approach available to assess these known emissions.”

In addition, the benefits of including indirect land use change in lifecycle analysis for the RFS sets the right incentives for improvements in land use practices and management not only in the U.S., but elsewhere in the world. While U.S. policymakers generally have little influence over forestry and agricultural practices in other countries, through the RFS, EPA has an opportunity to set higher standards for those harvesters and fuels manufacturers who expect to benefit from the program.

We appreciate EPA’s process for seeking expert peer review of the available models for estimating land use change resulting from increased demand for biofuels. EPA’s efforts to assess these emissions are appropriate and science-based, and the results are generally consistent with similar efforts by the state of California and other researchers. It is premature for NESCAUM at this stage to recommend a particular modeling framework or combination of models for final determination of the emissions impacts of indirect land use change. However, we strongly urge EPA to maintain the inclusion of the emissions impacts associated with indirect land use change in the final rule. We also encourage EPA to devote sufficient resources to continued improvement of modeling tools and evaluation of alternative models and approaches.

EPA’s Interpretation of the EISA Legislation as an Ethanol Requirement

The EISA legislation passed by Congress in 2007 established requirements for the introduction of specific volumes of three categories of advanced biofuel into the nation’s gasoline and diesel supply between 2008 and 2022, subject to modification by the EPA Administrator. Congress provided broad latitude to the Agency to determine what types of fuels qualify as “biomass-

based diesel,” “cellulosic biofuels,” and “other advanced biofuels.” Specifically, the EISA legislation states:

The types of fuels eligible for consideration as ‘advanced biofuel’ may include any of the following:

- (I) Ethanol derived from cellulose, hemicellulose, or lignin.
- (II) Ethanol derived from sugar or starch (other than corn starch).
- (III) Ethanol derived from waste material, including crop residue, other vegetative waste material, animal waste, and food waste and yard waste.
- (IV) Biomass-based diesel.
- (V) Biogas (including landfill gas and sewage waste treatment gas) produced through the conversion of organic matter from renewable biomass.
- (VI) Butanol or other alcohols produced through the conversion of organic matter from renewable biomass.
- (VII) Other fuel derived from cellulosic biomass.**

(D) BIOMASS-BASED DIESEL- The term ‘biomass-based diesel’ means **renewable fuel that is biodiesel as defined in section 312(f) of the Energy Policy Act of 1992 (42 U.S.C. 13220(f))** and that has lifecycle greenhouse gas emissions, as determined by the Administrator, after notice and opportunity for comment, that are at least 50 percent less than the baseline lifecycle greenhouse gas emissions. Notwithstanding the preceding sentence, renewable fuel derived from co-processing biomass with a petroleum feedstock shall be advanced biofuel if it meets the requirements of subparagraph (B), but is not biomass-based diesel.

(E) CELLULOSIC BIOFUEL- The term ‘cellulosic biofuel’ means **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 [bold text added].

As can be seen from the excerpts from the EISA legislation above, Congress did not intend for the renewable fuel standard to be an ethanol requirement. However, through the RFS proposal, EPA appears to have narrowly interpreted the EISA legislation as if it were predominantly an ethanol requirement. Given this, we are concerned about how EPA’s actions and those of other federal agencies are perpetuating the dominant role of ethanol among renewable fuels. While we concede that the proposed regulatory amendments to 40 CFR 80 Subpart M (Regulation of Fuels and Fuel Additives – Renewable Fuel Standard), if read by themselves, appear to be fuel neutral, the very extensive preamble clearly portrays ethanol as winner of the market competition amongst fuel choices. The preamble further seems to take the approach that the mandate to achieve the volume requirements for deployment of renewable fuels is a mandate for EPA, in conjunction with the refining, auto manufacturing, fuel transport, and fuel marketing industries, and state and federal governments, to take all necessary steps to ensure that ethanol continues to dominate the renewable fuels market into the foreseeable future.

According to 42 USC 7545(o) (Renewable Fuel Program), the EPA Administrator is required to promulgate regulations “to ensure that transportation fuel sold or introduced into commerce in

the United States..., on an annual average basis, contains at least the applicable volume of renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel” specified in the statute. A plain reading of the statute indicates, in the context of the responsibility placed by Congress upon EPA, that the term *ensure* has nothing to do with creating incentives, infrastructure, or technology to promote a particular fuel type. Rather, EPA’s responsibility is to craft regulations with appropriate “compliance provisions applicable to refineries, blenders, distributors, and importers, as appropriate, to ensure that the requirements of this paragraph [i.e., to introduce into commerce the required volumes of renewable fuels] are met.” EPA fulfills its responsibility simply by laying out and implementing a regulatory framework of credit generation, trading, and accounting mechanisms. It is then the responsibility of the regulated entities to comply with the volume requirements, drawing from an array of potential renewable fuel choices.

With little support for its conclusions, the preamble repeatedly suggests that most of the obstacles to major expansion of ethanol production, transport, and consumption will be easily overcome, compared to the obstacles in the way of ramping up production of other renewable fuels. The fact is that the challenges and indirect consequences of vastly increased ethanol consumption are formidable. Here are a few examples:

- According to EPA’s own analysis, ethanol production facilities for the most part will remain regionalized. Therefore, in order to meet a strong nationwide demand for gasoline blended with ethanol, it will be necessary to greatly increase bulk storage and transport infrastructure at a high cost. Affected bulk storage infrastructure includes petroleum products terminals and rail hubs. Affected transport infrastructure includes rail lines, rail cars, rail terminals, marine terminals, and pipelines. To further the complexity, many petroleum terminals do not have access to rail spurs. It will be necessary to greatly increase ethanol transport by truck from rail terminals to petroleum products terminals.
- The preamble points out that meeting the increased volume requirements of the standard with ethanol is going to require a very substantial increase in consumption of E-85. There are numerous barriers to increased E-85 consumption, including lack of terminal storage capacity, high cost at the pump, low energy density necessitating more frequent fill ups, fueling component incompatibility, high cost of retail installations, relatively low numbers of flexible fueled vehicles on the road, and no UL-approved fueling systems.
- EPA is considering approving mid-level ethanol blends (E-15, E-20) as a temporary means to meet future renewable fuel volume requirements. As with E-85, there are numerous barriers to increased mid-level blend consumption, including unresolved legal issues, engine warranty issues, likely need for two different gasolines (i.e., E-10 and a mid-level blend), potential misfueling problems involving older vehicles and non-road gasoline powered equipment, and need for a new low-RVP blendstock that is compatible with higher percentages of ethanol.

The preamble further enumerates ways in which the petroleum products industry and governments must perpetuate a competitive advantage for ethanol if the RFS volume requirements are to be achieved. Here are some examples:

- Industry, study groups, and interagency governmental organizations must continue “to evaluate what steps may be necessary to facilitate the necessary upgrades to the distribution system to support compliance with the RFS2 standards.” While this statement may seem rather innocuous on its own, the context is ethanol production from agricultural crops. No similar actions or investments are even suggested for other renewable fuels.
- EPA is considering providing “E-85 manufacturers who use blendstocks to produce E-85 with ...flexibilities in complying with the refiner requirements.” Presumably these same “flexibilities” are not being offered to manufacturers of other renewable fuels.
- Some states are offering infrastructure grants and retail pump incentives, including excise tax reductions, to expand E-85 availability. Bills before Congress are proposing tax credits as incentives to expand retail E-85 infrastructure.
- EPA suggests refiners consider subsidizing the price of ethanol used to manufacture E-85 through an increase in their selling price of gasoline.
- While EPA does not have the authority to mandate production quotas for flexible fueled vehicles, the preamble discusses mandates as an approach to increasing E-85 consumption and models the potential impact of a mandate in its analysis.
- EPA is contemplating an unprecedented “partial waiver” for mid-level blends of ethanol under the Clean Air Act (CAA) section 211(f)(4).

This extreme emphasis on ethanol as the solution for meeting the requirements of the renewable fuel standard is particularly disappointing, in light of promising developments in the production of hydrocarbon fuels derived from biomass. According to the National Science Foundation,¹ there are several key advantages to biomass-based hydrocarbon fuels over ethanol:

- Chemically, they essentially are the same as petroleum based fuels and therefore are able to utilize infrastructures already in place (e.g., pipelines, engine technologies, refinery systems, dispensing equipment).
- They are energy equivalent to petroleum based fuels, thus there are no fuel economy penalties or blending restrictions.
- They are immiscible in water, meaning they self-separate, eliminating the need for the energy intensive distillation step necessary for producing ethanol.
- The reactors used to produce the fuels are small and therefore easily transported and set up near the source of the biomass.

¹ NSF. 2008. *Breaking the Chemical and Engineering Barriers to Lignocellulosic Biofuels: Next Generation Hydrocarbon Biorefineries*.

The National Science Foundation projects that commercial scale production of liquid hydrocarbon fuels from biomass will be possible in just a few years.² If the same level of effort, presently made by EPA and other federal agencies to promote greater ethanol consumption was applied to production of biomass-based hydrocarbon fuels, it is quite possible that the volume mandates of the renewable fuel standard could be met by these fuels and with fewer drawbacks.

The expected expansion of electric vehicle technology is one of the more promising developments in the transportation sector for reducing dependence on traditional petroleum fuels. Consistent with this expectation, Congress added Section 206 to the EISA, requiring the EPA Administrator to “conduct a study on the feasibility of issuing credits...to electric vehicles powered by electricity produced from renewable energy sources.” This report, which is yet to be completed, was to be submitted to Congress by no later than June 2009. Among its elements, the report is to describe alternatives for “equating specific quantities of electricity to quantities of renewable fuel under section 211(o) of the Clean Air Act.” The preamble acknowledges this reporting requirement, but only to note that “[o]nce completed, this study will provide additional information regarding the means by which renewable electricity is able to generate RINs under the RFS2 program.” This current round of amendments to the renewable fuel standard would have been an opportune time to address electricity as a renewable fuel. We urge EPA to publish this report as soon as possible and submit it to Congress in support of possible future amendments to the EISA.

We urge EPA to substantially amend its preamble, giving the same depth of treatment presently afforded to ethanol, to biomass-based hydrocarbon fuels and renewable electricity as potentially effective solutions to meeting the renewable fuel mandates.

Assessing and Mitigating the Potential Air and Water Quality Impacts of the RFS

Several aspects of current industrial practice in biofuels production could potentially be harmful to air quality, water quality, and ecosystem health. We urge EPA to pursue a vigorous assessment of these effects and establish rigorous anti-backsliding provisions for air and water quality to ensure that increased production of renewable fuels does not increase air and water pollution. Alternatively, we encourage EPA to waive the RFS2 volume requirements if appropriate, until such time as the potentially adverse environmental impacts are mitigated. We note that the Administrator has authority under EISA to waive or modify RFS fuel volume requirements in any year if implementation would “severely harm the economy or environment...or...there is an inadequate domestic supply.” Specifically, we note several potential adverse environmental impacts below.

Air Quality

EPA states in the preamble to the proposed rule that “the increased use of renewable fuels would also impact criteria pollutant emissions, with some pollutants such as volatile organic

² Science, Vol. 325, August 14, 2009, *Cellulosic Biofuels – Got Gasoline?*

compounds (VOC) and nitrogen oxides (NO_x) expected to increase[.]” EPA has also noted the potential for increased emissions of acetaldehyde, acrolein, and other air toxics if the RFS volume requirements are implemented.

Water Quality and Ecosystem Health

EPA states in its Regulatory Impact Analysis that it “anticipates that increased corn production for ethanol will increase the occurrence of nitrate, nitrite, and atrazine in sources of drinking water.” EPA notes further that “production of corn for ethanol may exacerbate existing serious water quality problems in the Gulf of Mexico,” and that “further assessment is necessary to determine whether there is the potential for adverse human health effects from any increase in pesticide use associated with increased domestic corn production.”

Greenhouse Gas Emissions

The EISA exempts up to 15 billion gallons of current-generation corn ethanol from any greenhouse gas reduction requirements. When the full lifecycle impacts of this ethanol are taken into account, including the effects of indirect land use change, substitution of this grandfathered ethanol for gasoline could result in a substantial increase in greenhouse gas emissions. We recognize that EPA does not have authority to require GHG emission reductions from a category of renewable fuel exempted by law. However, EPA is authorized to consider the lifecycle impacts of all categories of renewable fuels in the context of a decision whether to waive the overall volume requirements.

We strongly urge EPA to assess the above described impacts and establish anti-backsliding provisions to forestall increases in emissions or alternatively consider waiving the volumetric requirements of the RFS in a given year to prevent significant increases in emissions.

Thank you for the opportunity to provide comments on this proposal. We look forward to working with the Agency in the development of the final RFS rule.

Very truly yours,



Arthur N. Marin
Executive Director

Cc: NESCAUM Directors
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Attached below are additional comments from the State of New Jersey on the EPA Proposed Rule on the Changes to the Renewable Fuels Standard Program

Additional comments on the May 26, 2009 Federal Register/ Vol. 74, No. 99/ Notice of Proposed Rulemaking for: 40 CFR Part 80 - Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program

The following comments are provided by Federal Register page number:

1. Page 24922 – EPA seeks comment on an alternative approach for generating RINs for renewable electricity, natural gas and propane.

Comment: We support the proposed alternative to allow or require parties that supply these fuels to centrally fueled fleets to generate RINs even if they are not the producers of the fuel. We support this approach because it would provide an incentive for a larger volume of electricity, natural gas and propane that is made from renewable biomass to be used as vehicle fuel.

2. Page 24922 – EPA seeks comment on whether or not MSW should be included in the definition of renewable biomass.

Comment: We recommend that EPA include MSW that contains yard and/or food waste within the definition of “renewable biomass”. This is consistent with the goal of EISA to reduce our dependence on foreign sources of energy. MSW is considered a significant potential feedstock for biofuel production in the Northeast region.

3. Page 24930 – EPA seeks comment on the selection of options for limitations on the grandfathering of ethanol plants that are not subject to the 20% reduction criteria.

Comment: We recommend choice of Option (3): expiration date of 15 years for grandfathered facilities and limitations on volume.

4. Page 24948 – EPA seeks comment on an alternative approach to imported renewable fuel that allows foreign renewable fuel producers to not participate in RFS2.

Comment: We disagree with allowing foreign renewable fuel providers the option to not participate in the RFS2 program because it is important that information on all renewable fuels gets reported and tracked. This information would be useful to support Low Carbon Fuel Standard (LCFS) programs such as the California program and the potential Northeast regional program.

5. Page 24960 – EPA seeks comment on whether fuel used in Category 2 (C2) marine engines should be excluded from the RFS2 program.

Comment: We believe that fuel used in C2 marine engines should not be excluded from the RFS2 program. EISA specifies that “transportation fuels” do not include fuels used in ocean-going vessels. We believe that this means C3 marine engines only; not C2 marine engines. C2 marine engines are normally associated with applications such as propulsion of harbor craft that tend to remain close to land.

6. Page 24964 – Heating Oil and Jet Fuel.

Comment: We support allowing RINs for use of renewable fuels in heating oil and jet fuel. These fuels are significant to the Northeast region and this would be an effective way to promote the use of renewable fuels in these two products.

7. Page 25022 – History and Evolution of GHG Lifecycle Analysis.

Comment: We support EPA working closely with California regarding the development of transportation fuels lifecycle GHG impacts and encourage future cooperation. Consistency of the RFS2 program with the California LCFS program will assist the Northeast in our efforts to develop a regional LCFS program.

8. Page 25035 – 25037 – EPA seeks comment on issues related to time periods for lifecycle analysis.

Comment: Instead of using a single time horizon, it would be more accurate to estimate the project time horizon differently from the impact time horizon as suggested on page 25036. The example given of assuming 30 years for corn ethanol production while assuming 100 years for assessing the impacts of the land use changes seems to model the future more realistically than use of a single time horizon. It’s reasonable to assume that corn will no longer be used for ethanol production in 30 years due to advances in other biofuels and the competing demand to use corn for food rather than biofuel. Also it’s reasonable to assume that land use impacts would persist for a longer time period, such as 100 years.

Comment: We agree that land reversion (what happens to the land after corn ethanol production ceases) should be considered in the final rule.

Comment: Assumption of a gradual phase-out of corn starch ethanol production between 2022 and 2045 as described on pages 25036 and 25037 appears to be reasonable.

9. Page 25037 – EPA seeks comment on the concept of discounting.

Comment: Use of physical science metrics such as actual quantities of climate forcing gasses in the atmosphere weighted by global warming potential, or cumulative radiative forcing should be used to evaluate emissions over time instead of use of a constant, somewhat arbitrary, value (e.g., 2%).

10. Page 25038 – Expert peer review.

Comment: We agree that it is appropriate to subject the issues surrounding time horizons and discount rates to an expert peer review.

11. Page 25062 – Air quality modeling.

Comment: We support EPA's proposal to use a national-scale air quality modeling analysis to assess the impacts of the RFS2 program on future ambient concentrations of PM2.5, ozone and air toxics. The CMAQ modeling platform is appropriate for this analysis to be presented in the final rule. Following are suggestions regarding the proposed CMAQ modeling plan: (1) Based on the current State Implementation Plan (SIP) modeling efforts by the Northeast States, 2007 meteorology is preferred over 2005 meteorology for PM2.5 and ozone modeling. If EPA uses 2007, their results may be more useful to the Northeast States SIP efforts. (2) EPA is proposing to use MM5 for meteorology modeling; however, WRF use is currently more prevalent.

12. Page 25095 – Marginal GHG benefits estimates.

Comment: Since the currently estimated benefits of GHG reductions do not reflect many of the main reasons for concern about climate change, we support EPA's plans to develop a full assessment of what is not currently being captured in the FUND model for the final rule.