By E-Docket Submission

Ms. Gina McCarthy
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D.C., 20460

July 27th, 2015

**RE: U.S. Environmental Protection Agency's "Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017" 80 Federal Register 111 (June 10, 2015) [EPA-HQ-OAR-2015-0111; FRL-9927-28-OAR]**

Dear Administrator McCarthy:

Thank you for the opportunity to comment on this proposed rule. The Union of Concerned Scientists (UCS) is the nation's leading science-based nonprofit putting rigorous, independent science to work to solve our planet's most pressing problems. On behalf of UCS's more than 450,000 supporters, and network of more than 16,000 scientists, engineers and public health professionals, we are pleased to provide comments on EPA Docket No. EPA-HQ-OAR-2015-0111 "Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017" that was published in the Federal Register at 80 Fed. Reg. 111 on June 10, 2015.

This combined Renewable Volume Obligation (RVO) for 2014, 2015, and 2016 represents a new direction for the administration of the Renewable Fuel Standard (RFS), which is necessary and appropriate not only because of ethanol blending challenges but also because the post 2015 RFS enters a new phase, focused heavily on growth in cellulosic biofuels, production of which are lagging statutory timelines significantly. Setting a direction for the next phase of the RFS has obviously been challenging and controversial, and uncertainty over EPA's approach has increased uncertainty in the biofuels marketplace and created a drag on investment. In this context, the most important outcome of the present rulemaking process is to reduce uncertainty and provide the maximum amount of clarity to all market participants and stakeholders about EPA's plans going forward. The limited scope of the present proposal means it cannot fully eliminate uncertainty on the related policy questions. However, the present rule can do a great deal to improve the situation, particularly by providing clear rational for how decisions are being made and laying out next steps toward longer term forward guidance.

Broadly we agree that EPA's approach should "balance aggressive growth with marketplace realities." Overall, the proposed RVO does a good job striking that balance, although there are a few specific areas where refinements will improve the proposal. Our comments reflect three broad goals, expanding investment in and production of cellulosic biofuels, limiting problems caused by expansion of food based fuels and enhancing the stability and predictability of the fuels policy framework. Our specific recommendations include:

- Initiate a rulemaking to update the standards from 2017 to 2022 or 2030.
- Reduce the growth of bio based diesel (BBD) to 30 million gallons (Mgal) in 2015, 29 Mgal in 2016 and 25 Mgal in 2017, consistent with the attached analysis of feedstock growth.
- Apply the full cellulosic waiver to the advanced and renewable mandates.
- Provide stable policy support for ethanol blends beyond 10% ethanol.
- Consider changes to the process of setting cellulosic volume targets and issuing cellulosic waiver credits to ensure a well-functioning market for cellulosic fuel.

As was suggested in the proposal, we will not repeat detailed arguments made in response to past proposals, most of which are still relevant input to the present process. We urge EPA to consider the present comments as a supplement to rather than replacement for our earlier input.

## Initiate rulemaking on cellulosic schedule update

As soon as possible upon finalizing the combined RVO, EPA should begin a rulemaking process to reset the RFS mandate schedule for 2017 and beyond. EPA should include discussion of the implications for cellulosic, advanced and renewable mandates in this rulemaking process. The implausibility of the current mandate schedule, including the 16 billion gallon (Bgal) cellulosic target for 2022 and the related 21 Bgal target for advanced and 36 Bgal target for renewable fuels, creates a vacuum in the regulatory framework with implications that go beyond EPA's administrative processes for the RFS. The associated uncertainty creates challenges for other federal agencies projecting the future of fuels and agricultural commodities, for market participants in fuel production, distribution, and use, as well as for state governments pursuing complimentary clean fuel policies and for international bodies such as the Food and Agriculture Organization of the United Nations trying to project international trade in fuels and agricultural commodities.

EPA should initiate an open and science-based rulemaking process, decoupled from the annual rulemaking for volume obligations, to develop an ambitious but realistic schedule for cellulosic biofuel growth over the coming years. At a minimum, the schedule should be updated through 2022, but alternatively, the EPA might approach the question of how long it will take to meet the full 16 Bgal cellulosic target, thus looking out past 2022 to 2030 or beyond. Such a roadmap is an important element of a comprehensive approach to climate policy that would complement the clean power plan, vehicle efficiency standards, and other policies.

Such a rule should address the statutory requirement to update the cellulosic mandate schedule in light of the consecutive waivers in years 2010 through 2016, and allow EPA to do the same for advanced and overall mandates. A workable approach to the policy requires an analysis of the impact of the policy in its entirety. The new compliance schedule and RVO criteria should be based on a technical assessment of competing uses for agriculture products, constraints in the vehicle and fueling infrastructure, and a detailed study of how mandate increases impact these factors and land use change and carbon emissions.

This comprehensive proposed rulemaking should fully support the Congressionally-directed goal of advancing the development of cellulosic biofuels that move beyond food as a feedstock while minimizing competition with existing uses of agricultural feedstocks and the associated negative impacts on food markets, land use change emissions. We recognize that such a rulemaking would require a substantial amount of analysis, consultation with United States Department of Agriculture and

Department of Energy, stakeholders, and extensive public comment and technical peer review. However, undertaking such a process sooner rather than later would reduce the scope of analysis required for annual RVO rulemakings, reduce uncertainty and provide clarity for all parties affected by RVOs, and would benefit the EPA by simplifying the administrative burdens of the RVO process moving forward.

## Constrain growth of bio-based diesel based on feedstock availability

Generally the arguments in section III on the proposed BBD volumes are well thought out and clearly explained. In particular, it is important that a significant portion of the advanced mandate should be left open to competition, even if current market conditions suggest BBD is the most likely source of additional advanced RIN generation. While the motivation to provide the biodiesel industry the predictability of a steadily growing mandate is reasonable, the proposed rate of growth of 100 Mgal a year is too high and gives inadequate consideration to the long term trends in BBD feedstock availability (discussed below). A more sustainable growth rate of 30 million gallons (Mgal) in 2015, 29 Mgal in 2016 and 25 Mgal in 2017, consistent with the attached analysis of feedstock growth (Brorsen 2015) will provide a baseline rate of stable and sustainable growth for the BBD industry while also providing an incentive to other advanced biofuel producers and preserving flexibility in case market conditions change. As is discussed below, a slower rate of growth for BBD mandates will not prevent BBD from providing a significant share of advanced biofuels needed to meet the advanced mandate if market conditions support this, as it has done in recent years.

EPA's proposal for bio-based diesel mandates gives inadequate consideration to feedstock availability and focuses too much on BBD availability and market access. Each biofuel is different, and while blending constraints are the principal near term obstacle to increased ethanol sales, and fuel production capacity is the principal constraint on cellulosic biofuel production, for bio-based diesel (BBD) the availability of feedstocks is the most urgent question.

Together with the International Council on Clean Transportation, the Union of Concerned Scientists commissioned Professor Wade Brorsen, a distinguished agricultural economist from the University of Oklahoma, to evaluate the availability of biodiesel feedstock in the United States to support expanded BBD mandates and advanced biofuel mandates (Brorsen, 2015). Professor Brorsen considered all the major sources of biodiesel feedstock and developed projections of their availability in the next several years. The conclusions of the study were that the US agricultural sector can increase production of fats and oils beyond 2014 levels by 30 Mgal in 2015, 29 Mgal for 2016 and 25 Mgal in 2017. Increasing the use of biodiesel at a faster rate will primarily result in bidding feedstocks away from other uses and ultimately to reduced vegetable oil exports or increased imports of vegetable oil or biodiesel. Increasing vegetable oil or biodiesel imports and bidding vegetable oil and other biodiesel feedstocks away from other uses are not sustainable means to meet the objectives of the RFS as outlined in Clean Air Act (CAA) section 211 (o)(2)(B)(ii).

Setting targets for production that exceed the reasonable growth of feedstocks will lead to a growing feedstock deficit (described in detail in Brorsen 2015). This will impact food markets, particularly affecting people living in extreme poverty for whom vegetable oil is a significant source of dietary fat (WHO 2002). It will also indirectly expand the market for palm oil to replace soybean oil currently exported for food use and other purposes.

Earlier assessments submitted by the American Biodiesel Board have suggested biodiesel feedstock is available to support a rate of growth of biodiesel mandates as high as 300 Mgal a year, but these assessments consider the global availability of vegetable oil rather than domestic resources. The US fuel market is not the sole consumer of BBD. EPA should consider how BBD growth would impact the balance of trade for vegetable oils in assessing the relevant data. We do not believe it is consistent with the goals of the RFS to create an unsustainable shift in global markets in which the US becomes increasingly dependent on vegetable oil or biodiesel imports.

Our concern about changes in the balance of trade in vegetable oil and biodiesel is not motivated by a protectionist impulse but primarily by the concern that palm oil is the marginal oil in the global marketplace for vegetable oil. As a consequence, changes in the US balance of trade in vegetable oil are unlikely to lead to increased planting of soybeans in the US or abroad, which are grown primarily for protein meal. Instead, over the long term, steady increases in demand for vegetable oil beyond the US capacity to supply it will result primarily in expanded demand for palm oil. This need not be caused by direct US imports of palm oil BBD, but could occur indirectly as price sensitive consumers of vegetable oil elsewhere in the global marketplace shift from soy oil to palm oil on the basis of price. The 2012 Stanford Ph.D. dissertation of Joanne Gaskell highlights the palm oil revolution going on in Asia. India, for example, as one of the largest global importers of vegetable oil, has been steadily increasing the quantity and share of oil imports from palm oil, although it is still importing an average of 1.5 million metric tons of soybean oil per year in the last five years (Foreign Agricultural Service, USDA). If US biodiesel markets bid away vegetable oils that are eligible biodiesel feedstocks, it is likely that this oil will primarily be replaced by further expansion of palm oil production. Palm oil production is a major driver of deforestation and the associated land use change and peat emissions will lead to dramatic increases in carbon emissions (UCS 2012).

Unrealistic and unstainable growth rates for BBD are not just a concern for food markets and the environment, but for BBD producers as well. Expanding BBD production capacity beyond the available feedstocks will eventually lead to market instability in the BBD market. A sustainable rate of growth of BBD production based on stable long term trends in underlying low carbon feedstock availability will provide more sustainable support for steady growth of the BBD industry over time. Rapid increases in production that are based on bidding feedstock away from other uses and changing the balance of trade will enhance the risk of a future market collapse when feedstock availability inevitably becomes constrained.

## Avoid discretionary increases in food based fuels by applying the full cellulosic waiver to advanced and renewable mandates

On pages 33104 and 33110 EPA seeks comment on the criteria under which it should exercise its cellulosic waiver authority. If EPA does not reduce the advanced and renewable mandates by the same amount as the cellulosic mandate, it is in effect making a discretionary enlargement of the mandate for food based fuel beyond the level implied by the statute.

While EPA clearly has authority to make such an enlargement, it is important that the exercise of this authority is made with consideration of all the goals and criteria set forth in section 211 (o)(2)(B)(ii) of the Clean Air Act, which include the impact on climate change, ecosystems, wildlife habitats, infrastructure, the price and supply of agricultural commodities and food prices. Given current sources of non-cellulosic advanced biofuel, we do not believe available biofuels support a discretionary

enlargement at this time. In particular, because limitations on fuel dispensing infrastructure constrain the use of advanced ethanol, BBD is likely to be the source of marginal compliance for the renewable fuel mandates as is reflected in Table II.D.2—2. As discussed above in the context of BBD, consideration of available feedstocks suggest that there is inadequate supply of low carbon sources of BBD that are consistent with the goals of section 211 (o)(2)(B)(ii) to merit a discretionary enlargement of the renewable fuel mandate.

In evaluating EPA's proposal, we recognize and commend the EPA's proposal to limit the growth of the non-cellulosic (food-based) advanced biofuel mandate between 2015 and 2016 to 480 million gallons. The proposed 2016 advanced biofuel mandate of 3.4 billion gallons, of which approximately 200 Mgal are cellulosic, still exceeds by approximately 200 Mgal the level associated with the statutory minimum. This discretionary enlargement is not warranted by the available feedstocks and thus for 2016, if the cellulosic mandate remains at 200 Mgal, the advanced and renewable mandates should be reduced by 4.05 Bgal rather than 3.85 Bgal as proposed.

While reducing the advanced mandate might not seem to support aggressive growth in advanced biofuels, it is important to recognize that the minimum statutory levels are already very aggressive. The minimum statutory level for non-cellulosic advanced biofuel is scheduled to grow at 500 Mgal a year for 2017, 2018 and 2019 reaching 4.5 Bgal in 2019. If this is met primarily with BBD it would support as much as 3 Bgal of BBD, a very large and rapid expansion from current levels. Even in the absence of any discretionary enlargement, this rate of growth is very aggressive considering the sources of non-cellulosic advanced biofuels that are likely to be available in this timeframe.

By setting forth clear criteria to evaluate future discretionary enlargement, considering feedstock availability among other factors, EPA will increase forward guidance to the marketplace and reduce policy uncertainty. Moreover, a focus on feedstock availability will clarify the importance of investment in fuels for which feedstocks are abundant, primarily cellulosic biofuels, and avoid unsustainable capacity buildup in BBD production capacity that outstrips feedstock availability. By adopting a clear approach to the cellulosic waiver now, the RFS will still provide and aggressive schedule of growth in non-cellulosic advanced biofuels and will reduce the role of speculation about EPA administration from driving the marketplace.

### Should cellulosic waiver be applied equally to advanced and renewable mandates?

In the present circumstance we believe that the mandates for advanced and renewable fuels should be adjusted by the full amount of cellulosic waiver. However, there are circumstance in which it might be preferable to make a larger adjustment in the renewable mandate and only apply part of the cellulosic adjustment to the advanced mandate as was described in a paper by James Stock (Stock 2015A). The motivation for such an approach would be to administer the overall program in a manner that provides greater incentives for cleaner fuels and to avoid counterproductive outcomes such as the extensive use of palm oil biodiesel from grandfathered facilities to comply with D6 obligations as occurred in 2013. In light of the exercise of general waiver authority in this proposal, it does not seem as if such a differentiated application of the cellulosic waiver authority is required. However, in the event that making a variable adjustment to the renewable and advanced pool EPA can ensure that more of the fuels used to meet the program are lower carbon, this would be consistent with the goals of the RFS and we would support it.

## Ethanol blending challenges

Addressing the infrastructure constraints and market access issues that complicate the sale of higher ethanol blends is critical to the long term success of the RFS. However, we recognize that overcoming these challenges requires actions that go beyond the present RFS proposal, and indeed that efficient and cost effective use of higher ethanol blends will require action from stakeholders in other parts of the federal government, state regulators, and private sector parties in the automobile, fuel production, refining, distribution and retail industries. But while the present rule alone cannot resolve the blending challenges, a balanced and stable path forward can make a significant contribution. In particular, we believe the approach EPA articulated in the proposal should clearly communicate to market participants that EPA intends to balance stability in fuel markets with a concerted regulatory push that will allow RIN markets to provide significant support for additional biofuel use.

One of the biofuel market dynamics that has emerged clearly over the last few years is the competition between BBD and E85 to provide compliance for advanced and renewable mandates that cannot be met within E10 blends. This competition has been illuminated by several studies from Scott Irwin at the University of Illinois published on FarmDocDaily. In light of this competition between E85 and BBD, it seems likely that absent exercise of general waiver authority, a 2016 renewable mandate of 18 Bgal (the statutory minimum) plus the cellulosic volume, would result in a dramatic increase the use of biodiesel rather than steady progress on availability and competitive pricing of higher ethanol blends. As discussed earlier, the supply of BBD is already straining to meet the non-cellulosic advanced mandate, and is clearly insufficient to increase by a further 667 Mgal to make up for the missing 1 Bgal worth of D6 RINs that would be required absent exercise of general waiver authority. Such a dramatic increase in the use of biodiesel would be destabilizing and not supportive of steady growth of fuel production and distribution capacity over time. In this sense, the availability of additional corn ethanol in the US is irrelevant if the markets will not support its use as fuel.

Thus EPA is justified in using the inadequate supply argument to reduce the 2016 mandate, although it is the supply of BBD rather than ethanol that is inadequate. EPA should determine the extent of the general waiver to support the maximum realistic potential use of ethanol in various blends while limiting spillover that increases demand for BBD and other biofuels beyond available supplies (taking feedstocks into consideration). This should provide fuel market participants the assurance that as infrastructure to distribute ethanol at cost effective prices is deployed, EPA will administer the RFS standards in a manner that supports the sale of these higher blends. EPA's arguments and analysis are generally sound, and quantitatively the proposal seems quite aggressive in its support for higher ethanol blends.

While EPA's 2016 proposal for the RFS balances stability while providing support higher blends, progress on higher blends over the long term will require coordination of car-makers, gas stations and numerous private sector actors and government agencies. No single industry or regulatory body can resolve this challenge by itself, but government has an important role to play coordinating this process and keeping changes focused on cutting oil use and emissions. We urge EPA to seek opportunities to lead or participate in multi-stakeholder processes to develop a fuel and vehicle infrastructure that steadily evolves to meet long term climate and oil saving goals.

### Calculating the ethanol obligation in terms of percentages rather than as a volume

Another specific change EPA should consider is to specify obligations in terms of percentages. This may provide more clarity to key participants in the supply chain (especially gas stations), and this clarity will

allow for rational investment and ultimately reduce compliance costs. In past comments we argued that a straight line increase in the mandate until the general waiver is no longer needed would be the best way to provide clarity to supply chain participants that the demand for high blends would be growing steadily. But recent analysis from Irwin and Good have demonstrated that fluctuations in gasoline use overall can lead to shifts in ethanol consumption as E10 that are large compared to volumes of ethanol consumed as E85 (Irwin and Good, 2015). In light of this, specifying the obligation based on fractional standards may be a more effective means of helping supply chain participants anticipate and pursue compliance strategies that are most efficient.

## Improve administration of cellulosic volumes and credits.

Increased production of cellulosic biofuels is critical to the RFS realizing its oil saving and climate objectives, and increased production will require substantial investment. This investment depends upon prospective producers having clarity about the compliance value of fuels they may produce. The policy design of the RFS provides a cap on the compliance value of cellulosic fuels in the form of the cellulosic waiver credit (CWC), and in the circumstance that cellulosic production is falling short of the statutory targets, this should suggest that cellulosic fuels would be valued at or near this cap value.

However, complexities in accurately projecting the supply of cellulosic fuel, legal restrictions based on court rulings, policy uncertainty and developing pathways all combine to create a risk that cellulosic producers may not be able to claim the full theoretical compliance value of their fuel. Two related issues emerge, related to how EPA projects cellulosic biofuel availability and the procedures related to the CWC.

We have heard directly from industry sources that obligated parties are in some cases choosing to purchase cellulosic waiver credits (CWCs) rather than actual gallons of cellulosic biofuels. This is creating liquidity problems in the market for cellulosic biofuels with the result that cellulosic producers must sell their fuel at a significant discount to the waiver credit price plus an advanced gallon.

While the cellulosic waiver credit mechanism was designed to cap the cost of cellulosic credits, it should not be administered in a manner depresses prices significantly below the cap price. While the market for cellulosic gallons is obviously a developing market, we urge EPA to consider mechanisms to ensure that there is no uncertainty about the ability of cellulosic fuel producers to sell their fuel at a reasonable price, and that cost containment mechanisms do not inadvertently depress these prices.

Some experts in academia and industry have proposed processes to true up the developing market for RINs year to year as a way of providing greater certainty to both cellulosic fuel producers and obligated parties. One approach was described by James Stock (Stock 2015B). Such a true up process would improve the functioning of this market in a manner that honors the statutory requirement for cost containment and court order for a neutral approach to the cellulosic mandates without undermining the support for investments in cellulosic biofuels that are clearly critical to the success of key RFS goals. EPA should seriously consider these or other modifications to the administration of the cellulosic volumes and waiver credits aimed at increasing stability and predictability for all market participants.

In the absence of a true up mechanism for cellulosic mandates, it is especially important to ensure that EPA does not underestimate the potential RIN generation from new and existing pathways. In particular, the emergence of significant cellulosic credits from renewable natural gas should be fully accounted for, including consideration of the relatively low technology risk associated with these

pathways, and the potential for additional RIN generation from the use of biogas based electricity for transportation in the future, which could lead to a relatively quick increase in credit generation once the paperwork is complete.

## Getting the RFS back on track will take time, but it is important

Congress intended to create a stable and durable framework for investment in low carbon renewable fuels when it passed the RFS2 in 2007. The realization of the ambitious targets in the RFS has proven very challenging for many reasons that are beyond EPA's control, but uncertainty surrounding EPA's administration of the policy has added to these challenges. By providing clear guidance in the final rule for 2014, 2015 and 2016 and initiating a comprehensive update to the RSF roadmap, EPA can provide the stable policy foundation that is a precondition to meeting the ambitious and critically important oil saving and climate goals of the Renewable Fuels Standard.

Sincerely,

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