NEW FUELS ALLIANCE

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Dear Mr. Courtis,

The New Fuels Alliance (NFA) respectfully submits the following comments pursuant to the ARB LCFS Workshop held on January 30, 2009. The NFA is a national advocate for bio-based fuel production and use, and has several biofuel members located in the State of California, including Altra, Cilion, Pacific Ethanol, VeraSun and BlueFire Ethanol. In addition, several worldwide leaders in the commercialization of cellulosic ethanol are members of NFA, including BlueFire Ethanol, Mascoma, Verenium, BioEnergy International, and Qteros.

We commend the staff for its ongoing efforts to build a first-of-its-kind carbon-based performance fuel standard. We recognize the magnitude of the challenge, and the volume of data that must be processed into a workable regulation. However, we continue to believe that the currently proposed LCFS does not meet the basic criteria of a performance-based regulation.

The fundamental presumption of a performance-based, carbon regulation is that all fuels will have a consistent lifecycle assessment (LCA) boundary. In fact, there is an ISO standard that has been applied to fuel lifecycle studies. The ISO 2006 standard states: "ISO 14040 specifies requirements and provides guidelines for life cycle assessment (LCA) including: definition of the goal *and scope* of the LCA …" [emphasis added]. ARB staff did not define the scope of the LCA across all fuel pathways early in the process, and over the course of the rulemaking the scope of the LCA for different fuels has become inconsistent. The most obvious example is between biofuels and petroleum. The petroleum carbon intensity score is based on the current average California "basket" of petroleum fuel. The biofuel carbon intensity score, which must compete with petroleum under the LCFS, is based on the future worldwide marginal biofuel gallon. In other words, the LCA boundary is wider for biofuels than petroleum, and the two are very clearly inconsistent. This is not the only case of inconsistent LCA boundaries in the proposed LCFS.

It is absolutely critical that all fuels have a consistent LCA boundary in a performance-based standard for two primary reasons: (1) because fuels are expected to compete based on their relative carbon intensity value (CI Value), and if one fuel pathway is charged for a category of carbon effect that another fuel pathway is not debited for, the result is an asymmetrical regulation that fails its primary ambition to remain technology neutral; and (2) because once LCA boundaries begin to expand beyond direct effects, there are limitless considerations that could be taken into account. ARB staff's expansion of the LCA boundary for biofuels to include the indirect, market-mediated effect of indirect land use change (iLUC) underscores both problems.

Inconsistent LCA Boundaries Tilts The Playing Field Against Biofuels

With regard to the issue of equitable and fair competition, biofuels are the only fuel under the LCFS being debited for an indirect, market-mediated effect, in the form of indirect land use change (iLUC). To be clear, we are not opposed to biofuels being debited for land use directly attributable to the production of the fuel (i.e. direct land use). But iLUC is an additional price-induced compliance metric derived by running a computable general equilibrium (CGE) model. In other words, it is the alleged disruptive effect biofuels might have in the agricultural sector from the presumed increase in demand for crop-based agricultural products. The result is a minimum 40% increase in the cumulative CI Value of biofuels, and for advanced biofuels the percentage increase is much higher. This indirect CI Value "adder" drags the corn ethanol CI Value down to roughly that of petroleum, and drags the advanced biofuel CI Value to the vicinity of electricity (in some scenarios) and natural gas. However, neither electricity nor natural gas is penalized for indirect, price-induced effects. So the comparison is based on asymmetrically-applied analysis.

In essence, ARB staff is deriving the biofuel CI Value by adding together the carbon emissions directly resulting from producing and using a gallon of biofuel (i.e. well-to-wheels) and the highly uncertain, economically-derived carbon emissions that could occur in the worldwide agricultural sector as a result of using more biofuels. But ARB does not add to the electricity score the impact of plugging more cars into the electricity grid, and the possible browning of the grid that could occur as a result. ARB does not add to the natural gas score the impact of using more natural gas in our vehicles, and the decrease in supply and increase in price of natural gas that could occur, with wide-ranging economic impacts including more prevalent coal combustion to produce power. ARB does not add to the tar sands petroleum score the indirect market effect of using vast quantities of natural gas to extract tar from soil, thereby increasing the demand for natural gas and potentially driving the grid back to coal. ARB has not conducted any inquiry into the indirect effects of producing and using the marginal gallon of petroleum, which will be more scarce and higher in price compared to the average petroleum gallon currently (and erroneously) assumed to be used instead of alternative fuels in the near and intermediate term.

In an LCFS in which biofuels are penalized for indirect effects, but other fuels are assumed to have zero indirect, market-mediated effect, there will be skewed decision-making. For example, an oil company may choose not to use corn ethanol in the near term because it does not offer carbon benefits relative to petroleum under the LCFS. But because the petroleum gallon used instead of corn ethanol is not penalized for indirect effects, the "*actual*" (direct + indirect) CI Value for this marginal gallon of petroleum may be much higher than the corn ethanol gallon not used. Furthermore, there is emerging evidence that the marginal gallon of petroleum – i.e. the gallon on the margin introduced into the system if an alternative fuel is not used instead – has a much higher *direct* CI Value than ascribed by the currently proposed LCFS. It is therefore critical that oil companies using dirtier fuels are not allowed to claim "average CA" carbon intensity under the LCFS. This problem also applies to advanced biofuels. On a "direct vs. direct" (i.e.

equitable) CI Value basis, most forms of advanced biofuel are superior to natural gas and electricity. But with indirect effects included only for advanced biofuel, the CI Value for advanced biofuel is similar to that of natural gas and electricity. If an oil company decides to use natural gas or electricity instead of advanced biofuels based on their comparable CI Values, they may in fact be using more carbon intensive fuel because ARB has not added to the natural gas or electricity score the indirect carbon emissions that could result from pulling those BTUs or electrons out of traditional natural gas and electricity markets (i.e. a potential browning of the grid). The result of this asymmetry is a biased LCFS that does not fulfill its promise of enforcing a technology-neutral standard.

Inconsistent LCA Boundaries, Or The Selective Enforcement of Indirect Effects, Opens A Pandora's Box Into The Medium of Indirect Carbon Effects That We Are Not Close To Understanding In A Comprehensive Way

The proposal to include indirect, market-mediated land use change (iLUC) in the biofuel CI Value opens the door – and most likely triggers a public policy obligation – to consider the full spectrum of indirect carbon effects stemming from the use of various fuels. Understanding the *relative* indirect carbon effects of all fuels is critical because the LCFS is a performance standard and fuels are judged on a relative scale.

To date, ARB staff has only focused on one indirect effect for one type of fuel (iLUC for biofuels). Even within the scope of biofuels, there is a wide range of indirect effects that could occur, including: (1) a reduction in the price of oil or alleviation of spiking oil prices, which has wide ranging economic effects and indirect GHG emissions; (2) a reduction in the demand for oil, which could fundamental change the prevalence and use of oil refinery co-products – GHG emissions from residual oil and petroleum coke combustion exceed those from all of the alternative fuels used in the U.S. today; (3) an avoidance of the use of the marginal gallon of petroleum, which would carry far more actual GHG benefit than quantified under the LCFS. Even within the biofuel/land use scope, there are more indirect effects than merely the reductive land use effect of increased demand for agricultural products. For example, the demand for carbon-controlled biofuels could lead to an era of innovation in the agricultural sector that could make land use more efficient and sustainable, thereby reducing the iLUC of bioenergy and other forms of agricultural production. Innovation has already led to much higher yields in agriculture. For example, the current methodology for assessing iLUC would have been incapable of predicting the 500% increase in corn yields since 1940, the tripling of wheat yields since 1960, or the 700% increases in yield that can occur if farmers in developing countries adopt more efficient seed and farming practices.

ARB staff and other iLUC proponents have argued that including iLUC at this time is consistent with the "precautionary principle." However, we should be equally cautious about using inadequately or inconsistently parameterized methods and models to determine CI Values. The best number available is not necessarily a scientifically-defensible number, and even perfect science should not be enforced asymmetrically. As we have noted in previous comments, a 2008 GTAP paper on biofuels acknowledges the uncertainty and infancy of the field: "researchers have begun to use a CGE (computable general equilibrium) framework [to assess biofuels], however, with several caveats such as lack of incorporating policy issues, absence of linkages to other energy markets, and land use changes, etc. Our study makes an attempt to address these issues. However, the studies on CGE modeling are few, largely due to the *infancy of the industry and limitations on the availability of data* [emphasis added]." [1]

[1] https://www.gtap.agecon.purdue.edu/resources/download/4034.pdf, p. 3.

Indirect Effects Are Not Needed At This Time To Drive Innovation Under the LCFS

We recognize the climatological need and desire to accelerate the production and use of advanced biofuels. Several NFA members are world leaders in the effort to commercialize advanced ethanol and bio-based diesel fuels. However, we are also sensitive to the inherent risks of investing in alternatives to fossil fuels, and the need to create a truly competitive, level playing field in the transportation fuel marketplace. The LCFS is a potentially powerful tool to drive carbon intensity reductions in the transportation fuel marketplace. However, it is also a regulation that could destabilize entire fuel sectors by adding risk and uncertainty to those investments. As such, it is critical that the LCFS judge all fuels through the same analytical lens.

With just months until adoption by the Board, the ARB should submit an LCFS regulation based on direct effects, as determined by CA-GREET. It should then participate in and support the further analysis of the indirect effects of all fuels, and implement a process to determine the most effective policies to prevent indirect carbon effects outside of the primary LCFS system boundary. The analysis should be conducted in collaboration with other bodies and governments implementing carbon-based fuel standards, including the European Parliament. An LCFS policy based on direct effects already favors non-land intensive, advanced biofuel production over conventional biofuel, and there are additional ways to incent "best practice" land use management within the framework of direct land use treatment in the regulation. More specifically, oil companies looking to secure the maximum carbon intensity reductions with the least displaced petroleum gallons will seek advanced biofuel over conventional biofuel even without iLUC inclusion.

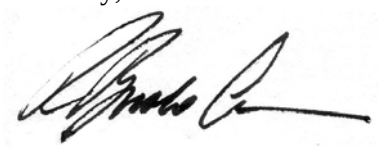
As to the question of whether the State of California has the time necessary to conduct further investigation of indirect effects before enforcement, it is worth noting the following:

(1) **The argument that U.S. biofuel is already causing iLUC is not well supported.** The studies showing iLUC assume "out year" ethanol gallons. Critical aspects of the modeling runs – such as reduced exports of corn and soybeans – have not been observed in the real world. Most of the iLUC modeling scenarios conducted to date rely on shocking the models with future gallons and ascribing the results "back" to current gallons.

(2) **The conventional biofuels industry is not is a growth phase.** One of the underlying principles of iLUC science is the presumption that the biofuels sector could grow to dangerous production levels (e.g. Tim Searchinger assumed 30 bgy of U.S. ethanol production). With the economic downturn, there will be little (if any) growth of the conventional biofuels industry in at least the next 12-18 months.

We look forward to working with ARB to ensure that the regulation reflects the best science available, and takes a policy approach that is balanced across all fuel pathways.

Sincerely,



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