

Dean Simeroth
John Courtis
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Subject: Low Carbon Fuel Standard

Dear Mr. Simeroth and Mr. Courtis,

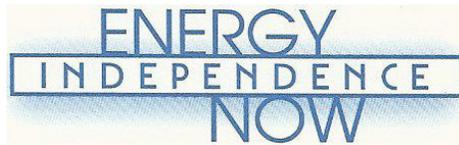
Energy Independence Now would like to thank you and your staff for your continued engagement with stakeholders as you prepare the draft LCFS regulations. We recognize the tremendous effort that your staff has invested in designing this innovative mechanism, and offer the following comments in the spirit of maximizing its long term effectiveness.

Our comments, in summary, cover the following points:

1. **The LCFS appears well designed to incentivize low-level blending of biofuels into conventional fuels, and spurring innovation to source and create lower carbon varieties of these blends.** (We offer some thoughts for its fine tuning in that regard).
2. **However, although the scope of the LCFS extends beyond biofuels, we are deeply concerned that the LCFS mechanism will not provide a sufficient incentive for the development of these other ultra-low carbon technologies.** This could impair our ability to meet long term GHG goals, and effectively leaves all our eggs in one basket - biofuels.
3. **We therefore urge ARB to assign dedicated resources and a stakeholder process to address the particular needs of non-biofuel technologies,** with special attention to electricity and hydrogen given their low carbon promise. This workgroup will need to tackle:
 - a. **Engaging partner agencies to remove key barriers which these new entrants face,** including the existing regulatory disincentive to growth of electric transport, and conducting a proactive review of hydrogen infrastructure regulatory barriers.
 - b. **Specifically promoting ultra-low carbon innovation** through innovation credits, specific targets, and rewards for early action and over-compliance.
 - c. **Addressing the uncertainties of the LCFS market and the value of LCFS credits** for non-biofuels, by exploring a range of revenue mechanisms.
 - d. **Addressing the specific challenges posed by the Federal RFS and AB32's uncertain scope, as they relate to electricity and hydrogen.**

The following pages address each of these 3 points, with details on some of the reasons for our concerns, and proposed solutions to address them.

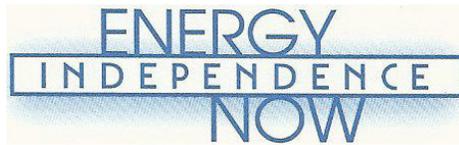
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The LCFS appears well designed for biofuels and blending.

In relation to the LCFS objectives of reducing the carbon intensity of gasoline and diesel, we generally support the ARB's staff recommendations that have been presented at the Policy Working Group 3 sessions. Our hope is that these incentives will create a clear commercial demand for the lowest carbon biofuels, and offer the following comments as they relate to our specific areas of experience. These include:

- a) **Scope:** We endorse staff recommendation to include electricity, natural gas & propane in the LCFS scope from the outset. As elaborated in this letter, we are nevertheless concerned that merely including them is not enough, since their development under the LCFS is qualitatively different than that of biofuels.
- b) **Hydrogen.** Designating hydrogen as an opt-in is acceptable, given its stage of development. However we urge ARB to ensure that the opt-in procedure is developed in advance of the request for it, and is in complete alignment with the regulations developed as part of SB1505, to avoid an additional barrier to hydrogen distributors. This includes:
 - i) Using the same Life Cycle Assessment methodology, model, and drivetrain adjustments for both the LCFS and SB1505.
 - ii) Ensuring that the point of regulation for hydrogen under the LCFS is the same as for SB1505. Hydrogen for transport should be measured close to the point of sale, not at the producer level as is intended for liquid fuels, since significant differences in GHG emissions exist depending on the distribution and compression choices. If it is measured closer to the point of sale, ARB must clearly show it has addressed these emissions differences of the various pathways. We urge ARB to address this issue proactively, to ensure that both:
 - *Conventional fuel producers* are incentivized by the LCFS to develop their own hydrogen distribution infrastructure, and easily receive the credits for doing so, and
 - *Independent hydrogen producers and distributors* can also receive LCFS credits with little or no additional regulatory burden beyond the SB1505 requirements.
- c) **Diesel.** While we recognize the GHG advantages of diesel drivetrains over gasoline, we support innovation of biofuel blends for both gasoline and diesel. We therefore endorse staff recommendation to treat gasoline and diesel as separate, incumbent fuels, each with their own baseline and target, rather than as competitors under a single baseline. This is a pragmatic approach and will best incentivize the development of both low carbon ethanol and low carbon renewable diesel.
- d) **Upstream emissions.** We endorse staff recommendation to treat all conventional crudes the same, not only to limit rationalization but to underscore that the focus of this policy is to drive innovation on the makeup of transport fuels, rather than upstream changes. It is of course imperative, however, that all other fuels (from tar sand crudes, to ethanol, biodiesel, electricity etc.), will receive full life-cycle assessment, including indirect land-use impacts, and that upstream influence and rationalization is to be expected for those fuels.



2) **We are concerned that the LCFS will not provide a sufficient incentive for the development and innovation of non-biofuel, ultra-low carbon technologies.**

While some of these points may also relate to natural gas and propane technologies, we focus on electricity and hydrogen given their greater potential as ultra-low carbon technologies.

a) **Significant existing regulatory barriers.**

There are currently some clear regulatory barriers to the growth of electricity and hydrogen, two of the key non-biofuel ultra-low carbon technologies, which the LCFS cannot address.

- i) **Electricity:** The electricity regulatory regime has been fine tuned in recent years to explicitly discourage growth in electricity sales, by “decoupling” utility performance metrics from sales. However the State’s new GHG goals are likely to require significant long term growth in electric drive transport, as outlined in the recent AB1007 Alternative Fuels Plan. These conflicting high-level objectives must be addressed, and CPUC regulations modified to change the utility incentives with regards to transport.

Without changes in electricity regulation, utilities will resist and be penalized for the growth of electricity for transport.

- ii) **Hydrogen:** Our close involvement with the Hydrogen Highways initiative has highlighted that even if there is a desire and incentive to invest in distribution infrastructure, a prospective investor faces a host of regulatory barriers, from fire codes to equipment certification by standards bodies which have been tailored to petroleum distribution and cannot be applied to hydrogen without modification. With regards to hydrogen, a proactive review of the regulatory barriers facing distribution is urgently needed.

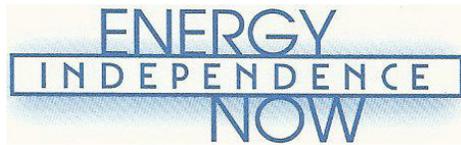
Unless these barriers are addressed, the LCFS credit system can do little to help the development of electricity or hydrogen as a transport fuel.

b) **An uncertain and highly imperfect LCFS market.**

We are concerned that there has been very little discussion on the nature of the market for LCFS credits, and any measures which are being considered to ensure it is competitive, transparent, and liquid.

We believe the impression has been given that the market for LCFS credits will set a price for carbon reduction, which will drive appropriate innovation. However several key requirements of a functioning market are clearly not present in this one. These include the relatively small number of players, the highly incomplete information, the obvious constraints on equal access to technology and barriers to entry, and lastly, the lack of homogeneity of the products.

It is this lack of homogeneity that we feel has not been acknowledged, in seeking to implement a technology-neutral program. From a petroleum company’s perspective, an LCFS credit received from a fuel it can buy and blend into its own clearly has a much higher value than a “paper” credit whose purchase funds a competitor’s expansion.



c) **Credits provide unreliable and insufficient incentive for non-biofuel alternatives**

The value of LCFS credits is highly uncertain for non-biofuels, given the possibility that gasoline and diesel producers may seek to comply without any trading of LCFS paper credits with their competitors. There is little doubt that biofuels, which can be blended, will secure immediate direct investment or contractual agreements with gasoline and diesel producers, something which has already begun. For biofuels, the value of the LCFS credit is incorporate into the price paid for the physical delivery of the fuel for blending, or for buying the company outright

However, as mentioned above, the same is not true for the other alternative fuels which cannot be blended. For these companies, including electricity, natural gas, propane and hydrogen prodcers, the financial incentive of the LCFS relies entirely on a petroleum company buying their paper “credit”. Researchers report that discussions with petroleum companies have indicated that the majority of compliance is expected to occur internally, thereby limiting demand for credits considerably.

The LCFS can only spur innovation for non-biofuel ultra-low carbon alternatives if the market for the credits provide a reliable source of revenue to innovators.

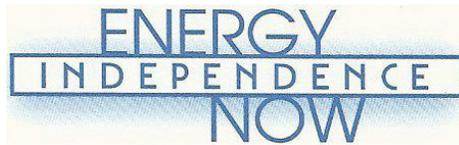
d) **The LCFS does not do enough to focus innovation on the lowest carbon technologies**

i) **Given that credits are proportional to GHG reduction, it will be easier to comply in the short term using large volumes of minimally improved fuels, rather than develop more costly ultra-low carbon technologies.** ARB should review and address Recommendation 18 of the UC report, which states: *“There is some concern that the LCFS reinforce investments in modestly low carbon intensity fuels in order to meet near-term compliance targets. This could lead to further entrenchment of fuel technologies that will be insufficient in meeting long-term 2050 GHG.”* Several suggestions on remedies to this problem were outlined by the UC researchers, including the concept of innovation credis, but we have not seen any proposed or discussed at the LCFS stakeholder workshops.

The current LCFS incentive, being only proportional to carbon intensity, does not compensate innovators for the disproportional costs and challenges of significant carbon reduction. This applies both for biofuels and the other technologies.

ii) **With its focus on the 2020 target, the LCFS provides no clear incentive for technologies that are needed to reach the State’s longer term GHG objectives.** Without some specific goal for these technologies, or a clearly outlined plan to go beyond 10% after the initial period, there is little incentive for a company to attempt to invest in ultra-low carbon technologies. By encouraging investments aimed at the medium term 10% goal, the LCFS may in fact redirect efforts and investments away from the technologies we need for the long term

iii) **The LCFS must be designed to work in tandem with and support the State’s vehicles policies.** While we recognize ARB’s intent to design an LCFS that is less



prescriptive in terms of *how* petroleum fuels are decarbonized, we believe this is compatible with a more prescriptive approach to some targets & milestones needed for the other new entrant technologies. Having established some clear vehicles policies, it is imperative that the state complete its investment by ensuring that fuel policy support these vehicles needs.

A “fuel neutral” policy is unlikely to result in the necessary match with the State’s vehicles policies.

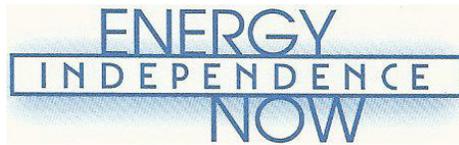
e) **Federal and other policy influence**

- i) **The recently passed Federal Renewable Fuel Standard provides further incentive to meet LCFS targets primarily through a biofuels/blending investment strategy, as producers can achieve simultaneous state and federal compliance.** While we support and are proponents of both the federal initiatives and LCFS objectives regarding biofuels, we are concerned that the two together further reduce the likelihood that we can expect to see investment in non-biofuel ultra-low carbon technologies.

Without greater attention to the different situation faced by non-biofuel alternatives, the LCFS could risk being little more than a backup for a federal RFS policy.

- ii) **The uncertainty around the scope of AB32, and whether the transport sector will be included under an AB32 cap is a problem for LCFS development.** We urge the LCFS team at ARB to impress upon their organization the difficulty which the uncertain scope of AB32 poses, and attempt where possible to synchronize the research and scenarios evaluation of both.

LCFS policy recommendations must reference whether and how they are impacted by the decision on whether the transport sector will be included under an AB32 cap.



3) **We urge ARB to address the specific challenges of non-biofuel, ultra-low carbon technologies, by dedicating resources and establishing a formal stakeholder process for them.** The focus of this process should be on:

a) **Removing Barriers:**

- i) **ARB needs to work closely with the CPUC to help it remove the existing regulatory barriers to the growth of electric transport.** ARB must engage the CPUC at the highest level to address the current conflict in these organizations' objectives as it relates to electricity for transport. A clear message and needs to be sent to utilities and other Load Serving Entities by the CPUC that electricity growth for transport is not only permissible, but is to be encouraged as part of the State's transport sector objectives.

The appropriate mechanisms and regulatory changes to incentivize and reward such growth are of course beyond the scope of this letter, but should include at a minimum:

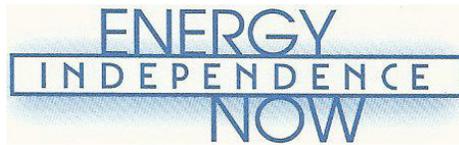
- How utilities and other load serving entities can measure and earn LCFS credits, including tracking and reporting different AFCIs for "green" power purchases.
- The options for "redeeming" the credits, if an LCFS buyer cannot be found. Options mentioned in this letter and by other stakeholders need to be looked at.
- Ensuring that capital investments made by the utilities are deemed "allowable" by the regulator if they support electric transport growth, and
- Clarity on how electricity sales for transport will be treated depending on whether the AB32 cap includes the transport sector or not.

- ii) **ARB should request a multi-agency, proactive review of regulatory barriers to hydrogen infrastructure.** A full review of the codes that impact fuelling distribution and infrastructure should be undertaken, to identify which State and local codes need to be modified or created. Innovation in this field is likely to introduce a range of new activities, products and technologies that have until now not been seen in retail locations, including onsite gas reformation and new compression and storage activities. These may challenge a variety of sectors, from fire, health, safety and multi-media standpoints. A full review across multiple state agencies is needed, as this may otherwise result in an insurmountable red tape challenge for any firm pioneering this space.

b) **Improving the LCFS incentive**

- i) **ARB should revive the concept of innovation credits, linking them directly with fuels that are ultra-low carbon.** In order to identify, measure, and reward the development of ultra-low carbon technologies, a supplementary metric to the APCI is needed. We would suggest that the innovation credits proposed by the University of California's LCFS Policy Paper be revived, and that fuels with an APCI below a certain number (e.g. 1/3 of gasoline) be awarded them in proportion to their APCI reduction.
- ii) **An innovation target should be set, to complement the APCI target.** ARB should outline and evaluate a variety of innovation targets using these supplementary credits. These could mandate an additional requirement on fuel producers, such that they must generate or buy a certain level of innovation credits. Alternatively, it could be a sub-

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requirement of the existing targets. For example, a “10 of 10” requirement requiring that 10% of their 10% target reduction would need to be derived from technologies meeting the ultra-low carbon cut-off.

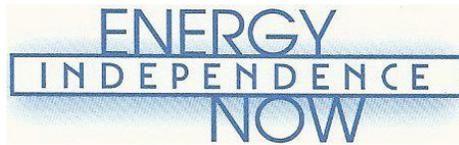
- iii) **Any target should support ZEV & AB1493 objectives.** Any specific target or milestones should be evaluated to ensure that they at a minimum guarantee that fuel and infrastructure will be available to support the State’s existing vehicles policies.
- iv) **Rewards for early action should be considered.** Given the lead time in developing what the State will need for the long term, ARB needs to send a clear signal that early action on these technologies will be acknowledged and rewarded. Some specific commitment on how early action and over-compliance in the first phase of the LCFS will be rewarded in future periods, or under revised targets would be helpful. For example, the question of what happens to any surplus credits a company has “banked” by the end of the first period is key. If companies fear future baselines will not factor in or reward their early action, less investment is likely.
- v) **Going beyond compliance also needs to be rewarded.** Greater clarity is needed on how a company will be encouraged and rewarded to go beyond the target for its AFCI at any given time, as well as beyond any innovation targets that may also be set. Although the ability to bank or sell surplus credits is of some value, other more competitive schemes need to be evaluated. For example these could include a marketing incentives (a reward / prize to the carbon reduction leader among the petroleum companies) or a competitive edge, such as adjusting the innovation target based on the best performer, thereby locking in a competitive advantage gained by going beyond compliance.

We urge ARB to use the relative freedom of these supplementary innovation credits, and to explore a variety of mechanisms to achieve its innovation goals and milestones. This can be achieved without jeopardizing the currently proposed AFCI scheme and its guarantee of meeting the GHG goals.

c) **LCFS credits and innovation credits must provide real value / revenue.**

- i) **ARB should outline a clear vision of what type of LCFS credit market it intends to set up.** Without knowing the type of market, who can trade, whether trading is done through a central clearing house or directly, the rules about disclosure, price setting, timing, etc, it is impossible to gauge the liquidity or value an LCFS credit will fetch. .
- ii) **ARB should prioritize the importance of revenues from LCFS credit sales, for non-biofuel technologies.** Many non-biofuels technologies will immediately have an LCFS credit on their books, but this will be meaningless unless it can translate into some clear, dependable value to their holder. We are concerned by the lack of priority given to this issue in the stakeholder workshops to date. ARB should direct greater attention to the qualitatively different situation which non-biofuels alternatives face, in converting their low AFCI into a tangible commercial value on which to base investment.
- iii) **Additional options other than exports to AB32 need to be examined.** We recognize that exports from LCFS to AB32 have been proposed as the main solution to address several of the problems outlined above. Although we believe this may be appropriate if the transport sector is capped, and that it might serve the purpose of securing a backup

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source of revenue for credit owners, we urge ARB to also explore other solutions to the revenue issue. It is difficult for stakeholders to accept linkages between the LCFS and other markets that have yet to be defined, given that the baselines, targets and rules regarding offsets of those markets are still unknown.

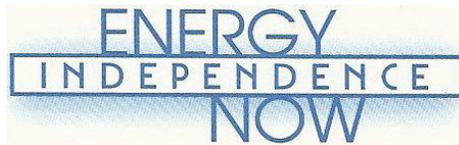
- iv) **ARB should consider setting a future target in relation to the observed LCFS price in the first term.** If a low LCFS price is consistently observed, and it is deemed to be due to an insufficiently ambitious 10% target, ARB should outline plans for a future, tighter target (e.g. 30% by 2030). This more ambitious long term goal would create the necessary future scarcity, raise the current price and give fuel producers the long term regulatory certainty they need to make the ultra-low carbon investments.
- v) **ARB should otherwise evaluate establishing a guaranteed buyer & price.** Recognizing that it will be hard to create a truly competitive market, and that linking with AB32 may be problematic, we urge ARB to otherwise evaluate:
- A guaranteed buyer of last resort, should the market be too thin or so imperfectly competitive that a credit owner could not find a buyer.
 - A floor price offered by that buyer. A reasonable floor price could be set, perhaps linked to parity with the California GHG market, perhaps for a clearly defined initial period. This would serve not only as a revenue guarantee for successful innovators, but would be a clear signal of the value ARB places on GHG reductions in the transport sector.

We encourage ARB to consider establishing such a buyer, or assigning this task to an entity such as the proposed “Carbon Trust” or other third party. We believe that the relatively low cost of this (given the projected small volumes in this period) would be a worthy investment in spurring the early development of non-biofuel technologies. Even beyond its revenue assurance to investors, it is a critical signal of how much the state agencies are committed to promoting a range of ultra-low carbon technologies.

- vi) **Failing the above, ARB will need to explore more complex, sector specific mechanisms.** We believe that the above mechanisms are the most transparent and simple ways to translate LCFS credits into meaningful value. Barring this, we expect that more complicated, sector specific policies will need to be developed to allow producers in the electricity, natural gas and hydrogen business to apply their credits towards other regulatory requirements. In the electricity sector, for example, LCFS credits may need to be looked at in terms of utilities’ existing targets for energy efficiency and conservation achievements.

d) **Harmonizing policy**

- i) **ARB should view the RFS as a new challenge and opportunity to California.** The RFS now creates yet another reason to be concerned about the likely under-investment in ultra-low carbon technologies, as firms are encouraged to invest in biofuels and blending to comply with the RFS and LCFS concurrently. We encourage ARB to see the RFS not only as a federal endorsement of the biofuels and blending strategy, but as a signal that California now has an even greater responsibility and opportunity to advance the other alternative fuel pathways.



- ii) **ARB needs to consider the tracking-related challenges of electricity and hydrogen also, in evaluating the use of the Federal RIN system.** We recognize the coordination challenges created by the recent Federal Energy Bill, and look forward to ARB staff proposals on how best to harmonize the tracking and compliance elements of the RFS with those of the LCFS. In developing a solution, we again urge ARB to set aside resources and time to evaluate how electricity and hydrogen can be integrated seamlessly into this system. As with biofuels, it is imperative that LCFS have a simple way of distinguishing different electricity and hydrogen pathways, with details on feedstocks, conversion processes and geography included.
- iii) **ARB must incorporate the uncertainty of the AB32 cap on transport in designing the LCFS.** Currently, it is difficult for stakeholders to evaluate many of the proposed LCFS policy proposals, as it is unclear if the LCFS is supposed to be:
- a complementary mechanism to an AB32 cap on transport, forcing technology innovation in an otherwise price inelastic sector, OR
 - an interim substitute for a cap on transport, if the sector is not expected to be included under the AB32 cap for some time.

Several of the question regarding the appropriate scope, targets, and baselines to use, as well as the question of LCFS credit exports, cannot be divorced from the AB32 umbrella policy under which they will need to function. The subject of the hard cap on transport must therefore be brought into the LCFS, not as an issue to be debated, but as a factor to be considered in the policy options.

Since many prospective ultra-low carbon technologies are expected to emerge from sectors where a cap is clearly expected (e.g. electricity and gas production), the question of the scope of the AB32 cap and treatment of transport is especially relevant to these companies.

We hope that the above comments and suggestions are helpful to you and your staff as you continue to develop the LCFS regulation, and look forward to further engagement with your team to follow up or explore these proposals in greater depth.

Sincerely,

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Daniel Emmett
Executive Director

A handwritten signature in black ink, appearing to read "Remy Garderet", on a light-colored background.

Remy Garderet
Clean Transportation Program