ENVIRONMENTAL DEFENSE FUND

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finding the ways that work

May 5, 2008

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

Re: Comments for LCFS Concept Outline

Dear Mr. Simeroth,

Please accept this comment letter on the March 2008 Proposed Concept Outline for the California Low Carbon Fuel Standard. Environmental Defense Fund appreciates the opportunity to participate in this discussion and shape the development of a regulation that provides important greenhouse gas benefits. We look forward to continued participation both with CARB and with the wide array of stakeholders involved in this process.

Environmental Defense Fund is very supportive of the development of a California Low Carbon Fuel Standard because it offers a unique method to inspire innovation and transformation within the transportation sector. By establishing a performance standard with a flexible compliance mechanism that allows fuel providers to search for and leverage low cost emissions reductions, the LCFS had the potential to drive reductions in ways we have not yet identified. Although the LCFS proposed in the concept outline is a step toward meeting these objectives, we believe it should be modified to ensure environmental integrity through accurate accounting, and to enable it to serve as a model for other standards. Therefore, we offer the following list of discrete issues and recommended modifications to the proposed standard, followed by a more lengthy discussion of each.

- The LCFS may undermine the AB32 cap because it allows for over-compliance credit export.
- The LCFS <u>needs improved long term certainty</u> to drive development of the lowest carbon fuels.
- The LCFS may miss opportunities to leverage low carbon production practices because it is grounded too firmly in reporting by use of defaults.
- The <u>vehicle efficiency adjustments create multiple problems</u>, including underperformance, inequitability, and uncertainty. This is compounded by the use of a two baselines approach.
- The use of the RFS definition of renewable biomass does not adequately protect sustainability.
- The LCFS should not incorporate volumetric mandates for ultra-low carbon fuels (ULCFs).
- The rapid compliance tool developed must meet the twin aims of complete transparency and superior accounting and computational performance.
- The LCFS <u>should allow 3rd parties</u> to participate in the market.
- The use of <u>default values for refineries falls short</u> of creating a robust accounting framework.
- The proposed calculation method for LCFS credits is <u>unnecessarily complex</u>.

- The <u>deficit allowance must provide certainty</u> of the emissions being borrowed.
- The treatment of indirect land use continues to be an important area for development as will likely <u>require a suite of measures</u> to achieve environmental integrity.

The discussion in our comment letter (framed by the list of issues identified above) is organized into three sections. First, we share our overall impression of the standard (both in general terms and with specific references) and seek to recommend specific modifications on issues representing our core concerns about the standard. Second, as requested in the concept outline, we respond to each of the topics marked "Feedback requested," as we seek to indentify areas where we can provide useful recommendations to yet to be resolved questions. Third, we deliver comments on issues not requested for response by the outline, but which we feel the outline could benefit from more discussion, clarity, or modification. For issues not directly covered by the outline (e.g. indirect land use), we issue general comments at the end and will submit additional feedback in later submissions.

Thank you in advance for your consideration of these comments an as you move forward to modify and strengthen the proposed standard. In addition to the statements in this letter, we bring to your attention the former comments we have submitted regarding the LCFS. We continue to support those statements and ask they be resubmitted to the record. Please feel free to contact us if you questions or would like to discuss any f these points in further detail.

Sincerely,

Timothy O'Connor Climate Change Policy Analyst Environmental Defense Fund

Environmental Defense Fund Comment Letter for the March 2008 Proposed LCFS Concept Outline

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Section I. Overall impression of the concept outline:

Environmental Defense Fund is supportive of CARB's efforts to move forward with the Low Carbon Fuel Standard. Requiring fuel providers to reduce the lifecycle carbon intensity of their fuel is a critical step toward creating a transportation system with an overall reduced carbon footprint. Further, we understand the complexities involved with making a first-of-its-kind regulation and appreciate the resource constraints associated with doing it within an accelerated timeframe. We nonetheless are compelled to identify specific shortfalls in the draft LCFS rule and highlight that, as proposed, the rule does not go far enough to create a regulatory framework that capitalizes on the potential to reduce greenhouse gas from our transportation system.

A. The proposed regulation (Section 4.3.b) will undermine the AB32 cap if it allows AB32 credit export

CARB should not allow over-compliance with the LCFS to create credits that can be sold into the AB32 cap. While the fuel intensity standard associated with the LCFS is an important tool for generating emissions reductions, it must be maintained as a complementary policy rather than a substitute for an absolute emissions cap. Environmental Defense Fund sees several reasons to prevent this credit transfer and we offer the following which we deem the most important.

1. Potential to violate the integrity of the cap.

First and foremost, emissions from the transportation system as a whole are projected to increase. Reasons for this growth are uncertain vehicle characteristics (extent of future efficiency improvements), projected growth in per capita vehicle miles traveled, and projected growth in the car owning population. Due to this growth, limiting fuel carbon intensity does not guarantee actual reductions in greenhouse gas emissions from the transportation sector. Therefore, allowing carbon intensity reduction credits to be counted towards meeting an emissions reduction requirement under the cap has the potential to violate the integrity of the cap. Put another way, whereas emissions reductions from other endeavors (such as discrete emissions reduction projects) should be allowed to sell into the cap, the projected growth in fuel use coupled with the potential reductions under an LCFS creates a special case that necessitates complete separation with AB32.

In addition to the integrity violation caused by transferring credits from transportation's growing emissions base, trading of LCFS over-compliance credits to the AB32 cap can also lead an integrity violation with respect to the quality of quality associated with emissions under the cap. Since the LCFS is based on the use of complicated life-cycle assessments (for both direct and indirect emissions), and this is still an emerging science, the quantification of emissions under the LCFS is different than the quantification of emissions from sources within the AB32 cap.

2. When transportation fuel is within the cap, credit export from LCFS due to overcompliance creates unworkable double counting.

When transportation fuel is within the cap, credit export from LCFS due to over-compliance creates unworkable double counting. Environmental Defense Fund supports the inclusion of the transportation sector fuel combustion emissions under an economy wide cap and trade program. These emissions should either be within the program at the outset or at some point in the future following the development of a multi-sector program that incorporates the statewide stationary sources. In a cap-and-trade program that covers transportation fuel emissions, reductions in the lifecycle emissions of fuel would be used by fuel providers within the cap to reduce their compliance burden. In such a case, compliance with the LCFS would make it easier for fuel providers to meet compliance obligations under the cap because the LCFS puts them on a path toward reduced lifecycle emissions. If however, LCFS overcompliance was allowed to trade into AB32 cap as well, these reductions would be double counted within the cap because they are already being used to reduce the compliance obligation of the fuel provider.

3. Allowing exchange will diminish the overall emissions reduction benefit.

Allowing exchange between the LCFS and an AB32 market will diminish, and potentially completely nullify, the overall emissions reduction benefit of the LCFS. When over-compliance with the LCFS reduction mandate is allowed to trade into the AB32 market, the amount of emissions credits traded equals the amount of reductions that would not otherwise be achieved under the cap (or through other complementary measures). That is, by allowing trading from the LCFS (reductions from the growing pool of transportation sector emissions), the total amount of reductions achieved by the combination of the cap and LCFS combined is reduced. Therefore, if the quantity of emissions reductions exported to AB32 is greater than the quantity of reductions required by the LCFS, the entire amount of reductions achieved by the LCFS will be subverted because the equivalent quantity will be deducted from the reductions required under the AB32 cap from other means.

4. LCFS over-compliance credits may not meet the rigorous criteria for qualifying as offsets

Export of LCFS over-compliance credits to an AB32 market has been likened to process of generating offset credits from discrete emissions reduction projects. Environmental Defense Fund

suggests that LCFS over-compliance credits may not meet the rigorous criteria for qualifying as offsets, and thus should not be given the same rights and attributes as offsets. If LCFS credits do not meet the offset criteria, allowing them to trade into AB32 as de-facto offsets undermines the participation of other legitimate offset projects in the AB32 market. The criteria used for qualifying offset credits (in voluntary and mandatory/compliance markets) include environmental integrity (realness), additional / surplus, enforceable, accurately accounted, permanent, verifiable and verified.

a. LCFS over-compliance credits may not meet the realness and accuracy criteria

When assessing whether a claimed reduction is real, the requirement of calculating a baseline and accurately measuring reductions from that baseline is key. Since LCFS credit generation is based on the newly emerging science of lifecycle accounting (including indirect land use calculations) and will be using vehicle efficiency adjustments (in need of consistent updating as vehicle technology changes), it is nearly impossible to know whether and to what extent the calculation of tons reduced by LCFS over-compliance is accurate. When comparing the LCFS calculations (and their level of accuracy) to offset project protocols which are grounded on precise emissions calculation methodologies, the quality of data assurance is no where near similar. For example, our analysis and that of UC Berkeley has promoted the use of stochastic simulation to assign a confidence interval for values from indirect land use emissions. Compared to that of a manure management project that uses direct measurement of combusted methane volume, the LCFS credit is highly uncertain.

b. LCFS over-compliance achieved through increased fuel blending or improvements in vehicle efficiency may not meet additionality criteria

When assessing whether a claimed reduction is beyond business as usual (additional) for the purposes of offset credit generation, the activity creating the credit must be achieved from performance beyond that which is required by law. When considering the LCFS by itself, beating the performance requirement of the standard creates over-compliance credits. However, the LCFS must not be viewed in a vacuum for additionality determination, and the interaction of other regulations such as the Renewable Fuel Standard, the Pavley / CAFÉ regulations and the RPS standard must also be assessed. For example, if a fuel provider's over-compliance with the LCFS is achieved by blending liquid fuels that were also blended for the purpose of achieving RFS compliance, then the total amount of the RFS fuel volume blended may have to be subtracted from the over-compliance quantity to accurately calculate what was beyond business as usual. Similarly, for over-compliance credits generated from improvements in vehicle efficiency stemming from the adoption of fuel economy (CAFÉ) or vehicle GHG reduction regulations (Pavley), the amount of reductions required by those standards would also need to be reduced from the fuel providers over-compliance quantity. Finally, to the extent that reductions in fuel carbon intensity from the electricity sector are gained by regulations such as renewable portfolio standards, those reductions must also be discounted for the purpose of additionality determination in offset crediting.

5. There are significantly less disruptive ways to achieve the desired result

To the extent that CARB's reason for allowing credit export from the LCFS to AB32 is an attempt to create a guaranteed market (or market price) for credits, Environmental Defense Fund believes there are significantly less disruptive ways to achieve the same result. For example, using tools such as banking and borrowing (recommended in the outline), creating a long-term emissions reduction target for reductions, and ratcheting down the standard if LCFS credits become too inexpensive, are all more preferable.

B. The proposed regulation may not provide sufficient long term certainty to drive development of the lowest carbon fuels.

CARB should set a clear path for continuing the LCFS beyond the 2020 timeframe and beyond the reductions required in the Executive Order. Reducing carbon intensity in California fuels by 10% by 2020 is just a start, so the LCFS rule should make that clear. Regardless of whether this is an aspirational goal or a regulatory mandate, CARB must provide a clear signal to investors that it is to their long-term economic advantage to produce the most low-carbon fuels possible. Reward from such future regulations should be based on the extent to which a fuel has a reduced carbon footprint, where the lowest carbon fuels receive the highest economic advantage.

C. The proposed regulation is grounded too firmly in reporting through the use of defaults and misses opportunities to leverage low carbon production practices.

CARB should establish clear guidelines for moving beyond an approach that merely allows fuel providers to report data, and towards an LCFS accounting framework that requires it. Although a tiered accounting system (with some specific defaults) may be necessary at the outset to facilitate the promulgation of a workable regulation, this approach should be phased out and requirements to report only at the Tier 6 accuracy level (actual data) should be phased in on a specified timetable. Once lifecycle emissions of traditional and alternative fuels are represented across the board at a Tier 6 accuracy level, fuel providers will be better able to leverage opportunities to utilize low carbon production practices, low carbon feed stocks, efficiency improvements, or other actions that are lost with the averaging of data to create default values. Further, as the option to selectively report default data is removed, the LCFS will create an even playing surface that removes the benefit given to fuel providers whose fuels are more emissive than the default (by no longer allowing then to choose a less emission intensive default).

D. Embedding vehicle efficiency adjustments into the compliance framework creates three problems: May cause the standard to underperform, may make the standard inequitable for fuel providers, and inserts unnecessary uncertainty.

Environmental Defense Fund supports the LCFS as a regulation to reduce the carbon intensity of the fuel sold in California. However, we recommend CARB not use vehicle efficiency factors (extracted from the AB1007 work) within the LCFS framework. We recommend the standard be based on the emissions of the fuel (embedded and direct) as it is delivered to the vehicle, regardless of the efficiency of the vehicles using the fuel, and we offer the following reasons in support of our position.

1. By including an efficiency adjustment, CARB risks compromising the effectiveness of the LCFS in driving innovations.

a. Underperformance through double-counting

An LCFS that allows fuel providers to record emissions reductions from engine efficiency improvement may double-count emission reductions achieved through other regulations (e.g., Pavley, AB1493). The reason for this is that the LCFS efficiency adjustment allows compliance through increased sales of alternative fuel vehicles (that have higher efficiency) and the compliance trajectory for Pavley and CAFÉ also allows increased sales of more efficient alternative fuel vehicles to count. Since these standards are thus seeking the same emissions to reduce, (from the use of alternative fuel vehicles) any quantification of reductions from one standard will count reductions that were achieved from the other. Therefore, to the extent that CARB is seeking to maximize emissions reductions from the transportation sector and reduce to the level emitted in 1990 (currently 25 MMTCO2E below the projected 2020 emissions), the LCFS will underperform if fuel providers get credit for reductions that already would have occurred.

b. Underperformance by failing to inspire the continued decarbonization of alternative fuels

Environmental Defense Fund, like many others, is an active advocate for the need to reduce emissions from the generation of energy. To achieve long-term climate stabilization and fossil fuel dependence reduction goals, these reductions must occur from all types of transportation fuel, whether it is liquid or non-liquid fuel. Given the long lifetime of energy generation and delivery infrastructure, we cannot afford to delay sending a clear market signal for the need of low-GHG transportation fuels. We view the LCFS as an important mechanism to drive the type of innovation necessary to significantly reduce emissions from the transportation sector. However, to do this, the LCFS must be structured properly. For example, if the LCFS is structured to allow electricity fuel providers who acquire renewable resources sufficient to cover the electricity they sell as transportation fuel to receive the GREET estimate value of 15gCO2/MJ¹, more renewable generation may be achieved faster than otherwise possible. However, if the LCFS fails to leverage opportunities for reductions in energy generation because the benefits are subsumed by reductions recorded through efficiency adjustments, the standard will underperform and fail to inspire the level of transformation possible.

Environmental Defense Fund accepts that without the engine efficiency adjustment, the lifecycle GHG intensities of some alternative fuels (e.g. electricity and hydrogen)² are higher than the lifecycle emissions of gasoline or diesel.³ Using these values as the basis for compliance in the LCFS (without an efficiency adjustment), producers of these alternative fuels must either substantially reduce the lifecycle emissions of the fuel they sell or purchase credits from those that have over-complied with the LCFS. Although an LCFS without an engine efficiency adjustment appears to disadvantage certain alternative fuels (and those fuels may be the type the Board envisions our transportation system will move towards), Environmental Defense Fund believes that 1) this effect is significantly tempered by existing policies and 2) is short-lived because it will drive lower GHG intensive energy generation.

The perceived disincentive in the LCFS to produce certain alternative fuels with a higher CO₂/MJ content than gasoline is tempered by the presence of regulations that recognize and reward improvements in miles/gallon or gCO₂/mile (e.g. CAFÉ and Pavley). Therefore, even if an alternative fuel is above the AFCI target within the LCFS, automakers selling vehicles using that fuel will still be gaining a benefit from producing vehicles with an increased engine performance. To the extent that fuel providers (particularly hydrogen) are unable to proceed with installing distribution and fuel supply stations due on the increased cost attributed to LCFS compliance, the effect can be tempered by cost sharing with carmakers and also by improving the GHG intensity of the fuel produced.

¹ 2007 UC technical report.

² 2007 University of California LCFS technical analysis: GREET derived lifecycle emissions values for California average electricity and on-site stream reformed hydrogen using natural gas are 141 and 108 gCO₂/MJ respectively

³ April 2008 CARB report on California-modified GREET pathways: Gasoline (CARBOB with ETOH) and diesel (ULSF) values are 96.6 and 99.4 gCO₂/MJ respectively.

With regard to improving the intensity of the fuel delivered to the vehicle, Environmental Defense Fund highlights that unlike conventional fossil fuel where GHG intensity is primarily determined by the chemical nature of the fuel (i.e., the number of carbons in each unit), alternative fuels like electricity and hydrogen are able to achieve substantially lower GHG intensity by production using low-carbon energy sources. Therefore, although the immediate treatment of these fuels without an efficiency adjustment gives them a higher AFCI value than conventional fuels, these alternative fuels have a wide array of options for reducing GHG content to a point well below that of gasoline. For this reason, Environmental Defense Fund sees the LCFS as an ideal tool to incentivize alternative fuel providers to reduce the emissions associated with the production and delivery of their fuel, thereby facilitating renewable energy production and delivery infrastructure.

c. Underperformance by making the standard too easy to comply with

When the efficiency adjustment is included in the LCFS, fuel providers will have less compliance obligations because they can capitalize on vehicle improvements occurring under other regulatory programs. If CARB never-the-less moves forward with including the efficiency adjustment within the standard, it should calculate the extent of electric engine use and determine whether tightening the standard would be prudent to maximize compliance without generating significant over-compliance credits.

2. The efficiency adjustment may make the standard inequitable for fuel providers

By combining vehicle efficiency within the compliance framework, the LCFS becomes inequitable for fuel providers because it holds them liable for the actions of automakers. That is, if automakers improve the efficiency of the alternative fuel engines they produce, fuel providers selling the fuel used in those engines will gain a credit under the LCFS. Further, since traditional fossil fuel providers cannot gain credits for efficiency improvements in gasoline and diesel engines, (and we argue that they should not), they will be penalized under the standard as other fuel providers achieve gains.

3. The efficiency adjustment adds unnecessary uncertainty and complexity into the standard.

Inserting efficiency adjustments into the LCFS places unneeded uncertainty and complexity into the LCFS. As proposed, the standard relies on extracted efficiency values from the AB1007 process and represents them as discrete data points. Since these values are based on a comparison on various engine types to the gasoline engine, they will inherently fluctuate as technology improves. Thus, these values will need to be updated regularly and will unavoidably continue to provide a source of uncertainty. Further, since these vehicle-based efficiency adjustment factors are predicated on evolving models of vehicle mix and use, such factors will inevitably be a point of contention and challenge. Given the inherent challenge of determining the lifecycle carbon intensity of fuels *without* vehicle adjustment factors, it does not seem advisable to compound that difficulty with an additional layer of complexity in the form of vehicle adjustment factors.

E. Sustainability is not adequately protected if the RFS definition of renewable biomass is used a safeguard.

The harvest of biomass for biofuels production can create new strains on ecosystems and have significant negative impacts on water quality, water quantity, wildlife habitat, and soil health if not managed properly. The LCFS needs to have adequate safeguards to ensure that these impacts are minimized. Environmental Defense Fund does not support the adoption of the federal Renewable Fuel Standard (RFS) definitions of renewable biomass contained in the 2007 Energy Independence and Security Act as the sole safeguard for sustainability within the California LCFS. The RFS safeguards do provide some important protections but they fall short in protecting certain critical resources, and could be improved to allow utilization of sources of biomass that would promote better public and private forest land management. Environmental Defense Fund supports a well-rounded scientific approach to sustainability and will provide CARB with a letter outlining our recommendations for suitable safeguards.

In addition to sustainability safeguards for biofuels, Environmental Defense Fund also recognizes a need for the identification of sustainability issues associated with production of traditional fossil fuels. We observe that such a discussion is absent from the concept outline and we welcome the opportunity to participate in a dialogue on this prior to the next iteration of the LCFS.

Section II. Response to specific sections of the concept outline where feedback it requested.

A. Staff is seeking comments on whether hydrogen should be included immediately at the onset of LCFS or be included when a threshold (either quantity or date) is reached. If hydrogen is included, it will be subject to LCFS compliance requirements. However, staff is considering waiving the reporting requirement until such time that the amount of hydrogen used for transportation exceeds a "to-be determined" amount. If hydrogen is not included immediately but is allowed to opt in to the LCFS, it will not be subject to reporting but will still be able to generate credits, should it qualify.

Environmental Defense Fund believes the LCFS should cover as wide an array of fuels as possible, including those not widely used for transportation today, but which have the potential to be used widely. As the use of non-conventional fuels like hydrogen increases, the impact of these fuels on reducing the average carbon intensity of the California transportation fuel mix will increase. Further, although hydrogen does not make up a large percentage of the state's transportation fuel currently, the potential importance of hydrogen to LCFS compliance in the future warrants the immediate creation of rules to incentivize production capacity and infrastructure development.

With regard to reporting, the LCFS should strive to establish the best accounting system possible for all fuels, including hydrogen. That said, the trade-off between creating strong accounting standards and the burden of reporting emissions from low volume fuel must be recognized. We therefore support the proposal to require reporting only after a pre-determined threshold is met.

B. The compliance schedule above is, as an initial basis, based on a default Linear Compliance path and is intended solely for discussion. Staff is seeking additional input on the general characteristics of an achievable compliance schedule for gasoline.

Comments should address the factors that could influence the ultimate slope of a compliance path including, but not limited to, the impact of land use change, the availability of low or very low-

carbon biofuels in the 2010 to 2015 timeframe, and possible compliance strategies available such as blends of biodiesel/biomass based diesel up to or greater than 20 percent.

Environmental Defense Fund is confident that the Low Carbon Fuel Standard, if properly designed and implemented, will drive significant innovation in the transportation sector and will allow fuel providers to achieve compliance targets. As previously stated in our comment letter dated January 7, 2008, we believe the best and most efficient way to structure the standard is to cover diesel fuel and gasoline in the same compliance pathway without granting vehicle efficiency adjustments. We believe that a single standard configured in this manner achieves several desired results. Not only is such a standard more "elegant" because it is administratively simple and clear, it will likely provide a more cost effective regulation by reducing administrative oversight and affording the most flexibility to fuel providers, thus optimizing compliance potential and allowing for steeper reductions sooner. Further, in such a standard it is not necessary to determine a reference vehicle for a particular fuel because compliance is measured against a single target. Concerns about diesel fuel use expansion also become obviated because the ACI value for diesel is higher than gasoline in the California GREET model, thus it is not a compliance pathway.

With regard to the compliance trajectory of the LCFS, Environmental Defense Fund realizes that the scale of technological innovation and implementation required to achieve a 10% reduction in carbon intensity (about 22 MMT CO_2e) is very large and cannot occur over night. Further, we are cautious of requiring steep reductions at the outset of the standard because significant pressure to expand biofuel production (before adequate international safeguards are developed) may cause unintended consequences such as deforestation and wildlife habitat degradation. For these reasons, we support the use of a compliance path that requires significant reductions later in the compliance window. However, this compliance path must not be so far into the future so as to promote the delay of needed technological development, or to exacerbate the lock-in of high-carbon fuel technologies.

C. Staff is seeking input on the types of vehicles (and their fuel systems) currently in operation or planned for each fuel category. In addition, staff is seeking input on how to appropriately assign references for fuels used in medium-duty applications.

Environmental Defense Fund is optimistic that a properly designed LCFS in conjunction with other state policies to incentive innovation and infrastructure development will shift the mix of vehicles on the road in 2020 to include significant alternative fuel vehicles and more efficient traditional fuel vehicles. However, we also note that we cannot predict the future mix of alternative fuel vehicles (e.g. plug-in hybrids, battery electric vehicles, etc). Therefore, we believe the LCFS must promote fuel type (and vehicles that use them) based on their greenhouse gas intensity reduction associated with the fuel, while not picking specific technology "winners".

Our support for using a single standard against which all fuel types are compared, thereby eliminating the need for a reference pathway for medium duty vehicles. If the LCFS does proceed with a two standard approach, we recommend comparing all medium duty fuel uses against the gasoline standard. This will not only simplify the standard, it will maximize reductions since gasoline will likely have a lower AFCI value than diesel within the California GREET model.

D. Staff is seeking comments on the definition of an ultra low carbon fuel and the concept of a volume obligation for ultra low carbon fuels. Listed below are two possible approaches:

- By a certain timeframe (i.e. 2015) or when the total volume of transportation fuels reaches "xx" amount, require "y" percentage of the fuel from an aggregate volume (based on total sales across all LCFS applicable fuels in California) to be ultra low carbon fuels;
- 2. By a certain timeframe (i.e. 2015) or when the total volume of transportation fuels reaches "xx" amount, an individual obligated party with total sales exceeding "z" volumes will be required to produce "y" percentage of ultra low carbon fuel.

Comments should address, at minimum, whether a volume obligation for ultra low carbon fuels should be included in the LCFS, the appropriate volume requirement, and other approaches staff should evaluate.

Environmental Defense Fund does not support the use of a provision within the LCFS to set volumetric mandates for ultra-low carbon fuels (ULCFs). We believe such an approach is not necessary if CARB issues a well-crafted, robust basic LCFS that both looks to a 10% reduction goal in 2020 and mandates further declines in carbon intensity by 2050. Ultimately, low carbon fuels innovation will be driven by an LCFS that limits GHGs to climate protective levels, regardless of near-term views of technological feasibility.

One of the dangers associated with an ULCF program is causing a situation of suppliers rushing out "for show" fuels that may have poor long-term prospects, and thus making capital investments that prematurely lock in fuels that eventually prove to be suboptimal. Volumetric mandates distort the competitive workings of the market that provides fuel providers and innovators the flexibility and incentives to search for, test and then commercialize fuels with outstanding environmental performance. Further, the administrative management of a separate crediting system within the LCFS to achieve ULCF volumes may be more burdensome and unyielding than merited by the perception of regulatory certainty. At least three viable approaches are more attractive than volumetric carve-outs for ULCFs:

- Long term and increasingly stringent LCFS requirements As a replacement for volumetric ULCF requirements, CARB should issue provisional long-term LCFS targets up to and beyond 2050. Unlike the 2020 goal, 2050 goals ought to be visionary, less reverent to current technological feasibility, and should signal that fuels of progressively lower AFCI will be demanded.
- Price premiums or guarantees for ultra-low carbon fuels Another potential replacement of an ULCF program is the implementation of an LCFS credit purchasing program where the state guarantees the purchase of credits from producers that achieve a certain carbon reduction threshold, or where a value adder is ascribed to ULCFs. This system will reward fuel providers based on what matters the magnitude of GHG emissions. It approach gives constant economic pressure that continues to push beyond ultra-low carbon toward zero-carbon fuels.
- Including transportation fuels within a multi-sector cap and trade program Finally, the best replacement for an ULCF program is the inclusion of transportation fuels under the overall (multi-sector) carbon cap, backed by robust LCFS. In such a system, the expectation that the cap will decline steeply through time provides the best possible signal to the private sector of need to reinvent fuels and vehicle-fuel systems.
- E. Staff is seeking input on what entity should be treated as the 'provider' for natural gas, propane, electricity, and hydrogen

Environmental Defense Fund support placing regulatory burden on parties who are best positioned to respond to compliance obligations and with the lowest administrative burden. Further, we observe that the number of regulated parties must not be so many that the regulations burdens the smallest fuel distributers, but also not be too few to prevent market fluidity. For natural gas, propane and electricity, the best option in many cases will be the utility that supplies fuel to the refueling station. For hydrogen, since distribution may involve on site production or importing from an outside source, the regulated source may vary.

F. Staff is seeking input on the reporting requirements for natural gas, propane, electricity, and hydrogen.

Environmental Defense Fund is unable to provide comments on this question at this time. We will gladly work with staff to review and comment on any approach proposed.

G. Staff is seeking input on a proposed tracking system to accommodate natural gas, propane, and hydrogen. Comments on a proposed tracking system for electricity are currently under staff review.

A main issue associated with the double baseline approach to the LCFS is the tracking systems for natural gas, propane and hydrogen needs to be able to disaggregate the sales volumes into quantities that compare against the gasoline standard and quantities that compare against the diesel standard. Such tracking systems not only need to have sufficient meters to measure total quantity sold, they must also have the detail to measure and verify facility level data. Until such metering is running, Environmental Defense Fund recommends using data from the DMV to estimate the mix of fuel sold to light and heavy vehicle users.

H. Staff is currently preparing an RFP for the development of a software compliance tool and is seeking input on the design and key software features that will help to streamline the determination of compliance.

Environmental Defense Fund supports the development of a compliance tool that meets the twin aims of 1) complete transparency and 2) superior accounting and computational performance. The compliance tool should facilitate the entry of real time production data to generate global warming intensity values for a given fuel pathway as well as provide sophisticated (and accurate) assumptions necessary for calculating fuel AFCI. The compliance tool should allow incorporation of detailed information about feedstocks, processing attributes like co-product characteristics, fossil energy requirements and geographical and cultivation characteristics. Last but of considerable importance, the tool should include a module for Monte Carlo uncertainty analysis in which the user can select and detail uncertain input parameters.

I. Staff is seeking comments on whether external 3rd party entities should be allowed to purchase and trade LCFS credit.

In general, Environmental Defense believes that it is desirable to increase participation in the LCFS permits market. Although enlarging the pool of purchasers could potentially raise the price of credits, but this would simply be more complete expression of society's willingness to pay to lower the carbon intensity of transportation fuels. Furthermore, the additional participation may invite additional or faster innovation that eventually reduces the "scarcity" of low carbon fuels and thus brings down LCFS credit prices. It is thus 3rd parties that may facilitate making the LCFS more stringent over time.

J. Staff is seeking input on the current vehicle engine types corresponding to light and heavy-duty applications of each fuel.

As stated above, Environmental Defense Fund supports the use of a single standard against which all fuel types are compared. Further, we object to the use of vehicle efficiency adjustments. With a single standard, the need to understand vehicle engine types and what reference pathway to apply becomes unnecessary. Under the proposed approach, choosing the reference pathway and tracking fuel sales becomes both arbitrary and political.

K. Staff is seeking input on what value above the averaged, default value is considered to be 'substantive' and whether the credits should be allowed.

Environmental Defense Fund recognizes that in the early iteration of the LCFS, full accounting of unconventional crude may not be feasible. However, to the extent possible, the practice of allowing fuel providers to opt-in when they choose should be phased out. By creating an LCFS that requires reporting of actual emissions data rather than defaults, the LCFS creates extra incentives to reduce emissions within all areas of the production process.

With regard to credit generation, Environmental Defense Fund supports allowing credits to be generated for over-compliance with the standard regardless of whether the facility was using an average value prior to the project. In calculating credit quantity, we support the generation of credits based on the extent to which a fuel providers is able to achieve reductions as compared to the reference standard. Further, although we recognize the size of the crude oil production industry in California, we feel it is important to create an LCFS that encourages the development of new practices and low emission technologies for producing oil both within and outside of the state.

- L. Staff is seeking input on what value above the averaged, default refinery efficiency value is considered to be a 'substantive' improvement. Additionally, if an obligated party makes a substantive improvement through the use of, for instance, co-generation technology, staff is seeking input on whether credits should be allowed. If credits are allowed, the input should also address how the credits are to be awarded. Credits may be awarded as follows:
 - *i.* Credits under the LCFS;
 - *ii.* Credits under AB32;
 - iii. Credits under both the LCFS and AB32;

Environmental Defense Fund feels the proposed use of default values for refineries falls short of creating a robust accounting framework for fossil fuels in California. Although refining emissions make up a small portion of the lifecycle emissions for a given fuel, generating emissions reductions at refineries has the double benefit of reducing fuel carbon intensity and reducing emissions under a multi-sector cap and trade program. Further, these emissions reductions are of particularly high value to society since they are typically accompanied by reductions in the emissions of co-pollutants. Therefore, we would suggest that CARB establish a specific time table for requiring all refiners to report their processing emissions for compliance with the LCFS rather than allow the use of a single default for all within state refining.

With regard to credit generation for efficiency improvements at California refineries, we cannot comment on an appropriate threshold for allowing a refiner to claim a substantive improvement without being arbitrary. However, in our view, improvements in refinery efficiency should be allowed to generate credits under both the LCFS and AB32, meaning it is essential that the two systems operate separately. In such a system, over-compliance with the LCFS must not yield credits that can be traded into the capand-trade because of performance-standard basis of the LCFS would allow for the multi-sector cap to be violated.

In reference to the specific example of cogeneration unit installation, such a project could likely lead to a decrease of fuel AFCI under the LCFS but an increase of emissions under AB32 (due to increased onsite emissions). This would not be a problem under a completely separated LCFS and AB32 system as the fuel standard is a performance standard not bound by a cap.

Section III. Comments on issues not presented for response, but which we feel the standard could benefit from more discussion, clarity, or modification

A. The credit calculation is unnecessarily complex

Environmental Defense Fund supports the use of credit calculations using units of GHG intensity and delivered energy rather than gasoline volumetric equivalents. Such a metric is more readily transparent to the regulated community (fuel producer) and the crediting metric (tons CO_2 equivalent) will remain the same. Further, fuel providers will already be converting units to energy delivery quantity regardless of the requirement to convert to volumetric gasoline equivalents, so there will be need for one less unit conversion.

B. The deficit allowance should be structured to provide certainty of the emissions being borrowed

Environmental Defense Funds supports the deficit provision (allowing forward borrowing of emissions reductions from the next compliance period). However, to the extent that a deficit provision provides a cost-containment mechanism and eases the compliance requirements on fuel providers, it also entails an added element of risk that fuel providers will postpone compliance into the future without making sufficient near-term emissions reduction investments. Thus, a specific definition of the compliance period is important.

C. The treatment of indirect land use continues to be an important area for development

Environmental Defense Funds supports the development of a framework to account for and reduce emissions from indirect land use. Although indirect effects appear to be substantial, the fact that they are *indirect* (beyond the direct value chain associated with any particular fuel), likely warrants the use of multiple tools, including those in policy arenas other than fuels regulations *per se*. These tools should ensure that GHG emissions from indirect land-use change do not negate the benefits of biofuels.

Thus, as a first step, we urge CARB to continue to carry out a thorough identification of the scope and severity of indirect land-use change emissions impacts domestically and abroad, as well as a review of the policy options and tools that could be developed for limiting them. In this manner, CARB will be able to make a strong commitment that reducing indirect emissions is a top priority, even if doing so means future imposition of additional rules and new programs once more complete and reliable information is available.

Thank you again for your time and effort.