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April 23,2018

Mary Nichols
Chair, California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Re: Comments on LCFS ISOR

Dear Chair Nichols and Board Members,

On behalf of our more than 75,000 supporters in California the Union of Concerned Scientists strongly supports the 2018 Low Carbon Fuel Standard (LCFS) amendments proposed in the Initial Statement of Reasons.

Since its initial implementation 2009, the LCFS has proven flexible enough to adapt to changes in fuel and vehicle markets. The LCFS has supported increased use of alternative fuels from biofuels to electricity and has done so without increasing the use of food-based biofuels. Moreover, the LCFS has provided a clear market signal to producers of these fuels to shift to the lowest carbon feedstocks and production processes. The proposed amendments build on this record of success by setting an ambitious but realistic target of 20 percent carbon intensity reduction by 2030, and expanding the range of fuel sector carbon reduction strategies that can be used to reach this goal.

Below we offer our comments on the proposed amendments. In summary,

- We support CARB's proposed 20 percent target for 2030, but note that analysis shows the potential for higher targets, particularly post 2025. The board should monitor progress and raise the targets as appropriate to ensure the LCFS continues to support investment in low carbon fuels.

- We support the proposal to allow for indirect accounting for renewable electricity to recognize and encourage the use of renewable electricity and smart charging.

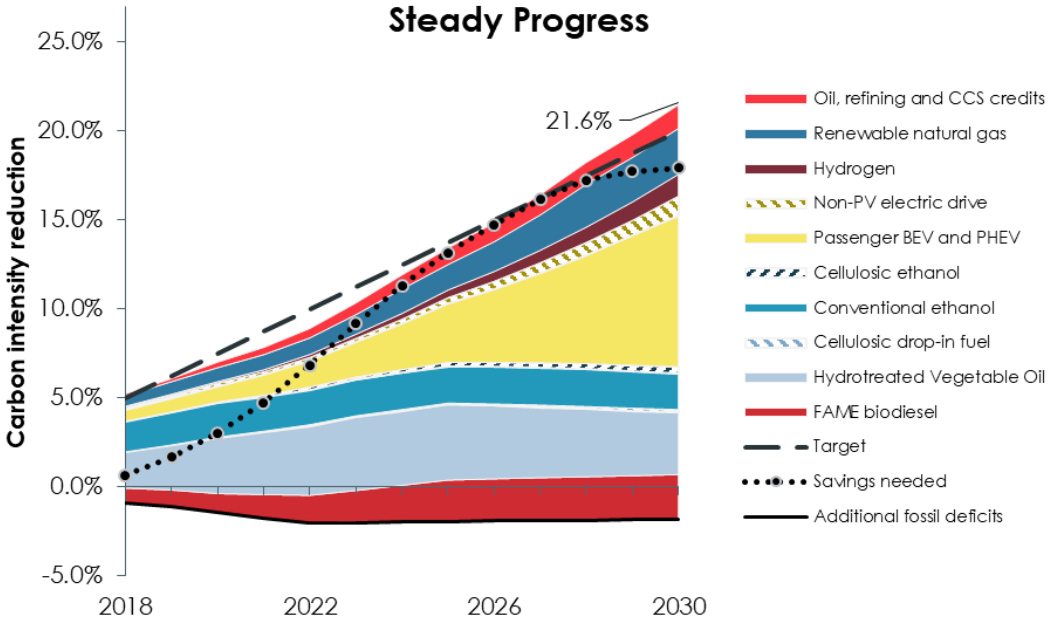
- We encourage CARB to expeditiously move forward proposals that ensure the use of credits generated from residential EV charging accelerate EV sales – in particular moving toward point of sale rebates to more effectively influence purchase decisions.

- While we recognize the importance of hydrogen as a low carbon and zero emissions fuel, we do not support the stakeholder proposal to provide credits based on infrastructure capacity rather than fuel sold.

- We support the proposal to account for carbon capture and sequestration (CCS) within the LCFS, in order to accelerate deployment of this critical technology and reduce emissions from the fuel supply chain for both biofuels and fossil fuels.

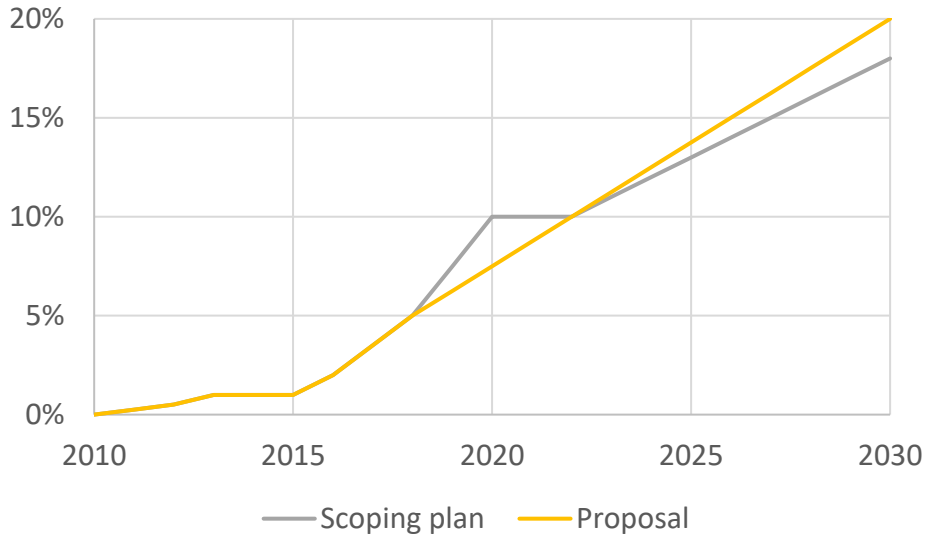
A 2030 target of 20 percent is feasible

USC strongly supports the proposed target of 20 percent by 2030. UCS, together with Ceres and NextGen, commissioned an independent analysis of low carbon fuel production by consulting firm Cerulogy. The analysis confirms that the 20 percent target is feasible under a wide range of scenarios. A chart from one core scenario below reflects that with steady progress but no major breakthroughs for the wide range of low carbon pathways, a 2030 target as high as 21.6 percent is achievable. Under the more optimistic assumptions included in the High-Performance scenario, a 2030 target of over 26 percent is achievable. The most pronounced opportunities to exceed the proposed targets come in the later years of the LCFS program, from 2025 to 2030. We encourage the board to monitor progress and raise the targets as appropriate to ensure support steady for investment in low carbon fuels throughout the program.



The proposed compliance schedule improves over the scoping plan proposal

The proposed compliance schedule, with a steady increase of 1.25 percent stringency each year between 2019 and 2030, is an important improvement over the schedule described in California's 2017 Climate Change Scoping Plan. The schedule proposed in the scoping plan reached 10 percent by 2020 but then plateaued for a few years before resuming 1 percent per year growth to an 18 percent target in 2030. The revised schedule reaches a higher 2030 target of 20 percent, and with predictable increases in the annual target sends a clearer message to fuel markets that demand for clean fuels will grow steadily over time.



The comparison of the two compliance schedules in Appendix E Section F 2 of the ISOR illustrates that the schedule proposed in the scoping plan was expected to lead to large fluctuations in the banked credits balance (see Figure F10) and estimated credit prices (Table F10), with credit prices at the cost containment limit for three years, followed by a precipitous drop of 50 percent in three years. Estimates of credit prices for the 2018 amendments proposal stay within 10 percent of a value of $125 throughout the whole compliance schedule. While higher credit prices theoretically support higher levels of investment, it is important to remember the extended timeframes required to move from an investment decision to delivery of fuel. While it is not surprising that some low carbon fuel producers would prefer more aggressive near-term targets and associated higher credit prices, a stable long-term credit price that avoids credit price spikes that trigger the cost containment mechanism and subsequent credit price drops is more likely to foster stable long-term investment over the whole duration of the LCFS program.

The increasing importance of electricity in the LCFS

Electrification of transportation is key to realizing California's climate and air pollution goals, and the LCFS is an important policy tool to accelerate electrification. In 2016, LCFS credits valued at approximately $92 million were generated by the use of electricity as a transportation fuel. Over time this value should grow as more EVs hit the road, contributing more than $4 billion cumulatively by 2030 at a credit price of $100. See our recent fact sheet, "California's Clean Fuel Standard Boosts the Electric Vehicle Market" for more on this topic (available online at www.ucusa.org/LCFSandEVs).

A well-structured LCFS will ensure that LCFS credit value reduces the cost of owning electric vehicles and speeds the transition to electric drive across the entire transportation sector. However, key implementation details are very important to realizing the full potential for synergy between the LCFS and statewide electrification goals.

Connecting renewable energy to zero emissions vehicles

We support the proposal to allow for indirect accounting for renewable electricity to recognize and encourage the use of renewable electricity and smart charging. Connecting renewable sources of electricity to zero emissions vehicles can maximize the benefits of both the fuel and the vehicle, whether it is solar energy charging a light duty EV or biomethane from a landfill or dairy powering a battery or fuel cell transit bus. Our analysis finds that biomethane generates the lowest carbon emissions when used to produce electricity or hydrogen for battery and fuel cell electric vehicles. See "The Promises and Limits of Biomethane as a Transportation Fuel" for more on this topic (available online at www.ucsusa.org/biomethane-transportation). The safeguards CARB has proposed ensure that the use of renewables will be appropriately documented and will be in addition to requirements of the renewable portfolio standard.

Improving electric vehicle crediting

We encourage CARB to reconsider whether the current programs established by utilities to rebate LCFS credit value to EV drivers are most effectively supporting the expansion of this low carbon fuel pathway. A uniform state-wide approach that makes LCFS credit value available at point of sale could be more effective at increasing EV sales, and thus expanding the use of this low carbon fuel pathway. We encourage CARB to expeditiously move forward proposals that improve the use of credits generated from residential EV charging to accelerate EV sales.

We also support CARB's effort to revise the Energy Efficiency Ratio for battery electric trucks and buses to better reflect real world efficiency gains over combustion technologies.

Hydrogen fueling station infrastructure

While we recognize the importance of hydrogen as a low carbon and zero emissions fuel, and the need for hydrogen fueling infrastructure, we do not support the proposal from Shell and other stakeholders to provide LCFS credits based on infrastructure capacity rather than fuel sold. The proposal is inconsistent with the fuel-neutral performance basis of the LCFS, and would set a precedent that could undermine the program over time.

If the Board does proceed with further consideration of such a proposal, it is important that such provisions be strictly limited to prevent potential gaming, diluting the value of LCFS credits, and setting a precedent that other fuels could follow to further weaken the program. Specifically, we encourage the board to

- Ramp down this crediting pathway over time, ensuring that early support for infrastructure transitions rapidly to credit generation based on low carbon fuel sales.

- Phase out the infrastructure pathway by 2025 or once the first 200 stations are built, whichever comes first, and limit individual stations to no more than ten years of credits for unused capacity.

- Ensure that crediting for infrastructure is based on a realistic estimate of future retail throughput, rather than a theoretical throughput of 100 percent utilization 24 hours a day

- Ensure that the initiative does not dilute the program by capping total credit generation at no more than 1 percent of the annual credit obligation in any given year.

- Restrict eligibility for similar pathways to zero emissions technologies with best in class carbon intensities.

Carbon capture and sequestration (CCS) Protocols

UCS believes that carbon removal technologies have the potential to be an important tool in efforts to keep global temperature rise well below 2 degrees centigrade consistent with global commitments in Paris. The liquid fuel supply chain includes several CO_2 sources that are especially promising opportunities to capture and sequester CO_2, including oil extraction and refining and ethanol production. We support the proposal to adopt a protocol to accurately assess CCS and to ensure that storage is appropriately monitored over time such that risks are mitigated without erecting prohibitively large barriers to developing projects.

The analytical methods that CARB has developed to quantify the lifecycle emissions of fuel pathways are state of the art, and adding CCS to these tools will make them more useful. The science in this area will certainly continue to develop as industry moves forward with projects and regulators get experience with the review and approval of pathways. Given the nascent development of this technology, we encourage CARB to be pragmatic and flexible as technology develops and industry and regulators gain experience. We also encourage CARB to hold workshops, seek external review and make updates over time, as the state of knowledge improves.

Allowing CCS in the fossil fuel supply chain to qualify for credit generation under the LCFS is an appropriate means to hold the oil industry accountable to reduce its emissions. Other policy approaches, such as the recently modified 45Q federal tax credit, provide subsidies for CCS that are ultimately paid for by the public. By contrast the LCFS provides a powerful motivation to move forward CCS projects, but the funds come not from public coffers, but from credits paid for by sellers of high carbon intensity fuels, principally gasoline and diesel. Thus, while LCFS credits may be very valuable, they do not constitute a subsidy, but are instead a science-based mechanism through which fuel producers in the fossil fuels industry can partially fulfil their obligations to reduce fuel carbon intensity under a performance standard. Decarbonizing the fuel supply chain will require action to reduce emissions from both innovative new transportation fuels, and existing fuels, and adding CCS to the available compliance options under the LCFS in conjunction with setting more ambitious targets is an important improvement to the policy.

Thank you for considering our views on this important and groundbreaking program to build a market for clean transportation fuels in California.

Sincerely,

Jeremy Martin, Ph.D.
Senior Scientist and Fuels Lead
Clean Vehicles Program