California Air Resources Board
1001 I Street
Sacramento, CA 95814
Via Online Submission:
https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/lcfs-meetings-and-workshops

Comments on Potential Changes to the LCFS Regulation

Dear California Air Resources Board ("CARB") Low Carbon Fuel Standard Program Staff:

Thank you for the opportunity to provide comments in response to the "Public Workshop to Discuss Potential Changes to the Low Carbon Fuel Standard" held November 9, 2022. We appreciate ARB hosting this workshop and engaging stakeholders' input on a variety of forward-looking concepts for the future of the LCFS. Taking decisive action to bolster the LCFS market will help ensure the long-term viability of the program and the accomplishment of the state's carbon reduction objectives. SkyNRG Americas ("SkyNRG") is pleased to be able to provide comments on several areas of LCFS policy.

Since 2009, SkyNRG has been building up sustainable aviation fuel ("SAF") capacity and production for the industry to meet its 2050 net zero commitment. SkyNRG will be among the first producers of SAF and renewable diesel ("RD") at scale from cellulosic feedstocks such as biomethane. Together with our existing technology partners, our production process converts biomethane to an alcohol intermediate, which is then further converted to SAF and RD at an integrated production facility. SkyNRG plans necessitate withdrawing biogas from commercial pipelines on a book-and-claim basis, similar to producers of hydrogen or CNG/LNG. Since 2019, SkyNRG has started developing dedicated SAF production facilities in the US and Europe to support the aviation industry's transition from fossil jet fuel to sustainable aviation fuel. Critically, SAF is one of the few cost-effective and scalable tools for decarbonizing aviation in the near- to medium-term and SAF is one of few viable solutions for mitigating aviation's emissions in the coming decades.

While aviation emissions currently comprise a relatively small percentage of California's total greenhouse gas footprint today, it is on track to be one of the largest emitters by 2035 and beyond due to the electrification of on road transportation. Additionally, the aviation sector is one of the most difficult industries to decarbonize due to very limited alternatives. The state will need to increasingly focus on aviation sector emission reductions in the near-term future to meet its overall greenhouse gas goals in the next decade. This will become increasingly important as aviation's share of total emissions are poised to significantly grow over time and as measures targeting other sectors such as road transport decarbonize through electrification given the state's goals to require all new vehicles sold in the state to be electric by 2035.

SAF is one of the few near-to-medium term solutions to rapidly decarbonize the aviation sector and can be a key contributor to achieving Governor Newsom's goal of 20% clean fuels for the aviation sector by 2030. Implementing supportive policies now will be crucial to scaling up production of SAF to ensure this goal can be achieved. Furthermore, SAF facilities can take 5 to 7 years to develop, build and begin operations so long-term planning must begin now to enable these solutions to be available by 2030.

Responses to Workshop Presentation

CARB Should Expand, Not Restrict, Book and Claim Opportunities for Biomethane: Expanding opportunities for biomethane to be used as an input for additional transportation fuels such as SAF and RD will be critical to achieving the more stringent targets introduced during the workshop. The share of LCFS credits generated for biomethane-based fuel (primarily CNG) has steadily grown over the last decade, thanks in large measure to the ultra-low carbon intensity ("CI") scores attainable for feedstocks such as dairy and livestock wastes. This trend may be unsustainable, however, if biomethane opportunities are not encouraged beyond their current applications due to the limited scale of CNG fleets. Existing LCFS regulations heavily incentivize the use of biomethane in compressed natural gas (CNG) and liquefied natural gas (LNG) applications, and for hydrogen production, by offering the flexibility of indirect accounting of biomethane injected into pipeline systems connected – sometimes at great distance – to downstream production or dispensing locations (referred to as "book-and-claim"). This is a highly effective way to rapidly decarbonize transportation fuels and we encourage this to be expanded to SAF and RD.

The U.S. biomethane industry has evolved with existing regulatory programs at both the federal and state level that reasonably recognize that most sources of biomethane do not justify co-location of fuel production. To accommodate this challenge, "book-and-claim" accounting is an indispensable ingredient to incentivizing the development of biomethane resources and unlocking their emission reduction potential to materially reduce emissions.

Under the current regulations, SkyNRG (and others) would be unable to participate in the expansion of biomethane resources because there are no provisions allowing book-and-claim accounting for offsite biomethane utilized as feedstock for the production of RD and SAF. We were therefore discouraged that CARB introduced two compliance scenarios (Alternatives A and B) during the workshop that involve *scaling back* opportunities for book-and-claim treatment of biomethane, rather than expanding the use cases. We strongly oppose CARB's concept of limiting book-and-claim to biomethane projects in the "Western NG network" (a concept that is in itself ambiguous). Geographic limitations would almost surely stifle investment in biogas/RNG resources and reduce opportunities for the state to achieve its climate goals with the LCFS. The agency's justification – harmonizing book-and-claim policies for low-CI electricity and biomethane – is a solution in search of a problem. These products do not compete for the same investments, resources or customers. Neither is advantaged over the other under the current regulatory regime, so harmonizing requirements would at best be an unnecessary change and at worst could severely disrupt both existing and future investments.

We also disagree with CARB's related concept of limiting book-and-claim opportunities for landfill gas to hydrogen production starting in 2030. Landfill gas remains an important contributor to transportation fuel markets. While its carbon intensity is less favorable than that of methane from dairy digesters and related projects, landfill gas does represent large, readily available sources of biomethane that offers lower carbon intensity cellulosic feedstocks for SAF and RD production. Foreclosing the California market to landfill gas except for hydrogen production will curtail investments and could have unforeseen and negative pricing impacts. For SkyNRG in particular, landfill gas represents a viable early pool of available methane at scale. We believe CARB should allow market forces to dictate the best end use of different biomethane streams and should not include limits on landfill gas book-and-claim opportunities as part of its LCFS rulemaking. However, if CARB does proceed with this concept, then at a minimum we believe CARB should allow SAF as another permitted end use for booked-and-claimed landfill gas.

We note that the U.S. EPA recently recognized biomethane's potential as a feedstock in the production of renewable fuels earlier this year. In its proposed "Set" rulemaking, EPA proposed a regulatory framework allowing the use of biomethane as a "biointermediate", paving the way (once finalized) for producers like SkyNRG to produce renewable, low carbon fuels like SAF and RD from products derived from biomethane under book-and-claim accounting. Critically, EPA's regime leverages indirect accounting of pipeline injection and offtake at separate points in a manner entirely consistent with LCFS book-and-claim procedures. CARB should ensure that its program aligns with the RFS treatment to avoid creating a bifurcated RNG market.

We implore CARB to expand eligibility for book-and-claim use of all sources of biomethane as feedstock to produce transportation fuels like RD and SAF. Doing so will create a new opportunity to utilize biomethane to make low CI (or even negative CI) transportation fuels that are suitable for hard to decarbonize industries, thereby directly contributing to Governor Newsom's ambitious goals for clean aviation fuels. With appropriate oversight (including the verification and validation procedures CARB already requires), we believe that any compliance risks can effectively be managed in the same manner it is today for CNG/LNG and hydrogen. We cannot overstress this point: unless CARB expands book-and-claim eligibility for fuels produced from biomethane, SkyNRG and others like it will be unable to proceed and an entire generation of low carbon fuels may be lost before they can ever get off the ground.

Expand Opportunities for Avoided Methane Emissions Credits: As SkyNRG continues to build sustainable jet fuel production capacity, the company will continue to explore a wide range of biomethane feedstock opportunities from organic waste streams, including food wastes, yard/landscaping wastes, industrial and wastewater sludges, and a variety of animal wastes. Many untapped waste streams are novel as it relates to LCFS pathways, but nonetheless can readily be converted to transportation fuels through technologies that are commercially proven and readily suitable for producing low carbon fuels from biomethane pathways. CARB should encourage the capture and productive re-purposing of emissions from organic waste streams processed through anaerobic digestion, regardless of the source of the waste stream. To this end, CARB should avoid making changes that limit opportunities to include avoided emissions in CI calculations. CARB should make full use of its regulatory discretion and the Tier 2 pathway process to evaluate novel feedstocks that can reasonably demonstrate eligibility for avoided methane credit.

Changes to the 2030 CI Targets and Related CARB Standard-Setting Processes: The LCFS has significantly encouraged market investment in low carbon fuels and accomplished emission reductions outpacing the standards finalized by CARB in 2018. While this may be a sign of a successful program, we share the concerns of many in the low carbon fuel community that the program may become a victim of its own success. The rapid expansion of low carbon transportation fuels (primarily serving the on-road market) is the leading contributor to depressed LCFS credit values. In 2022 alone the value of LCFS credits has eroded by more than $130 per ton**.** This significant loss of value will stifle future investment, particularly in harder-to-decarbonize areas such as aviation fuels.

We appreciate that CARB has identified the challenge of falling LCFS credit prices and has shared more ambitious (yet achievable) near-term standards for 2030 and beyond. SkyNRG broadly supports an aggressive CI reduction target of 35% by 2030. SkyNRG also supports CARB's further exploration of a "self-adjusting" CI mechanism as mentioned during the workshop. While we acknowledge more details are to come on this concept, we encourage CARB to pursue an adjustment mechanism linked to similar circumstances of credit oversupply. This could be based on the size of the overall LCFS credit bank relative to predicted deficit forecasts. Codifying a self-implementing adjustment to the CI standards will allow the program to respond more seamlessly and predictably in these circumstances, which in turn should

promote credit price stability. As part of its further consideration of this option, we believe that CARB should ensure that such mechanisms will only function to automatically increase, not relax, the standards then in effect. Any relaxation of the standards, however unlikely that may appear at the present time, must go through a full notice and comment period to give proper voice to the stakeholders whose low carbon fuel investments are inextricably linked to the LCFS credit market (and by extension, the standards supporting that market).

Other Measures that CARB Could Consider in Support of SAF Deployment. While not directly raised during the November 9th workshop, we wish to take this opportunity to encourage CARB to consider the following additional concepts that would be generally supportive of SAF producers (as well as other low-CI fuel producers in general):

- *Streamlined Review of LCFS Fuel Pathways:* We support CARB's current Tier 1/2 fuel pathway application process. The addition in 2019 of third-party verification as a step in both initial pathway approval and on an annual basis thereafter has added critical oversight and improved the integrity of the LCFS credit market. However, the process as a whole still requires a substantial amount of time and resources, with pathway applications for many conventional biofuels averaging nearly a year from submission to ultimate approval. We encourage CARB to further explore and seek stakeholder input on measures to streamline at least the initial fuel pathway application process. Many new producers are heavily reliant on the ability to monetize their product in the LCFS market to remain viable; if forced to wait for final approval for over a year, some of these projects may not be sustainable or may be forced into economic compromises that undermine their long-term value. We acknowledge that earlier LCFS workshops included discussion on expanding opportunities for retroactive credit generation, in light of the long pathway application process. While such changes would be welcome, it would still leave fuel producers financially vulnerable at the start of operations and during the pendency of their initial fuel pathway applications.

- *Temporary Pathway Availability.* With Tier 1/2 pathways taking a considerable amount of time to be completed, many producers are heavily reliant on LCFS temporary pathways to provide a credit generation opportunity in their initial production period and during CARB's fuel pathway review. CARB should consider measures to expand the availability of temporary fuel pathways to promote greater certainty, especially for new producers. Some options include:
    - *Increase the Default Lifespan of Temporary Pathways from Two to Six Quarters.* The current regulations limit temporary pathways' use to two quarters. Thereafter, a producer would need to re-apply without certainty of approval, which may put established supply agreements and business relationships in jeopardy. We encourage CARB to increase the initial period of approval to six quarters, reflecting the average length of time for Tier 1 and 2 pathways to be completed. We understand that CARB does not want fuel producers making use of their temporary pathways for the long term, and in most cases a producer likewise would not want this either due to the conservative CI scores associated with most temporary pathways. However, to address these concerns, CARB could separately adopt and enforce a requirement for producers to initiate Tier 1/2 fuel pathway applications within two quarters of their approval for a temporary pathway.

    - *Expand the Temporary Pathway List by Incorporating RFS Pathways.* While existing temporary pathways cover a wide range of feedstocks and fuel types, they are typically

limited to existing production technologies. Novel technologies may be the most dependent on the LCFS credit value in their early stages, yet are the least likely to find an existing temporary pathway available to them. The LCFS regulations do include steps for requesting a new temporary pathway, but the process itself is onerous and CARB's own resources are stretched thin in covering producer-specific fuel pathway applications. We encourage CARB to consider alternatives that would accelerate the adoption of new temporary pathways. One potential concept would be to adopt LCFS temporary pathways with all renewable fuels covered by an existing RFS fuel pathway pursuant to 40 C.F.R. 80.1426. While the RFS does not require the calculation of specific CI scores, each approved RFS fuel pathway must be modeled in GREET and shown to meet a minimum emission reduction threshold. CARB could consider two options leveraging EPA modeling to offer an expanded temporary pathway list – either (1) require a producer to develop estimates of their own CI score and compare with EPA GREET modeling of the producer's corresponding pathway(s), with the higher of the two being adopted as the producer's temporary CI; or (2) adopt default CIs corresponding with the emission reduction thresholds required for each category (D-Code) of the RFS fuel pathway. Other concepts/approaches may be viable, and we encourage CARB to consider this further and seek stakeholder input.

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Thank you again for the opportunity to offer comments on the November 9th Workshop. We look forward to working with CARB staff throughout this rulemaking process.

Sincerely,

John Plaza
President & CEO
SkyNRG Americas, Inc.