Element Markets, LLC comments to Public Workshop: Potential Future Changes to the LCFS Program held on December 7, 2021

Establish declining CI compliance targets post-2030, and potentially strengthen interim pre-2030 targets

The LCFS program has seen unprecedented success in achieving transportation-related carbon emission reductions, providing California drivers with a suite of diverse, secure and sustainable transportation solutions; as well as acting as a beacon and template for governances all around the world looking to decarbonize. We congratulate CARB for the successful implementation of this trailblazing program thus far and their wisdom in highlighting the importance of long-term market signals in the current rulemaking process.

The credit supply under the LCFS program is ever-expanding along several dimensions: (i) the volume and diversity of low-carbon fuels available in California is growing; (ii) the carbon intensity of the fuel mix is decreasing; and (iii) continuous supply-side program expansions are causing the crediting avenues available to participants to skyrocket. We believe that if administered correctly, all of these are hallmarks of a successful renewable transportation fuel program. However, these trends are creating an imbalance in LCFS credit supply that must be met with an appropriate credit demand and pricing environment. If the program were to fail to achieve this in lockstep with supply-side developments, it will fall victim to slow and inflexible implementation which will undermine the LCFS credit market.

The LCFS has spurred the buildout of a tremendous supply of low-carbon transportation fuel solutions, all of which are now on a collision course to upend the marketplace that made them possible to begin with. Without immediate action from CARB the wavering investor trust spiraling from the current LCFS credit value loss will not only stifle future growth of clean transportation solutions, but also undermine current value chains leaving Californians with a crumbling transportation fuel program that failed to convert initial achievements into strategic, transformative and lasting success.

The need for maintaining the LCFS program's ability to attract and enhance investment, innovation and California-focused implementation cannot be overstated. The LCFS program – like all other well-structured and administered market-based public initiatives – does not pick winners or losers, and instead acts as a catalyst for driving and harnessing the efficiencies that private investment-based development creates. This necessarily means that the LCFS has to continuously stay up to date, react and lead current market realities. Market events in Q4 2021, which sent LCFS prices into a freefall causing restrictive uncertainties for developers of clean transportation fuels clearly demonstrate the fragility of the program's hard-earned prior successes. Just as alarming as the tremendous loss in value essential to the producers of

renewable fuels due to the recent price shock is the increase in banked credits. While an increasing inventory of unused credits may have been necessary in the early stages of the program, over the past 10 years the LCFS created a mature marketplace in need of balanced and continued growth stimuli. The fact that past performance can be relied on by market participants for program compliance to an increasing degree clearly indicates that rebalancing of the credit market is essential.

CARB must not delay action essential for the long-term viability of the LCFS program. Without bolstering LCFS credit demand and pricing today, the conversations around the compliance curve pre or post-2030 are moot, since the investments necessary to meet these targets will be long gone from the Golden State before this rulemaking's 2024 implementation timeline.

We strongly urge CARB to:

- Immediately announce that the compliance curve is expediently getting lowered pre-2030 and extended post-2030.
- Pursuant to the announcement, implement a stand-alone rulemaking for the new compliance curve effective 2022.
- Include market stability mechanisms in the current 2024-facing rulemaking, which provide a LCFS credit price floor and limit credit banking to enhance liquidity.
- When introducing future updates to the program that increase LCFS credit supply (e.g. by allowing new crediting avenues), do so only in lockstep with credit demand expansion measures (such as adjusting the compliance curve).

Allow for book-and-claim accounting of new-or-expanded low-CI hydrogen injected into hydrogen pipelines

We support CARB's proposal to provide a long-term growth signal for achieving a low-carbon hydrogen economy by removing unnecessary transactional hurdles and putting hydrogen on equal footing with other fungible energy carriers such as renewable electricity and biomethane.

CARB should implement such measures carefully, equitably and considering all the potential intended and unintended effects of book-and-claim eligibility for hydrogen. Accordingly, we suggest that hydrogen should be eligible for book-and-claim accounting if the actual chemical composition of the pipeline-injected gas stream is truly interchangeable with the delivered commodity. As such, book-and-claim eligibility should apply only for applications in which the heating value of the co-injected hydrogen gas to the natural gas pipeline grid is leveraged (such as gas turbines) or if pure fuel cell-grade hydrogen is book-and-claim delivered to fuel cell applications.

Add jet fuel as required fuel

Element Markets is in strong support for the inclusion of jet fuel as a regulated fuel under the LCFS program. We believe this to be a necessary and appropriate next step in the evolution of

LCFS that will send an important signal to developers of renewable jet fuels and enhance investor trust essential to achieving real and impactful carbon reduction.

Jet fuel is notoriously hard to decarbonize and is in need of strong leadership as well as an appropriate glide path to sustainability. Accordingly, we suggest CARB sets clear timelines and a phased approach to removing jet fuel's opt-in status under the rules. We also believe that it is not sufficient to limit compliance requirements to intrastate flights and thus suggest CARB create a path towards making all jet fuel dispensed at California airports subject to the LCFS carbon intensity requirements.

HRI eligibility for medium and heavy-duty refueling

Element Markets strongly supports extension of the Hydrogen Refueling Infrastructure (HRI) program to medium and heavy duty-vehicles. We agree with CARB's assessment that zero emission fuel cell trucks will play a pivotal role in decarbonizing California's roads and the HRI program has proven itself to be an exceedingly effective tool for catalyzing the deployment of FCEV refueling infrastructure and reduction of carbon intensity of hydrogen used in California cars.

The HRI program is working as intended in its current form and we do not believe that structural changes are necessary for covering medium and heavy-duty FCEV refueling. We suggest CARB make HRI crediting eligible for medium and heavy-duty refueling stations with the following adjustments to account for the differences in size and expected structure between passenger vehicle and truck refueling:

- Private, fleet-specific refueling infrastructure should be eligible for HRI crediting – preferably identical to public stations, but at least up to CAPEX recovery (akin to the FCI program). As CARB highlighted, this adjustment is necessary to account for the increased reliance on private refueling for medium and heavy-duty fleet as compared to passenger cars.
- Significantly increase the nameplate refueling capacity limit of 1,200 kg/day to account for higher dispensing volumes compared to light duty vehicles.
- Consider increasing the 2.5% of prior quarter deficits cut-off, to ensure that the heavy-duty-HRI program creates the impact in station count necessary for meaningful deployment, given that more HRI credits will be generated per station compared to light-duty refueling.

Third-party verification requirements for all EV and FCEV credit generation

Over our decade-long successful participation in the LCFS program, Element Markets has worked with CARB to establish and maintain close to 50 individualized Tier 2 pathways. These pathways span various fuels, including bio-CNG, bio-LNG, hydrogen and various battery-electric vehicle applications. Our company has also successfully satisfied all third-party annual verification requirements that our pathways are subject to in 2021.

We believe that this track record provides Element Markets with an unparalleled view of the real-life workings for the validation and verification framework of the LCFS program. It is our opinion that while continued improvement and enhancement of how third-party verification is implemented into real-life complex value chains is essential, the third-party verification initiative as a whole is a success to be expanded and built upon.

Accordingly, we support CARB's suggestion of having all electricity and fuel cell-based reporting become subject to third-party verification; but do so while cautioning CARB not to take an overly rigid and restrictive approach to implementation that could stifle continued growth of these exceptionally important fueling solutions.

The pathways listed by CARB to become subject to third-party verification (EV charging, eTRU, eCHE, eOGV, forklifts, etc.) are diverse and ownership, collection process, management, documentation and QAQC of fuel use data vastly differs between value chains and industry participants. To ensure robust adoption of third-party verification, we suggest CARB places emphasis on following:

- Create a "glide path" similar to what's been followed for current regulation to allow for proper training of verifiers and preparation of appropriate documentation practices by industry participants.
- Consider including a "small credit generator" exemption threshold that would make third-party verification mandatory only after a set annual credit generation quantity is reached, to avoid creating undue burdens to smaller electric end fuel cell fleets.
- Allow verifiers to work directly with the credit generators to evaluate which measurement, tracking and documentation processes are appropriate as opposed to providing limited and restrictive options for compliance.

<u>Keep pathway "deemed complete" designation</u>

Timely pathway approval remains one of the most important bottlenecks yet to be resolved for the long-term success of the LCFS program. We recognize and appreciate that CARB is continually working towards improving the efficiency of pathway review processes. We do not, however, think the removal of deemed-complete designation to be a step in the right direction.

The deemed-complete signal from CARB provides the credit generator with official assurance that reporting under the pathway in the quarter will be possible and thus may be essential to the commencement of fuel deliveries. The commencement of actual creditable fuel deliveries is of crucial importance to newly built projects (new projects are the ones most affected by this measure) and loss of LCFS credit value or delay in fuel deliveries may become prohibitive to newly operational projects at the start of their capital recovery phase.

Removal of the deemed-complete designation would remove this affirmation from the pathway application process and add further opaqueness to delivery (and thus cashflow) planning of renewable fuel projects. The suggested alternative approach by CARB (to allow reporting for any

quarter with an active reporting window at the time of approval) is unfortunately too little too late. In many cases, without a deemed-complete designation the actual fuel deliveries to be reported under the pathway cannot occur due to the prohibitive uncertainty in LCFS credit generation. Accordingly, in these frequent scenarios the ability for retroactive reporting is moot since there simply isn't anything to report without a signal greenlighting delivery of fuels to California in due time.

It is furthermore Element Markets' assessment that removal of the deemed-complete designation would not have a meaningful impact on pathway approval timelines, so an element of the process important to the most vulnerable renewable fuels projects would be removed, without impactful gains to the LCFS program and participating fuel producers. Instead of the removal of deemed-complete signal, we suggest implementing the following measures for the improvement of the pathway application process (some of these are discussed in more detail below):

- Increasing the utilization of outside resources by CARB, such as auditors, consultants and industry specialists to ease workload on CARB staff. We have seen successful implementation of similar measures to speed up pathway approvals under the federal Renewable Fuel Standard. Part of the cost for these outside resources could be born by the pathway applicant.
- Increase CARB staff headcount dedicated to LCFS pathway approvals. The renewable fuels industry stakeholders are likely to be supportive of efforts by CARB to secure funding for additional team members.
- Allowing credit generators to true-up credits for fuel used during the pathway approval process (and potentially reported under a temporary pathway with significant credit loss today). This may very well be the "silver bullet" for de-bottlenecking the application process and providing new fuel production facilities with a robust and reliable way for entering the LCFS program.

<u>Introduce ex-post credit true-up for CI improvements, including temporary pathway use</u>
During the October 14, 2020 workshop CARB staff proposed including a mechanism that allows for ex-post true-up credit generation for fuel quantities reported under a temporary pathway and subsequently received a Tier 1 or Tier 2 pathway carbon intensity.

We request that CARB revisit this program update and work towards implementation in the current rulemaking process. The full potential of this program improvement could be realized if it is not limited to temporary pathways, but instead applied to the Annual Fuel Pathway Report verification process. We are suggesting that projects that outperform their historic carbon intensity modeling be trued up to the credit quantity actually achieved. This would eliminate the skewed incentives in place today that, by only punishing carbon intensity increase but not rewarding improvement, fail to drive projects with an approved pathway towards further enhancing carbon reductions. This would especially be of importance to swine and dairy biomethane projects, which are subject to unavoidable carbon intensity fluctuations inherent in their life cycle analysis (e.g. carbon intensity is impacted by average temperature at these project locations). Transitioning to a robust ex-post credit true-up approach that tracks with carbon

intensity fluctuations would not only provide certainty and value recognition to renewable fuel producers, but also reduce CARB workload by not having to work through redundant re-applications by credit generators seeking to revisit of their pathway modeling.

Allow refinery investment crediting for merchant hydrogen production facilities

Element Markets supports CARB's initiative for providing the continuously developing hydrogen economy with the flexibility needed for achieving large scale efficiency and value chain integration. Given the LCFS program's stellar track record in providing the necessary incentives and framework for market participants to create the most cost-effective renewable fuels solutions without being unnecessarily restrictive or limiting, we view this adjustment to be befitting and beneficial.

We would like to underscore the established framework in the LCFS rules that allows book-and-claim delivery of biomethane when used for hydrogen production. Any inclusion of merchant hydrogen production facilities in the refinery crediting framework should be implemented in alignment with this provision and allow for delivery of pipeline-injected biomethane for participation in the refinery investment or renewable hydrogen refinery credit programs, as applicable to the value chain at hand.

Allow site-specific agricultural inputs

The LCFS program has great potential in charting the course towards accurate carbon accounting in the agricultural sector. Allowing industry participants and innovators to leverage quantifiable carbon reductions across biofuel value chains is the next frontier of California's renewable fuels initiative. Not only would this overdue regulatory update catalyze development and adoption of sustainable agriculture-based fuel value chains leading to California, but also provide a blueprint for other sustainability programs to rely on – greatly contributing to CARB's goal of increasing exportability of the LCFS program.

As CARB has highlighted, some of the challenges of implementing this measure are complex with uncertainties to be mitigated. We believe there is tremendous stakeholder engagement and know-how that can achieve robust advances towards the LCFS program's goals.
Specifically, CARB asked for feedback on potential GHG leakage. We believe this can be overcome by setting default reporting values to a conservative level so that all stakeholders are incentivized to accurately assess and improve emissions across their value chains.
We do not suggest that CARB staff internally develops all solutions to the considerable verification and auditing challenges that this update creates. Instead, we suggest CARB set clear goals and standards for the industrial and scientific community to develop their own robust solutions for CARB's adoption. Leveraging current and future voluntary initiatives for the quantification and tracking of agricultural value chains, such as carbon offset protocols maintained by third-party registries or sustainability certification systems akin to the International Sustainability & Carbon Certification accredited by the European Commission could be key to the successful implementation of this measure.

When implementing site-specific agriculture inputs to carbon intensity calculations we believe it is important that CARB provides avenues for recognition of emission avoidances and reductions achieved by agricultural practices that restore ecological services and provide benefits to ongoing agricultural operations (e.g. decreased fertilizer and pesticide use through re-establishment of native flora as cover crops).

Projects currently recognized to achieve emissions avoidances, such as swine and diary manure-based biomethane production facilities should also be given the ability to apply data-driven solutions to quantifying the avoidance benefits of their product and not be overly constrained by the assessments and approximations made in the 2014 Compliance Offset Protocol Livestock Projects.

Revise 75% landfill gas capture efficiency in diverted waste lifecycle analysis (would improve Anaergia's CI)

CARB is basing their current life cycle analysis approach (e.g. as part of the Tier 1 Simplified CI Calculator for Biomethane from Anaerobic Digestion of Organic Waste) on the assumption that all landfills in the US achieve a 75% landfill gas capture efficiency.

Both the US NASA, NOAA, and other agencies, including the EPA, have reported that landfill gases are rarely properly capped. Large amounts of greenhouse gasses are continuously leaking from all landfills at high amounts, significantly exceeding the 25% considered by CARB.

Element Markets asks that CARB consider reducing the assumed methane capture rate of 75% to a more conservative percentage.