

Feedback on LCFS Re-Adoption Concept Paper and Workshop held March 11, 2014

Comments provided here are labeled according to the page and paragraph in the concept paper (using the form Page # / Paragraph #) or according to the slides in the Workshop presentation.

Page 1/ Paragraph 2:

“The LCFS is performance-based and fuel-neutral, allowing the market to determine how the carbon intensity of California’s transportation fuels will be reduced.”

Fuel neutrality is a central feature and core principle of the LCFS policy design; however, it is also been the subject of considerable concern. Stakeholders have voiced concerns that the LCFS is susceptible to implementation decisions that violate its fuel-neutral principles. Such concerns are understandable and worth bearing in mind, whether or not they are justified.

The Concept Paper’s reaffirmation of the policy’s commitment to fuel neutrality is important generally, but it is also uniquely relevant because many of the proposals it describes serve to differentiate the treatment of fuel carbon intensity (“CI”) reductions according to the fuel type and / or emissions reductions strategy employed. Two examples from the Concept Paper are noted below. While these proposals may be justified and reasonable, the resulting differentiation in the treatment of fuels and CI reductions based on the fuel type and CI reduction strategy may create certain challenges regarding the fuel-neutrality of California’s policy implementation.

In this context, and given ongoing stakeholder concerns regarding the policy’s fuel-neutrality, I respectfully suggest that CARB staff develop explicit policies and procedures to ensure that the fuel-neutrality of the LCFS is strongly maintained across increasingly differentiated mechanisms for treating fuel pathways and CI reductions.

To put a somewhat finer point on the issue, I would ask the following question: What is CARB doing—and what can stakeholders interested in the policy’s success do—to ensure that the California’s LCFS maintains a strong commitment to fuel neutrality?

One example of Concept Paper’s proposals for differentiated policy treatment is the proposed Tier 1 / Tier 2 structure for fuel pathways, which differentiates fuel treatment according to a somewhat abstract classification of fuels as either “conventional” or “next generation”. If this proposal is adopted, Tier 1 fuels will benefit from streamlined application process, but will have CI values aggregated into “bins”. The binned treatment will substantially reduce the precision of CI values for Tier 1 fuels (relative to Tier 2 fuels) and will arguably reduce the ability Tier 1 fuel suppliers to receive credit for reducing the CI of their fuels (again, relative to Tier 2 fuel suppliers).

A second example is the proposed treatment of petroleum fuel CI reductions via “innovative methods of crude oil production” and “refinery investment credits”. Both of these proposals tend to abstract the policy treatment of petroleum fuels away from a strict performance standard applied to transportation fuels used in California.

To be clear, the central focus of these comments is on ensuring fuel-neutrality across a growing set of mechanisms for defining and treating fuel CI and CI reductions; they are not intended to address the merits of the underlying proposals.

Page 3 / Paragraph 4

“It is also clear that the LCFS would benefit from a greater focus on the long-term goal of ultra-low CI fuels to ensure the long-term effectiveness of the program . . . In response, some modest changes may allow greater “bang for the buck” and provide additional resources to be put toward greater enforcement, consideration of significant innovations in the fuels sector, and ensuring accountability.”

This statement seems reasonable on its face, but its implications for policy implementation are not obvious. Clearly, there are benefits from focusing attention on fuel pathways with the potential to drive large reductions in lifecycle fuel carbon intensity. That said, it is not at all clear which pathways or innovations are likely to be successful in this regard. Pathway innovations that initially appear to be capable of driving large CI reductions may or may not prove to be ultimately successful, and innovations providing more incremental CI reductions may ultimately support a trajectory of innovation that enables dramatic CI reductions over the medium or longer term. These complexities make it fundamentally difficult to pick which innovations or fuel pathways will ultimately support the policy’s long term success. This is one of the reasons underlying the policy’s structure as a fuel-neutral performance standard.

In this context, it is not clear what CARB staff can do to provide greater focus on pathways and innovations that will deliver ultra-low CI fuels. It is not clear that CARB staff (or anyone) can effectively pick which fuels, fuel production systems, or fuel pathways are most likely to support this long-term policy objective. It is not clear how CARB staff (or anyone) can reliably pick—and thereby focus additional attention on—innovations that will prove to be “significant” in the fuels sector. As a result, efforts by CARB staff to “provide additional resources” to promising pathways and innovations carries a high risk of (i) focusing excess resources on pathways and innovations that will ultimately be unsuccessful in reducing fuel CI and (ii) providing insufficient resources to those pathways and innovations that can ultimately deliver ultra-low carbon fuels. As a result, such efforts appear likely to yield inefficient allocation of limited regulatory resources and likely to contradict the policy’s inherent structure as a fuel-neutral performance standard, which is specifically intended to avoid putting CARB staff in the position of picking fuel pathways and innovation to be advanced under the policy.

I respectfully submit that CARB staff be deliberate in articulating its intentions in this regard and enable open, fulsome discussion with stakeholders before taking action to allocate resources toward any particular types of pathways or innovations.

Page 4 / Paragraphs 3 & 4

“Staff is anticipating the rulemaking process for re-adoption of the LCFS to be concluded in 2015. This will likely keep LCFS regulatory standards at 2013 levels through 2015. Staff currently has no proposal to change the average carbon intensity target of 10 percent by 2020; however staff believes that some post-2015 “curve-smoothing” will be

appropriate. . . in 2014 ARB will consider revising the LCFS with post-2020 targets that call for CI reductions greater than 10 percent.”

Defining post 2020 targets is very important. It will provide a clear signal to regulated parties and low carbon fuel developers alike regarding future compliance requirements and thereby support more coherent investments to enable appropriate supplies of low carbon fuels moving forward.

Holding the regulatory standard at 2013 levels through 2015, is potentially problematic for the program, however. Every effort should be made to limit delays in implementing the compliance schedule and to stay as close as possible to schedule that was originally designed and approved.

As noted in CARB reports, fuel suppliers are currently over-complying with the LCFS requirements. One consequence of this over-compliance is the effective stockpiling of surplus LCFS credits. The availability of surplus credits to support future compliance is generally a positive outcome; however, maintaining the 2013 standard for an additional two years will effectively inflate a bubble of surplus credits, which will be popped when the standard is rapidly ratcheted down to meet the 2020 target.

In principle, predictable growth in stockpiles of surplus LCFS credits followed by predictable declines as the standards are ratcheted down should support rational decision making by credit market participants; however, the joint effects of ballooning credit stockpiles with other regulatory uncertainties may yield a trajectory of credit prices that ultimately compromises the policy’s effectiveness. The history of LCFS credit prices over the past year and a half arguably support this concern.

LCFS credit prices, as reported by the Oil Price Information Service, were generally quoted below \$30 per ton CO₂ throughout most of January 2013. Credit prices then climbed consistently throughout the year and reached a high near \$80 in the fourth quarter. The potentially binding nature of LCFS requirements was widely seen as the driving factor for this escalation in credit prices. Credit prices began a steady decline shortly after CARB announced that the compliance schedule was being delayed and that 2013 standard would continue to be enforced in 2014. LCFS credit prices eventually seemed to settle into a relatively stable range between \$40 and \$50 per ton. Prices began falling again in the beginning of March, 2014, around the time CARB indicated that the 2013 standard would be enforced through the end of 2015. Credit prices are most recently quoted below \$30 per ton again, roughly where they were at the beginning of 2013.

This price history can be interpreted in a variety of ways. One reasonable interpretation, which is consistent with comments by various stakeholders, is that credit prices reflect the joint effects of regulatory uncertainty and the prolonged deferral of compliance obligations (which itself reinforces the perceived regulatory uncertainty).

Such price responses are potentially problematic for the program’s success due to the relatively long lead times required to develop supplies of fuels with CI values sufficiently low to achieve compliance. For example, this price history may support the following scenario: (i) ballooning stockpiles of LCFS credits cause credit prices to remain depressed for an extended period; (ii) depressed prices discourage near-term investments to develop low CI fuels; (iii) the ratcheting down of the regulatory standard in the 2016-2020 period effectively pops ballooning LCFS credit stockpiles and causes a credit price spike to politically untenable levels; (iv) deferred investments into low carbon fuel supplies makes the lower

regulatory standard infeasible for an indeterminate number of years; and (v) the combination of untenable credit prices and technical infeasibility creates pressure to dismantle the program.

With this in mind, I respectfully suggest that CARB staff strive to minimize delays in the compliance schedule. It is clear that there are limits to what can be done, in light of court ruling that caused the standard to be frozen at 2013 levels. One option might be to limit the scope of policy amendments built into the re-authorization process so that the process could be completed by the end of 2014. This might enable the regulatory standard to begin being ratcheted down again in 2015. The feasibility of such an approach is totally unclear at this point, but may be worth investigating by CARB staff.

Page 5 / Paragraph 5

“LCFS stakeholders have expressed concerns that many of the Method 2 pathways in the Lookup Table and on the Method 2 web site are not available for wider use by regulated parties. In response to these concerns, as well as to the need to focus the program on the promotion of innovation, staff proposes to restructure the certification and registration functions.”

These statements are confusing and appear contradict the nature of innovation. Developing innovative fuel production systems is uncertain, costly, and time consuming, with many competing strategies available to developers. As a result, successful innovators will be those that invest early to develop strategies that are effective and well suited to their particular circumstances. In this context, it is not at all surprising that Method 2 pathways are “not available for wider use by regulated parties”; they are appropriately available to the parties that took the time, effort and expense to develop innovative strategies. As a result, it should be expected that, by their very nature, innovative fuel pathways will not be available for wide use by all regulated parties.

I respectfully submit that the notion that the program should be modified in order to make innovative fuel pathways “available for wider use by regulated parties” seems to contradict the policy’s aim to stimulate innovation.

Page 8 / Paragraph 3

“Staff has worked with stakeholders to develop a proposal to add electricity used in fixed guideway systems and electric forklifts to the regulation as eligible to generate credits.”

It is appropriate to expand the coverage of the LCFS to cover as many transportation fuels as possible. It is not clear, however, where to draw the line on what is transportation and what is not. For example, in some cases fossil fuel forklifts used at stationary facilities might be converted electric forklifts or to other types of conveyance systems (e.g., conveyor belts, cranes, or track-based systems). It’s not intuitively obvious where the line should be drawn between electricity used as a transportation fuel verses an energy source for facility management systems, for example.

Page 8 / Paragraph 5

“Staff is proposing that in order to be considered low-energy-use, a refinery must have a modified Nelson Complexity score of five or less and that the annual energy usage would have to be five million MMBtu or less.”

It may be that total annual energy use or complexity are reasonable considerations for determining the appropriate treatment of petroleum fuel CI, but the rationale is not immediately obvious from the discussion provided in the Concept Paper. In particular, it is not clear why the one-time opportunity to adopt refinery-specific incremental deficit assessments (see slides 17 and 18) should be limited to low energy / low complexity refineries.

Unless a strong reason exists to limit the opt-in opportunity in this way, I respectfully suggest that the opportunity be extended to all refineries. CARB staff noted during the Workshop that larger refineries have expressed little interest in this opportunity. This suggests that many large refineries may not take advantage of this one-time opportunity, but it's not clear why they should be excluded from the opportunity to adopt refinery-specific incremental deficits.

Page 9 / Paragraph 3

“Staff will also propose to: . . . include carbon capture coupled with carbon dioxide enhanced oil recovery as an innovative technique under certain circumstances;”

Carbon capture coupled with carbon dioxide enhanced oil recovery represents an important near-term opportunity to advance CO₂ capture and storage technologies, build the capacity for achieving long term climate policy objectives, and substantially reduce both anthropogenic greenhouse gas emissions and the carbon intensity of associated petroleum fuels. It seems appropriate to explicitly include this type of crude oil production within the innovative methods provisions of the LCFS. The language here suggests that this inclusion would be limited to certain circumstances.

I respectfully submit that CARB staff should engage stakeholders to determine clear guidelines regarding the circumstances under which CO₂ capture for enhanced oil recovery will qualify as an innovative method of crude oil production.

Page 10 / Paragraph 4

“Further, to substantiate the validity of companies that register in the LRT as a regulated party, a modified registration process will be identified, enabling ARB staff to do a more thorough pre-registration check of each company.”

It isn't obvious from this language what the underlying issue or purpose is for modifying the registration process. Use of the LRT is restricted to regulated parties and fuel suppliers that opt-in to participate in the LCFS program. Parties that do not fit this criteria should arguably be excluded from the LRT, but it isn't clear why ARB resources should be burdened with modifying and more actively regulating the registration process unless a problem is emerging with the current system. This language begs the following questions: Has there been a problem with the “validity of companies that register in the LRT”? What criteria is ARB staff proposing to determine the validity of companies?

Page A-1 / Paragraph 5

“Staff will create a series of bins for each tier one fuel using life cycle inventory data obtained from various sources, including existing Method 2 applications. Each bin will consist of a mutually exclusive CI range.”

ARB staff have already received considerable feedback regarding the appropriate width of CI bins into which Tier 1 fuel pathways would be assigned. ARB staff have already acknowledged the significant trade-offs inherent to bin width determinations. Generally speaking, wider bins tend to reduce staff workloads, but also reduce incentives for incremental CI reductions unless they enable a producer to move into a lower bin.

This is problematic for two distinct reasons. First, incremental CI reductions may provide important contributions to the LCFS program. They can provide substantial aggregate reductions when applied to large fuel volumes. They can also support a trajectory of innovation in which a series of incremental CI reductions add up to large cumulative CI reductions over a period of years. Second, incremental reductions that enable a producer to move to a lower bin will enable LCFS credit generation to overstate the actual CI reduction.

For example, ARB staff have suggested a hypothetical bin width of 10 grams CO₂e/MJ. In this case, an incremental CI reduction that enables a producer to move to a lower bin will generate LCFS credits equivalent to a 10 gram CO₂e/MJ reduction, even if the actual reduction is much smaller. On the other hand, a producer that reduces their carbon intensity by 9 grams CO₂e/MJ would not see any benefit from this large improvement if the original CI was near the top of bin's range.

More generally, adopting wider bins tends to reduce the scientific basis and credibility of the program. The LCFS is specifically a science-based, technology-neutral, performance standard. Careful consideration is warranted for any program change that could compromise or reduce the scientific credibility of the program.

For these reasons, I respectfully submit that the bin width be set as narrow as is practical. At the very least, the width should not be wider than the current substantiality criteria of 5 grams CO₂e/MJ, and the trend lower substantiality criteria for other types of fuel pathways (e.g., crude oil and CARBOB) would support far narrower bins for Tier 1 fuels.

If the underlying problem that the proposal is aiming to address (e.g., adopting the Tier 1 / Tier 2 framework and relatively large CI bins) is really a staff resource issue, I respectfully submit that allocation of additional resources to the program may be an appropriate response.

Page A-4 / Paragraph 3

“Compared to the existing Method 2 certification process, therefore, the proposed tier 2 process will require applicants to provide more and higher quality data. . . Applicants should be prepared to provide independent, third-party verification of the data they submit. Increased data quantity requirements will be met either through the

submission of verified data sets from sophisticated plant data-logging systems of by similarly verified empirical data gathered through fully controlled in-plant experimental testing. Given the increasing value of the low-carbon fuels falling into the second tier, investments in data collection and verification will more than pay for themselves through the premiums these fuels will command in the market and the credits they will earn.”

This section of the Concept Paper seems problematic for several reasons. Clearly, innovative Tier 2 fuel pathways should be required to justify and demonstrate the validity of the resulting fuel carbon intensity. Third party validation seems like an appropriate step in this direction and is consistent with other provisions in the LCFS; however, requirements for “sophisticated plant data-logging systems” seem to place an undue additional burden on parties developing innovative low carbon fuels. This creates additional burdens for such innovators, who already face considerable barriers to development. Perhaps more importantly, creating additional burdens for innovative fuel pathways seems to contradict the policy’s intent to stimulate innovation and provide incentives to bring new low carbon fuels to market.

The proposed requirement for fully controlled in-plant experimental testing is somewhat vague. It is not clear from the current context if this is an appropriate extension of the type of verification required for fuel pathways generally (e.g., invoices for mass and energy inputs & outputs), or if it represents an undue additional burden and barrier to deployment for innovative fuel producers.

Finally, the suggestion that the additional costs for data collection and verification will be recovered through the premium value of the fuels ignores the fact that the premium value provided by the LCFS must cover the costs for developing and producing the low carbon fuels. Basic economics tells us that fuels will be produced when the market price is sufficient to cover the production costs. Such economic principles are already challenged by various market dynamics and market conditions in the transportation fuel sector. Additional burdens for innovative producers contribute to these challenges by providing an additional hurdle to deployment. Moreover, the additional costs of data collection and verification will increase the market premium required to bring these fuels to market and risks reducing their penetration and driving up compliance costs.

With this in mind, I respectfully submit that ARB staff limit the data requirements imposed on Tier 2 providers to (i) data strictly required to validate the fuel carbon intensity value and (ii) to requirements that are similar in character to those imposed on other fuel suppliers.