

State of California  
AIR RESOURCES BOARD

**PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE LOW  
CARBON FUEL STANDARD REGULATION**

**STAFF REPORT: INITIAL STATEMENT OF REASONS**

**DATE OF RELEASE: October 1, 2019**  
**SCHEDULED FOR CONSIDERATION: November 21, 2019**

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**Staff Report: Initial Statement of Reasons for the Proposed Amendments to the Low Carbon Fuel Standard Regulation**

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## **Executive Summary**

### **Purpose of Proposed Rulemaking**

In this rulemaking, the California Air Resources Board (Board or CARB) staff is proposing to amend the Low Carbon Fuel Standard (LCFS) regulation. Since the Board's original adoption of the LCFS in 2009, the program has increased the availability and use of low carbon fuels throughout California. Prior to the LCFS, the only alternative fuels for transportation with any significant market share were fossil natural gas and ethanol. Since the LCFS began, we have seen significant growth in volumes of alternative fuels in California. Renewable diesel use has increased from less than 2 million gallons to 384 million gallons per year. Biodiesel use has similarly grown from 12 million to 184 million gallons. Renewable natural gas use in vehicles has increased from 2 million to 120 million diesel gallons equivalent, accounting for the majority of natural gas used as a transportation fuel in the State.

In response to Senate Bill (SB) 32 (Pavley, 2016), which codified a statewide GHG target of at least 40 percent below 1990 levels by 2030, the Board adopted a broad set of LCFS amendments in 2018 that strengthened and broadened the ambition of the program. The most significant of these amendments was increasing the LCFS targets, which are now set to achieve a 20 percent reduction in fuel carbon intensity by 2030. To support additional GHG reductions, and result in reductions in criteria emissions and toxics pollutants, the adopted amendments recognize eligibility for new fuel and vehicle applications, such as alternative jet fuel, to generate credits under the program. The adopted amendments also included a rigorous protocol for approving carbon capture and sequestration projects and established a framework for an independent third-party verification and verifier accreditation program for ensuring the accuracy of LCFS data reported.

While adopting the 2018 amendments, the Board directed the Executive Officer to monitor the cost containment provisions of the LCFS program including the Credit Clearance Market (CCM), and to propose technical adjustments through future rulemaking to strengthen the cost containment provisions, if needed.

The Board also directed the Executive Officer to work with stakeholders to establish an equity-based framework for the possible uses of base credit value from residential charging, consistent with legislative priorities.

The purpose of the proposed rulemaking is to strengthen the current cost containment mechanism by establishing a hard price cap on credit transactions and allowing a limited amount of credit borrowing during years in which there are insufficient credits to meet the annual compliance obligation for all entities.

Consistent with Board direction, the proposed rulemaking also ensures a significant portion of LCFS revenue from base residential charging is directed to benefit disadvantaged and low-income communities, thereby allowing these communities to benefit from the increasing adoption of zero emission vehicles in California.

## Summary of Proposal

Staff proposes the following amendments to the LCFS regulation focused primarily on the cost containment provisions in the regulation and strengthening the equity component of the LCFS program:

- 1) **Establish a maximum tradable price for LCFS credits:** A proposed amendment would limit the price of LCFS credit transfers between parties to the previously established Credit Clearance Market price of \$200 in 2016 dollars, adjusted for inflation.
- 2) **Supply additional credits to the CCM through credit borrowing:** If insufficient credits are pledged in the CCM to clear the annual obligation of deficit generating entities, CARB could borrow credits from future residential base residential electric vehicle (EV) charging and distribute these credits to large utilities for sale in the CCM.
- 3) **Require Compliance Plans for deficit generators participating in two or more consecutive CCMs:** Regulated entities that participate in the CCM for two consecutive years would be required to submit a Compliance Plan to CARB detailing their plans on how they intend to meet their LCFS annual compliance obligations in future years.
- 4) **Remove buyer liability for entities purchasing credits in the CCM:** Buyers of credits in the CCM would not be required to pay back these credits if they are later determined to be invalid.
- 5) **Use revenues from holdback credits to support GHG and criteria pollutant reductions in disadvantaged communities:** Utilities receiving base credits for residential EV charging will be required to direct a substantial portion of the revenue from those credits to benefit disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals.
- 6) **Clarify how base electricity credits will be reallocated from service areas of utilities that do not receive such credits:** Credits generated in the service area of utilities that are ineligible to receive base credits for residential EV charging would be issued to large utilities. Large utilities receiving such credits would be required to direct all reallocated base credit revenue to the Clean Fuel Reward (CFR) program.

## Potential Impacts of the Proposal

The proposed amendments, by reinforcing the cost containment provisions of the LCFS, will build on and ensure the continued success of the program. The LCFS program is a key driver of decarbonization in California's transportation sector, and supports California's overall climate goals. Additionally, the LCFS incents the use of alternative fuels and alternative vehicles, which may lower the emissions of harmful local air

pollutants, potentially resulting in better health outcomes for California residents. The LCFS also contributes to the diversification of California's fuel pool, reducing the impact of large swings in the price of fossil fuels and crude oil imports.

Staff believes that the LCFS market is functioning as intended and is providing a strong signal for investment in low-carbon alternative fuels and emission reduction projects. New, large scale investments are being considered and announced every month for a diverse set of projects, including new and expanded renewable diesel and jet fuel facilities, solar steam production in oil fields, CCS at ethanol plants and steam methane reformers, capture of methane at dairies and waste water treatment plants, and infrastructure for electric and fuel cell vehicles. Because of the strong market and existing large bank of excess credits, staff does not believe that the proposed amendments for cost containment are likely to be triggered. However, to estimate the potential economic impacts in the event that the mechanism is triggered, staff prepared sensitivity scenarios, which simulate the very unlikely conditions which could lead to a moderate credit shortfall in the LCFS credit market. The sensitivity analysis helps demonstrate that the proposed amendments would stabilize compliance costs, and therefore help reduce fuel price impacts that could be experienced by consumers.

By including an explicit equity component for the use of residential base credits in the proposed amendments, utilities would be required to use those existing LCFS credit revenues to support transportation electrification in disadvantaged and low-income communities. By 2024, at least 50 percent of revenues from base credits generated by utilities must be used for this purpose. These revenues may be used to provide rebates for used EVs, support for purchase of electric school buses, including battery swaps, and drayage trucks, investment in EV infrastructure, and education and outreach programs, to help to bring the benefits of zero emission vehicles to the communities that need it most. Utilities, in cooperation with local municipalities and environmental justice advocates, may also develop and implement other projects to promote electrification transportation that primarily benefit disadvantaged and low-income communities.



## **I. INTRODUCTION AND BACKGROUND**

In this chapter, the California Air Resources Board (CARB or Board) staff provides a brief overview of the Low Carbon Fuel Standard (LCFS), information on the history and status of the LCFS program, and an overview of the proposed revisions to the program.

The Board approved the LCFS regulation in 2009 as a discrete early action measure under the California Global Warming Solutions Act of 2006 (AB 32). The purpose of the LCFS regulation is to reduce the carbon intensity of transportation fuels used in California, thereby reducing greenhouse gas (GHG) emissions, and to diversify the fuel pool to enable long-term decarbonization of the transportation sector.

In response to Senate Bill (SB) 32 (Pavley, 2016) that codified a statewide GHG target of at least 40 percent below 1990 levels by 2030, the Board adopted a broad set of amendments that strengthened and broadened the ambition of the LCFS program in 2018. The most significant of these amendments was increasing the LCFS targets, which are now set to achieve a 20 percent reduction in fuel carbon intensity by 2030. To encourage additional GHG reductions in key areas, the adopted amendments recognize eligibility for new fuel and vehicle applications that had previously not been included in the standard, such as alternative jet fuel, to generate credits under the program. The 2018 adopted amendments also included a rigorous protocol for approving carbon capture and sequestration projects and established a framework for an independent third-party verification and verifier accreditation program for ensuring the accuracy of data reported under LCFS.

### **A. Overview of the LCFS**

Transportation plays a key role in California's economy and lifestyle. The production and use of traditional petroleum-derived transportation fuels—such as gasoline and diesel—is responsible for almost half of the State's GHG emissions. The LCFS is a key part of a comprehensive set of California programs that cut GHG emissions by improving vehicle technology, by reducing fossil fuel consumption, and by implementing sustainable land-use policies (California Air Resources Board, 2017c). The LCFS is designed to decrease the carbon intensity (CI) of California's transportation pool and provide an increasing range of low-carbon and renewable alternatives to conventional petroleum-derived fuels.<sup>1</sup>

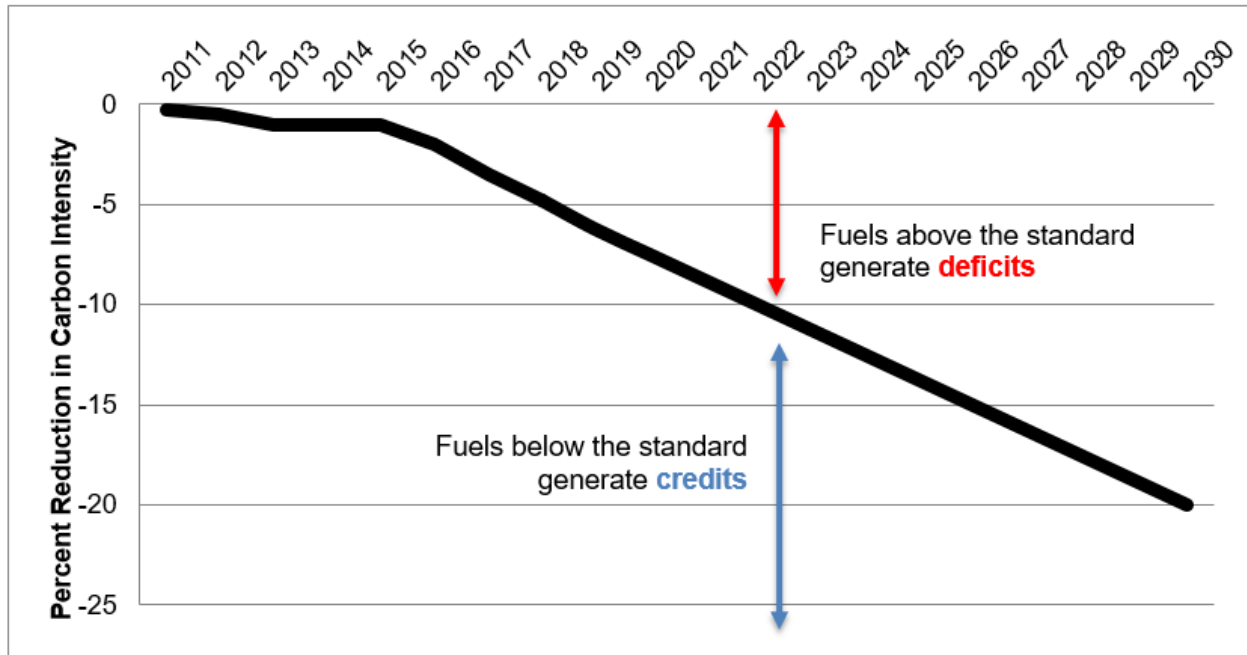
Providers of transportation fuels must demonstrate that the mix of fuels they supply for use in California meets the LCFS carbon intensity standards, or benchmarks, for each annual compliance period. They must report all fuels provided, and track the fuels' carbon intensity through a system of "credits" and "deficits." Credits are generated by supplying fuels with lower carbon intensity than the annually-declining benchmark. Deficits result from supplying fuels with higher carbon intensity than the annually-declining benchmark. This concept is illustrated in Figure I-1. A deficit generator meets its compliance obligation by ensuring that the amount of credits it earns or otherwise acquires from another party is equal to, or greater than, the deficits it has incurred. Credits and deficits are generally determined based on the quantity of fuel sold, the

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<sup>1</sup> Carbon intensity (CI) is a measure of the GHG emissions associated with the various production, distribution, and consumption steps in the "life cycle" of a transportation fuel.

carbon intensity of the fuel, and the efficiency by which a vehicle converts the fuel into useable energy. Additionally, there are CARB-approved LCFS project-based actions that may generate credits, such as by demonstrating carbon capture and sequestration (CCS), using solar-generated steam at oil and gas extraction sites, and investing in refinery improvements that reduce emissions. Credits and deficits are denominated in metric tons of GHG emissions. Credits may be banked and traded within the LCFS market to meet compliance obligations in current or future years.

**Figure I-1: Illustration of LCFS Mechanics: How Credits and Deficits are Calculated**



The LCFS carbon intensity benchmarks are an annually-declining standard, which are defined in the LCFS regulation as a percentage reduction from the historical average carbon intensity of gasoline and diesel fuel in the year 2010. To determine the carbon intensity value of a particular fuel, the GHG emissions from all steps in the fuel’s life cycle are summed and divided by the fuel’s energy content (in megajoules). GHG emissions from each step can include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), volatile organic compounds (VOC) and carbon monoxide (CO), which are adjusted by their Intergovernmental Panel on Climate Change (IPCC) global warming potentials to their CO<sub>2</sub> equivalent. Thus, carbon intensity is expressed in terms of grams of CO<sub>2</sub> equivalent per megajoule (gCO<sub>2</sub>e/MJ).

The LCFS is based on the principle that each fuel has life cycle GHG emissions. This life cycle analysis (LCA) examines the GHG emissions associated with the production, transportation, and use of a given fuel. The LCA includes direct emissions from the energy and material inputs to production, transport, and use of the fuels, as well as significant GHG emissions from market-driven changes, such as changes in land use for some crop-derived biofuels, and emissions that may result from market displacement effects (e.g., when a material is diverted from its historic use in order to

produce a fuel, causing increased demand for another material to substitute the for fuel feedstock). The system of declining benchmarks that is used to calculate credits and deficits, and the obligation of deficit-generating fuels to be canceled out by credits, result in a decrease in the total life cycle GHG emissions from the transportation fuel pool in California.

The LCFS is designed to encourage the use of low carbon fuels in California, to encourage the lowest-carbon production of those fuels in California and elsewhere, thereby, reducing GHG emissions and advancing the technology underlying these low carbon fuels. The LCFS is performance-based and the flexibility of the credit market allows many possible low carbon fuels to contribute to the carbon intensity reductions.

A more complete description of how the LCFS regulation is designed to work, as well as its underlying scientific and economic principles, can be found in the initial and final statements of reasons for the original 2009 rulemaking, the, 2015 and 2018 Staff Reports (California Air Resources Board, 2009a, 2009c, 2009d, 2011b, 2012, 2014, 2015, 2018c, 2018i).

## **B. History and Current Status of the LCFS**

CARB initially approved the LCFS regulation in 2009. Throughout the decade since the Board's original adoption, the basic framework of the current LCFS—including the use of life cycle analysis, the LCFS credit market, and the electronic registry for fuel reporting—has worked well and continues to support growth in an increasingly diverse and low-carbon transportation fuel pool (California Air Resources Board, 2017a).

CARB approved revisions to the LCFS in December 2011, which became effective on November 26, 2012, and were implemented by CARB on January 1, 2013. On July 15, 2013, the State of California Court of Appeal, Fifth Appellate District (Court) issued its opinion in POET, LLC versus California Air Resources Board (2013) 218 Cal.App.4th 681, resulting in a stay of the LCFS. The Court held that the LCFS adopted in 2009 and implemented in 2010 (referred to as 2010 LCFS) would remain in effect and that CARB could continue to implement and enforce the 2013 regulatory standards while taking steps to remedy California Environmental Quality Act (CEQA) and Administrative Procedure Act (APA) issues as required in the ruling.

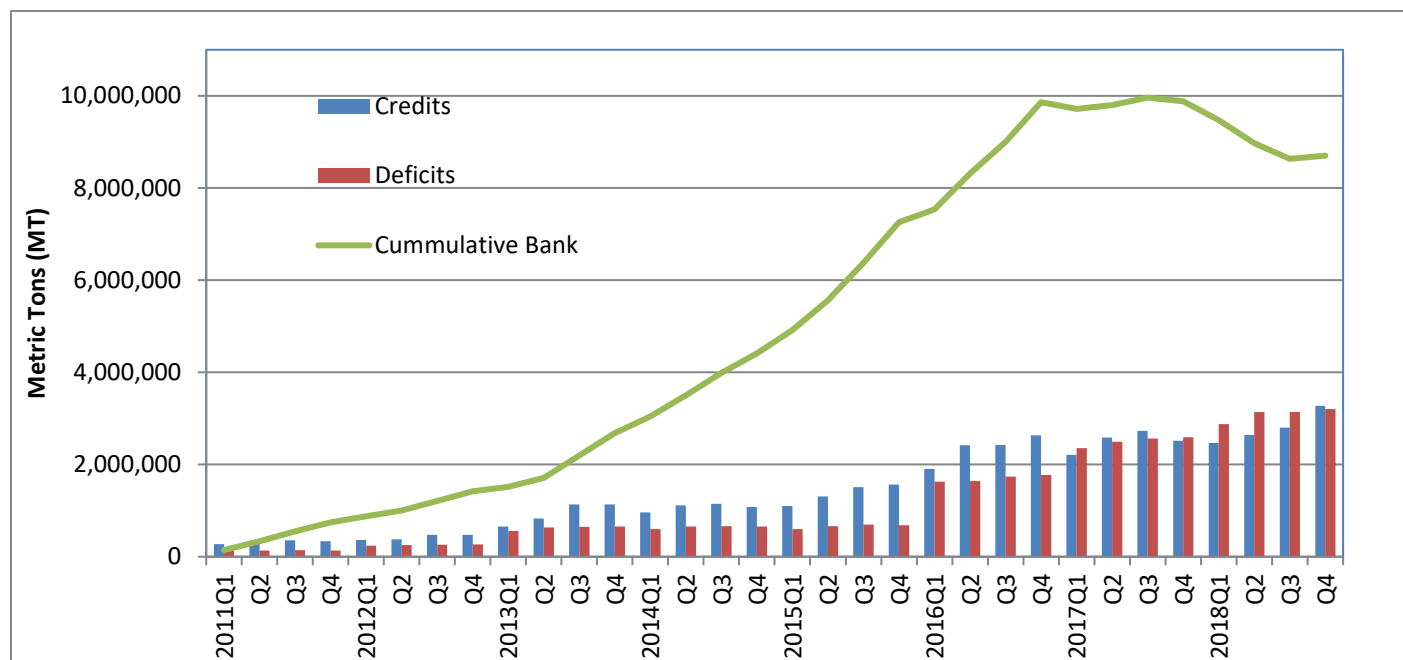
To address the court ruling, CARB brought a revised LCFS regulation to the Board for re-adoption in February 2015. The 2015 rulemaking included many amendments, updates and improvements to the program, including a compliance schedule that maintained the 2009 LCFS regulation's target of a 10 percent reduction in average carbon intensity by 2020 from a 2010 baseline. On September 24, 2015, the Board approved the re-adopted LCFS regulation. That regulation became effective on January 1, 2016.

In 2018, CARB approved amendments to the LCFS, which included a doubling of the CI target to 20 percent by 2030, inclusion of new credit generating opportunities, the establishment of a third-party verification program, adoption of a carbon capture and sequestration protocol, as well additional updates and improvements to the program.

From 2011 through 2017, entities over-complied with the regulation leading to the build-up of a substantial bank of credits. The 2018 compliance year was the first year in which

credit generation was lower than deficit generation, leading to a slight drawdown of the bank of credits. In 2018, California achieved a reduction of 4.2 percent in the average carbon intensity of the overall transportation fuel pool, as compared to a target reduction of 4.7 percent.<sup>2</sup> In the last quarter of 2018, however, credit generation did exceed deficit generation by approximately 70 thousand credits. Since regulated entities have historically over-complied with the regulation, at the end of 2018 a bank of approximately 8.7 million excess credits are available for future compliance, as shown in Figure I-2.

**Figure I-2: Total Credits and Deficits for All Fuels Reported and Cumulative Credit Bank**



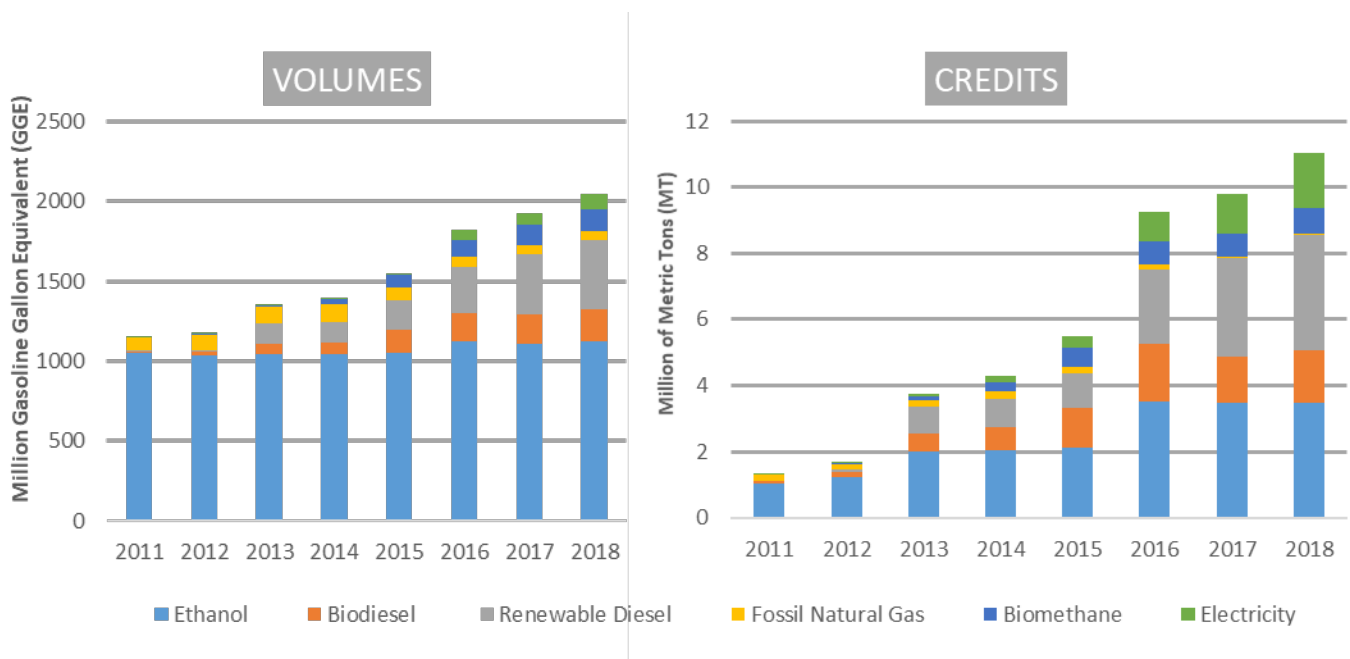
The financial benefits from selling LCFS credits are distributed among providers of various low-carbon fuels (as illustrated in Figure I-3), geographically across California (California Air Resources Board, 2019c), and across the participating credit generators (California Air Resources Board, 2019b).

The LCFS is rapidly increasing use of low-carbon fuels in California. Before the LCFS, the only alternative fuels with substantial market share in the State were fossil natural gas and ethanol. Between 2011 and 2018, renewable diesel use has increased from less than 2 million gallons to 384 million gallons per year, as shown in Figure I-3. Biodiesel use has similarly grown from 12 million to 184 million gallons. Renewable natural gas use in vehicles has increased from 2 million to 120 million diesel gallons equivalent, accounting for the majority of natural gas used as a transportation fuel in the State. Credits in 2018 were generated primarily from ethanol (33 percent), renewable

<sup>2</sup> The LCFS reduction target for 2018 was 5 percent for gasoline and 3.5 percent for diesel, which translates to a weighted average reduction target of 4.7 percent in 2018.

diesel (31 percent), biodiesel (14 percent), electricity (14 percent) and to a lesser—but growing—extent, from biomethane (7 percent).

**Figure I-3: Alternative Fuel Volumes and Credit Generation by Fuel Type**



Through ongoing innovation, fuel producers are achieving significant reductions in the carbon intensities of their fuel pathways. New projects with the potential to generate significant credits are being explored at biofuel production facilities (e.g., carbon capture and sequestration), waste management operations (e.g., livestock manure and wastewater treatment plants), crude production fields (e.g., solar-generated electricity and steam) and petroleum refineries (e.g., production of renewable hydrogen and co-processing of renewable feedstocks). Providers of electricity and hydrogen for battery electric and fuel cell vehicles are also increasing their participation in the program. The recently-adopted amendments also allow credit generation from alternative jet fuels, investment in hydrogen and direct current fast charging (DCFC) infrastructure, CCS projects, and increased use of low-carbon electricity (e.g., wind, solar, etc.) in the program.

Credit prices and trading activity reached their highest in 2019, with prices averaging around \$180 - \$190 per credit. Over thirteen million LCFS credits were sold or traded in approximately 1,725 transactions in 2018 with a weighted average credit price of \$160/metric ton carbon dioxide equivalent (MTCO<sub>2e</sub>), demonstrating an active credit market with an annual transactional value of over \$2 billion (California Air Resources Board, 2019d). More than 322 active entities are registered for reporting in the LCFS Reporting Tool and Credit Bank & Transfer System (LRT-CBTS), and 487 individual alternative fuel pathways have been certified with carbon intensities below the current benchmarks. About 180 biofuel facilities are registered under the LCFS as supplying low carbon fuels to California.

### C. Overview of the Proposed Amendments

This section provides a broad overview of amendments staff is proposing for adoption in 2019. Chapter II provides a more in-depth description of the purpose for the rulemaking and the problems that the proposal is intended to address. Chapter III provides a summary, purpose and rationale for each change to the regulation order.

The Board, as part of the hearings to adopt the proposed amendments in 2018, directed the Executive Officer to monitor the cost containment provisions of the LCFS program including the Credit Clearance Market (CCM), and to propose technical adjustments through future rulemaking to strengthen the cost containment provisions, if needed. The Board also directed Executive Officer to work with stakeholders to establish an equity-based framework for the possible uses of base credit value from residential charging, consistent with legislative priorities.

The proposed changes discussed below focus on strengthening the cost containment provisions of the LCFS program and addressing equity in the use of LCFS credit value for electricity.

- 1) **Establish a maximum tradable price for LCFS credits:** Staff proposes to add a new provision to the LCFS regulation that will limit the price of LCFS credit transfers between parties to the previously-established Credit Clearance Market price of \$200 in 2016 dollars, adjusted for inflation.
- 2) **Supply additional credits to the market through credit borrowing:** This provision introduces a new concept for potential borrowing of credits. In years where an insufficient number of credits are pledged into the CCM to meet all outstanding annual deficit obligations, CARB proposes to issue additional credits to large utilities to make up that difference. Large utilities will be obligated to pledge these credits to the current year CCM, ensuring that the CCM has enough credits to meet all outstanding deficit obligations. An equal number of credits will later be deducted from the credits that large utilities generate in the future through the existing base residential EV charging provisions. In essence, the provision allows the borrowing of residential base EV charging credits from future years to meet potential credit shortages in the near period.

Borrowed credits would be issued over a 6-year window, and will be repaid within 11-years from the time borrowed credits are first issued in accordance with the repayment schedule in Table I-1. To ensure that enough credits will be available for repayment within 11-years from the time of issuance, staff proposes to limit the cumulative number of borrowed credits to 10 million. This is approximately half the number of base residential EV charging credits that are expected to be generated from electric vehicle charging in the 2026 – 2030 timeframe for the conservative scenario in which cumulative EVs sold only reach 1.7 million by 2030 (California Air Resources Board, 2018d).

The use of revenue from the sale of borrowed credits will have the same requirements as the use of revenue from the sale of base credits. Specifically, a minimum portion of proceeds from the credits will have to be directed to the Clean

Fuel Reward (CFR) program. The proceeds from the remaining portion of the credits, referred to as holdback credits, will be used to the benefit of EV drivers in California and to promote transportation electrification in California. As described below, by 2024 at least half of the credits must be used to support transportation electrification to benefit disadvantaged and/or low-income communities.

**Table I-1: Borrowed Credits Repayment Schedule**

<b>Year</b>	<b>Repayment Rate of Total Borrowed Credits</b>
Year 7	5%
Year 8	10%
Year 9	20%
Year 10	30%
Year 11	35%

- 3) **Require Compliance Plans for entities participating in two or more consecutive CCMs:** Regulated entities that participate in the CCM for two consecutive years would be required to submit a Compliance Plan to CARB detailing investments they intend to make to meet their LCFS annual compliance obligations in future years. These plans would be reviewed by CARB to ensure progress in successfully implementing the plan. Compliance Plan requirements are designed to assure CARB, LCFS stakeholders, and the public that the regulated entity has a feasible roadmap to achieve annual compliance obligations in support of the stability of the LCFS credit market and program policy goals. While the CCM is designed to help entities meet short-term credit shortages, and to provide greater cost containment certainty in the program, it is not designed to be a long-term compliance strategy for deficit generators. Long-term compliance should involve necessary investment by deficit generators in alternative fuel production and other emission reduction projects that generate credits in the program. Regulated entities that have had their Compliance Plans approved would file annual implementation reports with CARB for a period of five years. If an implementation report indicates that there was a deviation from the approved Compliance Plan, the regulated entity must identify actions that they will take to correct this deviation, and CARB will post that annual implementation report publicly on the LCFS website. Consistent with legal requirements, CARB will work with entities that have deviated from their compliance plan to ensure that any confidential trade secret information is appropriately redacted from the publicly posted versions of such implementation reports.
  
- 4) **Remove buyer liability for entities purchasing credits in the CCM:** Buyers of credits in the CCM would not be required to pay back these credits if they are later determined to be invalid. The LCFS regulation generally operates under the principle of buyer liability, whereby in the event that the generator of invalid credits is not available, the Executive Officer may remove credits from entities that have purchased the invalid credits. In the CCM, buyers are obligated to purchase their pro-rata share of credits, and therefore do not have discretion over who they buy from, as they would in the day-to-day market. While the introduction of third party

verification and validation in the LCFS program as part of the 2018 adopted amendments is anticipated to decrease invalidation risk, it does not entirely remove risk to the buyer. Regulated entities that are obligated to participate in the CCM cannot reduce their exposure to invalidation risk by exercising due diligence, since they are obligated to purchase credits pledged in the CCM.

- 5) **Use revenues from holdback credits to support GHG and criteria pollutant reductions in disadvantaged communities:** Utilities receiving base credits for residential EV charging will be required to direct a substantial portion of the revenue from those credits to benefit disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals. In Resolution 18-34, the Board directed staff to work with stakeholders to establish an equity-based framework for the possible uses of base credit value from residential charging, consistent with legislative priorities. Base credits are generated by EDUs for both metered and non-metered residential charging using the grid average carbon intensity. The EDUs must contribute a portion of the LCFS credit revenue generated for this electricity to the CFR program. The remaining revenue from credits not contributed to the CFR, or “holdback credits,” must be invested by utilities in projects that advance transportation electrification, such as electric school or transit buses, charging infrastructure, used EV rebates, and public outreach and education. To ensure that all populations in California benefit from this particular transportation electrification initiative, staff is proposing that by 2024 at least 50 percent of this holdback credit revenue be used to directly support emission reductions in disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals.
- 6) **Clarify how base electricity credits may be reallocated when utilities are not eligible to receive such credits:** Credits generated based on residential EV charging calculated for the service areas of utilities that are ineligible to receive base credits will be issued to large utilities that are eligible to receive base credits. Large utilities receiving such credits must direct the revenue of all such reallocated base credits to the CFR program. To be eligible to receive base credits, EDUs must provide evidence that they entered or will enter the CFR governance agreement. Failure to provide this evidence by the appropriate deadline will result in the EDU losing its eligibility status to receive base credits. EDU eligibility status will remain unchanged unless they notify CARB that they wish to change their status by September 30 of the year prior to subsequent year in which base credits will be generated.



## **II. THE PROBLEM THAT THE PROPOSAL IS INTENDED TO ADDRESS**

A properly designed cost containment mechanism, even if it is never triggered, plays an important role in ensuring the stability of the market, deterring market manipulation, maintaining support for the program, and program certainty necessary for long-term investment. Additionally, the Board directed the Executive Officer to establish an equity-based framework for the possible uses of value from base credits generated by electric utilities. In this chapter, staff provides a description of the purpose for the rulemaking and the problems the proposed amendments are intended to address. A description, purpose and rationale for each of the proposed updates and revisions are provided in Chapter III.

Staff is proposing amendments to the regulation in order to:

- A. Strengthen the cost containment provisions of the LCFS program.
- B. Support GHG and criteria pollutant reductions in disadvantaged communities.

### **A. Strengthen the Cost Containment Provisions of the LCFS Program**

The LCFS requires that regulated entities meet the annual carbon intensity standards. The regulation contains numerous design features that provide regulated parties with flexibility regarding their compliance strategy, which help to contain the cost of the program while achieving reductions in the carbon intensity of California's transportation fuel pool. Because the program is performance-based, it allows regulated parties to choose from a range of strategies that achieve compliance in the most cost-effective and reliable manner. The strategies include: investing in production of low-carbon fuels to self-generate credits; undertaking projects at refineries or oil fields that reduce GHG emissions; purchasing low-carbon fuels for blending with conventional high carbon fuels; purchasing credits from low carbon fuel providers and other credit generators; and banking credits for use in future years. Regulated parties can determine the most economical path to compliance by choosing one, or a combination of, the above strategies.

In addition to its performance-standard design enabling regulated parties to seek their own least-cost, compliance strategies, the LCFS credit provisions incorporate a variety of other features that better allow regulated parties to cost-effectively achieve compliance using credits.

- First, credits do not have an expiration date, so they can be banked by regulated entities. This gives deficit generators the option to over-comply in the early years of the regulation so that they would have banked credits to use in later years when the standard is more stringent. The current size of the LCFS credit bank is over 8 million credits.
- Second, credits are fungible across the gasoline and diesel sectors. For example, if a regulated entity makes both gasoline and diesel, it can use credits generated by substituting petroleum diesel fuel with lower carbon renewable diesel or biodiesel and can apply those credits towards its gasoline deficit, or vice versa.

- Third, as noted above, credits can be bought and sold in the LCFS credit market, allowing regulated entities to meet their obligations with credits purchased from other regulated entities who have credits available for sale.

When the LCFS was re-adopted in 2015, the Board approved the addition of a cost containment provision in the LCFS, which has not been modified since. Under the current regulation, regulated entities would be allowed to hold deficits to the next compliance period, provided that they purchase their pro-rata share of all credits made available for sale during a year-end CCM. This credit clearance mechanism is specified in section 95485 of the LCFS regulation. Regulated entities may “bank” deficits for up to five years before they are in non-compliance with the standard, and incur 5 percent interest each year on all outstanding deficits up to the point of non-compliance.

Under the current cost containment mechanism, staff does not consider it rational that regulated entities facing credit shortage will elect to pay more than the CCM’s maximum price to obtain credits to meet a credit shortage. Staff’s reasoning is that there are plenty of GHG emission mitigation opportunities below the CCM’s maximum price that can be brought online within a five-year period. Additionally, strong LCFS credit prices and the availability of recently introduced opportunities to generate credits will likely result in sufficient low-carbon fuel production and associated credit generation to meet the regulated entities’ demand for credits.

While staff has confidence that the current provisions are robust enough to prevent prices from increasing beyond the CCM’s maximum price, several stakeholders have expressed concerns that regulated entities may be willing to pay more than maximum CCM’s price to avoid the possibility of not meeting their annual deficit obligation. Such price spikes may have adverse impacts on California consumers, potentially resulting in an erosion of support for the program. Avoiding credit market instability and deterring market manipulation is essential to ensure investment and support in the LCFS, which is essential for driving innovation and GHG emission reduction in transportation, California’s largest sector of GHG emissions.

Staff’s proposal will allay concerns about a potential credit shortfall and further deter market manipulation that could result in high or unpredictable prices. It will also address concerns of buyer liability expressed by some stakeholders about invalidation risk for credits purchased in the CCM. Finally, it will place a hard cap on the price of credits in the day-to-day market. In total, these provisions will strengthen the credit clearance market and create an upper bound on the potential compliance costs to the LCFS program, providing greater certainty for regulated entities and limiting potential adverse impacts on California consumers.

As part of this rulemaking, some stakeholders expressed interest in lowering, or increasing, the existing \$200 CCM price structure. Staff is not proposing to change that value in either direction, but reinforce it through the proposed amendments. Deficit generators would prefer a lower value as it would limit their compliance costs. Credit generators would prefer a higher value as it would potentially result in higher values for their credits in the market.

In setting the value in the 2015 LCFS rulemaking, staff set the CCM credit price cap at \$200 in 2016 dollars, increasing at the rate of inflation in subsequent years. Although a

price cap that is set too low may limit the profitability of credit generators (i.e. low-CI fuel producers and distributors), staff analysis of the price cap indicates that \$200 is high enough to stimulate investments in and production of low-CI fuels, and sufficiently high to attract these fuels to California if they are produced elsewhere. As part of the 2018 LCFS rulemaking process, staff analyzed a variety of different compliance scenarios, taking into account supply, demand, and costs for a variety of fuel-technology pathways (California Air Resources Board, 2018i). Staff analysis indicated that the set of available low-carbon transportation fuels and pathways likely to come to the California market with the existing California policy environment should be possible at credit prices of less than \$200. The emission reductions that are achievable with a price cap of \$200 are consistent with the 2017 Scoping Plan, and staff does not believe a higher price cap will be more effective than implementing the proposed amendments to the program for achieving the goals of AB 32, SB 32, and AB 398 (California Air Resources Board, 2017c). The proposed price cap at \$200 is anticipated to result in multiple, ancillary market benefits, including reduced price uncertainty, and reduced regulatory uncertainty. Reducing both these sources of uncertainty is anticipated to increase the incentives for investment. Potential investors may be hesitant to invest in low-CI fuel production facilities given conditions of undue uncertainty, particularly because production facilities for low-CI fuels are typically capital-intensive projects with relatively long payback periods.

Staff believes that lowering the value could potentially devalue historical and recent investments that anticipate a specific return on investment. Lowering the value may also result in new and emerging projects not being realized due to a reduced potential on return on investment. Staff believes that increasing the value may result in unanticipated compliance costs, which could have adverse impacts on consumers and risk the loss of support for the LCFS.

#### **B. Support GHG and Criteria Pollutant Reductions in Disadvantaged Communities**

To ensure that the economic and health benefits of the LCFS are directed towards and addressing equity and environmental justice concerns, staff proposes to require electric utilities to use a significant portion of their credit revenue to support transportation electrification in disadvantaged and/or low-income communities and to provide increased access to electric transportation to low-income individuals. Under the existing regulation, hundreds of entities across the State earn revenue from LCFS credits. The objectives of the program are well-aligned with environmental justice recommendations, as discussed in Chapter VII, and the actions incited by the LCFS have resulted in significant public health benefits statewide, as elucidated in Chapters IV and V. However, the existing regulation does not specifically guarantee that the cleaner fuels and technologies promoted by the LCFS will be deployed in areas disproportionately affected by environmental pollution. Staff's proposal includes requirements to ensure that LCFS credit revenues are invested in improvements to local air quality in disadvantaged and low-income communities.

**III. THE SPECIFIC PURPOSE OF EACH ADOPTION, AMENDMENT, OR REPEAL & THE RATIONALE FOR CARB’S DETERMINATION THAT EACH IS REASONABLY NECESSARY**

**SECTION 95481. DEFINITIONS AND ACRONYMS.**

**Section 95481(a). Definition for “Borrowed credits”**

Description of Problem

The term “borrowed credit” is used in the proposed regulation amendments, but is not defined in the existing regulation.

Proposed Solution

Define borrowed credits.

Rationale Supporting Proposed Solution

The term “borrowed credits” is a new concept proposed in this rulemaking. Including this definition clarifies the scope of the introduced regulatory concept of potentially issuing credits forward in time, for future fueling, which would be subtracted from future issuances.

**Section 95481(a). Definition for “Borrowed credits window”**

Description of Problem

The term “borrowed credits window” is used in the proposed amendments, but is not defined in the existing regulation.

Proposed Solution

Define borrowed credits window.

Rationale Supporting Proposed Solution

Defining important terms provides clarity and helps prevent misinterpretation of regulation requirements.

**Section 95481(a). Definition for “Clean Fuel Reward”**

Description of Problem

The term “Clean Fuel Reward” is used in the proposed regulation amendments, but is not defined in the existing regulation.

Proposed Solution

Define Clean Fuel Reward.

Rationale Supporting Proposed Solution

Clean Fuel Reward is an updated terminology for what the current regulation refers to as the “statewide point of purchase rebate program.” Staff proposes to change the terminology in the regulation to align with the title chosen by utilities to refer to the reward program, which emphasizes the fact that the statewide program is funded based

on revenues from the sale of credits generated through low carbon intensity (specifically electricity) fueling.

**Section 95481(a). Definition for “Disadvantaged Communities”**

Description of Problem

The term “disadvantaged communities” is used in the proposed regulation amendments, but is not defined in the existing regulation.

Proposed Solution

Define disadvantaged communities.

Rationale Supporting Proposed Solution

Defining important terms provides clarity and helps prevent misinterpretation of regulation requirements. It is essential to define disadvantaged communities in this regulation, as the proposed amendment requires a minimum percentage of holdback credits to be used for transportation electrification for the benefit of members of disadvantaged and low-income communities. Disadvantaged and low-income communities are disproportionately affected by environmental pollution from transportation fuels, and defining the terms will clarify the regulation requirements to benefit members of these communities.

**Section 95481(a). Definition for “Drayage Trucks”**

Description of Problem

The term “drayage trucks” is used in the proposed regulation amendments, but is not defined in the existing regulation.

Proposed Solution

Define drayage trucks.

Rationale Supporting Proposed Solution

One of the potential uses of holdback credits involves the electrification of drayage trucks to the benefit of disadvantaged and low-income communities. It is important to clarify this term to prevent potential ambiguity regarding regulation requirements.

**Section 95481(a). Definition for “Electrical Distribution Utility”**

Description of Problem

The current rule does not distinguish between different sizes of investor-owned utilities (IOUs) as it does with public-owned utilities (POUs).

Proposed Solution

Staff proposes to clarify the difference between small, medium and large IOUs in the regulation in a similar way that different sized POUs are defined in the regulation.

### Rationale Supporting Proposed Solution

The change will ensure that the requirements for spending of the proceeds of selling base electric credits for small- and medium-owned IOUs are similar to the requirements for small- and medium-owned POUs that are similarly situated in terms of LCFS participation.

#### **Section 95481(a). Definition for “Holdback credits”**

### Description of Problem

The term “holdback credits” is used in the proposed amendments, but is not defined in the existing regulation.

### Proposed Solution

Define holdback credits.

### Rationale Supporting Proposed Solution

Defining important terms provides clarity and helps prevent misinterpretation of regulation requirements. It is necessary to define holdback credits, which is an existing concept in the current regulation, in order to clarify the scope of the term as referenced several times in the proposed amendments, which add specific new requirements applicable to holdback credit revenue.

#### **Section 95481(a). Definition for “Low-income Communities”**

### Description of Problem

The term “low-income communities” is used in the proposed regulation amendments, but is not defined in the existing regulation.

### Proposed Solution

Define low-income communities.

### Rationale Supporting Proposed Solution

It is necessary to define low-income communities in this regulation, as the proposed amendments require a minimum percentage of holdback credits to be used for transportation electrification for the benefit of members of disadvantaged and low-income communities. Disadvantaged and low-income communities are disproportionately affected by environmental pollution from transportation fuels, and defining the terms will clarify the regulation requirements to benefit members of these communities.

## **SECTION 95483. FUEL REPORTING ENTITIES.**

#### **Section 95483(c)(1)(A) Residential EV Charging – Base Credits**

### Description of Problem

The LCFS regulation requires opt-in EDUs to contribute a specified minimum percentage of base credits for residential EV charging (or net base credit proceeds) to

provide a statewide point of purchase rebate funded exclusively by LCFS credit proceeds, but may not provide adequate specificity on the regulatory consequences of any failure to make required contributions consistent with CPUC approval of large IOU advice letters.

Additionally, to address various program goals, new requirements are proposed to be added under 94583(c)(1)(A) in new paragraphs as described below.

#### Proposed Solution

EDUs must confirm through demonstration to CARB that they are able to contribute the specified base credits or base credit proceeds to the CFR program as required, by providing an attestation or demonstration of entrance into any applicable CFR governance agreement. Utilities that do not demonstrate this or withdraw from any governance agreement may be ineligible to generate base credits. Base credits generated in service area of utilities that are ineligible to receive base credits will be reallocated to the CFR program.

EDUs eligibility status will not change after the initial demonstration unless they notify CARB by September 30 of their intent to switch their eligibility status for the next effective credit generation year.

Staff also proposes to add new guidelines and requirements in new paragraphs to facilitate implementation of the statewide point of purchase rebate.

#### Rationale Supporting Proposed Solution

For the CFR program to succeed in incentivizing State residents to adopt EVs, it must provide a sufficient rebate to EV customers. As the LCFS is the sole source of revenues for the CFR program, sufficient contributions of base credits are essential to adequately fund the program. The proposed change will ensure that a substantial proportion of base credits or base credit proceeds will be contributed to the statewide point of purchase rebate as previously required, regardless of whether all EDU's that had previously opted in to generate base credits are able to participate in rebate program governance consistent with CPUC resolution on initial program administration.

To enhance stability and predictability for the CFR, EDUs may change their eligibility for receiving base credits annually, by notifying CARB of their intent before September 30 prior to the year the status change is effective. This will allow CARB and the CFR governance board sufficient time to make necessary changes to the programs.

The addition of new EDU guidelines and requirements to facilitate implementation of the statewide point of purchase rebate is designed to ensure that the rebate successfully achieves underlying policy goals.

### **Section 95483(c)(1)(A)1. Clean Fuel Reward Program – Minimum Percentage Contributions**

#### Description of Problem

Under the current regulation, small and medium IOUs are required to make the same minimum percentage contribution to the CFR program as large IOUs. Currently, no small or medium IOUs have opted into the LCFS program, but if they choose to do so,

staff anticipates that they would generate few base credits due to their relatively small service areas. Requiring these small and medium IOUs to contribute the same as large IOUs could be unnecessarily burdensome to those small and medium IOUs and could thus discourage beneficial LCFS opt-in base credit generation participation by those IOUs.

#### Proposed Solution

The minimum percentage contribution to the CFR program for small and medium IOUs is set at the same minimum percentage mandated for small-and medium-POUs, respectively.

#### Rationale Supporting Proposed Solution

This change would ensure consistency between IOUs and POU's, and will allow small-and medium-IOUs to invest in other projects that promote electrification in their service areas, which may have a more significant impact on electrification than the relatively small incremental increase in the number of credits that are contributed to the CFR program.

### **Section 95483(c)(1)(A)3. CFR Program – Base Credits Generated from Service Areas of Utilities that are Not Eligible to Generate Base Credits**

#### Description of Problem

Under the current regulation, if an EDU is not eligible to receive base credits, the base credits generated from residential electricity charging use in the ineligible EDU's service area will be distributed to all utilities that are participating in the LCFS program. These credits are allocated based on each utility's pro-rata share of non-metered residential electricity used for charging electric vehicles. If a larger utility were to opt out or lose eligibility to generate base credits, the relative number of credits that would be generated by smaller utilities would increase. Because smaller utilities have a lower minimum percentage contribution to the CFR program relative to large EDUs, this reallocation structure could lead to a significant reduction in the revenues that would have otherwise been directed to the CFR program.

#### Proposed Solution

For EDUs that are not eligible to receive base credits, the credits generated through non-metered residential electric vehicle charging within these service territories will be assigned to large IOUs and large POU's. The utilities receiving these credits will be directed to use all the revenues from the sale of these credits to directly fund the CFR program.

#### Rationale Supporting Proposed Solution

Electrification of the transportation sector is essential for the success of the LCFS and for California to achieve its climate and air pollution goals, and a successful CFR program will aid in this effort. The proposed solution will eliminate any risk of a reduction in funds for the program if an EDU is not eligible to receive base credits.



#### **Section 95483(c)(1)(A)4. CFR Program – Administrative costs**

##### Description of Problem

While the current language directs utilities to use some of the funds from the sale of base residential EV charging credits to fund the CFR program, staff anticipates that some of that value may be used to administer the program. The current regulation, however, does not place an upper limit for administrative costs of this program.

##### Proposed Solution

Limit administration costs to 10 percent of the revenue generated through sale of credits contributed to the CFR program on a calendar year basis.

##### Rationale Supporting Proposed Solution

Effective administration of programs may be costly for the administrator of the program. Well-administered programs will potentially increase the effectiveness and use of funds, which may potentially increase the rate of adoption of EVs. However, placing a limit is a prudent measure to ensure that the value from these credits are used efficiently and more of the value ultimately is transferred to the benefit of EV drivers. This administrative cost does not include the funds used to initially set up the program infrastructure, such as IT systems.

#### **Section 95483(c)(1)(A)5. CFR program – Reporting**

##### Description of Problem

While the current language directs utilities to allocate a portion credits or proceeds from the sale of base residential EV charging credits to fund the CFR program, it does not specify any reporting requirements for the administrator.

##### Proposed Solution

Require the administrator of the CFR program to provide CARB with annual reports detailing the value received by the administrator, and how these funds were used.

##### Rationale Supporting Proposed Solution

An annual report will ensure that the funds provided to program are utilized primarily for the benefit of California EV drivers and to further the State's efforts to electrify the transportation sector.

#### **Section 95483(c)(1)(A)6.a. Uses of Revenue from Sale of Holdback Credits**

##### Description of Problem

The Board, as part of the second public hearing to consider the proposed amendments to the Low Carbon Fuel Standard (LCFS) program in September 2018, directed the Executive Officer to establish an equity based framework for the possible uses of base credit value from residential charging, consistent with Legislative priorities (California Air Resources Board, 2018e).

## Proposed Solution

Direct an increasing percentage of revenues (at least 30 percent in 2022, 40 percent in 2023, and 50 percent in 2024 and subsequent years) generated through sale of holdback credits to the primary benefit of California residents who are members of disadvantaged and low-income communities and/or are low-income individuals. This minimum percentage excludes any administration costs of these programs or any other utility programs.

Staff also proposes to specify some approaches that utilities can use to spend the proceeds from the sale of these credits to the benefit of members of disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals.

Utilities can also design and implement their own programs in consultation with local municipalities and local environmental justice advocates.

## Rationale Supporting Proposed Solution

By directing utilities receiving base credits to prioritize projects that benefit the State's disadvantaged and low income communities, the LCFS will assist in achieving greater equity in the positive expected outcomes.

To be consistent with the State's legislative goals of assisting California's most vulnerable communities, staff proposed that by 2024 at least 50 percent of the proceeds from base credits must be used to the primary benefit of disadvantaged and low-income communities and low-income individuals in California. The 50 percent minimum is similar to the percentage of the California Climate Investment Projects that provided benefits to disadvantaged and low-income communities. It is also consistent with SB 535 (De Leon) goal of providing a minimum of 25 percent of the total investments to benefit disadvantaged communities.

A delayed start date for this provision and ramp up to 50 percent will allow utilities' to integrate current programs, design future programs, and obtain appropriate approvals from multiple stakeholders, including the CPUC and the utilities' boards.

Staff's proposal to specify particular allowable approaches is meant to add more clarity to utilities receiving these credits, and is based on CARB's ongoing outreach efforts with environmental justice advocates. The provision gives utilities additional flexibility to design and implement their programs, with the assistance and coordination with local municipalities and environmental justice advocates.

### **Section 95483(c)(1)(A)6.b. Prohibited Uses of Revenue Generated through Sale of Holdback Credits**

#### Description of Problem

While the current language directs utilities to use the funds from the sale of base residential EV charging credits for the benefit of electric vehicle drivers in the State, the current regulation does not specify prohibited uses for the proceeds from the credits. Additional specificity could help utilities use the value of these credits to more effectively meet the objectives of the LCFS program.

### Proposed Solution

Prohibit the use of the revenue from sale of holdback credits for compliance with other State programs. Prohibit the use of the value of these credits for lobbying, payments to employees or shareholders, payment of fines and other penalties.

### Rationale Supporting Proposed Solution

The proposed additional specificity should ensure that utilities will use the value from such credits to benefit electric vehicle drivers consistent with existing regulatory requirements and program goals.

## **Section 95483(c)(1)(C). Reporting Entity for Borrowed Credits**

### Description of Problem

Staff's proposal introduces a new concept of borrowed credits, and must specify which entities may generate such credits.

### Proposed Solution

Staff proposes that eligible large IOUs and large POUs should generate borrowed credits.

### Rationale Supporting Proposed Solution

Participating in the CCM potentially involves high transaction costs for small entities, and requires executing potentially large contracts in a relatively short period of time. Restricting the issuance of borrowed credits to a small number of eligible large EDUs that have sufficient staff and resources to execute such deals on tight deadlines will ensure the success of the CCM and not unduly burden smaller entities.

## **SECTION 95485. DEMONSTRATING COMPLIANCE.**

### **Section 95485(c)(1)(A)2. Credit Clearance Market – Deadline to Retire Pro-Rata Obligation**

### Description of Problem

Current language requires regulated entities that must participate in the CCM to retire credits by July 31<sup>st</sup> of the year subsequent to the compliance in question. The CCM, however, ends July 31<sup>st</sup>, and effectively this does not give regulated entities any time to allow for transactions to be completed.

### Proposed Solution

Regulated entities can retire the number of credits by August 31<sup>st</sup> of the same year.

### Rationale Supporting Proposed Solution

This rule change will give regulated entities sufficient time to complete transactions. Additionally, the new deadline is the same as the deadline for the updated annual reports, and thus the change will enable submission and review to be easier and more streamlined for regulated entities and CARB staff.

## **Section 95485(c)(2)(C). Compliance Plans**

### Description of Problem

Participation in the CCM is designed to help entities meet short-term credit shortages and to provide greater cost containment certainty in the program. It is not designed as a long-term compliance strategy for deficit generators. Long-term compliance should involve necessary investment by deficit generators in alternative fuel production and other emission reduction projects that generate credits in the program.

### Proposed Solution

Regulated entities participating in the CCM for two or more consecutive years must submit a Compliance Plan to CARB detailing how they intend to meet their annual deficit obligations in the future. The plan will be reviewed by CARB and tracked to ensure progress in successfully implementing the plan. Regulated entities that have had their Compliance Plans approved will file annual implementation reports with CARB to assist in this tracking. If an implementation report indicates that there was a deviation from the approved Compliance Plan, the regulated entity must identify actions that they will take to correct this deviation, and CARB will post the report publicly on the LCFS website.

### Rationale Supporting Proposed Solution

Participating in the CCM is not intended to be a long-term compliance strategy for regulated entities. The Compliance Plan will give CARB, the public and other stakeholders and investors greater confidence that the regulated entities that failed to meet their annual compliance obligations have been required to formulate and submit a feasible plan for investment in credit generating fuels and projects to ensure sufficient future annual compliance with LCFS targets.

## **Section 95485(c)(2)(C)1. Compliance Plan Requirements**

### Description of Problem

Requirements must be specified for submission of a Compliance Plan by a regulated entity that participates in the Credit Clearance Market for two consecutive years, a new requirement proposed to be added with these amendments.

### Proposed Solution

Include in the regulation a detailed list of requirements to submit a completed Compliance Plan.

### Rationale Supporting Proposed Solution

The Compliance Plan requirements listed are designed to ensure that regulated entities required to submit these plans provide sufficient and concrete details of how and when they plan to make investments and other compliance actions to achieve compliance with the LCFS.

The list requires that regulated entities that must submit compliance plans to provide calculations and evidence, and maintain proper records to provide CARB with sufficient information on their compliance progress.

## **Section 95485(c)(2)(C)2. Compliance Plan Approval**

### Description of Problem

An approval process must be specified for submission of a Compliance Plan, a new requirement proposed to be added with this rulemaking for any regulated entity that participates in the Credit Clearance Market for two consecutive years.

### Proposed Solution

CARB will review submitted plans for compliance with specified regulatory requirements listed in section 95485(c)(2)(C)1, and will inform the submitter if more information is needed or if the plan does not meet particular regulatory requirements. Regulated entities would be required to correct their submitted Compliance Plan to meet any identified deficiencies within 45 days of initial submission.

### Rationale Supporting Proposed Solution

The proposed process is designed to provide CARB and the regulated entity that must submit a Compliance Plan an open process and reasonable timeline for approval. By requiring detailed information and evaluation of those requirements, the approval process is designed to ensure that the regulated entity required to submit a Compliance Plan is adequately planning to meet future annual compliance obligation targets.

## **Section 95485(c)(2)(C)3. Compliance Plan Implementation Reporting**

### Description of Problem

As proposed, Compliance Plans are required to describe a five year plan to meet the annual compliance targets. Tracking implementation of these plans is necessary to strengthen the incentive for entities required to submit Compliance Plans to submit high quality plans, and disclose and adjust to uncertainties.

### Proposed Solution

Regulated entities that submit Compliance Reports would be required to submit annual implementation reports describing actions already taken and progress made towards achieving the approved plan. The regulated entity would be required to disclose and explain any deviations from the approved plan, and identify how it plans to correct these deviations. If the reporting entity fails to achieve the reductions in the approved Compliance Plan, then the implementation reports that identify these deviations would be made public on the CARB website consistent with legal confidentiality protections.

### Rationale Supporting Proposed Solution

Compliance Plans are introduced in these proposed amendments to provide CARB and the public with greater assurance that regulated entities that continuously fail to meet their annual compliance have a detailed and feasible plan to achieve their annual compliance obligations.

If a regulated entity fails to follow through on their Compliance Plan, the public and other stakeholders should be provided with a detailed explanation on why the plans were not followed, and how the regulated entity plans to address this. This requirement is designed to allow the public and other stakeholders to hold the regulated companies

accountable for following their plans in the case that they fail to meet them. If regulated parties must deviate from their approved plans, required potential public disclosure and explanation of such a deviation should strengthen the incentive to formulate quality compliance plans and thus ensure compliance with the standard in future years.

### **Section 95485(c)(3)(C) Borrowed Credits**

#### Description of Problem

Under the current regulation, if insufficient credits are pledged in the credit clearance market to meet all the annual deficit obligations by regulated entities, then the regulated entities will have to accumulate deficits, which they must retire within five years to stay in compliance. Reluctance to utilizing this deficit accumulation provision could potentially lead some regulated entities to bid up the price of LCFS credits to ensure they meet their annual compliance obligations each year, potentially increasing the price of LCFS credits above the price cap imposed by the CCM.

#### Proposed Solution

In the event that insufficient credits are pledged to cover all regulated entities' annual deficit obligation, additional credits, equal to the difference between the number of outstanding credits and the number of pledged credits, will be borrowed from future base residential EV charging credits to clear any unmet demand.

#### Rationale Supporting Proposed Solution

Borrowed credits will ensure that all entities are able to meet their annual deficit obligation in the year's CCM. This should deter regulated entities from bidding the LCFS credit prices upwards, and will help reasonably contain LCFS compliance costs.

### **Section 95485(c)(3)(C)1. Issuance, Sales and Uses of Borrowed Credits**

#### Description of Problem

How will the borrowed credits be offered to the market, to which entities the newly introduced borrowed credits will be issued, and how will the proceeds from these credits be used must be specified.

#### Proposed Solution

Staff proposes that borrowed credits be offered for sale in the current year's CCM at the maximum credit price for that year. Staff proposes that borrowed credits will be issued to large IOUs and large POUs that meet the following conditions: 1) they must be eligible to receive borrowed credits and sell them in the current year's CCM by either receiving approval from the CPUC (in the case of IOUs) or approval of their boards (in the case of POUs), if such approval is necessary, and 2) they must be eligible to receive base credits per section 95483(c)(1)(A). Borrowed credits will be distributed to each eligible utility based on their pro-rata share of base credits generated in the quarter prior to the issuance of borrowed credits.

Additionally, staff proposes that the minimum portion of proceeds generated from the sale of borrowed credits be contributed according the post-2023 minimum CFR allocation percentages.

### Rationale Supporting Proposed Solution

This proposed framework is designed to ensure that borrowed credits are effectively used to contain costs and clear any outstanding deficits. Specifically, the proposal that borrowed credits must be sold at the maximum credit price for that year is designed to prevent the forwarding of borrowed credits from artificially lowering credit prices.

Without the specific provision requiring that borrowed credits be sold into the current year's CCM, the entity receiving borrowed credits could potentially bank the credits for use in later years, counter to the intended purpose of the proposed amendments.

Borrowed credits would only be issued if some regulated entities were unable to acquire sufficient credits to meet their annual compliance obligation, and insufficient credits are pledged for sale into the Credit Clearance Market to fully clear outstanding deficits. In such a scenario, the proposed borrowed credit backstop, as designed, would direct additional funding to increasing the adoption of electric vehicles, thereby reducing the demand for gasoline. Funding the CFR program and other transportation electrification projects, which will assist in increasing the adoption of EVs will help the LCFS credit market in two ways: 1) by spurring greater use of electricity as a transportation fuel more credits will be generated and 2) lower consumption of gasoline will result in lower deficit generation.

The language also ensures that borrowed credits will only be issued to utilities that are eligible to receive these credits and sell them in the current year's CCM.

Because borrowed credits are effectively borrowed from the future, and the first possible year of repayment would be 2026, the minimum percentage contribution to the CFR for the proceeds from the sale of borrowed credits should be based on the post 2023 percentages to ensure that the issuance of borrowed credits does not reduce the number of credits that are contributed to the CFR.

### **Section 95485(c)(3)(C)2. Borrowed Credit Window**

#### Description of Problem

Staff does not intend borrowed credits to be a long-term compliance option, but instead a temporary measure to contain costs in cases where there is a short-term shortage of credits. Regulated entities should plan to acquire enough credits to meet their compliance targets.

#### Proposed Solution

Borrowed credits will only be issued for six years following the issuance of the first borrowed credit.

#### Rationale Supporting Proposed Solution

Staff estimates that six years will give regulated entities sufficient time to make plans and to invest in credit generating projects, alternative fuel production facilities, and alternative fuel vehicle fleets to meet their annual compliance targets.

### **Section 95485(c)(3)(C)3. Cumulative Borrowed Credits Limit**

#### Description of Problem

Borrowed credits are generated from future use of base residential EV charging. If borrowed credit issuance must be limited to prevent a possibility that there could be insufficient future base credits available to recoup the borrowed credits.

#### Proposed Solution

Staff proposes that borrowed credits be limited to a cumulative amount of 10 million credits.

#### Rationale Supporting Proposed Solution

To ensure that borrowed credits can be recouped, staff estimated the number of base residential EV charging credits that will be generated in 2026 – 2030, the earliest period in which the borrowed credits will be recouped, under the fairly conservative scenario of low-ZEV adoption used in the SRIA of the 2018 LCFS Amendments (California Air Resources Board, 2017d). Staff then chose 10 million as the cumulative borrowing limit, as it represents about half the number of base residential EV charging credits that will be generated in 2026 – 2030, as a conservative estimate of credits that can be recouped.

### **Section 95485(c)(3)(C)4. Recouping Borrowed Credits**

#### Description of Problem

Borrowed credits are generated from future use of base residential EV charging. If borrowed credits are not recouped, then borrowed credits will jeopardize the environmental integrity of the program, and issuing of borrowed credits will effectively reduce the GHG emission reductions that the LCFS will drive.

#### Proposed Solution

Staff proposes that borrowed credits will be recouped from utilities that received borrowed credits, based on their pro-rata share of base credit generation. Staff has proposed a five-year schedule for recouping borrowed credits, which starts out at a low percentage and progressively increases in percentage over the five-year window.

#### Rationale Supporting Proposed Solution

Staff proposes that borrowed credits should be recouped from utilities that received borrowed credits based on their share of base credit generation because the funds from the borrowed credits will be directed to those utilities.

The schedule, where an increasing percentage of credits are recouped for five years after the borrowing window ends, serves two purposes. First, recouping the credits in a period of five years rather than one year will ensure that enough base credits are generated, and the reduction of credit generation for that year is not too rapid, which may disrupt the credit market. Second, as uptake of EVs increases over time, utilities are expected to generate more base credits and thus recouping a higher percentage of credits in later years is less likely to cause a disruption in the LCFS credit market.



### **Section 95485(c)(4)(B)1. Publishing a List of Entities Needing Credits in the Clearance Market**

#### Description of Problem

Under the current regulation, when a regulated entity is obligated to purchase credits in the CCM, its deficit position must be publicly revealed. An entity's credit market balance is market sensitive and releasing this information could place the entity at a disadvantage in the market in future years.

#### Proposed Solution

Do not publish the number of credits that entities need to acquire in the CCM.

#### Rationale Supporting Proposed Solution

Removing the language that revealed regulated entity credit position is designed to alleviate regulated entity concern to participating in the CCM, while also preventing other entities from potentially exploiting the knowledge to demand higher credit prices in the future.

### **Section 95485(c)(4)(B)3. Publishing a List of Entities that Pledge Borrowed Credits in the CCM**

#### Description of Problem

A list of all entities pledging credits in the CCM and the number of credits pledged must be published to ensure that deficit generators needing credits know who to contact to obtain credits in the clearance market.

#### Proposed Solution

Identify the utilities receiving borrowed credits and the number of credits they have received as part of the public announcement initiating the CCM.

#### Rationale Supporting Proposed Solution

The proposed amendment will ensure that entities needing to purchase credits in the CCM know whom to contact.

### **SECTION 95486.1. GENERATING AND CALCULATING CREDITS AND DEFICITS USING FUEL PATHWAYS.**

#### **Section 95486.1(c)(1)(A)2. Non-metered Residential EV Credits Generated in Service Areas of EDUs that are Ineligible to Receive Base Credits**

#### Description of Problem

Under the current regulation, if an EDU does not opt-in to the LCFS program or is not eligible to receive base credits, the credits generated from non-metered residential electric vehicle charging will be distributed to all utilities participating in the LCFS based on their pro-rata share of electricity dispensed for non-metered residential electric vehicle charging. In the case that a larger utility no longer opts-in to the program or is not eligible to receive base credits, the relative number of credits generated by smaller

utilities would increase. Since smaller utilities have a lower minimum percentage contribution to the CFR program, this would lead to a significant reduction in the revenues dedicated to the CFR program.

#### Proposed Solution

Large IOUs and large POUs would be assigned credits that would have otherwise been generated by EDUs that are not eligible to receive base credits for non-metered residential electric vehicle charging. Utilities receiving these credits are directed to contribute all such revenues to the CFR program.

#### Rationale Supporting Proposed Solution

Electrification of the transportation sector is essential for the success of the LCFS and for California to achieve its climate and air pollution goals, and a successful statewide point of purchase program will aid in this effort. The proposed solution will eliminate the risk of reduction in funds for the CFR if any EDUs become ineligible to receive base credits.

### **SECTION 95487. CREDIT TRANSACTIONS.**

#### **Section 95487(a)(2)(B). No Borrowing Exemption**

##### Description of Problem

Under the current regulation, regulated entities may not borrow credits from future carbon intensity reductions. The provisions for issuing borrowed credits directed to the CCM proposed in these amendments must be explicitly exempted to be clearly consistent with this existing prohibition.

##### Proposed Solution

Exempt borrowed credits from this subsection.

##### Rationale Supporting Proposed Solution

This technical change is necessary to clarify that, while entities generally may now borrow credits from future CI reductions, the provisions for issuing borrowed credits directed to the CCM are specifically exempt from that general restriction in order to achieve the specific, reasonably limited goal to strengthen the CCM as described herein.

#### **Section 95487(a)(2)(D). Maximum Price Cap**

##### Description of Problem

Under the current regulation, regulated entities can charge any price for the sale of LCFS credits, unless transactions occur in the CCM, where they are capped at \$200 in 2016, adjusted for inflation annually. Costs of compliance thus are potentially uncapped in the LCFS.

##### Proposed Solution

Restrict the sale price of LCFS credits to the CCM price cap in the day-to-day LCFS market.

### Rationale Supporting Proposed Solution

Placing a limit on the transaction price for credits will prevent price spikes and deter market manipulation, to avoid adverse impacts on California consumers potentially resulting in an erosion of support for the program, thereby leading to credit market instability. By capping the sale price of LCFS credits, is the proposed amendment establishing a strong market signal of expectation for the maximum cost of compliance with the program and its potential impact on consumers.

## **SECTION 95491. FUEL TRANSACTIONS AND COMPLIANCE REPORTING.**

### **Table 12. Annual Compliance Calendar**

#### Description of Problem

Current table does not include dates for reporting requirements introduced by these proposed amendments.

#### Proposed Solution

Update table to include dates for new reporting requirements.

#### Rationale Supporting Proposed Solution

This technical change is intended to clarify the reporting requirement for regulated entities and ensure that they meet their reporting deadlines in a timely fashion.

## **SECTION 95495. AUTHORITY TO SUSPEND, REVOKE, MODIFY OR INVALIDATE.**

### **Section 95495(b)(5)(D). Invalidation of Credits Obtained in CCM**

#### Description of Problem

The LCFS regulation generally operates under the principle of buyer-beware, whereby in the event that the generator of invalid credits is not available, the Executive Officer may remove credits from entities that have purchased the invalid credits. In the CCM, buyers are obligated to purchase their pro-rata share of credits, and therefore may not have the same degree of discretion over who they buy from as they would in the day-to-day market. This may result in a high perceived risk of invalidation through participation in the CCM, which some entities may want to avoid by paying higher prices in the day-to-day market.

#### Proposed Solution

Staff proposes that the Executive Officer will not remove invalidated credits from regulated entities that purchased credits in the CCM.

#### Rationale Supporting Proposed Solution

While the introduction of third party verification and validation in the LCFS program as part of the 2018 adopted amendments is anticipated to decrease the risk of invalidation substantially, it does not entirely remove risk to the buyer. Regulated entities that are obligated to participate in the CCM cannot reduce their exposure to invalidation risk by exercising due diligence, since they are obligated to purchase credits pledged in the

CCM. Removing invalidation risk from the buyer of credits should provide assurance to regulated entities that participation in the CCM, will not carry potentially increased invalidation risk.

#### **IV. BENEFITS OF THE PROPOSED AMENDMENTS**

Government Code section 11346.2(b)(1) requires enumeration of the anticipated benefits of the regulatory action, including the benefits and goals of the authorizing statute. The proposed amendments are not expected to result in direct benefits to the health and welfare of California residents, worker safety, and the state's environment. However, the amendments will strengthen the existing cost containment provisions of the regulation, which in turn is intended to ensure the long-term success of the LCFS program. The success of the program is essential for California to achieve its climate change goals, and may contribute to improvement in air quality in the State, and subsequently lead to improvement in California residents' health. The LCFS also contributes to decreasing the dependence of California on fossil fuels, and in diversifying the State's transportation fuel pool, which will protect the California economy and residents from exogenous changes in the prices of fossil fuels.

The benefits that are anticipated to accrue from the adoption of these proposed amendments are:

- Reinforcing the cost containment provisions of the LCFS program and,
- Using revenues from holdback credits to support GHG and criteria pollutant reductions in disadvantaged communities

##### **A. Improving the Cost Containment Provisions**

The LCFS program is a market-based program designed to achieve emission reductions, by reducing the carbon intensity of all transportation fuels used in the State. This is achieved through an annual carbon intensity standard that increases in stringency through 2030, gradually shifting fuel consumption from fossil fuels to cleaner, low-carbon alternative fuels. The program also has cost containment provisions, including a credit clearance market (CCM), where regulated entities can acquire additional credits from other entities that voluntarily pledge to sell their credits. If insufficient pledged credits are available in the CCM, regulated entities have the ability to clear deficits within a five-year period before falling into non-compliance with the standard. This flexibility improves compliance outcomes in the event of a short-term credit shortfall, as could happen due to variability in the supply of low-carbon fuels. The proposed amendments would help strengthen the CCM by introducing the concept of "borrowed credits," which will guarantee the availability of an additional 10 million credits for sale in the CCM if there are insufficient pledged credits. Additionally, the proposed amendments will prohibit LCFS credit transfers between parties in excess of the previously-established price maximum allowable in the CCM, ensuring that the cost of compliance is limited to a specific hard maximum. The proposed cost containment mechanism reinforcement allows regulated entities to achieve compliance at a clearly defined, maximum credit price. It would also help prevent an unlikely, but potentially high impact, credit shortfall that could make LCFS compliance substantially more expensive. By limiting the compliance costs to the program, the proposed amendments are designed to protect regulated entities and consumers from potential large fuel price spikes. The availability of additional borrowed credits is designed to deter regulated entities from seeking to profit from short-term market manipulation, as regulated entities

with an unmet compliance obligation will now have a known source of credits dedicated for compliance uses through the borrowed credits provision.

Potential price spikes sought to be prevented by the proposed amendments could have adverse impacts on California consumers, potentially resulting in an erosion of support for the program, thereby leading to credit market instability and investor uncertainty in the long-term survival of the program. Avoiding credit market instability is essential to ensure investment in the low-carbon fuel sector, which in turn is essential for driving innovation and GHG emission reduction in transportation, California's largest sector of GHG emissions.

## **B. Use of Holdback Credits to Reduce GHG and Criteria Pollutants in Disadvantaged Communities**

Under the proposed amendments, utilities that are eligible to receive base credits will be required by 2024 to use at least 50 percent of proceeds from the sale of holdback credits to benefit disadvantaged and/or low-income communities in the State, thereby ensuring that all Californians benefit from transportation electrification. Utilities will have different options on how to use the proceeds. A partial list of proposed options and associated benefits of transportation electrification are provided in Chapter V.

Types of actions that could be funded through the holdback credit values to benefit disadvantaged and/or low-income communities include, but is not limited to:

- Electrification of transit or school buses, including battery swap programs to support consistent service;
- Electrification of drayage trucks;
- Provide rebate for used EVs or utility bill rebate for EV owners; and
- Collaboration with local municipalities to develop pilot programs or EV plans to support further deployment of EVs.

## **V. AIR QUALITY**

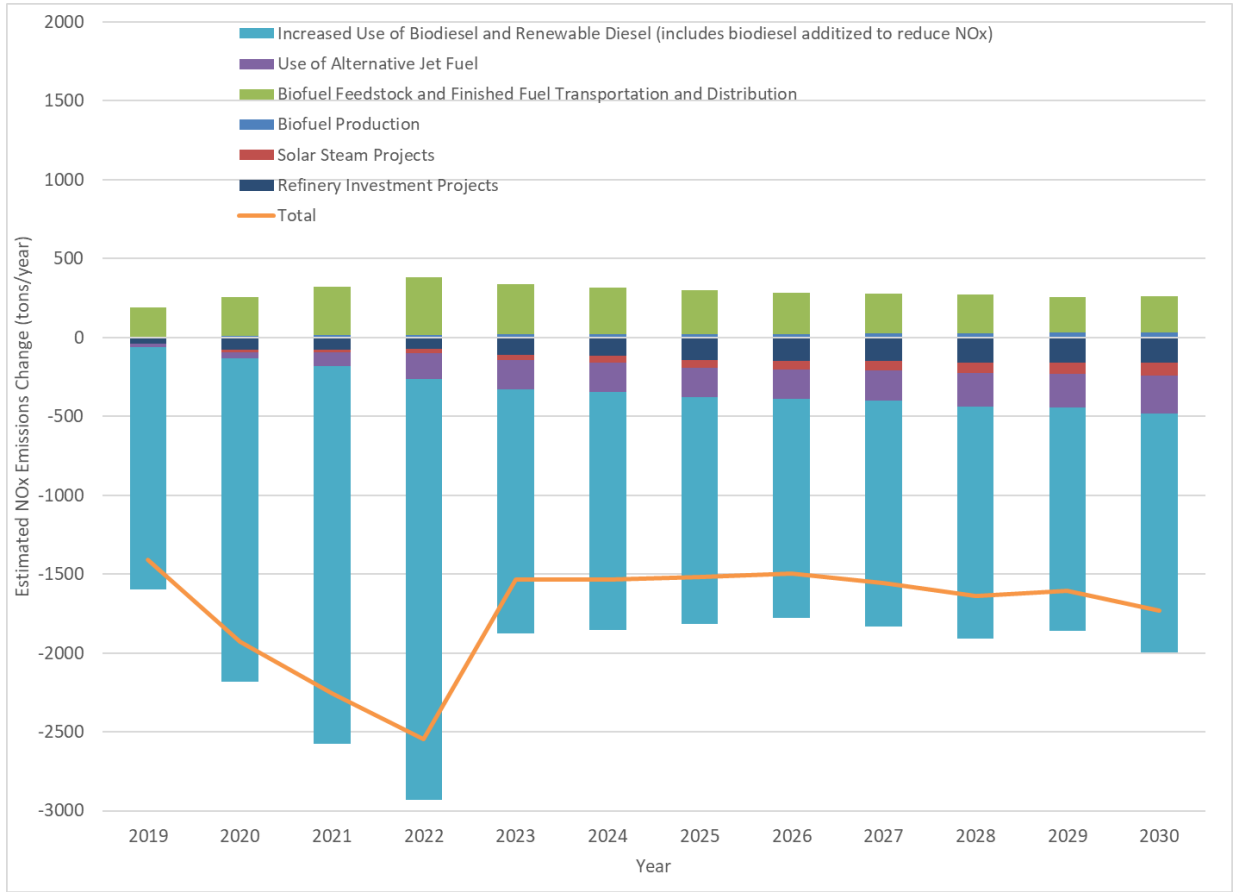
This chapter summarizes the potential air quality and public health impacts in California that may result in response to the proposed amendments.

### **A. Overview of the Air Quality Analysis and Major Findings**

The analysis of the potential air quality impacts of the proposed LCFS amendments builds off of the 2018 analysis on air quality since the proposed amendments would not substantially change the types of compliance responses analyzed in 2018. The proposed amendments will only affect the outcomes of the LCFS program in cases where the CCM is triggered and insufficient credits are pledged in the market. But because staff does not anticipate the credit market to experience a significant shortage in credits that will trigger the CCM, the proposed amendments are not expected to affect the outcomes of the program. Under the most likely anticipated scenarios, the LCFS credit market will not experience significant credit shortages, so staff does not anticipate that the proposed amendments will result in any changes to the 2018 air quality analysis.

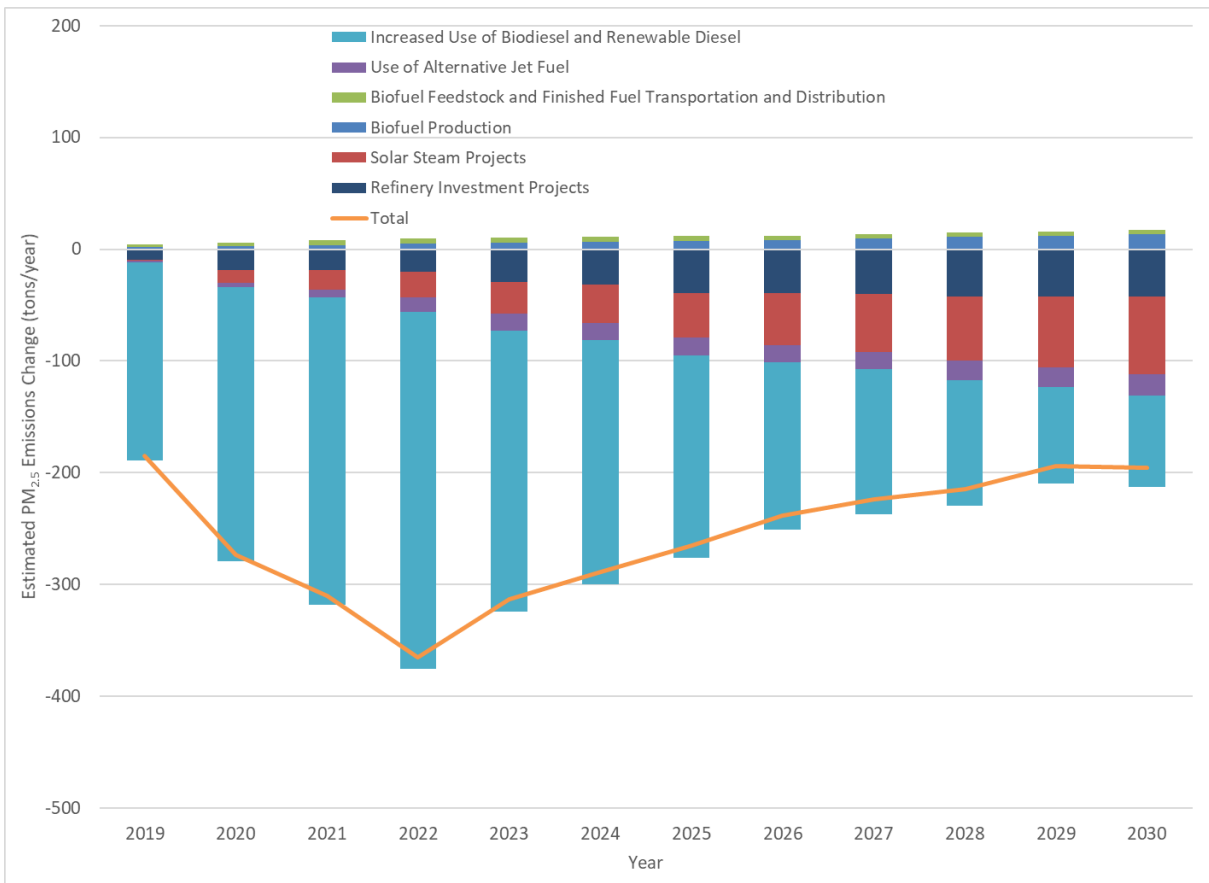
The air quality analysis conducted in 2018 shows that the total NO<sub>x</sub> and PM<sub>2.5</sub> emissions are estimated to be lower in each year from 2019 through 2030, as shown in Figures V-1 and V-2, respectively. The annual NO<sub>x</sub> and PM<sub>2.5</sub> emission reductions represent less than one percent of total statewide emissions.

**Figure V-1: Estimated Statewide NOx Emissions Impact of the Proposed LCFS Amendments Relative to 2016 Baseline (tons/year)**





**Figure V-2: Estimated Statewide PM<sub>2.5</sub> Emissions Impact of the Proposed LCFS Amendments Relative to 2016 Baseline (tons/year)**



As discussed in section E of this chapter, staff also does not anticipate that the proposed amendments will result in any changes to the estimated statewide health benefits for California individuals presented in the 2018 amendments. The 2018 analysis shows that improvements in California air quality are anticipated to result in statewide health benefits for California individuals, including avoided premature deaths, hospitalizations, and emergency room visits.

For the detailed air quality analysis, please see Attachment H of the Errata to the Second Notice of Public Availability of Modified Text (California Air Resources Board, 2018a).

## **B. Baseline Condition**

In order to determine the effects of the proposed LCFS amendments on California air quality, it is first necessary to establish the baseline conditions that currently exist from the production and use of transportation fuels in California.

Since the proposed amendment would not substantially change the types of compliance responses analyzed in the 2018 Environmental Analysis (EA), staff is building off of the 2018 EA for this rulemaking. Because of this, the baseline conditions used in analyzing the environmental impacts, including air quality, for this rulemaking will be the same

baseline conditions used in the 2018 EA. The year 2016 was chosen as the “current conditions” baseline for the 2018 EA. For a complete description of the baseline conditions, please see section B of Attachment H of the Errata to the Second Notice of Public Availability of Modified Text (California Air Resources Board, 2018a).

### **C. Illustrative Compliance Scenario**

As discussed in the economic analysis (see Chapter VIII) for the proposed amendments, staff modified the illustrative compliance scenario from 2018 ISOR with a few updates to reflect more recent LCFS data (California Air Resources Board, 2018d).<sup>3</sup>

Staff detailed the process of how the illustrative compliance scenario was prepared in the Appendix E of the 2018 Initial Statement of Reasons (ISOR) of the Low Carbon Fuel Standard and Alternative Diesel Regulation, under section A.5. (California Air Resources Board, 2018g).

### **D. Changes of Emissions in Response to the Proposed Amendments Strengthening the Cost Containment Provisions**

Because California is in attainment for all criteria pollutants except for ozone, PM<sub>2.5</sub>, and PM<sub>10</sub>, staff focused on NO<sub>x</sub>, which is a precursor for ozone formation, and PM emissions in the following analysis.

Under the most anticipated market conditions, staff believes that regulated entities will generate sufficient credits so that borrowing of credits will be unnecessary. Therefore, the proposed amendments are not expected to result in differences in emissions compared to the existing regulation and will result in no changes to the air quality analysis conducted in 2018. Because utilities will be required to use 50 percent of proceeds from the sale of holdback credits to directly benefit disadvantaged and/or low-income communities under the proposed amendments, the amendments should ensure that Californians from these communities will benefit directly from LCFS transportation electrification initiatives. Utilities have the flexibility to choose which types of actions to fund to benefit disadvantaged and/or low-income communities. Benefits of transportation electrification include an improvement in air quality throughout the State, including disadvantaged and/or low-income communities. For example, utilities may choose to fund electrification of transit or school buses. The Innovative Clean Transit (ICT) regulation focuses on a long-term goal of transforming the public transit sector to zero-emission modes and is expected to result in a reduction of about 7,000 tons of NO<sub>x</sub> and 40 tons of PM<sub>2.5</sub> emission (California Air Resources Board, 2018h). There are currently 26,500 school buses operating in the state, approximately 70 percent of those being fueled by diesel (California Air Resources Board, 2016). Helping schools throughout the state transition from old, polluting diesel school buses to zero- or low-emission vehicles will improve children’s health by limiting their exposure to transportation-related air pollution (California Energy Commission, 2018). Utilities may also choose to fund the electrification of drayage trucks. The Drayage Truck Regulation is projected to provide significant emission reductions that will have a positive air quality

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<sup>3</sup> Staff’s scenario for the baseline for this document is similar to the scenario titled Project/LD/Low ZEV/20%/infra however changes have been made to reflect 2018 data, and the trajectory of electricity consumption between 2018 and 2025 were smooth to reflect the higher than expected 2018 numbers.

impact in California, especially in and around affected ports and intermodal rail yards, which are often located in disadvantaged communities. PM emissions are projected to be reduced by 2.6 tons per day starting in 2010 and NOx emissions are projected to be reduced by 34 tons per day starting in 2014. (California Air Resources Board, 2013). Utilities may also choose to provide rebate for used EVs or utility bill rebate for EV owners. Under the current LCFS regulation, the utilities that opted into the LCFS program are required to allocate a portion of revenue from base residential credits to the CFR program for new EVs. While this point-of-sale rebate in conjunction with other state and federal rebates and tax credits substantially reduces the cost of ownership for new EVs, most members of disadvantaged and low-income communities still will not be able to afford a new EV purchase or lease. Utilities may also choose to use the funds to construct public or private electric vehicle infrastructure. Executive Order B-48-18 sets ambitious targets of 250,000 plug-in electric chargers to support 1.5 million ZEVs in California by 2025, on the path to 5 million ZEVs by 2030. Publicly available plug-in charging stations are fundamental to widespread ZEV adoption, especially for residents of apartment complexes and other multi-family dwellings. Should utilities choose to direct their proceeds to transportation electrification, such as the above examples, in disadvantaged and/or low-income communities, it would support regulations, such as the ICT and Drayage Truck regulations, in achieving their goals in improving local air quality, especially in disadvantaged and/or low-income communities, while also accelerate the adoption of electrification in these communities, thereby helping to improve local air quality.

Staff detailed the process of how the changes of emissions in response to the 2018 amendments in section D of Attachment H of the Errata to the Second Notice of Public Availability of Modified Text (California Air Resources Board, 2018a).

#### **E. Health Impacts Analysis**

Under the most anticipated market conditions, staff believes that regulated entities will generate sufficient credits so that borrowing of credits from the future is not necessary. Therefore, the proposed amendments are not expected to result in differences in emissions compared to the current regulation and will have no changes to the health impacts analyzed in 2018. Improvements in California air quality under the 2018 amendments are anticipated to result in health benefits for California individuals.

For a complete description of the health impacts analysis, please see section E of Attachment H of the Errata to the Second Notice of Public Availability of Modified Text (California Air Resources Board, 2018a).

#### **F. Localized Health Risk Assessment for a Potential California Biofuel Facility**

When analyzing the health impacts of re-adopting the LCFS in 2015, staff conducted a health risk assessment (HRA) study to evaluate the localized health impacts associated with toxic air contaminants that could be emitted from a typical biofuel facility within California. Because the data has not changed since the assessment was done, staff used this same assessment for this rulemaking.

For additional details, please see Chapter IV of the 2015 ISOR of the LCFS (California Air Resources Board, 2014).

## **VI. ENVIRONMENTAL ANALYSIS ADDENDUM**

### **A. Introduction**

This chapter provides the basis for CARB's determination that no subsequent or supplemental environmental analysis is required for the proposed amendments. A brief explanation of this determination is provided in section D below. CARB's regulatory program—which involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality—has been certified by the California Secretary for Natural Resources under Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA) (14 CCR 15251(d)). Public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to, preparing environmental impact reports, negative declarations, and initial studies. CARB, as a lead agency, prepares a substitute environmental document (referred to as an "Environmental Analysis" or "EA") as part of the Staff Report to comply with CEQA (17 CCR 60005).

This EA addendum for the proposed amendments serves as a certified regulatory program substitute document equivalent to an addendum to the prior September 17, 2018, final EA prepared for the adopted amendments to the Low Carbon Fuel Standard (LCFS) and Alternative Diesel Fuel (ADF) Regulations (2018 EA)<sup>4</sup> to explain CARB's determination that no additional environmental analysis is required for the currently proposed amendments.

### **B. Prior Environmental Analysis**

As noted above, CARB, as the lead agency under CEQA, previously prepared the 2018 EA under its certified regulatory program (Cal. Code Regs., tit. 17, §60005) to comply with the requirements of CEQA. The 2018 EA provided an environmental analysis which focused on reasonably foreseeable potentially significant adverse and beneficial impacts on the physical environment resulting from reasonably foreseeable compliance responses taken in response to implementation of the amendments proposed in that rulemaking that went into effect on January 4, 2019 (2018 amendments).

The LCFS regulation reduces the carbon intensity (CI) of fuels used in California's transportation sector by requiring annual reductions in the volume-weighted average CI of transportation fuels used in the State. While fuels with higher CIs can and will be used, the regulation creates financial incentives for the development and use of fuels with lower CIs. Fuel reporting entities, such as fuel producers or distributors, must meet the annual CI standard through mechanisms such as: producing lower-carbon fuels; buying such fuel from producers to sell on the market; purchasing credits generated by others; using banked credits generated in previous years; or a combination of these strategies. The LCFS establishes two sets of performance standards that determine the treatment of each fuel used in California: 1) a standard for gasoline and alternative fuels that substitute for gasoline, and 2) a standard for diesel fuel and its substitutes. The

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<sup>4</sup> The 2018 EA may be found here- <https://ww3.arb.ca.gov/regact/2018/lcfs18/finalea.pdf>.

standards were established to achieve an average 20 percent reduction in the CI of the statewide mix of transportation fuels by 2030, as compared to 2010.

Under the LCFS regulation, a fuel reporting entity is a California fuel producer, provider, or importer that must meet the annual compliance requirements in the regulation. Supplying a fuel with a CI that is below the standard in a given year generates credits; conversely, supplying a fuel with a CI above the standard generates deficits. Credits and deficits are determined on a quarterly basis. For a given annual compliance period, a fuel reporting entity's compliance obligation is determined by adding up all the quarterly deficits assessed to that party. A regulated party's annual compliance obligation is met when the regulated party demonstrates, via its annual report, that it possessed and has retired a number of credits that is equal to its compliance obligation. Credits are "tradeable"—a regulated party can purchase them from other program participants. Credits earned from CI reductions from diesel and diesel substitutes may be used to offset deficits generated from the supply of gasoline and gasoline substitutes, and vice versa. The credits are also "bankable" (i.e., surrendering credits that the fuel reporting entity already has accumulated in prior compliance periods is permissible). A fuel reporting entity may also, under certain circumstances, pass the LCFS compliance obligation for that fuel to the buyer of the fuel as part of the sales transaction.

CARB adopted the 2018 LCFS amendments in response to Senate Bill (SB) 32 (2016), which built on the progress of Assembly Bill (AB) 32, by codifying a statewide target to reduce GHG emissions by at least 40 percent below 1990 levels by 2030. Achieving the SB 32 GHG reduction goals will require the use of a portfolio of low carbon transportation fuels beyond the amount expected to result from the current compliance schedule. To assess possible compliance schedules through 2030, staff conducted an in-depth scenario analysis to account for potential effects of additional proposed changes to the LCFS, such as the addition of alternative jet fuels, providing a protocol to facilitate crediting for CCS, and revisions to other credit provisions, which may affect the volumes and types of fuels used to comply with the standard. Staff developed modeling tools that take into account feedstock supply, fuel prices, fuel incentives, and capacity constraints to assess the technical and economic feasibility of bringing low carbon fuels to California. Staff used these modeling tools to assess fuel supply variability and sensitivity to LCFS credit price and other uncertain market effects on a year-by-year basis. Staff used these modeling results, together with stakeholder feedback and information obtained from market reports on alternative fuel technology development, to inform the proposed compliance schedule through 2030.

CARB evaluated the **compliance responses** that the 2018 amendments could potentially trigger as regulated entities implement the LCFS regulatory changes. It found that only certain changes to the LCFS regulation could potentially trigger the following reasonably foreseeable compliance responses: modifications to cultivation volume and transport of feedstock; changes to location and types of feedstock; new or modified processing facilities for feedstock and finished fuel production; increased transportation of finished alternative fuels to blending terminals or retail fuel sites; construction and operation of new facilities to produce renewable diesel, gasoline, alternative jet fuel and propane; construction of new anaerobic facilities to digest

manure from dairies, sewage from wastewater treatment plants, and organic waste diverted from landfills; construction of infrastructure to collect biogas and produce methane; construction of stand-alone and bolt-on cellulosic processing units for renewable fuels production; increase of tree cultivation at farms, collection of yard waste, or removal of forest litter and agricultural residues; construction of electrolysis units and substitution of renewable natural gas for fossil gas in production of hydrogen; construction of solar and wind electricity generation projects; modification to existing or new industrial facilities to capture CO<sub>2</sub> emissions; construction of new infrastructure such as pipelines, wells and other surface facilities; construction and operation of additional hydrogen stations, CNG/LNG stations and EV charging stations; deployment and use of additional electric drivetrain, natural gas, and propane fueled vehicles; modifications to existing crude production facilities to accommodate solar and wind electricity, solar heat, and/or solar steam generation; electrification of equipment and installation of renewable electricity and battery storage systems at petroleum refineries and alternative fuel production facilities; land use changes and changes to fuel associated shipment patterns.

The 2018 EA found that certain specific amendments included in the proposed amendments would not result in potential compliance responses that change the physical environment or result in adverse environmental effects. These include the addition of third-party verification, pathway application and CI determination, fuel amount reporting improvements, credit exchange trading, enhancement to credit transaction reporting and removal of the limited producer/importer exemption in the current ADF regulation. This set of amendments dealt with modifications or updates to already existing programs and processes and would not result in additional physical changes to the environment beyond what would already occur under current LCFS regulations.

The 2018 EA took a conservative approach in its significance conclusions and disclosed, for CEQA compliance purposes, that impacts from the development of new facilities or modification of existing facilities associated with reasonably foreseeable compliance responses to the 2018 amendments could be potentially significant and unavoidable under several resource areas. These significance determinations are summarized below and discussed in greater detail in the 2018 EA.

**Environmental impacts** associated with the implementation of the reasonably foreseeable compliance responses to the 2018 Amendments included: beneficial short-term impacts to greenhouse gas emissions; beneficial long-term operational impacts to energy demand, and greenhouse gas emissions; less-than-significant impacts to odors, short-term, construction-related energy demand, greenhouse gas emissions, long-term hazard and hazardous materials, population, employment and housing, public services, and recreation; and potentially significant and unavoidable adverse impacts to aesthetics, agricultural resources, air quality, biological resources, cultural resources, energy demand, geology, soil and minerals, short-term, construction-related hazard and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, transportation and traffic, and utility and service systems.

## C. Proposed Modifications

CARB staff's proposal is to amend the LCFS program's cost containment provisions for tradeable LCFS credits. These amendments are designed to provide greater maximum-price certainty for LCFS credits, deter market manipulation, and help avoid potential adverse impacts for California consumers.

Staff proposes the following amendments to the LCFS program focused exclusively on the cost containment provisions in the current regulation:

- 1) **Establish a maximum tradable price for LCFS credits:** New provisions to the LCFS regulation that would limit the price of LCFS credit transfers between parties to the existing Credit Clearance Market price of \$200 in 2016 dollars, adjusted for inflation.
- 2) **Supply additional credits to the CCM through credit borrowing:** If insufficient credits are pledged in the CCM to clear the annual obligation of deficit generating entities, CARB could borrow credits from future residential base residential electric vehicle (EV) charging and distribute these credits to large utilities for sale in the CCM.
- 3) **Require Compliance Plans for deficit generators participating in two or more consecutive CCMs:** Regulated entities that participate in the CCM for two consecutive years will be required to submit a Compliance Plan to CARB detailing their plans on how they intend to meet their LCFS annual obligations in future years.
- 4) **Remove buyer liability for entities purchasing credits in the CCM:** CARB will not require buyers of credits in the CCM to pay back these credits if they are later determined to be invalid.
- 5) **Use revenues from holdback credits to support GHG and criteria pollutant reductions in disadvantaged communities:** Utilities receiving base credits for residential EV charging will be required to direct a substantial portion of the revenue to projects in disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals.
- 6) **Clarify how base electricity credits will be reallocated from utilities ineligible to receive such credits:** Credits generated in the service area of utilities that are ineligible to receive base credits for residential EV charging will be issued to large utilities. Large utilities receiving such credits must direct all such credit revenue to the CFR program.

The proposed amendments do not change the type of facilities or projects that are permitted under the LCFS, nor does staff anticipate that they will alter the compliance responses by regulated entities covered by the program. As such, these amendments are not expected to introduce any new environmental impacts that were not already evaluated under the 2018 EA.

## D. Analysis

### 1. Legal Standards

When considering modifications to a regulation for which a substitute document equivalent to an EIR or negative declaration has previously been prepared, CARB looks to Public Resources Code section 21166 and CEQA Guidelines section 15162 for guidance on the requirements for subsequent or supplemental environmental review.

CEQA Guidelines section 15162 states:

*(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:*

*(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;*

*(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or*

*(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:*

*(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*

*(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;*

*(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*

*(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*



If a subsequent or supplemental EIR or negative declaration is not required, the lead agency may document its decision and supporting evidence in an addendum (14 CCR 15164 (e)). The addendum and lead agency's findings should include a brief explanation, supported by substantial evidence, of the decision not to prepare a subsequent or supplemental EIR or negative declaration (14 CCR 15164(e)). An addendum need not be circulated for public review, but must be considered by the lead agency prior to making a decision on the project (14 CCR 15164(c), (d)).

## 2. Basis for Determination

CARB has determined that the proposed amendments do not involve any changes that result in any new significant adverse environmental impacts or a substantial increase in the severity of the significant adverse impacts previously disclosed in the 2018 EA. Further, there are no changes in circumstances or new information that would otherwise warrant any subsequent or supplemental environmental review. The 2018 EA adequately addresses the implementation of the regulation as modified by the proposed amendments and no additional environmental analysis is required. The basis for CARB's determination that none of the conditions requiring further environmental review are triggered by the proposed modifications is based on the following analysis.

- (1) *There are no substantial changes to the regulation previously analyzed in the Environmental Analysis which require major revisions to the Environmental Analysis involving new significant environmental effects or a substantial increase in the severity of previously identified effects.*

When the LCFS was re-adopted in 2015, the Board approved the addition of a cost containment provision in the LCFS which has not been modified since. Under the current regulation, regulated entities would be allowed to hold deficits to the next compliance period, provided that they purchase their pro-rata share of all credits made available for sale during a year-end credit clearance market (CCM). This credit clearance mechanism is specified in section 95485 of the LCFS regulation. Regulated entities may "bank" deficits for up to five years before they are in non-compliance with the standard, and incur a 5% interest each year on all outstanding deficits up to the point of non-compliance. The 2018 EA evaluated the impacts associated with regulated entities' measures they would take to achieve the LCFS standard, which necessarily incorporates the generation of credits from those measures.

The proposed amendment does not include regulatory changes that would alter the substantive, standards-based provisions adopted in the 2018 amendments. With the CI standards staying the same, the proposed amendment does not trigger new compliance responses necessary to address implementation of new CI standards. Since the 2018 EA evaluated the impacts associated with compliance responses triggered by the 2018 amendment's new CI standards and those compliance responses are the means in which entities create LCFS credits, the environmental impacts associated with the creation of credits through implementation of the 2018 amendments is necessarily folded into the impact analysis of the 2018 EA.

The proposed amendments, rather, simply addresses several stakeholders' explicit concerns that regulated entities may be willing to pay more than maximum CCM's price to avoid the possibility of not meeting their annual deficit obligation. While there is some uncertainty about the likelihood of that possibility, the proposed amendments are designed to create greater credit market stability to ensure investment in the low-carbon fuel sector, which is essential for driving innovation and GHG emission reduction in transportation, California's largest sector of GHG emissions.

The proposed amendments are also designed to address concerns of the unavailability of enough credits to meet all regulated entities' annual deficit obligations by enabling the borrowing of future credits from base residential EV charging and making them available in the CCM. It will also prevent the sale of credits at prices higher than the CCM price. The proposed provision will strengthen the current cost containment mechanism and create an upper bound on the potential compliance costs to the LCFS program, providing greater certainty for regulated entities, deterring market manipulation, and limiting potential adverse impacts on California consumers.

Because there is no substantive change to the way in which regulated entities may generate credits in their implementation of the 2018 amendment's CI standards, the proposed amendments will not result in additional physical changes to the environment beyond what would already occur under current LCFS regulations. They do not incent or allow for new project types in response to the proposed amendments. Staff does not anticipate that regulated entities' compliance responses will change due to these proposed amendments as compared to the compliance responses from the 2018 amendments, principally because the amendments do not require new CI standards for the regulated entities. Rather, the proposed amendments will allow regulated entities to borrow cost-contained credits in the unlikely scenario where there is a credit deficit in the market to meet outstanding annual credit deficit obligations so that they can comply with the LCFS standards established in the 2018 amendments. Regulated entities that rely on borrowed credits to meet their annual obligations for two consecutive years will be obligated to submit a Compliance Plan to CARB detailing their plans on how they intend to meet their LCFS annual obligations in future years. The Compliance Plan is intended to assure CARB, the LCFS stakeholders, and the public that the regulated entity has a feasible and timely roadmap to achieve its compliance target, ensuring the success of the program and the stability of the credit market. Therefore, staff does not anticipate that the proposed amendments will cause new significant environmental effects or a substantial increase in the severity of previously identified effects in the 2018 EA.

- (2) *There are no substantial changes with respect to the circumstances under which the regulation is being undertaken which require major revisions to the previous Environmental Analysis involving new significant environmental effects or a substantial increase in the severity of previously identified effects.*

There are no substantial changes to the environmental setting or circumstances in which the proposed amendments to the LCFS Regulation are being implemented

compared to that analyzed in the 2018 EA. As explained above, the new measures do not substantially alter the types of compliance responses of the regulated entities or result in any changes that significantly affect the physical environment.

- (3) *There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous Environmental Analysis was certified as complete, that changes the conclusions of the Environmental Analysis with regard to impacts, mitigation measures, or alternatives;*

No new information of substantial importance has become available to CARB staff since the 2018 EA was certified. The project will not have any significant effects that are not discussed in the 2018 EA. Significant effects previously examined will not be substantially more severe than previously analyzed in the 2018 EA. No newly-feasible or different mitigation measures are known which could substantially reduce one or more of the previously-identified significant effects of the project. Therefore, there is no new information of substantial importance that changes the conclusions in the 2018 EA about the potential environmental impacts to any resource areas, mitigation measures for those impacts or alternatives.

In sum, no supplemental or subsequent environmental analysis is required for these proposed amendments to the LCFS Regulation because, as described above, the proposed changes do not result in any new environmental impacts or in a substantial increase in severity to the impacts previously disclosed in the 2018 EA. Further, there are no changes in circumstances or new information that would otherwise warrant an additional environmental review.

## VII. ENVIRONMENTAL JUSTICE

### A. Overview.

For nearly two decades, CARB has been committed to making environmental justice (EJ) an integral part of its rulemaking, policy development and other key decision-making and implementation activities. Since adopting the LCFS in 2009, CARB has incorporated into the program a number of key EJ-related recommendations provided by the AB 32 Environmental Justice Advisory Committee (EJAC). We are working with CARB's Assistant Executive Officer for Environmental Justice to effectuate the most recent EJAC recommendations (California Air Resources Board, 2017e) on a wide variety of areas, including the LCFS, as well as EJ-related recommendations on the LCFS provided by disadvantaged community representatives (California Air Resources Board, 2017b)<sup>5</sup> throughout CARB's extensive 2015-2017 community engagement process.<sup>6</sup>

The current rulemaking is limited in scope to two objectives: to stabilize and limit the cost of the program to consumers of petroleum fuels, and to ensure that the statewide health and economic benefits of the LCFS are distributed equitably to disadvantaged communities. The proposed cost containment strategies are designed as protective measures to ensure that consumers of conventional fuels are not significantly burdened by the costs of LCFS compliance to petroleum fuel providers that may be passed on to consumers at the gas pump. This is especially relevant to Californians who lack the means to purchase an alternative fuel vehicle or who lack access to public transit. In addition, staff proposes to require that a portion of LCFS credit revenue earned by utilities must be used to support GHG and criteria pollutant reductions in disadvantaged communities.

**What is Environmental Justice?** State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies ("SB 115, Solis. Environmental justice," 1999). The Board approved its Environmental Justice Policies and Actions (Policies) in 2001 to establish a framework for incorporating environmental justice into CARB's programs consistent with State law (California Air Resources Board, 2001). These policies and actions apply to all communities in California, but are intended to address the disproportionate environmental exposure burden borne by low-income communities and communities of color. Environmental justice is one of CARB's core values and fundamental to achieving its mission.

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<sup>5</sup> Consolidated from over 700 individual suggestions gathered from community members during the 2015-2017 community meetings.

<sup>6</sup> California Air Resources Board (2018b) contains a list of nearly three dozen EJAC and local community meetings held from December 2015 through November 2017 in various communities throughout California.

## **B. LCFS History**

The LCFS was adopted in 2009 as a discrete early action GHG-reduction measure, and remains California’s primary strategy for promoting the use of cleaner alternative fuels in the transportation sector, including electricity, hydrogen, renewable diesel and biodiesel, and renewable natural gas ("California Global Warming Solutions Act of 2006," 2011). The Legislature enacted SB 32 in 2016, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. The 2018 amendments strengthened the LCFS standards through 2030 to achieve the SB 32 target, expanded the range of eligible abatement technologies, and introduced new crediting provisions designed to develop hydrogen refueling and electric vehicle fast-charging stations, and advance other transformative technologies that will be required to achieve deep decarbonization in the long term. As part of the adoption of 2018 amendments, CARB committed to monitor the cost containment features of the program, including the credit clearance market, and propose technical adjustments through future rulemaking if needed to further strengthen the cost containment provisions, which is being addressed in the current rulemaking. CARB also committed to work with stakeholders to establish an equity-based framework for the possible uses of base credit value from residential charging, consistent with legislative priorities.

## **C. EJ Overview on the Current LCFS Program**

In its overarching recommendations for the 2017 Scoping Plan Update, EJAC recommended for the transportation sector:<sup>7</sup>

*“We envision a California where all communities breathe clean air and have access to safe, affordable, clean transportation options. The following recommendations will help to achieve this vision. The themes present in this Transportation Section that can be lifted up as overarching principles are:*

- a. Access to clean transportation technologies*
- b. Meaningful investments in disadvantaged communities*
- c. Capturing economic benefits in disadvantaged communities*
- d. Coordination of state and local agencies*
- e. Reporting on actual impacts of programs, particularly community level impacts*
- f. Robust community participation.”(Environmental Justice Advisory Committee, 2016)*

The fundamental goal of the LCFS is to reduce the carbon intensity (and therefore GHG emissions) of transportation fuels used in California. The LCFS achieves this fundamental goal, while acknowledging the concerns voiced by EJAC. After nine years

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<sup>7</sup> The EJAC has submitted more recent overarching recommendations for the 2030 Scoping Plan. However, the most recent recommendations were less relevant to the LCFS, than the overarching recommendations dated December 22, 2016. Their most recent recommendations can be found in Appendix A of the 2030 Scoping Plan.

of implementation, the LCFS has incented significant lower-carbon fueling infrastructure developments in California and elsewhere.

A common burden on certain disadvantaged communities located near transportation and freight movement hubs is exposure to particulate matter (PM) and other air pollutants from the tailpipe emissions of vehicles and trucks. Studies have shown that biodiesel and renewable diesel generally both have lower emissions of other pollutants, including PM, than petroleum diesel (California Environmental Policy Council, 2015). The use of conventional biofuels such as ethanol and biodiesel has grown, partly due to the LCFS, and has generally provided air quality co-benefits in addition to the intended GHG reductions.<sup>8</sup> Because the LCFS incents the use of more low carbon fuels like biodiesel, renewable diesel, renewable natural gas, hydrogen, and electricity, the LCFS reduces GHG emissions while helping in reducing PM emissions and achieving other co-benefits.

The EJ chapter of the 2018 Staff Report includes an extensive overview of how EJAC recommendations have been reflected in the LCFS (California Air Resources Board, 2018i). To illustrate, some of these are briefly summarized below:

- EJAC raised a number of concerns as part of the 2009 LCFS rulemaking that were related to the siting of biorefineries in California, especially if such facilities were sited near disadvantaged communities. In response, CARB adopted a biorefinery siting guidance so that local decision-makers can make better informed siting determinations (California Air Resources Board, 2011a).<sup>9</sup>
- For the 2014 First Scoping Plan Update, EJAC recommended, among other things, that the carbon intensity of the drilling and hydraulic fracturing (“fracking”) of shale oil be assessed as part of the LCFS (California Air Resources Board, 2017b). This recommendation has since been integrated into the LCFS through CARB’s adoption of the Oil Production GHG Emissions Estimator (OPGEE), a software module designed to assess the carbon intensity of such crude production activities (California Air Resources Board, 2019a). Further, CARB approved at its March 2017 hearing a regulation on GHG emission standards for crude oil and natural gas facilities, which also imposes emission standards on fracking activities, further addressing the underlying concerns with regard to accurate accounting of the carbon intensity of fracking and drilling activities.
- One of EJAC’s principal recommendations regarding transportation is for the State to provide and facilitate “*access to clean transportation technologies*” (Environmental Justice Advisory Committee, 2016). This recommendation

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<sup>8</sup> Historically, biodiesel driven by the LCFS may have created minor health impacts associated with NOx disbenefits but strong health improvements associated with reduced PM co-benefits, as explained in the supplemental disclosure, Appendix G of this Staff Report. On a forward-going basis, the ADF rule eliminates any potential NOx disbenefits from biodiesel.

<sup>9</sup> See Environmental Justice Advisory Committee (2009) for additional EJAC recommendations regarding the LCFS program. These recommendations were considered by the Board and determined to be addressed through the design and/or public vetting and scientific peer review of the LCFS regulation or otherwise addressed by other CARB programs and policies; see California Air Resources Board (2009b)

encompasses, among other things, increasing the availability of electric vehicles and charging infrastructure in disadvantaged communities. The LCFS program covers over 10,500 registered EV charging stations that receive LCFS credits. Some of these are in urban centers in or near disadvantaged communities. These EV charging stations (vehicle, fleet, or equipment i.e., forklifts) are considered a net air quality benefit for any community where they are located. A similar determination would apply to hydrogen (30 registered stations), natural gas fuel-dispensing stations (750) and transit agencies (35).

- Generally, the disadvantaged community representatives that were involved in the 2015-2017 community engagement process recommended more, not less, EV charging infrastructure in their communities. By incentivizing the use of charging stations for public, private, transit, and fleet uses, the LCFS supports this principal goal. However, it should be noted that most EV charging stations are currently located in areas with the highest number of electric vehicles, which are usually not in disadvantaged communities. While the LCFS does not provide specific incentives for siting EV charging stations in disadvantaged communities, other programs that do may rely on the value of LCFS credits to make their efforts feasible.
- The EJAC and EJ community representatives have also recommended that CARB help improve the affordability and quality of services of public transit agencies. Currently, there are transit agencies participating in the LCFS program that generate credits. These credits are sold by the transit agencies, which use the proceeds to help improve services and affordability for service users. For example, during the period of Q1 2018 through Q4 2018, California transit agencies generated 331,000 LCFS credits from the use of low carbon electricity and natural gas in bus fleets and electric rail. The revenue generated by these credits, nearly \$65 million annually at current credit prices, is then available for transit agencies to reinvest in their transportation services and/or reduce (or delay increasing) rates for consumers. The provisions in the LCFS allowing transit agencies to generate credits serve as an example of how CARB's policies promote zero and near-zero emission transit options for low income Californians.

#### **D. Proposed Amendments**

The purpose of the proposed amendments is to strengthen the current cost containment mechanism, deter market manipulation, and to avoid the potential of high credit prices and potential adverse impacts for consumers, and to support air quality improvements in disadvantaged and/or low-income communities.

The 2018 LCFS amendments established a statewide point of purchase rebate program for new EVs funded by LCFS credits earned by electric utilities. This new rebate, in conjunction with other state and federal rebates and tax credits, substantially reduces the cost of ownership for new EVs. Staff's proposal includes measures to ensure that the LCFS credit value not used by EDUs for the statewide rebate program is used to support electrification in low-income and disadvantaged communities and to provide increased access to electric transportation to low-income individuals.

Under the proposed amendments, electric utilities will be required by 2024 to use 50 percent of proceeds from the sale of holdback credits (credits not contributed to the EV rebate program) to directly benefit disadvantaged and/or low-income communities and to provide increased access to electric transportation to low-income individuals. Potential projects supported by this revenue include assisting in the purchase of electric transit buses, school buses, and drayage trucks, providing rebates for purchase of used EVs, providing utility bill rebates for owners of EVs, and the construction of public and private infrastructure for EVs in disadvantaged and/or low-income communities. This additional investment will accelerate transportation electrification in these communities leading to positive impacts on local air quality.

Staff's proposed changes to the cost containment mechanism, including the establishment of borrowed credits and limits on credit price, will protect all consumers from potential high costs of LCFS compliance to petroleum fuel providers that may be passed on to consumers at the gas pump.

## **E. Conclusion**

Many elements of the Low Carbon Fuel Standard support key environmental justice-related recommendations, including the reduction of fossil fuel use and promotion of cleaner, low carbon fuels. Further, CARB has continually enhanced the LCFS since 2010 to further integrate EJ considerations into the LCFS program. The proposed LCFS rulemaking package continues this historical integration of EJ perspectives, and ensures that the statewide health and economic benefits of the LCFS are distributed equitably to disadvantaged communities.



## **VIII. ECONOMIC IMPACTS ASSESSMENT**

### **A. Summary**

The Board, as part of the second public hearing to consider the proposed amendments to the Low Carbon Fuel Standard (LCFS) program in September 2018, directed the Executive Officer to monitor the cost containment provisions of the LCFS program including the Credit Clearance Market (CCM), and to propose technical adjustments through future rulemaking to strengthen the cost containment provisions, if needed (California Air Resources Board, 2018f). The CCM in its current form is a mechanism that triggers in the event that a regulated party's deficits exceed its credits at the end of an annual compliance period. The CCM allows entities with excess credits to pledge to sell credits through the CCM, with a maximum price of \$200 in 2016 dollars, adjusted for inflation. Any deficit-holding party entering the CCM is obligated to buy their pro-rata share of credits that were pledged into the market until their deficits are eliminated. In the event that insufficient credits are pledged to eliminate all deficits, regulated parties are allowed to bank deficits for up to 5 years, accruing 5 percent interest on outstanding deficits each year, before falling into non-compliance with the regulation. In response to the Board's direction, staff is proposing a set of amendments to the CCM mechanism to further strengthen the cost containment of the LCFS program, and to establish a maximum price for LCFS credits that will help limit adverse impacts on consumers.

Since the proposed amendments are not expected to generate an economic impact greater than \$50 million in any 12 month period, it does not qualify as a "major regulation" for purposes of Standardized Regulatory Impact Analysis (SRIA) requirements. However, CARB is committed to transparency. Therefore, staff is preparing a more extensive economic analysis to these proposed amendments, including a macroeconomic impacts analysis.

### **B. Background on the LCFS**

The transportation sector continues to be the State's main GHG emitting sector. In 2018, the production, transport, and use of these fuels are responsible for nearly half of the State's GHG emissions, 80 percent of total emissions of oxides of nitrogen (NO<sub>x</sub>), and 95 percent of diesel particulate matter (DPM) emissions. The LCFS is a key part of a comprehensive set of programs in California designed to reduce GHG emissions and other smog-forming and toxic air pollutants from the transportation sector.

Executive Order S-01-07 ordered the establishment of the LCFS as a discrete early action item under the California Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32, codified at Health and Safety Code section 38500 *et seq.*). In 2009, the Board approved the LCFS to achieve a 10 percent reduction in the CI of California transportation fuel by 2020, and in 2011 approved amendments to the regulation to clarify, streamline, and enhance certain provisions. In 2015, the Board re-adopted the LCFS in compliance with a court order arising from a challenge to the adoption of the original regulation.

In 2018, the Board adopted new amendments that reflect a range of objectives: from simple updates and revisions to improve the program's overall implementation, to broader program design proposals that will improve accuracy of the LCFS and further support California's long-term ability to diversify the State's fuel pool, support demand for increasingly lower CI fuels, and promote transformative innovation in the transportation sector. The main objectives of the 2018 adopted amendments were to:

- Strengthen the carbon intensity (CI) reduction targets through 2030 in support of California's 2030 greenhouse gas (GHG) emissions reduction requirement enacted through Senate Bill (SB) 32 (Pavley, 2016);
- Expand the fuel types and qualifying activities eligible to participate in the Low Carbon Fuel Standard (LCFS) in order to recognize and incentivize GHG reductions in additional transportation fuel sectors;
- Require third-party verification of CI values and fuel transactions in order to enhance confidence in the LCFS program accounting;
- Incorporate a protocol for carbon capture and sequestration projects that would specify the methods for both quantifying emission reductions and ensuring their permanent sequestration;
- Award LCFS credits for capacity at hydrogen stations and direct current fast chargers to incent the investment in fueling stations for zero emission vehicles;
- Encourage the establishment of a statewide program to provide electric vehicle (EV) rebates at the point of purchase by redirecting a percentage of the LCFS credits generated by residential EV charging; and
- Amend the Alternative Diesel Fuels (ADF) regulation to include bifurcated sunset provisions for on- and off-road sectors, separately, to reflect the differences in the level of past and anticipated future adoption of new technology diesel engines (NTDEs) in the on- and off-road sectors.

The LCFS is designed to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. The LCFS establishes one standard for gasoline and the alternative fuels that can replace it, and a second standard for diesel fuel and its replacements. Each standard is set to achieve an average 20 percent reduction in the carbon intensity (CI) of the statewide mix of transportation fuels by 2030. CI takes into account the GHG emissions associated with the complete life cycle of each fuel, including production, transportation to market, and consumption—and is expressed in units of grams of carbon dioxide equivalent per megajoule of energy supplied by the fuel. Fuels and fuel blendstocks introduced into the California fuel system that have a CI higher than the applicable standard generate deficits while fuels and fuel blendstocks with CIs lower than the standard generate credits.

The LCFS lets market forces determine the mix of fuels used to reach the CI reduction targets. Regulated parties with compliance obligations, generally refiners in California and importers of fossil gasoline and diesel, demonstrate compliance by annually retiring one LCFS credit for each deficit generated. The price of the LCFS credit depends on

the demand and supply for credits in the LCFS market. The demand for credits is determined by the quantity of deficits, which are generated from the in-state use of high-carbon conventional fuels and blendstocks such as fossil CARBOB<sup>10</sup> and diesel. Regulated parties can obtain credits by blending low-CI liquid biofuels into the gasoline, diesel, or jet fuel they produce or import, by selling low carbon fuel for use as transportation fuel, by investing in credit generating petroleum projects, or by purchasing LCFS credits from other parties. In this way the LCFS encourages the production of low carbon fuels and investments in capital projects that reduce the CI of more traditional fuels.

The LCFS also has provisions that provide flexibility in achieving the CI standards. Regulated parties that acquire more credits than they need to cover their annual deficits can either sell credits in the open market or bank them for the future. Regulated parties that cannot meet their annual obligation by lowering the CI of their own fuel pool can purchase credits in the open market. If parties are unable to meet their annual compliance obligation through open market credit purchases, they are required to participate in the LCFS's Credit Clearance Market (CCM). Regulated entities that do not meet their annual obligations are required to buy their pro-rata share of the credits offered by willing credit sellers. The price of any credit sold at the CCM is restricted to a ceiling of \$200 in 2016, and adjusted annually for inflation thereafter. If, after participating in the CCM, a regulated entity is still unable to meet its obligation (i.e. the number of credits offered by willing credit sellers is less than the number of total deficits), it can accumulate deficits for five years at an interest rate of five percent annually. A regulated entity must repay its accumulated deficits plus interest by the fifth year or face a penalty of up to \$1,000 per deficit.

### **C. Statement of Need and Description of the Proposed Amendments**

In September 2018, as part of the second public hearing to consider the proposed amendments to the LCFS program, the Board directed the Executive Officer to monitor the cost containment provisions of the LCFS program including the CCM, and to propose technical adjustments through future rulemaking to strengthen the cost containment provisions, if needed.

As described above, the current regulation allows regulated entities flexibility to stay in compliance with the LCFS in case of short-term shortages in the number of credits available for sale. The recently adopted amendments also provide regulated entities with many new opportunities to generate credits, which has been supported by numerous announcements for new, low-carbon fuel projects partially due to the incentive provided by the LCFS program.<sup>11</sup>

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<sup>10</sup> CARBOB means California reformulated gasoline blendstock for oxygenate blending, which is produced from crude oil refining. Most of the finished motor gasoline sold in California is a blend of 90% CARBOB and 10% ethanol by volume.

<sup>11</sup> Examples of recently announced projects whose development was attributed (partially or fully) to the LCFS are:

- CCS projects at the White Energy and Red Trail Energy ethanol facilities

Several LCFS stakeholders and observers have, however, expressed concern that the current regulation's provision does not provide enough certainty to avoid situations where compliance is too difficult for regulated entities, which may lead to adverse impacts on consumers (Bledsoe & Farbota, 2019).

To address these concerns, staff propose the following amendments to the LCFS program focused primarily on the cost containment provisions in the regulation:

1. **Establish a maximum tradable price for LCFS credits:** New provisions to the LCFS regulation that would limit the price of LCFS credit transfers between parties to the existing Credit Clearance Market price of \$200 in 2016 dollars, adjusted for inflation.
2. **Supply additional credits to the CCM through credit borrowing:** If insufficient credits are pledged in the CCM to clear the annual obligation of deficit generating entities, CARB could borrow credits from future residential base residential electric vehicle (EV) charging and distribute these credits to large utilities for sale in the CCM.
3. **Require Compliance Plans for entities participating in two or more consecutive CCMs:** Regulated entities that participate in the CCM for two consecutive years will be required to submit a Compliance Plan to CARB detailing their plans on how they intend to meet their LCFS annual obligations in future years.
4. **Remove buyer liability for entities purchasing credits in the CCM:** CARB will not require buyers of credits in the CCM to pay back these credits if they are later determined to be invalid.
5. **Use revenues from holdback credits to support GHG and criteria pollutant reductions in disadvantaged communities:** Utilities receiving base credits for residential EV charging will be required to direct a substantial portion of the

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- Enhanced oil recovery project in Kern County that will use solar energy in lieu of natural gas to recover oil, reducing GHG emissions and criteria pollutants
  - Conversion of a California oil refinery (at Paramount, California) and a North Dakota oil refinery to renewable diesel biorefineries
  - Addition of cellulosic ethanol production at Pacific Ethanol's California and Idaho facilities, and the construction of a new cellulosic ethanol biorefinery in North Dakota by New Energy Blue
  - Increased use of waste and solar energy in the production of biofuels: The following provide just a few examples underway at alternative fuel production facilities: Calgren recently applied to use dairy biogas to produce ethanol at their Pixley, California facility; Aemetis will use orchard waste to produce cellulosic ethanol at its Riverbank, California project; Pacific ethanol will add a 5 MW solar power system to its Madera, California facility; Biodico opened a new facility at Five Points, California that will utilize waste biogas and solar energy to produce biodiesel; Fulcrum Energy is planning to convert syngas produced through gasification of municipal solid waste to renewable diesel; and Ensyn is producing biocrude (produced from forest waste) for use in California refineries.
  - Carbon Engineering partnering with Chevron and Occidental Petroleum to directly capture CO<sub>2</sub>, to use for fuel production.

revenue to projects benefiting disadvantaged and low-income communities and to provide increased access to electric transportation to low-income individuals.

6. **Clarify how base electricity credits will be reallocated from utilities ineligible to receive such credits:** Credits generated in the service area of utilities that are ineligible to receive base credits for residential EV charging will be issued to large utilities. Large utilities receiving such credits must direct all such credit revenue to the CFR program.

The first provision will set a new rule, whereby a maximum price of \$200 in 2016 dollars, adjusted for inflation, will apply to all credit transactions among regulated entities.

The second provision will introduce a new concept of borrowing credits within the regulation. In years where insufficient number of credits are pledged to the CCM to meet all outstanding annual deficit obligations, CARB will distribute credits to utilities to make up that difference. Utilities receiving borrowed credits will be obligated to pledge these credits into the current year CCM, ensuring that the CCM has enough credits to meet all outstanding deficit obligations. These credits will then be deducted from utilities' future distribution of base residential EV charging electricity. In essence, the provision allows the borrowing of base residential EV charging credits from future years to meet potential credits shortages in the interim period.

Borrowed credits will be issued in a six-year borrowing window, which will commence in the year that the first borrowed credit is issued. Borrowed credits be repaid in the five year period following the end of the six-year borrowing window according to the repayment schedule in Table IX-1. Thus for example, if the CCM is triggered in 2022 and insufficient credits are pledged to meet the total deficit obligations for all regulated entities, the borrowing window will commence in 2022 and will continue until 2027. The borrowed credits will subsequently be recouped from base residential EV charging credits in 2028 to 2032 as shown in Table IX-1: Borrowed Credits Repayment Schedule below.

To ensure that enough credits will be available for repayment, staff proposes to limit the number of credits that may be borrowed to 10 million credits in total, which is approximately half the number of base EV residential EV charging credits that will be generated in 2026 – 2030, the earliest period in which the borrowed credits will be recouped, under the fairly conservative scenario of low-ZEV adoption used in the SRIA of the 2018 LCFS Amendments (California Air Resources Board, 2017d).

**Table IX-1: Borrowed Credits Repayment Schedule**

<b>Year</b>	<b>Repayment Rate of Total Borrowed Credits</b>
Year 7	5%
Year 8	10%
Year 9	20%
Year 10	30%
Year 11	35%

Regulated entities that participate in the CCM for two or more consecutive years will be obligated to write a report to CARB detailing their plans on how they intend to meet their LCFS annual obligations in future years. These plans will be reviewed by CARB staff and tracked to ensure progress in successfully implementing the plan. The Compliance Plan is intended to assure CARB, the LCFS stakeholders, and the public that the regulated entity has a feasible and timely roadmap to achieve its compliance target, ensuring the success of the program and the stability of the credit market. While participation in the CCM is allowed to help entities to meet short-term credit shortages, and to provide greater cost containment certainty in the program, it is not designed as a long-term compliance strategy for deficit generators. Long-term compliance should involve necessary investment by deficit generators in alternative fuel production and other emission reduction projects that generate credits in the program

Buyers of credits in the CCM will not be required to pay back these credits if they are later determined to be invalid. The LCFS regulation generally operates under the principle of buyer-beware, whereby in the event that the generator of invalid credits is not available, the Executive Officer can remove credits from entities that have purchased the invalid credits. In the CCM, buyers are obligated to purchase their pro-rata share of credits, and therefore do not have discretion over who they buy from, as they would in the day-to-day market. While the introduction of third party verification and validation in the LCFS program as part of the 2018 adopted amendments will decrease the risk of invalidation substantially, it does not entirely remove risk to the buyer. Regulated entities that are obligated to participate in the CCM cannot reduce their exposure to invalidation risk by exercising due diligence, since they are obligated to purchase credits pledged in the CCM. Removing invalidation risk from the buyer of credits should provide more assurance to regulated entities to participate in the CCM rather than bidding up the price of credits in the day-to-day market in order to avoid participating.

Utilities receiving LCFS credits for residential electric vehicle (EV) charging will be required to direct a substantial portion of the revenue to projects in disadvantaged and low-income communities. In Resolution 18-34, the Board directed staff to work with stakeholders to establish an equity-based framework for the possible uses of base credit value from residential charging, consistent with legislative priorities. Base credits are generated by EDUs for both metered and non-metered residential charging using the grid average carbon intensity. The EDUs must contribute a portion of the LCFS credit revenue generated for this electricity to the CFR program. The remaining holdback credits must be invested by utilities in projects that further the adoption of electric vehicles such as charging infrastructure, used EV rebates, and public outreach and education. To ensure that all populations in California benefit from transportation electrification, staff is proposing that by 2024 at least 50 percent of this holdback revenue be used to directly support transportation electrification in disadvantaged and low-income communities.

Finally, credits generated in the service area of utilities that are ineligible to receive base credits for residential EV charging agreement will be issued to large utilities that are eligible to receive base credits. Large utilities receiving such credits must direct all revenue to the CFR program. This change will ensure that the CFR will be adequately

funded if EDUs decide to opt-out of the LCFS program, or if they decide to not enroll in the CFR governance agreement.

#### **D. Scenario Descriptions**

The proposed amendments will only affect the outcomes of the LCFS program in cases where the CCM is triggered and insufficient credits are pledged in the market. Since staff does not anticipate that the credit market will experience a significant shortage in credits that would trigger the CCM, the proposed amendments are not expected to affect the outcomes of the program.

The current credit bank and new credit generation opportunities provide regulated entities with flexibility to comply with the standard. The LCFS credit bank, as of the end of 2018, held about 8.7 million credits, which will provide additional flexibility for regulated entities to meet their annual obligations.<sup>12</sup> Additionally, the recently proposed amendments in 2018 allow new opportunities for regulated entities to generate LCFS credits. Many market participants are in the process of expanding existing projects, or have announced new projects that are expected to take advantage of these new provisions, as well as older provisions to take advantage of the value created by the LCFS program.

Since under the most likely cases the LCFS credit market will not experience significant credit shortages, staff does not anticipate that the proposed amendments will result in direct economic impacts on regulated entities or the California economy at large due to changes in the cost containment provisions of the LCFS.

Changes that may result from adopting the amendment to require EDUs to use a minimum percentage of holdback credits to benefit of disadvantaged and low-income communities will not result in changes to costs or revenues to any of California EDUs, nor will they impact ratepayers. The proposed amendments will also not result in reduction in the value of investment that EDUs will spend for in-State projects, since the LCFS requires them to spend the value of LCFS credits that they receive to the benefit of California EV drivers. However, the proposed amendments may result in changes in the type and location (within the State) of these investments to benefit disadvantaged and low-income communities primarily. The proposed amendments may therefore result in EDUs changing plans or locating them in different areas, but will not result in economic transfers between economic sectors or loss of overall benefits to in-State spending or investments. The economic impacts of these changes are also mitigated by the later effective start date of the requirement to spend holdback credits for the primary benefit of disadvantaged and low-income communities, which will give EDUs sufficient lead-time to design and implement new plans and investments.

Similarly, staff does not anticipate that EDUs will not be eligible to receive base credits, since enrolling in the CFR program has been designed by utilities to streamline their use of base credits. The CFR program also does not impose significant costs to the EDUs, and the provisions allows for 10% of the proceeds to be used to administer the program.

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<sup>12</sup> As a point of reference, the number of deficits generated in 2018 were about 12.3 million credits. The size of deficits is expected to grow in 2019 to 14.5 million.

Staff does not anticipate that the proposed amendments will result in any changes in benefits or costs to California businesses, including small businesses, and residents. Additionally, staff does not anticipate the proposed amendments to have any fiscal impacts for State or local governments. To reflect the economic impacts of the proposed amendments in the unlikely cases where a significant credit shortages occurs, staff performed a sensitivity analysis where a credit shortage is simulated, and will show the differential economic impact of the proposed amendments relative to the business-as-usual case. The discussion of the sensitivity analysis is contained in Appendix B of the ISOR.

## **1. The Baseline Condition for the LCFS Amendments**

The LCFS is a flexible, market-based program that interacts with many different state and federal regulations. Estimating the baseline fuel demand requires accounting for compliance with existing regulations and standards, changes in fuel consumption due to natural fleet turnover to more efficient vehicles, and the expected price of fuels in the future.

As part of the rulemaking process to adopt the 2018 proposed amendments for the LCFS program, staff has developed several compliance scenarios (e.g., volumes and credits generated by alternative fuels as well as credits generated through petroleum projects) that were used to conduct economic analysis to support the rulemaking process, including the preparation of the LCFS 2018 proposed amendments SRIA. As the proposed amendments have been adopted by the Board, the baseline condition in this document is similar to the proposed amendments scenario in the most updated version of the illustrative compliance scenario posted in August 2018, with few updates to reflect updated LCFS data (California Air Resources Board, 2018d).<sup>13</sup> Staff detailed the process of how the illustrative compliance scenario was prepared in the Appendix E of Staff's ISOR of the Low Carbon Fuel Standard and Alternative Diesel Regulation 2018, under section A.5 (California Air Resources Board, 2018g).

The most important policies that drive change in fossil fuel demand that are represented in the baseline are the following:

- **Advanced Clean Cars (ACC):** ACC incentivizes both improvements in GHG tailpipe performance of conventional vehicles (see description of CAFE below) and the adoption of alternative technology vehicles that consume fuels such as electricity, natural gas, and/or hydrogen.
- **U.S. Environmental Protection Agency's (U.S. EPA) Renewable Fuel Standard (RFS):** The U.S. EPA's RFS mandates minimum volumes of renewable fuels, which are required to be blended into transportation fuels. Staff assumes that the RFS will continue to operate through 2030, providing monetary incentive for biofuels such as ethanol, biodiesel, renewable diesel, and renewable natural gas.

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<sup>13</sup> Staff's scenario for the baseline for this document is similar to the scenario titled Project/LD/Low ZEV/20%/infra however changes have been made to reflect 2018 data, and the trajectory of electricity consumption between 2018 and 2025 were smoothed to reflect the higher than expected numbers for 2018.



- U.S. EPA National Program for Vehicle GHG Performance Standards/Corporate Average Fuel Economy (CAFE) standards: This policy requires vehicle manufacturers to comply with new GHG vehicle performance standards/fuel economy standards through 2025. Post 2025, staff assumes GHG vehicle performance standards/fuel economy standards for new vehicles will be held constant through 2030. However, due to turnover introducing newer model vehicles with better GHG performance and fuel efficiency, the average vehicle fuel efficiency will continue to increase through 2030.
- The Sustainable Communities and Climate Protection Act of 2008 (SB 375): SB 375 supports the State's climate action goals to reduce greenhouse gas (GHG) emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Under SB 375, CARB sets regional targets for GHG emissions reductions from passenger vehicle use and each of the State's metropolitan planning organizations prepares a sustainable communities strategy to meet its GHG reduction target.
- Cap-and-Trade Program: The Cap-and-Trade Program establishes a declining limit on major sources of GHG emissions, and it creates an economic incentive for major investment in cleaner, more efficient technologies. The Cap-and-Trade Program applies to emissions that cover about 80 percent of the State's GHG emissions. CARB creates allowances equal to the total amount of permissible emissions (i.e., the "cap") over a given compliance period. One allowance equals one metric ton of GHG emissions. Fewer allowances are created each year, thus the annual cap declines and statewide emissions are reduced over time. An increasing annual auction reserve (or floor) price for allowances and the reduction in annual allowance budgets creates a steady and sustained pressure for covered entities to reduce their GHGs---the Program is expected to lower the GHG emissions associated with the instate production of fuels and lower demand for high carbon fuels.
- California Phase 2 GHG Standards for On-Road Medium and Heavy Duty Vehicles: Under this program, medium and heavy duty vehicles are required to reduce GHG and criteria pollutants emissions by adopting more fuel efficient technologies.
- Low Carbon Fuel Standard: Under the current LCFS, a 20 percent reduction in average fuel CI will be achieved by 2030. This target then remains constant for years 2031 and beyond.
- Clean Energy & Pollution Reduction Act (SB 350): SB 350 requires 50 percent of California's electricity to come from renewable sources by 2030. While this requirement will not lower fuel demand directly, it will affect the carbon intensity of electricity.

## **2. The Proposed Amendments**

To model the proposed amendments scenario, staff modified the illustrative compliance scenario to borrow additional credits in the period from 2020 through 2025, if needed, up to 10 million credits cumulatively, and subtracted the cumulative total of borrowed

credits from 2026 through 2030 according to the schedule in Figure A1. In the model, credits are borrowed from future years if the total bank of credits falls below a certain threshold. A threshold is used to simulate the assumption that some regulated entities will not run down their credit banks completely, but that at low levels of total credits, some entities would have depleted their credit banks and would be required to participate in a CCM. The model borrows credits from future years so that the total credit bank stays at the specified threshold. Borrowed credits will not result in an increase in the number of credits beyond that level. However, under the anticipated market conditions, regulated entities will generate enough credits that no borrowed credits will be issued in 2020 through 2025. Under anticipated LCFS market conditions, the proposed amendments are not expected to result in differences in volumes or prices compared to the baseline and will have no economic impact.

## **E. Benefits**

The proposed amendments, by improving the cost containment provisions of the LCFS, will build on and ensure the continued success of the program. The LCFS program is a key driver of decarbonization in California's transportation sector, and supports California's overall climate goals. Additionally, the LCFS incentivizes the increased use of alternative fuels and alternative vehicles, which may lower the emissions of harmful local air pollutants, potentially resulting in better health outcomes for California residents. The LCFS also contributes to the diversification of California's fuel pool, reducing the impact of large swings in the price of fossil fuels and crude oil imports.

### **1. Benefits to Businesses**

There are no direct incremental benefits to businesses from the proposed amendments. However, the proposed amendments will benefit regulated entities of the program, including credit and deficit generating entities, by increasing the maximum price certainty of the program. Greater certainty in the LCFS credit market may provide additional planning certainty regarding the upper bound of the price of the LCFS credits, which may benefit businesses as they plan their long-term investment and compliance strategies.

### **2. Benefits to Small Businesses**

Small businesses that are participants in the LCFS will also benefit from greater market certainty in the program as it improves their ability to make investment decisions to expand their production of low carbon fuels, credit generating charging infrastructure, or changing their fleet to alternative fuel vehicles.

### **3. Benefits to Individuals**

There are no direct incremental benefits to individuals from the proposed amendments. However, the success of the LCFS program will indirectly benefit California residents, through continued reductions in GHG emissions and local air pollutants, and potential improvements in health outcomes for the State's residents.

## **F. Direct Costs**

### **1. Direct Cost to Businesses**

Staff does not anticipate that the proposed amendments will impose any significant direct costs to businesses. However, the addition of an annual reporting requirement for the CFR program will impose an additional annual cost of \$12,000 on the administrator of the CFR program (Southern California Edison, 2019). However, the administrator will be able to recoup these costs as the proposed amendments allow the use of up to 10% of the proceeds to the CFR program on administrative costs.

## **2. Direct Cost to Typical Businesses**

Staff does not anticipate that the proposed amendments will impose any significant direct costs to typical businesses.

## **3. Direct Cost to Small Businesses**

Staff does not anticipate that the proposed amendments will impose any additional cost to small businesses.

## **4. Direct Cost to Individuals**

Staff does not anticipate that the proposed amendments will impose any additional cost to individuals.

## **G. Fiscal Impacts**

### **1. State Government**

Staff does not anticipate that the proposed amendments will have any impacts on the State's finances. CARB does not anticipate the need for any additional staff to implement these proposed amendments.

### **2. Local Government**

Staff does not anticipate that the proposed amendments will have any impacts on local governments' finances.

## **H. Macroeconomic Impacts**

Since there are no quantifiable impacts of the proposed amendments, staff did not perform a macroeconomic impacts analysis for the proposed amendments in the case the CCM is not triggered. All macroeconomic indicators are not expected to change.

## **IX. EVALUATION OF REGULATORY ALTERNATIVES**

Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. This section discusses alternatives evaluated and provides reasons why these alternatives were not included in the proposal. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner than ensures full compliance with the authorizing law. The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

### **A. Borrowed Credits from Regulated Entities other than EDUs**

RNG Coalition, White Energy, AJW, WSPA, RPMG and SoCalGas proposed that CARB consider allowing other regulated entities to generate borrowed credits in addition to EDUs. Staff considered this alternative and found that this alternative would achieve the proposed rulemaking's objective of strengthening the cost containment provision, since it relies on the same framework of borrowed credits as the proposed amendments. Additionally, this alternative may in fact increase the number of credits beyond 10 million credits as credits could potentially be borrowed from multiple credit generating sectors in addition to base credits generated by EDUs.

However, staff chose to reject this alternative as difficult to implement due to risks associated with recouping borrowed credits. To be similar to the staff proposal, the "borrowed" credits would need to be recouped in a timely manner from the entities that the borrowed credits were issued to. If fuel producers are able to participate in the borrowed credit framework, it could be difficult to ensure that these entities will exist or be producing sufficient low-carbon fuel such that borrowed credits could be recovered in the future. Utilities, however, are uniquely regulated in the State, and there are fewer complexities and risks affiliated with implementation of the borrowed credit framework.

To implement this alternative, CARB would have to establish fairly extensive and objective criteria to evaluate the eligibility of projects that may receive borrowed credits. This will require extensive resources, including staff and management time, to review and consider different projects that could apply for the provision. Staff would also be required to hold workshops, meet with stakeholders, perform research, extensive analysis, and other activities to ensure that projects meet the eligibility criteria of borrowed credits.

Additionally, recouping credits under this alternative may be difficult and uncertain. Under the proposed amendments, CARB issues base credits to utilities, therefore the process of recouping credit is simple and low-risk: CARB reduces the future issuance of base electricity to EDUs. Even if an EDU ceases to exist or opts-out of the program, the credits will be generated by other entities as described in section 95486.1(1)(A)2.

Under the proposed alternative, recouping credits is neither simple nor risk-free. There are no guarantees that credits can be recouped if the company ceases to exist, the project fails to generate sufficient volumes, or the project produces fuels of higher CI than expected and does not generate sufficient credits to be recouped, or the company

ceases to send fuels to California and generate credits under the LCFS and instead sends its products to other jurisdictions.

Due to the reasons listed above, adopting this alternative might compromise the environmental integrity of the program. Additionally, this alternative will require a substantial increase in the administrative difficulty of the program, which may be unnecessary, since staff does not consider it likely that the LCFS will experience significant credit shortages.

#### **B. No Maximum Price Cap for Regular LCFS Credit Transactions**

White Energy, Neste, Trillium, GlassPoint Solar Inc., RPMG, Clean Energy, and Shell Oil Products proposed that the amendment should not impose a maximum price cap for regular LCFS credit transactions. These entities argue that prices higher than the price cap in the CCM may be necessary to bring sufficient volumes of low carbon alternative fuels to California.

The proposed credit price cap will deter market manipulation and help prevent deleterious impacts to fuel consumers that otherwise could be possible. As part of the broader suite of cost containment provisions, the proposed price cap in the day-to-day market would help prevent the trade of LCFS credits at values in far excess of what staff has established as a reasonable credit price value while also serving as a deterrent for market manipulation. The established credit maximum is enough to provide a sufficient value added to stimulate investments in the production of low-CI fuels, and sufficiently high to attract these fuels if they are produced elsewhere.

The proposed alternative would not provide a credit price cap, and would allow credits to potentially be traded outside of the credit clearance market at prices in excess of the credit clearance market maximum price. Some entities have suggested that trades would take place outside of the credit clearance market at substantially higher prices than the CCM price.

Trading at these higher prices might be motivated by program participants seeking to mask information relating to their deficit position. The provisions affiliated with the credit clearance market reveal information affiliated with credit-holding positions for deficit generating parties, to improve market liquidity, and to further encourage investment in low-carbon fuel infrastructure.

Additional arguments have been made that credit prices must be higher than the suggested credit price cap to ensure a steady stream of low-carbon fuels into the California market. CARB, however, aims to establish a cost containment mechanism that will dissuade entities from trading credits outside of the credit clearance market in the event of a credit shortfall, deter market manipulation, and avoids potential price impacts felt by consumers due to the LCFS. Additional analysis, as was carried out for the LCFS 2018 amendment process, suggests that LCFS credit prices below the proposed credit price cap should be sufficient to encourage investment in low-carbon fuel technologies. LCFS credit prices have remained below the suggested credit price cap, and there have been numerous announcements for projects expected to provide low-carbon fuels to the California market in coming years.

At this time, staff rejects the alternative proposal for “no maximum price cap for LCFS credit transactions,” as the alternative will not ensure the kind of cost containment that a “price cap” on LCFS credit transactions would otherwise achieve.

### **C. Vintage Years for LCFS Credits**

White Energy proposed an alternative where LCFS credits are assigned a vintage year. Introducing vintage years to LCFS credits would effectively limit the period of time that a credit can be used to meet future compliance obligations. Staff does not consider that this alternative will improve the cost containment provision of the LCFS. Introducing vintage years will reduce the flexibility of compliance responses by regulated entities, since their ability to over-comply with the standard in earlier years to meet any future year’s obligations is reduced. This may result in a reduction in supply of LCFS credits in future years, and thus potentially lead to higher credit prices in these periods. Therefore, staff rejects this alternative.

### **D. Issue an Unlimited Number of Borrowed Credits**

Shell Oil Products and WSPA propose to alter the proposed amendment so that the number of borrowed credits is unlimited, instead of staff’s proposal of limiting borrowed credits to 10 million credits. This alternative would achieve certainty in terms of cost containment, since there will be an unlimited supply of LCFS credits generation at the maximum price set in the CCM. Even though staff thinks that is unlikely that such a mechanism would be needed, this alternative could risk undermining the environmental integrity of the program. If borrowed credits cannot be recouped in a timely fashion in future years, then carbon emission reductions achieved by the LCFS may not manifest. This alternative is thus rejected, as it may result in fewer reductions in GHG emissions attributable to the LCFS, and thus the alternative is not consistent with staff’s stated principles for this rulemaking and with the State’s Scoping Plan objectives.

### **E. Implementing a Price Floor**

Clean Energy proposed that CARB considers implementing a price floor to increase the certainty to low carbon fuel projects and increase the supply of low carbon fuels to California. While this alternative may contribute to decreasing the volatility of the LCFS credit markets, it does not strengthen the cost containment provisions of the LCFS, and is thus beyond the scope of this rulemaking.

### **F. Adjust CI Targets Downwards in Case of Shortage**

WSPA proposed potentially decreasing the stringency of the LCFS targets in the event that a credit shortfall occurs. While staff agrees that the WSPA alternative may improve compliance opportunities for deficit-generating entities, the alternative must be rejected because it compromises the environmental integrity of the program, may further destabilize the LCFS credit market by creating additional uncertainty, and fails to support future investments in low-carbon fuels.

The staff proposal allows for credit borrowing, which gives deficit generating entities access to additional credits to meet compliance obligations that are later repaid. If after the 6-year borrowed credit window, deficit-generating entities are still unable to obtain sufficient credits to offset deficits under the program, entities are allowed to further bank deficits with interest for up to 5-years (current provisions under the 2018 adoption of the

LCFS). Staff believes that the 6-year credit borrowing window alongside the 5-year deficit banking period provides a sufficient time-period for deficit-generating entities to make the necessary investments in low-carbon fuel projects to fully offset any outstanding deficits they otherwise may have accrued. These provisions help to maintain the environmental integrity of the program, while providing compliance flexibility for addressing short-term credit shortages. The staff proposal will help maintain a predictable framework for supporting low-carbon fuel investment, and is therefore better aligned with long-term cost containment.

#### **H. Small Business Alternative**

The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business while still maintaining the environmental integrity of the program and achieving the goal of a 20 percent reduction in CI by 2030.

#### **I. Performance Standards in Place of Prescriptive Standards**

Government Code section 11346.2(b)(4)(A) requires that when CARB proposes a regulation that would mandate the use of specific technologies or equipment, or prescribe specific actions or procedures, it must consider performance standards as an alternative. The LCFS is a performance standard, and therefore this requirement is not applicable.

#### **J. Health and Safety Code section 57005 Major Regulation Alternatives**

CARB estimates the proposed regulation will not have an economic impact on the state's business enterprises of more than \$10 million in one or more years of implementation.

## **X. JUSTIFICATION FOR ADOPTION OF REGULATIONS DIFFERENT FROM FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS**

There are no current federal regulations comparable to the LCFS regulation. The U.S. Environmental Protection Agency (U.S. EPA) has adopted its Renewable Fuel Standard (RFS) regulation—title 40, Code of Federal Regulations (CFR), part 80, section 1100 et seq.—that mandates the blending of specific volumes of renewable fuels into gasoline and diesel sold in the U.S. to achieve a specified ratio for each year (i.e., the renewable fuel standard). As defined, “renewable fuels” under the RFS superficially resembles the list of transportation fuels subject to the LCFS. However, there are a number of reasons why the RFS is not comparable to the LCFS.

Congress adopted the RFS in 2005 and strengthened it in December 2007 as part of the Energy Independence and Security Act. The RFS requires that 36 billion gallons of biofuels be sold annually by 2022, of which 21 billion gallons must be “advanced” biofuels and the other 15 billion gallons can be corn ethanol. The advanced biofuels are those that achieve at least 50 percent reduction from baseline life cycle GHG emissions, with a subcategory required to meet a 60 percent reduction target. These reduction targets are based on life cycle emissions, including emissions from land use changes.

The RFS volumetric mandate alone will not achieve the objectives of the LCFS. The RFS targets only biofuels and not other alternatives; therefore, the potential value of electricity, hydrogen, and natural gas are not considered in an overall program to reduce the carbon intensity of transportation fuels. In addition, the targets of 50 percent and 60 percent GHG reductions only establish minimum requirements for biofuels, without incentivizing continuous improvements. It forces biofuels into a small number of fixed categories, without incentivizing innovations within categories. Finally, the GHG requirements do not apply to corn ethanol production plants that were existing and planned at the time of RFS adoption, thus providing no incentive for reducing the carbon intensity from these fuels.

By contrast, the LCFS regulates all transportation fuels, including biofuels and non-biofuels, with a few narrow and specific exceptions. Thus, non-biofuels such as compressed natural gas, electricity, and hydrogen may play important roles in the LCFS program. In addition, the LCFS encourages much greater innovation than the federal program by providing important incentives to continuously improve the carbon intensity of biofuel supply chains and to deploy other fuels with very low carbon intensities.

If California were to rely solely on the RFS, the State would neither achieve the fuel carbon intensity goals called for in Executive Order S-01-07, nor the 2030 GHG reduction targets of SB 32, nor stimulate the innovation needed to support future dramatic GHG reductions from the transportation sector. Because of these differences, the federal RFS regulation is complementary but not comparable to the staff’s proposal.



## **XI. PUBLIC PROCESS FOR DEVELOPMENT OF THE PROPOSED ACTION (PRE-REGULATORY INFORMATION)**

Consistent with Government Code sections 11346, subdivision (b), and 11346.45, subdivision (a), and with the Board's long-standing practice, CARB staff held public workshops and had other meetings with interested persons during the development of the proposed regulation. These informal pre-rulemaking discussions provided staff with useful information that was considered during development of the regulation that is now being proposed for formal public comment.

CARB staff conducted two workshops on April 5, 2019, and July 31, 2019, where staff presented and discussed concepts for the proposed amendments, and where stakeholders were able to provide oral and written feedback to staff's initial concepts. Meeting attendees included transportation fuel producers, providers and importers, environmental groups, academia, and other interested persons.

Over 11,000 individuals or companies were notified for the workshop. Notices for the public meetings were posted to CARB's LCFS public meetings web page and e-mailed to subscribers of the "LCFS," "FUELS," "ALLFUELS," and "ALTDIESEL" list serves. Webcasts and teleconference options was also available for the workshop.

During the original 2009 rulemaking process, staff created the LCFS informational portal website to increase public participation and enhance the information flow between CARB staff and interested parties. Since that time, staff has consistently made available online materials related to this rulemaking, including meeting presentations, preliminary draft regulatory language, and life cycle analysis models and tools used in assessing fuel and feedstock availability to inform the proposed carbon intensity benchmarks. The website has also provided background information on the LCFS, workshop and meeting notices and materials; other GHG related information; and links to other websites with related information. The website also includes feedback letters from stakeholders in response to Staff's informal workshops and working meetings that led to the proposed amendments.

Beyond the public and workgroup meetings noted above, staff's outreach efforts also included numerous personal contacts via telephone, electronic mail, regular mail, and individual meetings with interested parties.

All feedback from stakeholders was considered carefully and was used to improve on staff's initial concepts.

## XII. REFERENCES

The following documents are the technical, theoretical, or empirical studies, reports, or similar documents relied upon in proposing these regulatory amendments, identified as required by Government Code, section 11346.2, subdivision (b)(3).

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### **XIII. APPENDICES**

Appendix A: Proposed Regulation Order

Appendix B: Economic Analysis – Sensitivity Risk Scenarios