Clean Energy's Comments on the California Air Resources Board's "Proposed Concept Outline for the California Low Carbon Fuel Standard Regulation."

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Clean Energy is pleased to provide comments on the California Air Resources Board's (CARB) "Proposed Concept Outline for the California Low Carbon Fuel Standard Regulation" as this process will hopefully transform California's current carbon-rich transportation system into one that is both low in carbon intensity and favorable in criteria air pollutant emissions. In fact, we at Clean Energy believe we can play a critical role in helping the state move away from carbon intense gasoline and diesel toward low carbon natural gas: a fuel that can provide a bridge to both a renewable and zero emission future given natural gas' ability to leverage biomethane and blend with hydrogen. It is for all of these reasons that we, as a company, continue to invest and innovate transportation that uses natural gas as a primary fuel.

We hope that CARB staff will find the enclosed comments prepared to be useful and stand ready to support any questions or information and data requests that you might need. Clean Energy would like to be viewed by CARB as a partner in achieving a ten percent reduction in current carbon intensity of petroleum-based fuels by 2020 and greater reductions beyond 2020.

Applicability of the LCFS:

1.a

Clean Energy recommends that fuels other than diesel or gasoline not be qualified or classified as "conventional fuels", especially since all of the alternative fuels combined qualify for less than a single percentage of today's transportation fuels sold in California (excluding ethanol as a blend stock for gasoline). Clearly, it is in CARB staff's interest to enable meaningful and significant growth and penetration of low carbon fuels in both the near and long-term in order that both government and private industry comply with the intent of AB 32 (Nunez/Pavley) – the Global Warming Solutions Act of 2006. If this is to happen, CARB must create a system where companies, like Clean Energy, can bring low carbon fuel to market with minimal barriers (i.e., regulation) as other barriers (i.e., finance, infrastructure, etc.) will already provide significant challenges to the Low Carbon Fuel Industry. Certainly, such an environment will help accelerate the State's carbon-reduction goals and reduce California's significant dependence upon carbon-rich imported oil – a goal of AB 1007 (Pavley): California's Alternative Fuel Plan.

We have noted that CARB has posited the question as to whether or not hydrogen fueling should immediately be included at the onset of the LCFS and we interpret this to mean that CARB staff believe that there is an advantage to fuels if they are left outside of the LCFS regulatory framework. If this is the case, we would argue that CARB should only initiate regulatory action to the fuels that currently dominate the market and are carbon

rich: gasoline and diesel. CARB should not include clean low carbon alternative fuels that already achieve a 10 percent or greater carbon reduction required in 2020 by the LCFS. By removing fuels that are already significantly lower in carbon content from regulatory obligations, CARB would instantly lower the barriers of entry for the very fuels CARB wants to see in the California marketplace: low carbon fuels.

1.b

Clean Energy supports CARB's inclusion of transportation on-road and off-road, off-road equipment, and locomotive applications for this rulemaking.

1.d

Clean Energy respectfully requests that CARB staff consider allowing biofuel producers that produce advanced biofuels that are determined to be "sustainable" by CARB, to be initially exempt from the LCFS compliance and reporting requirement, regardless of the aggregate volume of that fuel supplied for transportation use in California, in an effort to further incentivize these critical LCFS markets. Advanced biofuels should achieve a minimum of a 10% GHG reduction on a well to wheels basis and create minimal to no indirect environmental impacts. A perfect example of such advanced biofuels would be biomethane produced from landfills, waste water treatment plants and dairy farm waste with proper mitigation. Further, Clean Energy would ask that CARB not aggregate volumes of advanced biofuels produced by a single obligated party who holds a stake in multiple LCF production projects throughout the state or the nation for use in California's transportation system as this too could serve as a significant and unintentional barrier to market entry and would ultimately be counterproductive to CARB's goals of the LCFS. If CARB still decides to aggregate volume production, Clean Energy recommends that the aggregate volume determined by CARB be limited to a company's production of low carbon fuel within the state or brought to California for sale in the state's transportation fuel market.

In terms of CARBs original proposal, Clean Energy would like to reserve judgment on CARB's proposed aggregate volume exemption for alternative fuel manufacturers until CARB proposes a GGE/year threshold with a stated rationale. Clean Energy does not produce the natural gas used in CNG vehicles and sometimes delivers liquefied natural gas (LNG) produced by a refiner as LNG can be a by-product of the gas-separation process. Certainly, Clean Energy under these conditions should not be considered an obligated party as we do not produce such fuels, nor should these fuels be counted toward our aggregate volume of fuel delivered to California's market. On the other hand, Clean Energy does own and operate two liquefied natural gas production plants, one in Boron, California (under construction), and another in Willis, Texas. Obviously, given Clean Energy's small scale of production when compared to existing California oil refineries and Clean Energy's efforts to produce a low-carbon LNG fuel using North American gas, we would request that CARB set this fuel exemption above our forecasted 2009 production numbers to help low carbon product penetrate the California market.

2. Fuel Standards

2.c

Clean Energy strongly supports and applauds CARB's decision to separate gasoline and diesel by requiring that each fuel type reduce its carbon intensity by 10% or more by 2020. This decision by CARB staff sends a strong market signal that California intends to meaningfully reduce the carbon intensity of the two dominant and carbon-rich fuels in its transportation fuel market and prevents a simple substitution of diesel fuel in the light-duty gasoline market to achieve the oil refiner's low-carbon fuel goals.

2.d

Clean Energy supports staff's recommendation. However, we do believe that if CARB chooses to provide credits for low carbon fuel achievements, they should provide the delta inbetween gasoline or diesel standard and the low carbon fuel rating. For diesel and gasoline, no credits should be afforded until they achieve the full ten percent. Remember, the goal of this standard is to reduce carbon intensity by 10 percent or more. Petroleum companies are proposing a compliance scenario that has them meeting the majority of their 10% carbon reductions in the last couple of years before the 2020 deadline. It would therefore be poor public policy to grant petroleum companies early credits for carbon reduction when their ability to achieve the full 10% reductions is uncertain.

2.e

Clean Energy does not support the allowance of a "vehicle efficiency adjustment factor" as described in 5.2.d as it will create a double-dipping opportunity that does nothing to advance low carbon fuels. CARB has a separate process that it is intended to increase the efficiency of vehicles. Such an allowance would further weaken the LCFS and create greater uncertainty for LCF producers and providers in terms of LCF acceptance into the marketplace. The need for a pure LCFS can be demonstrated by numerous municipal proposals around the country to regulate GHGs in various fleets by fuel efficiency alone. It is clear that California must lead on this issue and provide clear guidance to decision makers beyond California's market so that a robust LCF market can evolve and mature. We therefore ask that CARB maintain the integrity of the LCFS by removing efficiency considerations that are irrelevant to the carbon intensity of any particular fuel. In the same vein, Clean Energy also opposes any proposal for a refinery credit for increased efficiencies in refinery operations (to be commented on later) as this also runs the risk of double-dipping given that the refinery process should be regulated under same conditions the utilities are under AB 32. For all of these reasons, CARB must resist the addition of vehicle efficiency factors in its low carbon fuel rule making.

2.f

Clean Energy does not believe that the baseline for diesel should be 71 gCO2e/MJ as proposed in Table 2.2. Based on the April 22, 2008 report "Detailed California-Modified GREET Pathway for Ultra Low Sulfur Diesel from Average Crude Refined in California", the WTW carbon content of ULSD is 99.4 gCO_2e/MJ. This number represents the total carbon content of the fuel on a Well to Wheels basis. The carbon content of the fuel and how much CO_2 is released into the air is independent of what vehicle consumes the fuel. Light-duty and heavy-duty vehicles release CO_2 at different rates based upon their fuel economy – but in the end – the total CO_2 load to the atmosphere from diesel fuel will be 99.4 gCO_2e/MJ times the total gallons of diesel consumed in the state, times the energy content of diesel in MJ/gallon.

In order to determine the overall effectiveness of the LCFS, one only needs to monitor and regulate the carbon content of the fuel (on a WTW basis), and monitor the total fuel consumption of the state. One doesn't need to apply "vehicle efficiency adjustment factors" to fuels.

2.1 Standards for Gasoline

2.1.a

Clean Energy reserves the right to comment on CARB's AFCI for gasoline until we can better understand CARB's analysis in arriving at the proposed number. Furthermore, we strongly recommend that the final carbon intensity number for gasoline expressed in gCO_2e/MJ not include the carbon intensity of oxygenates that may be required by federal or state law. We believe including an oxygenate's carbon intensity would actually diminish the goal of the low carbon fuel standard as the simple act of removing the oxygenate may enable the producer to comply with the rule. Clean Energy does not believe this was the intent of CARB Staff or of the LCFS. The intent of the LCFS is to produce low carbon fuels and to force both gasoline and diesel to reduce their carbon intensity by 10 percent or more by 2020.

For example, the carbon intensity of CARBOB is 95.2 gCO_2e/MJ (April 22, 2008 report) whereas the carbon intensity of RFG with 5.7% ethanol is 96.6 gCO_2e/MJ. When 10% ethanol content is implemented, the carbon intensity of RFG will be even higher. CARB needs to seriously consider setting the baseline for gasoline at the 95.2 gCO_2e/MJ level and eliminating the temptation for gasoline fuel providers achieve about a 2-3% reduction in carbon intensity by just eliminating ethanol from gasoline.

2.1.b

In concept, Clean Energy strongly supports a linear compliance pathway toward reducing the carbon intensity of both gasoline and diesel between 2010 and 2020 as presented by CARB staff. However, we do not believe that Year 1 (or 2010) should start with the

status quo at 92 gCO2e/MJ if gasoline is ultimately determined to be at 92 gCO2e/MJ. At a minimum, Year 1 should require a percentage or more reduction of carbon intensity of the established value of gasoline so that those low carbon fuel companies producing or providing low carbon fuels to California's transportation markets can benefit instantly and meaningfully if gasoline producers fail to meet the standard's compliance targets. Such a consideration by CARB is critical as early credits generated by the Low Carbon Fuel Industry should, in theory, provide much needed upfront financial capital that can support earlier and greater penetration of low carbon fuels in California's transportation market.

Further, there are references in the proposed rule and statements that have been made by CARB staff suggesting that the LCFS will achieve a 10 percent or greater reduction in carbon intensity of transportation fuels. It would be helpful for CARB to explain how the standard, as proposed, can achieve a greater than 10 percent reduction when the proposal only requires a 10 percent reduction in carbon intensity for Year 10 and beyond (2020+). CARB should consider adding stretch goals or greater incentives to low carbon fuel producers and providers that reduce carbon intensity beyond the 10 percent reductions that will be applied to gasoline and diesel.

It is clear that CARB must alter the current proposal if the Agency wants to achieve a 10 percent or greater carbon intensity reduction from either baseline established by gasoline or diesel. One way to potentially achieve this result without modifying the proposed linear compliance path would be to disallow diesel and gasoline providers to earn any credit for carbon intensity reductions until a producer achieves a greater than 10 percent carbon intensity reduction. At the same time, CARB should allow low carbon fuel producers and providers that do not traditionally produce or provide gasoline or diesel to earn full credit for any carbon intensity reduction below the linear compliance line. By doing so, CARB provides a powerful incentive for gasoline and diesel producers to reduce their carbon intensity at the beginning of the regulation while rewarding low carbon fuel producers and providers who can ramp up early market penetration of low carbon fuels that may well exceed CARB's 10 percent carbon intensity reduction goals. In other words, CARB provides flexibility where it is needed most, with the Low Carbon Fuel Industry, and places the burden on the diesel and gasoline producers that dominate more than 99% of the transportation fuels market.

2.2 Standards for Diesel

2.2.a

Clean Energy disagrees with the AFCI for diesel as it is presented on page 2 of the Proposed LCFS document. Please note the prior comments under 2.f. above. The carbon content for diesel used in a light-duty vehicle is exactly the same as the carbon content of diesel used in a heavy-duty vehicle. The carbon intensity of the fuel can't be listed as 71 gCO_2e/MJ for light-duty vehicles and 99.4 gCO_2e/MJ. The fuel economy of a vehicle dictates the rate of release of CO_2 but overall, the carbon intensity of the fuel doesn't change on a gallon basis.

It appears that CARB's interest in factoring in a "vehicle efficiency adjustment factor"is more for modeling purposes than it is to capture the overall benefit of reducing the carbon content of the fuel and the resulting reduction in GHGs. One "vehicle efficiency adjustment factor" is inappropriate to capture the variations between vehicles. This approach is also incomplete unless other factors like VMT, etc., are also addressed.

Clean Energy therefore recommends abandoning the concept of using a "vehicle efficiency adjustment factor" and remain focused on the more global concept of carbon content of the fuel.

2.2.b

Again, in concept, Clean Energy strongly supports a linear compliance pathway toward reducing the carbon intensity of diesel between 2010 and 2020 as presented by CARB staff. We strongly encourage, however, that in Year 1 CARB requires a percentage or more reduction of carbon intensity so that the low carbon fuel industry can potentially benefit immediately from delivering low carbon fuels to California's transportation markets. Further, CARB should consider adding stretch goals or greater incentives to low carbon fuels that can reduce carbon intensity beyond the 10 percent target applied to gasoline and diesel in 2020. It would be very beneficial for CARB to modify the current proposal in order to achieve a 10 percent or greater carbon intensity reduction from either baseline established by gasoline or diesel. By disallowing diesel producers and providers to earn any credit for carbon intensity reductions until a producer achieves a greater than 10 percent carbon intensity reduction and by allowing low carbon fuel producers and providers that do not traditionally produce diesel to earn full credit for any carbon intensity reduction below the linear compliance line, CARB would provide a powerful incentive for diesel producers to reduce their carbon intensity at the beginning of the regulation while rewarding low carbon fuel producers who can ramp up early market penetration of low carbon fuels that may well exceed CARB's 10 percent carbon intensity reduction goals. Again, CARB should provide flexibility where the Industry needs it most: with the low carbon fuel industry.

2.3 Standards for Natural Gas

2.3.a

Clean Energy agrees with CARB's proposal.

2.3.b

Clean Energy agrees with CARB's proposal.

2.3.c

To our knowledge, liquefied natural gas (LNG) is not currently used in light-duty vehicle applications and we do not expect any deviation from this practice as LNG fueling requires both safety training and safety protection equipment making the practice not practical for consumers. To our knowledge, LNG is used in applications that require a longer range to accomplish a driver's occupational goals (i.e., drayage trucks).

2.3.d

Clean Energy agrees with CARB's proposal.

2.3.e (RECOMMENDED ADDITIONS)

Clean Energy strongly recommends that CARB incorporate a Standard for Biomethane that can be applied to gasoline vehicles.

2.3.f (RECOMMENDED ADDITIONS)

Clean Energy strongly recommends that CARB incorporate a Standard for Biomethane and domestically produced LNG that can be applied to diesel vehicles.

Table 2.3. Summary of applicable reference standards for LCFS-participating transportation fuels.

Again, this table is incomplete without the incorporation of biomethane applications. We strongly recommend that you consider the consideration of biomethane in your regulations as this option may be employed extensively given its low carbon content and minimal lifecycle impacts, particularly when compared to other sustainable, low carbon fuel alternatives.

2.9 Volume Obligation for Ultra Low Carbon Fuel

2.9.a

This is hard to comment on at this time as Section 7 is not developed in the current draft. Clean Energy reserves the right to comment until we can review CARB's proposal on an "ultra low carbon fuel requirement" for imports.

As to how CARB might approach requiring a producer to provide a certain percentage of ultra low carbon fuels, will depend on what CARB considers to be ultra low carbon (i.e., beyond 10 percent) and what producers you apply this standard to and why. Clean Energy recommends that you apply ultra low carbon fuel requirements upon diesel and gasoline producers exclusively and provide greater flexibility to low carbon fuel producers who do not traditionally produce diesel or gasoline. Further, if CARB applied such a requirement, it would not make sense to apply it to the market across the board. This requirement, if implemented, should only apply to companies that are producing

fuels that dominate a significant portion of California's transportation market share (i.e., gasoline and diesel).

In comparison to the carbon content of gasoline and diesel (95.2 gCO_2e/MJ and 99.4 gCO_2e/MJ respectively as reported in April 22, 2008 GREET model reports), fuels such as natural gas (67.9 gCO_2e/MJ) could be considered an ultra low carbon fuel. The necessity for CARB to consider volume obligations for ultra low carbon fuels is really a function of petroleum companies ability or inability to meet the requirements of the LCFS and their ability to accommodate greater amounts of ultra low carbon fuels in gasoline or diesel blends.

3. Compliance and Enforcement

3.1 Compliance Requirements

3.1.a

Clean Energy believes that CARB should limit the "obligated party" status to producers, providers or importers of gasoline or diesel fuels – fuels that currently dominate more than 99% of California's marketplace. Again, flexibility in the regulation should be limited to the low carbon fuel industry which does not produce gasoline or diesel and desperately needs support to gain meaningful marketshare.

3.1.b

Clean Energy is interested in what CARB defines as "periodic" for compliance reports. At a minimum, periodic compliance reports should be required of the major gasoline and diesel producers and any inclusion of the Low Carbon Fuel Industry should be gradually phased-in, if at all.

3.1.c Options for Compliance

Again, Clean Energy does not believe the Low Carbon Fuel Industry should be considered an obligated party as low carbon fuels have a very limited market share when compared to gasoline and diesel producers. Under this scenario, we do not support credit generation for gasoline and diesel producers unless they exceed the state's ultimate goal of a 10 percent carbon intensity reduction. Conversely, we believe the Low Carbon Fuel Industry should be allowed to generate full credits for fuels that are lower in carbon than the linear compliance path. Low Carbon Fuel Companies also should not be considered obligated parties until they make up a significant share of California's market place (i.e., 10 percent or greater) as the credit market should be promoting the inclusion of low carbon fuels into the transportation market. Thus, option 3 could only be achieved if a gasoline or diesel producer manufactured a fuel that reduced its carbon intensity beyond 10 percent.

3.1.d Variance provision

CARB should ensure that any variance from the linear compliance path is corrected promptly and resolved by making up the shortfall in a timely manner via purchasing credits from the low carbon fuel industry.

3.1.e Deficit Allowance

Clean Energy strongly encourages CARB not to allow a whole year to go by before a deficit is resolved by the gasoline and diesel producers. Certainly, this approach will delay the progress of a low carbon fuel market. We strongly encourage CARB to consider that the "deficit clearance period" be received by the end of each quarter or, at a minimum, semi-annually.

3.1.f

Clean Energy supports staff position that a fee payment is not allowed. Credits from the Low Carbon Fuel Industry should be purchased by any shortfall of gasoline and diesel producers.

3.1.g

Clean Energy views an annual compliance period to be reasonable, but CARB should require quarterly updates on progress and require credits to be purchased if a producer is far behind in making progress.

3.2 Point of Regulation

3.2.e Natural Gas

Approximately 98% of the natural gas consumed by the United States today comes from North American sources. Further, it is assumed that AB 32 will regulate the utilities and their throughput of natural gas volumes. Clean Energy therefore requests CARB staff to provide us with a better understanding of how the LCFS regulation will avoid any potential double counting if it regulates both the utilities and a fuel provider who may distribute natural gas but is not in the business of producing natural gas.

3.2.ee (RECOMMENDED ADDITIONS)

Again, Clean Energy strongly requests that CARB staff incorporate biomethane within this regulation as it has tremendous potential in providing significant greenhouse gas benefits. CARB should complete analysis on biomethane pathways. Biomethane represents the natural gas industry's best option of an "ultra low carbon fuel".

3.3 Tracking and Reporting

3.3.1 Reporting requirements

3.3.1.b Reporting frequency

If CARB is proposing to receive quarterly reporting, CARB should require obligated parties to make up their shortfalls at this point in time.

3.3.4 Tracking Biofuels

Clean Energy recommends that biomethane not be subject to the federal Renewable Identification Number (RIN) tracking requirements as production of biomethane will be from continuous processes that should be reported the same way that oil refineries report their process energy efficiencies.

4. LCFS Credits.

Clean Energy believes that if CARB is to allow credit trading at all, it should be acknowledged that this action already provides significant flexibility to California gasoline and oil producers in and of itself, particularly when gasoline and diesel dominate over 99 percent of California transportation fuel market place. The proposal to allow California refiners to sell or export credits to markets outside of the Low Carbon Fuels market or trade credits between their gasoline or diesel obligations within the rule should be rejected. Such allowances unintentionally weaken the rule throughout the rule making process, during implementation and subject the Agency to an accounting nightmare that would be difficult to enforce and the public to follow. CARB wisely opted to disallow the importation of credits generated outside of the Low Carbon Fuels Market to help with compliance. It should equally reject providing an overly-flexible environment that lowers the bar for California oil refiners and raises the bar for low carbon fuel providers who already face significant barriers (i.e., low consumer awareness, limited infrastructure, number of vehicles, limited financial resources) to enter the marketplace.

Clean Energy would further argue that oil companies should be required to purchase carbon credits from verified low carbon fuel producers if they experience any shortfall of the linear compliance schedule as outlined in the proposed LCFS rulemaking. Clean Energy does not favor more flexibility for oil companies via the extension of credit opportunities to wider markets well outside of California's market system. In other words, engine and fuel producers/providers of low carbon alternative fuels should reap the benefits and incentives when oil companies fall short in reducing the carbon intensity of their product.

Finally, Clean Energy recommends that California's gasoline and diesel producers be restricted in their earning of credits and that low carbon fuel producers be less restricted in their earning of credits. Specifically, we believe that gasoline and diesel producers should not generate credits until they produce fuels that are 10 or more percent lower in carbon intensity. For low carbon fuel producers, however, Clean Energy recommends that such producers can generate credit for fuels that produce a lower carbon intensity than the linear compliance curve. By doing this, CARB will provide a significant

incentive for the oil companies to produce low carbon fuels well beyond the 10 percent carbon intensity target while providing a significant incentive for low carbon fuel companies to jump start their production and penetration of low carbon fuels in the California transportation fuel market place. Clean Energy believes that CARB should adopt this policy approach if the Agency is to achieve and exceed California's 2020 goal. Adopting such an approach will by no means balance the playing field between gasoline/diesel producers and low carbon fuel producers, but it certainly will help low carbon fuel producers compete more easily.

5. Determination of Carbon Intensity Values

5.3.2 Refinery Efficiency

Clean Energy opposes the inclusion of a refinery efficiency component as it does little to reduce the carbon content in a fuel while unnecessarily rewarding refiners who already will be required to improve efficiencies under AB 32. Again, if CARB hopes to achieve California's 2020 goal of 10 percent or more carbon intensity reductions in fuels, it needs to place the pressure on gasoline and oil producers and ease and incentivize the state's low carbon fuel industry. We strongly encourage CARB not to further entertain this proposal and to rather promote incentives to fuel producers that can provide low carbon solutions to California today. If, however, CARB does decide to entertain a refinery efficiency component, what does CARB plan to offer the low carbon fuel industry to level the playing field? We think CARB should provide greater incentives to the low carbon fuel industry as this industry has fewer financial resources, less infrastructure, and lower consumer awareness. CARB needs to adopt policy components within the LCFS that can significantly promote change (i.e., California's low carbon fuel industry), not preserve the status quo for the gasoline and diesel producers.

One element that CARB must address if the Agency decides to proceed with developing a refinery efficiency factor is the tremendous flexibility that refineries have associated with co-product production. Many if not all of these co-products are outside the scope of the LCFS. CARB should be concerned about manipulation of energy budgets for co-products to artificially lower the carbon budget for producing gasoline or diesel fuel. In other words, co-products produced by refineries may be more energy intensive than processes that would normally produce such co-products. Hence, actual carbon reductions claimed via co-product allowance may help a refinery's bottom-line but may not actually increase, not reduce, carbon intensity. Clearly, refineries should not be credited with false carbon reductions.

Conclusion

Clean Energy would like to thank CARB staff for this opportunity to comment on the Proposed Concept Outline for the California Low Carbon Fuel Standard Regulation. Clean Energy believes that CARB staff has placed a lot of thought behind the draft proposal and we hope that you will find our suggestions to be helpful, supportive and workable. Clean Energy strongly encourages staff to place the burden of the regulation

on the dominant players of the transportation fuel sector – the gasoline and diesel producers – and to provide greater incentives and flexibility to California's low carbon fuel industry. If you should have any questions or need any further information, etc., please do not hesitate to contact us.

Sincerely,

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Clean Energy