COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL ON PROPOSED AMENDMENTS TO THE LOW CARBON FUEL STANDARD

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SUBMITTED TO:

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1 Summary of Contents

The Natural Resources Defense Council ("NRDC") is pleased to provide comments to the Air Resources Board ("ARB" or "Board") on the *Proposed Amendments to the Low Carbon Fuel Standard* ("Proposed Amendments"). We thank ARB staff for the tremendous effort over the past year to ensure the Low Carbon Fuel Standard ("LCFS") is implemented in an effective manner. Provided key changes recommended below are adopted, NRDC urges the Board to enact the Proposed Amendments, which are critical to the success of the LCFS and California's larger efforts to improve the environmental performance of the transportation sector.

Findings

1. Accounting for emissions from high carbon intensity crude oils ("HCICOs") is essential to prevent emissions from dirtier sources from overwhelming the emissions reductions from cleaner sources.
2. Over the past two and a half years, ARB staff has conducted an open and thorough process to address stakeholder concerns on the HCICO provision.
3. The Proposed Amendments' requirement that electricity providers return proceeds from the sale of LCFS credits to electric vehicle customers will accelerate vehicle electrification in California and further the overarching goal of the LCFS.
4. The Proposed Amendments are consistent with the California Public Utilities Commission's determination that third-party electric vehicle service providers will generally be utility customers. Third-party electric vehicle service providers stand to benefit from the Proposed Amendments, either as direct recipients of LCFS credits for public charging or as utility customers receiving the benefit of the requirement that utilities return all credit value to electric vehicle customers.
5. The Proposed Amendments make it clear that parties that opt into the LCFS recognize ARB's administrative authority, including its authority to require electricity providers to return all LCFS credit proceeds to electric vehicle customers.

Recommendations

1. To better align responsibility with performance and to improve equity, ARB should, at a minimum, provide an option for refinery-specific accounting under the HCICO provision.
2. Annual, mandatory reporting requirements are needed to ensure the success of the HCICO provision.
3. ARB should develop regulations to support electrification beyond light-duty vehicles.
4. The important efforts of the Sustainability Work Group should continue.
5. The credit market should be expanded and should allow brokers to maintain the anonymity of sellers and buyers.

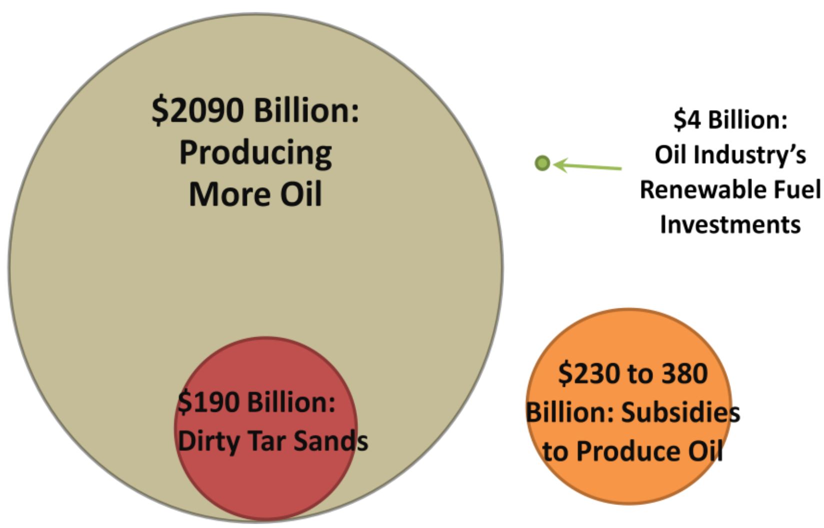
2 NRDC Strongly Supports Accounting for Emissions from High Carbon Intensity Crude Oils and Urges ARB to Adopt an Option for Refinery-Specific Accounting to Improve Equity and to Align Responsibility with Performance.

NRDC and the international environmental and health-based community have long supported ARB's efforts to account for additional emissions due to high-carbon intensity crude oils ("HCICOs"). ARB staff has gone to great lengths to address the concerns expressed by the oil industry and the Proposed Amendments incorporate extensive changes made as a result of those efforts. We thank ARB staff and management for their hard work on this critical component of the LCFS. We recommend that the Board adopt the Proposed Amendments as drafted, and adopt a resolution instructing staff to make a key 15-day change to improve the regulations.

2.1 Proper accounting of HCICO emissions is essential to the success of the LCFS

The fundamental purpose of the LCFS is to lower the carbon intensity of California's fuel mix. The program is meant to both encourage the use of lower carbon fuels and discourage the use of higher carbon fuels. The two goals are inextricably linked, as emissions resulting from the widespread use of dirty fuels could easily overwhelm reductions gained from the increased use of cleaner fuels. As illustrated in Figure 1, the amount the oil industry is investing in a single dirty fuel source − tar sands − is fifty times greater than its global investment in renewable fuels (50:1).[1] Oil industry capital expenditures in finding and producing all types of oil exceed their global renewable investments by a ratio of 500:1.

Figure 1: Global oil industry investment from 2006 through 2010

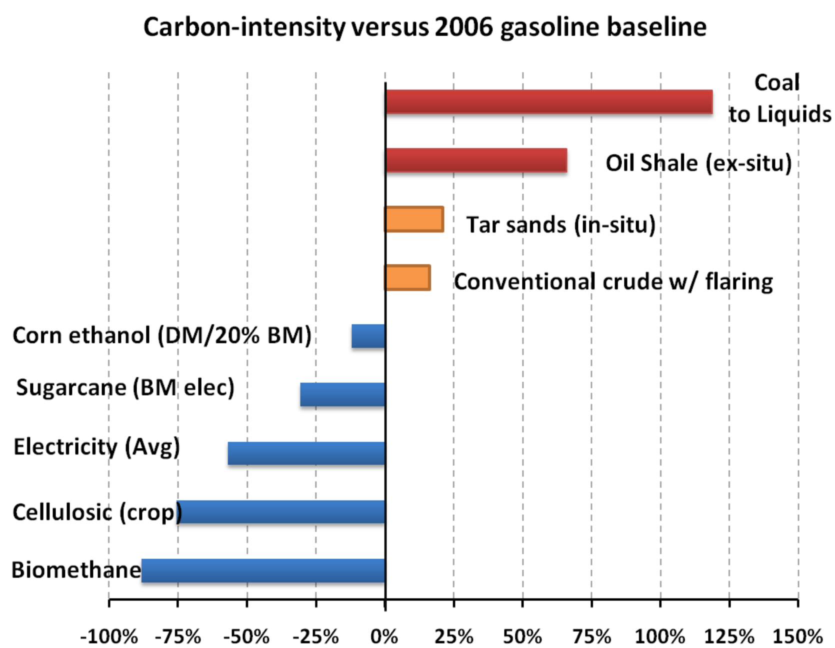


[1] NRDC, *Oil Industry Investment Report: Dirty Fuel Investments Outpacing Clean Fuels by Fifty Times,* 2011. This does not include investments in oil shale, extra-heavy crude oil, coal to liquids, and other dirty fuel sources.

As shown in a NRDC presentation to the LCFS Advisory Panel Meeting on July 1, 2011, the entire greenhouse gas emission reduction benefits of the federal Renewable Fuels Standard will be offset by increased emissions from tar sands alone, unless the oil industry dramatically slows investments in these sources or significantly reduces the resulting emissions.[2] The LCFS sends a signal to do both.

The LCFS regulations adopted in 2009 included HCICO provisions to ensure that any increases in gasoline or diesel emissions due to increased HCICO use would be taken into account and offset. As noted in the Proposed Amendments, emissions from gasoline and diesel use have increased approximately1% between 2006 and 2010 due to increases in HCICO use.[3] By way of comparison, the LCFS targets a 2.5% reduction by 2015, meaning much of the early year benefits of the LCFS have been already offset, even before the program has begun. As Figure 3 illustrates, accounting for emissions from HCICOs is consistent with a fair, lifecycle-based carbon accounting methodology across all fuels.

Figure 2: The widespread use of HCICOs could offset emissions reductions from the use of cleaner fuels.[4]



[2] S. Mui, *Accounting for High Carbon Intensity Crude Oils in Low Carbon Fuel Policies*, presentation to LCFS Advisory Panel, July 1, 2011, Sacramento, CA. *Available at* http://www.arb.ca.gov/fuels/lcfs/workgroups/advisorypanel/20110630NRDC.pdf

[3] Air Resource Board, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking ("ISOR").* October, 2011, p. 36-40.

[4] Sources: NRDC, *GHG Emission Factors of High Carbon-Intensity Crude Oils*, 2010; International Council on Clean Transportation, *Carbon Intensity of Crude Oil in Europe Crude. Energy-Redefined LLC*; ARB, *ISOR*, October, 2011, ("Lookup Tables").

2.2 ARB staff has conducted an open and thorough process to address stakeholder concerns regarding the HCICO provision

Staff and management have worked tirelessly over the past two-and-a-half years to address oil industry concerns regarding the original, and now modified, HCICO provision. NRDC participated in nearly of all the public workshops on this matter, as well as separate discussions with ARB staff, representatives of the oil industry, the environmental and health-based community, labor, oil industry experts, and academics. The ARB process included:

1. Three formal public workshops throughout 2011.
2. The formation of a HCICO work group which met over six days in 2010 and 2011 to develop a screening approach to limit the burden on industry. A number of sub-groups also met.
3. Two implementation delays for the HCICO provision to provide more time for input from the oil industry and other stakeholders.
4. Multiple requests from ARB to refineries to provide data necessary to help implement the original provision and subsequently, to evaluate new HCICO approaches. It is our understanding that not all the data necessary to evaluate options, including NRDC's recommended option, was provided by all refineries.
5. Multiple requests from ARB staff to refiners for crude oil production parameters, followed by inadequate responses from the oil industry. Our understanding is that ARB has attempted to fill this information gap by contracting with Stanford University to develop a publically accessible model to estimate carbon intensity values for crude oil production, to be completed in Spring, 2012. In the meantime, ARB staff has developed carbon intensity values relying on a review of literature.
6. Per oil industry requests, expanding the purview of the LCFS Advisory Panel to review HCICO policy and to include a session devoted to this topic.
7. In response to additional oil industry requests, the development of four new HCICO options. ARB also further clarified the principles and goals of the HCICO provision, against which the various options would be measured.
8. A resulting regulatory proposal that sunsets the existing HCICO provision and replaces it with a new HCICO provision.
9. Changing the effective baseline year from 2006, to 2010, effectively grandfathering in the increase in carbon-intensity of gasoline and diesel that occurred between 2006 and 2010 due to increased HCICO use in California.

As a result of the extensive process enumerated above, the Proposed Amendments have been modified to assess the carbon intensity of the crude oil slate used in California going forward, and to provide deficits to the industry for increases in the carbon intensity going forward. The Proposed Amendments also include credit generating opportunities (i.e. incentives) to reduce the carbon intensity from oil production. If the amendments are adopted as drafted, all refineries selling product to California will be free to buy and sell crude oils as before and will only be debited if the carbon-intensity of all California refineries and importers worsens over time. This contrasts with the earlier approach, that would have applied penalties *specifically* to refineries for crude oils which were above a "bright line" of 15 grams CO_2 per megajoule and which were not part of the original 2006 crude oil slate.

2.3 NRDC urges ARB to adopt a refinery-specific accounting option to improve fairness and to align responsibility with performance.

NRDC supports the Proposed Amendments' accounting mechanism for HCICOs and the fact that grandfathering is being applied on a carbon-intensity basis rather than a crude oil source basis. The inclusion of credits for innovative reduction activities will also help spur innovative projects, and provide additional flexibility in meeting the LCFS targets.[5] However, the Proposed Amendments should be modified through 15-day changes to move toward a refinery-specific accounting approach to improve the equity and efficiency of the regulations.

As currently drafted, the carbon burden resulting from the decision of a single refinery to increase its HCICO use is spread across all refineries, many of which may not be increasing (or may be even decreasing) carbon-intensity from HCICO use. At minimum, ARB should provide refineries with the option to report their own refinery-specific emissions and to be held responsible for just those emissions, thereby improving the equity of the program and aligning reduction responsibility with performance. The Proposed Amendments should be strengthened as follows:

- Deficits due to the use of HCICOs should be assigned to the responsible refinery, in keeping with a "polluter pays principle." Under the Proposed Amendments, if one refinery increases its carbon-intensity, the deficit is not assigned to that refinery, but spread across the entire industry. Such a system dilutes the signal to the responsible parties and provides the opposite signal to refineries that may be keeping the carbon-intensity of their crude oil slate constant (or actually improving it). In sum, better alignment of incentives and debits is needed to fulfill the goal of the regulations.

- The Proposed Amendments should require refineries to report actual crude oil use by marketing name, production method and parameters as needed, and ultimately the corresponding carbon intensity values. It is NRDC's understanding there may be insufficient reporting of such data by all oil companies, causing staff to resort to alternative sources to develop the carbon intensity values on their own, as was necessary for the Proposed Amendments. Effective implementation of the HCICO provision and the recommendation made above to hold either the industry or individual refineries accountable for HCICO use will not be possible without a mandatory reporting requirement. Going forward, relying on voluntary cooperation, which has been slow and inconsistent to this point, will further delay the implementation of the changes.

[5] The collaboration between Chevron and BrightSource Energy to demonstrate the use of solar thermal energy instead of natural gas to power the recovery of crude oil in Coalinga, California is a current example of this type of innovation.

- The average carbon-intensity of the crude slate should be updated annually to provide a timely signal to oil companies to avoid increases in gasoline and diesel emissions. The Proposed Amendments are ambiguous as to this requirement, which should be made explicit.

These improvements should be enacted through a Board resolution directing staff to implement 15-day amendments. NRDC's recommended language is included in Attachment A and below.

> *"BE IT FURTHER RESOLVED that the Board delegates to the Executive Officer the authority to amend the high carbon intensity crude oil provision through 15 day changes by summer of 2012 or as expeditiously as practical, to:*
>
> *(1) Provide an additional option for individual regulated parties to report incremental deficits to the gasoline and diesel baseline on an individual refinery basis.*
>
> *(2) Update, as needed, reporting requirements for regulated parties for purposes of calculating the carbon-intensity value of gasoline and diesel on an on-going basis. This may include, but is not limited to, data for crude oil supplied to California refineries including use by volume, marketing name, production method and parameters for purposes of the determination of carbon-intensity values using the Oil Production Greenhouse Gas Estimator (OPGEE) tool.*
>
> *(3) Clarify that incremental deficits will be calculated on an annual basis.*
>
> *The Board directs the Executive Officer to notify the Board of the initiation and results of any rulemakings conducted pursuant to this delegation*

3 The Proposed Amendments' Treatment of Electricity as a Transportation Fuel Will Accelerate the Electric Vehicle Market

3.1 The requirement that electricity providers return all LCFS credit proceeds to electric vehicle customers could significantly improve the economics of vehicle electrification

NRDC enthusiastically supports the requirement that electricity providers must use "all credit proceeds as direct benefits for current EV customers."[6] As explained in previous comments, returning all proceeds to electric vehicle ("EV") customers, who are ultimately responsible for the creation of LCFS credits, will further the goals of the LCFS.[7] Under the Proposed Amendments, electricity providers can return credit value to EV customers through rebates or through reductions in rates, both of which will improve the economics of a decision to drive on electricity. The Proposed Amendments also encourage the use of off-peak electricity to minimize grid impacts. Figure 3 illustrates the combination of off-peak electricity rates and the use of LCFS credit value to

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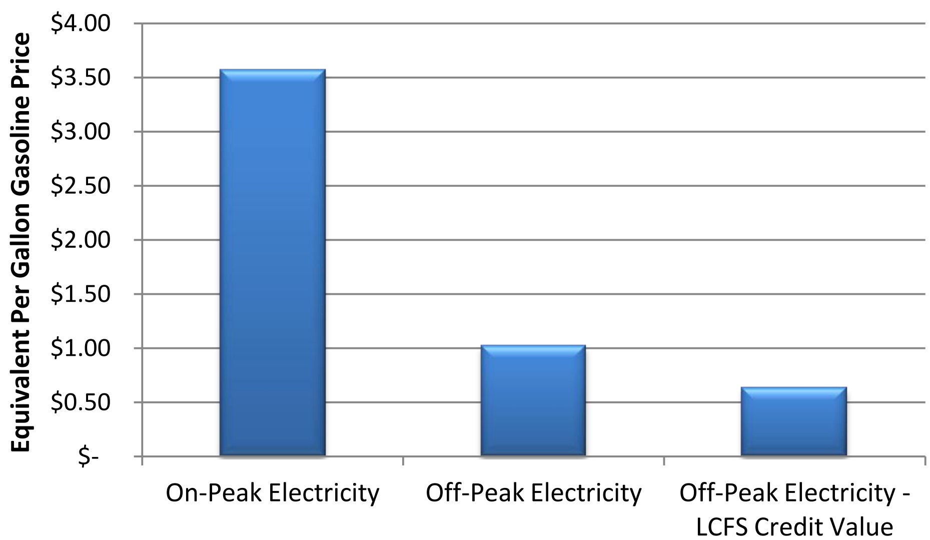
[6] California Air Resource Board, *Appendix A: Proposed Regulation Order*, October 26, 2011, p. 34 ("Proposed Amendments").

[7] *See* NRDC, *Comments on the October 14, 2011 Low Carbon Fuel Standard Workshop*, October 21, 2011.

reduce rates, resulting in a fuel which costs roughly as much to use as sixty cent-per-gallon gasoline.

Figure 3: Hypothetical use of LCFS credit value to reduce off-peak electricity for EV use.[8]



Because the incremental cost of an electric vehicle relative to a comparable conventional vehicle is expected to remain high for some time, the economics of vehicle electrification depend upon savings relative to gasoline. The Proposed Amendments will ensure that LCFS credit value is used to improve the economics of a decision to drive on electricity. NRDC commends ARB staff for proposing regulations which could accelerate the widespread adoption of electric vehicles in California.

3.2 Third-party electric vehicle service providers acting as utility customers will directly benefit from the requirement that all credit proceeds be returned to utility EV customers

Under §95484(a)(6)(B) of the Proposed Amendments, "third-party non-utility Electric Vehicle Service Providers" ("EVSPs") are eligible to receive credits directly for public charging installations.[9] The California Public Utilities Commission has determined that EVSPs operating in both the public and residential contexts will generally be utility customers and will be eligible for the same rates as other customers, including residential rates.[10] Assembly Bill 631 codified the Commission's conclusion.[11] The Proposed Amendments are consistent with the determination the

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[8] Assumes $0.10/kWh off-peak electricity, $0.35/kWh on-peak electricity, an electric vehicle with 0.34/kWh efficiency, compared to a conventional vehicle with 30 mile/gallon efficiency, and a LCFS credit value of $50/tone C02e.
[9] *Proposed Amendments*, p. 34.
[10] California Public Utilities Commission, *Decision 11-07-029*, Conclusion of Law 10: "With limited exceptions, existing residential Electric Vehicle rates should apply to electric vehicle service providers operating in the residential setting."
[11] *See* NRDC, *Comments on the October 14, 2011 Low Carbon Fuel Standard Workshop*, October 21, 2011.

EVSPs will generally be utility customers. Given that utilities are obligated under §95484(a)(6)(A) to return all credit proceeds as direct benefits to EV customers, even when EVSPs are not the direct recipients of LCFS credits under §95484(a)(6)(B), they will still receive the benefits of utility credits generated under §95484(a)(6)(A). For example, if a utility complies with the requirement to return all credit proceeds to EV customers by using credit proceeds to reduce off-peak prices on EV rates, all EV customers, including EVSPs receiving service on EV rates, will benefit from the rate reduction.

3.3 ARB has the authority to require that credit all value be returned to electric vehicle customers

Section 95480.5 of the Proposed Amendments makes it clear that regulated parties and parties selling LCFS credits are subject to ARB's jurisdiction. Electricity providers choose to become regulated parties. Pre-conditions on the receipt of credits by entities under no obligation to participate do not infringe upon the authority of utility regulators, including the California Public Utilities Commission and the local governing boards of municipal utilities. As the agency charged with implementing the LCFS, ARB has exclusive authority to set the rules of the game. Electricity providers are not compelled to play, and will do so out of a desire to secure credit value for their customers. ARB is well within its own authority in requiring that all proceeds be returned to electric vehicle customers to encourage the use of electricity as a low carbon transportation fuel. NRDC supports the inclusion of Section 95480.5 as it makes this explicit.

3.4 NRDC supports the staff goal of addressing LCFS credit generation from electrification beyond the light-duty vehicle space

Staff has stated in workshops the intention to develop regulations for credit generation from the electrification of trains, buses, rail, and heavy duty vehicles, as well as non-road equipment. The use of electricity in these applications could potentially result in several million metric tons of greenhouse gas emission reductions.[12] We recognize that ARB has been working to resolve accounting questions to ensure that LCFS credit generation results in additional emission reductions beyond what is already occurring, and that this is a somewhat complex issue. NRDC supports the staff goal of ensuring the LCFS addresses the increased use of lower carbon fuels in these contexts and recommends the Board adopt a resolution instructing staff to develop regulations to enable credit generation from such technologies and to designate the appropriate regulated parties.

4 NRDC Requests Additional Time for the Sustainability Working Group to Address Issues Critical to the Long-term Success of the LCFS Program

NRDC strongly supports the efforts of ARB staff to develop and implement sustainability provisions for the LCFS, which are critical to realize the full environmental benefits of the program. The Sustainability Work Group ("SWG") has made significant progress over the last

[12] TIAX LLC, *Electric Transportation and Goods Movement Technologies in California: Technical Brief*, September, 2008. Available at http://www.arb.ca.gov/regact/2009/lcfs09/tiax.pdf.

year, delineating the broad provisions and providing an important forum for public feedback. However, much work remains to be done to finalize the criteria, incentives and reporting mechanisms necessary to ensure the effort is supported by a credible and cost effective regulatory mechanism which provides the appropriate incentives for regulated parties.

Resolution 09-31 directed the Executive Officer to work with stakeholders to develop a work-plan for sustainability provisions that would be used in implementing the LCFS regulation by December, 2009, and to complete the tasks contained within the work-plan by December, 2011.[13] The SWG has made significant progress in developing a science-based definition of sustainability and the specific provisions to be included in the LCFS regulation.

However, the work-plan includes additional components that have not yet been addressed, specifically: 1) how the sustainability provisions can incentivize sustainable fuels; 2) what provisions will be reviewed for inclusion in the LCFS regulation; 3) the framework for how sustainability provisions should be incorporated and enforced in the LCFS program; and 4) a schedule for finalizing the sustainability provisions. Additional work is needed to complete these elements. NRDC supports the continuation of this important work and respectfully requests that the Board extend the December, 2011 deadline to allow the SWG to address these issues and complete this critical process.

5 NRDC Supports the Expansion of the Credit Trading Market and the Anonymity Necessary for Efficient Transactions

5.1 NRDC recommends ARB expand the credit trading market

NRDC supports the current credit trading mechanism, but recommends that the market be expanded. ARB formed a work group under the LCFS Advisory Panel, led by Environmental Entrepreneurs ("E2"), to provide input and recommendations on this issue. As explained in the E2 letter of November 18, 2011, a transparent credit trading market will signal the value of carbon intensity reductions and encourage additional investments in the field. With a publicly available market price, producers of lower carbon fuels will be able to more accurately forecast the returns available from incremental improvements to their facilities. The expansion of the credit trading market is widely supported by the low carbon fuels industry, which considers the price transparency that will result from such a mechanism as key to the successful expansion of the sector. NRDC supports such an expansion and recommends ARB adopt the proposal outlined by E2.

5.2 ARB's regulations should allow for brokers to maintain the anonymity of buyers and sellers of LCFS credits

The Proposed Amendments allow for the use of third-party brokers to facilitate the sale and purchase of LCFS credits.[14] Competition between regulated parties in the transportation fuels

[13] California Air Resource Board, *Resolution 09-31.* April 23, 2009.
[14] *Proposed Amendments*, p. 91.

market could impede the level of activity needed for a healthy credit market. The use of third-party brokers could facilitate arm's length transactions and minimize the risk large numbers of credits go unsold, especially if such brokers are not required to disclose the identity of buyers and sellers. These brokers should, however, provide ARB with the identity of buyers and sellers for purposes of compliance and enforcement. NRDC recommends 15-day amendments to the Proposed Amendments to allow for such transactions as ARB builds upon the success of the first year of the program.

6 Conclusion

Provided Board actions to improve HCICO provision as suggested above, NRDC urges adoption of the Proposed Amendments. We commend ARB for its efforts to increase the use of alternative transportation fuels, reduce dependence on oil, and further California's broader environmental goals.

Sincerely,

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ATTACHMENT A

Requested Resolution Language to Improve HCICO Provisions

"BE IT FURTHER RESOLVED that the Board delegates to the Executive Officer the authority to amend the high carbon intensity crude oil provision through 15 day changes by summer of 2012 or as expeditiously as practical, to:

(1) Provide an additional option for individual regulated parties to report incremental deficits to the gasoline and diesel baseline on an individual refinery basis.

(2) Update, as needed, reporting requirements for regulated parties for purposes of calculating the carbon-intensity value of gasoline and diesel on an on-going basis. This may include, but is not limited to, data for crude oil supplied to California refineries including use by volume, marketing name, production method and parameters for purposes of the determination of carbon-intensity values using the Oil Production Greenhouse Gas Estimator (OPGEE) tool.

(3) Clarify that incremental deficits will be calculated on an annual basis.

The Board directs the Executive Officer to notify the Board of the initiation and results of any rulemakings conducted pursuant to this delegation