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**ATTACHMENT B**

**PUBLIC HEARING TO CONSIDER ADOPTION OF A PROPOSED REGULATION  
TO IMPLEMENT THE LOW CARBON FUEL STANDARD**

Staff's Suggested Modifications to the Original Proposal

TO BE PRESENTED AT THE APRIL 23, 2009 HEARING  
OF THE AIR RESOURCES BOARD

Note: Shown below are the staff's suggested modifications to the originally proposed regulatory text set forth in Appendix A to the Staff Report: Initial Statement of Reasons, released March 5, 2009. Only those portions containing the suggested modifications are included.

**Comments and Suggested Modifications to the Original Regulatory Proposal Set Forth in Attachment A to Resolution 09-31**

This document is printed in a style to indicate changes from the originally proposed regulatory language. All originally proposed regulatory language is indicated by plain type. Staff's suggested modifications to the original proposal are shown in underline to indicate additions to the original proposal and ~~strike through~~ to indicate deletions. All proposed modifications will be made available to the public for a fifteen-day comment period prior to final adoption.

**Modifications to section 95480.1, Applicability.**

It has been recommended that, in addition to exempting military tactical vehicles, the LCFS regulation also should not apply to military tactical equipment. Staff agrees that the LCFS should not apply to such equipment to the extent they are used for transportation purposes. Accordingly, staff proposes a modification to section 95480.1(d)(3) as follows:

Modify title 17, California Code of Regulations (CCR), §95480.1(d)(3) to read:

- (3) Military tactical vehicles and tactical support equipment, as defined in 13 CCR §1905(a) and 17 CCR §93116.2(a)(36), respectively.

**Modifications to section 95481, Definitions.**

1. It has been recommended that a definition is needed for "liquefied petroleum gas" (LPG or "propane") because it is exempted under section 95480.1(c)(2). Staff agrees and proposes a modification to section 95481 as follows:

Modify title 17, CCR, §95481(a) to add the following definition:

( ) “Liquefied petroleum gas (LPG or propane)” has the same meaning as defined in Vehicle Code section 380.

2. It has been recommended that the definition for “biogas” be expanded to include natural gas derived from thermal decomposition of biomass. This would better reflect the current state of biogas production technologies. Staff agrees and proposes a modification to section 95481(a)(5) as follows:

Modify title 17, CCR, §95481(a)(5) to read:

(5) “Biogas (also called biomethane) means natural gas that meets the requirements of 13 CCR §2292.5 and is ~~derived~~ produced from the breakdown of organic material in the absence of oxygen. Biogas is produced in processes including, but not limited to, anaerobic digestion, anaerobic decomposition, and thermo-chemical decomposition. These processes are applied to biodegradable biomass materials, such as manure, sewage, municipal solid waste, green waste, and waste from energy crops, to produce landfill gas, digester gas, and other forms of biogas. ~~of agricultural waste, animal waste, or other biomass.~~

#### **Modifications to section 95484, Requirements for Regulated Parties.**

1. Section 95484(c)(3)(C)1. (“Specific Quarterly Reporting Requirements for Electricity”) currently requires the electricity delivered to residential charging stations and used for transportation purposes to be reported based on direct metering. It has been recommended that, given the utilities’ planned phase-in of “smart” meters that would accomplish this goal in a few years, it could be unnecessarily burdensome to require direct metering in the early years of the LCFS program. It has accordingly been recommended that the objective can be accomplished with alternative methods that are equivalent to direct metering. Staff agrees and proposes that the regulatory language be modified to provide alternatives to direct metering in the early years.

2. Section 95484(d)(2) (“Evidence of Physical Pathway”) currently requires regulated parties to demonstrate or provide a sufficiently detailed demonstration of the delivery methods comprising the physical pathway for each of the regulated party’s fuels. It has been recommended that section 95484(d)(2) be modified to allow such demonstrations to be made by fuel producers that do not fall within the definition of “regulated party.” By allowing this change, regulated parties would be able to incorporate by reference the demonstrations provided by such fuel producers, thereby simplifying the physical-pathway demonstration process. In addition, it has been recommended that ARB publish a list of those entities that have completed the demonstration. Staff agrees and proposes that the regulatory language be modified to allow fuel producers who do not fall within the definition of “regulated party” to demonstrate or provide a sufficiently-detailed demonstration of the delivery methods

comprising the physical pathway; the modified language would also specify the listing on ARB's website of entities that have completed the demonstration.

### **Modifications to section 95485, LCFS Credits and Deficits.**

It has been recommended that section 95485(c)(1)(B) and (C) creates confusion in that (c)(1)(C) appears to allow the export of LCFS credits to other greenhouse gas initiatives, but (c)(1)(B) appears to prohibit at least some of the sales to such initiatives because it prohibits those entities, which are not LCFS regulated parties or acting on behalf of such regulated parties, from buying LCFS credits. Staff agrees the text can be clarified and proposes modifications to section 95485(c)(1)(A), (B) and (C) as follows:

Modify title 17, CCR, §95485(c)(1)(A), (B), and (C) to read:

- (A) retain LCFS credits without expiration for use within the LCFS market;
- (B) acquire or transfer LCFS credits. A third-party entity, which ~~that~~ is not a regulated party or acting on behalf of a regulated party, may not purchase, sell, or trade LCFS credits, except as otherwise specified in (C) below; ~~and~~;
- (C) export credits for compliance with other greenhouse gas reduction initiatives including, but not limited to, programs established pursuant to AB 32 (Nunez, Stats. 2006, ch. 488), subject to the authorities and requirements of those programs.

### **Modifications to section 95486, Determination of Carbon Intensity Values.**

1. *Lookup Tables, Methods 1/2A/2B.* Under the original proposal, no carbon intensity values would be set forth in the regulation itself. Instead, upon adoption of the LCFS regulation, the Executive Officer was directed to certify Method 1 carbon intensity (CI) values for various fuels and fuel pathways; these CI values would then be published in a "Lookup Table" to be used by regulated parties. Tables IV-20 and IV-21 of the Staff Report set forth the fuel and fuel pathway CI values identified by staff to date, using the CA-GREET model for direct effects and the GTAP model when applicable for indirect effects. Staff proposed that, at the hearing, the Board approve the CI values in Tables IV-20 and IV-21 of the Staff Report. It was anticipated that the initial "Method 1" CI values certified by the Executive Officer would be based on the Board-approved values with modifications reflecting any updated information and any new fuel pathways for which sufficient data had been developed by the time of certification.

The originally proposed regulation authorized the Executive Officer to subsequently certify new CI values or modifications to the Lookup Table values at his or her own initiative. It also included two methods under which a regulated party could apply for

Executive Officer certification of a modified or new pathway or new pathway. Method 2A covered proposed modifications to inputs already incorporated in CA-GREET, to reflect the conditions specific to the regulated party's production and distribution process. Method 2B covered the generation of a proposed new fuel pathway, using the CA-GREET model and, if indirect effects are involved, GTAP or an equivalent model.

Staff has become concerned that under the original proposal, the Executive Officer's action of certifying CI values could have the effect of establishing an important element of the regulation without following the rule-adoption process or applying robust criteria in the regulation that significantly narrow the Executive Officer's discretion in certifying CI values. This could result in disapproval of the mechanism by the Office of Administrative Law. Concerns have also been raised that, as initially proposed, the certification process might not be sufficiently transparent.

Staff accordingly recommends that section 95486 be modified to make the Lookup Table and its carbon intensity values part of the regulation. While the CI values could only be amended or expanded by regulatory amendments, in Resolution 09-31 the Board would delegate to the Executive Officer the responsibility to conduct the necessary rulemaking hearings and take final action on any amendments, other than amending indirect land-use change values included in the Lookup Table as adopted in this LCFS rulemaking. This is appropriate because of the technical nature of the CI determinations and the need to expedite the amendment process. Staff intends to develop for consideration by the Board in December specific guidance on establishing CI values that, if feasible, could become part of a certification process.

*The Proposed Lookup Tables.* Set forth below are the two Lookup Tables proposed for inclusion in section 95486. They are based on the Staff Report's Tables IV-20 and IV-21. For ease of review, text identical to the Staff Report's tables is shown in normal type; currently proposed additions are shown in underline and deletions are shown in strikeout.

**Table IV-20**  
**Lookup Table for Carbon Intensity Values**  
**for Gasoline and Fuels that Substitute for Gasoline**

| Fuel   | Pathway Description  | Carbon Intensity Values (gCO <sub>2</sub> e/MJ) |                                   |        |
|--|--|---|-----------------------------------|--------|
|  |  | Direct Emissions                                | Land Use or Other Indirect Effect | Total  |
| Gasoline   | CARBOB – based on the average crude oil delivered to California refineries and average California refinery efficiencies  | 95.86   | 0                                 | 95.86  |
| Ethanol from Corn                                  | Midwest average; 80% Dry Mill; 20% Wet Mill; Dry DGS   | 69.40   | 30                                | 99.40  |
|  | California average; 80% Midwest Average; 20% California; Dry Mill; Wet DGS; NG   | 65.66   | 30                                | 95.66  |
|  | California; Dry Mill; Wet DGS; NG  | 50.70   | 30                                | 80.70  |
|  | Midwest; Dry Mill; Dry DGS, NG   | 68.40   | 30                                | 98.40  |
|  | Midwest; Wet Mill, 60% NG, 40% coal  | 75.10   | 30                                | 105.10 |
|  | Midwest; Dry Mill; Wet; DGS  | 60.10   | 30                                | 90.10  |
|  | California; Dry Mill; Dry DGS, NG  | 58.90   | 30                                | 88.90  |
|  | Midwest; Dry Mill; Dry DGS; 80% NG; 20% Biomass  | 63.60   | 30                                | 93.60  |
|  | Midwest; Dry Mill; Wet DGS; 80% NG; 20% Biomass  | 56.80   | 30                                | 86.80  |
|  | California; Dry Mill; Dry DGS; 80% NG; 20% Biomass   | 54.20   | 30                                | 84.20  |
| California; Dry Mill; Wet DGS; 80% NG; 20% Biomass | 47.40  | 30  | 77.40                             |        |
| Ethanol from Sugarcane                             | Brazilian sugarcane using average production processes   | 27.40   | 46                                | 73.40  |
|  | <u>Direct pathways for Brazilian sugarcane (e.g., use of bagasse for electricity production as a co-product credit), as deemed warranted by the Executive Officer.</u> |   | 46                                |        |
| Compressed Natural Gas                             | California NG via pipeline; compressed in California   | 67.70   | 0                                 | 67.70  |
|  | North American NG delivered via pipeline; compressed in California   | 68.00   | 0                                 | 68.00  |
|  | Landfill gas (bio-methane) cleaned up to pipeline quality NG; compressed in California   | 11.26   | 0                                 | 11.26  |
| <u>Liquefied Natural Gas</u>                       | <u>Pathways for North American-sourced LNG and biogas-sourced LNG liquefied in California</u>  |   |                                   |        |
| Electricity  | California average electricity mix   | 124.10  | 0                                 | 124.10 |
|  | California marginal electricity mix of natural gas and renewable energy sources  | 104.70  | 0                                 | 104.70 |
| Hydrogen   | Compressed H <sub>2</sub> from central reforming of NG <u>(includes liquefaction and regasification steps)</u>   | 142.00  | 0                                 | 142.00 |
|  | Liquid H <sub>2</sub> from central reforming of NG   | 133.00  | 0                                 | 133.00 |
|  | Compressed H <sub>2</sub> from central reforming of NG <u>(no liquefaction and regasification steps)</u>   | 98.80   | 0                                 | 98.80  |
|  | Compressed H <sub>2</sub> from on-site reforming of NG   | 98.30   | 0                                 | 98.30  |
|  | <u>SB 1505 Scenario</u> ; Compressed H <sub>2</sub> from on-site reforming with renewable feedstocks   | 76.10   | 0                                 | 76.10  |

**Table IV-21  
Lookup Table for Carbon Intensity Values  
for Diesel and Fuels that Substitute for Diesel**

| Fuel                         | Pathway Description   | Carbon Intensity Values (gCO <sub>2</sub> e/MJ) |                                   |                           |
|------------------------------|---|---|-----------------------------------|---------------------------|
|                              |   | Direct Emissions                                | Land Use or Other Indirect Effect | Total                     |
| Diesel                       | ULSD – based on the average crude oil delivered to California refineries and average California refinery efficiencies | 94.71   | 0                                 | 94.71                     |
| <u>Biodiesel</u>             | <u>Pathways for conversion of Midwest soybeans, waste oils to biodiesel (fatty acid methyl esters - FAME)</u>         |   |                                   |                           |
| <u>Renewable Diesel</u>      | <u>Pathways for conversion of Midwest soybeans, waste oils to renewable diesel (FAME)</u>                             |   |                                   |                           |
| Compressed Natural Gas       | California NG via pipeline; compressed in California  | 67.70   | 0                                 | <del>75.22</del><br>67.70 |
|                              | North American NG delivered via pipeline; compressed in California  | 68.00   | 0                                 | <del>75.56</del><br>68.00 |
|                              | Landfill gas (biogas-methane) cleaned up to pipeline quality NG; compressed in California                             | 11.26   | 0                                 | 11.26                     |
| <u>Liquefied Natural Gas</u> | <u>Pathways for North American-sourced and biogas-sourced NG liquefied in CA</u>                                      |   |                                   |                           |
| Electricity                  | California average electricity mix  | 124.10  | 0                                 | 124.10                    |
|                              | California marginal electricity mix of natural gas and renewable energy sources                                       | 104.70  | 0                                 | 104.70                    |
| Hydrogen                     | Compressed H <sub>2</sub> from central reforming of NG (includes liquefaction and regasification steps)               | 142.00  | 0                                 | 142.00                    |
|                              | Liquid H <sub>2</sub> from central reforming of NG  | 133.00  | 0                                 | 133.00                    |
|                              | Compressed H <sub>2</sub> from central reforming of NG (no liquefaction and regasification steps)                     | <u>98.80</u>                                    | <u>0</u>                          | <u>98.80</u>              |
|                              | Compressed H <sub>2</sub> from on-site reforming of NG  | 98.30   | 0                                 | 98.30                     |
|                              | <del>SB 1505 Scenario</del> ; Compressed H <sub>2</sub> from on-site reforming with renewable feedstocks              | 76.10   | 0                                 | 76.10                     |

The Lookup Tables have been modified to add pathways for three additional fuels – biodiesel, renewable diesel, and liquefied natural gas, along with a pathway for ethanol from sugarcane. As part of the 15-day change process, the final regulation will specify CI values for one or more pathways for each of the additionally identified fuels.

As staff continues its work on the CI values, additional documentation will be posted on the LCFS webpage when it becomes available. In addition, the final proposed tables (and any additional documentation being relied upon) will be available as part of a formal notice for a supplemental comment period of at least 15 days (longer if time permits). The Tables released with the 15-day modifications may include any further refinements to the previously presented CI values, along with the supporting technical analysis.

*Methods 2A and 2B.* The considerations precluding at this time a certification system for the Executive Officer's determination of CI values at his own initiative similarly preclude a certification system for acting on requests from regulated parties under Methods 2A and 2B. However, the staff continues to believe that the Method 2A and 2B mechanisms provide appropriate criteria for determining the circumstances in which the regulation will be amended to provide customized Lookup Table values or new pathways in response to regulated party requests. Inclusion of these methods will also give regulated parties advance notice of the necessary documentation, so that the Executive Officer can conduct and complete the rule-amendment process as expeditiously as possible. Staff accordingly recommends that Methods 2A and 2B be retained, with appropriate modifications, for identifying when a regulated party request will trigger an Executive Officer rulemaking on customized Lookup Table values or new pathways. At a minimum, staff is proposing modifications to the regulatory text relating to the public review process in Methods 2A and 2B to make it consistent with the rulemaking process set forth in the Administrative Procedure Act.

2. Section 95486(b)(2) currently contains a provision that applies to high-carbon intensity crude oil (i.e., crudes with production-and-transport carbon intensity that is greater than 15.00 g CO<sub>2</sub>e/MJ). However, it has been recommended that the regulatory language is not clear as to how a regulated party would report the carbon intensity of such fuels. Staff agrees that the original proposed language is unclear and proposes to modify the language to clarify that increases in calculated greenhouse gas emissions are to be treated as a deficit for purposes of determining annual compliance with the standards and to include appropriate calculation procedures.

### **Modifications to section 95489, Regulation Review.**

It has been recommended that additional Executive Officer review be required in this provision and with more specificity with regard to the scope of the reviews. Staff agrees and proposes modifications to section 95489 as follows:

Modify title 17, CCR, §95489 to read:

## Section 95489. Regulation Review

~~The Executive Officer shall conduct a review of the implementation of the LCFS program by January 1, 2012. The Executive Officer shall determine the scope and content of the review.~~

As provided in this section, the Executive Officer shall conduct two reviews of the implementation of the LCFS program. The first review shall be completed and presented to the Board by January 1, 2012; the second review shall be completed and presented to the Board by January 1, 2015.

- (a) The scope of each review shall include, at a minimum, consideration of the following areas:
- (1) The LCFS program's progress against LCFS targets;
  - (2) Adjustments to the compliance schedule, if needed;
  - (3) Advances in full, fuel-lifecycle assessments;
  - (4) Advances in fuels and production technologies, including the feasibility and cost-effectiveness of such advances;
  - (5) The availability and use of ultralow carbon fuels to achieve the LCFS standards and advisability of establishing additional mechanisms to incentivize higher volumes of these fuels to be used;
  - (6) An assessment of supply availabilities and the rates of commercialization of fuels and vehicles;
  - (7) The LCFS program's impact on the State's fuel supplies;
  - (8) The LCFS program's impact on state revenues, consumers, and economic growth;
  - (9) An analysis of the public health impacts of the LCFS at the state and local level, including the impacts of local infrastructure or fuel production facilities in place or under development to deliver low carbon fuels, using an ARB approved method of analysis developed in consultation with public health experts from academia and other government agencies;
  - (10) An assessment of the air quality impacts on California associated with the implementation of the LCFS; whether the use of the fuel in the State will affect progress towards achieving State or federal air quality standards, or results in any significant changes in toxic air contaminant emissions; and recommendations for mitigation to address adverse air quality impacts identified;
  - (11) Identification of hurdles or barriers (e.g., permitting issues, infrastructure adequacy, research funds) and recommendations for addressing such hurdles or barriers;
  - (12) Significant economic issues; fuel adequacy, reliability, and supply issues; and environmental issues that have arisen; and



- (13) The advisability of harmonizing with international, federal, regional, and state LCFS and lifecycle assessments.
- (b) The Executive Officer shall establish an LCFS advisory panel by July 1, 2010. Panel participants should include representatives of the California Energy Commission; the California Public Utilities Commission; fuel providers; storage and distribution infrastructure owner/operators; consumers; engine and vehicle manufacturers; environmental justice organizations; environmental groups; academia; public health; and other stakeholders and government agencies as deemed appropriate by the Executive Officer. The advisory panel shall participate in the reviews of the LCFS program required by this section, and the Executive Officer shall solicit comments and evaluations from the panel on the ARB staff's assessments of the areas and elements specified in section (a) above, as well as on other topics relevant to the periodic reviews.
- (c) The Executive Officer shall conduct the reviews specified above in a public process and shall conduct at least two public workshops for each review prior to presenting the reports to the Board. In presenting the results of each program review to the Board, the Executive Officer shall propose any amendments or such other action as the Executive Officer determines is warranted.

#### **Addition of new section 95490, Enforcement Protocols.**

It has been recommended that the LCFS regulation be modified to allow the Executive Officer to enter into an enforceable written protocol with a regulated party or other person to identify conditions under which the person may comply with the recordkeeping, reporting, and demonstration of physical pathway requirements in the LCFS under mechanisms equivalent to those specified in the regulation. This would allow the accommodation of circumstances particular to the person while still requiring compliance with the regulatory requirements. Staff agrees and proposes a new section 95490 as follows:

Add title 17, CCR, §95490 to read:

#### **Section 95490. Enforcement Protocols**

Notwithstanding section 95484(c) and (d), the Executive Officer may enter into an enforceable written protocol with any person to identify conditions under which the person may lawfully meet the recordkeeping, reporting, or demonstration of physical pathway requirements in section 95484(c) and (d). The Executive Officer may only enter into such a protocol if he or she reasonably determines that the provisions in the protocol are necessary under the circumstances and at least as effective as the applicable provisions specified in section 95484(c) and

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(d). Any such protocol shall include the person's agreement to be bound by the terms of the protocol.