Western States Petroleum Association Comments
on the Proposed CARB Alternative Diesel Fuels Regulation
June 13 Staff Workshop

Note: WSPA understands the newly proposed amendments to the CARB diesel regulation, that are separate from the amendments necessary to advance the new alternative diesel fuels regulatory sections, will not be considered during the September 2014 CARB Board hearing.

We have therefore withheld the majority of the comments related to those sections, apart from some comments directed at the definitions in both regulations, until such time as ARB decides to move forward with further consideration of the CARB diesel regulatory amendments. The comments on definitional consistency may not be complete and we look forward to additional time to address this thoroughly.

Below are WSPA’s comments/questions on the Alternative Diesel Fuels Regulation Outline in addition to several definitional comments on the CARB Diesel Regulation in 13 CCR 2281-2288, as it relates to the ADF regulation.

Generic – Proposed Regulatory Framework

The proposed Alternative Diesel Fuel (ADF) regulation permits ARB to implement a new regulatory approach where an ADF (e.g. a B20 blend) is allowed in the state, because the ARB Executive Officer has determined that the NOx and/or other air pollutant impacts resulting from use of this fuel in California will not reach a “significantly” adverse level - based on the volume of the ADF sales and other factors such as the penetration of advanced NOx control devices in the diesel vehicle fleet. ARB is proposing to implement a “trigger-activated” mitigation strategy where a minimum projected adverse ambient air quality impact would have to be reached for two consecutive years before the need to implement a mitigation strategy twelve months thereafter.

This initial concept of a “significance level” not being reached, and therefore ADF sales being allowed, is very different from the approach in the CARB diesel aromatics regulation (for NOx control). The existing CARB diesel aromatics regulation is very prescriptive in ensuring no NOx increase occurs (not a NOx increase below some significance level).

We would like to see more definition in the proposed rulemaking on what the proposed trigger level will be and how it was developed. We also want to have staff explain in more detail what tools/methods/procedures they will use to translate the ambient air quality trigger level back to a biodiesel use threshold. We are concerned at the absence of clarity in these key areas that could significantly impact the practicality of the proposed regulatory concept that staff has introduced. The outline does not provide sufficient information to properly evaluate this regulation.
Possible Principles:
As indicated, WSPA needs additional details in order to assess the proposed regulatory approach and provide definitive feedback. If ARB continues with this approach, however, there are some initial principles that may need to be considered:

- The proposal be kept as simple as possible, e.g., a single state-wide ambient NOx trigger level corresponding to a single state-wide biodiesel average use level in diesel.
- Once the ambient trigger level has been set, it should remain unchanged throughout the duration of the program, or until it has been exceeded.
- Consideration of offsetting ADFs. (i.e., renewable diesel)
- Balance between reporting biodiesel (and other ADF) use information and lessening any incremental burden on the industry. Possible use of existing recordkeeping and reporting requirements associated with LCFS.
- Ensuring program is finite and tied to market penetration of advanced-emission controlled heavy duty diesel engines such as those featured in 2010 and newer trucks.

Staff’s Proposed Mitigation Options:
As far as the options available to suppliers should mitigation be required, the issues remain the same as previously outlined to ARB staff during the workshops held to outline the different proposed alternatives and secure industry feedback in terms of their viability and practicality.

For example, the option to blend the biodiesel into a base diesel that contains less than or equal to 6.4 percent aromatics and a cetane number greater than or equal to 67 is unrealistic and impractical. While one could argue that there seems to be no distinction in staff’s proposal of the anticipated level of NOx increase associated with a B6 blend versus a B20 blend, the fact remains that staff’s proposal would not become any more workable at this fuel property range, even if it comprehended a range of base fuel requirements based on biodiesel content. Given that the supply of base diesel meeting these specifications is likely to be extremely limited (as discussed below), this compliance option may be economically unattractive for blenders given the likelihood of small volumes of costly to produce CARB-compliant base diesel.

The property specifications (for diesel suitable for blending B6-B20) effectively eliminate petroleum-derived diesel, essentially leaving renewable diesel and GTL diesel as the materials that one has to blend biodiesel into. It is unclear how staff envisions the supply outlook for these materials, but some rudimentary calculations would quickly show that the volumes required to effectively mitigate biodiesel (at the B6-B20 level) in this fashion would require volumes that are simply not readily available in the marketplace. Moreover, controlling and directing their use in the refining and distribution system to provide terminals with access to the appropriate base diesel at community storage locations likely to be logistically very difficult. It would require segregating out a separate diesel grade on the fungible pipeline system “suitable for B6-B20 blending” and the volumes are currently limited, leaving this compliance alternative...
as a potential option only for proprietary distribution systems to entertain, assuming their owners/operators can: a) secure the renewable diesel and/or GTL diesel volumes necessary at the targeted locations, and b) choose to blend biodiesel with/into whatever limited volumes of these ADFs they have available rather than blending the ADFs directly into their diesel pool.

The option to conduct emissions testing to demonstrate equivalence for a formula containing the applicant desired maximum volume of biodiesel (in the B6 to B20 range) also suffers from serious shortcomings that are likely to limit its usefulness. First, the process to prepare the necessary fuels, conduct preliminary testing to arrive at a candidate fuel that should yield equivalent emissions to CARB’s reference 10% aromatics fuel, secure ARB’s approval for the testing protocol, conduct the official testing, and repeat the process until passing emission results are obtained is a lengthy and very expensive one. It is not unreasonable to expect that it may take 18-24 months from start to completion and that the cost will be $2-3 million dollars on average. These figures can increase substantially depending on the number of “tries” necessary before passing results (i.e., emissions equivalence) can be demonstrated to ARB’s satisfaction. Adding to these simple “time and money” considerations, are obvious “hurdle” candidate fuel requirements in the regulation that, either directly or indirectly, call for:

- Very specific distillates (straight run from California sourced crude),
- Very narrow range of allowable candidate fuel properties (that staff is further narrowing in this regulation),
- Outside contract laboratory emissions testing since internal capabilities are currently non-existent,
- Implementation of a new “official” test engine (on which the emissions equivalence testing is to be conducted post 2015) that industry has extremely limited experience with,
- Technical expertise in the fuels blending and emissions testing area which is currently limited to very few among the group of potential biodiesel blenders.

It is difficult to project entities being interested in such an undertaking in terms of resources, time and money to conduct a program for compliance with the mitigation requirements of a “finite” program such as the one staff has put forward. The inherent hurdle that a fuel blender must overcome in possibly spending 2 years plus $3 million in the lab to certify an equivalent formula (plus whatever additional time and capital investment will be necessary to modify refinery processing and blending operations to produce the “new” base diesel formula once successful certification is obtained), is nothing less than daunting. The specter of having the program potentially sunset shortly thereafter, may well be a sufficient deterrent for fuel blenders to effectively eliminate this option as a potential mitigation in the short term.

Mitigation Timeframe:
The above discussion naturally leads to a key question that review of staff’s proposed regulation order and outline of proposed ADF regulation leave unanswered: “How long
might the period be where mitigation for B6-B20 is required?” From an economic standpoint it is imperative that ARB staff provide their best answer/estimate on this key issue to their Board and the regulated community as part of this rulemaking. There is sufficient information available on fleet turn-over rates for staff to be able to estimate approximately how long it will take (in years) before 2010 heavy duty truck “technology” featuring NOx traps and particulate filters reaches the target threshold level for sun setting the program. It is recognized that the estimate might feature a time range (e.g., 8-10 years) and that it will need to be revised along the way based on updated fleet turnover information. However, it is not possible to perform meaningful economic calculations to justify investment on any of the compliance options (mitigation alternatives) without some basic information on the length of the period over which the return-on-investment will be evaluated.

Specific

A. Specific to Section 2293

1. Based on the ADF approach using “stages”, “performance criteria”, and “significance levels”, we have the following questions:

- The “significance level” percentage increase in NOx statewide triggering mitigation in moving from Stage 2 to Stage 3 has not been identified by ARB. What will this percentage be, and what is the basis/justification?
- The protocol for the mitigation threshold also needs to be defined. Moreover, given the findings of prior studies by ENVIRON on impacts of hypothetical increases in biodiesel penetration in Southern California on ozone levels (all significantly less than 1 ppb), how is ARB going to determine what percentage of statewide emissions corresponds to a need for mitigation in the first place? Is this evaluation done statewide or regionally (e.g. at air district level)?
- Will there be a public comment period or hearing before or after the Executive Officer publishes by July 1st of each year the report on performance criteria results and the determination that a significance level has been reached or not?
- In section 2294.4 “General Prohibition and Requirements Applicable to All ADFs”, the proposed effective date is listed as July 1, 2014. Also the effective date for the proposed amendments to the CARB diesel regulations (13 CCR 2281-2288) is unknown. Can ARB confirm the October 4, 2011 Biodiesel Regulatory Guidance Document continues to be in effect in the interim?
- Section 2294.4 (c) states “All ADFs must meet applicable Division of Measurement Standards fuel regulations (4 CCR sections 4140-4148, 4200, and 4202-4205). This requirement should be deleted. It is redundant to state requirements that fall under the control of other agencies within California.

• In the Stage 2 portion of the 2293.5 Phase-In Requirements section, staff states that “Biodiesel falls within this stage.” For clarity, please confirm that the word “biodiesel” means B100 falls into this stage but not B20, which will be further regulated under proposed amendments in 13 CCR 2282.

• In section 2293.6 staff proposes, “All producers and importers of an ADF that falls within Stage 1, 2 3, or 4 shall provide quarterly and annual reports for each ADF on: Sales volume and blend levels of each ADF…” Staff should recognize that ADF producers and importers may not be the actual blenders of ADF with CARB diesel fuel. ADF producers do not necessarily know how the blender is using what they purchased. In the case of biodiesel blends, ARB will have to obtain information on the volume of B6-B20 sales from other sources. ARB should not require additional reporting from parties blending up to 5% biodiesel with CARB diesel as this is the likely default case and the volume of biodiesel going into B5 blends can be back-calculated by ARB by difference based on the total volume of B100 produced/imported and the volume of B20 blended/sold in California. Does this requirement preclude blend stocks?

2. B5 should not require any more reporting than is currently required as it meets ASTM D975 and CARB Diesel regulations.

3. What is the reason for adding an API gravity specification for alternative diesel fuels?

4. The “Equivalent Test Method” ASTM D4052-96(2002) for API Gravity is not listed. It is currently listed as an accepted equivalent method for CARB Diesel Fuel specification testing. Please clarify the omission or add the option.

5. 2293.2. Applicability (Green underlined is a recommended addition)

   • Applies to any person who sells, offers for sale, or supplies alternative diesel fuel intended for use in motor vehicles in California, including producers, importers, and blenders.

   • Applies to any liquid (at ambient conditions) fuel meant for use in a diesel engine in California that does not have an applicable specification under 13 CCR section 2292. Note: This is to be consistent with 2293.4 and to allow an exemption for exports (below):

5.2293.4. General Prohibition and Requirements Applicable to All ADFs:
Starting July 1, 2014, no person shall sell, offer for sale or supply an alternative diesel fuel intended for use in motor vehicles in California unless the alternative diesel fuel meets the applicable requirements specified in this regulation.

6. In Section 2293.3: (Redline strikeout is recommended deletion)
• B1-B5 blends meeting 13 CCR 2280-2285 are not subject to the mitigation requirements in Stage 1, 2 or 3. Monitoring and reporting requirements remain in effect.

7. Appendix A. Mitigation Measures:

• As part of the mitigation strategy, a supplier should have the option to offset emissions from an alternative diesel fuel with the use of other emissions mitigating diesel fuels such as renewable diesel or GTL, but not necessarily in the same gallon of fuel. Flexibility in how emissions are mitigated should be provided. One option would be to allow for an aggregate average across all gallons supplied rather than a per gallon requirement.

• Given the different scenarios tested in the ARB Biodiesel/Renewable Diesel study, all identified options should be allowed and listed in Appendix A. For example the blend ratio of renewable diesel or GTL diesel to biodiesel that would mitigate NOx emissions should be listed.

8. Definitional issues in 2293.7 (and the proposed ARB diesel regulation amendments in 2281-2288, 2290, and 2293) need to be consistent regarding, among other thing, the definitions for:
  • “diesel”
  • “final blend”
  • “alternative diesel fuel”
  • “vehicular diesel fuel”
  • “biodiesel”
  • “B20”
  • “hydrocarbon”

Below are various definitions from the proposed ARB Diesel Amendments in sections 2281-2288 and from the proposed Alternative Diesel Regulation section “2293”. Red strikeout denotes further deletions and underlined green font denotes further additions recommended by WSPA. For context within a section, several definitions are also listed as proposed by ARB staff. Unless specifically noted, WSPA is not suggesting edits to those particular existing, or ARB staff proposed, definitions.

• Alternative Diesel Fuel – In section 2281 of the diesel fuel regulation it says the following:
  § 2281. Sulfur Content of Diesel Fuel.
  (b) Definitions
  (0.11) “Alternative diesel fuel” means a fuel that is listed with specifications under 13 CCR 2293.7.

  (0.12) “Alternative fuel” is defined in 13 CCR 2290(a)(1).
This is inconsistent with Section 2293.7 of the proposed Alternative Diesel Fuels Regulation, so these two areas need to be made consistent.

- “Diesel fuel” means any fuel that is liquid at ambient conditions and is commonly or commercially known, sold or represented as diesel fuel, including any mixture of primarily liquid hydrocarbons—organic compounds consisting exclusively of the elements carbon and hydrogen—that is sold or represented as suitable for use in an internal combustion, compression-ignition engine. Alternative diesel fuel, such as B100, is not diesel fuel; however, diesel fuel may contain alternative diesel fuel up to specified volume percentages in 13 CCR 2282 [added to account for B5 and B20]. Alternative fuel is not diesel fuel.

- (12) “Vehicular diesel fuel” means any diesel fuel (A) which is not conspicuously identified as a fuel which may not lawfully be dispensed into motor vehicle fuel tanks in California; or (B) which the person selling, offering for sale, or supplying the diesel fuel knows will be dispensed into motor vehicle fuel tanks in California; or (C) which the person selling, offering for sale, or supplying the diesel fuel in the exercise of reasonable prudence should know will be dispensed into motor vehicle fuel tanks in California, and that is not the subject of a declaration under penalty of perjury by the purchaser, offeree or recipient stating that s/he will not sell, offer for sale, or transfer supply the fuel for dispensing, or dispense the fuel, into motor vehicle fuel tanks in California.

§ 2282. Aromatic Hydrocarbon and Biodiesel Contents of Diesel Fuel.
(b) Definitions.
(0.11) “Alternative Diesel” – No change recommended here but needs to be consistent with 2293.7.

(0.12) “Alternative fuel” – same

(0.61) “Biodiesel” means a fuel comprised of mono-alkyl esters of long-chain fatty acids derived from vegetable oils or animal fats, designated B100.

This is an abbreviated definition. WSPA suggests ARB insert the more robust definition listed in the LCFS regulation section 17 CCR 95481(a)(6). That more robust definition cites (a) 40CFR79 registration, (b) being a mono-alkyl ester, (c) meeting D6751-10 (d) intended in use for diesel engines, and (e) derived from non-petroleum renewable resources. Staff could also use the following: Biodiesel means the mono-alkyl esters of long chain fatty acids derived from plant or animal matter that meet: The registration requirements for fuels and fuel additives under 40 CFR part 79; and the requirements of ASTM standard D6751-10 “Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels.”
(0.62) “B20” means a diesel fuel consisting of 6.01 to 2000 percent-by-volume biodiesel, inclusive, and the remaining percent-by-volume liquid hydrocarbons meeting the definition in 2293.7. — organic compounds consisting exclusively of the elements carbon and hydrogen. Any fuel that is labeled or otherwise identified as “B20” is deemed to have a biodiesel content exceeding 5.00 percent by volume, but not allowed to exceed 2000 percent by volume.

As another example that 5.01 to 20.00 vol% contains too many significant figures, ARB’s own LCFS regulation in section 95481(a)(7) says “Biodiesel Blend” means a blend of biodiesel and diesel fuel containing 6% (B6) to 20% (B20) biodiesel and meeting ASTM D7467-08 (October 1, 2008), Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to 20), which is incorporated herein by reference.

Section B of our comments discusses the issue of significant figures further, however stating biodiesel content to the second decimal point is infeasible from an analytical standpoint as well. From a blending standpoint, anything tighter than a +/- 0.5 volume percent target is not possible for many of the blenders currently in operation. ARB’s proposed tighter margin, should it not be revised, necessitates setting lower targets than the nominal blend designation would indicate. For example a B5 would really be a blend with approximately 4.5 volume percent biodiesel content and a B20 would really be a blend with approximately 19.5 volume percent biodiesel content. This approach is inconsistent with facilitating meeting LCFS and RFS targets and is inconsistent with established industry practice which follows ASTM standards in allowing a nominal B5 blend to contain as much as 5.49 percent. Targets could be even lower to accommodate test reproducibility.

Moreover, in the case of B5 blends, forcing industry to an average 4.5 volume percent level (rather than 5 percent) essentially takes 10% of the possible biodiesel blend volume out of the California market.

(3) “Diesel fuel” - Insert same revised definition proposed above- “Diesel” in section 2281.

(6) “Final blend” means a distinct quantity of diesel fuel which is introduced into commerce in California from a production facility or import facility without further alteration which would tend to affect the fuel’s aromatic hydrocarbon content. A “final blend” does not contain biodiesel.

Based on later, definitional changes the intent is that “Final Blends” include “Drop-In Fuels” defined in the ADF section 2293.
All definitions need to be consistent with those above for:
- Alternative Diesel Fuel
- Alternative Fuel
- Biodiesel
- B20
- CDF-for-B20
- Diesel Fuel
- Final Blend

10. Modifications to definitions in “2293.7”

(1) “Alternative diesel fuel” or “ADF” means any fuel used in a compression ignition engine that is liquid at ambient conditions, does not consist solely solely of hydrocarbons according to the definition in this section, and does not have an applicable specification under 13, CCR, section 2292.

(2) “Biodiesel” means an alternative diesel fuel that meets the definition of “biodiesel” in the LCFS regulation (17 CCR 95481(a)).

(3) “Hydrocarbon” means any homogeneous mixture or solution with elemental composition primarily of carbon and hydrogen and also containing sulfur, oxygen or nitrogen from residual impurities and contaminants and excluding added oxygenated materials. This is the definition of “hydrocarbon oil” within the ASTM D975 diesel standard.

(4) “Drop-in Fuel” means a non-conventional CARB diesel fuel which is blended with other CARB diesel already meeting the requirements of sections 2281-2288 beyond the refinery gate downstream of a production or import facility or used as a neat fuel and is either:
- chemically identical to a hydrocarbon liquid at ambient conditions and meets the requirements for CARB diesel in sections 2281-2288, or its chemical and physical properties fall within the ranges of those properties for CARB diesel.
- Renewable diesel, Gas To Liquid, and similar hydrocarbon fuels are presumed to meet the above criteria, and are therefore not considered to be ADFs.

(10) “Significance Level” means a potential increase of __% [what is this percentage?] in NOx statewide, or an incremental increase of any other air pollutant determined by the Executive Officer, as a potentially significant adverse impact in the particular air pollutant. The significance level reflects the sales volume of an ADF that [Redundant and overly specific as this point, and is covered by the definition of “Performance Criteria” under #8] would trigger the application of mitigation measures to the extent needed to bring the pollutant level below the significance level.
B. Comments on CARB Diesel Regulation in 13 CCR 2281-2288: as it relates to the ADF regulation

1. Throughout the amendments, the significant number of figures for property limits should not be increased (e.g. changing distillation temperature limit specifications from the ones column to the tenths column). Changing the number of significant figures in a specification is changing the standard. While the number of significant figures set in a regulatory standard should consider the number of significant figures in the test method for reporting purposes, the number of significant figures in the regulatory standard (for compliance) should also consider:
   a. the reproducibility of the test method, and
   b. the necessity for the increased or decreased number of significant figures (the perceived benefits versus the potential increased costs of compliance).

ARB has not shown the need for changing the standard to control the property limits to additional significant figures.

2. As stated above, with respect to B5 and B20 blends, the volume specification limits should be 5 vol% maximum for blends up to B5, and 6 vol% to 20 vol% for B20. Listing the specifications with additional significant figures such as 5.00 vol% and 5.01 vol% to 20.00 vol%:
   a. Is overly prescriptive and unjustified,
   b. Is inconsistent with the 5% limit in ASTM D975, the 6-20% limit in ASTM D7467, the FTC’s fuel rating rules in 16 CFR306, and even in the ARB LCFS regulation where the definition in 17 CCR 95481(a)(7) states:

   “Biodiesel Blend” means a blend of biodiesel and diesel fuel containing 6% (B6) to 20% (B20) biodiesel and meeting ASTM D7467-08 (October 1, 2008), Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to 20), which is incorporated herein by reference,
   c. Does not include the measurement errors associated with flow meters measuring the blend rate, the tank heel or the fact that different biodiesel blendstocks will have varying effects on the results as well. D7471 was developed with Soy methyl esters only. See Annex A2 in ASTM D7471, and,
   d. May possibly result in otherwise unnecessary lower levels of biodiesel blending into diesel fuel and or corrections, when ARB is trying to promote the use of biofuels in the marketplace.

As an example, in a case where a blender targets the addition of 50 gallons of biodiesel to 950 gallons of CARB diesel to make a 1,000 gallon total B5 blend in the compartment of truck, an actual end of blend metered reading of 51 gallons of biodiesel (just 1 gallon more) into the blend, might be considered under ARB’s proposed number of significant figures as 5.1 vol% biodiesel and deemed non-compliant based on the final metered volumes. With the truck compartment potentially at its safe fill
volume at this point, the compartment volume might have to be pumped off and the process restarted.

Similarly if 50 gallons of biodiesel was actually added to the blend, but only 948 gallons of CARB diesel were added to the load (2 gallons short of the 950 gallons targeted) based on the meter readings:

- The total blend volume would be 998 gallons, and
- Mathematically the biodiesel content of the load would be 5.01 vol% (50 gallons of biodiesel in a 998 gallon total blend volume) and potentially non-compliant.

WSPA agrees that in this example, the blending control set points/control targets for the volumes in the blend should not be set higher than an absolute value of 50 gallons for the biodiesel and no less than an absolute value of 950 gallons of CARB diesel, but as written the biodiesel content specification to the hundredths place, or even the tenths place, sets the blender up for potential non-compliance based on the actual end of blend metered volume readings.

e. Moreover, the historic policy by ARB to not afford regulated parties the ability to account for test tolerance, coupled with an extremely tight limit (to the 100ths place), may discourage company-internal quality testing. The risk of getting a result above a tight specification like 5.00 vol% biodiesel content is present even when the blend target is set low (i.e., B4) as the reproducibility values in ASTM are based on a 95% confidence level meaning that 1 in 20 test results can still be outside of the reproducibility limits for the test method.

f. CaRFG regulations do not require the D86 results to be reported or enforced to the 10th decimal place.

3. DTBP minimum content: How is it measured or will this be a paper calculation?

4. Under “Test Methods”, why does ARB need two version of the same test method (D5186-96 and D5186-03). What is the basis of choosing one version over the other?

5. What is the justification for the proposed section 2288? Staff stated that there were comparable requirements in the gasoline regulations. However, that particular section of the gasoline regulations deals with CARBOB and NOT finished gasoline. The proposed section adds unneeded complexity which may lead to unintended consequences and should not be added to the regulations.

6. §2282. Aromatic Hydrocarbon and Biodiesel Contents of Diesel Fuel. With regard to the changes ARB staff proposes in section 2282 (g) regarding “Certified Diesel Fuel Formulations Resulting in Equivalent Emissions Reductions”, do any of the changes in the certifications fuel section and/or
reference fuel section retroactively apply to any existing CARB approved Certified Diesel Fuel Formulation? If so, in what manner are the rules retroactively applied?

On a related note, how do the prohibitions/restrictions on “Other materials that may be added to diesel fuel” in proposed new section 2288(a)(9) apply to additives already approved in existing ARB-approved Certified Diesel Fuel Formulations under section 2282(g)?

7. §2288 (B). Additives at a ratio of less than or equal to 0.2500 % by weight seems to be in conflict the 1.28% DTBP. Need an explanation on how these two requirements can co-exist.