Alternative Diesel Fuels Rulemaking Meeting

Third Public Workshop
September 5, 2013

California Air Resources Board
Stationary Source Division
Alternative Fuels Branch

Meeting Agenda

- Recap of Previous Public Workshops
- Overview of Draft Regulation
- Next Steps
- Q&A
- Contacts

Previous Public Workshops

- April Workshop
  - Introduced ADF concepts
  - Released white paper
- June Workshop
  - Released regulation outline
  - Major updates to concept
  - Introduced multi-stage ADF process

Setting the Groundwork

- Various ways to optimize mitigation approaches for biodiesel and other ADFs
- How best to protect Californians while fostering new innovative fuels
- Consider mitigating factors already in market

Review of Proposed Regulatory Sections (title 13, CCR)

- 2293.1 Applicability
- 2293.2 Definitions
- 2293.3 Exemptions
- 2293.4 General Requirements
- 2293.5 Phase-in Requirements
- 2293.6 Significance Thresholds and Effective Blend Levels
- 2293.7 Specifications for Alternative Diesel Fuels
- 2293.8 Reporting and Recordkeeping
- 2293.9 Severability
- Appendix A. Mitigation Measures

2293.1 Applicability

- All alternative diesel fuels intended for use in motor vehicles in California will be subject to this regulation
- Goes into effect January 1, 2015

2293.2 Definitions

- Explicitly identifies important terms such as alt. diesel fuel (ADF), biodiesel, drop-in fuel, effective ADF blend level, new technology diesel engine (NTDE), and significance threshold.

2293.2 Definitions

- Alternative Diesel Fuel (ADF): Compression ignition fuel without a specification under 13 CCR 2292
- Drop-in fuel: Fuel that may be blended with CARB diesel and is essentially the same as CARB diesel
- Effective ADF Blend Level: Statewide average blend level of an ADF after consideration of mitigating inputs

Definitions

- New Technology Diesel Engines (NTDE): Diesel engines that are using the latest NOx control technology, specifically Selective Catalytic Reduction (SCR)

- Significance Level: Determined by pollutant; for ADF blends, the blend level at which an increase in a pollutant is found to occur; for neat ADFs, if any increase in a pollutant is found to occur the significance level is any use of that ADF

2293.3 Exemptions

- Exempts fuels with a specification under 13 CCR 2292-2292.7 (M85/M100, E85/E100, CNG, LNG, LPG)
- Exempts additives in CARB diesel up to one percent (excl. mitigation additives in App. A).
- Exempts from mitigation:
  - Fleets comprised of more than 95 % New Technology Diesel Engines
  - Drop-in fuels

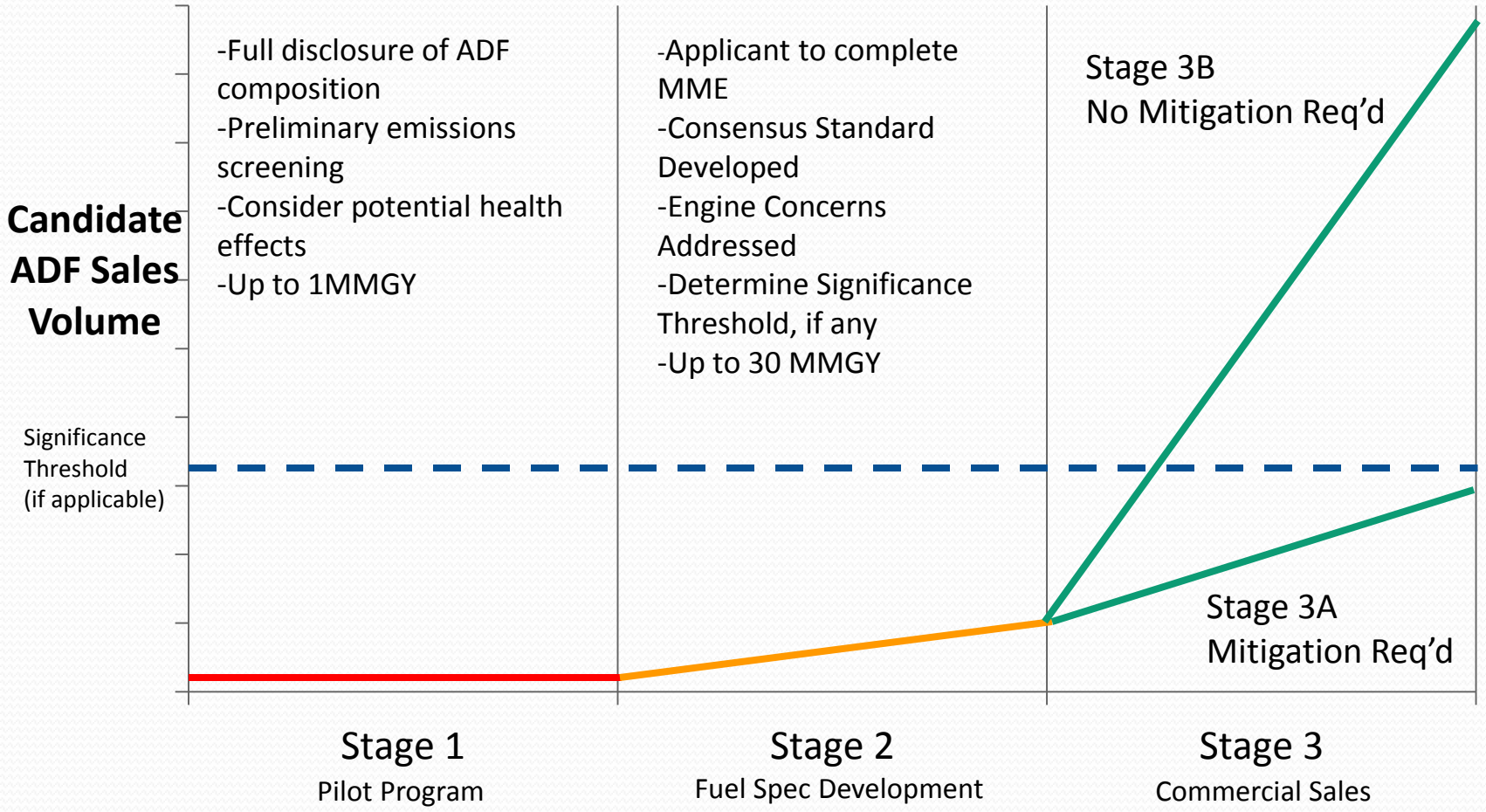
2293.4 General Requirements

- Maintains existing State and federal requirements for ADFS (these are not new requirements):
  - U.S. EPA fuel registration
  - Compliance with CDFA provisions
  - Compliance with all other State, local and federal requirements

2293.5 Phase-in Requirements

- Three stages:
  - Stage 1 Pilot Program
  - Stage 2 Development of Fuel Specification
  - Stage 3:
    - Stage 3A Commercial Sales Subject to Mitigation
    - Stage 3B Commercial Sales Subject to No Mitigation

Phase-in Requirements



Stage 1

- Goal: Screening Analysis – Would Stage 2 ADF testing present unreasonable harm?
- Proponent applies for pilot program MOU
- Small fleet use, not to exceed 1 MMGY and one year (but up to 3 six-month extensions)
- ADF composition full disclosure
- Determine boundaries of possible risks (incl. EJ screening)
- Requires developmental variance from CDFA

Stage 2

- Goal: Develop necessary commercial fuel specifications
- Application to include update of Stage 1 application
- Expanded but still limited fleet, not to exceed 30 MMGY
- MOU to last one year with up to 4 one year renewals
- Development of consensus standard for fuel required
- Approval of 75 percent of engine OEMs required
- Multimedia Evaluation (MME) required
- Determine significance threshold, if any, based on MME

Stage 2 Significance Threshold

- EO establishes significance threshold if the ADF or ADF blends shown to increase a pollutant of concern.
- Significance threshold applies to lowest blend shown to increase a pollutant of concern
- Appropriate mitigation strategies to be applied if threshold is approached

Stage 3A

- If there is a significance threshold, EO monitors trajectory of effective ADF blend level
  - Accounts for mitigating effects already occurring
  - EO announces when effective ADF blend level reaches 25%, 50%, 75%, and 95% of significance threshold
  - If 75% level reached, EO publishes notice of intent to apply mitigation at 95% level
  - If 95% level reached, mitigation is required for all sales of that ADF
- Biodiesel will be regulated under this Stage

Stage 3B

- No mitigation required
- Quarterly reporting

2293.6 Significance Thresholds

- Significance threshold determined from multimedia evaluation
- B10 statewide is the significance threshold for biodiesel
- Effective blend level is calculated to determine whether significance level is met

$$EB = 100 \times [1 - EM] \times \left[\frac{TBV - 0.37LN - VM - 0.5AB}{TCV}\right]$$

This equation applies to biodiesel only, other ADFs will have different equations as appropriate

Effective ADF Blend Level Terms

- EB: Effective blend
- EM: Engine based mitigation (NTDEs)
- TBV: Total Biodiesel Volume
- LN: Low NOx diesel
- VM: Voluntary Mitigation
- AB: Animal Biodiesel
- TCV: Total Compression Ignition Fuels Volume

$$EB = 100 \times [1 - EM] \times \left[\frac{TBV - 0.37LN - VM - 0.5AB}{TCV}\right]$$

2293.7 Specifications

- ADFs will have specifications set in respective MOUs and when necessary added to 2293.7
- Biodiesel currently is the only ADF with specifications
- ADF regulation sets specifications for biodiesel blendstocks above and beyond what is required by ASTM, as well as DMS requirements

Property	ASTM Test Method	Value
Cetane number	D613 or D6890	>47
API Gravity	D287-82	>27 degrees API
Sulfur	D2622	<15 ppm
FAME content	EN 14103	>96.5%

2293.8 Reporting and Recordkeeping

- Specifies the reporting requirements of each Stage
- Piggyback on quarterly and annual reporting for LCFS where appropriate
- Enhanced (monthly) reporting as significance threshold is approached

Appendix A. Mitigation Measures

- This appendix will contain mitigation measures for any ADF that is in Stage 3A
- Biodiesel mitigation measures currently included in regulation
  - Approved emissions equivalent additives
  - Low-NOx diesel base fuel (incl. renewable diesel, GTL, etc.)
  - ADF formulation certified as emissions equivalent to CARB diesel

Approved Emissions Equivalent Additives

- Currently one additive is included: Di-tertbutyl peroxide (DTBP)

- Specified ratio of five percent DTBP in biodiesel blendstocks considered mitigated up to B20

Low-NOx (LN) diesel base fuel

- B20 mitigated when low NOx diesel to biodiesel is at least 2.75 to 1 by volume
- LN diesel properties:

Property	Test Method	Limit
Cetane Number	ASTM D613-84	≥ 67
Total Aromatics	ASTM D5186-96	≤ 6.4 mass%
PAH	ASTM D5186-96	≤ 0.6 mass%
API Gravity	ASTM D287-82	≥ 47.4 degrees API
Nitrogen Content	ASTM D4629-96	≤ 164 ppmw
Sulfur Content	ASTM D5453-93	≤ 5 ppmw

Certification of Emissions Equivalent ADFs

- Allows for either additives, biodiesel blendstocks, or a combination of the two to be certified for mitigation.

- Allows the market to determine what best course for mitigation will be

Next Steps

- Comments by September 16, 2013
- Staff report to be released October 2, 2013
- 45 day public comment period to open October 7, 2013
- Board hearing November 21-22, 2013
- Up to one year for approval by OAL
- Date of start of implementation January 1, 2015

Questions and Answers

Rulemaking Contacts

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http://www.arb.ca.gov/fuels/diesel/altdiesel/biodiesel.htm [Note: This web address will be updated shortly to reflect ADF, not just biodiesel]