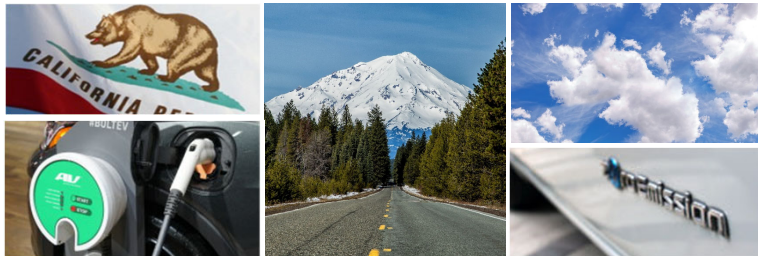


California Fuels Update



OCTOBER 18, 2019
Sacramento, CA

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Agenda

- Introduction
- Overview of Current Fuels Regulations
- Concepts for Potential Updates
- Discussion



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Introduction

- CA has made significant progress to improve air quality and reduce GHG emissions
- On path to meet State's 2030 climate goal
- Executive Order B-55-18 establishes statewide goal to achieve carbon neutrality by 2045
- Board Resolution 17-46 directs CARB staff to continue to evaluate and explore opportunities to achieve significant reductions in GHG emissions
- Staff plans to update various fuels regulations and programs as CA transitions away from fossil fuels
 - Continue to reduce criteria pollutants and improve air quality
 - Focus on clean renewable fuels



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Overview of Current Fuels Regulations

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California Fuels Regulations and Programs

- **Conventional Fuels**

- Reformulated Gasoline Regulations (CaRFG3) – 13 CCR 2250-2273.5
- Diesel Fuel Regulations – 13 CCR 2281-2285, 2299-2299-5; 17 CCR 93114, 93117, 93118, 93118.2, 93118.5

- **Alternative Fuels**

- Alternative Motor Vehicle Fuels Specifications – 13 CCR 2290-2295
- Alternative Diesel Fuels (ADF) Regulation – 13 CCR 2293-2293.9

- **Low Carbon Fuel Standard (LCFS)** – 17 CCR 95480-95503

- **Cap and Trade Program** – 17 CCR 95801-96022



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California Reformulated Gasoline Regulations

- Require CA gasoline to be produced according to specifications determined by the CA Predictive Model
- Correlates emissions with fuel properties to determine emission-equivalent fuel specifications
- Determines specifications for oxygen, sulfur, total aromatic hydrocarbon, benzene, olefin contents, T90, T50 and RVP



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California Diesel Regulations

- Sulfur content – 15 ppmw limit
- Aromatic hydrocarbon content
 - 10 vol% limit
 - 10 vol% average
 - Designated equivalent limits
 - Certified emission-equivalent formulation
- Standards also apply to stationary, marine harbor craft, and locomotive diesel-engine fuel uses in CA



Renewable Gasoline and Renewable Diesel

- Renewable gasoline that meets the requirements for conventional gasoline is treated the same as conventional gasoline:
 - California reformulated gasoline regulations
 - ASTM D4814
 - Federal Clean Air Act section 211(f)(1)
- Renewable diesel that meets the requirements for conventional diesel is the same as conventional diesel:
 - California diesel regulations
 - ASTM D975



October 24, 2017

Issued Program Agency (SFPD)
Fuel Blenders, Refiners, and Blenders
Operator Fuel Distributors
Other Interested Stakeholders

Gasoline Produced from Renewable Feedstocks Should Be Treated as Conventional Gasoline

This is a joint statement by the California Air Resources Board (CARB) and the State Water Resources Control Board (SWRCB) regarding renewable gasoline that meets the same standard as conventional gasoline. As discussed below, gasoline that meets the California reformulated gasoline (CRFG) regulations and ASTM International standard specification D4814 should be treated for use as conventional gasoline for all purposes, including compliance with federal and state (CARB) and other regulatory requirements, against its feedstock source (renewable or petroleum-based).

This joint statement applies to finished fuel that meets the CRFG regulations specified in Title 17, California Code of Regulations, section 22519.0010 (22519.0010). Through the use of the California Production Model (CPM) "fuel product (pre-tax) model," as well as ASTM D4814 and the inclusion of "hydrocarbon content" specified in section 211(f)(1) of the Federal Clean Air Act, any gasoline fuel that meets the above requirements for conventional gasoline should be treated for use as conventional gasoline.

Despite meeting requirements for conventional gasoline, there have been questions regarding the ability of renewable gasoline to be used in place of conventional gasoline in 2017. We encourage any blenders that meet both regulatory and technical requirements for that fuel to be used with existing infrastructure and motor vehicle engines. Accordingly, gasoline that meets the requirements for CARB's and ASTM D4814 is to be treated as renewable if differently than conventional gasoline.



Alternative Fuels Regulation

Alternative fuels regulations establish fuel specifications for following alternative motor vehicle fuels:

- M100
- M85
- E100
- E85
- Compressed Natural Gas (CNG)
- Liquefied Petroleum Gas (LPG)
- Hydrogen



Alternative Diesel Fuels Regulation

- Comprehensive, multi-stage process governing commercialization of alternative diesel fuels (ADFs) in California:
 - Stage 1: Pilot Program – Initial limited sales of an ADF during screening evaluation
 - Stage 2: Determination of Fuel Specifications – Expanded sales governed by enhanced monitoring, testing and multimedia evaluations
 - Stage 3: Commercial Sale – Full-scale commercial sales, as warranted
- In-use requirements for biodiesel



Concepts for Potential Updates

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Reformulated Gasoline Regulations

- Delete obsolete provisions
- Primarily minor updates and non-substantive revisions



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Reformulated Gasoline Regulations

SECTION	ACTION
§ 2257. Required Additives in Gasoline	Consider adding maximum concentration level
§ 2258. Oxygen Content of Gasoline in the Wintertime	Consider deleting repealed section
§ 2261. Applicability of Standards; Additional Standards	Reevaluate subsections referencing CaRFG2 specifications
§ 2262. The California Reformulated Gasoline Phase 2 and Phase 3 Standards	Reevaluate subsections referencing CaRFG2 specifications Consider reducing sulfur averaging limit to 10 ppm to align with U.S. EPA standards
§ 2262.5(a) Compliance with Minimum Oxygen Cap Limit Standard in Specific Areas in the Wintertime	Consider deleting obsolete minimum oxygen cap limit standards
§ 2265.5 Alternative Emission Reduction Plan	Consider deleting obsolete section



Reformulated Gasoline Regulations

SECTION	ACTION
§ 2266.5 Requirements Pertaining to California Reformulated Gasoline Blendstock for Oxygen Blending (CARBOB) and Downstream Blending	Reevaluate subsections referencing CaRFG2 specifications
§ 2272. CaRFG Phase 3 Standards for Qualifying Small Refiners	Reevaluate need for small refiner provisions
§ 2273. Labeling of Equipment Dispensing Gasoline Containing MTBE	Consider deleting MTBE labeling requirements



Diesel Fuel Regulations

- Delete obsolete provisions
- Primarily minor updates and non-substantive revisions



Diesel Regulations

SECTION	ACTION
§ 2281. Sulfur Content of Diesel	Consider deleting obsolete 1993 and 2006 effective dates and phase-in periods Consider updating the 15 ppm sulfur standard to 10 ppm
§ 2282. Aromatic Hydrocarbon Content of Diesel Fuel	Consider deleting 1993 and 2007 effective dates Reevaluate aromatic hydrocarbon content for small refiners
§ 2284. Lubricity of Diesel Fuel	Consider deleting obsolete phase-in lubricity requirements



Alternative Fuels Regulation

- Proposed Updates:
 - Delete obsolete fuel specifications not in use: E100, M85, M100
 - Minor updates and non-substantive revisions
- Future Improvements:
 - Update E85 specifications
 - Rescind CNG specifications
 - Update LPG specifications
 - Establish E15 specifications



E85 Fuel Specifications

- Option 1: Update or rescind individual specifications:

SPECIFICATION	REVISION									
	CURRENT	PROPOSED								
Vapor Pressure	<table border="1"> <thead> <tr> <th>RVP Range</th> <th>Volatility Class</th> </tr> </thead> <tbody> <tr> <td>6.5 - 8.7 psi</td> <td>A, A/B, B/A</td> </tr> <tr> <td>7.3 - 9.4 psi</td> <td>B/C, C/B, C, C/D, D/C</td> </tr> <tr> <td>8.7 - 10.2 psi</td> <td>D, D/E, E/D, E</td> </tr> </tbody> </table>	RVP Range	Volatility Class	6.5 - 8.7 psi	A, A/B, B/A	7.3 - 9.4 psi	B/C, C/B, C, C/D, D/C	8.7 - 10.2 psi	D, D/E, E/D, E	Rescind <u>minimum</u> vapor pressure (lower RVP values result in less evaporative fuel emissions) and refer to ASTM D5798-18a: 5.5, 7.0, 8.5, 9.5 psi depending on area and time of year Revise <u>maximum</u> RVP to 7.2 psi in summer as defined in CaRFG3, 13 CCR § 2262 (volatility class same as CaRFG3)
RVP Range	Volatility Class									
6.5 - 8.7 psi	A, A/B, B/A									
7.3 - 9.4 psi	B/C, C/B, C, C/D, D/C									
8.7 - 10.2 psi	D, D/E, E/D, E									
Ethanol Content	79 vol% (min)	Revise minimum to 70-75 vol% Revise test method ASTM D3545 to ASTM D5501								
Hydrocarbon Content	15 - 21 vol%	Revise maximum to 25-30 vol% for E51 blends								
Sulfur	40 ppm (max)	Revise maximum to 20 ppm								



E85 Fuel Specifications

- Option 2: Rescind entire E85 Specification and refer to ASTM D5798
 - CARB must confirm no air quality impacts
 - No performance or compatibility issues reported under CARB test program exemption



CNG Fuel Specifications

- Rescind CNG specifications
- Consider updating engine certification fuel to be more representative of in-use fuel in place of regulating CNG using fuel specifications
- ASTM is developing specifications for CNG
 - Consider adopting ASTM specifications after CDFA adoption
 - Consider additional specifications



LPG Fuel Specifications

- Increase butane limit and decrease propane minimum to reflect properties of in-use renewable propane
 - Butane (maximum): 5 percent → 10 percent
 - Propane (minimum): 85 percent → 80 percent
- Consider higher butane limit based on emissions impact and necessity



E15 Fuel Specifications

- Currently undergoing fuels multimedia evaluation to determine knowledge gaps, multimedia impacts
- Results of the evaluation will determine if development of E15 specifications is appropriate



Alternative Diesel Fuels (ADF) Regulation

- Provisions require program review of the biodiesel in-use requirements
- Proposed amendments in the areas of:
 - NOx mitigation point
 - NOx mitigation control level
 - Cleanup certification provisions
 - General regulation language cleanup



Low Emission Diesel (LED) Standard

- CARB State Strategy for the State Implementation Plan (SIP) requires substantial NOx and PM reductions by 2031 or sooner
- CARB committed to developing a performance-based emission standard for diesel fuels to:
 - Achieve emission reductions for LED fuels relative to conventional diesel
 - Diversify diesel fuel pool through increased use of LED fuels
 - Contribute to California's long-term transition away from fossil fuels
- Public meeting held on November 28, 2018 – Discussed renewable diesel and biodiesel emissions study



Low Emission Diesel Standard

- Concept 1: Volumetric Standard for LED Fuels
 - Framework similar to Federal Renewable Fuel Standard
 - Require specific volumes of different LED fuels
 - Annual volume requirements increase over time
 - LED fuel types
 - Non-petroleum-based fuels (e.g., renewable diesel (RD), NOx-mitigated biodiesel (BD), RD/BD blends, renewable natural gas)
 - Petroleum-based fuels (e.g., cleaner refined diesel, gas-to-liquid (GTL) diesel, CNG)



Low Emission Diesel Standard

- Concept 2: Reduce Aromatic Content of Diesel Fuel
 - Reductions in total aromatics and polycyclic aromatic hydrocarbons (PAH) reduce tailpipe NOx and PM
 - Amend diesel regulations to reduce maximum total aromatic content and PAH content
 - LED fuels contain little or no aromatics
 - Compliance achieved through blending LED fuels into diesel or additional refining of diesel
- Other concepts?



General Timeframe

- 2020 – Clean up items and non-substantive revisions
- 2021 – Remaining updates



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Discussion

Thank You

Please submit feedback by **November 1st** @

FuelsProgram@arb.ca.gov



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