



Potential Amendments to the In-Use Off-Road Diesel Regulation Workgroup

Renewable Diesel
September 10, 2021

What is Renewable Diesel?

“Drop in” liquid hydrocarbon fuel that is chemically indistinguishable from petroleum diesel

Compatible with existing transport and fueling infrastructure

Currently produced by hydrotreatment of the same fat and oil feedstocks as biodiesel

Can also be produced via thermochemical processes (gasification or pyrolysis of biomass)

Not an alternative diesel fuel (meets all the specifications of conventional diesel)

Renewable Diesel for On- and Off-Road Transportation Use in California



Total from 2011-2020 = 2.59 billion gallons

Renewable Diesel Production

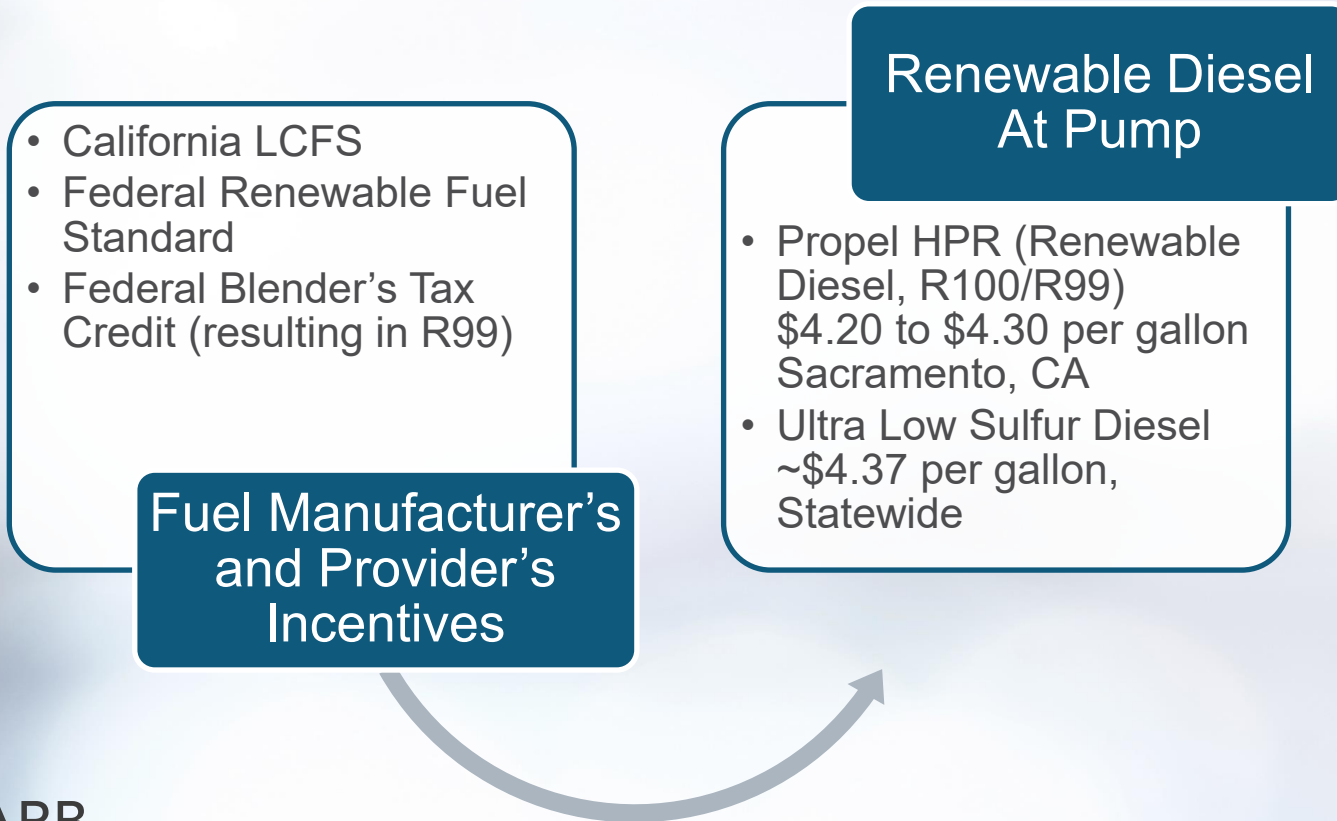
Increasing in CA

- World Energy in Paramount, CA expansion
~256 million gallons per year, completion date unknown
- Marathon Refinery in Martinez, CA
~736 million gallons per year, full production by 2023
- Phillips 66 in Rodeo, CA
<800 million gallons per year, production may begin as early as 2024

Increasing outside of CA

- Current estimates show that the US will also increase production volume to greater than two billion gallons per year within the next few years

Cost of Renewable Diesel



Emissions Reduction Benefits

Emissions	R99 Fuel
Carbon Intensity	-36% to -83%
NOx	-10%
Diesel PM	-30%

Reductions above are:

- Relative to CARB Ultra Low Sulfur Diesel (ULSD)
- For Heavy-duty engines without SCR and DPF controls

Carbon Intensity depends on feedstock, such as cooking oil, animal fat, corn oil, soybean oil

Renewable Diesel: CI range currently between 16.89 to 64.24
CARB ULSD: CI of 100.45

Why Considering Renewable Diesel for Off-Road Diesel (ORD) Amendments?

Need for additional emissions reductions within California, especially for South Coast and the San Joaquin Valley

Renewable diesel is readily available across the majority of California

Shifting the use of the currently available renewable diesel from on-road to off-road provides a greater emissions reduction benefit

Cost parity with CARB ULSD

Renewable Diesel as part of the Potential ORD Amendments

**All fleets
required to
use
renewable
diesel
(with some
exemptions,
next slide)**

**Implementation
Timing:
Potentially 2024**

**Recordkeeping and
Reporting
Requirements**

Potential Requirements and Exemptions

All fleets would be required to utilize renewable diesel in all equipment

- Exemption: Equipment operating in attainment regions, as identified in section 2449c(6)
- Exemption: Fleets where 100% of the equipment is T4f or cleaner

Timing of Implementation

Questions for the Workgroup

- What is the fuel contracting cycle like?
- How long would it take to switch from traditional diesel to renewable diesel?



Considering Jan 1, 2024

- Renewable diesel is currently readily available
- Should not require new infrastructure
- Cost parity between renewable diesel and CARB ULSD, on average

Potential Reporting/Recordkeeping

Propose to include both reporting and recordkeeping requirements

- Attestation in annual report that the fleet is using renewable diesel
- Question for workgroup on recordkeeping: What type of documents do you already receive? Fuel contracts? Fuel purchase receipts?
- CARB will be able to take fuel samples from in-use equipment

Potential Benefits from Renewable Diesel Concept

- Assumptions: All tier 0-4i equipment would use RD
10% NOx, 30% Diesel PM reduction
Amendment concept implemented

Region (Year)	NOx Reductions (tpd)	PM2.5* Reductions (tpd)
South Coast (2025)	0.87	0.119
South Coast (2031)	0.26	0.034
San Joaquin Valley (2025)	0.55	0.073
San Joaquin Valley (2031)	0.18	0.024

Discussion/Other Challenges

Are there special challenges for small fleets in utilizing renewable diesel outside of the exemptions already mentioned?

Are there other considerations we should be thinking about when discussing renewable diesel?

Are there any availability issues we need to account for?

Questions or Comments?

Here is a brief overview of your webinar controls.

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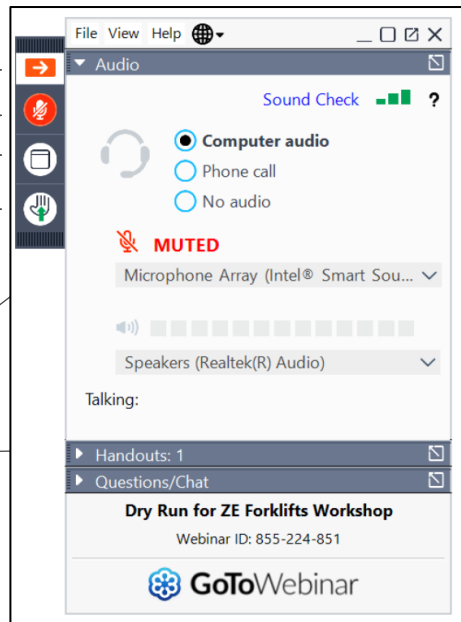
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