

# Off-Road Regulatory and Test Fuel Amendments

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California Environmental Protection Agency  
 Air Resources Board

## Overview

- Small Off-Road Engine (SORE) Test Procedure Modifications
- Compression-Ignition (i.e., diesel-fueled engine) Test Procedure Modifications
- E10 Exhaust Emission Certification Fuel Requirements

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# SORE Equipment

Less than 80 cc\*



80 to 225 cc\*



Greater than  
225 cc\*

\*cubic centimeters

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# SORE Test Procedures Background

- ARB's SORE test procedures reference Title 40 Code of Federal Regulations (CFR)
- U.S. EPA adopted revised test procedures for SORE in 2008 that go into effect in 2011-13
- Included small engines in CFR Part 1065 test procedures
- Introduced standards in CFR Part 1054
- Additional minor modifications
- SORE manufacturers want ARB to align
  - Avoid having to perform two different test procedures with no associated emissions benefit

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# Proposed SORE Amendments

- Align beginning with 2013 model year
  - Test procedure aligned in CFR Part 1065
  - Certification aligned in CFR Part 1054;
- California-specific requirements
  - Production-line testing procedures
  - Enforcement
  - Credit program

# Diesel Engine Equipment

$130 \leq \text{kW} \leq 560$



$56 \leq \text{kW} < 130$



$< 19 \text{ kW}$



$> 560 \text{ kW}$



$19 \leq \text{kW} < 56$

## Diesel Engine Background

- ARB adopted Tier 4 off-road diesel regulations in 2004 that were largely identical to Federal requirements at that time
- U.S. EPA made significant changes to federal Tier 4 requirements in 2010, including a new NOx+HC emissions standard
- Diesel engine manufacturers want ARB to align
  - Avoid having to perform two different test procedures with no associated emissions benefit

## Proposed Tier 4 Amendments

- NOx+HC Tier 4 Emissions Standard
- Enhanced Labeling Requirements
- Updated Test Procedures in CFR Parts 1039, 1065, and 1068
- Stockpiling Prohibitions
- Miscellaneous

## Requirements Specific to California

### EXISTING (since 2005)

- More Informative Flexibility Engine Labels
- Mandatory Certification of Flexibility Engines
- Independent ARB Enforcement and Compliance

### PROPOSED:

- More Informative Replacement Engine Labels
- No Preliminary Certification Approvals
- Less Simplistic Definition of an Engine

## Exhaust Emissions Test Fuel Amendment

## Off-Road Spark-Ignition Categories

- SORE
- Recreational Marine Engines
- Large Spark-Ignition Engines
- Off-Highway Recreational Vehicles



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## Pending Motor Vehicle Fuel Change

- Advanced Clean Cars rulemaking (Jan 2012)
- Propose adoption of 10% ethanol (E10)
- E10 will replace current test fuels:
  - 2 “non-oxygenated” federal fuels: Tier II & Indolene
  - CaRFG2 (oxygenated w/MTBE)
- Aligns w/commercial E10 pump fuel (CaRFG3)
  - Only pump fuel available since 2010

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## Current Off-Road Certification Test Fuels

- Exhaust testing
  - Same as on-road motor vehicle test fuels
  - 2 federal fuels or CaRFG2
  - Either no or lower oxygenation levels (E0 or ~E6)

## Proposed Exhaust Test Fuel Requirements

- E10 for SORE, Recreational Marine engines, Large Spark-Ignition engines, and Off-Highway Recreational Vehicles
- Optional for 2013 – 2019 MYs
- Mandatory starting in 2020 MY
  - Same MY as proposed for motor vehicles
- Makes off-road categories consistent with:
  - Proposed motor vehicle test fuel
  - Commercial E10 pump fuel

## 15-Day Changes

- Change E10 implementation date to 2020 to align with on-road requirement
- Correct/Revise other relatively minor clerical oversights

## Stakeholder Participation

- Participation from Regulated Entities
  - Major Stakeholders:
    - Outdoor Power Equipment Institute (OPEI)
    - Truck and Engine Manufacturers Association (EMA)
    - National Marine Manufacturers Association (NMMA)
- Outreach
- Publication Dates



# Recommendations

- Adopt proposed revisions including modified CFR Parts 1054 and 1065 for SORE
- Adopt proposed revisions including modified CFR Parts 1039, 1065 and 1068 for Tier 4 Diesel Engines
- Adopt E10 exhaust emission certification test fuel for SORE, Recreational Marine engines, Large Spark-Ignition engines, and Off-Highway Recreational Vehicles
- Adopt the proposed 15-day changes