

US EPA Tier 3 Rulemaking and Market Gasoline Standards



Auto Industry Perspective

Meeting with OMB, March 22, 2013



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Fuel Matters

The Washington Post

Oops! Presidential Limo Filled With Wrong Fuel

March 20, 2013

President Barack Obama is in Israel today, but he's not going anywhere. The presidential limo, which was brought from Washington, D.C., for the visit, was disabled because it was accidentally filled with the wrong type of fuel.



New US EPA Tier 3 Market Fuel Standards Are Critically Important

- 1. Vehicles and fuels are a system**
- 2. Reducing sulfur yields immediate and future public benefits**
- 3. New Tier 3 criteria pollutant vehicle standards need minimized gasoline sulfur; harmonization with California standards and compatible fuels**
- 4. President Obama's fuel economy and GHG standards anticipated nationwide availability of clean, compatible fuel**
- 5. Ultra-low sulfur gasoline is already available; costs to implement nationwide are overstated**

Vehicles And Fuels Are A System

- Automakers need predictable national fuel quality at the retail pump
- Engines and emissions control systems must be designed to accommodate the retail gasoline to be used (including outlier fuels)
- Broad ranges of key fuel properties result in suboptimal performance and environmental outcomes and inhibits technologies
- Failing to reduce sulfur will shift costs and eliminate immediate and future health benefits of reduced vehicle emissions

Reducing Sulfur Yields Immediate And Future Public Benefits

- Reducing sulfur to 10 ppm yields “day one” benefits in the existing fleet
- Over 245 million cars, trucks and SUVs on road today
- 15 million/year new vehicle sales
- 15+ years to turn over the fleet
- NACAA estimates NO_x-reduction benefits from introducing low-sulfur gasoline to the existing fleet in 2017 has an immediate benefit equivalent to removing 33 million Tier 2 cars from the nation’s highways.

New Tier 3 Vehicle Standards Need Minimized Gasoline Sulfur; Harmonization With California Standards And Compatible Fuels

- **Sulfur significantly impacts vehicle emissions performance and durability**
 - Gasoline sulfur by-products of combustion reduce the effectiveness of catalytic converters, resulting in increased tailpipe emissions
 - Burning off sulfur in driving cycles requires additional energy (fuel), thereby impacting fuel economy
- **The intent of Tier 3 is to harmonize with CALEV III vehicle standards and clean fuels**
 - The current CA gasoline pool average is 10 ppm sulfur or less
 - Current pool outside California nationally averages about 25 ppm sulfur (about 2.5 times higher than California)
- **Reduced sulfur necessary to achieve 25% increase in catalytic converter durability (120K-150K miles)**

President Obama's Fuel Economy And GHG Standards Anticipated Nationwide Availability Of Clean Compatible Fuel

- Ultra-low sulfur gasoline enables better fuel economy and less GHG by employing improved engine technologies and refined calibrations
- “... an optimized “lean-burn” direct injection gasoline engine may achieve high engine thermal efficiency which approaches that of a diesel engine... EPA and NHTSA’s current assessment is that the availability of ultra-low sulfur (ULS less than 15 ppm sulfur) gasoline is a key technical requirement for lean-burn GDI engines to meet EPA’s Tier 2 NOx emissions standards.” *EPA’s 2017 Tech Support Doc (TSD)*
<http://www.epa.gov/otaq/climate/regulations/420r10901.pdf>, pg. 141
- Lean-burn GDI systems operated on high sulfur fuel will not realize their full GHG/FE potential, costing customers more in fuel costs, reducing the GHG benefit and making the technology less cost-effective.

Ultra-Low Sulfur Gasoline is Already Available; Costs to Implement Nationwide are Overstated

- Refiners are already producing ultra-low sulfur fuel in California and much of the developed world (e.g., EU and Japan already require a retail cap of 10 ppm)¹
- OEMs' cost investment is significant too
- Similar cost arguments were raised in Tier 2, ultra-low sulfur diesel, and California RFGIII sulfur standard rulemakings but never materialized as predicted
- Navigant Economics/ECTA study of cost compares MathPro/ICCT and Baker & O'Brien/API (B&O) and concluded:
 - B&O's projected 6-9 cents marginal cost equates to about 2 cents per gallon average cost compared to MathPro's projected 1.4 cents per gallon average refining cost
 - The cost of crude oil accounts for 67 percent of the price for gasoline and refining costs comprise about 17 percent

¹In April 2012, the International Fuel Quality Center ranked the US 47th for gasoline sulfur standards

Summary

- **Tier 3 must continue to treat vehicles and fuels as a system**
- **Ultra-low sulfur gasoline will provide immediate and future public health benefits from existing vehicles on the road, in addition to the Tier 3 fleet**
- **Ultra-low sulfur fuel is necessary for Tier 3 and enables technologies that will improve fuel economy and reduce GHG emissions.**

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