EPA's NPRM on Vehicle Test Procedure Adjustments For Tier 3 Test Fuel

Prepared for OMB OIRA Meeting
May 28, 2019

Overall Concerns

- Agencies only obligated to update R-factor
- NHTSA coordination is necessary
- It may be very difficult for some manufacturers to plan for changes at this stage
- Will be winners and losers
- Programs were developed on E0 Indolene
- If R-factor does not maintain proportional energy content (not 1.0)
  - Evergreen requirements would require continuous updates by EPA
  - Allow optional Tier 2 testing since rules were developed on T2

T3 E10 Test Program Questions

- Is this is a joint rulemaking with NHTSA?
- Data set too small
- Should be all Tier 3 vehicles
  - Could use broader EPA certification testing (as laid out in the T3 rule)
- See attached FR notices and Agency guidance

References

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Alliance Tier 3 Comments and EPA Response

- In its comments to the Tier 3 NPRM the Alliance (and others) advocated for an R factor of 1.0, referencing several Auto-oil, EPA and DOE test programs.
- In its response to comment EPA stated that data from Tier 3 or Tier 3/LEV III technology vehicles was required.
  - "However, in the NPRM we deferred action on adopting a new R factor and other potential related adjustments because we did not have the requisite data on the new test fuel (E10) and the current test fuel (E0) on Tier 3 technology vehicles." [Tier 3 Rule, Summary and Analysis of Comments p455]
  - "By requiring CAFE and GHG testing on Indolene or E0, the interim requirements established in the FRM assure that the stringency for the CAFE and GHG standards are not affected. This approach will also help to ensure that the data needed to make the test procedure adjustments based E0 and E10 emission test data on Tier 3 technology vehicles is available in a timely manner." [Ibid, p455]
  - "We do not agree with ICCT that a value of 0.96 is appropriate because it is not based on the results for Tier 3/LEV III technology vehicles tested on Tier 3/LEV III fuels." [Ibid p461]
  - "Test data based on Tier 3/LEVIII fuel in Tier 3/LEVIII technology vehicles will provide the data needed to determine any appropriate test procedure changes." [Ibid p465]

EPA Tier 3 Final Rule

In the Tier 3 final rule EPA states [79 FR 23531]

- "These potential effects [fuel change] are best understood using emission data generated on Tier 3/LEV III vehicles tested on both Tier 3 and Tier 2 test fuel."
- "It is very important to note that the emission test data generated by these early Tier 3/LEVIII vehicles covering both Tier 2 and Tier 3 test fuel will provide data needed to assess the "R" value and the impact of the fuel change on the stringency of the CAFE and GHG standards, and the calculations for the fuel economy labeling program."
- These passages indicate that EPA plans to use certification data to evaluate the effects of the change in certification test fuel on vehicles meeting the newest emissions standards (Tier 3) to insure that the resulting analysis is relevant to todays vehicles.

In addition, EPA states [ibid]

- "...to conduct a thorough assessment of the impacts of different emission test fuels on Tier 3/LEV III vehicles and develop any appropriate adjustments and changes, in consultation and coordination with NHTSA.
- Given the effect that the R factor has on NHTSA rulemaking, consultation and coordination with NHTSA is essential.

R-Factor Needs

EPA has indicated that a robust data set is required

- "To reach a conclusion regarding the appropriate R factor for phase 2 testing, EPA would need city and highway tests on both EPA and CARB test fuel for a minimum of 75 to 100 50-state vehicles." [EPA guidance letter CD-95-09 (June 1, 1995), p3]
- "The R factor calculation is sensitive to experimental variability; hence, large amounts of data are needed to examine R values with reasonable confidence intervals." [*Determination of the R Factor for Fuel Economy Calculations Using Ethanol-Blended Fuels over Two Test Cycles*, C. S. Sluder, B. H. West; Oak Ridge National Laboratory; A. D. Butler, A. L. Mitcham; EPA; W. J. Ruona; Ford; 2014]

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To: Chad Whiteman, Office of Information and Regulatory Affairs

From: Adam Gustafson

Re: EPA's Proposed Vehicle Test Procedure Adjustments for Tier 3 Test Fuel

On February 25, 2019, EPA sent the proposed *Vehicle Test Procedure Adjustments for Tier 3 Test Fuel* (RIN: 2060-AT21) Rule to OMB. Although it is labeled a technical "adjustment," the proposed rule actually represents a major policy change that will harm the auto, ethanol, agriculture, and petroleum industries and stifle innovation in vehicle and fuel technology. It should not be finalized as proposed.

Carbon Penalty. The rule would make an arbitrary and counter-productive modification of the Carbon Related Exhaust Emissions (CREE) formula used to measure compliance with the greenhouse gas emissions standard. To compensate for the lower carbon content of the new E10 certification fuel, the proposed modification would effectively add phantom carbon molecules into the calculation instead of simply measuring the carbon that comes out of the tailpipe, as EPA does for all other pollutants. This carbon penalty would undermine the Administration's effort to grant regulatory relief through the SAFE Rule, and it would stifle innovation in alternative fuels and automotive design. EPA has no statutory justification for its action, which is intended to make it harder for automakers to achieve the Administration's forthcoming greenhouse gas standards.

R-factor. The rule would also make a change to the formula used to measure compliance with the fuel economy standards. For many years EPA has recognized that the formula contains an erroneous variable (the R-factor) which is supposed to correct for differences in the energy content of test fuels for consistency with the 1975 test procedure, as EPCA requires. The current R-factor of 0.6 was based on testing of open-loop carbureted vehicles built in the 1970s. Newer studies by the auto industry, DOE, and EPA confirm that the R-factor should be close to 1.0.[1] EPA's rule would change this variable, but not fully correct it. When automakers are required to test vehicles on the new E10 certification fuel, the R-factor will have devastating consequences on their reported fuel economy.

EPA's insufficient R-factor adjustment is based on a test program that used the wrong vehicles and too few vehicles.

Wrong vehicles. In the 2014 Tier 3 Rule, EPA said it would use "emissions data generated [by] early Tier 3/LEV III vehicles" certified "on both Tier 2 and Tier 3 test fuel" to determine the R-factor.[2]

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[1] *See* C. Scott Sluder et al., Determination of the R Factor for Fuel Economy Calculations Using Ethanol-Blended Fuels Over Two Test Cycles, 7 SAE Int. J. Fuels Lubr. 551, 561 (2014) (suggesting an R-factor for the "FTP drive cycle" of "0.949±0.042" and concluding that the results from "three studies" show that "R factor values for modern vehicles are closer to unity than the 0.6 value originally established in the 1980s").

[2] Tier 3 Rule, 79 Fed. Reg. at 23,532 ("It is very important to note that the emission test data generated by these early Tier 3/LEVIII vehicles covering both Tier 2 and Tier 3 test fuel will provide data needed to assess the 'R' value"); *see also* Tier 3 Rule Summary and Analysis of Comments at 4-347 ("By requiring CAFE and GHG testing on Indolene or E0, the interim requirements established in the [final rule] assure that the stringency for the CAFE and GHG standards are not affected. This approach will also help to ensure that the data needed to make the test procedure adjustments based E0 and E10 emission test data on Tier 3 technology vehicles is available in a timely manner."); *id.* at 4-353 ("The approach laid out in the [final rule] and prescribed in [40] § 86.600.11[7] will help to ensure that the R-factor is based on E0 and

EPA dismissed earlier studies that used older vehicles because Tier 3 vehicles were the "vehicles of interest."[3]

The emissions certification test data that EPA was waiting for are now available. But instead of using certification test data for the "vehicles of interest," EPA's test program used eleven model year 2013 to 2016 vehicles, most of which were certified to Tier 2 standards.[4] EPA's failure to use representative Tier 3 vehicle test data is fatal, because this criterion was set by the Agency itself.

Too few vehicles. Due in large part to variation in how different vehicles respond to changes in fuel properties, "large amounts of data are needed to examine R values with reasonable confidence intervals."[5] EPA has said that "[t]o reach a conclusion regarding the appropriate R-factor" to use in fuel economy calculations, it would need "a minimum of 75 to 100" representative vehicles.[6] A test program that uses only eleven vehicles lacks the statistical power needed to determine R for the entire vehicle fleet.

EPA's test program is unnecessary, because the emissions certification data that EPA was waiting for is now available for hundreds of Tier 3 vehicles. That data would show that R is closer to 1.[7]

E10 emission results for Tier 3 technology vehicles."); *id.* ("The approach laid out in the FRM will allow EPA to gather the requisite data and conduct the analysis needed to see if a change in the R factor value is needed and if so, what value should be proposed.").

[3] Tier 3 Rule Summary and Analysis of Comments 4-352 ("We do not agree with ICCT that a value of 0.96 is appropriate because it is not based on the results for Tier 3/LEV III technology vehicles tested on Tier 3/LEV III fuels."); *id.* at 4-357 ("Test data based on Tier 3/LEVIII fuel in Tier 3/LEVIII technology vehicles will provide the data needed to determine any appropriate test procedure changes. The data available now such as that discussed in Appendix 8 of the Alliance and Global Automakers comments may inform the analysis but are not sufficient to meet the needs of the assessment since it does not focus fully on the fuels and vehicles of interest.").

[4] EPA, Tier 3 Certification Fuel Impacts Test Program 5–7 (Dec. 2017).

[5] Sluder et al., *supra* note 1, at 561.

[6] EPA, MPG Calculations for Certification Vehicles Tested on California Phase 2 Gasoline, CD-95-09, at 3 (June 1, 1995), https://iaspub.epa.gov/otaqpub/display_file.jsp?docid=14107&flag=1.

[7] Even though no carbon penalty is appropriate under the Clean Air Act, Tier 3 certification test data would also show that the carbon penalty is lower than the agency estimates.