

The Effects of Ultra-Low Sulfur Gasoline on Emissions from Tier 2 Vehicles in the In-Use Fleet

Final Report

Appendix F Sensitivity Analysis of Influential Vehicles

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U.S. Environmental Protection Agency

NOTICE

This technical report does not necessarily represent final EPA decisions or positions. It is intended to present technical analysis of issues using data that are currently available. The purpose in the release of such reports is to facilitate the exchange of technical information and to inform the public of technical developments.

Appendix F. Sensitivity Analysis of Influential Vehicles

Percent Reduction in Emissions from 28 ppm to 5 ppm Fuel Sulfur on In-Use Tier 2 Vehicles

| Pollutant | Bag | Final Model (p-value) | Model with Influential Vehicles Removed (p-value) |
|-----------------|---------------|--------------------------|--|
| NO _x | Bag 1 | 7.1% (0.0216) | 7.4% (0.0125) |
| | Bag 2 | 51.9% (< 0.0001) | 52.1% (<0.0001) |
| | Bag 3 | 47.8% (< 0.0001) | 40.3% (<0.0001) |
| | FTP Composite | 14.1% (0.0008) | 12.2% (0.0008) |
| | Bag1-Bag3 | — ^a | — ^a |
| THC | Bag 1 | 9.2% (0.0002) | 8.2% (0.0002) |
| | Bag 2 | 43.3% (< 0.0001) | 40.0% (<0.0001) |
| | Bag 3 | 40.2% (< 0.0001) | 39.7% (<0.0001) |
| | FTP Composite | 15.3% (< 0.0001) | 12.5% (<0.0001) |
| | Bag1-Bag3 | 5.9% (0.0074) | 6.3% (0.0006) |
| CO | Bag 1 | 6.7% (0.0131) | 5.7% (0.0013) |
| | Bag 2 | — ^a | — ^a |
| | Bag 3 | 15.9% (0.0003) | 19.7% (<0.0001) |
| | FTP Composite | 9.5% (< 0.0001) | 7.9% (0.0006) |
| | Bag1-Bag3 | — ^a | — ^a |
| NMHC | Bag 1 | 8.1% (0.0017) | 7.4% (<0.0001) |
| | Bag 2 | 42.7% (0.0003) | 50.0% (<0.0001) |
| | Bag 3 | 54.7% (< 0.0001) | 41.6% (<0.0001) |
| | FTP Composite | 12.4% (< 0.0001) | — ^b |
| | Bag1-Bag3 | — ^b | — ^b |
| CH ₄ | Bag 1 | 16.6% (< 0.0001) | 14.5% (<0.0001) |
| | Bag 2 | 51.8% (< 0.0001) | 47.4% (<0.0001) |
| | Bag 3 | 29.2% (< 0.0001) | 31.0% (<0.0001) |
| | FTP Composite | 29.3% (< 0.0001) | 25.7% (<0.0001) |
| | Bag1-Bag3 | — ^b | — ^b |
| PM | Bag 1 | — ^a | — ^a |
| | Bag 2 | — ^a | — ^a |
| | Bag 3 | — ^a | — ^a |
| | FTP Composite | — ^a | — ^a |
| | Bag1-Bag3 | — ^a | — ^a |

^a Sulfur level not significant at $\alpha = 0.10$.

^b Inconclusive because the mixed model did not converge.