

The updated forecasts involve several model changes, volume changes, and greater use of some of the technologies included in NHTSA's analyses. Based on these updated forecasts, General Motors provided its own computation of what General Motors' CAFE would be for MYs 2005–2007 if either the Stage or Volpe technologies were added to General Motors' updated product plans without any instances of double counting. These projections indicated that the Stage analysis projected General Motors' attaining a CAFE of 21.20 mpg in MY 2005, 21.65 mpg in MY 2006 and 21.75 mpg in MY 2007. Using the Volpe method, General Motors reported that its projected CAFE should be 21.12 mpg in MY 2005, 21.47 mpg in MY 2006 and 21.70 mpg in MY 2007.

The foregoing projections, according to General Motors, are still far too optimistic, even after the effects of double counting and other clerical errors are addressed. General Motors indicated that the agency's proposal included the use of technologies that could not be implemented in the time available, including some that were not yet ready for commercial application. In other instances, General Motors asserted that it had already exploited particular technologies to the extent possible. General Motors also indicated that both the "Stage" analysis and the Volpe analysis relied on projected improvements from certain technologies that were unrealistic.

Accordingly, General Motors submitted its own estimates of benefits from the application of the same technologies. In many instances, these estimates were lower than those used by NHTSA. The company also disagreed with NHTSA's view in the NPRM that the displacement reductions envisioned in NHTSA's Stage III analysis—replacing a larger engine with a smaller one in some vehicles—were a practical means of improving fuel economy. According to General Motors, requiring the replacement of one engine with another constituted more than a change in a single vehicle. Instead, the company argued that such a change was the equivalent of prohibiting production of an entire model line. General Motors concluded that NHTSA's proposed CAFE standards are neither technologically feasible nor economically practicable.

As it did for the NPRM, NHTSA used two methodologies to explore the potential for improvement in General Motors' fuel economy. One, the "Stage" analysis, examined the potential use of various technologies and other means after separating these methods into three different "Stages" and applying them to

manufacturers in a designated sequence. The agency's "Stage" analysis, which is contained in the FEA that has been placed in the docket, corrected errors that General Motors had found in our earlier analysis.

As was the case with the "Stage" analysis performed in support of the NPRM, we based our choices as to which technologies to apply on our review of manufacturer product plans. In the case of General Motors, the agency re-examined many of our preliminary findings about which technologies could be applied to improve General Motors' fuel economy and revised its estimates. In so doing, we noted that General Motors' May 2002 submission, submitted in response to our February 7, 2002 request for comments, contained a number of references to technologies or returns on technologies that the company either abandoned or discounted in its February 14, 2003 submission. In some instances, our analysis was modified to reflect General Motors' February 2003 view of which measures could be employed. In others, we examined both the May 2002 and February 2003 General Motors submissions to see if opportunities existed to expand the use of technologies that appeared to be consistent with General Motors' product plans as depicted in both documents. We also considered improvements from technologies that had been adopted by other manufacturers. Our analysis projected that some of these technologies could be used to improve fuel economy if General Motors expended additional effort to implement some of these changes.

We further believe that, while there are technological and market risks associated with establishing a CAFE standard three model years beyond MY 2004, the last year for which a standard has been established, there is also the opportunity to incorporate further technological advancements to achieve the standard and beyond. We also believe that General Motors' projected CAFE capabilities may be further enhanced should consumers begin to demand more hybrid electric vehicles, diesel vehicles and cross-over utility vehicles and should General Motors expand its offerings in this arena to meet consumer demand.

NHTSA believes that it is technologically feasible for General Motors to meet the standards established in this final rule. We note that our updated "Stage" analysis responds to General Motors' most recent comments and projections by adjusting the use, introduction, and application of fuel economy

improvements to conform better to General Motors' currently planned deployment of technologies. The agency also reexamined the application of several technologies to ensure that they were applied to vehicles suitable for their use. In so doing, NHTSA examined the way in which these technologies were being used by the industry. Our analysis applies technologies that are either already in use or are sufficiently mature to have been included by other manufacturers in their MY 2005–2007 product plans.

Finally, our analysis did not rely on the use of clean diesel engines or the production of hybrids beyond those already planned by General Motors. However, the agency believes that the use of diesel engines and hybrid technology would enable General Motors to offset some of their anticipated risks of technical implementation and meet the new standard. Both of these technologies offer significant promise for increased fuel efficiency and one, if not both, could certainly be in place during MYs 2005–2007. Other external uncertainties, such as further technological development and fluctuating fuel prices that may affect consumer demand by MY 2007, could assist General Motors in achieving the standards established by this final rule.

General Motors' comments also took issue with the validity and execution of NHTSA's "Volpe" analysis. As indicated in the PEA prepared in conjunction with our December 2002 NPRM, NHTSA computed the potential costs of its proposal through an analysis developed by the Volpe National Transportation Systems Center. This analysis used an algorithm that applied fuel economy technologies to different model lines based on the cost-effectiveness of each technology. General Motors argued that the Volpe analysis contained a number of errors, including some clerical and mathematical errors.

The company also claimed that the Volpe analysis was illogical in the manner in which technologies were used and discarded without sufficient regard for capital costs. The analysis was also flawed, in General Motors' view, because the Volpe analysis applied different techniques for estimating costs than those employed in the Stage analysis to raise General Motors' fuel economy. Finally, General Motors also indicated that many of the technologies employed in the "Volpe" analysis were either not ready, did not deliver the fuel savings described or were, in many instances, not practicable for General Motors.