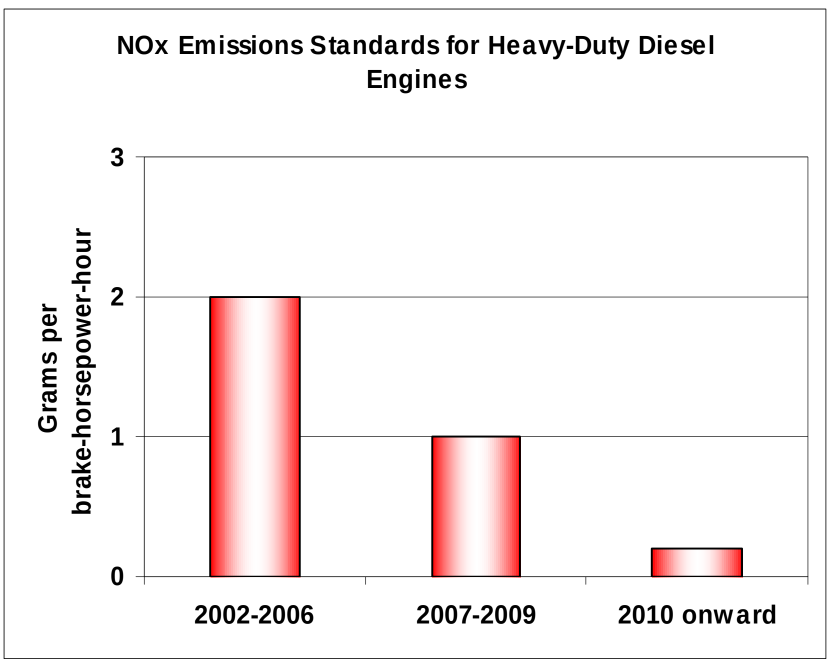
Customer Behavior in Response to the 2007 Heavy-Duty Engine Emissions Standards: Implications for the 2010 NO_x Standard Executive Summary

This document summarizes an evaluation prepared by NERA Economic Consulting ("NERA") on the predicted and actual effects of the 2007 heavy-duty diesel engine emissions standards on customer behavior. It also outlines preliminary implications of this information for the likely effects on customer behavior of the forthcoming 2010 NO_x emissions standard for heavy-duty diesel engines.[1]

A. Background

The heavy-duty NO_x standard was reduced from 2 g/bhp-hr in 2006 to approximately 1 g/bhp-hr for 2007-2009 and will decline further to 0.2 g/bhp-hr in 2010 (as shown in Figure 1).

Figure 1. NO_x Emissions Standards for Heavy (Class 8) Trucks from 2002-2010



In January of 2005, NERA conducted a study of the possible economic and environmental effects of the 2007 standards, focusing on the implications of truck purchaser responses to the substantial price increases and technological uncertainties associated with the 2007-09 standards. In this study, NERA predicted that increased costs and technological uncertainty on the part of

[1] We acknowledge the support of Navistar International Corporation ("Navistar"). The information and opinions contained herein are solely the responsibility of the NERA authors and not necessarily those of Navistar.

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truck purchasers would lead to incentives for increased pre-2007 sales ("pre-buy") and decreased sales from 2007 onward ("low-buy"). This customer behavior reduces the emissions benefits and lowers the cost-effectiveness of the standards. NERA conducted a survey to determine the size of the pre-buy and low-buy and modeled the effects of pre-buy, low-buy and price changes on the composition of the Class 8 truck fleet.

B. Comparison of Results of NERA/AIR 2005 Report with Actual Truck Sales

The customer behavior predictions made by NERA in 2005 seem to have been validated by actual sales figures. Table 1 shows the NERA predictions and the actual changes in sales relative to the EPA baseline for Class 8 truck sales.

Table 1. NERA Predictions of the Change in Class 8 Truck Sales and the Actual Changes relative to the EPA Baseline

	NERA Estimate Class 8		Actual Class 8	
2005	25,324	104,077	45,683	119,072
2006	78,753		73,389	
2007	-102,237	-149,279	-63,164	-182,749
2008	-47,042		-119,585	

Note: 2008 sales extrapolated from sales through September 2008.

While other factors (e.g., changes in diesel prices and macroeconomic conditions) may affect truck sales, the pattern of pre-buy and low-buy seems apparent. Indeed, the ratio of the total pre-buy to the post-buy volumes predicted by the NERA study—a ratio of about 2 pre-buy sales for every 3 decreased sales— is almost exactly the same as the ratio for the actual estimates.

C. Preliminary Implications for the 2010 NO_x Standards

Two key features of the 2007 standards that caused the effects modeled by NERA seem destined to apply to the 2010 NO_x standard as well:

§ Trucks that meet the new standard will have substantially greater purchase prices; and

§ Trucks that meet the new standard will entail technological uncertainties from the perspective of the customer (including uncertain increases in operating and maintenance costs).

It thus seems reasonable to expect that the customer responses to the 2007 standard—pre-buy sales before and low-buy sales when the standard comes into effect, leading to decreased environmental benefits and reduced cost-effectiveness—will be repeated for the 2010 standard. Indeed, macroeconomic weakness and a lack of available credit in 2008 and 2009 may prevent a pre-buy. These effects could further decrease the environmental benefits and cost-effectiveness of the 2010 regulation.

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