

b. Impact of the Rule on Affordability of Vehicles and Low-Income Households

Several organizations provided comments about the effect of the rule on the affordability of new vehicles, as well as the impacts of the rule specifically on low-income households.

Comments from Consumer Federation of America (CFA) and 23 other consumer groups, as well as Consumers Union (CU) and several environmental organizations, argued that low-income households will benefit from the rule. These commenters cite Bureau of Labor Statistics data that low-income households spend more on fuel than they do on new vehicles each year and are thus more vulnerable to fuel costs. CU comments that low-income households pay a disproportionately large portion of their income on fuel and are thus most vulnerable to price spikes in gasoline. CFA reported that in 2010, households with incomes below \$20,000 spent 7.3 times as much on gasoline as on new car payments, compared with 1.2 times as much for households with incomes above \$70,000. This commenter believes that consumers will benefit greatly from the fuel savings that come with improved fuel economy. These organizations note that low-income households account for a very small portion of new car buyers, since they primarily purchase used cars, and are therefore less affected by the up-front costs of the more efficient vehicles than those who buy new vehicles. CU further comments that Consumers Reports survey data show that low-income households support improved fuel economy. In a recent survey, 71% of low-income households responded that they expect to choose a model with better fuel economy, compared to 59% of moderate and high-income respondents. In addition, 79% of low-income respondents to the survey reported that they were willing to pay extra for a more fuel efficient vehicle if they can recover the additional cost through lower fuel costs within five years, compared to 86% of moderate and high-income respondents.

In addition, these commenters agreed with EPA's assessment in the NPRM that consumers who buy their vehicles with loans save more in fuel each month than they do in increased loan payments. CU points out that this is especially true for buyers of future, more fuel-efficient used vehicles: The increase in up-front cost is much lower on a used vehicle, due to depreciation, while the fuel economy of the vehicle is unlikely to change over time. Because low-income households disproportionately buy used vehicles,

they will benefit from this more rapid cost recovery. Because most of the increased vehicle cost depreciates after five years, the payback period for improved fuel economy in used MY 2017 and later vehicles will be shorter than the payback period for these vehicles when newly purchased (under two years for some examples). EPA agrees that more efficient vehicles will reduce operating costs for buyers of used vehicles as well as new vehicles, because the fuel-saving technologies maintain their effectiveness over time; indeed, GHG standards continue to apply in-use. As shown in RIA Chapter 5.5, our estimate of the payback period for five-year-old MY 2025 vehicles is approximately 1.1 years, less than the payback period of about 3.2–3.4 years for new MY 2025 vehicles. We also note that depreciation rates may be affected by the rule: increases in reliability would decrease depreciation, and decreases in reliability would increase depreciation. Finally, CU points out that some auto lenders take into consideration the fuel economy of new vehicles, and offer discounted rates for more efficient vehicles.<sup>893</sup> As discussed further below, EPA also finds that a number of financial institutions give a discount on loans for more fuel-efficient vehicles.

The National Automobile Dealers Association (NADA) and the Institute for Energy Research emphasized that the increase in the up-front vehicle costs would be a factor in consumers' abilities to purchase. In particular, they stated that, if vehicle buyers are not able to get loans for vehicles that have become more expensive as a result of new standards, because they cannot get access to credit for the additional cost, then they will be unable to participate in the new vehicle market even if the new vehicles offer significant fuel savings. This argument is based on the statement from NADA that auto lenders do not take into account the fuel economy of the vehicles when they are deciding on providing loans; the lenders consider only consumers' debt-to-income ratios. NADA provided an analysis that concludes that 6.8 million licensed drivers may no longer have access to new vehicles. According to NADA's analysis, this estimate is the number of licensed drivers who live in the 3.1–4.2 million households that could borrow \$11,750, the loan amount for the least expensive new vehicle in

2011 after a \$1000 down payment, but could not borrow \$14,750.<sup>894</sup> This difference of \$3,000 is meant to represent what NADA views as the cost increase of new fuel economy standards, which EPA believes is incorrect and responds to further below.

In assessing these comments, EPA finds that the NADA study does not provide a usable estimate of those consumers in the market for new vehicles who might have trouble getting loans, and is not a usable estimate of the impacts of the rule on the new vehicle market. Because the NADA study does not separate consumers who might consider new vehicles from consumers who are not in the market for new vehicles, the 6.8 million licensed driver figure significantly overestimates any impact of this rule on the new vehicle market.

The NADA study suffers from a number of inaccuracies and weaknesses. First, it is important to understand what NADA's 6.8 million estimate actually represents. NADA simply looked at the 113 million households in the U.S. who could afford to borrow \$11,750 and estimated which ones of those could not afford to take out a loan of \$14,750.<sup>895</sup> NADA's analysis unfortunately neglects a fundamental factor that could make this analysis relevant to this rulemaking—how many of those households would in fact even be in the market for a new vehicle. EPA believes that the vast majority of these households would not be in the market for new vehicles (for context, the total new vehicle market is estimated to be 17.2 million vehicles in 2025; see TSD Chapter 1.3.2.1). As documented by many other commenters and as can be found in the Federal Reserve Board's Survey of Consumer Finances,<sup>896</sup> low-

<sup>894</sup> Wagner, D., P. Nusinovich, and E. Plaza-Jennings, National Automobile Dealers Association (February 13, 2012). "The Effect of Proposed MY 2017–2025 Corporate Average Fuel Economy (CAFE) Standards on the New Vehicle Market Population." Docket EPA–HQ–OAR–0799.

<sup>895</sup> The Bureau of Labor Statistics' Consumer Expenditure Survey, on which the Wagner et al. paper is based, measures 121,000 households in the U.S. in 2010. Wagner et al. find that "an estimated 93% of all consumer units have a financial profile that would allow them to meet the 40% maximum debt to income ratio after purchasing the current minimum cost new vehicle (\$12,750)." (See footnote 894, p. 4.) Ninety-three percent of 121 million households is about 113 million households; Wagner et al.'s estimate of 3.1 to 4.2 million of those who can borrow \$11,750 but not \$14,750 is 2.8 to 3.7 percent of that total.

<sup>896</sup> In the Federal Reserve Board's 2007 Survey of Consumer Finances, households with income below \$35,200 (about the lower 40% of population by income) bought about 17% of new vehicles; those in the bottom quintile of income bought fewer than 2% of new vehicles. See Federal Reserve Board, 2007 Survey of Consumer Finances, <http://>

<sup>893</sup> See, for instance, Ladika, Susan (2009). "'Green' auto loans offer lower rates," Bankrate.com, <http://www.bankrate.com/finance/auto/green-auto-loans-offer-lower-rates-1.aspx>, accessed 2/28/12.

income households account for a very small portion of new car buyers, since they primarily purchase used cars. Thus, the NADA estimate is severely flawed and does not contribute usable information to identify the impacts of this rule on the vehicle market or on low-income households.

Second, the NADA estimate is based, not on people who are considering purchasing new vehicles, but on the number of licensed drivers in households in the U.S. who could theoretically qualify to borrow \$11,750, but not \$14,750, based purely on debt-to-income ratio.<sup>897</sup> Even accepting NADA's study at face value, the relevant unit for the financial decision would be the number of households—not every licensed driver in a low income household would purchase a separate vehicle. The number of households in the NADA study is 3.1 to 4.2 million, already far lower than the estimate of 6.8 million drivers.

Third, NADA's assumption of a \$3,000 cost increase per vehicle is based on summing the costs of MY 2011, MY 2012–16, and MY 2017–25 rules. This estimate does not correspond to EPA's estimate, an average cost of about \$1,800 per vehicle by MY 2025, in several ways. For analyzing the effects of this rulemaking, it is appropriate to focus on the costs and benefits associated with this rulemaking, not those of previous rulemakings. The impacts of the other rules are included in the reference case for this rule. The NADA cost estimate, based on a MY 2011 vehicle, appears to double-count MY 2011 costs, because those should already be included in the price of the MY 2011 vehicle used in its study. Further, the costs of meeting MY 2016 standards in 2025 are expected to be lower than the costs of meeting those standards in 2016, the value used by NADA, due to manufacturer learning. Moreover, EPA's costs estimates are based on industry-wide averages, not applicable to specific vehicle models. As discussed further below, impacts of the rule on the prices of low-price vehicles may well be less than these averages.

Fourth, the estimate does not take into account, as pointed out by CU and as EPA has documented, that some lenders currently give discounts for loans to

[www.federalreserve.gov/econresdata/scf/scf\\_2007.htm](http://www.federalreserve.gov/econresdata/scf/scf_2007.htm).

<sup>897</sup> As noted, these amounts are based on the cost of the least expensive vehicle in 2011, with \$1,000 down payment, with the assumption that it will become \$3,000 more expensive as the result of three rulemakings, for MYs 2011, 2012–16, and 2017–25 (see Wagner et al., footnote 894).

purchase more fuel-efficient vehicles.<sup>898</sup> It is possible (though unknown at this time) that the auto loan market may evolve to include further consideration of fuel savings, as those savings play a significant factor in offsetting the increase in up-front costs of vehicles.

Fifth, the NADA analysis is based on the cost of the least expensive vehicle in the MY 2011 market, but the market size for low-priced vehicles is only about one-tenth the size of NADA's estimate of 6.8 million affected people. The agencies' baseline estimates of the vehicle fleet in 2025 finds that total sales of vehicles costing less than \$15,000 (a price point that low income consumers in the new car market would most likely be pursuing) in the absence of the rule are estimated to be well below 1 million in MY 2025; there is also no relationship between the NADA estimate and the potential impact of this rule on sales of low-priced vehicles.

Sixth, if NADA's estimate reflected a measurable effect of the rule, that effect would be reflected in a commensurate reduction in vehicle sales. Yet there is no connection between any vehicle sales estimates provided in comments on this rule and the NADA estimate. As discussed in section III.H.11.a, many commenters predict an increase in vehicle sales as a result of the rule, though others predict decreases.<sup>899</sup> However, even the most negative estimate provided in public comments of the GHG rule's impact on vehicle sales, from the Defour Group (which we address in detail in Section III.H.11.a), is a reduction of 1.8 million vehicles. The NADA estimate appears significantly overstated even compared to this commenter's most negative estimate of vehicle sales impacts.

For these reasons, we find the NADA study does not provide a usable estimate of consumers in the market for new vehicles who might have trouble getting new vehicle loans, nor do we find it a usable estimate of the impacts of the rule on the new vehicle market.

It is possible that future trends in the auto loan market may affect future vehicle sales. It is also possible that

<sup>898</sup> See footnote 893, above. An Internet search on the term "green auto loan" produced more than 50 lending institutions that provide reduced rates for more efficient vehicles. See Helland, Gloria (2012). "Memorandum: Lending institutions that provide discounts for more fuel-efficient vehicles." Assessment and Standards Division, Office of Transportation and Air Quality, U.S. Environmental Protection Agency, Docket EPA-HQ-OAR-0799.

<sup>899</sup> We note that the role of vehicle financing in vehicle purchase decisions is not a separate factor in typical studies of the determinants of vehicle sales. Estimates of vehicle sales in the literature, which commonly are dependent on both up-front vehicle costs and fuel costs, implicitly account for effects of the loan market.

some people who have significant debt loads may not be able to get financing for some of these new vehicles; they may have to buy different vehicles (including used vehicles) or delay purchase. For others who borrow on credit, though, as discussed in Section III.H.5, the fuel savings are expected to outweigh the increased loan costs from the time of vehicle purchase. As some comments suggest, the rule thus may make vehicles more affordable to the public, by reducing consumers' vulnerability to fuel price jumps. Some comments raised concerns about the impacts of the rule specifically on low-priced vehicles. EPA agrees that vehicles in the low-priced (economy-class) segment will bear technology costs needed to meet the new standards, but it is not known how manufacturers will decide to pass on these costs across their vehicle fleets, including in the low-priced vehicle segment. If manufacturers decide to pass on the full cost of compliance in this segment, then it is possible that consumers who might barely afford new vehicles may be priced out of the new-vehicle market or may not have access to loans. As just discussed, the rule's impacts on availability of loans are unclear, because some lenders do factor fuel economy into their loans, and it is possible that this trend may expand. In addition, as the Union of Concerned Scientists comments, auto makers have some flexibility in how both technologies and price changes are applied to these vehicles; auto makers have ways to keep some vehicles in the low-priced vehicle segment if they so choose. Though the rule is expected to increase the prices of these vehicles, the degrees of price increase and the impacts of the price increases, especially when combined with the fuel savings that will accompany these changes, are much less clear.

The Defour Group suggests that the standards are regressive, with adverse impacts falling disproportionately on low-income households, and possibly limiting their ability to obtain employment because of limited mobility. The commenter's regressivity assessment is based on a study of a non-footprint-based fuel economy program;<sup>900</sup> the disproportionate impact on low-income households is based on the increased prices of used vehicles and the shift toward smaller vehicles. As discussed above in Section III.H.11.a,

<sup>900</sup> Jacobsen, Mark. "Evaluating U.S. Fuel Economy Standards in a Model With Producer and Household Heterogeneity." Working paper, University of California, San Diego, September 2010. Docket EPA-HQ-OAR-0799-0829.

EPA finds that the impact on the used vehicle market depends on the impact of the rule on new vehicle sales, which we have not quantified. Because the footprint-based standard reduces incentives to downsize vehicles, we do not accept the conclusion that the rule will result in buyers of used vehicles getting smaller ones with a consequent welfare loss. For these reasons, the regressivity finding from Jacobsen's paper is not applicable to the effects of this rule.

In summary, the net effect of the rule on low-income households depends on several factors: The way that manufacturers choose to translate cost increases into price increases; the effects on sales of used vehicles, which depend on the effects on sales of new vehicles; the fuel savings that the new (and used) vehicles will provide; and any effects on access to credit for new and used vehicles. For reasons outlined above, we do not at this time have quantitative assessments of how these effects interact and affect low-income households. However, due to the significant effect of the rule on fuel savings, especially for used vehicles (see RIA Chapter 5.5), we expect low-income households to benefit from the more rapid payback period for used vehicles, though some of this benefit may be affected by the net effect of this rule on the prices and availability of used vehicles, which we have not estimated.

In addition, the net effect of the rule on low-priced vehicles is difficult to assess; though we expect the prices of these vehicles to increase, it is also possible that auto makers may find ways to preserve the entry-vehicle segment, by adding less additional technology to these vehicles or through pricing strategies. The net effect of the rule on access to credit is also difficult to assess: though some consumers may find themselves credit-constrained, some auto lenders are already giving interest rate discounts for more fuel-efficient vehicles, and the loan market may continue to evolve.

## 12. Employment Impacts

### a. Introduction

Although analysis of employment impacts is not part of a cost-benefit analysis (except to the extent that labor costs contribute to costs), employment impacts of federal rules are of particular concern in the current economic climate of sizeable unemployment. When President Obama requested that the agencies develop this program, he sought a program that would “strengthen the [auto] industry and enhance job creation in the United

States.”<sup>901</sup> The recently issued Executive Order 13563, “Improving Regulation and Regulatory Review” (January 18, 2011), states, “Our regulatory system must protect public health, welfare, safety, and our *environment* while promoting economic growth, innovation, competitiveness, and *job creation*” (emphasis added). EPA is accordingly providing partial estimates of the effects of this rule on domestic employment in the auto manufacturing and parts sectors, while qualitatively discussing how it may affect employment in other sectors more generally. Several commenters specifically pointed to the desirability of our conducting employment analyses, to provide insights into the effects of the rule on economic recovery and the health of the auto industry; we did not receive comments opposed to the inclusion of employment impacts.

This rule is expected to affect employment in the United States through the regulated sector—the auto manufacturing industry—and through several related sectors, specifically, industries that supply the auto manufacturing industry (e.g., vehicle parts), auto dealers, the fuel refining and supply sectors, and the general retail sector. According to the U.S. Bureau of Labor Statistics, in 2010, about 677,000 people in the U.S. were employed in Motor Vehicle and Parts Manufacturing Sector (NAICS 3361, 3362, and 3363). About 129,000 people in the U.S. were employed specifically in the Automobile and Light Truck Manufacturing Sector (NAICS 33611), the directly regulated sector, since it encompasses the auto manufacturers that are responsible for complying with the standards.<sup>902</sup> The employment effects of this rule are expected to expand beyond the regulated sector. Though some of the parts used to achieve the standards are likely to be built by auto manufacturers themselves, the auto parts manufacturing sector also plays a significant role in providing those parts, and will also be affected by changes in vehicle sales. Changes in light duty vehicle sales, discussed in Section III.H.11, could affect employment for auto dealers. As discussed in Section III.H.4, this rule is expected to reduce the amount of fuel these vehicles use, and thus affect the

petroleum refinery and supply industries. Finally, since the net reduction in cost associated with this rule is expected to lead to lower household expenditures on fuel net of vehicle costs, consumers then will have additional discretionary income that can be spent on other goods and services.

When the economy is at full employment, an environmental regulation is unlikely to have much impact on net overall U.S. employment; instead, labor would primarily be shifted from one sector to another. These shifts in employment impose an opportunity cost on society, approximated by the wages of the employees, as regulation diverts workers from other activities in the economy. In this situation, any effects on net employment are likely to be transitory as workers change jobs (e.g., some workers may need to be retrained or require time to search for new jobs, while shortages in some sectors or regions could bid up wages to attract workers).

On the other hand, if a regulation comes into effect during a period of high unemployment, a change in labor demand due to regulation may affect net overall U.S. employment because the labor market is not in equilibrium. In such a period, both positive and negative employment effects are possible.<sup>903</sup> Schmalensee and Stavins point out that net positive employment effects are possible in the near term when the economy is at less than full employment due to the potential hiring of idle labor resources by the regulated sector to meet new requirements (e.g., to install new equipment) and new economic activity in sectors related to the regulated sector.<sup>904</sup> In the longer run, the net effect on employment is more difficult to predict and will depend on the way in which the related industries respond to the regulatory requirements. As Schmalensee and Stavins note, it is possible that the magnitude of the effect on employment could vary over time, region, and sector, and positive effects on employment in some regions or sectors could be offset by negative effects in other regions or sectors. For this reason, they urge caution in reporting partial employment effects since it can “paint an inaccurate

<sup>901</sup> President Barack Obama. “Presidential Memorandum Regarding Fuel Efficiency Standards. The White House, Office of the Press Secretary, May 21, 2010. <http://www.whitehouse.gov/the-press-office/presidential-memorandum-regarding-fuel-efficiency-standards>.

<sup>902</sup> U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, as accessed on August 9, 2011.

<sup>903</sup> Masur and Posner, 2011. “Regulation, Unemployment, and Cost-Benefit Analysis.” [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1920441](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1920441) (Docket EPA-HQ-OAR-2010-0799-1222).

<sup>904</sup> Schmalensee, Richard, and Robert N. Stavins. “A Guide to Economic and Policy Analysis of EPA’s Transport Rule.” White paper commissioned by Excelon Corporation, March 2011 (Docket EPA-HQ-OAR-2010-0799-0676).