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Calculating Employment Losses Due to Post-2016 Fuel Economy Standards Using Government Data and Methodology

This white paper has been prepared by the Defour Group LLC, who is solely responsible for its contents.

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The U.S. Energy Information Agency (EIA) recently estimated that a 62 mpg Corporate Average Fuel Economy (CAFE) standard would result in 2.4 million fewer new vehicle sales in MY 2025[1]. In this white paper, Defour Group LLC economists have taken the EIA sales-loss numbers and, utilizing factors used by the Federal government for these types of estimates, calculated the projected employment losses for:

- Original equipment manufacturers (OEM) and supplier.
- Automobile dealers.

In addition, this white paper discusses the possible further employment impacts of:

- Community job losses resulting from the basic employment losses at OEMs, suppliers and dealers.
- Possible employment gains resulting from new technologies.
- Domestic job losses due to cost pressures.

It is now beyond dispute that the range of fuel economy standards being considered for 2017 and beyond will both increase the cost of new motor vehicles and thus reduce new vehicle sales. The EIA estimate that a 62 mpg CAFE standard would result in 2.4 million fewer new vehicle sales in MY 2025 closely matches Defour's own estimate that 2,525,000 vehicle sales would be lost. Clearly, sales losses of this magnitude could be expected to lead to job losses in the industry.

Job Losses by OEM's and Component Suppliers

The National Highway Traffic Safety Administration (NHTSA), in its Final Regulatory Impact Analysis for the 2012 – 2016 MY CAFE Standard[2] estimates that there would be one job lost by OEMs and suppliers for every 11.3 vehicle sales that are lost. For a loss of 2.4 million units in new vehicle sales as predicted by EIA, this translates into 212,400 jobs that would be lost at OEMs and parts suppliers in 2025 due to a 62 mpg CAFE standard.

[1]Energy Information Agency Outlook 2011, April, 2011. In the section entitled "Increasing Light Duty Vehicle Greenhouse Gas & Fuel Economy Standards for MYs 2017-2025", the agency states: *"As a result of higher vehicle prices, total new LDV sales in 2025 are 8 percent lower in the CAFE3 case and 14 percent lower in the CAFE6 case than in the Reference case*" (these values are based on gasoline prices of $3.54 / gallon in 2009 dollars). Assuming that absent higher CAFE standards the total new vehicle sales in the U.S. would be 17.1 million units, the EIA sales losses translate into a loss of 1.4 million units at a 47 mpg CAFE and 2.4 million units at a 62 mpg CAFE standard.

[2] "Corporate Average Fuel Economy for MY 2012 – MY 2016 Passenger Cars and Light Trucks," National Highway Traffic Safety Administration, March, 2010. The agency says, on page 355, "*one could assume that projected sales loss* [due to more stringent fuel economy standards] *divided by 11.3 would give an estimate of the potential employment loss* [in the motor vehicle and parts manufacturing sector]."

According to the Bureau of Labor Statistics (BLS)[3], there are 694,500 people employed by OEMs and parts manufacturers as of May, 2011. Assuming that employment remains the same through 2025, a 62 mpg CAFE standard could be expected to reduce employment by 30.6%.

Job Losses at Automobile Dealerships

According to the BLS[4], there are 3.362 dealer jobs for every 100 vehicles produced. Therefore, the 2.4 million unit reduction of vehicle production predicted by EIA would reduce dealer employment by 80,700 as a result of a 62 mpg CAFE standard in 2025. Also according to the BLS, as of May, 2011, U.S. dealers employ 1,040,400 employees. If dealer employment in 2025 remains the same, then a 62 mpg CAFE standard would reduce dealer employment by 7.8%.

Total Automotive Industry Employment

Taken together, a 62 mpg CAFE standard would reduce OEM, parts supplier and dealer employment by 293,100. Total OEM, parts supplier and dealer employment is 1,734,900. As a result, a 62 mpg CAFE standard would reduce total industry employment in 2025 by 16.9%. Using the same logic to calculate job losses, it can be estimated that a 56 mpg CAFE [5] would result in 220,000 jobs lost in the industry.

Community Job Losses

While dealer job losses will be uniformly distributed, affecting virtually every community in the United States, nearly half the job losses from OEMs and parts manufacturers will occur in five states: Michigan, Ohio, Indiana, Kentucky and Alabama. Clearly, a ripple effect could be expected to cause additional job losses in local communities and at the state level. Industries such as the food service industry would see less business and would require fewer employees. To the extent the thousands of unemployed workers would move out of state to find work, local and state tax receipts would be reduced, leading to reduced public sector employment. While quantifying these job losses is beyond the scope of this white paper, it is worth noting that historically, job losses by OEMs and supplier have led to further job losses at the community level in the past.

[3] www.bls.gov "Automotive Industry:: Employment, Earnings and Hours"

[4] BLS Input/Output Tables

[5] Since the EIA's sales loss estimate for a 62 mpg CAFE was 95% of the Defour Group estimate, 95% of the Defour Group's estimate for sales losses at a 56 mpg CAFE of 1,907,000 would translate into an EIA-equivalent number of 1.8 million unit sales loss.

Employment Gains Resulting from New Technology

There is an expectation by some that domestic employment losses caused by a 62 mpg CAFE standard will be offset with jobs in new technology such as electric vehicles (the "green jobs" argument). There are two factors, however, that make it doubtful whether the jobs created by new technologies would ameliorate the huge job losses caused by EIA's predicted 2.4 million unit a year drop in new vehicle sales.

- New technologies may only make up a small part of the vehicle fleet in 2025, even at a 62 mpg CAFE standard. Proponents of the green jobs theory point to entirely new industries being created to manufacture components for advanced electric vehicles. Yet according to the government's Technical Assessment Report[6], a 62 mpg CAFE standard could be met with very little use of advanced technologies. In one of the technology paths that were modeled, 26% of the vehicles employed mass reduction and conventional powertrains to meet the standard, while only 4% of the vehicles were electric or plug-in electrics. Mass reduction, where a lighter weight more expensive material is substituted for a heavier and less expensive material, involves no additional labor. Like mass reduction, many of the strategies being considered to meet a 62 mpg fuel CAFE standard involve little or no additional labor and thus would create no new jobs.

  There is no guarantee that there would be many green jobs or that they would be in the U.S. There are three major systems in advanced electric vehicles not found in conventional vehicles: large advanced batteries, electric control systems, and electric motors. Advanced batteries are either labor or capital intensive. If labor is used to produce the batteries instead of automation, then production would migrate to countries with low labor costs. Advanced batteries produced domestically could only compete with batteries from countries with low labor costs if the manufacturing process was highly automated. In either case, there would be few U.S jobs created. The electronics package for electric vehicles would likely be produced in the same manner as other electronic devices: with the use of highly automated manufacturing. Again, it is unlikely that any significant number of new jobs would be created. The electric motors used to power the wheels of an electric vehicle essentially replace the drivetrain found in a conventional vehicle. No more employees would be needed to manufacture the motors than were used to manufacture the powertrain components they replaced. As a consequence, there would be few if any additional jobs created by building advanced technology for as little as 4% of the new vehicle fleet. What few new jobs that are created in this way would be dwarfed by the job losses created by a 14% drop in overall new vehicle production.

[6] "Interim Joint Technical Assessment Report: Light-Duty Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2017-2025," page xi, Table ES-3, Technology Penetration Estimates for MY 2025 Vehicle Fleet.

Job Losses from Cost Pressures

A 62 mpg CAFE standard results in reduced vehicle sales because consumers are unwilling or unable to pay the increased vehicle cost. In order to maintain sales volumes and market share, manufacturers will be under tremendous pressure to reduce vehicle costs elsewhere to pay for the increase in cost due to CAFE. Such cost pressures should result in simplifying the design of the vehicle so it can be produced with fewer workers, the use of more automation or the transfer of high labor content operations to other countries. All of these strategies will result in reduced employment.

Summary

Independent studies ranging from those done by private consultants such as Defour Group LLC to government studies by the Energy Information Agency agree that a 62 mpg CAFE standard in 2025 will reduce vehicle sales and production by about 2.4 million units. Based on methodology used by the National Highway Traffic Safety Administration to calculate job losses from the 2012 – 2016 Model Year CAFE standards, this will result in a 31% drop in employment by original equipment manufacturers (OEMs) and parts suppliers. Using the same methodology as used by the Bureau of Labor Statistics in estimating dealer employment, a 2.4 million drop in vehicle sales will reduce dealer employment by 8%.

Thus, based entirely upon recent work done by various agencies of the Federal government, it can be estimated that the motor vehicle industry (OEMs, suppliers and dealers) will lose nearly 300,000 jobs (17%) as a result of a 62 mpg CAFE standard in 2025. Additional job losses can be expected in local communities most affected and by the efforts of vehicle manufacturers to reduce costs to maintain market share. Conversely, there is little to suggest that additional jobs created in the U.S. by advanced technology will be enough to have a noticeable impact on these employment losses.

The discussion about the optimum level of fuel economy standards for 2017 and beyond must begin by accepting that more stringent standards will result in sales and job losses in the absence of a massive increase in the price of gasoline. Furthermore, more stringent standards can be expected to lead to greater sales and job losses.

This white paper was prepared by Dean Drake from input
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