

**Testimony of Jody Shaw**  
**Director – Technical Marketing and Product Research**  
**United States Steel Corporation**

**“Endorsement to Expand 2017-2025 CAFE Rules to Comprehend Life  
Cycle Thinking”**

**Before the EPA and NHTSA regarding extend the National Program of  
harmonized greenhouse gas and fuel economy standards to model year  
2017 through 2025 passenger vehicles**  
**January 17, 2012 - Detroit**

Good afternoon and thank you for the opportunity to appear before you today to provide comment on the proposed 2017-2025 CAFE rules. My name is Jody Shaw, Director of Technical Marketing and Product Research for the United States Steel Corporation. My role within U. S. Steel is to assist the automotive industry make the best use of our product in vehicle structural applications and to ensure U. S. Steel is producing the products the automotive industry requires today and in the future.

I am also Chairman of WorldAutoSteel, the automotive applications organization for the World Steel Association, representing 17 global steel companies that provide the vast majority of the steel for the 60 million vehicles globally produced each year. The goal of WordAutoSteel is to demonstrate the advantages of steel in vehicle design as well as establish the technical requirements of steels in future vehicles.

The message I am providing to you today, complements the position taken by the global steel industry and other pro-environment stakeholders who share the objective of reducing the carbon footprint of motor vehicles.

U. S. Steel supports the objectives of the EPA and NHTSA to improve fuel economy and reduce the greenhouse gas emissions associated with light vehicles. We also support the Energy Independence and Security Act (EISA) of 2007 and the President’s May 21, 2010 request that EPA and NHTSA work together to develop a national program that would “...*produce a new generation of clean vehicles*” and responds to the country’s goal of reducing carbon emissions and reducing oil consumption.

CAFE was initiated in 1975 in the wake of the 1973 Oil Embargo with the objective reducing dependence on foreign oil. That program adopted miles per gallon, measured in equivalent tailpipe grams of CO<sub>2</sub> per mile, as the metric to achieve reductions in oil consumption. It was the right approach to achieve the stated objective.

However, extending that same metric toward the new objectives and will not achieve the intended outcome, but in contrast will result in increased total energy use and CO<sub>2</sub>

emissions. In fact, the magnitude of these unintended consequences will increase as the fuel economy and grams of CO<sub>2</sub> per mile become more stringent between now and 2025.

To explain, a vehicle consumes energy and emits CO<sub>2</sub> during all phases of its life which includes manufacturing, driving, and end of life disposal. Considering all phases of a vehicle's life accurately measures its true carbon footprint.

In today's vehicles, the driving phase CO<sub>2</sub> emissions represent 85 percent of a vehicle's total carbon footprint allowing regulators to ignore the other phases of impact. However, as the fuel economy requirements double from 27.5 mpg today to 54.5 mpg in 2025, the driving phase emissions will be cut in half, thus increasing the importance of other vehicle life phases. Also, consider that many of the technologies (and materials) necessary to achieve these fuel economy improvements are energy and CO<sub>2</sub> intensive in the manufacturing phase and will increase the vehicle manufacturing phase CO<sub>2</sub> emissions, altering end-of-life impact in both relative and absolute measures.

Several recent studies demonstrate that vehicles aiming to achieve the future fuel economy and tailpipe emissions targets will have a 50-50 split between CO<sub>2</sub> emissions associated with the driving phase and other phases. Under the proposed regulations 50 percent or more of the total CO<sub>2</sub> emissions associated with these future vehicles will fall outside of the regulation.

How does this conflict with the national objectives of reducing CO<sub>2</sub> emissions and energy use of vehicles to address climate? As I stated many of the technologies required to achieve the proposed 54.5 miles per gallon target have high manufacturing emissions. Examples of this are materials that compete with steel, such as aluminum, magnesium, and carbon fiber, which are six to twenty times more energy and carbon intensive to produce on a pound per pound basis than steel. While these materials may improve fuel economy and tailpipe CO<sub>2</sub> emissions in the driving phase, those improvements are not sufficient to offset the upstream CO<sub>2</sub> emissions associated with producing these materials.

To address these unintended consequences and achieve optimal environmental resource allocations, future regulations should evaluate the CO<sub>2</sub> emissions associated with all of the vehicle's life. This will ensure that technologies are not deployed that improve driving phase emissions while increasing a vehicle's overall carbon footprint. In this regard, we have been working with the EPA and NHTSA over the past several years to consider a more appropriate methodology which resulted in the section III.G.5 of the NPRM requesting additional information on this topic, for which I would like to thank and commend the EPA and NHTSA for their open mindedness on this issue.

There are other advantages to a vehicle CO<sub>2</sub> regulatory approach that incorporates life cycle thinking over the current tailpipe emissions approach beyond the obvious advantage of actually achieving the intended outcome of reduced energy use and CO<sub>2</sub> emissions.

First, such an approach will enable vehicle makers with increased design flexibility in complying with the regulations which will result in lower cost vehicles and improved environmental performance. Vehicle makers have provided examples where the lowest life cycle CO<sub>2</sub> technology solution is also the low cost solution. In contrast, these examples also demonstrate that selection of the technology to improve fuel economy and tail pipe emissions alone would have resulted in increase manufacturing costs while increasing the carbon footprint of the vehicle. Regulations that drive vehicle makers toward solutions that increase cost and total carbon emissions does not make sense. Regulation that incorporates life cycle thinking will address such unintended consequences.

A second advantage is that it would drive the vehicle supply chain to reduce the carbon intensity of their products because of the commercial advantage it would provide them. That is low carbon suppliers would provide a competitive advantage to their customer, the vehicle manufacturer, in complying with the regulations. Regulations, properly executed, would result in a race to the CO<sub>2</sub> bottom as manufactures competed to be the low carbon supplier.

A study sponsored by the steel industry and conducted by the University of California Davis proposes a methodology for CAFE regulation that incorporates life cycle thinking while maintaining the simple grams of CO<sub>2</sub> per mile metric on current EPA-DOT vehicle stickers today and that will dovetail into the existing CAFE regulations. This methodology addresses the unintended consequences and results in real carbon reduction associated with vehicles using information readily available to the vehicle makers.

This proposed life cycle methodology still needs further development in order to be incorporated into regulations, but great strides are being made and should be ready for trial in the coming years. Already, several automakers are utilizing life cycle tools during vehicle design.

The steel industry is building a consortium of stakeholders to further develop this life cycle methodology and identify the details to ensure its feasibility in regulation. Properly devised, we believe life-cycle tools incorporated into the regulation will result in a better framework that increases flexibility for auto designers and improves transparency, while enhancing the environmental integrity of the underlying regulation. The current 2017-2025 light duty vehicle emission rules call for a mid-term evaluation that will lead to final agency action. We believe that a complete evaluation of the feasibility of incorporating life cycle thinking into vehicle emissions regulation is possible within the mid-term evaluation phase. We will continue to work closely with the EPA and NHTSA on this issue and urge the agencies to actively solicit advice and input from multidisciplinary experts prior to the mid-term review.

In 110 year history of United States Steel Corporation, we have conducted ourselves according to a framework of sustainable business conduct and corporate citizenship established by one of our founders, Judge Elbert H. Gary. These principles, known as the Gary Principles, are established in nine uncomplicated statements. The first of these

states, “I believe that when a thing is right, it will ultimately and permanently succeed”. In light of that principle, life cycle thinking applied to climate change regulation is the right thing and I believe it will ultimately succeed. However, ultimately can be a long time with unintended and harmful consequences occurring before the right thing is finally deployed. We have an opportunity here to implement the right solution in the near term and avoid unintended consequences. Vehicle emissions regulations that incorporate lifecycle thinking is the right approach to achieve positive environmental and economic objectives. Accordingly, we urge regulatory policymakers to begin to investigate the application of life cycle analytics and metrics into future vehicle emissions regulations.

Thank you.