

## BRIEFING

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# Credit Trading in the US Corporate Average Fuel Economy (CAFE) Standard

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This briefing explains how compliance credit trading under the US Corporate Average Fuel Economy (CAFE) standard is managed and executed in practice.

## WHAT IS CREDIT TRADING?

The 1975 Energy Policy and Conservation Act (EPCA) authorized a credit banking system for individual manufacturers, allowing them to carry credits forward and backward for up to three model years. This program was expanded by the 2007 Energy Independence and Security Act (EISA) to allow manufacturers to trade credits with each other and to transfer credits between their car and light truck fleets. Based upon the new provisions in EISA, the National Highway Traffic and Safety Administration (NHTSA) established a credit trading and transferring scheme to help manufacturers meet their CAFE standard beginning with the 2011 model year.

Put simply, to determine whether a manufacturer is in compliance with the CAFE standard, NHTSA compares the manufacturer's actual average fuel economy (in miles per gallon, mpg) for a given fleet category (car or light truck) against the applicable standard for the same category, based on certified data provided by Environmental Protection Agency (EPA). If the manufacturer's average exceeds the standard, then the manufacturer earns credits. On the other hand, if a manufacturer's actual average mpg does not meet the applicable standard, then it has a shortfall for that fleet.

In a shortfall situation, a manufacturer may comply by (1) carrying forward credits earned in a prior model year; (2) transferring credits from one of its fleets (cars or light trucks) to the fleet with the shortfall; (3) trading for credits (purchasing credits) from

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another manufacturer; (4) providing NHTSA with a plan to make up the difference in the next three years (carry back credits); or (5) paying a civil penalty.

This briefing focuses on the second and third methods of compliance.

## TRADING STRUCTURE AND THE ROLE OF NHTSA

To track and control credit trading, NHTSA created and manages CAFE credit accounts. Every manufacturer subject to the fuel economy standard is automatically an account holder.<sup>1</sup> The account information includes the holders credit balance in each compliance category, and the year in which the credits were earned.

Manufacturers desiring to trade credits must jointly submit a formal request to NHTSA. The request must specify origin, recipient, category of credit, and amount expressed in tenths of a mile per gallon, including the adjustment between categories (see details of credit calculation and adjustment in next section). Upon receipt of the request, NHTSA verifies the presence of sufficient credits in the account of the trader (the party that plans to sell credits), then approves the request. Finally, NHTSA completes the trade by debiting the account of the trader and crediting the account of the recipient.

NHTSA periodically publishes the names and credit holdings of all credit holders, and issues an annual credit status letter to each account holder.

In case of changes in corporate ownership and control, manufacturers must inform NHTSA of the new ownership arrangements and any reallocation, merger, or division of CAFE credits belonging to parties to the change in ownership.

## CALCULATION OF CREDITS AND CONSTRAINTS

A credit equals one tenth of the difference between standard and actual fuel economy (in mpg) for each vehicle in the fleet. Total credits of a company =  $\sum(CAFE_i - Standard_i) \times Production_i \times 10$ , where  $i$  denotes the compliance category.

Initially, a manufacturer can only use credits purchased from another manufacturer in a particular compliance category to offset its own shortfall within the same category. After a manufacturer successfully purchases credits in one category (e.g., cars), it may use another provision in EISA to transfer the credits to meet the standard in a different category (e.g., light trucks). However, NHTSA caps the maximum increase in any compliance category attributable to credits transferred from another compliance category. The cap for MY 2011–2013 is 1 mpg, phasing up to 1.5 mpg during MY 2014–2017 and 2 mpg after MY2018.<sup>2</sup>

When trading credits or transferring credits between compliance categories, the fuel economy credits must be adjusted to ensure equivalent oil savings are preserved.

<sup>1</sup> In some circumstances, a recipient of credits (party that purchases credits) is not an auto manufacturer. In such cases, upon receiving a credit holder's request designating the recipient, NHTSA will create an account for the recipient.

<sup>2</sup> 49 U.S.C. 32903(g)(3)

This is because the lifetime fuel saving of vehicles depends on lifetime expected vehicle miles traveled (VMT) and the baseline fuel economy, both of which vary by vehicle category and model year. NHTSA requires that the number of shortfall credits a company plans to offset be multiplied by an adjustment factor to determine the number of required equivalent credits to acquire from the credit seller. The adjustment factor is calculated by the following formula:

$$A = \frac{(VMT_u \times MPG_{ae} \times MPG_{se})}{(VMT_e \times MPG_{au} \times MPG_{su})}$$

Where *A* = adjustment factor applied to traded or transferred credits;

*VMT<sub>e</sub>* = lifetime vehicle miles traveled for the model year and compliance category in which the credit was earned

*VMT<sub>u</sub>* = lifetime vehicle miles traveled for the model year and compliance category in which the credit is used for compliance

*MPG<sub>se</sub>* = required fuel economy standard for the credit seller (earner) manufacturer, compliance category and model year in which the credit was earned

*MPG<sub>ae</sub>* = actual fuel economy for the credit seller (earner) manufacturer, compliance category and model year in which the credit was earned

*MPG<sub>su</sub>* = required fuel economy standard for the credit purchasing (user) manufacturer, compliance category and model year in which the credit is used for compliance

*MPG<sub>au</sub>* = actual fuel economy for the credit purchasing (user) manufacturer, compliance category and model year in which the credit is used for compliance

The table below shows expected miles traveled for the two compliance categories in various model years:

|                | Lifetime vehicle miles traveled (VMT) |         |         |         |         |
|----------------|---------------------------------------|---------|---------|---------|---------|
| Model year     | 2012                                  | 2013    | 2014    | 2015    | 2016    |
| Passenger cars | 177,238                               | 177,366 | 178,652 | 180,497 | 182,134 |
| Light trucks   | 208,471                               | 208,537 | 209,974 | 212,040 | 213,954 |

Traded credits or transferred credits can only be used to satisfy the attribute-based (footprint-based) CAFE standard, and cannot be used to comply with domestic minimum fuel economy limits.<sup>3</sup>

<sup>3</sup> As directed by the Energy Independence and Security Act of 2007 (EISA 2007), NHTSA added a minimum domestic passenger car standard to the Corporate Average Fuel Economy (CAFE) program with the MY 2011 rulemaking. Unlike the attribute-based CAFE standards, the minimum standards are universal corporate-average standards that each manufacturer’s domestically produced passenger car must meet. Note that the “domestic minimum fuel economy limits” is a provision unique to the US.

## CREDIT TRADING TRANSACTION MANAGEMENT

NHTSA is not responsible for supervising credit trading and payment. Credit sellers and recipients must sign a legal contract for the transaction. In the US, original equipment manufacturers (OEMs) can also use a third party as a broker for CAFE credit trading. Even if a broker is used, NHTSA still needs to verify the available credits (from sellers) for the trading and officially approve the trade. The broker's role is typically to offer a forum for manufacturers to anonymously communicate their willingness to buy or sell credits and a standardized way for OEMs to bid on and auction credits.

## FOR FURTHER INFORMATION

On CAFE credit trading: 49 CFR Part 536, Transfer and Trading of Fuel Economy Credits, [www.law.cornell.edu/cfr/text/49/part-536](http://www.law.cornell.edu/cfr/text/49/part-536).

On EPA GHG credit trading: 40 CFR 86.1865-12, How to Comply with the Fleet Average CO2 Standards, [www.law.cornell.edu/cfr/text/40/86.1865-12](http://www.law.cornell.edu/cfr/text/40/86.1865-12).

National Highway Traffic Safety Administration, Average Fuel Economy Standards Passenger Cars and Light Trucks, Model Year 2011. 49 CFR Parts 523, 531, 533, 534, 536 and 537. [www.nhtsa.gov/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/CAFE\\_Updated\\_Final\\_Rule\\_MY2011.pdf](http://www.nhtsa.gov/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/CAFE_Updated_Final_Rule_MY2011.pdf)

NHTSA, Light Duty CAFE Credit Status for Model Years 2008–2011, [www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/LD-CAFE\\_credit\\_status.pdf](http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/LD-CAFE_credit_status.pdf).

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