

Comment from Anonymous

I am supportive of increasing the stringency of CAFE standards for future model years. However, the use of miles per gallon (MPG) as the base unit for CAFE means that increasingly high MPG figures saves incrementally fewer emissions/gasoline burned. I suggest that the standard be adapted from a mileage based metric to a consumption based metric (gal/mi, L/100 km, or g CO₂ emitted/mi) and then apply the chosen percentage increases in stringency to ensure continued steady progress toward a more efficient fleet.

Likewise, this may be an opportunity to revise the calculation for penalties under CAFE.

The CAFE penalties were poorly constructed by congress when based on the commonly used MPG metric. The penalties are based on a flat dollar-per-MPG (miles per gallon) metric. However, MPG as a mileage measure does not scale linearly with fuel consumed or carbon dioxide emitted – and limiting that fuel consumption was the intent of the regulations.

For example, a fleet that travels 1,000,000 vehicle-miles per year at 30 MPG burns 33,333.3 gal of gasoline; that same fleet at 29 MPG burns 34,482.8 gal, a difference of 1,149.4 gal. Yet an incremental 1 MPG to 28 MPG burns not another 1,149.4 gal, but 1,231.5 gal. As MPG gets lower and lower, the fuel consumed increases by more than the apparent MPG drop.

Therefore, the penalty for an automaker that misses its target by 2 MPG should be more than double the penalty of one that misses its target by 1 MPG – it should scale with a consumption metric.

Similarly, the credit for a more efficient automobile can be over-stated: at 50 MPG, that same fleet saves 13,333.3 gal, but the savings is not double at 100 MPG, instead saving 23,333.3 gal (vs 26,666.6).

Electric vehicles, hybrids, and plug-in hybrid vehicles are wonderful inventions and the efficiency of electric motors can greatly help reduce fuel consumption and carbon emissions. However, using their MPG (or MPGe) in an average can over-state their contribution to saving fuel and reducing emissions. Using a consumption metric would better account for the contributions of gas-saving technologies (and gas-burning design choices), and could help drive even faster and broader adoption of hybrid and PHEV technologies.

Converting the penalties (and credits) from the amounts close to the target in MPG to a consumption metric (gal/mi or the metric L/100 km; or g of CO₂/mi) and then applying those across the range would lead to a better-designed and implemented penalty and credit system.

i.e., at a rate of \$X per each 0.1 mpg based on an average of 38.5 MPG, that would translate to \$X per 6.76×10^{-5} gal/mi above the target (or \$X per 0.0159 L/100 km above the target). In this framework, an automaker would pay a flat penalty for additional fuel consumed, rather than one with decreasing penalties (and increasing credits) for extreme levels of fuel consumption (or savings).