



COMMERCIAL FLEET TIRE DIGEST

*The authoritative guide to reducing commercial tire expenditures from
Pressure Systems International,
the manufacturer of the Meritor Tire Inflation System by PSI™*

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Understanding Greenhouse Gas (GHG) Emissions Rulemaking – Phase 2

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On June 19, the proposed Phase 2 GHG rulemaking was announced. The 1,329 page document covers both tractors and trailers for the first time. It is a joint proposed GHG standard between EPA and NHTSA to improve the fuel efficiency of medium and heavy duty vehicles effective model year 2018 and beyond. This new Phase 2 program is estimated to cut emissions by 1 billion metric tons, conserve 1.8 billion barrels of oil, and lower fuel costs by over \$170 billion over the lifetime of the vehicles covered.

The five primary greenhouse gases in the earth's atmosphere are: water vapor, carbon dioxide, methane, nitrous oxide and ozone.

The new Phase 2 GHG rulemaking is divided into four regulatory categories:

- Tractors
- Trailer
- Heavy-duty pick-up trucks and vans
- Vocational vehicles (buses, refuse, concrete, etc.)

There are also separate standards for engines.

Trailers are recognized in the standard as an integral part of the tractor-trailer vehicle that significantly contributes to the emissions and fuel consumption of the tractor. The new proposed rule spells out cost-effective trailer technologies that can offer significant carbon dioxide and fuel use reductions for the vehicle. These technologies include: aerodynamic devices, low rolling resistance tires*, automatic tire inflation systems* and lightweight components.

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***Non-box trailers** (including platform/flatbed, tank, container chassis and other specialty trailers) **would be required to use lower rolling resistance tires and automatic tire inflation systems**

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Trailers have been broken into five categories:

- Highway box trailer shorter than 50'
- Highway box trailer longer than 50'
- Highway box refrigerated trailers longer than 50'
- Highway box refrigerated trailers shorter than 50'
- Non-box highway trailers

EPA/NHTSA has published an updated Greenhouse Gas Emissions Model for this Phase 2 rulemaking called the GEM model. It is a tractor-trailer computer vehicle simulation tool to determine if vehicles will meet the new standards. This new GEM program can be downloaded at <http://www.epa.gov/otag/climate/gem.htm>.

Below (Table 6) is an example of some of the technologies found in GEM along with their corresponding fuel reduction estimates for both the tractor and trailer. Tractor and trailer reductions do vary.

Table 6 Technology Improvement Options for Tractor Manufacturers

Technology Improvement	Regulation Reference	Reduction Value
Vehicle Speed Limit	See 40 CFR 1037.520(d)	Varies
Weight Reduction (lb)	See 40 CFR 1037.520(e)	Varies
Single Drive Axle (Class 8 Tractors Only)	See 40 CFR 1037.520(f)(1)	2.5%
Part Time Single Drive Axle (Class 8 Tractors Only)	See 40 CFR 1037.520(f)(1)	2.5% ^a
Low Friction Axle Lubricant	See 40 CFR 1037.520(f)(2)	0.5%
Transmissions: AT, AMT, DCT	See 40 CFR 1037.520(f)(3)	2.0%
Predictive Cruise Control	See 40 CFR 1037.520(f)(4)	2.0%
High Efficiency A/C Compressor	See 40 CFR 1037.520(f)(5)	0.5%
Electric Engine Coolant and Power Steering Pumps	See 40 CFR 1037.520(f)(6)	1.0%
Automatic Tire Inflation System	See 40 CFR 1037.520(f)(7)	1.0%
Extended Idle Reduction (Sleeper Cabs Only)	See 40 CFR 1037.520(f)(8)	5.0%

GEM allows a user to modify or adjust performance information for certain components in order to model and quantify improvements the manufacturer is making to its vehicles. The trailer program has three user-defined parameters and one pre-defined technology improvement option that has a specified reduction value associated with its use (Table 16). Trailer manufacturers are able to change their tire rolling resistance, aerodynamic drag and cumulative weight reduction. GEM applies an additional technology improvement value of 1.5 percent for manufacturers that indicate they installed automatic tire inflation systems on their simulated trailer.

Table 16 User-Defined Modeling Parameters and Technology Improvement Options for Trailers (All Lengths)

Modeling Parameter	Method of Determining Parameter
Trailer Tire Crr (kg/t)	ISO 28580:2009(E), See 40 CFR 1037.515(b)
Change in Aerodynamic Drag Area, $\Delta C_d A$ (m ²)	See 40 CFR 1037.515(c) and 40 CFR 1037.525
Weight Reduction (lb)	See 40 CFR 1037.515(d)
Automatic Tire Inflation System	1.5% if applied, See 40 CFR 1037.515(a)

Sources: EPA and NHTSA Propose Standards to Reduce Greenhouse Gas Emissions Regulatory Announcement June 2015, epa-420-f-15-901 and User Manual for the GEM Model, Phase 2. June 2015

The scientific definition of the **greenhouse effect** is the process by which the earth's surface is warmed by radiation from the atmosphere to a temperature above what it would be in the absence of its atmosphere. The "greenhouse effect" of the atmosphere is named because of the similarity with the greenhouses found at your local nursery which get warmer in sunlight. A nursery greenhouse works primarily by allowing sunlight to warm surfaces inside the structure, but then preventing absorbed heat from leaving the structure through convection. The "greenhouse effect" heats the Earth because greenhouse gases absorb outgoing radiative energy, heating the atmosphere which then emits radiative energy with some of it going back towards the Earth.