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## Economic Commission for Europe

### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

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Item 14.2 of the provisional agenda

#### Consideration of technical regulations

to be listed in the Compendium of Candidate

global technical regulations – United States of America 2013 and

later revisions and additions to the motor vehicle fuel economy label:

new fuel economy and environment labels for a new generation of vehicles

### **Request to list in the Compendium of candidate global technical regulations the United States of America Environmental Protection Agency and National Highway Traffic Safety Administration, Department of Transportation, Program for Revisions and Additions to the Motor Vehicle Fuel Economy Label: New Fuel Economy and Environment Labels for a New Generation of Vehicles**

#### **Submitted by the representative of the United States of America\***

The document reproduced below is submitted by the United States of America (US) to the Executive Committee (AC.3) for consideration. It is a request to include in the Compendium of Candidates the rulemaking related to the Revisions and Additions to the Motor Vehicle Fuel Economy Label: New Fuel Economy and Environment Labels for a New Generation of Vehicles. The document is based on informal document WP.29-155-12. In order to be considered by AC.3, this request is accompanied by a copy of the regulations mentioned (see Article 5, paras. 5.2.1., 5.2.1.1. and 5.2.2. of the 1998 Agreement).

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\* In accordance with the programme of work of the Inland Transport Committee for 2010-2014 (ECE/TRANS/208, para. 106 and ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## **United States of America Environmental Protection Agency and National Highway Traffic Safety Administration, Department of Transportation, Program for Revisions and Additions to the Motor Vehicle Fuel Economy Label: New Fuel Economy and Environment Labels for a New Generation of Vehicles**

### **Overview**

1. The Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) issued a joint final rule establishing new requirements for the fuel economy and environment label that will be posted on the window sticker of all new automobiles sold in the US. The labelling requirements apply for model year 2013 and later vehicles with a voluntary manufacturer option for model year 2012. The labelling requirements apply to passenger cars, light-duty trucks and medium duty passenger vehicles such as larger sport-utility vehicles and vans.
2. The redesigned label provides expanded information to American consumers about new vehicle fuel economy and fuel consumption, greenhouse gas and smog-forming emissions and projected fuel costs and savings. It also includes a smartphone interactive code that permits direct access to additional Web resources. Specific label designs are provided for gasoline, diesel, ethanol flexible fuel, compressed natural gas, electric, plug-in hybrid electric and hydrogen fuel cell vehicles.
3. This rulemaking is in response to provisions in the Energy Independence and Security Act of 2007 that imposed several new labelling requirements and new advanced-technology vehicles entering the market. NHTSA and EPA believe that these changes will help consumers to make more informed vehicle purchase decisions, particularly as the future automotive marketplace provides more diverse vehicle technologies from which consumers may choose.
4. These new label requirements do not affect the methodologies that EPA uses to generate consumer fuel economy estimates, or the automaker compliance values for NHTSA's corporate average fuel economy and EPA's greenhouse gas emissions standards. This action also finalizes a number of technical corrections to EPA's light-duty greenhouse gas emission standards.

### **New Label Designs**

5. Building on the EPA's 35-year labeling history for vehicles, NHTSA joined with EPA in unveiling new fuel economy and environment labels that, for the first time ever, highlight the increased efficiency standards that will save families money at the pump starting this year. The new labels, which are the most dramatic overhaul in the history of EPA's labeling program, will provide more comprehensive fuel efficiency information and five-year fuel costs or savings compared to the average vehicle, as well as environmental impact information.
6. The redesigned Fuel Economy and Environment Labels will provide the public with new information on vehicles' fuel economy, energy use, fuel costs and environmental impacts. For the first time, comparable fuel economy and environmental ratings will be available for all new vehicles, including advanced technology vehicles such as electric cars.

7. Starting with model year 2013, the improved fuel economy labels will be required to be affixed to all new passenger cars and trucks – both conventional gasoline powered and “next generation” cars, such as plug-in hybrids and electric vehicles. Automakers may also voluntarily adopt the new labels earlier for model year 2012 vehicles.

8. Specific features on the new Fuel Economy and Environment Labels include:

- (a) New ways to compare energy use and cost between new-technology cars that use electricity and conventional cars that are gasoline-powered.
- (b) Useful estimates on how much consumers will save or spend on fuel over the next five years compared to the average new vehicle.
- (c) Easy-to-read ratings of how a model compares to all others for smog emissions and emissions of pollution that contribute to climate change.
- (d) An estimate of how much fuel or electricity it takes to drive 100 miles.
- (e) Information on the driving range and charging time of an electric vehicle.
- (f) A QR Code® (Quick Response Code) that will allow smartphone users to access online information about how various models compare on fuel economy and other environmental and energy factors.

9. In addition, a new interactive tool at [www.fueleconomy.gov](http://www.fueleconomy.gov) will allow drivers to enter their zip code and estimate the greenhouse gas emissions from charging and driving a plug-in hybrid or electric car where they live. The site [www.fueleconomy.gov](http://www.fueleconomy.gov) also enables drivers of all types of vehicles to enter personalized information like local gas prices along with individual driving habits to get best possible cost and energy-use estimates.

10. EPA and NHTSA conducted extensive research to inform the development of this new label. This includes reviewing input from an expert panel, focus groups, public hearing, and more than 6,000 public comments.

#### 11. Labels for gasoline and diesel vehicles (see Figure 1):

- (a) **Fuel Economy:** Miles per gallon (MPG) estimates. The combined City/Highway estimate is the most prominent to allow quick and easy comparison to other vehicles.
- (b) **Comparable Fuel Economy:** Information to compare the vehicle’s fuel economy to other vehicles in the same category (e.g. among all small Sport Utility Vehicles (SUVs)) and to find out the highest fuel economy among all vehicles.
- (c) **Fuel Consumption Rate:** The estimated rate of fuel consumption, in gallons per 100 miles, for combined city and highway driving. Unlike MPG, consumption relates directly to the amount of fuel used, and thus to fuel expenditures.
- (d) **Fuel Economy and Greenhouse Gas Rating:** One-to-ten rating comparing the vehicle’s fuel economy and tailpipe carbon dioxide (CO<sub>2</sub>) emissions to those of all other new vehicles, where a rating of 10 is best.
- (e) **CO<sub>2</sub> Emissions Information:** Tailpipe CO<sub>2</sub> emissions in grams per mile for combined city and highway driving and the emissions of the vehicle with lowest CO<sub>2</sub> emissions.
- (f) **Smog rating:** A one-to-ten rating based on exhaust emissions that contribute to air pollution.

- (g) **Fuel Costs:** An estimate of how much more (or less) the vehicle will cost to fuel over five years relative to the average new vehicle, as well as its estimated annual fuel cost.
- (h) **Web site:** The web site, [www.fueleconomy.gov](http://www.fueleconomy.gov), provides additional information and tools that allow consumers to compare different vehicles.
- (i) **Smartphone interactive tool:** A symbol (also known as a QR Code®) that smartphones can read to reach a website that will provide additional and customizable information about the vehicle.

Figure 1-Gasoline Vehicle Label



**12. Labels for advanced technology vehicles may contain additional information (see figures 2 and 3):**

- (a) **Driving Range:** Identifies how many miles electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), hydrogen fuel cell vehicles (FCVs), and compressed natural gas (CNG) vehicles can go before recharging or refueling.
- (b) **Charge Time:** Identifies the amount of time it takes to charge EV and PHEV batteries.
- (c) **Different Modes:** Some vehicles, such as PHEVs, may have two or more different operating modes such as all-electric, blended gas and electric, and gasoline-only. The labels will provide certain information for different operating modes.
- (d) **Fuel Economy:** The label shows fuel economy for advanced technology vehicles in miles per gallon of gasoline-equivalent (MPGe). A gallon of gasoline-equivalent means the number of kilowatt-hours of electricity, cubic feet of CNG, or kilograms of hydrogen that is equal to the energy in a gallon of gasoline.
- (e) **Energy Consumption Measurement:** Fuel consumption is expressed as a unit of fuel purchased (e.g., kilowatt-hours) per 100 miles.

Figure 2- Electric Vehicle Label

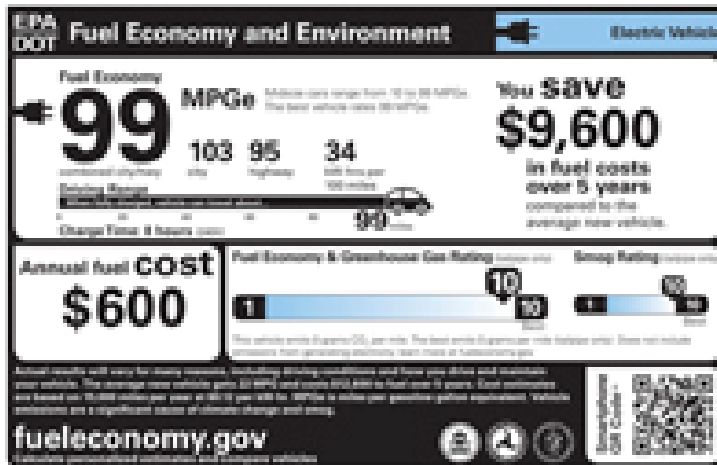
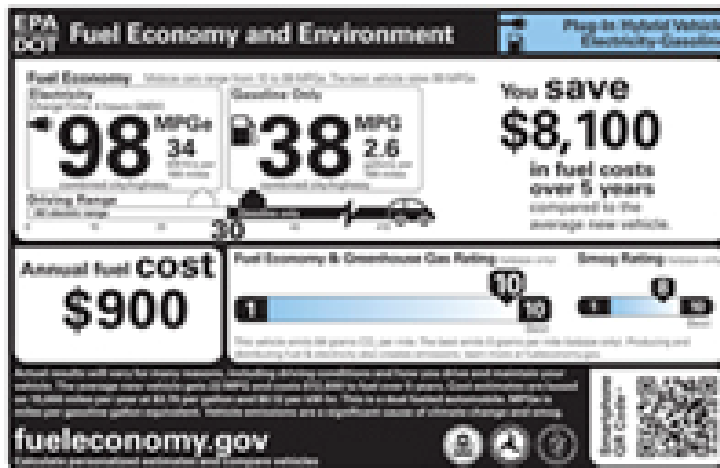


Figure3- Plug-in Hybrid Electric Vehicle Label



13. To see labels for all vehicle types, including flexible fuel vehicles (FFVs), hydrogen fuel cell vehicles (FCVs), and compressed natural gas (CNG) vehicles please refer to the referenced web sites for the full rulemaking documentation as well as supporting documents related to this action listed below at "Preamble and Regulatory Text".

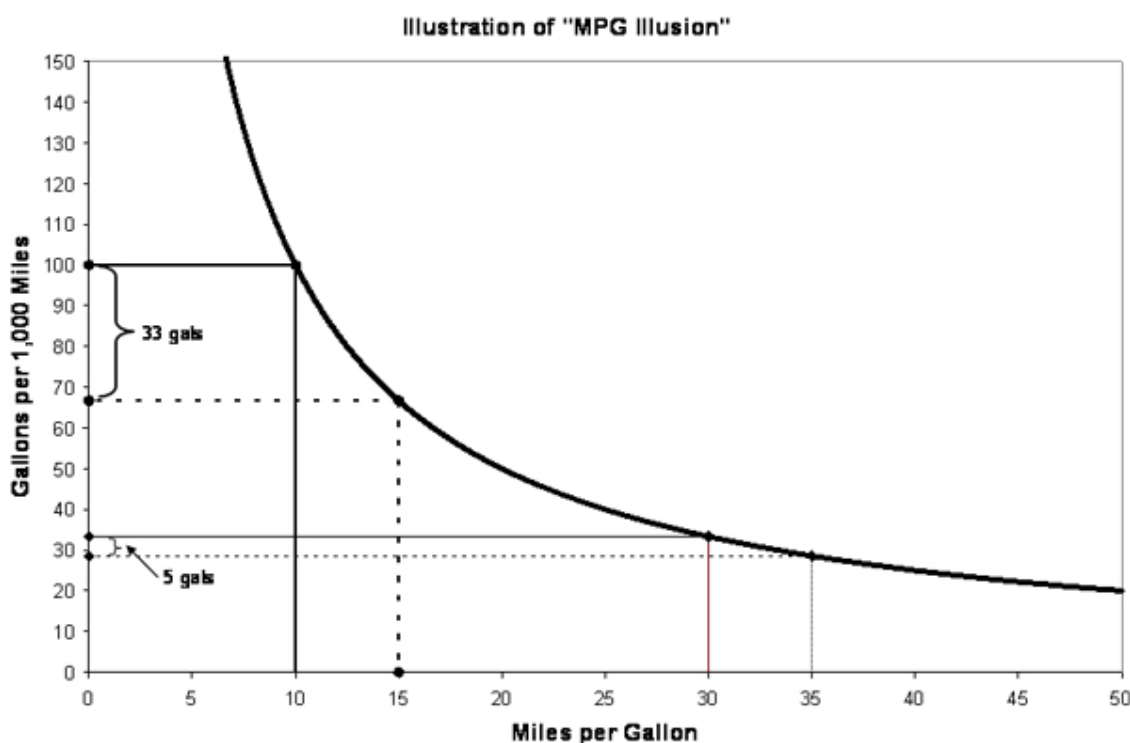
**Consumers Information on Fuel Savings and Reduced Consumption**

14. The new labels show the calculated fuel cost over a five-year period for the vehicle compared to the average new vehicle. If the vehicle would save the consumer money over the average vehicle, the label would state, "You save USD x,xxx in fuel costs over 5 years compared to the average new vehicle." If the vehicle would be more expensive to operate than the average vehicle, the label would state, "You spend USD x,xxx more in fuel costs over 5 years compared to the average new vehicle." These estimates are based on 15,000 miles per year, for five years, and a projected gasoline (or diesel) price for the year from the US Energy Information Administration. Fuel prices will typically be updated annually in coordination with the Department of Energy.

15. The label also shows the estimated annual fuel cost for the vehicle, as required under the Energy Policy and Conservation Act. This estimated cost is based on 15,000 miles per year and the projected fuel price for the year.

16. While a miles per gallon (MPG) estimate is a required feature that has appeared on the fuel economy label for several decades, this metric can be potentially misleading when consumers compare fuel economy improvements, particularly when they use it in place of fuel costs. Therefore the new label offers new information on consumption as a more meaningful way to express efficiency. The following chart shows the non-linear relationship between gallons used over a given distance and miles per gallon. The fuel savings, in gallons, for a vehicle that gets 10 MPG versus a vehicle that gets 15 MPG is about 33 gallons (assuming 1000 miles). On the other hand, the fuel savings in gallons, for 5 MPG fuel economy jump, for a 30 MPG versus a 35 MPG vehicle is only about 5 gallons (see figure 4).

Figure 4. Demonstration of the "MPG illusion."



17. This “MPG illusion” demonstrates why it may be more meaningful to express fuel efficiency in terms of consumption (e.g., gallons per mile or per 100 miles) rather than in terms of economy (miles per gallon). A fuel consumption metric allows for more accurate energy usage comparisons among vehicles.

18. The revised label includes both fuel economy and consumption information for all vehicle types.

### The Label and Greenhouse Gas Emissions

19. The new label assigns each vehicle a rating from 1 (worst) to 10 (best) for fuel economy and greenhouse gas emissions (i.e., how much carbon dioxide the vehicle’s tailpipe emits each mile), as shown in Figure 5. Consumers may note that higher fuel economy is associated with a better Greenhouse Gas (GHG) emissions profile.

20. For more information on this rating system, see:  
[www.epa.gov/carlabel/regulations.htm](http://www.epa.gov/carlabel/regulations.htm).

Figure 5. One-to-ten Fuel Economy and GHG Rating

<u>Rating</u>	<u>MPG</u>	<u>CO<sub>2</sub>(g/mile)</u>
10	38+	0-236
9	31-37	237-290
8	27-30	291-334
7	23-26	335-394
6	22	395-412
5	19-21	413-479
4	17-18	480-538
3	15-16	539-612
2	13-14	613-710
1	0-12	711+

21. For those vehicles that only run on electricity, the tailpipe emissions are zero. Of course, these vehicles do cause emissions at the electric power plant, with amounts varying greatly based on the source of electricity (such as coal, nuclear, natural gas, hydro, or wind). Consumers can use a calculator tool on the web site, [www.fueleconomy.gov](http://www.fueleconomy.gov), to estimate GHG emissions associated with an EV or PHEV, including emissions from the production and distribution of the electricity used to charge the vehicle in their region of the country.

### **Other Environmental Information on the New Label**

22. The labels also include a rating for those pollutants that cause smog and other local air pollution. This information, listed as "Smog" on the labels, will be displayed using a slider bar with a scale of 1 (worst) to 10 (best). The scale is based on US vehicle emissions standards, which incorporate specific thresholds for nitrogen oxides, non-methane organic gas, carbon monoxide, particulate matter, and formaldehyde emissions.

### **Preamble and Regulatory Text**

23. The preamble and regulatory text for this programme can be found in the files below. They are also accessible through the web site shown in the "For More Information" section below.

<http://www.gpo.gov/fdsys/pkg/FR-2011-07-06/pdf/2011-14291.pdf>

### **For More Information**

24. The final rule and related documents can be accessed electronically on NHTSA's web site and on EPA's web site at:

[www.nhtsa.gov/fuel-economy](http://www.nhtsa.gov/fuel-economy) and [www.epa.gov/carlabel/regulations.htm](http://www.epa.gov/carlabel/regulations.htm)

25. To view the label designs for all vehicle types, please visit:

[www.epa.gov/carlabel/basicinformation.htm](http://www.epa.gov/carlabel/basicinformation.htm)

26. Consumer information and tools associated with the new labels are available at:  
[www.fueleconomy.gov](http://www.fueleconomy.gov)

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