

Informal Group Gaseous Fuelled Vehicles  
February 2015

In Consideration of Vehicle Propulsion System Definitions (VPSD)

The UNECE Working Party of Experts on Pollution and Energy (GRPE) has been working to harmonize Vehicle Propulsion System Definitions (VPSD), a special working group dedicated for this purpose. The VPSD is seeking input from the GFV to create definitions for gaseous fuelled vehicles – natural gas vehicles (NGVs) and LPG Vehicles (LPG-Vs). The GFV is focusing on three definitions: bi-fuel vehicle; dual-fuel vehicle; and mono-fuel vehicle. A range of different variations of definitions have been proposed by different stakeholders but now we must review the options, form a consensus on (hopefully) simple but comprehensive definitions and provide these to the VPSD. We hope to accomplish this at the GFV-38 meeting on 25 February 2015 in Brussels.

Options for definitions in the three categories are provided below, based on input from various gaseous fuel stakeholders who also have been struggling with definitions, now for a number of years (!). These are being provided to the members of the GFV and the Heavy Duty Dual-Fuel Task Force (HDDF TF) for review, consideration, and input.

Please provide your comments and editorial changes on this Word-format document and return this to the GFV. Please add your initials to a newly named document so the responses can be distinguished easily from the original. The results will be collated and options will be provided to the GFV for consideration and finalization. If time permits, we may send the results to the GFV/HDDF TF a second time to determine if some consensus can be achieved on the revised definitions.

Some considerations for your review and input:

- The definitions are for vehicles and not engines, although the vehicle definition should be easily adaptable to 'engines' if that ever is required. The use of 'vehicles' is consistent with other VPSDs and, since the concept of 'storage systems' has evolved as part of the definition, it seems easier to be defining 'vehicles.'
- The definition of a bi-fuel vehicle has been complicated by the development of some LPG systems that now blend/mix LPG and gasoline for a short period of time in limited proportions to help cool the fuel injectors. Some options of the bi-fuel definition have taken this into account; others not.
- Since bi-fuel vehicles/engines tend to be spark-ignited and dual-fuel systems tend to be feasible only in compression ignition engines, It has been suggested that this be taken into consideration in creating these definitions.

Optional definitions are provided below. Please indicate which you prefer of the given choices, if you have suggested changes, or if you have other options not considered.

## BI-FUEL VEHICLE

- Option 1: A “bi-fuel vehicle” (is a vehicle that) has two separate fuel storage systems for different fuels that is designed to run on both fuels and on one fuel at a time and may run part-time on mixtures of the two fuels.
- Option 2: A “bi-fuel vehicle” (is a vehicle that) has two separate fuel storage systems for different fuels that is designed to run on one fuel at a time.
- Option 3: A “bi-fuel vehicle” (is a vehicle that) has a spark ignited engine and two separate fuel storage systems for different fuels that principally is designed to run on one fuel at a time but may run part-time on a combination of both fuels.
- Option 4: A “bi-fuel vehicle” (is a vehicle that) has a spark ignited engine and two separate storage systems for different fuels that is designed to run on one fuel at a time.

## DUAL-FUEL VEHICLE

- Option 1: A “dual-fuel vehicle” (is a vehicle that) has two separate fuel storage systems for different fuels that is designed to run on variable mixtures of the two fuels.
- Option 2: A “dual-fuel vehicle” (is a vehicle that) has two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels and may run part-time on one fuel.
- Option 3: A “dual-fuel vehicle” (is a vehicle that) has a compression ignition engine and has two separate fuel storage systems for different fuels that is designed to run on variable mixtures of the two fuels.
- Option 4: A “dual-fuel vehicle” (is a vehicle that) has a compression ignition engine and has two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels but may run part-time on one fuel.
- Option 5: A “dual-fuel vehicle” (is a vehicle that) has a compression ignition engine, has two separate fuel systems and can run on both fuels simultaneously. It also may run on one fuel.

## MONO-FUEL NATURAL GAS VEHICLE

Option 1: A mono-fuel natural gas vehicle (is a vehicle that) operates on natural gas only.

- *Note 1: Also known as "Dedicated Natural Gas Vehicle"*
- *Note 2: In Europe and in India the term Mono-Fuel also applies to a light duty NGV with max 15 litre gasoline tank.*

Option 2: A mono-fuel natural gas vehicle (is a vehicle that) has a spark ignited engine and operates on natural gas only.

- Same notes as apply in Option 1:

## COMPARABLE DEFINITION OF MONO-FUEL LPG VEHICLE ?