Public Procurement boosts Energy Efficiency

2. FUEL EFFICIENCY OF CARS AND VEHICLE FLEETS

2.1. BACKGROUND

2.1.1. GLOBAL AND EUROPEAN CONTEXT

Energy efficiency, lower CO2 emissions, lower pollutant emissions including particulates and cleaner urban air are the main drivers for policy. On December 19th 2007, the EU Commission presented a Directive on clean and energy efficient road transport vehicles (http://ec.europa.eu/transport/clean/promotion/doc/com_2007_0817_en.pdf)
It proposes the gradual introduction of environmental criteria for public procuring authorities (from 2012), which will include life-cycle costs for fuel consumption and CO2 and other pollutant emissions. A previous proposal limited to heavy duty vehicles (3.5 tonnes) had been rejected by the European Parliament in June 2006 and this one targets a wider population including public purchases of cars, commercial vehicles, trucks and buses, representing about ¼ million vehicles. The entire market for passenger cars is also addressed by the proposed regulation to reduce CO2 emissions (120g CO_2 per km by 2012) and other Directives e.g. fuel quality, also under revision, to reduce emissions of sulphur and PAHs (Poly Aromatic Hydrocarbons) from diesel.

PwC's study issued in September 2007 indicated that by 2017 there would be major reductions in emissions "ranging from -36% NOx under the "Early Euro Standards Mandatory" EESM scenario[1], to -29% NOx and -70% in the "Internalising Lifetime External costs Mandatory (ILECM) scenario. These scenarios highlight huge differences, with cost simulations for a normal bus going from 150k€ to 594k€ with inclusion of all these costs.

[1] PwC Impact study

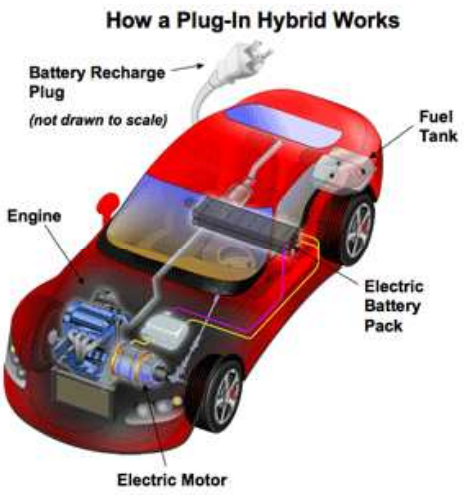
As to date the public vehicles market is often characterised by aged vehicles whereas the purpose of these guidelines would be to stimulate the uptake of more efficient vehicle fleets for local and central governmental authorities in the EU.

2.1.2. STATE OF THE ART

The major influences on fuel efficiency in cars are complex because they are derived from human as well as mechanical factors. Vehicle efficiencies are about engine and other components and their composition. More than a century of progress has improved aerodynamics and largely unknown factors such as reduced tyre resistance. Procurers are confronted with these technical aspects combined with human and systemic factors such as car use pattern and conditions.

The first car that reached 100km/h was electric, in 1899. Steam and electricity preceded the dominant internal combustion engine technology of today running on petrol or diesel. This technology and associated systems are rapidly evolving (lead removal, sulphur reduction achievements, efficiency gains). There is a "lock-in" phenomena due to infrastructure (fuel delivery, maintenance, skills etc) but new power solutions are making inroads using electric or semi electric (hybrid) vehicles, also engines using biofuel, hydrogen, natural gas or LPG. The procurer confronted with the developments in the market introducing new types of fuel should bear in mind that use of parameters like litres/100 kilometre etc are not the right parameter to compare the various cars using different systems like LNG (liquefied natural gas), CNG (compressed natural gas), diesel etc. The procurer should use the CO2-emission/kilometre as his parameter. Another important parameter is car range.

Fuel efficiency in vehicles is foremost a function of weight and purpose, with many other factors such as safety and durability to consider. With so many complex parameters, improving efficiency requires a trade-off between factors, which are hard and sometimes almost impossible to measure – for example comfort. Procurement priorities will be in fuel efficiency standards such as EURO III ratings.



Additionally, procurers can request partial replacement of fleets with EEV vehicles at EURO IV or V, through positive tendering discrimination. Standards in fuel efficiency and CO2 emissions are higher for vehicles using electrical power, but investment in EEV vehicles requires preliminary cooperation with energy providers and significant infrastructure. Fuel contracts help to promote economies of scale. Accompanying measures include promoting the shift from private cars to collective transport and reducing mobility needs through changes in urban and land use planning of the different human activities.[2]
Human behaviour adds to the complexity in procurement; with regards to drivers of public vehicles for instance, efficiencies can be influenced with driver information systems, monitoring sensors, training etc.

According to a recent WWF report: "Plugged In – The End of the Oil Age"[3], grid-connected vehicle technology – enabling all or part of every journey to be powered by electricity taken from the grid – is available based on existing infrastructure and current technology. Battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) – which may be supplemented by sustainable biofuels for range extension – can dramatically reduce the crude oil dependency of automotive transport in a highly efficient and sustainable manner.

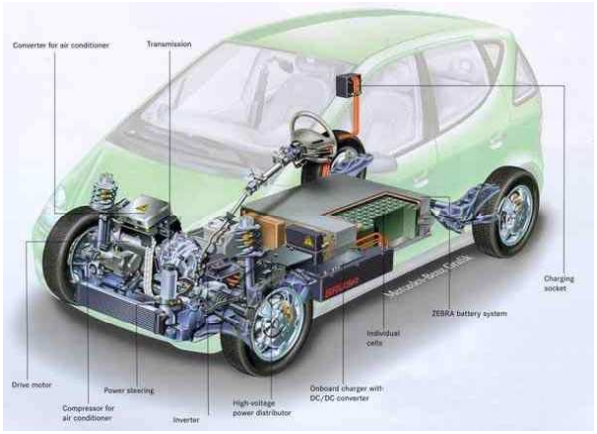
Electric vehicles still need energy, and that energy today comes mostly from fossil fuels. However, the electric powertrain is up to four times more efficient than its conventional mechanical counterpart. This means electric vehicles consume far less primary energy per kilometer travelled, so that even based on today's fossil-rich energy mix, electric vehicles can deliver an overall reduction of greenhouse gas emissions. In addition, electric vehicles can contribute to improving urban air quality and reduce noise levels. Even based on today's fossil-rich energy mix, electric vehicles can deliver an overall reduction of greenhouse gas emissions. In addition,

[2] IMPRO-Car JRC http://ftp.jrc.es/JRC40598.pdf

[3] www.panda.org/climate or www.panda.org/eu

electric vehicles can contribute to improving urban air quality and reduce noise levels.

In recent years, the cost and performance of advanced batteries have improved dramatically. And plug-in hybrid electric vehicles (PHEVs) – electric vehicles with an onboard generator – can overcome the perceived range limitations which hamper the market acceptance of battery-electric vehicles (BEVs). The technology is proven, and requires no significant new infrastructure. BEVs and PHEVs supplemented with sustainably produced biofuels are compatible with a future in which all of our energy services derive from sustainable renewable resources. And because electric vehicles are so much more efficient than conventional mechanical vehicles at converting stored energy into kilometers, the overall system demand for energy – and CO emissions – will be reduced, helping us fight climate change.



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