

*Report and Analysis by Jeffrey Seisler, CEO, Clean Fuels Consulting, in collaboration with Kevin Leydon Associates. Exclusively for NGV Global*

The debate on proposals for new energy and environment policies are coming to a head as the European Union prepares to turn its focus in the New Year to Parliamentary elections by mid-2009. European Commission initiatives proposed as early as March 2007 are being adopted by Parliament and will tend to lay out the coming years' roadmap for renewable fuel sources (including liquid and gaseous biofuels), for the European car industry related to CO<sub>2</sub> reductions, and hydrogen vehicle and fuelling station development. The flurry of intense activity is scheduled to go through December 2008. Those directives that are finalized then enter the implementation phase. Those that are not finalized or successfully negotiated to their conclusion either at the end of the year or beginning of 2009 could languish until a new Parliament is chosen. The 'battle lines' on issues is complex:

For the debate on renewable energy key issues include:

- What percentage of renewable energy should be targeted for all sectors, and separately, for the transportation sector; and
- What is the definition of biofuels sustainability, separating out 'bad' from 'good' renewable energy (i.e. options that do more good than harm);

For Cars and CO<sub>2</sub> there are equally 'hot issues' that have the European car industry pitted against environmental organisations.

- What should be the target CO<sub>2</sub> reductions imposed on the car industry?
- By what year should the reductions become mandatory?
- Should there be transitional targets set?
- Most importantly, what would be appropriate monetary penalties for failing to reach the targets in the appropriate time-frame, and should those be transitional as well?

Hydrogen continues to receive strong support from the European Commission and Parliament.

### **Directive on Renewable Energy Sources**

The passage of the Renewable Energy Sources (RES) directive in Parliament on 11 September was generally hailed as a victory by environmentalists although liquid biofuel producers were less enthusiastic due to issues associated with the hotly debated definition of what constitutes a

'sustainable' biofuel. Biomethane, in the first glance is not a consideration for road transport; only for electricity generation.

The vote by the Industry and Energy Committee (ITRE) – after working to consolidate almost 2000 amendments into a package of 35 compromise amendments -- calls for all energy consuming sectors to use 20% renewables by 2020. Transport sector targets are to use 5% renewables by 2015 and 10% by 2020.

Renewable energy advocates have been debating for months about liquid biofuels and attempting to create a definition of sustainability. This is due to newer findings about harmful effects on the food chain, deforestation, land rights of local communities, fair payment for workers and other related issues associated with the production of liquid biofuels. Not being able to arrive at a suitable, quantifiable definition of sustainability, policy makers turned to another measure to limit so-called 'bad' liquid biofuels: cradle-to-grave CO<sub>2</sub> production. For the transport sector, which focuses on liquid biofuels, there are two requirements established:

- At least 20% of the 2015 target and 40% of the 2020 goal must be met from "non-food and feed-competing second generation biofuels or cars running on green electricity or hydrogen."
- Furthermore, the directive includes an obligation for biofuels to offer at least 40% CO<sub>2</sub> savings compared to fossil fuels – a figure that would rise to 60% after 2015. All of this would be subject to further review by 2014.

This is an unanticipated challenge for the liquid biofuels producers because typically, biodiesel made from European-grown rapeseed results in a greenhouse gas saving of 44% over fossil petroleum while the typical figure for ethanol made from EU sugar beet is 48%. The European Biodiesel Board (EBB) said that the new CO<sub>2</sub> requirements would cut-off more than 80% of European-produced biofuels and would result in an increase of non-European biofuels, which also would have to meet the same CO<sub>2</sub> criteria. Biogas would likely have no trouble meeting either of these stringent CO<sub>2</sub> target reductions and, thus, could be defined as 'sustainable.'

## **Impact for Alternative Fuels**

While the original text offers little for biomethane or the NGV sector, a new body of 504 amendments introduced from seven Parliamentary committees on 26 September will be included, in some consolidated form or another, in the Parliament's final plenary vote in December. At least eight of these amendments deal with gaseous fuels and, if even one passes, could help fill a legislative void for biomethane and other alternative fuels such as natural gas and LPG. The most important amendments recommend separate initiatives (i.e a European Directive) to promote clean, alternative fuels and a second amendment would provide incentives for "the development of gaseous fuels for transport and, in the short-to-mid term guarantee incentives to potential customers." The other amendments relate more to definitions of biogas and biomethane, which also is critical to gaining legitimacy within a political world

where liquid biofuels continue to attract mainstream attention.

Will these amendments that could be so critical to European NGV development survive through the final vote of the plenary in Parliament on December 15th? The European Commission has not supported either an alternative fuels directive or the specific designation of biogas/biomethane policies for transport purposes; only for electric generation since the greenhouse savings from supplementing coal or oil with methane yields substantially more carbon reductions than the vehicle sector. (Biogas is, however, included in the definition of renewable energy from biomass.) Keeping any of the biogas-friendly amendments would require strong demonstrations of support for the committee members who fostered these various amendments. Picking champions will be a challenge and reaching the key MEPs in a meaningful way would be time consuming and expensive.

The gaseous fuel vehicle lobby efforts (NGVs and LPG) cannot compare to the strength of the well-financed, highly organised liquid fuel lobbies dominated by the oil and auto industries and now including the farm industry supporting ethanol and biodiesel. So it remains to be seen if these very positive (but last minute) biogas initiatives in the RES will survive through the Parliament's plenary vote. If, for example, the initiative to create an alternative fuels directive does survive, which is not likely, it will be at least a three year process at the Commission – including a green paper, white paper, a number of public consultations and a draft directive – to become a reality. (A European Alternative Fuels Directive first was proposed by the European Natural Gas Vehicle Association (ENGVA) at its inaugural Brussels conference in May, 1995.)

## **CO2 and Cars**

The European Parliament Committee on the Environment, Public Health and Food Safety, on 23 September 2008 voted on proposed regulation to reduce CO2 emissions in light duty vehicles that also included 265 amendments. It was one of the most controversial energy regulations facing the European Union since March 2007 when the European energy package was introduced. In the end, the environmental advocates who battled car industry stakeholders claimed victory in the combination of CO2 reduction requirements, time table, and penalties that were included in the final regulation. As for alternative fuels like natural gas and liquefied petroleum gas (LPG), which have the greatest potential to reduce CO2 emissions, they didn't fare as well as they might have.

## **Background**

This highly contentious regulation stemmed from the failure of the European car industry to achieve CO2 reductions in accordance with a 1998 voluntary agreement the industry made with the European Commission (EC) to achieve a level of 140 g/km CO2 in the passenger car fleet by 2008, equal to a 25% CO2 reduction from 1995 levels of 186g/km. The car industry claimed to have achieved a 13.5% reduction (160 g/km) and has said that the failure to go lower was also partly due to a lack of tax incentives or a vehicle labeling scheme promised by the EC. Nevertheless, in February 2007 the regulatory hammer fell on the European car industry when the EC proposed a CO2 regulation for 2012, targeting 130g/km for the new car fleet, with an additional 10g/km to be achieved through technological innovations. The EC also proposed a

simultaneous increase in the use of biofuels by 2012 to help achieve the reductions. This was principally aimed at liquid biofuels, with biogas/biomethane again, only included in the definitions of biofuels. The combined CO<sub>2</sub> reductions and increased use of liquid biofuels was known as the 'integrated approach.' In October 2007 Parliament adopted a resolution supporting the CO<sub>2</sub>/biofuels integrated approach but advocated a more ambitious, long term target to reduce CO<sub>2</sub> to 95 g/km by 2020 and looking to 70g/km by 2025. The European automobile manufacturers association (ACEA) has claimed that a reduction to 120 g/km CO<sub>2</sub> by 2012 would add €3,000 to the cost of a car and that these costs could not reasonably be passed on to the consumer, thus making European cars less competitive.

### **The Adopted Regulatory Package**

The EP Committee on the Environment, Public Health and Food Safety on 25 September 2008 voted on a draft legislative report that included 265 amendments to the EC's original language. In the end, the EP agreed to require the car makers to achieve 130 g/km CO<sub>2</sub> emissions level across their car fleets by 2012, but to include an additional 10 g/km reduction based on 'technology improvements' and the use of biofuels. They also agreed to target a 95 g/km CO<sub>2</sub> reduction by 2020, however, the European Commission, which had not stipulated the additional reductions, said that Environment Committee will be required to produce by the end of 2014 an assessment of the impact on the car industry and its allied industries, coupled with a cost-benefit analysis, taking into account the development of technological innovations for CO<sub>2</sub> reduction. The committee rejected an amendment that would have allowed transitional measures and interim targets ensuring that CO<sub>2</sub> emissions reductions would be possible in 60% of the car makers' models in 2012; 70% in 2013; 80% in 2014 and 100% compliance from 2015. Such a transitional phase-in was preferred by the auto industry.

Parliament also voted to support an EC provision imposing fines on the automakers that failed to achieve the CO<sub>2</sub> reduction goals: from €20 (per gram CO<sub>2</sub>) in 2012 and gradually increasing to €95 from 2015 onward. The revenue from these penalties is to be invested in the development of zero emissions cars and other technological innovations that reduce vehicle CO<sub>2</sub> emissions.

The ACEA appealed unsuccessfully to the European member states to "strike a balance between environmental protection and economic growth and employment." Meanwhile, Germany, with one of the strongest car manufacturing sectors in Europe, reacted very strongly and the German presidency is at work on a compromise to soften the impact on the car industry. The French, with their own large car industry, suggested the car makers achieve 60% compliance by 2012 and 100% of the fleet compliance by 2015. Additionally, the French proposed to give car companies an 'eco innovation' credit for producing cleaner vehicles or low emission cars. Environmentalists (non-governmental organisations and the Green party) claim that reductions of such technologies cannot be verified under current EU test procedures.

One successful amendment advocated by the European LPG Association (AEGPL) allows LPG and NGVs, when they achieve European certification, to show only the lower CO<sub>2</sub> figure from its natural gas operation. Another technical amendment by AEGPL for bi-fuel vehicles registered on a national basis without European type approval failed. At least, under this first

provision NGVs and LPG cars will get some recognition for their lower CO2 emissions but, it's a negligible incentive.

### Impact for Alternative Fuels

Apart from the small technical amendment from the AEGPL, the CO2 and Cars regulation does little to incentivize NGVs or other alternative fuels. Any 'incentive' for the European car industry will come from the fairly draconian penalties that are aimed at the industry for not fulfilling its fleet-wide CO2 reductions. And these would not start until 2012. Whether the penalties will enhance the opportunity for CO2 reductions in the proposed timetable or result in serious economic dislocation for the car industry remains to be sorted out through different industry and government analyses.

The concept of awarding automakers specific CO2 credits for producing clean, alternative fuel vehicles such as natural gas vehicles (NGVs) was advocated by the old European Natural Gas Vehicle Association (ENGVA) immediately following the announcement of the European Commission's February 2007 energy and CO2 proposals. This position was stressed to policy makers at the June 2007 ENGVA Political Round Table in Parliament in Strasbourg, France. Key policy makers at the European Commission felt, however, that NGVs already achieve a 20-25% CO2 reduction over gasoline vehicles and this was an adequate incentive for the car makers to make NGVs.

General Motors picked up on the idea of CO2 credits for biofuel vehicles and successfully lobbied with Swedish members of Parliament to include an amendment that passenger cars achieving the CO2 emissions levels be granted an additional 5% reduction in CO2 targets in recognition of 'the greater technological and emissions reduction capacity to run on two different fuels.' Other related amendments included in the regulatory package (that were not adopted) advocated a variety of credits and allowances for low CO2 vehicles, with some incentives tied to the percentage of fuelling stations selling the fuel. None of these, however, specifically addressed natural gas vehicles.

The GM effort translated into the following amendment language that was included in the regulation passed by Parliament:

*For the purpose of determining compliance by individual manufacturers of passenger cars with the specific emissions targets... the CO2 emissions as stated in the certificate of conformity for each alternative fuel vehicle, as defined in Regulation (EC) No 715/2007, registered in the European Union shall be reduced by 20%, with a maximum of 25 grams CO2 per kilometer, if at least 30% of the filling stations in the Member State where the vehicle is registered provide alternative fuels for these vehicles that meets the sustainability criteria set out in the [Renewable energy directive]. The reduction shall not be valid for vehicles with a mass-weight over 2000 kg, or through the use of alternative fuels that are not available for commercial use within the Community.*

But the loopholes in this language are large enough to drive a truck through, making it potentially effective only in Sweden for ethanol fuelled cars where the fuelling station network is

primed for ethanol and fuel flexible vehicles (and if the fuel meets the tough sustainability criteria in the Renewable Energy Directive). The definition of 'sustainable (bio)fuel' remains a question and the definition of 'commercially available' adds another serious issue, particularly if less than 30% of fuelling stations provide a specific alternative fuel. Furthermore, the weight limitation for qualifying vehicles is below many of the popular alternative fuel vehicles. This regulation would eliminate vehicles such as the Mercedes E200 NGT (2,275kg) and natural gas Opel Zafira (2075 kg). The Opel Astra (at 118 g/km CO<sub>2</sub>) would qualify at 1905kg. With the added weight of CNG cylinders, such weight restrictions on incentive packages put NGVs at a disadvantage.

### **Hydrogen Vehicles Continue to Draw EU Support**

Parliament supported European Commission proposals for a draft directive on hydrogen vehicles (H<sub>2</sub>Vs) on 3rd September 2008 to increase the support for infrastructure development of hydrogen, indicating that 'concrete measures' will be required on a Europe-wide scale to ensure the creation of a fuelling station network for H<sub>2</sub>Vs. Additionally, Parliament supported proposals to harmonise type-approval criteria for H<sub>2</sub>Vs in order to help boost the market for these vehicles.

The harmonisation effort for H<sub>2</sub>Vs is well on its way, both at the United Nations where a Global Technical Regulation has been in the works for the past several years and at the European Union level where a Regulation on Type Approval of Hydrogen Power Motor Vehicles (amending Directive 2007/46EC) was approved by Parliament. One interesting feature of the type approval directive is the definition of a hydrogen powered vehicle, which was 'any motor vehicle that uses pure hydrogen or a mixture of hydrogen and natural gas as a fuel to propel the vehicle...up to 25%.' H<sub>2</sub>V stakeholders are eyeing the natural gas pipeline infrastructure as one possible mechanism to deliver hydrogen to vehicle customers.

### **Still More to Come**

The massive energy initiative also will include a Fuel Quality Directive and, still-to-be-determined, a lesser known Clean and Efficient Car Initiative, which laid out a variety of measures aimed at national and local government's procurement of clean vehicles, which also would include natural gas and LPG. The Clean and Efficient Car Initiative is up for vote by Parliament in October.

Political action in Brussels, particularly focused on Parliament, will be intense as December approaches. There is much at stake for many industries and, most importantly, for European citizens affected by these wide-ranging energy and environment provisions. Regardless of the outcome, these legislative initiatives also will set the tone of the global debate on energy, the environment, CO<sub>2</sub> and climate change in Europe and internationally.

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