



2009 Legislation Quarterly Review - Q1

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Introduction

As fuel cells commercialise, and as increasing attention is given to hydrogen and fuel cells by policymakers at local, international and supra-national levels, it is timely to draw together the main policy and legislative developments worldwide. This is one of a series of quarterly reviews of policy and legislation on hydrogen and fuel cells organised by region. Focusing on the main markets for fuel cells, including the North American, Japanese, and European super-regions, the Review analyses developments by local and US State governments, national governments, (such as Japan) and groupings of nation-states (such as the European Union). This Review focuses on continuing energy and environmental legislation coming from the European Union, the election of Barack Obama as US President, and continuing political developments affecting fuel cells in Japan.

Worldwide developments, Q1 2009

This Review covers the period 1st January to 31st March 2009. This quarter has been dominated by a flurry of federal government activity in the U.S. that affects the fuel cell industry. Since President Obama took office, the Congress passed an economic stimulus package with billions in energy-related funding and tax incentives for the next two years. Congress also passed its FY'09 budget (halfway through the fiscal year) with more funding for energy programmes, and both the Obama Administration and Congress are working on 2010 spending plans. The Obama Administration is continuing to announce major shifts on environmental policy, most notably on climate change. All this is happening while the government continues to address the economic downturn, including the effort to save the troubled US automotive industry. Similar, though less dramatic, legislative measures have been pushed through in Europe, Japan and in other parts of the world, as detailed below. Perhaps the biggest development worldwide recently was the meeting of the group of 20 Finance Ministers and Central Bank Governors of 19 of the world's largest national economies, plus the EU (the 'G-20') in London in early April. Strictly speaking, this event occurred outside of the period covered in this report, but is however included here for its imminent relevance.

The G-20 met in the face of the 'greatest challenge to the world economy in modern times' according to the summit communiqué. Many commentators concluded that for all the talk prior to the meeting of the G-20, with some politicians labeling the gathering as an opportunity for a new BreTton-Woods style global economic framework, there was relatively little actual progress. The final G20 communiqué spoke of a \$5 trillion of financial expansion required by the end of 2010, as well as \$1.1 trillion in additional resources through international institutions like the IMF. Politicians also pledged \$250 billion in support of trade finance. Despite these large figures, the actual amount of public funding going towards economic recovery is more modest, and relatively little is what can be classed as 'new' money. The main source of new cash agreed at the G-20 will be in the form of \$250 billion on Special Drawing Rights, the International Monetary Fund's de-facto currency, which should add to global liquidity, particularly sovereign reserves. Of course, funding for fuel cells may only be tangentially related to this development – funding for alternative energy was not the main focus of the discussions. However, boosting the global financial system is clearly aimed at stimulating innovation to drive renewed economic growth, and may ultimately include further funding for novel energy technologies – just as is currently happening in the US. There is increasing consensus that support for the automotive and industrial sectors must be contingent on major technological change, not least in the way energy is created and used. This adds up to a timely boost for funding and commercialisation of the fuel cell sector. One caveat to this is that, attractive as additional funding for the fuel cell industry is, it must be targeted at assisting ongoing commercial development, rather than encouraging one-off demonstration projects or long-term dependency – in other words, when the funding is eventually taken away (as it will be) projects and companies need to have a real business.

North America

In North America, most fuel cell related activity in this quarter has been at the US federal level, with some major new funding announcements. The \$789 billion economic stimulus legislation signed by the president on 17 February

continues to attract a huge amount of attention, and for good reason. Officially titled the “American Recovery and Reinvestment Act of 2009” or “ARRA”, this legislation provides billions in energy and environmental project funding through several federal agencies as well as through the US states. The key to this legislation is that it is designed to inject an immediate stimulus to the economy, so the funding largely must be distributed within the next two years. Federal agencies and state governments are scrambling to find ways to use the money effectively and immediately, so funding announcements are coming on an almost daily basis.

The US Department of Energy (DOE) received \$32.7 billion in ARRA allocations, as well as \$12.5 billion in loan guarantee or borrowing authority allocations. Of this amount, the ARRA directs \$16.8 billion to the Office of Energy Efficiency and Renewable Energy (EERE), home of the DOE Hydrogen Program. (ARRA funding for other DOE offices such as Nuclear Energy or Fossil Energy may also be used for hydrogen related activity, but this Review will focus on the EERE, the locus of the DOE’s hydrogen and fuel cell activity.) Because the money is to be spent quickly, the legislation largely directs it to existing programmes where it can supplement current funding levels. A quick review of programme allocations reveals that a wide range of clean technologies for buildings, transportation and the electric grid will be eligible for funding support. For example, there is \$3.2 billion for grants through state and local governments to support energy efficiency improvements in government buildings, while another \$300 million will go to the US Clean Cities program for its alternative fuel vehicle pilot projects. Fuel cells and hydrogen are part of this mix of eligible technologies, but will compete with other clean energy options.

EERE has already directed some ARRA money to fuel cells. There is an open solicitation for hydrogen sensor R&D, with \$2.5 million available for 2-3 projects. On 15 April, DOE announced \$41.9 million in new projects under the Fuel Cell Market Transformation initiative. This programme is intended to accelerate growth in early fuel cell markets such as materials handling and backup power. According to DOE, the \$41.9 million – combined with \$72.4 million in cost share from industry partners – will support deployment of 1,000 fuel cell systems for backup power and forklift applications as well as several development projects for combined heat and power and portable power applications. DOE has indicated it is preparing another Market Transformation funding announcement, contingent on appropriations, that could be released in the next few weeks. These activities reflect the agency’s increasing focus on near-term clean energy technologies.

The ARRA also made changes to several fuel cell related tax incentives – valid through 2010 -- that could have an impact on near-term deployment decisions:

- The hydrogen fuelling facility tax credit was increased to 30% of the facility cost up to \$200,000 (increased from the previous cap of \$30,000).
- The tax credit for residential fuel cell installation was increased to \$3,334/kW (up from \$1,000/kw) for joint-occupancy dwellings.
- The business fuel cell installation tax credit may now be taken as a grant by tax-paying entities that do not have sufficient tax liability. This credit applies to fuel cells with a minimum capacity of .5 kW and forklifts are eligible.
- There is a 30% tax credit for investment in property used for manufacturing clean energy technologies including fuel cells.

It’s important to remember that the ARRA funding is all supplemental to federal funding for fiscal years 2009 and 2010. EERE received around \$200 million for its hydrogen program activities in 2009; this is a slight decrease from 2008 but an increase over 2007. In addition, 2009 funding for all DOE hydrogen activity, including in the Fossil Energy, Nuclear Energy and Basic Energy Sciences offices, is \$293 million, about a 7% increase from last year.

The DOE hydrogen program is undergoing some changes, as is typical following a presidential election. There are new appointees to head up the major DOE offices that oversee hydrogen and fuel cell activities, but it is not yet clear whether there will be any major changes as a result. While the Administration is clearly promoting clean energy technologies, our sense is that there are no strong fuel cell advocates among the political leadership. However, this may not have a practical effect on the hydrogen program or its funding levels. The Administration’s 2010 budget request is still in process, with details expected to be made public within the next few weeks. We’ll be keeping an eye out for this and report any important developments in our news updates.

We should also mention that other agencies have funding that can be used for fuel cells or hydrogen – most notably, the Department of Defense (DOD), which received \$4.5 billion for energy improvements at DOD facilities and to develop energy efficient technologies. The DOD also has programs exploring fuel cells for materials handling at

logistics facilities; portable power; unmanned air and underwater vehicles; and other applications -- these areas are all likely to see continued funding in the 2010 budget.

The major US policy news was the US Environmental Protection Agency's finding that greenhouse gases are a harmful pollutant. (This is still a proposed finding; it will not become official until a public comment period has been concluded.) This finding opens the door for EPA to regulate greenhouse gas emissions under the Clean Air Act, as it does for other air pollutants such as ozone precursors. However, it is not clear whether EPA will take steps to do this. President Obama has been promoting a cap and trade concept that would have to be created by Congressional legislation. The Administration may prefer to pursue the legislative option since the idea of regulating carbon emissions is still fairly contentious in the US, and the president may prefer to create a climate policy that has the active support of Congress. While the threat of potential EPA action could serve to "focus the attention" of Congress on a cap-and-trade bill, it is nevertheless not clear whether such a bill can pass this year, especially given the president's other ambitious policy goals. In the meantime, as we reported in the last Legislation Review, there are several US states that are continuing to pursue their own greenhouse gas regulations.

We would be remiss if we did not at least note the recent government interventions in the US automotive industry. As has been widely reported, General Motors and Chrysler both received billions in federal aid late last year and requested billions more in March. GM head Richard Wagoner resigned at the behest of the Obama Administration, so the company could receive additional taxpayer money; GM now has until June 1st to either prove it has a viable restructuring plan or it may have to file for bankruptcy. Meanwhile, Chrysler has an April 30 deadline to reach an alliance with Fiat and undertake cost-cutting measures or it too may be forced into bankruptcy proceedings. The Obama Administration has made it clear that it expects a restructured US automotive industry to be a leader in producing "the next generation of clean cars". The potential impact of the federal aid on light duty fuel cell vehicle development may be more clear as these restructuring deadlines are reached. FCT will review this issue in greater depth in our Light Duty Vehicle Survey due out in May.

Finally, this North American review has not focused attention on Canada's fuel cell and hydrogen policies or funding. This is partly because the US announcements have dominated the news in the last quarter, and partly because Canada does not have a single hydrogen program on which we can report, but instead supports specific fuel cell and hydrogen projects. For example, BC Transit's ambitious 20 fuel cell bus project is expected to receive over CN\$80 million in federal, provincial and local government funding support, while this month the government announced a CN\$14 million project to deploy 11 hydrogen vehicles at the Montreal and Vancouver airports. The Government of Canada is contributing CN\$2.4 million for this airport vehicle pilot project through its ecoENERGY Technology Initiative, a CN\$230-million program launched in 2007 under Prime Minister Stephen Harper's government to support the development of clean energy technologies and fuels, and energy efficiency. Fuel Cell Today will be attending the hydrogen conference in Vancouver at the end of May, so we will have a more detailed report on Canada's fuel cell and hydrogen policy activities for the next Legislative Review following this event.

European Union

The biggest news from the EU this quarter was the agreement on 20th March to allocate €5 billion (US\$6.9 billion) to energy and broadband infrastructure projects as part of a European stimulus package. The announcement follows the Commission's proposal in January to reallocate €5 billion of unspent 2008 EU agricultural funding, mostly to support clean coal projects, offshore wind farms and the deployment of broadband Internet connections in rural areas, a proposal that resulted in weeks of negotiation over which projects should receive funding. The plans allocate a total of over €3.5 billion to clean energy projects (in 2009 and 2010), up to €1 billion will support broadband Internet, and a further €500 million for tackling 'new agricultural challenges', such as climate change and renewable energy. However, plans for 'smart cities' did not make it into the final allocation. Whilst the sums being allocated are large, there is a distinct feeling that these represent large capital intensive investments whose benefits are as yet unknown – such as large-scale gas connections in Eastern Europe, offshore wind and CCS projects. The final budget will only be decided in autumn 2009, once the 2010 budget procedure is closed and may be subject to further amendment. The €5 billion funding is part of a wider package of €200 billion in stimulus funding from the EU, coming from unused funds from the Common Agricultural Policy. Without specific allocations for fuel cells and hydrogen (as in the US), it is difficult to see what the EU's measures will mean for the industry in the immediate term. In other Europe-wide news the European Investment Bank announced it will lend car makers €3 billion, in a parallel measure to that announced in the US. This is expected not only to assist with European car-makers' current troubles but also the development of clean new vehicles such as the Opel Ampere, the US equivalent of the Chevrolet Volt which uses GM's e-flex vehicle architecture and is suited to a fuel cell power train.

More news on the EU's package of energy and environment measures announced last year: EU energy ministers have pledged to agree on the measures by the end of 2009. The EU has indicated it is close to finalising the climate change and energy measures announced last year. These measures include a commitment to an EU-wide 20% emissions cut and an increase in the use of renewables to 20% of the energy mix by 2020. It is hoped that the EU might negotiate its position ahead of the Copenhagen Climate Conference to be held in December 2009, and which aims to develop a global framework for dealing with climate change beyond 2012.

In February, the European Commission's Network of Excellence for Hydrogen Safety, HySafe, released a document providing initial guidance for using hydrogen in confined spaces. The document also references existing standards and best practices on hydrogen safety. HySafe is intended support the transition to sustainable development in Europe by facilitating the safe introduction of hydrogen technologies and applications. The consortium consists of 25 partners representing research organisations, governmental agencies, universities and industry. The report can be found at: <http://www.hysafe.org/documents>

UK

With the recession biting hard, the UK government has cited a move to a low carbon economy and high value manufacturing as a way of creating jobs and stimulating a new growth area. Prime minister Gordon Brown has recently called for an international "green new deal" to boost the environmental sector and help lift the global economy out of recession. The UK seems to be increasingly moving towards regulation, grants and direct intervention as a way to stimulate the 'green' economy although the manner in which it has done this has to date been less explicit than in the US. Also this quarter, several influential reports have highlighted the need for greater investment in the UK's engineering capacity and also the need to harness economic stimulus funding into clean energy. In terms of measures being considered by the UK government as part of its economic stimulus package include a grant to encourage drivers of older cars to trade them in for new models, and up to £5,000 for the purchase of electric vehicles. In January, it was announced that £250 million would be made available for consumer incentives to bring electric cars to market in the UK. At the time of writing, on the eve of the UK's budget, further funding for electric vehicles is expected.

At regional level, London's mayor recently announced a plan to introduce 100,000 electric cars to the capital and to build an infrastructure of 25,000 charging points in public streets, car parks and shops. A third of this funding would come from the budget of the Greater London Authority (GLA), with the remainder coming from central government. It is not known how many of these electric cars will be fuel cell powered, nor what funding commitments the London Mayor will make towards fuel cells in the capital. Meanwhile, Royal Mail, the UK's postal delivery service, has taken delivery of three hydrogen fuelled vehicles, believed to be the only hydrogen fuelled postal vehicles in the world outside of North America. Two internal combustion engine delivery vans will be used in Northern Scotland, while a fuel cell powered Microcab will be used on the campus of Birmingham University. Separately, Royal Mail is working with the Centre of Excellence for Low Carbon and Fuel Cells (Cenex), PostEurop and FuelCellEurope to develop a universal design specification for fuel cell postal delivery vans.

For a more detailed analysis of UK policy developments, please refer to Fuel Cell Today's UK policy review, published in May on the Low Carbon and Fuel Cell Knowledge Transfer Network (www.fuelcellktn.com)

Japan

The Japanese New Energy Foundation (NEF), a coalition of Japanese electrical utilities, fuel companies and fuel cell manufacturers, has installed over 3,000 PEM CHP units in residential settings in Japan to the end of 2008. This year is set to be a milestone year as the Ene Farm range of fuel cell products, sold by a range of manufacturers but marketed under one brand, are launched commercially with up to 50% funding from the Japanese Ministry of Economy, Trade and Industry (METI). In 2009, up to 3,300 Ene Farm branded products are expected to be sold in this way, in contrast to the previous leasing of products by companies such as Tokyo Gas on 4- or 10-year leases. From May 2009, Ene Farm units by Panasonic/Tokyo Gas will be on sale for around 3.3 million Yen (US\$31,000) - METI will reduce this to just under half through its subsidy for consumers (half of the purchasing price with an upper limit of 1.4 million yen). These will be followed by Ebara Ballard, Toshiba, and Eneos Celltech Ene Farm units. In the next five years, the four gas companies involved in the project (Tokyo, Osaka, Toho and Saibu Gas) expect to ship 2,800 units; while Nippon Oil Corp. expects to ship 2,000 units and Astomos Energy expects to ship 5,000 units. The Japanese government

anticipates a cumulative total of 2.5 million units to be installed by 2030. In the next year or so, various technical and commercial barriers are to be addressed by the Ene Farm suite of products, led by the Japan Institute of Energy.

The Japanese government also announced this quarter that it will include tax breaks for environmentally friendly cars in the FY2009 tax reform bill. This is likely to benefit hybrid and electric vehicles, including fuel cell vehicles. Under the bill, the three years worth of automobile tonnage tax will be waived for hybrid cars and electric vehicles, representing another incentive for fuel cell vehicle adoption.

China

China has also this quarter revealed new subsidy levels for fuel cell vehicles, which follows announcements on subsidies for public transport, the taxi industry, and postal and urban sanitary vehicles in 13 cities including Beijing and Shanghai, Chongqing and Changchun. For passenger vehicles, the maximum subsidy for a hybrid vehicle will be CNY50,000 (£5,126), for a purely electric vehicle CNY60,000 (6,152 GBP), and for a fuel-cell vehicle CNY250,000 (£25,632), the statement said. Subsidies for light commercial vehicles will focus on city buses longer than 10 metres. Subsidies for alternative energy buses will range from CNY420,000 (£43,063) to CNY600,000 (£61,504) for a fuel cell bus. The report mentioned no restrictions on the rebate, but it was not immediately clear if this meant it would be extended to include vehicles produced overseas by foreign manufacturers. It did not say when the program would begin. Clearly this has the potential to be a significant incentive for buyers of fuel cell vehicles and, given that some of China's largest automakers have ongoing fuel cell development programmes, we expect to see it taken up in the near future. In other news, General Motors Corporation and Shanghai Automotive Industry Corporation (SAIC) recently announced the launch of SAIC's Shanghai Brand Fuel Cell Vehicle, which is powered by GM's latest fourth-generation fuel cell propulsion technology – a boost to what was already a promising programme.

About the authors

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