

Consultation on proposals for the levels of banded support under the Renewables Obligation for the period 2013-17 and the Renewables Obligation Order 2012

Please use the table below as a template to respond to the consultation. It will help us to record and take account of your views.

Also, please provide evidence for your answers and comments where possible.

PERSONAL DETAILS
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<p>Introduction</p> <p>This paper is the UK Hydrogen and Fuel Cell Association's response to the "Consultation on proposals for the levels of banded support under the Renewables Obligation for the period 2013-17 and the Renewable Obligations Order 2012" published by the Department of Energy and Climate Change in October 2011.</p> <p>The UK Hydrogen and Fuel Cell Association (UK HFCA) aims to accelerate the commercialization of fuel cell and hydrogen energy technologies. Through the breadth, expertise and diversity of our membership, we work to trigger the policy changes required for the UK to fully realise the opportunities offered by these clean energy solutions and associated elements of the supply chain.</p> <p>Fuel cells and hydrogen are 'game changing' technologies providing low-carbon solutions across transport, stationary power and beyond. The growing industry is already bringing benefits that the UK cannot afford to miss: creating new jobs, supporting UK economic growth and improved competitiveness in energy markets globally.</p> <p>This submission has been produced through consultation with our members and presents the Association's response to those aspects of the consultation of most relevance to the sector. We</p>

advocate for Government policy to encourage the deployment of the most efficient technologies, rather than to be prescriptive about particular means of renewable electricity generation. The Renewables Obligations Order 2012 and new banding levels must protect the potential for hydrogen and fuel cells, and other high efficiency, low carbon technologies, to be deployed as part of anaerobic digestion, landfill and sewage gas projects. Given the growing importance of energy storage in the management of the UK electricity network, we would welcome clarification on the Government’s proposals to accelerate the take-up of energy storage technologies under the existing renewable energy support schemes.

CHAPTER 11: ANAEROBIC DIGESTION

Q48: Do you agree with the proposed level of 2 ROCs/MWh for Anaerobic Digestion, stepping down to 1.9 ROCs in 2015/16 and 1.8 ROCs in 2016/17? Please explain your response with evidence.

Disagree

Comments: The fuel cell and hydrogen industry believes that 2ROCs/MWh banding should be retained until 2017 for installations utilising high efficiency energy conversion technology such as fuel cells. In addition to its combustion for electricity generation (refer to paragraph 11.2 in the Consultation), biogas can be utilised in highly efficient fuel cell systems for electricity and / or heat generation. The absence of combustion process in a fuel cell significantly reduces emissions of nitrogen and sulphur oxides (NO_x and SO_x) as well as fully eliminating particulate matter. In combined heat and power (CHP) installations running on biogas, fuel cells can achieve efficiencies of 80% and higher. Furthermore, fuel cells are also efficient generation technologies for biogas with low methane contents.

There is also a scope to install tri-generation units with the anaerobic digestion or sewage treatment plants. These generate electricity and heat, as well as producing hydrogen. The first such facility in the world was commissioned in the Orange County Sanitation District's wastewater treatment plant in Fountain Valley, California, in August 2011. This installation will produce enough hydrogen to fuel 25-50 fuel cell electric vehicles (FCEVs) per day, and will also generate 250kW of power for utilisation by the waste water treatment plant. It demonstrates the versatility of fuel cells to utilise multiple feedstocks (such as biogas, sewage gas, natural gas), to produce power and low cost renewable hydrogen that can be used to fuel light duty vehicles or as backup power in applications such as cell phone towers.

CHAPTER 12: ADVANCED CONVERSION TECHNOLOGIES (GASIFICATION AND PYROLYSIS)

Q50: Do you agree with the eligibility criteria for the new standard ACT and advanced ACT bands? Please explain your response with evidence.

Disagree

Comments: Point 12.20 of the Consultation Document states that electricity from advanced ACTs will only be eligible for ROCs if it is produced in an internal combustion engine. The hydrogen and

fuel cell industry believes that it is inappropriate to define the generation technology so tightly. When installed in ACT plants, fuel cells offer considerable benefits over internal combustion engines, including:

- Higher efficiency (up to 60% electrical efficiency)
- Significantly reduced NO_x, SO_x and particulate matter emissions, allowing stringent air quality requirements to be met
- Modularity (suitability for different scales, from kW community schemes to MW power generation schemes)

There is UK capability in the development of fuel cells fit for installation with the ACT. Without broadening the limit on the generation technology under the Renewable Obligation, the UK will undermine this capability and risk the loss of wealth, intellectual property and jobs generated by this growing industry.

We propose that new advanced ACT band should cover all generation technologies that meet or exceed the current efficiencies of the similar size internal combustion engine. In addition, electricity generated from surplus syngas should also be rewarded under the scheme.

CHAPTER 13: LANDFILL GAS

Q55: Do you agree that RO support for new landfill gas generation should end from 1 April 2013? Please explain your response with evidence.

Disagree

Comments: See response to question 59 below

CHAPTER 14: SEWAGE GAS

Q59: We would welcome evidence on new technologies that can increase the technical potential from sewage gas in the UK. We are also interested in whether there is potential cogeneration. Information on the costs, potential and viability of new technologies would be particularly valuable.

We propose that support for electricity generation from landfill gas continues where innovative, high efficiency conversion technologies are applied. Subject to appropriate cleaning of the gas (particularly removal of sulphur compounds), fuel cells can generate electricity from landfill gas with low methane content. This will be of particular relevance at older sites which no longer generate methane-rich gas.

Fuel cells have been installed extensively in landfill and sewage gas applications worldwide - for example:

- The system installed in the Tulare Wastewater Treatment Plant (California, USA), utilises a 300kW fuel cell unit running on sewage gas. The waste heat from the fuel cell is captured and fed back to facilitate the anaerobic digestion process. The fuel cell is meeting 45% of the treatment plant's electricity needs; it runs at 47% electrical efficiency, and 90% combined

electrical and heat efficiency¹.

- The sewage plant operator Moosburger Kläranlagen in Moosburg, Germany, has installed a 250kW fuel cell to supplement an engine-driven modular CHP plant. The fuel cell is superior to the conventional technology, with:
 - 47% electrical efficiency;
 - the generation of high quality heat at around 400°C, which is ideal for drying sewage sludge; and
 - substantially lower emissions at an equivalent overall fuel efficiency level².

- The Erdinger Weißbräu brewery in Germany uses a cogeneration fuel cell system fuelled with biogas produced from its onsite wastewater treatment plant. Almost 50% of the biogas energy content is converted into electrical power, and more than 40% translates into heat. Thermal energy is used to heat the brewery buildings and water for the brewing process³.

¹ <http://www.fuelcells.org/info/TulareCaseStudy.pdf>

² <http://www.fuelcelltoday.com/news-events/news-archive/2007/july/hotmodule-fuel-cell-generates-heat-and-power-from-sewage-gas>

³ http://www.tognum.com/press/press-releases/presse-detail/news/german_minister_of_economics_unveils_new_tognum_fuel_cell_at_erdinger_brewery-1/news_smode/text/cHash/0caea54efe/