



Department
of Energy &
Climate Change

Green Hydrogen Standard

Call for Evidence

February 2015

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URN 15D/057

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Executive summary

Developing a Standard for Green Hydrogen

Meeting our 2050 decarbonisation target will require innovation and the deployment of new technologies in traditional roles. Hydrogen, as a fuel, is not new – what is new are the innovative approaches British industry is taking to produce it in such a way as to support our decarbonisation effort. In cars, heavy vehicles, in aircraft and even in domestic heating, low carbon hydrogen could play a strong role.

The Department for Energy & Climate Change is mindful of this and is working to find ways to develop a market in Green Hydrogen. A key first step in this process is defining in precise and technical terms what Green Hydrogen is and finding a way of providing assurances to buyers of hydrogen that the product they are purchasing meets their environmental expectations. At this stage, DECC is interpreting 'Green' to mean low carbon and not considering other environmental impacts, while not excluding broader definitions later in the Standard's development.

DECC is of the view that this must be an industry-led process, but that Government has a strong role to play in helping to facilitate efforts to develop a Green Hydrogen Standard. We have established a Green Hydrogen Working Group with industry to define a process for the Standard's development.

The first step is developing an agreed definition of 'low carbon' as it applies to hydrogen, and this Call for Evidence includes a set of questions intended to ensure that we have captured all points of view about the policy aspects of a Standard. It specifically excludes technical questions about which approaches to measuring emissions or other pollutants from processes are the right ones and more general life cycle analysis issues, as these are being handled by a separate workstream. The administration of the Standard is not being considered at this stage.

Answers to these questions will be collated and an approach agreed with members of the Working Group before initial proposals are put out to consultation in the summer.

Call for Evidence

1. Defining the scope of the energy system under assessment

This section covers the elements of the energy system involved in the production, transportation and use of hydrogen. Under traditional life cycle analyses for carbon dioxide emissions we would expect to measure emissions throughout the entire system, but given that a Green Hydrogen Standard must cover multiple uses exactly which parts of the system we include within the Standard is an open question – and an important one. It will effectively determine the precise level of the emissions threshold at which the Standard is set. This first set of questions relates this issue.

Q1	Should the Standard cover heat, power, transport and other hydrogen applications? What sectors should it cover beyond these?
Q2	What is your view on the usefulness of the standard making assessments at Point of Use (PoU) or Point of Production (PoP)? Does this vary by end use? For example, might we require a different approach for hydrogen used in transport?
Q3	Assuming that regardless of whatever carbon intensity threshold is set by the Standard, some production will involve blending ‘brown’ hydrogen with ‘green’ in such a way as to meet the Standard, how should we account for this when defining the system to be assessed?
Q4	How should grid electricity used to produce hydrogen be treated within the Standard, given its temporal variation?
Q5	How should hydrogen produced using a low carbon electricity source via private wire be treated?
Q6	Should hydrogen produced as a by-product of industrial processes be included within the standard? If yes, how should we define system boundaries for reasonable allocation of its carbon footprint?
Q7	Which industrial processes produce hydrogen as a by-product in useful quantities?
Q8	How should biomass used to produce hydrogen be treated under the Standard?

2. Setting the level of the Standard

The Standard is intended to be a tool to help us use hydrogen to decarbonise the economy, and therefore the carbon content of hydrogen produced and used is crucial. At the same time, a new industry requires a market for its product, and setting the Standard at a stringent level out of the

gate may hamper its development. Getting the threshold right is critical, and these questions relate to how we should determine that threshold once the system boundaries have been set.

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| Q9 | Should one carbon intensity threshold apply to green hydrogen irrespective of its application? |
| Q10 | Is there a risk that a single threshold will exclude hydrogen produced from fossil fuels from the Standard, when that hydrogen may represent a CO ₂ saving compared to another fuel? |
| Q11 | Should the Standard be set using an increasingly tighter trajectory of allowable emissions? |
| Q12 | If yes, how should this trajectory be set? With reference to just our 2050 target or with reference to intermediate Carbon Budgets too? |
| Q13 | What is an appropriate emissions level to begin at? |
| Q14 | What is an appropriate emissions level to target, and when should the target be hit? |

3. Technologies

DECC's view is that the Standard should be technologically neutral, only making judgements on the carbon emissions resulting from production, transport and end-use technologies as determined by the selected system boundary. However, different technologies will require different approaches to technical assessment that will need to be defined within the Standard. Defining which technologies are considered first is therefore of importance.

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| Q15 | Which technologies should the Standard cover in its first iteration? These should be the technologies that are currently most widespread or have the most significant potential in the very near term. |
| Q16 | Which developing technologies should the Standard look to include in its later iterations? |

4. Ancillary Benefits

Notwithstanding DECC's views as set out in the Executive Summary, there may be a case for including non-CO₂ benefits in the first iteration of the Standard. This section contains questions seeking your views on whether these should be included and what they should be.

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| Q17 | Beyond carbon emission reduction, should the Standard look to include other benefits within its first iteration, such as a reduction in airborne particulate matter? |
| Q18 | If yes, how should these benefits be factored in? |

5. International

DECC is aware of initiatives in Europe to develop a similar Green Hydrogen Standard, including the existing TUV Standard, the 'Garantie Origine' approach being developed in France, and the

EU-funded CertifHy project. While elements of these standards are likely to be helpful, the UK requirement for technological neutrality means that it is likely any Standard developed as part of this process will include technologies not currently covered by these. However, this raises an important set of questions, which we cover here.

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| Q23 Would it be an advantage to have a single EU standard, even if it was not technology neutral? Is international consistency important or could the UK develop a better Green Hydrogen standard? |
| Q24 How should we treat imported hydrogen if there is not a common agreed EU or international standard?? |

6. Submitting your responses

This Call for Evidence is open between February 13th and March 29th. Responses should be emailed to adam.bell@decc.gsi.gov.uk with the subject heading, "Response to Green Hydrogen Standard CfE".

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