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Designing a UK low carbon hydrogen standard: Consultation Response

Scottish Renewables is the voice of Scotland's renewable energy industry, working to grow the sector and sustain its position at the forefront of the global clean energy transition. We represent around 260 organisations across the full range of renewable energy technologies in Scotland and around the world, ranging from energy suppliers, operators and manufacturers to small developers, installers, and community groups, as well as companies throughout the supply chain.

Scottish Renewables welcomes the opportunity to provide our view on the proposals outlined in this consultation.

In responding to this consultation, we would like to draw your attention to the following points:

- We strongly disagree that the standard should adopt one label of 'low carbon hydrogen' as this will not allow the ability to distinguish electrolytic renewable hydrogen from other types and will be detrimental for consumers who wish to choose renewable energy.
- Members feel that the standard should be set at the 'point of production' as this would be simplest and would be easier to demonstrate that electrolytic hydrogen would be zero carbon.
- There is a risk that additionality could impose unnecessary complexities and constraints on electrolytic hydrogen project qualifications which could constrain future pipelines.

Scottish Renewables would be keen to engage further with this agenda and would be happy to discuss our response in more detail.

Yours sincerely,

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Scottish Renewables

Q1.

Do you agree that the standard should focus on UK production pathways and end uses whilst supporting future export/imports opportunities? Yes/no. Please expand on your response.

Yes, the standard should focus first on UK production pathways as it is needed to kick-start the UK market. This needs to happen first, before considering how to be consistent with any international standards used in the countries that we would export to.

Q2.

Would there be benefits in developing the standard into a certification scheme? Yes/no. Please provide detail.

Yes, we do support this suggestion, but it is not appropriate to introduce a certification scheme in the early stages as it could delay the growth of the sector. Looking at supply chain requirements right now, already there are issues from previous European directives translating to equivalent UK directives, so there is a risk of getting tied up in knots.

A main challenge is how to both drive development through the UK supply chain to deliver this, and open to the international market. If driving development through the supply chain, then that potentially answers a lot of the questions around production. The UK supply chain needs to have sufficient capacity to deliver otherwise there will be serious issues with competition and deliverability.

It is important to build in a review of these decisions as the hydrogen market is just developing and things will change drastically in the next decade. A lot of this hinges on how realistic it is to have an international standard on low-carbon hydrogen; there are existing mechanisms on carbon content, and these could apply to hydrogen that is being traded internationally. The major international momentum seems to be moving in the direction of starting to think about applying border tax adjustments on trade and that may be a cleaner, simpler, more transparent way to deal with the carbon content of hydrogen or anything else.

Q3.

a.Is international consistency important, or should the UK seek to develop a low carbon hydrogen standard primarily based on the UK context and criteria set out above? Please provide detail.

As said in our answer to Q1, international consistency is important, especially when importing or exporting hydrogen, however, is less important than kick-starting the UK hydrogen economy. There is great export potential for electrolytic hydrogen specifically, and we should maximise the economic benefits from this.

b.If elements of a UK standard differ to comparable international standards or definitions, would this impact the ability to facilitate investment in the UK or cause issues for business operations across borders? Yes/no/unclear at this stage. Please provide detail.

As said above, we feel that if the UK standard is drastically different to that of other countries, it could hinder business operations across borders, especially for global companies operating across many different countries. This could be particularly important for the UK's closest markets.

It could also be argued that, rather than spending time trying to align with that of other countries (while important), it would be best to move fast now rather than have other markets get the benefit of first mover advantage. But it is early in the whole hydrogen economy to be able to say this definitively. Current conversations are on feasibility to import/export so a different standard could well cause issues, but it is too early to say for definite. This is partly because we do not yet know what is going to be imported/exported – whether it will be hydrogen or ammonia. So, still lots of questions to be answered before we get to the details of export. We could look at the co-operation between Japan and Australia, for example, as it is at a more advanced stage.

c.If answering yes to 3b, what elements of existing low carbon hydrogen standards or definitions are most important to ensure international consistency?

As said in our answer to 3b, we feel it is a bit early to be specifying what elements are most important to ensure international consistency and suggest a review of this in 2 - 3 years' time. Some members suggest that the elements and definitions that are most important are: consistency on thresholds, additionality and purity as being the most important, however not all members agree on the additionality point (see our answer to Q.20).

Q4.

a. Should the standard specify a list of hydrogen production pathways, which would be updated periodically or on request? Yes/no.

Partly, but we think trying to list all the hydrogen production pathways will be problematic as there is a large variety of these, so it might be easier to have a shortlist of what is standard for the main production pathways, for example, grid, onshore, offshore, etc. and to allow space for project-specific pathways. This has been done in other countries and gives the Government an idea of what the carbon intensity of the pathways will be. It is not yet known what the carbon intensity of electrolysers will be so this picture needs to be updated regularly. We suggest at least every two years. There is value in having a reduced list but also updating it as things develop.

This shortlist would have the carbon intensity of each pathway, with the detail of the assumptions and methodology used for transparency. This methodology can then serve as a basis for new production pathways, and as a tool for prospective projects.

Some members believe that some form of third-party certification or validation is likely to be required to ensure that hydrogen production is below whichever emissions threshold is ultimately set for the standard and believe that any list should act as a guide, rather than a definitive list of eligible technologies.

b. If yes, we would welcome respondents' views on what production methods could have significant potential in the UK in the near term.

Some members suggest there is a significant opportunity to site electrolysis in parts of Great Britain where the carbon intensity of the regional electricity grid is already sufficiently low carbon, such as southern Scotland. There is also significant potential for hydrogen production using power which would otherwise be constrained in areas where there is an excess of renewable energy production and constrained regional transmission networks, such as Scotland and East Anglia. It is important that the standard recognises these two opportunities given the positive 'whole system' impacts that these production models could unlock, through reduced investment in network infrastructure and lower costs for consumers through avoided constraint costs.

c. If no, we would welcome respondents' views on alternative options.

N/A

Q5.

a. Do you agree that the standard should adopt one label of 'low carbon' hydrogen, or would it be valuable to have multiple categories?

b. If multiple categories, what benefits would we get from adopting this approach in terms of emissions reduction and consumer confidence?

We are very concerned by the Government's minded to position here and strongly disagree that the standard should adopt one label of 'low carbon hydrogen' as this will not allow the ability to distinguish electrolytic renewable hydrogen from other types and will be detrimental for consumers who wish to choose renewable energy. There ought to be a way of still including electrolytic hydrogen in the standard, so there needs to be an additional 'renewables' tag here, so that a consumer can choose that option. They could be purchasing low-carbon hydrogen, but they are also purchasing certificates for that to be renewables-sourced low-carbon hydrogen. Certificates would also need to include the GHG intensity of different hydrogen pathways. An example where having only one label could be an issue is for companies producing electric vehicles powered by hydrogen fuel cells or green gas suppliers. Undoubtedly their customers will want electrolytic hydrogen rather than low-carbon hydrogen. At a minimum, the Government needs to allow for the additional categorisation of electrolytic hydrogen, as otherwise consumer confidence in this developing economy will be limited. The minded-to position limits consumers' ability to support electrolytic hydrogen. Electrolytic hydrogen is zero carbon and that is important to consumers.

The risk of having one category is that it could hinder renewable hydrogen production. We want the UK to produce zero carbon hydrogen and we want it to be labelled as zero carbon hydrogen rather than low-carbon and there needs to be a clear distinction between the two. This could be done either by having labels of 'zero' or 'low-carbon', or a number that is produced through some kind of methodology.

It is worth bearing in mind the link between this consultation, the business model consultation and the net zero hydrogen fund consultation in terms of who is eligible for that funding so it would matter if a 'zero carbon hydrogen' or a 'low-carbon hydrogen' project got funding particularly in terms of those other two support mechanisms.

The other thing that might differentiate the two is pricing – users may pay a premium for the renewable hydrogen as opposed to the CCUS hydrogen but obviously the risk in terms of the volume is the transition period where the prices could be lower for CCUS, and consumers get used to that. Whereas we want to reach the objective of net-zero, powered by renewables.

If we are thinking about exporting electrolytic hydrogen to Germany, for example, then there clearly needs to be a differentiation as indications are that Germany is only interested in electrolytic zero-carbon hydrogen.

It is also important that the more expensive, 'higher hanging fruit' technology that is necessary for the achievement of hydrogen (and decarbonisation) targets is eligible for governmental support. Perhaps a number of electrolytic hydrogen standards could contribute to bringing some structure to the allocation of such support.

Q6.

a. Do you agree that a UK low carbon hydrogen standard should be set at the 'point of production'? Yes/no.

b. If no, what would the advantages be of the standard making assessments at 'point of use' or 'point of use + in use emissions'?

Members feel that 'point of production' would be simplest and would be easier to demonstrate that electrolytic hydrogen would be zero carbon. Hydrogen producers should not be made responsible for decisions in the hydrogen value chain outside their control. In addition, 'point of use' could be problematic for electrolytic hydrogen as it would imbue it with emissions relating to powering compressors and other equipment.

Q7.

Which chain of custody system would be most appropriate for a UK low carbon hydrogen standard: a mass balance or a book and claim system? Please explain the benefits of your chosen option.

Book and claim systems have been successfully implemented in the power sector through the REGO scheme. It also will allow for the mixing of non-certificated content which will be important in the early stages when hydrogen is blended into the gas system.

Q8.

Should other CoC options be considered instead? Yes/no. If yes, please provide detail.

No

Q9.

a. If the system boundary was set at the point of production, should there be defined reference purity and pressure levels for a UK low carbon hydrogen standard? Yes/no.

b. If yes, what should they be?

c. If no, what are the benefits to not defining reference purity and pressure levels?

Regarding defined reference purity levels for a UK low carbon hydrogen standard, it depends on the use. Hydrogen being used for transport applications needs to be of a high purity but if using it for high temperature heating in industrial uses it does not necessarily need to be at that level of purity.

Another question that needs to be asked is whether hydrogen of 98% purity still be eligible for the same support as hydrogen of other levels of purity?

From an electrolytic hydrogen perspective, setting the reference purity at 99.99% would be fine, and would enable a level playing field in transport applications where that purity is needed. From a carbon emissions point of view, it is important to know what the carbon emissions are in getting to that level of purity. For CCUS hydrogen, there may be additional carbon emissions to get it up to the level of purity required.

Pressure should be defined because in most applications the hydrogen will need to be compressed. If the hydrogen is available at atmospheric pressure, then the energy overhead is large. Industry sources have suggested 10 to 20 bar as a sensible pressure datum because many applications require the pressure to be elevated at about this level. Another option would be to include an indicative compression step, whereby the producer calculates the impact of compressing the hydrogen to a specified pressure to ensure that all hydrogen can be compared on a like-for-like basis (even if that additional compression does not occur).

However, some members suggest that pressure should not be defined as different users may have different requirements and this is a matter for producers and customers rather than for regulation.

Q10.

a. Should there be minimum pressure and purity requirements for hydrogen to meet the standard? Yes/no.

Yes.

b. What could the potential implications of setting minimum purity and pressure requirements be?

As said in our answer to Q.9, it depends on what the hydrogen is being used for, but generally agree that yes there should be minimum pressure and purity requirements for hydrogen to meet the standard.

Q11.

a. Do you agree that embodied emissions should be omitted from the calculation of GHG emissions under a low carbon hydrogen standard, to ensure comparability with global and UK schemes? Yes/no.

Yes. To ensure consistency with other methodologies, we agree with the Government's proposal here, as there are currently no policy mechanisms existing to address those emissions.

We acknowledge that it is administratively burdensome on producers and that the data available is limited and may not always reflect the current decarbonisation efforts occurring in other sectors.

However, the embodied emissions from international sources, which could have relaxed regulation around O&G production than the UK, should be measured. This will prevent electrolytic hydrogen and CCUS hydrogen (using locally sourced natural gas) from being outcompeted by cheaper imports of gas.

b. If no, what are the benefits to including embodied emissions in the calculation of GHG emissions, and what should be done to ensure that hydrogen is on a level playing field to other energy vectors?

Excluding the GHG emissions embedded in imports could undermine territorial reductions in emissions and decrease the competitiveness of local production.

Q12.

a. Do you agree that a UK low carbon hydrogen standard should include the global warming potential of hydrogen? Yes/no.

Yes, for consistency with wider policy. However, some members believe that due to the complexity of the calculation and the very real economic driver to minimise losses it should

not be included, but they strongly believe that it should account for the global warming impact of fugitive methane from relevant forms of hydrogen production.

b. If no, are there other options for accounting for the GWP of hydrogen outside of a UK low carbon hydrogen standard that could support compatibility with existing standards/schemes?

We would strongly recommend that we adopt whatever the UNFCCC GWP for hydrogen currently is. This would allow for compatibility and consistency with existing schemes.

Q13.

a. **Should a materiality threshold for total emissions be included in the life cycle assessments of hydrogen pathways? Yes/no.**
b. **b. If yes, what would the most appropriate level be and why?**

We are not sure how this relates to renewable hydrogen and are very concerned that 'up to 5% of the input energy can be conservatively estimated without the need for exact measurements'. This creates, in our view, potential loopholes that could be exploited. However, there is a need to have a threshold here, but 5% is quite high. To scale up electrolytic hydrogen, some members believe this threshold needs to be lower, as there is a potential here for favouring CCUS over electrolytic hydrogen.

Q14.

a. **Should CCU with proven displacement or permanence be included as an allowable benefit in GHG calculations under a UK low carbon hydrogen standard? Yes/no.**
b. **b. If yes, what should a suitable minimum time be for proven permanence and which applications should be eligible?**

No comment.

Q15.

c. **Should CCU credits only be allowed for biogenic carbon, and not allowed for fossil carbon sources? Yes/no.**

No comment.

Q16.

As the grid is decarbonising rapidly, so will grid connected hydrogen production pathways. How should government policy take into consideration hydrogen production pathways using grid electricity as primary input energy now? Please explain the benefits to the approach you have suggested.

Grid connected electricity should be allowed as the system decarbonises. These will represent the earlier projects and the variable carbon intensity of the grid can be managed via PPAs and evidenced by temporal renewable energy verification.

Some members believe there is a compelling opportunity to 'kick-start' the entire green hydrogen industry through a regional approach, which would incentivise the location of electrolysis in areas with strong renewable energy output, rather than waiting for the entire GB grid to sufficiently decarbonise, which will not happen until the early 2030's, according to the analysis presented in the consultation.

Q17.

a. What options should we consider for accounting for the use of electricity under a UK low carbon hydrogen standard? Do the options outlined seem appropriate? Are any of these particularly problematic? Please explain your reasoning.

Physical links and PPAs. A grid carbon intensity threshold should be kept for connections to grid to ensure the low carbon hydrogen can be trusted.

b. Of the options considered, should further conditions be included to mitigate any negative impacts or potential unintended consequences, such as driving additional high carbon power generation, and what could these conditions be?

The level of constraints in Scotland is likely to dwarf the growth of hydrogen production, with more than 15GW of new offshore wind capacity either in development or leasing, and significant levels of new onshore wind and solar development. As such, projects targeting the use of power output which would otherwise be constrained – i.e., wasted - are extremely unlikely to create a driver for the generation of high carbon generation.

Q18.

What evidence should BEIS consider ahead of making decisions around the use of electricity as primary input energy for hydrogen production?

No comment.

Q19.

How should low carbon electricity use in hydrogen production be accounted for in order to support the deployment of hydrogen production via electrolysis, whilst avoiding unintended consequences such as increased generation from high carbon power sources (impacting grid decarbonisation)?

Electrification is needed to decarbonise transport and heat and as such will increase demand from the electricity network. This underlines the importance of increasing renewable generation and the importance of a joined-up approach by government to net zero.

This should not be a barrier to the deployment of grid-connected electrolysis where it can be demonstrated that the electricity is low carbon.

If projects are relying on grid power, this will potentially cause pricing complications for them, and issues around the cost of production. We should enable projects to be 'grid-connected' but they need to demonstrably sourcing renewable power (not grid power). This can be demonstrated via Corporate Power Purchase Agreements (CPPAs) or GGoOs / REGOs.

One challenge many projects have is that production of renewables is not consistent, so there is a need to have storage, however this can be very expensive. This is where connection to the grid is beneficial and much easier. We need to be careful not to separate connecting to the grid from non-connecting to the grid because many renewable projects need that back up.

One advantage of electrolysers connected to the grid is it can potentially meet demand response. When there is a peak of demand, if there is a contract with National Grid, the electrolysers could get compensation for their production, but they are also contributing to the grid. Electrolysers can also help with 'shaving of the peaks'. This is an advantage to the whole system.

Q20.

Should a UK low carbon hydrogen standard include a requirement on additionality and why? Please explain the benefits to the approach you have suggested.

The additionality requirement can add a level of complexity that would hinder the development of renewable hydrogen. Trying to “force” the development of renewables via hydrogen could result in a no-projects, no-additional capacity situation.

There should not be a requirement for additionality at this stage. Hydrogen production is not going to significantly increase the volume of renewable capacity deployment in the short term but will be important as the sector scales up. Electrolytic hydrogen could enhance the renewable power sector by making renewables more efficient by reducing curtailment and by providing inter-seasonal storage which can provide reserves during long periods of low wind.

Electrolytic hydrogen production is no different to other electrification options in heat and transport. It is a new technology that will increase demand for low carbon electricity to displace fossil fuels. This is consistent with net-zero and necessary to decarbonise hard-to-abate sectors and to displace natural gas.

There is a risk that additionality could impose unnecessary complexities and constraints on electrolytic hydrogen project qualifications which could constrain future pipelines.

Ramping up renewable generation relative to electrolyser deployment can be monitored and increased/decreased via other policies which are in many cases already being successfully deployed.

Some members consider suggestions to apply additionality criteria to low carbon power used for electrolytic hydrogen production are based on a flawed way of thinking about the energy system. At its heart, electrolytic hydrogen is an electrification technology – it creates the potential to displace existing fossil fuel use in a range of sectors with an energy vector (hydrogen) which has been produced from electricity. As such, electrolytic hydrogen is no different to other electrification options such as electric vehicles in the transport sector and electric heat pumps for decarbonising heating demand. It is a new technology which creates the potential for decarbonisation in a range of sectors but will increase the demand for zero or very low carbon electricity to achieve this goal. It is of course widely recognised that much greater electrification is needed to achieve net zero and that a net zero consistent energy system will have much higher total demand for electricity.

However, the concept of a need for additionality is not one that is applied to discussions around the electrification of transport or the electrification of heat. These developments will increase demand for electricity in the same way that growth in the electrolytic hydrogen sector would. As such they could be equally argued to give rise to “concerns about unintended consequences of increased generation from high carbon sources”. However, for these sectors it is not suggested that electric vehicles or heat pumps are only to be considered lower carbon options if the user buys their electricity from a new low carbon generation station or makes an additional financial contribution to some form of fund for supporting new low carbon generation assets. Instead, we accept that the better view is to consider these technologies as positive electrification options in all circumstances, which are necessary for achieving net zero, and whose adoption should be incentivised and encouraged. Underpinning this approach is the recognition that electrification is essential for net zero and a broad suite of wider policies are available - and are in many cases already being successfully deployed - to decarbonise the power sector, at increasingly lower costs to consumers as economies of scale and the benefits of replication are realised. If electrolysis is accepted as an emerging electrification technology just like others, to be incentivised and encouraged, it should follow that un-necessary costs and barriers should not be put in the way of its early development. However, this is exactly what placing additionality criteria on electrolytic hydrogen projects would achieve in practice

Q21.

Should additionality considerations also apply to renewable heat and other input energy vectors such as biomethane, in the same vein as for low carbon electricity and why? Yes/no. Please explain the benefits to the approach you have suggested.

No, as said above.

Q22.

a. Should waste fossil feedstocks be considered with counterfactuals under a UK low carbon hydrogen standard? Yes/no. Please explain the benefits to the approach you have suggested.

b. What are the potential implications of supporting the use of any particular waste streams in hydrogen production?

No comment.

Q23.

What is the most appropriate way to account for hydrogen produced from a facility that has mixed inputs (high and low carbon)? Please explain the benefits to the approach you have suggested.

The answer comes back to the issue of connecting to the grid. If an electrolyser takes 90% of its electricity from a wind farm and 10% from the grid, how is this hydrogen accounted for? There are different options:

- Measuring electricity consumption from the turbines and from the grid and apply this percentage to the produced hydrogen.

- Measuring electricity consumption from the turbines and from the grid, and with the corresponding conversion efficiency calculate the hydrogen produced from the grid and from the turbines

Then, there are different options to consider the produced hydrogen:

- Hydrogen from renewables is low carbon and from the grid isn't, unless the grid has decarbonized sufficiently or there is a way to justify that the hours of consumption correspond to a high percentage of renewables.

- Hydrogen from renewables is low carbon and from the grid isn't and the total production average should be low carbon.

Electrolysers may need to use grid electricity occasionally to deliver baseload contractual hydrogen to offtakers which should not disqualify them from support. Rather than making the whole project non-eligible, we support a separate consignment option which would exclude the hydrogen produced via "high carbon sources" from CfD payments.

This could include a cap on the proportion of hydrogen production that is permitted from high carbon sources over a reference period. The reference period will need to be long (e.g., annual) to provide enough time for a project to react to exceptional circumstances, such as the prolonged period of wind in 2021.

Q24.

What are the most appropriate units to calculate GHG emissions of low carbon hydrogen?

As almost all existing standards use gCO2e/MJ LHV (Lower Heating Value) for calculating GHG intensities of hydrogen or transport fuels, we support the Government's proposal here. However, in an export situation, we need to be mindful of compatibility with other countries' standards.

Q25.

What allocation method should be adopted for by-product hydrogen and why?

No comment

Q26.

Should the standard allow for negative emissions hydrogen to be reported? Yes/no.

Yes, because negative emissions will be crucial to tackle hard to decarbonise sectors such as agriculture and international transport. This could be done by introducing a "negative emissions" label.

Q27.

a. Should non GHG impacts be taken into account? Yes/no.

No

b. If yes, what criteria or factors should be taken into account and how?

c. If no, please set out your rationale for your answer.

No, these should be a matter for environmental permitting rather than the present standard.

Q28.

Given the many potential end uses of hydrogen, and the rapid expansion of low carbon supplies required, do you agree that an absolute emissions threshold be adopted, rather than a percentage saving based on a fossil comparator? Yes/no. Please provide detail.

Bearing in mind the export potential of electrolytic hydrogen, we agree that the absolute emissions threshold is adopted as it is simpler.

Q29.

Should the standard adopt a single threshold or several, and why?

A single threshold which tightens over time will be easier to administer and should ensure consistency.

Q30.

a. Should the GHG emissions threshold be set at a higher level in the early stages of hydrogen deployment, with a trajectory to decrease over time? Yes/no. Please explain the benefits to the approach you have suggested.

Yes. The standard should be set high from the onset to ensure only genuinely low carbon projects qualify and it should be tightened over time.

CCUS-enabled hydrogen production can achieve capture rates of up to 90 to 95% which implies that there are still fugitive emissions associated with the process. Additional emissions are also associated with the energy used to drive the carbon capture process, which must also be sequestered and has fugitive emissions.

CCUS-enabled hydrogen projects should be required to achieve higher CO2 capture rates over time to drive innovation and ensure these projects are contributing towards significant carbon reductions. The energy used to drive the carbon capture mechanism should also be taken into consideration.

Additionally, BEIS must ensure that producers of CCUS hydrogen are not incentivised to source natural gas internationally where emissions regulation is relaxed. This could act like the European Union (EU) Carbon Border Adjustment Mechanism, in which importers must buy certificates relating to the carbon price that would have been paid if the goods were produced inside the EU. This will protect UK industries against carbon leakage and prevent

natural gas imports from undermining the integrity of low carbon hydrogen in the eyes of the public.

b. If yes, should this decreasing trajectory be announced from the offset? Yes/no. Please explain the benefits to the approach you have suggested.

Yes. The decreasing trajectory should be announced from the onset to provide these projects with clarity over the lifeline of their projects and boost investor confidence.

We note also that there is still much research to be carried out on effective technologies. However, the GHG emissions threshold could be set at a higher level at the start of hydrogen deployment so that production is not stifled and could decrease over time. Where it reduces over time, the contracts under the production Business Models should be the same for the life of the subsidy scheme. We suggest periodic revisions to this threshold.

Q31.

What would be an appropriate level for a point of production emissions threshold under a UK low carbon hydrogen standard? Please set out your rationale for your answer.

The 15-20gCO2/MJ threshold is a good starting point and ambitious compared to other certification schemes such as CertiHy.

We recommend that the level should be decreased over time, which could be done through bands (e.g., from 2045 it is set at 5gCO2/MJ). There should not be a single threshold system because otherwise there would be no incentive to innovate to decrease the carbon emissions associated with low carbon hydrogen.

Q32.

a. Could some net zero compliant hydrogen production pathways be disadvantaged by the introduction of an emissions threshold set at 15-20gCO2e/MJLHV? Yes/no.

Yes, potentially.

b. If yes, please explain which methods are likely to be disadvantaged and why.

The grid will not be carbon neutral until 2035 which will be a risk for grid-connected electrolysers depending on the generation mix. We need to ensure that grid-connected electrolysers can make use of it while the generation mix is not 100%.

33.

a. How could we ensure that a low threshold does not negatively impact projects on a trajectory to net zero and learning by doing at the early stages of hydrogen market development?

See Question 16

b. What impact could this have on the UK achieving 5GW production capacity by 2030?

It will reduce the barriers to market for electrolytic hydrogen production projects. These production facilities will represent the earliest projects needed to increase the scale of electrolytic hydrogen production, which will be a significant contributor to the 5GW target.

Some members believe that grid electrolysis has a number of advantages, including the ability to site production close to demand, and could be deployed at significant scale. If not allowed, even on a regional basis, other more expensive forms of production will inevitably fill the gap.

Q34.

a. Should the UK low carbon hydrogen standard provide for some limited leeway on the threshold for existing hydrogen production facilities? Yes/no. Please explain the benefits to the approach you have suggested.

No

b. If yes, is a 10% leeway suitable? Yes/no.

No, a 10% leeway is not suitable.

Q35.

What would be an appropriate level for a UK low carbon hydrogen standard if it were considering point of use emissions? Please set out your rationale for your answer.

We need to be cautious here so that road transportation can be included. In the suggested graph, in 2020, road transportation might not be accepted. Then the only way is onsite production, which means putting the electrolyser next to the demand, thus means connecting to the grid.

Some members believe that downstream emissions are best managed through relevant interventions in areas such as restrictions on the sale of diesel-fuelled HGVs, rather than by measures associated with the present standard. That is a more appropriate way to ensure compliance with net zero and will avoid ‘double regulation’.

Q36.

Which type of organisation would be best placed to deliver and administer a Low Carbon Hydrogen standard? Please include examples where possible of effective delivery routes for comparable schemes.

The standard could be administered by BEIS or an independent industry-led organisation. The same organisation should administer standards, certificates and business models

Q37.

Should default data, actual data or a hybrid approach be used to assess GHG emissions? Please explain the benefits to the approach you have suggested.

No comment

Q38.

What should the options be for reporting and verification of low carbon hydrogen? Do any of the options outlined seem appropriate? Are any of these particularly problematic?

No comment

Q39.

Are any other options not listed here that are better suited for low carbon hydrogen reporting? Any thoughts on how possible trade-offs between accessibility and robustness or between accuracy and simplicity could be addressed?

There might be a difference between the reporting and the verification. For instance, if payments are monthly, then we suggest self-reporting monthly with an annual third-party verification. The reason behind is not regarding the carbon threshold but the necessity for cash flow to keep the plan running.

Q40.

What would be an appropriate frequency for verification or audit?

As stated above, yearly seems to be fine, as renewables have yearly variations.

Q41.

Over what period of time should the standard be introduced?

As soon as possible. Eligibility criteria for the NZHF and hydrogen business models will be based on the standard and so it should be published to ensure these schemes begin allocation. Introducing the standard quickly will also provide projects with clarity to advance development.

It is important that the industry has clarity on the different windows for applications and that there is greater alignment between the funding schemes. The NZHF will launch in early 2022 but the business model contracts will be allocated from 2023. This allocation model omits projects that require CAPEX, DEVEX and OPEX funding, meaning these projects could have to go into abeyance until 2023.

Q42.

Do you have any other comments relating to the carbon standard proposals set out in this document?

No.