**REA Response:**

**Call for evidence on the expansion of the 2009 Carbon Capture Readiness Requirements**

The Association for Renewable Energy & Clean Technologies (REA) is pleased to submit this response to the above call for evidence. The REA represents industry stakeholders from across the whole bioenergy sector and includes dedicated member forums focused on green gas, biomass heat, biomass power, renewable transport fuels and energy from waste (including advanced conversion technologies). Our members include generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 500 corporate members of the REA, making it the largest renewable energy trade association in the UK.

1. **What type of organisation are you answering on behalf of? (e.g., generation, interconnector, demand side response, storage, investor, developer, trade association, consultant, individual, other)**

* Trade Association - the REA has over 550 members across the power, heat, transport, and organics sectors.

1. **Which technologies is your organisation mainly involved with? (e.g. gas turbines, combined heat and power, reciprocating engines, nuclear, interconnector, coal plant, demand side response, storage, wind, solar, energy from waste, hydropower, batteries, other)**

* Green Gas, Biomass power, Biomass Heat, CHP, Storage, Solar, Energy from Waste

1. **What are your views on the 300 MW threshold, and what challenges might the removal of the threshold present to developers?**

* For the time being we support the removal of the 300 MW threshold but reiterate that the requirement must acknowledge the lack of current business model to actually see CCS retrofitted. We should stress that while the threshold is removed, if the cost of retrofit is uneconomical, or the environmental benefit remains low, then it remains appropriate for site not to proceed with installing CCS
* Threshold being removed can cause innovation
* With the expansion of the requirements to other technologies some form of threshold will still likely be required. Some Biomass power and heat sites may well be too small to make such requirements realistic.
* But this needs to be done in a sensible time frame and in conjunction with sites so the Government is not putting up market barriers.
* Challenges to developers are likely to include difficult timescales and increased development costs.

1. **What are your views on the inclusion of refurbishing plants in DR? How could we best define refurbishing plants in this context?**

* We support including refurbishing plants and new build combustion power plants
* There must be clear differentiation between refurbishment and maintenance. Refurbishment needs to suggest that the existing site has come to the end of its economically viable life and that refurbishment of the site is required inorder to make it worthwhile for the site to continue to operate. Where the actual operations of the site are significantly changed.
* What we want to avoid is the DR becoming a barrier to straight forward maintenance that is done to keep the site operational in line with its original economic activity and business case.

1. **What are your views on the potential inclusion of technologies such as heat, energy from waste, biomass and CHP in DR? Are there any additional technologies to these which could be included?**

* There needs to be some discussion here around the appropriateness of retrospective application of these requirements. Existing sites will not have been designed with DR in mind and it may not be appropriate for them even at the point of refurbishment. If it however becomes a term of their environmental permit, it could create a risk on ongoing operations.
* We support the inclusion of Biomass and Energy from Waste in DR.
* Bioenergy with carbon capture and storage (BECCS) is seen as of critical importance within the CCC sixth carbon budget. It will need to provide approximately 53 MtCO2 by 2050.
* The biomass power sector is already pioneering demonstration projects in BECCS. Anaerobic digestion plants are also already capturing carbon dioxide for use in the food and drinks industry.
* Further bioenergy industries are also considering how the retrofitting of CCS may be achieved.

1. **What are your views on potential exemptions from DR? Would it be suitable to exclude plants which operate below a certain level of annual carbon emissions and/or running hours?**

* Exemptions will be required for smaller sites that decarbonise through fuel switching to biogenic feedstocks. It may prove unrealistic to apply these requirements to smaller scale biomass heat or power sites. Carbon emission levels might be suitable as a way of making appropriate exemptions. Will need to explore with members what might be appropriate here.
* Extra leniency or time should be considered for sites with improved environmental performance.

1. **Beyond grandfathering of Capacity Markets agreements, is there anything more that we could do to ensure that the DR requirements do not affect the Capacity Market?**

* *Have to seek member views on this one we may not answer.*

1. **What are your views on implementing DR through environmental permitting rather than the planning consent process?**

* In theory we should have no problem with this. We also welcome the proposed approach on implementation that a site will only become non compliant if they do something that actively jeopardises their ability to install CCS in the future. However:
* Clear guidance must be produced on how compliance will be monitored and what activities may mean when a site becomes non compliant
* Reassurance should be given that this will not see requirements implemented retrospectively when environmental permits are renewed every four years. The EA will need clear guidance on when such a requirement will kick in for site following refurbishment.
* The REA also supports Environmental Agencies with their knowledge and experience overseeing implementation rather than local authorities.

1. **If we were to implement DR through environmental permitting, how can developers be given confidence that their site will be compliant with DR prior to construction?**

* Clear guidance from the EA, including a list of things they would expect to see as a part of the plans when applying for environmental permitting.

1. **What are your views on the two-yearly review of DR requirements? Should this be retained and is the frequency suitable?**

* If the requirements are being implemented through the environmental permit, then this should be done inline with when permits are reviewed which is every four year. This will reduce the administrative burden for both the EA and site.

1. **How frequently should the DR requirements be reviewed? Should this be made a legislative requirement?**

* As decarbonisation readiness and carbon capture are a fast evolving and ever adapting technology we support the need for requirements to be reviewed.
* If it is to be expanded beyond two years, a once a Parliament 4-5 year review seems appropriate
* This should be made a legislative requirement

1. **How can we future proof DR again further technological development, e.g. new decarbonisation technologies and/or simplify the process for adding new techs to DR?**

* Initial idea would be for the requirement to focus on carbon emission thresholds rather than specific technologies. In doing so a site could use any appropriate emerging technology as long as carbon is being demonstrably captured.

1. **Are there any alternative decarbonisation options, beyond low-carbon hydrogen and CCS which are already developed enough to be included in Decarbonisation Readiness? If so, then please include details on how their readiness could be assessed for a combustion power plant.**

* The deployment of CCS should complement, and not replace, methods for decarbonisation. Renewable sources of energy such as biomass should continued to be used hand in hand with CCS as we strive for negative emissions
* Capturing carbon in Char and other by-products of advanced conversion technologies should also be considered. All GreenHouse Gas Removal options should be considered.

1. **What are your views on our suggested design principles?**

* We support the ratcheting rigorousness of assessments, this will provide a reasonable timeframe for developers to put in place CCS with much needed leniency considering the novelty of the technology. I think we would support this but maybe not so vigorously, we support striking a balance.
* We support maintaining the no barriers approach to facilitate innovation and a constructive partnership between assessors and sites.
* We support allowing developers to change their chosen decarbonisation technology as long as the loss of emissions is equal to or greater than the previous technology.
* We agree hydrogen conversion and carbon capture assessments should be as similar as possible in order to simplify the assessment process
* We believe assessments should work in conjunction with sites, and that the robustness of demonstration should keep in mind the size and capacity of plants under development – This one might be crucial and should talk up.
* A site should also be provided lenanacy if required infrastructure needed to implement CCS or hydrogen is not available to them through no fault of their own. Ie. Availability of carbon transportation and storage, or hydrogen pipeline.
* *What are members views on suggested design principles*

1. **What are your views regarding the four proposed assessments for demonstrating Hydrogen readiness? Are there additional assessments which would be beneficial?**

* We support the four proposed assessments
* We would like to see further assessments about the safety of hydrogen storage, as well as infrastructure in place to manage hydrogen safely

1. **What are your views on the suggested requirements for hydrogen ready plants to demonstrate hydrogen blend capability from the point of construction, including the example of 2030 as a cut-off for 100% hydrogen?**

* The shift from fossil gas to hydrogen should be made as quickly as possible, we would like to see the 2030 cut-off date brought forward
* We support the day one requirement to consider a site “hydrogen ready”

1. **We would welcome views on if there are any additional and/or necessary items for hydrogen combustion that might have space requirements (e.g. NOx abatement equipment) and what their specific requirements might be?**
2. **Would it be suitable to require plants that have a choice between hydrogen and CCS to set-aside enough space for whichever technology requires the most space, even if they are planning to meet the DR requirements through hydrogen? How could we ensure that this would only apply to sites which are likely to be able to retrofit CCS as well as to convert to hydrogen?**
3. **We would appreciate your views on these issues, including whether there are any we have overlooked, and how we can best assure/assess that developers have considered all the relevant technical issues.**

* Will need members views on this
* The issues raised are all pertinent and legitimate, especially issues raised around the safety of hydrogen and the danger of leakage. This is why it is important for the government to work closely with sites and provide clear safety guidance.
* The points raised around pressure are also important as much infrastructure designed for fossil gas on existing sites will have to be converted to transport hydrogen, this will be a costly and time-consuming process
* New technical training will also be required for staff at conversion sites

1. **We welcome your views on how to design a meaningful assessment for hydrogen fuel.**

* Will need members views on this
* Assessment should be done in conjunction with sites
* Criteria for assessment could include:
  + Logistical considerations, e.g. distance from supply cluster and infrastructure in place
  + Health and safety consideration e.g. the structural integrity of storage units, transport pipes etc.
  + Financial feasibility e.g. necessary capital acquired, long term investment
  + Environmental impact e.g. consequences of expanding site balanced with CO2 reductions

1. **We welcome your views on our likely position to make the hydrogen fuel access assessment non-compulsory in the short-term, with a view to making “passing” it mandatory in future to reflect the anticipated development of the hydrogen economy.**

* We support making fuel access non-compulsory in the short term as this will reduce unnecessary barriers

1. **We appreciate your views on the viability of on-site hydrogen supply and/or storage for hydrogen-fuelled peaking plants.**
2. **What factors are viewed as critical in determining whether conversion to hydrogen is economically feasible? What would be your economic considerations?**

* As well as the factors listed further factors could include:
  + Workforce and training
  + Export and logistical costs
  + Energy costs around hydrogen conversion

1. **What are your views on our proposed updates to the CCR requirements?**

* We support updates which reduce barriers such as converting the economic feasibility test to a periodically reviewed economics assessment.
* The revised requirements must be matched by Government policy support to see the delivery of CCS and Hydrogen. The business case for installing systems will not happen without government support.

1. **What are your views on how the transport and storage test for CCR should be updated?**

* We would like to see more flexibility in the transport assessment, maintaining the option of a viable transport route, but also opening up assessments based on feasible routes to carbon storage or suitable clusters.
* This will reduce barriers and maximise flexibility for sites
* As technology stabilises and uncertainty reduced these assessments could be narrowed

1. **Are there additional areas for change we have not identified? Please provide Justifications.**

* What is meant by carbon capture?
* Much more practical to install carbon capture in rural secluded sites i.e. sewage plants, rather than cities, concerns around space
* All forms of carbon capture need to be seen as legitimate
* There will be lots of places where this will work really well, but could become a barrier for smaller plants
* Want clarification on definition of combustion based fuels - gasification is not combustion

1. **What impact could the changes discussed in this call for evidence have on your business’s administrative costs for planning permission and environmental permitting? Please specify which of the proposed changes will have the most impact.**

* Question for members
* Environmental permitting is too late in the process
* Businesses could start to offer carbon capture readiness consultancy service

1. **We anticipate developers are already considering future decarbonisation options following the EWP. What impact are the changes discussed in this call for evidence likely to have on your investment decisions for a new build plant? Please specify which of the proposed changes will have the most impact.**

* One to explore with members but this might become a barrier to use of bioenergy solutions if they must eventually install CCS – creating competitive advantage for electrification even where it may not be the most appropriate solution.

1. **How do you currently manage the long-term risks of decarbonisation in your investment decisions? What additional work will the proposed changes cause?**

* Question for members

1. **Are there any specific impacts on small and micro businesses that are not covered above? If so, please provide details of the anticipated one-off and on-going costs.**

* Question for members
* These need to be considered and appropriate thresholds put in place. If carbon emissions are minimised through installation of renewable systems athen CCS or hydrogen may not be an appropriate requirement for small systems as used by SMEs

1. **Please tell us if you think there are any other impacts not covered above, in particular wider impacts on the energy system and security of supply**

* Question for members