



Department for
Business, Energy
& Industrial Strategy

CALL FOR CARBON CAPTURE & UTILISATION DEMONSTRATION PROGRAMME (CCUD), PHASE 3B – CONSTRUCTION & DEMONSTRATION

Guidance Notes



July 2019

CALL FOR CCUD, PHASE 3B, CONSTRUCTION & DEMONSTRATION

Call for Carbon Capture & Utilisation Demonstration Programme (CCUD), Phase 3B –
Construction & Demonstration

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Part 1- Call for CCUD, Phase 3B, Construction & Demonstration

1. Background

In October 2017 the Clean Growth Strategy set out the new Government approach to CCUS in the UK, highlighting the important role of innovation in supporting cost reduction. To support this, the Government committed to spend up to £100 million from the BEIS Energy Innovation Programme to support Industry and CCUS innovation. This will improve business and industry efficiency, and further reduce the cost of deploying CCUS.

To encourage early learning and cost reduction, capture technology can potentially be deployed commercially at an intermediate scale (approximately 30,000-70,000 tonnes of CO₂ a year). At this scale the CO₂ can be commercially utilised for industrial processes, allowing, for example, the cost of demonstrating the technology to be partially funded by the host site having to pay less for the CO₂ they currently use. Market research shows the price range for purchasing tens of thousands of tonnes of food-grade CO₂ is between £80-120 per tonne of liquid CO₂.

The early demonstration of carbon capture on these first projects will begin learning about the optimal way to configure the plants and will provide crucial operational data on performance and degradation. These plants will act as the lead unit for the demonstration of the technology, providing tens of thousands of hours operation. By de-risking the technology at this scale, this will encourage use of the technology in similar projects in the UK and internationally. For example, potentially enabling a pipeline of projects where novel configurations, processes, materials and technology act as an early market pull to accelerate carbon capture technology development and the development of a CO₂ utilisation market in the UK. **The focus on capture technologies, in the CCU programme, are for those that can be developed, scaled and eventually used for large “mega-scale” (>1Mtpa CO₂) CCUS projects.**

CO₂ utilisation is an evolving subject in the UK and internationally. By establishing more carbon capture at UK industrial sites, this should improve BEIS' and Industry's understanding of the opportunities for further CCU in the UK.

It is for this purpose that BEIS has allocated up to £20m of the £100m funds for Industry and CCUS Innovation to fund the design, construction and demonstration of Carbon Capture and Utilisation in the UK. The **CCU Demonstration Programme (CCUD), announced in the Clean Growth Strategy**, is divided into three phases:

- **Phase 1:** a 6-month Scoping Study, carried out by a third-party engineering supplier in collaboration with participating companies that wish to capture and/or utilise the

CO₂, or provide the necessary equipment. The supplier has produced site-specific design estimates for deploying CCU technology to a cost accuracy of at least $\pm 30\%$.

- **Phase 2:** The techno-economic result from phase 1 will be used to allow BEIS and the project developers to confidently determine if the CCU projects should progress to a detailed Front-End Engineering Design (FEED) study. These will produce cost estimates for the construction and operation of demonstrating CCU at the host site. The cost estimates are anticipated to produce cost accuracy of $\pm 15\%$ to allow BEIS and the developer to make a final investment decision.
- **Phase 3:** Will focus on construction and demonstration of a number of CCU projects

1. Overview of Phase 3 Construction and Demonstration Call

This is a £14 million BEIS Call for Phase 3: Construction and Demonstration of the £20 million CCUD Innovation programme that will provide grant funding for a number of Construction and Demonstration projects. These will provide learning opportunities about the optimal way to configure the plants and crucial operational data on performance and degradation. These plants will act as the “lead unit” for the demonstration of the technology, providing tens of thousands of hours operational data and experience.

This call is divided into two stages, 3A and 3B:

Stage 3A: Is designed for applicants who would be interested in proceeding to Construction & Demonstration without the need for government funding for the FEED stage (Phase 2).

Stage 3B: This stage of Phase 3 is designed to offer an opportunity for projects that undertook the FEED Study (Phase 2), either in collaboration with government or by self-funding, to bid for the Construction & Demonstration phase.

The Call is eligible for all sizes of organisation and will provide grant funding up to 31st March 2021. The projects can involve working with international partners, but the work funded must predominantly be conducted in the UK.

The competition will be delivered as a grant programme within the terms of the General Block Exemption Regulation (GBER). Specifically, Article 25 (Aid for research and development projects)¹ will apply. This will define the type of innovation activities that can be funded and will limit the amount of funding that can be provided to each participant in a funded project.

The Competition will fund Experimental Development as defined in the GBER and outlined below. Grants of up to £10m will be considered for experimental Development under Article 25.

1.1 Definition of Experimental Development

Experimental development is defined as: ‘acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services’.

Activities undertaken may include prototyping, demonstrating, piloting, testing and validation of new or improved products, processes or services in environments representative of real-life operating conditions where the primary objective is to make further technical improvements on products, processes or services that are not substantially set. This may include the development of a commercially usable prototype or

¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN>

pilot which is necessarily the final commercial product, and which is too expensive to produce for it to be used only for demonstration and validation purposes.

Experimental development does not include routine or periodic changes made to existing products, production lines, manufacturing processes, services and other operations in progress, even if those changes may represent improvements.

1.2 Definition of CCU technology

Carbon capture and utilisation is a way of using carbon as a raw material in industrial processes, such as manufacturing building components and chemicals. CO₂ utilisation delays carbon emissions to the atmosphere while reducing the consumption of the original feedstock and avoiding the emission of other substances associated to them. Some CCU technologies are already quite developed and could be scaled up in the foreseeable future to industrial scale; others are still at the lab or pilot scale.

The CO₂, as a source of carbon, has the potential to be used in the manufacture of fuels, carbonates, polymers and chemicals. Being on development-to-demonstration phases, CCU represents a new economy for CO₂, when used as raw material.

To be supported, CCU Projects must meet the following criteria

- CO₂ is produced as the bi-product of an existing industrial process and is currently released into the atmosphere
- Size of the capture capacity is 30,000 – 70,000 tonnes of CO₂ per year. But we will consider projects capturing and utilising larger quantities of carbon dioxide
- The projects must be largely conducted in the UK
- To have a financially viable project, which implies that you will have a relatively high concentration of CO₂, low-cost utilities, and close to potential sales outlets.

1.3 Minimum Outputs required from each Construction & Demonstration

Each Construction & Demonstration project proposal supported *must* provide the following specific outputs:

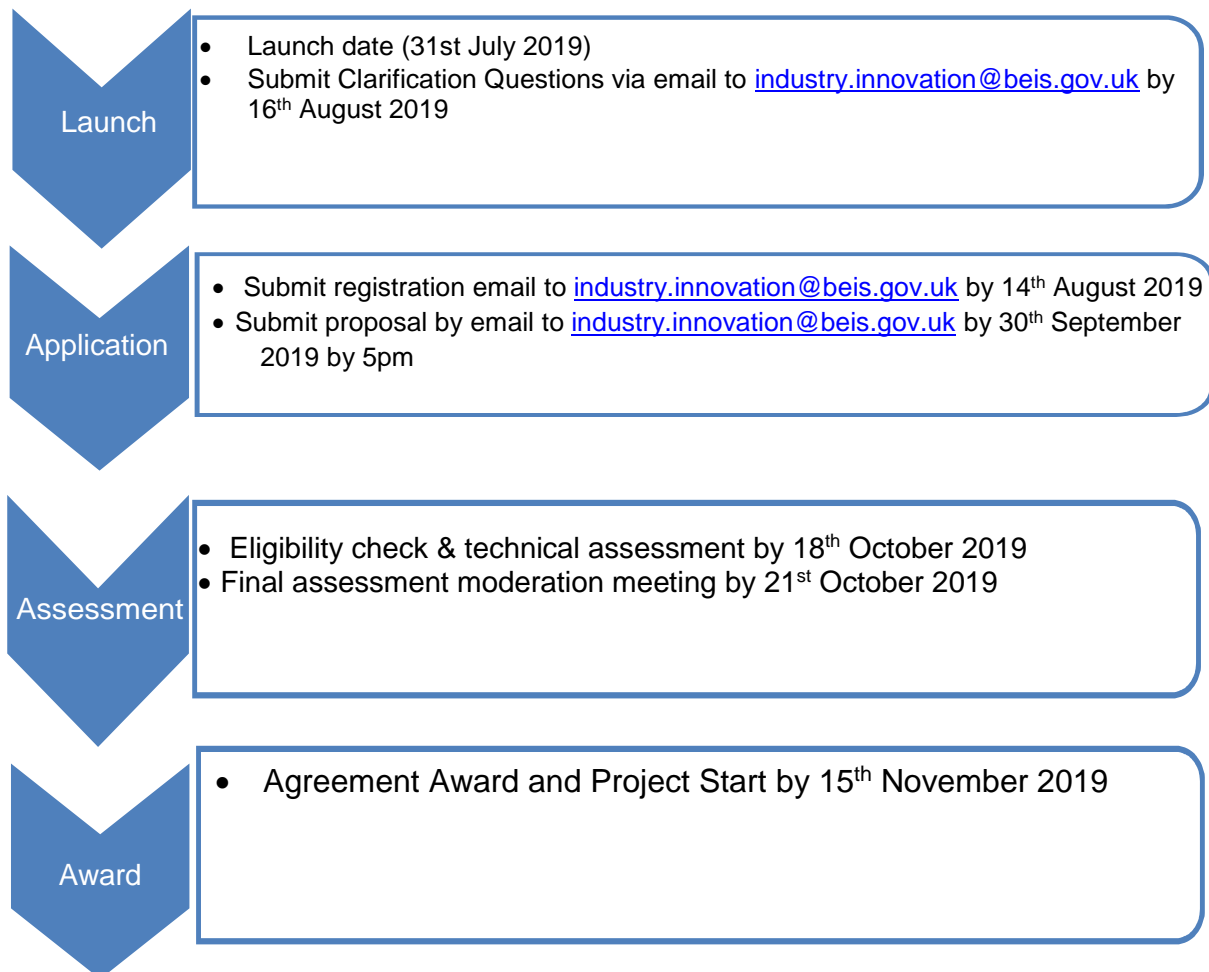
Essential (required for FEED) [in no particular order]

- Material Balance around the carbon capture (and utilisation) process, clearly showing flow rates, composition and operating conditions for key streams.
- Sized equipment list for any new or modified equipment.
- Summary of solid wastes, effluent streams and gaseous emissions, including proposed disposal or treatment routes.
- SIL or LOPA report
- Plot Layout, clearly showing connections to existing systems and access routes for construction and operational traffic.
- Fixed and variable operating costs, including number of personnel and costs for utilities and services.

- Capital cost estimate to AACE Class II or equivalent. Estimate to be broken down to show costs for equipment items, bulk materials, engineering, construction contracts, land costs and owner costs. Please include the Estimate Methodology used, stating clearly the basis for material take-offs and any assumptions used. Capital cost estimate accuracy to be advised.
- Economic assessment, showing planned period of operation, costs, sales value and internal hurdle rate (discount rate).
- Technical / Commercial Risk Assessment and Mitigation Plan.
- Schedule for implementation, including Financial Investment Decision, EPC award, Mechanical Completion, Ready for Start-up, Commercial Operations Date and any other key milestones / decision gates
- Material Safety Data Sheets for any materials that are toxic or harmful to the environment.
- Process Flow Diagrams for the new process.
- Tie-in Schedule, indicating location, method of tie-in and planned schedules.

2. Application and Assessment Process

CCUD, Phase 3B – Construction and Demonstration timings: Launch 31st July 2019.



As outlined in the diagram above, the competition process will be undertaken stages comprising application, assessment and grant award.

Stage 1: Application

- Applicants are invited to submit project applications by **30th September 2019**, these must be electronic and sent to Industry.Innovation@beis.gov.uk. The email subject line must begin 'CCUD, Phase 3B – Construction & Demonstration Application'.
- The application documents are:
 - Application form
 - Finance form (one per project application)
 - Gantt chart
 - Letters of support from collaborators/partners (where relevant)
- BEIS will accept additional supporting information in the form of further annexes. However, you should not assume that any additional information will be reviewed as part of the selection process and your application should not rely on information cross-referenced within annexes.
- If you have any other questions about the CCUD call, these should be sent by e-mail to Industry.Innovation@beis.gov.uk by **16th August 2019**. To ensure an open and transparent competition, answers to questions will be added to our FAQs. These will be republished, including all questions asked, on **23rd August 2019**.

Stage 2: BEIS Assessment

Applications will be initially checked against the Eligibility Criteria detailed in section 3.

N.B. Applications which fail the Eligibility Criteria will not be assessed further, so it is essential to ensure that your project meets these before you submit your application.

Applications which meet the Eligibility Criteria will then be assessed against the Assessment Criteria detailed in section 7. The assessment will be done by assessors from BEIS and a third-party contractor.

All applicants will receive a short summary of key feedback regarding their applications, irrespective of whether they are successful or not. BEIS aims to have provided all feedback to applicants within two months of the final funding decision. However, applicants are asked to remember that BEIS may receive a significant number of applications and the timing of the release of feedback will be at BEIS's discretion.

Stage 3: Grant Awards

Successful applicants will be notified via email that they have been provisionally awarded a grant, and a provisional grant offer letter will be provided. An inception meeting will be

set up with the applicant and a BEIS official to explain the conditions of the letter, respond to any queries which the applicant may have at this stage and to agree the milestone schedule.

N.B. Successful applicants have only received provisional approval for a grant, until successful completion of the inception meeting.

On satisfactory completion of the inception meeting, the conditions agreed, and signing of the grant offer letter, the project can begin.

3. Eligibility for funding

To be eligible for funding, proposed projects must meet all the following criteria:

1. Innovation and technology readiness:

This competition will support proposals that can develop, construct, trial and demonstrate innovative carbon capture & utilisation technologies/techniques within the timescale indicated above. It is intended to identify methods and techniques which would reduce the cost of carbon capture technologies. BEIS anticipates the technology readiness level to be consistent with the earlier definition of Experimental Development.

2. Projects must fall within the EU GBER Section 4 Article 25 (Aid for research and development projects).

3. Aid Intensity including cumulation: The funding levels applied for must be consistent with the appropriate Block Exemption aid intensity levels (including consideration of the cumulative effect of other forms of state aid) and costs must be consistent with the eligible cost criteria (as set out in Appendix 1).

4. Match-funding: Given the aid intensity rules, applicants will need to have private funding in place to cover the balance of the eligible costs. Such funding may come from a company's own resources or external private sector investors, but may not include funding attributable to any public authority or EU institution. The match funding must be at least 40% of the total project costs. The maximum amounts of aid towards eligible Project Costs are in Table 1 below.

5. Project Location: The project's activities must be conducted in the UK.

6. Grant size: Applicant(s) to the scheme will be eligible to receive up to £10m for funding a project under Article 25.

Since BEIS is seeking to maximise the impact of government funding, projects looking for public funding intensities that are lower than the applicable maximum are likely to score higher in the appraisal process.

7. Technology scope: The focus of the competition is on projects that will demonstrate flexible and low-cost carbon capture and utilisation

technologies/techniques demonstrated in various industries and can be replicated at larger scale in identical or similar applications.

8. Project duration: Projects can last up to 24 months.

9. Applicants and Project team make-up

Both single company and consortium bids will be considered. In case of Consortia, a single project application must be submitted by the lead project member (industrial host site) – the project co-ordinator.

Successful project teams for this Competition are likely to include:

- an organisation in the UK capable of constructing the Carbon Capture & Utilisation Demonstration plant
- technology supplier(s) who can implement the Carbon Capture & Utilisation technology solution

Members of the project team can be:

- UK-registered private sector companies: both SMEs (as defined by the EU5) and large enterprises can apply for funding as part of a consortium with other private sector companies or in a consortium with academic, research, public, third sector or community organisations;
- UK academic, research, public, third sector or community organisations must work as part of a project consortium with private sector organisations – they cannot be sole applicants to this competition;
- The applicant or the project team member hosting the demonstration project is expected to be users of the CO₂.

4.1 General conditions:

Companies of any size are eligible to seek funding.

Applicants who have been successful or unsuccessful under other BEIS grant schemes, such as the Energy Entrepreneurs Fund, may apply for funding under the CCUD, Phase 3B – Construction and Demonstration call. They will be neither advantaged nor disadvantaged by their previous applications.

5. Funding levels and State Aid requirements

This Competition will be operated in accordance with the terms of the revised General Block Exemption Regulation governing State Aid (Commission Regulation (EU) No. 651/2014), which came into force on 1st July 2014 (GBER) – specifically Article 25 (Aid for research and development projects)². This scheme operates under General Block Exemption Regulation (GBER). Article 25, 'Aid for research and development projects'.

² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN> .

The size and type of funding that the project can receive will depend upon the type of applicant and which GBER Article they qualify under.

Table 1: Maximum public funding for projects

Research Category	Size of Enterprise	Maximum amount of aid towards eligible Project Costs
Experimental Development - Single Company	Small	45%
	Medium	35%
	Large	25%
Experimental Development – projects delivered by sole organisations or collaborations (i.e. consortium made up of either several businesses, including at least one SME; or business(es) and at least one research organisation); and the results of the project are widely disseminated (i.e. through conferences, publication, open access repositories, or free or open source software) Note: certain conditions must be fulfilled for collaboration (See Article 25(6) of the Block Exemption ³)	Small	60%
	Medium	50%
	Large	40%
Experimental Development – Universities or Research Organisations in Collaborations	Universities or research organisations (defined as collaborative fundamental research projects in GBER Article 2 (84)) may be entitled to receive full funding for their eligible project costs as long as they are not undertaking any economic activities in the project. University and research organisations should confirm the funding position with BEIS prior to application	

³ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN>

The figures represent the maximum aid intensity that BEIS will provide under the 2019 Call for CCUD, Phase 3B – Construction and Demonstration. State Aid compliance is a legal requirement and the risk of non-compliance rests with the grant recipient⁴. It is therefore crucial that you address State Aid fully within the application, as any errors at this stage may result in BEIS being able only to offer a reduced level of funding. BEIS is seeking value for money from its funding and proposals that demonstrate matched funding greater than minimum requirement will be looked on favourably.

Collaborative Bid: You must also submit a copy of the Heads of Terms for your collaboration agreement. This will form part of the assessment process and BEIS will review it to ensure that proposed collaborations are viable and robust.

5.1 Competition budget and availability

The total budget available for the CCUD Phase 3B Competition is up to £14m, although BEIS may allocate less than the total budget depending on the quality of the applications.

A single project can receive up to the maximum State Aid intensity as determined by Article 25 of the General Block Exemption Regulation. The number of projects funded depends on the range of storage technologies proposed and the quality of the proposals.

Grant funding under this Competition is only available until 31 March 2021. All project activities related to the build, including dissemination and reporting and payments need to be completed by this date. Match funding must be retained to deliver the operational piloting, testing and validation (and related dissemination and reporting and payments) if these activities occur post March 2021; these activities must be complete by **December 2021**.

Note: Nothing in this funding call requires BEIS to award any applicant a grant agreement of any particular amount or on any particular terms. BEIS reserves the right not to award any grant agreements, in particular if BEIS is not satisfied by the proposals received or if the funding assigned to the scheme is required for other, unforeseen, purposes. BEIS will not, under any circumstances, make any contribution to the costs of preparing proposals and applicants accept the risk that they may not be awarded a grant agreement.

5.2 Public funding

When considering levels of aid intensity (described above), public funding includes the grant and all other funding from, or which is attributable to, other government departments, UK public bodies, other Member States, or EU institutions. Such funding includes grants or

⁴ The UK's rights and obligations of EU membership, including compliance with State aid rules, continue to apply until the UK's exit from the EU has been completed, and therefore for this competition.

other subsidies made available by those bodies or their agents or intermediaries (such as grant funded bodies).

In applying to this Call, you must state if you are applying for, or expect to receive, any funding for your project from public authorities (in the UK or in other Member States) or the EU or its agencies. Any other public funding will be cumulated with BEIS funding to ensure that the public funding limit and the aid intensity levels are not exceeded for the project.

Whilst BEIS will check the information provided to try and ensure that applicants meet the requirements of State Aid, applicants should establish that they fall within the state aid rules before submitting applications. BEIS requires applicants to notify them of any change to situation or circumstance during the project.

If there is a breach of State aid regulations, for whatever reason, the European Commission requires repayment of any grant received, including interest, above that which was due. In this situation, applicants will be required to repay any funding received. It is also important to ensure that the total grant funding for the project from public sources (including from the European Commission) does not exceed the permitted percentages stated for the relevant Article.

As part of the assessment process, the added value and additionality of public funding will be tested. Applicants will need to demonstrate why public funding is required to deliver this project.

5.3 Collaboration and Knowledge Dissemination

Under the GBER Article 25 regulation, additional public funding (up to 15%) can be awarded to participants in collaborative projects (not feasibility studies) as long as they meet one of the following conditions:

“(i) the project involves effective collaboration:

— between undertakings among which at least one is an SME, or is carried out in at least two Member States, or in a Member State and in a Contracting Party of the EEA Agreement, and no single undertaking bears more than 70% of the eligible costs, or

— between an undertaking and one or more research and knowledge-dissemination organisations, where the latter bear at least 10% of the eligible costs and have the right to publish their own research results;

(ii) the results of the project are widely disseminated through conferences, publication, open access repositories, or free or open source software.”

6. Project Plans, Finances and Financial Viability

6.1 Project Plans

Projects are expected to last up to 24 months in duration. All projects must be financially complete by 31st March 2021. All projects must submit a detailed Gantt chart (or equivalent) as part of their application, which details the project timeline, the various work packages and the project milestones.

6.2 Project Costs

All applicants must complete the 2019 Call for CCUD Finance Form detailing their expected expenditure and spending profile for the project on a quarterly basis. Further details about this form are in Part 2 of this document. You should complete a single form covering your entire project and including all your partners, clearly identifying which costs relate to which partner. *Multiple Finance Forms will not be accepted and will result in failing the Eligibility Criteria.*

During the assessment of applications, the project costs and plans that are submitted as part of the application process will be fully assessed along with the answers to the questions on the application form to ensure they are what might be reasonably expected.

The eligibility of all costs under state aid rules and the financial viability of your organisation will be checked following the decision to pre-select an applicant but before a formal offer is made. Being contacted for this information does not indicate either success or failure in the assessment process.

BEIS understands that project costs are subject to change prior to agreeing a Grant Offer Letter and throughout the course of the project, and we will therefore review the project budget with a view to producing a final version to be included in the Grant Offer Letter.

BEIS generally does not accept contributions in kind as match funding, as these are ascribed a notional cost. However, where money changes hands (e.g. for the time of managers or experts who are paid by you or another partner) this would not be considered as in-kind match funding.

6.3 Financial viability checks

BEIS will undertake financial viability checks on all successful applicants. These will include looking at the latest independently audited accounts filed on the Companies House database.

Where a business is not required to file accounts with Companies House, other financial information may be requested to enable an appropriate financial viability review to be undertaken. We will be looking for evidence of your ability to resource the project appropriately, so the information we request will be focused on understanding how your business operates in this respect.

Before your project starts, BEIS will ask for evidence that you have the funding mechanisms in place to manage your cash flow across the life of your project. This could include letters of credit or other such mechanisms. We do not expect you to have cash deposits to cover the entirety of your project at the start. If you do not complete your project due to cash flow problems that you could have anticipated and managed, we may request repayment of any grant already issued to you.

BEIS will not make payments in advance of need. BEIS understands, however, the difficulties which small businesses may face when financing this type of project. BEIS will explore cash flow issues with the applicant as part of developing the financial and milestone profile within the Grant Offer Letter. BEIS will offer flexibility in terms of profiles and payments, within the confines of the requirements for use of public money within which it operates.

7. Assessment Process and Selection Criteria

All applications will be considered against the assessment areas and ranked against each other.

The application form and guidance notes are designed to inform you about the types of information you should provide to BEIS for your proposal to be assessed.

For the avoidance of doubt, the individual questions listed under the headings below do not constitute assessment sub-criteria, but are an indication of the kinds of factors that will be considered in assessing each aspect of a proposal.

The highest scoring applications will proceed to the Grant Offer Letter stage. BEIS may offer a grant to the highest scoring projects, that is of lower value than applied for, if this will enable a greater number of projects to be supported under the Call. We will select projects that offer the best value for money, taking account the following areas:

Criterion 1	Project Motivation
Weighting	10%
Questions	<ul style="list-style-type: none"> a. What are your main aims and expectations for involvement in the CCU Demonstration Programme? b. Describe what work has been done to date in terms of decarbonization activities at the site. c. How does this programme fit with short, medium and long term future business plans? d. What are the proposed sources of investment for the project in Phase 3? What level of support is required from BEIS at each stage to ensure the viability of your future developments and not only for this project?

Guidance	<p>a. Ensure that the description aligns with BEIS' aims and expectations. Details regarding expected outcomes of the project should be provided, including motivations for decarbonization, goals and expectations for the short and longer-term future. Estimates of CO₂ emission reductions are not required at this stage.</p> <p>b. Tell us about all the company's decarbonization activities to date, including both carbon capture, and any alternative decarbonization strategies considered or implemented.</p> <p>c. You need to show how this project either fits in with, and/or compliments, your long-term corporate business plans with regard to decarbonisation</p> <p>d. What level of support would you need from BEIS to successfully complete Phase 3 and run a viable project? You should be able to demonstrate the level of support required from BEIS for each stage within your overall project plan.</p>
Mark Scheme	<p>0 – No information about the aims and history of the project, and no discussion of how the project fits in to business strategy or no thoughts about future projects and funding.</p> <p>1-2 – Basic information about aims for the project, but without context of how the project fits with existing long-term business objectives. Information about requirements for the project from BEIS is provided but not justified</p> <p>3-4 –The aims of the project are described, including a brief explanation of how it fits within the company's business plan. Brief information about requirements from BEIS is given, but with either insufficient or weak justifications.</p> <p>5-6 – The aims of the project are described, alongside the company's long-term strategies and business plans, though without explicit explanation of how they fit together, including a brief description of previous work on the project. An explanation of the requirements for the project from BEIS has been provided, with justification.</p> <p>7-8 – The aims of the project are well-described and justified, with information of how the project fits within the company's long-term business plan and strategies provided. The requirements of BEIS for the project have been provided with well-reasoned justification.</p> <p>9-10 – Full discussion of the project regarding the history of the project and any previous work carried out, as well as information about how this is expected to fit with and reshape existing business plans. The project aims and objectives are well-described, with expected benefits and a potential future progression described. The requirements of BEIS are clearly defined, with explanation and justification for each of them, alongside an explanation of why the project could not progress without BEIS support.</p>
Criterion 2	Source CO₂ and Export Route Information
Weighting	10%
Questions	<p>a. Provide a description of the base industrial process that the carbon capture plant will be applied to, including whether this is a new-build plant or will carbon capture be retro-fitted to an existing facility.</p> <p>b. How much carbon dioxide will be captured from the process (both as a proportion of the total CO₂ in the feed stream, and as an annual mass of CO₂ product from the process)?</p> <p>c. What export route has been identified for the product carbon dioxide stream? Provide details of the destination, product specification, means of transportation and expected sales value per tonne of CO₂.</p> <p>d. What is the proposed utilisation pathway, and what arrangements are in place for the sale or usage of the captured CO₂</p> <p>e. How will the proposed plant impact the safety and health of on-site personnel and the general public? Has a HAZOP or HAZID or as a minimum a SIL or LOPA report assessment been carried out?</p> <p>f. What is the potential impact on the environment? Provide a copy of the project's Environmental Impact Assessment and describe how any recommended mitigation measures are being addressed. This should include</p>

	<p>any deviations from existing Environmental Impact Assessments for existing processes caused by implementing the CCU process.</p> <p>g. What discussions have been held with external stakeholders, such as the Environment Agency and Local Authority? What approvals have been gained for installation of the carbon capture and utilisation plant and what is still outstanding? Describe the timeline and activities required to gain all necessary approvals.</p>
<p>Guidance</p>	<p>a. Tell us about how you are going to set up the CCUD plant</p> <p>b. Tell us how much carbon dioxide will be captured using this process, both in terms of mass and also as a percentage of the source stream</p> <p>c. Tell us where the captured carbon dioxide will be stored, used and how will it be transferred. How much is the sale value per tonne of CO₂?</p> <p>d. Have the utilisation route been identified? What discussion have been held with external stakeholders.</p> <p>e. Have HSE risks been assessed appropriately? Might possible concerns arise later that could derail the project?</p> <p>f. Have you considered the environmental effect and how is the risk to the environment managed?</p> <p>g. How aware are you of the approvals process and does it have a robust process for gaining the necessary approvals? Has this process been started already?</p>
<p>Mark Scheme</p>	<p>0 – No information about the process, with incomplete or missing information about the CO₂ source and quantities proposed to be captured. No evidence that safety or the environment have been considered, and preliminary discussions with local authorities have not been begun.</p> <p>1-2 – Information provided is brief, with little information on the new process and rates of CO₂ capture. Health, safety and environmental impacts are mentioned briefly without detail or evidence of further study having been carried out. Discussion between the applicant and local authorities is claimed to have begun, but no evidence is supplied to support this.</p> <p>3-4 – The information for the CO₂ capture process has been provided, but not in context of the existing process. Health and safety have been considered, and a brief document has been provided in lieu of a HAZOP or HAZID or as a minimum SIL or LOPA. The environmental impact assessment is either in the planning phase or is brief and not fully developed, and discussions with the environment agency or local authorities are in their initial stages.</p> <p>5-6 – Rate of CO₂ capture, or proportion of total flue to be captured, is not provided, and most of the key data has been provided, but some details may be missing. Either a draft HAZID or a clear methodology for the HAZOP have been provided, though these lack sufficient detail to be able to fully assess the impacts of the process. A brief environmental impact assessment has been carried out, and discussions with the environment agency or local authorities have been carried out but with either incomplete transcripts of recent conversations or are not advanced.</p> <p>7-8 – A full description of the process is given, with information provided for the carbon capture method, including how it is integrated with the existing process. A detailed HAZID or draft HAZOP have been carried out and are provided, alongside an environmental study. The approvals process has been begun with local authorities or the environment agency, but detail of discussions to date have not been provided.</p> <p>9-10 – A full description of the process has been provided, showing the existing plant in detail, alongside the proposed carbon capture process, including detail of the proportion of the total flow to be captured. A completed HAZOP defines health and safety risks, and an environmental assessment has been carried out showing the risks to the environment. Discussions with the environment agency or local authority are at an advanced stage, and transcripts of these have been provided.</p>
<p>Criterion 3</p>	<p>CO₂ utilisation pathway</p>

Weighting	10%
Questions	<p>a. Where will the captured CO₂ be stored, and how will it be transported from the capture process and to the end user?</p> <p>b. What product specification is required from the CO₂ for the intended utilization pathway? Is further purification necessary?</p> <p>What is the CO₂ end user's process, how much CO₂ is required per year, and are there any formal agreements or contracts signed with them (if an external company)?</p>
Guidance	<p>a. Detail import and export processes, and the proposed volume of any on-site storage tanks.</p> <p>b. Describe the required CO₂ purity for the end-user's process, and how this quality will be guaranteed by the capture process (and describe further purification stages required, if any)</p> <p>Please provide any agreements (including heads of terms, if appropriate) with the end user of CO₂, including required volumes and an assessment of the end-use process. Give details about how much CO₂ this will offset and how this leads to overall decarbonization of the process.</p>
Mark Scheme	<p>0 – No information provided about CO₂ end user, or no end user has been identified yet. There is no information about the required or provided specification of CO₂ and no consideration has been given to the import/export and interim storage of the CO₂.</p> <p>1-2 – Very brief information is provided about the end user of CO₂, with major omissions from either the end-use process description, the required volume and specification of the CO₂ to be provided, or the produced volume of CO₂ far exceeds the required quantity from the end users. There is no evidence provided of agreements between the end-user and producer of CO₂.</p> <p>3-4 – The import/export and storage are briefly described, with a stated product specification given, though without information on how this will be guaranteed. The end user is identified, and their end-use process is briefly described, and the produced CO₂ is of comparable quantity to the requirements. Evidence is provided of discussions with the proposed end-user, but no formal documentation (letters of support, heads of terms or draft contracts) are provided.</p> <p>5-6 – The information about import/export and storage is provided, with information about the location on plant and consideration of how best to achieve the required flowrates. Product specifications are given, with brief information given regarding how this specification would be met. The end user's processes are described in detail, though without consideration of the total CO₂ emissions reduction potential of the CCU process, and evidence of discussions with the end-user is given, including a letter of support, though without evidence of firmer commitments to buy the CO₂ after production.</p> <p>7-8 – Information regarding the import/export and storage system for CO₂ is given, with detail provided of how the system would operate and any contingencies that are required. The product specification is stated, with basic evidence showing how this will be met, or of an upgrading system if so required, including discussion of how to guarantee quality. The end-user's process is well described, with an estimate of life-cycle CO₂ savings for the processes provided. A detailed letter of support between the end-user and CO₂ provider is provided, alongside evidence of further discussions regarding the drawing up of a full contract (or creation of a subsidiary if appropriate).</p> <p>9-10 – A full overview of the import, export and storage is given, including proposed sizings of the pipework, including information about contingencies. The product specification is described, and the produced CO₂ will exceed this specification, with guarantees are given from the technology vendor that this will be exceeded, or detail is provided on a purification plant to further upgrade the CO₂ to the required quality. The end user is described, with their requirements and an overview of the process, including usage of CO₂ and why this is a viable route for the utilization, and detailed agreements between the CO₂ provider and end user are provided, including a provisional agreement for the sale of the CO₂.</p>
Criterion 4	Technology Selection and Engineering

Weighting	15%
Questions	<p>a. What specific process technology is proposed for removal of carbon dioxide from the process stream? Where this is a licensed technology, describe the basis of your current and future relationship with the technology provider, including any firm agreements for supplying the technology. If the technology is proprietary, please include information about how the technology would function.</p> <p>b. What previous projects have used the proposed technology? Describe the scale, period of operation and source of CO₂ for existing installations using this technology. What limitations to plant capacity / train size exist for this technology?</p> <p>c. Has a specific engineering contractor been selected for delivery of the project in Phase 3? If not, provide a plan and timeline for selecting your EPC contractor, including how they will be procured. If they have been selected, describe the basis of your current and future relationship with your EPC contractor.</p> <p>d. What guarantees is the technology provider (or EPC contractor) offering for performance of the technology?</p>
Guidance	<p>a. You need to demonstrate that you have a thorough understanding of the technology and the scale of the project. Identify any limitations that may exist, and how this might affect the project.</p> <p>b. How aware are you of the projects done at this scale, what are the risks and limitations?</p> <p>c. Who is going to deliver the project and how? If this is done in-house, provide details of the team and experience delivering equivalent projects.</p> <p>d. How sure are you that the selected engineering contractor can deliver the project in time and within specification?</p>
Mark Scheme	<p>0 – There is no detail of the technology to be used, and no performance metrics have been provided, meaning that no assessment of the technology selection can be carried out.</p> <p>1-2 – Information about the selection of technology is very brief, without performance metrics or a guarantee of performance from the technology provider. There is no evidence of an agreement or discussions with the technology provider, and the process of selecting an engineering contractor has not yet begun.</p> <p>3-4 – The technology has been selected and is described, though there is no information about performance metrics. Discussions with the vendor have begun, though without a firm commitment to use or supply the technology respectively, and hence no performance guarantees have been provided. The process of tendering for the engineering contractor has not begun, or there is insufficient information about the process.</p> <p>5-6 – The technology has been described with performance metrics, and the vendor identified. There is evidence of discussions between the applicant and the vendor, but there are no guarantees of performance. Information has been provided about the process for selection of the engineering contractor, but none has yet been selected.</p> <p>7-8 –The technology is described, including performance metrics and guarantees of performance from the vendor, though without supporting evidence or information about other processes where the technology has been implemented. Agreements with the vendor have been made, but the engineering contractor has not yet been selected or there is scarce information about the selection process.</p> <p>9-10 – The technology is well-described, with performance metrics supported by existing projects. Agreements with the third-party vendor, if appropriate, are at an advanced stage and the technology provider has provided performance guarantees that meet the required performance. An engineering contractor has been selected, with information about previous comparable projects carried out by the contractor given, and information about the tendering process has been provided.</p>

Criterion 5	Specific Project Deliverables Required
Weighting	20%
Questions	<ul style="list-style-type: none"> a. Process Flow Diagrams for the new process. b. Process Description and range of expected operating conditions. c. Material Balance around the carbon capture (and utilisation) process, clearly showing flow rates, composition and operating conditions for key streams. d. Sized equipment list for any new or modified equipment. e. Plot Layout, clearly showing connections to existing systems and access routes for construction and operational traffic. f. Tie-in Schedule, indicating location, method of tie-in and planned schedules. g. Summary of utility and electrical power demands. h. Summary of solid wastes, effluent streams and gaseous emissions, including proposed disposal or treatment routes. i. If available, Material Safety Data Sheets for any materials that are toxic or harmful to the environment. j. Single Line Diagram. k. Description of control and monitoring system, including Control System architecture diagram. How will this interface with the existing plant control and monitoring system? l. Capital cost estimate to AACE Class II or equivalent. Estimate to be broken down to show costs for equipment items, bulk materials, engineering, construction contracts, land costs and owner costs. Please include the Estimate Methodology used, stating clearly the basis for material take-offs and any assumptions used. Capital cost estimate accuracy to be advised. m. Fixed and variable operating costs, including number of personnel and costs for utilities and services. n. Economic assessment, showing planned period of operation, costs, sales value and internal hurdle rate (discount rate). o. Financial Investment Decision, EPC award, Mechanical Completion, Ready for Start-up, Commercial Operations Date and any other key milestones / decision gates. p. Technical / Commercial Risk Assessment and Mitigation Plan. q. HAZOP or HAZID or as a minimum SIL or LOPA for proposed process, where possible. If this has not been carried out, an assessment of the health and safety risks of the process should be provided, even if this is incomplete or brief.
Guidance	<p>Please see below for the full list of essential and requested documents. All documents marked as “essential” should be provided to give the assessors sufficient information to ensure that the FEED has been carried out to a sufficiently high quality. Documents marked as “requested” will give the assessors additional supporting information to provide additional levels of reassurance and should be included if available.</p>
Mark Scheme	<p>0-2 – Multiple documents marked as “essential” are missing or are incomplete, missing key information. Major omissions mean that it is impossible to assess the feasibility of the project.</p> <p>3-4 – All documents marked as “essential” have been provided, though some of these contain major omissions which would need to be addressed before any construction work could begin. Alternatively, there may be a small number of documents marked as “essential” that are missing, but with</p> <p>5-6 – All documents marked as “essential” have been provided and give a thorough overview of work carried out to date, with minor gaps (some supporting information from these documents may be missing, but all key data is provided). However, “requested” documents are either not provided or without sufficient data to provide full assurance.</p>

	<p>7-8 – All documents marked as “essential” have been provided and are of high quality, with all major information provided but some minor gaps. Some of the “requested” documents are provided and add to the overall understanding of the process, but some documents are either not provided or have key information missing.</p> <p>9-10 – All documents have been provided, with all major information included. Any omissions are minor, and enough information is provided for the assessors to fully understand the project, its costs and its implications on the existing process.</p>
Criterion 6	Project schedule and risks
Weighting	10%
Questions	<p>a. Provide a schedule for implementation of the project, including construction activities, any key internal milestones / decision gates, and approval gates for external agencies.</p> <p>b. Please include an illustrative schedule for how Phase 3 will be implemented, including activities, milestones and timing</p> <p>c. What main risks exist for the project and how does the bidder intend to manage these? Please complete a project risk register, showing both the likelihood and potential impacts of individual risks, and giving clear mitigation strategies to manage them.</p>
Guidance	<p>a. Please provide the schedule using Gantt chart. Show interdependencies of tasks and any contingency time to reduce the risks of project bottlenecking.</p> <p>b. Please ensure this is clear to read and understand</p> <p>c. Have you considered what could go wrong? How sensitive are the economics to disturbances?</p>
Mark Scheme	<p>0-2 – Gantt chart is not included, or does not accurately reflect the tasks required in project construction. The schedule for delivery is inadequate, and the risk matrix is sparse or absent, and does not consider risks associated with the project.</p> <p>3-4 – The Gantt chart has been filled in with basic tasks, but interdependencies between these are not given, and there is no indication of potential overlaps. The schedule contains major tasks, but without sufficient detail to identify bottlenecks, and decision gates or approval points are not provided. The risk matrix contains the major risks associated with the project, but others are absent. Proposed mitigations are weak and would not address the risks in a meaningful manner.</p> <p>5-6 – The Gantt chart is filled in with the major tasks, but interdependencies between these are not clearly identified. The project schedule is generally complete, though without sufficient detail regarding timings, tie-ins and decision points. The risk matrix contains the major risks from across a range of different risk areas, and mitigation actions are generally adequate.</p> <p>7-8 – The Gantt chart contains the major tasks for the project, including their interdependencies, and the schedule is generally complete, though without information on timings of tie-ins or approvals. The risk matrix is comprehensively filled in with many risks from different categories, though the mitigation actions are in some cases weak and do not address the risks.</p> <p>9-10 – The Gantt chart shows the major tasks required for the implementation of the project, including proposed dates for tie-ins and interdependencies of tasks, as well as individual milestones and points of approval or decisions. The project schedule includes major milestones, with tasks which could bottleneck the project identified and contingencies planned. The risk matrix is exhaustively filled out, with a range of risks identified from categories including technical, economical, scheduling and approvals, and strong mitigation actions given.</p>
Criterion 7	Project Finance
Weighting	15%

Questions	<p>a. Please complete a finance form for your proposed project and use this section to explain the proposed costs of your project.</p> <p>b. Please describe and explain the costs of your project.</p> <p>c. Justify how the proposed costs represent fair market value and how the total budget represents good value for money. Explain how this project would represent good value for public funding</p>
Guidance	<p>a. Please use the finance form provided to submit the information and explain what the proposed costs are. Where possible (e.g. subcontracted work), please include information about what work is being subcontracted for each selected subcontractor</p> <p>b. Please tell us how you have come to the final cost of your project and what is included.</p> <p>c. How does your proposed cost compare with the market value, and how does the cost proposed represent good value for money.</p>
Mark Scheme	<p>0-2 – The finance form is incomplete or contains costs which are ineligible for this project. No reflection of how the project compares to market value has been provided.</p> <p>3-4 – The finance form has been filled in but costs are presented as-is, without detail or justification. Staff costs may be high, or a disproportionate amount of time required from senior staff on higher rates. An argument for how the project represents value for money has been presented, but this is either weak or without justification.</p> <p>5-6 – The finance form has been completed, and some costs are presented with evidence, while others are presented as-is. There is insufficient information about the total project cost and what is included within it, and the argument for the project representing good value for public funding is given but not compelling.</p> <p>7-8 – The finance form has been filled in, and the costs within are reasonable, with subcontract costs justified and staff costs in-line with expected industrial salaries. There is insufficient evidence to suggest that the project represents good value for money, or the argument for this project representing good value for public funding is weak.</p> <p>9-10 – The finance form is comprehensively filled in, including justification for costs. Day-rates are in-line with industry standards, and proportionally less time is required for senior staff. Subcontractor costs are justified, with explanations of each subcontractor’s contributions to the project. Project has been compared to similar projects across the industry, and this is used to demonstrate fair market value, and hence a compelling argument is given as to how the project represents good value for public money.</p>
Criterion 8	Project Team
Weighting	10%
Questions	<p>a. Describe the companies that are involved in the project and their level of involvement during FEED, EPC and operation of the facility. Provide organisation charts to show the nature of the relationships during each phase, including a project management structure.</p> <p>b. Which companies are making a financial investment in the facility? What are the relative proportions of ownership for each? (if relevant)</p> <p>c. What proportion of the investment capital will be provided by loans from financial institutions (or other sources)? Please provide details of lenders. What rights do the lenders have with respect to the project? If such lenders have been sought, please include information about the current status of the funding.</p> <p>d. Where the carbon capture and utilisation plant will be operated as a separate entity, describe the nature of the contract between the host site and the CCU plant operator.</p> <p>e. What level of BEIS support is required during Phase 3 to ensure the viability of your development?</p>

Guidance	<p>a. Who will be involved, what is their level of involvement, how is the project is going to be managed by each party?</p> <p>b. Who is investing in the project and what is the level of investment and responsibility?</p> <p>c. Where is the money for investment coming from? How did you acquire the capital cost and what are the terms and conditions?</p> <p>d. How would the plant be managed?</p> <p>e. How much support is required from BEIS and why?</p>
Mark Scheme	<p>0-2 – There are major gaps in the information about the team, with members not named and no experience given, and no information about how the project will be managed. Companies with a financial investment in the project are listed, without information about the source of this. There is no discussion of whether a separate entity would be formed for project delivery.</p> <p>3-4 – Key team members are named, but their experiences are not given and the project management structure is weak or poorly explained. Companies with a financial investment in the project are listed and the relationships briefly described, but without mention of the source of the capital. Where the plant would be run as a separate entity, the contract between the host site and operator has not been provided, nor details of attempts to draw one up.</p> <p>5-6 – Key team members are given and their experiences described, but the project management structure or strategy is either absent or poorly described. A list of companies with a financial interest in the project is given, alongside a brief description of their relationship, but without detail on the source of funding for the project. BEIS support is mentioned but not justified or expanded upon, and in the event a new entity were to be created, proposed terms of the contract have been drawn up but not agreed upon.</p> <p>7-8 – The team is described, with key staff possessing relevant experience, and a project management structure is given, though without detail on the management strategy. Companies with a financial investment are listed, with their relationships described, and the source of funding is clear. Where a separate entity is being formed, evidence is provided of discussions to drawing up a contract between the operator and site owner, but this contract has not yet been signed. Brief mention of support required from BEIS, but not much detail has been provided.</p> <p>9-10 – The team is well-described, with key staff members, such as heads of individual work packages, named and bios given, showing relevant experience. The project management strategy is given, with a named BEIS contact. Companies making a financial investment in the project are described, and their relationship with the applicant is described, including whether a separate entity would be formed; if so, a contract has been drawn up between this new entity and the site owner. In this case, documentation describing how this will be set up and run has been provided. The level of support from BEIS has been described and justified.</p>

8. Notification

Applicants will be informed by email whether their application has been successful (or unsuccessful), subject to compliance with the terms and conditions of the Conditional Offer that will be received and successful completion of the inception meeting.

BEIS may wish to publicise the results of the scheme which would include engagement with the media. At the end of the application and assessment process, BEIS may issue a

press release or publish a notice on its website. These may, for example, outline the overall results of competitions and describe some of the projects to be funded.

Some organisations may want their activities to remain confidential and you will be given a chance to opt out of any involvement in media relations activity and further case study coverage of projects, should you see this as being absolutely necessary. However, the public description of the project you provide in your application will be made available in the public domain if your application is successful, and you are not able to opt out of the project description being published.

Any organisation that wishes to publicise its project, at any stage, must contact the Project Manager of the CCUD Call at BEIS via email or a formal letter before doing so.

9. Feedback, re-application and right of appeal

A short summary of key feedback regarding the applications will be provided to all applicants, this feedback will be based on the summary comments of the Assessors. No additional feedback will be provided and there will be no further discussion on the application.

The feedback from the assessors is intended to be constructive. Comments are not a check list of points which must be answered or argued in a resubmitted application as the assessors may be different and it is your decision as to whether you act on the suggestions made. For the avoidance of doubt, BEIS & the assessors' decision is final and there is no right of appeal and or re-application allowed.

10. Confidentiality and Freedom of Information

Where any request is made to BEIS under the Freedom of Information Act 2000 ("FOIA") for the release of information relating to any project or applicant, which would otherwise be reasonably regarded as confidential information, then BEIS will notify you of the request as soon as we become aware of it. An applicant must acknowledge that any lists or schedules provided by it outlining information it deems confidential or commercially sensitive are of indicative value only and that BEIS may nevertheless be obliged to disclose information which the applicant considers confidential.

As part of the application process all applicants are asked to submit a public description of the project. This should be a public facing form of words that adequately describes the project but that does not disclose any information that may impact on Intellectual Property (IP), is confidential or commercially sensitive. The titles of successful projects, names of organisations, amounts awarded and the description of the project may be published once the award is confirmed as final.

All assessors used during the assessment of applications will be subject to a confidentiality agreement.

Part 2 - Completion of the Application and Finance Forms

1. Completion of the Application Form

This section aims to guide you through the completion of the 2019 Call for CCUD, Phase 3B – Construction and Demonstration Application Form. It is important that a response is provided to every question. This guidance is intended to explain what type of information applicants should consider providing to BEIS to best demonstrate the merit of their application.

Applications will be judged based on the information provided in the application form and any supporting information provided. These guidance notes are not intended to be exhaustive; applicants are expected to develop their own responses based on your own skills, knowledge and experience. You are encouraged to be concise and to the point whilst providing all the necessary and relevant information.

Throughout the form there are grey boxes, in order to answer the question or provide information you should simply click on the box and begin typing or select from the drop-down menu. Questions do have character limits and when the text has reached the character limit you will not be able to add any further information and the text must be edited to fit within the character limit.

Any graphs, diagrams or supporting evidence that you are providing to support your application should be attached to your submission.

1.1 Summary Information, Contact Details and Business Information

The initial section of the application asks you to provide details about your organisation.

Section/Field	Guidance
Summary Information	
Names of business	Provide the name of the lead applicant business
Project Title	A brief title that can be used to summarise the project
Estimated start date	Select the month you would propose to start work assuming successful funding
Project duration	Enter the expected duration in months, taking into consideration the maximum project length of 24 months
Total Project Costs	This figure should match the figure calculated in the CCUD Call Finance Form. It should be the total value of the project including all eligible costs.
Company contribution	This is the amount of total eligible project costs that you will be paying from your own resources/private sector investment into the project.

Section/Field	Guidance
BEIS Grant Applied for	This is the amount you will be asking for from BEIS. You should ensure that you do not request a grant higher than the maximum allowed, taking into account all public-sector funding for the project.
Contact Details	Name and details of the person who will be the main point of contact for the application process
Organisation Name	Provide the full registered name of the organisation applying for funding
Number of employees (including directors)	Number of staff in your organisation (this will help us confirm the nature of your company)
Turnover (in most recent annual accounts)	Please provide your most recent turnover figure from annual accounts and the date of those accounts
Balance Sheet Total (total assets net of depreciation)	Please provide your most recent balance sheet total (total assets net of depreciation) and the date of the calculation.
Does the business have a parent company?	We need to understand if there any significant shareholders in your business. The parent company details should be provided in the Parent Company details section.

Section/Field	Guidance
How is your business currently funded?	Please select all the types of funding that your company has received to date
Which State Aid article are you applying under?	<p>You must select one of the General Block Exemption State Aid articles from the drop-down list.</p> <p>For more details on the State Aid rules and requirements, see section 5 of these Guidance Notes (above). You must indicate that you comply with the financial obligation rules by providing the relevant information.</p> <p>N.B. You must select one of the State Aid options and adhere to its requirements or you will not pass the Eligibility Check.</p>
If you are applying under Article 25, is this a collaborative project?	<p>If you are applying collaboratively, please provide details of the partner organisations in the CCUS Call Partner Details Form.</p> <p>If you are applying as a collaboration you must also submit a copy of formal Heads of Terms agreed between all the collaborators.</p> <p>Prior to the issuing of a Grant Offer Letter, you will have to submit to BEIS a copy of the collaboration or joint venture agreement that you propose to work under. You should be aware that BEIS will not issue a Grant Offer Letter until they have seen, reviewed and approved a final draft of this agreement.</p> <p>Sub-contracting work to a third party does not classify as a collaboration.</p>

Section/Field	Guidance
Parent Company Details	If you have a parent company, or are more than 25% owned by another enterprise, you must provide the details of that enterprise here. The details of the relationship between SME eligibility and linked / partner enterprises is set out in Annex 1 of the General Block Exemption Regulation. ⁵

⁵ See Annex 1 of the General Block Exemption Regulation: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN>

1.2 Project Description and Company Status

This section of the application asks you to provide an initial summary of your project and company as an introduction for the assessors.

Section/Field	Guidance
Project Description and Company Status	<p>This should be a summary description of the project and your company which should set the scene for the assessors and introduce your company and proposed project. You should use language that can be understood by people without specialist knowledge or expertise.</p> <p>This question is not scored but will be used by assessors to gain a high-level understanding of the project before they start their detailed assessment.</p>

2. Completion of the 2019 Call for CCUD, Phase 3B – Construction and Demonstration Finance Form

You will need to complete the financial details in the Financial Summary section of the application form and complete the 2019 Call for CCUD, Phase 3B – Construction and Demonstration Finance Form. The information in both sections should be consistent.

You should only submit one finance form for the project, which should combine the costs of all project partners. Within the finance form and the application, you should make clear how funds will be split between partners and that these splits comply with the relevant State Aid rules.

The 2019 Call for CCUD, Phase 3B – Construction and Demonstration Finance Form consists of 8 worksheets:

Summary

Labour Costs (Inc. Overhead Costs)

Materials Costs

Capital Equipment Costs

Sub Contract Costs

Travel & Subsistence Costs

Other costs

Project quarterly & Milestone costs breakdown

Each of these sheets can be accessed by using the scroll bar at the bottom of the worksheets.

Within the spread-sheet there are boxes that are shaded grey, these boxes are auto-calculating and can only be altered by changing data in the manual entry boxes. All white boxes are manual entry boxes into which data can be input.

Guidance on eligible costs is provided in Appendix 1 of these guidance notes.

Guidance on what needs to be entered in some fields is provided within the sheet when you click on the box.

Worksheets only need to be completed if you have costs in those categories, so for example, if your project has no planned capital equipment or sub-contract costs, the form will assume these entries are £0 and calculate without them.

2.1 Project Quarterly & Milestone Breakdown Worksheet

This worksheet provides the breakdown of all costs across the duration of the project. It represents the spending profile you expect for your project. In entering this information, you should ensure that the profile is consistent with the timings of the various work packages you are proposing within the project plan.

You must ensure that the total, in the spreadsheet, for each category matches the total that has been calculated on the individual worksheets.

Appendix 1 – Eligible Costs

In addition to the requirements of the EU Block Exemption Regulation, BEIS will only provide the grant to cover eligible costs incurred and defrayed in the period between acceptance of the BEIS grant and the deadline specified in the grant offer letter for completion of the project.

The definition of eligible costs includes the applicant's own costs, eligible costs incurred by consortium members and eligible costs incurred by companies connected to any of these. The cost of work contracted to connected companies, to consortium members or to companies connected to consortium members should be on the basis of eligible costs.

Costs must be denominated in GB pounds. Applicants should indicate where conversion has been made to GB pounds from other currencies and indicate the rate and assumptions used.

List of Eligible Costs

Under Article 25 of the EU Block Exemption Regulation⁶, eligible costs for experimental development are defined as the following:

- 3 Personnel costs: researchers, technicians and other supporting staff to the extent employed on the project;
- 4 Costs of instruments and equipment to the extent and for the period used for the project. Where such instruments and equipment are not used for their full life for the project, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible;
- 5 Costs for of buildings and land, to the extent and for the duration period used for the project. With regard to buildings, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible. For land, costs of commercial transfer or actually incurred capital costs are eligible;

⁶ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0651&from=EN>

- 6 Costs of contractual research, knowledge and patents bought or licensed from outside sources at arm's length conditions, as well as costs of consultancy and equivalent services used exclusively for the project;
- 7 Additional overheads and other operating expenses, including costs of materials, supplies and similar products, incurred directly as a result of the project.

Under article 25 the eligible cost for feasibility studies shall be the costs of the study.

List of Ineligible Costs

Under no circumstances can the grant be claimed or used:

For activities of a political or exclusively religious nature;

In respect of costs reimbursed or to be reimbursed by funding from other public authorities or from the private sector;

In connection with the receipt of contributions in kind⁷ (a contribution in goods or services as opposed to money);

To cover interest payments (including service charge payments for finance leases);

For the giving of gifts to individuals, other than promotional items with a value no more than £10 a year to any one individual;

For entertaining (entertaining for this purpose means anything that would be a taxable benefit to the person being entertained, according to current UK tax regulations);

To pay statutory fines, criminal fines or penalties; or

⁷ BEIS generally doesn't accept contributions in kind as match funding, as these are ascribed a notional cost. However, where money changes hands (e.g. for the time of managers or experts who are paid by yourselves or another partner) this would not be considered as in-kind match funding.

In respect of VAT that you able to claim from HM Revenue and Customs.

Staff Costs

BEIS would not normally expect to see contractors in key posts, e.g. CEO, FD, etc. Exceptionally, where BEIS is willing to fund a project which includes contractors in key posts, the day rate attributable to the project must be agreed with BEIS at the outset and cannot be varied without written agreement.

Appendix 2 – Technology Readiness Levels (TRLs)

Technology Readiness Levels are an indication of the maturity stage of development of particular technology on its way to being developed for a particular application or product. Below are some broad definitions of the TRLs

Fundamental Research (guideline)

TRL 1 – Basic Research

Scientific research begins to be translated into applied research and development.

TRL 2 – Applied Research

Basic physical principles are observed, practical applications of those characteristics can be 'invented' or identified. At this level, the application is still speculative: there is not experimental proof or detailed analysis to support the conjecture.

Industrial Research (guideline)

TRL 3 – Proof of technical concept

Experimental proof of critical technical functions and validation of feasibility for application. Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include showing the performance of critical technical features or components are feasible (even if not yet integrated or representative of real-life environment).

This stage is beyond “discovery science” (TRL1) and applied research (TRL2) and investigates a novel technological or scientific advance with some category of application in mind. The scientific principles of the novel or innovative aspect are already characterised with hard experimental data

points that enable prediction of performance, but the science is not necessarily in the final engineered format. In this stage, analytical and experimental studies measure parameters of interest, characterise properties and performance, and validate the theoretical predictions. For example, with new materials or combinations of materials, a range of formulations or combinations may be tested to explore the boundaries of performance and to select a combination with the necessary properties for commercial exploitation. System components are not yet fully integrated e.g. the lab demonstration of a new photovoltaic material may show desired properties in a controlled atmosphere but applications will require a suitable encapsulation method. Technology principles may be demonstrated in computer models and computer simulated environments where appropriate. A key output from this stage is to identify how results differ from the expected or necessary performance for future applications and where improvement is necessary.

TRL 4 – Lab and Test Bench Demonstrations

Lab and Test Bench Demos of sub-systems & key components. Modelling & experimentation with parameters representing future conditions. Application proof-of-concept

Application proof-of-concept. Modelling and experimentation with data or parameters that represent future conditions (cf. TRL4). “Bench” demonstrators’ show that the core technology components or subsystems based on the lab research could be engineered in practice, behave as predicted, and results indicate that the performance needed for a future application is achievable albeit with further optimisation. Bench demonstrations may focus on the key innovative component of the proposed system/product or demonstrate an entire system with simulated inputs or use of substitute subsystems. For large scale technologies the “bench” demonstration may be at smaller scale and would include tests of scale models in tanks and tunnels. If new manufacturing methods will be required, the feasibility of these will be investigated at this stage.

TRL 5 – Development Prototypes

The system, sub-system, components, or sub-scale units are integrated with reasonably realistic supporting elements so it can be tested in a simulated or representative environment.

Critical cost assumptions are carefully investigated and the feasibility of the proposed manufacturing process is tested. A new manufacturing step may require a separate “product development” process

for the manufacturing equipment. Prototype components and sub-systems are developed and improved to show that all the proposed technical components can provide the performance which will be required for future application (including: longevity, reliability, energy efficiency). Representative hardware and software components are tested in way that realistically simulates anticipated operating conditions or allows realistic predictions to be made. A relevant environment may be: laboratory test rigs with simulated use conditions, a controlled operational environment, or basic field tests. A test rig for new component technologies may be a version of the end-product. Intended functionality, size/form factor, and performance features are known at this stage. Successful development prototypes (components) become the basis for a demonstration prototype for full field tests.

Experimental Development (guideline)

TRL 6 – Engineering or
Demonstration Prototype

Full-scale system in representative conditions - Engineering Prototype. Representative full-scale prototype system is tested in a relevant environment. Proof-of-application.

Critical cost factors and new manufacturing capability are refined at this stage e.g. use of cost effective materials, demonstration that new components can be manufactured, demonstration of any new manufacturing steps or processes. Not all secondary interfaces or user features are (necessarily) available yet. Representative prototype is demonstrated in a relevant environment to prove engineering feasibility. The component/sub-system designs selected at previous stage are validated. Demonstration prototypes are typically fitted with a range of monitoring/measurement systems and operated in real-life systems and conditions with continual adjustment to confirm or optimise performance claims. Core functionality, size/form factor, and benefits of the proposed product should all be demonstrable but not all end-user features or interfaces are necessarily available at this stage. Some third part measurement validation or tests are usually best done at this stage (particularly to validate improved performance over other technologies or to confirm any necessary certification and approvals that need to be obtained).

TRL 7 – Operational Prototype
(Alpha Product)

Near or at planned operational system, requiring demonstration of an actual system prototype in an operational environment. Prototype for prolonged use at “tame” client or user site. All planned functions, interfaces integrated for monitored trials under the developer’s control.

Alpha product prototypes are at or close to the proposed final product configuration which can be fully tested in an “in-house” trial in operational or client-like environments with integration to all systems or interfaces which will be experienced in-use. Alpha trials should validate in-use performance and also test the following: integration to all other relevant systems, features needed to support proposed installation and maintenance procedures, exposure to all other influences likely to be experienced in the “user-environment” etc.

All the manufacturing steps will be tested at this stage and repeatable samples provided. Third party specialist tests would be done at this stage if not possible earlier. Prototypes may have minor re-designs following alpha tests but should not be subject to major re-designs if earlier stages have been completed properly. “In-house” means the developer runs and the trial and has access to the system(s) during the trial. Performance is not public but Alpha tests could be at “tame client” sites. Companies would not typically expect to sell prototypes at this stage.

TRL 8 – Production Prototype
(saleable Beta product)

System Incorporated in Commercial Design - Production Prototype (or process). Development is complete, final design and feature set, limited release to appropriate number of clients, all fulfilment procedures trialled and documented. Trials under client / users control and operation. Technology is proven to work - technology design for production or roll-out is completed and qualified through test and demonstration.

Development complete, final design and feature set, limited market release to appropriate number of clients, all fulfilment procedures trialled and user documentation complete. Saleable product. (cf. TRL 8 / 9)

A beta or pre-production prototype is the configuration which the venture expects to sell repeatedly.

These designs are finalised to a product specification and ready for repeat production. Client trial would validate: all the features and functions of the system perform as needed under expected conditions.

A full product beta test includes trialling sales processed (to some extent by signing up “beta-clients”), delivery and installation procedures, integration and commissioning procedures, instructions for use, monitoring, support and maintenance procedures. Suppliers will provide short-runs of components or assembled product. There needs to be a sufficient number of beta-sites to validate the product or solution is repeatable and reliable. At the end of a successful beta test the company should be in a position to sell the product to a client for reliable on-going use.

Repeated sales may be measured in 10’s or 1000’s depending on the technology and the cost of making iterations or improvements to the product design. However, by the above staged process, when the “beta” product prototype is prepared the venture has confidence that they could make repeated sales which will not require a re-call or levels of remedial support that would hamper the company’s future progress.

TRL 9 – Marketable Product

Marketable Product: proven in repeated use - Product being sold in market, scaling up sales volumes. Actual application of technology is in its final form - Technology proven through successful operations.

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