

Appendix A: Requirements specification

Kontor/afdeling
Undergrund CCS

Dato
31-03-2023

J nr. 2023 - 715

/MAKP

Introduction

This appendix contains the requirements specification. Requirements are divided into minimum requirements and general requirements. Each requirement has a unique number assigned for easy reference in communication.

Minimum requirements

The following table describes the Minimum requirements to be fulfilled by the Operator.

No.	Minimum Requirement
1	The Operator shall establish and operate the Value Chain.
2	The Operator must ensure that all certificates, approvals, and permits necessary to establish and operate the Value Chain are obtained
3	The Operator shall ensure that the CO ₂ captured and stored as part of the contracted quantity is of biogenic origin or atmospheric origin
4	The Operator shall ensure that the Delivered Quantity originates from (a) capture plant(s) placed in Denmark
5	The Operator shall deliver the Contracted Quantity starting from the year 2025

General Requirements

This section outlines the general requirements. The requirements R-1, R-2, R-3, R-4, and R-5 must be submitted as part of the Operator's offer to the DEA in order to qualify as a valid and admissible offer. The Operator's solution description of compliance with the requirements R-1, R-2, R-3, R-4 and R-5 will be included in the DEA's evaluation of offers.

The Operator is obliged to comply with the requirements R-6, R-7, R-8 and R-9 from operational commencement date until end of Contract.

R-1: Milestone Plan

Energistyrelsen

Carsten Niebuhrs Gade 43
1577 København V

T: +45 3392 6700
E: ens@ens.dk

www.ens.dk



For the CCS Activities, the Operator shall provide a Milestone Plan as part of its offer to the DEA.

The plan shall at minimum state the timing of the following milestones:

- a. All necessary contracts with sub-suppliers needed to establish and operate the Value Chain.
 - b. All necessary permits, approvals, and certificates needed to establish and operate the full Value Chain
 - c. Implementation of the technical design for capture, transport and storage of CO₂
- The Milestone Plan should also include permits, approvals, and certificates already obtained to establish and operate the full Value Chain
 - The Operator should for each milestone state the timing in the format DD.MM.YYYY

It will be an advantage if the Milestone Plan states a realistic time-frame regarding the achievement of the abovementioned milestones and reflects all necessary milestones needed in order to capture and store the Contracted Quantity in the year 2025.

The Operator must notify the DEA in case of changes to the Milestone Plan that affects the realisation of the Contracted Quantity.

The Milestone Plan shall not exceed XX pages.

R-2: Risk assessment matrix and Risk Management Plan

For the CCS Activities, the Operator shall provide a Risk assessment matrix and Risk Management Plan as part of its offer to the DEA.

The Risk assessment matrix and Risk Management Plan shall be in accordance with the following requirements:

Risk assessment matrix

- The Risk assessment matrix shall include criteria to grade risks into different significance levels.
- The Risk assessment matrix shall describe how risks in different significance levels are to be addressed.

Risk Management Plan

- The Risk Management Plan shall reflect relevant concepts, management and risk evaluation elements as established in ISO 31000 or an equivalent standard
- The Risk Management Plan shall encompass identification, analysis, evaluation, as well as mitigation planning and mitigation plan



implementation, and tracking in accordance with the pre-established risk levels.

- As a minimum, the Risk Management Plan shall establish the framework to address risks related to: Costs, financial risks, technical and operational risks, QHSE (Quality, Health, Safety and Environment), Change management

The Risk assessment matrix and Risk Management Plan shall not exceed **XX** pages.

R-3: Business model summary sheet

For the CCS Activities, the Operator shall provide a Business model summary sheet as part of its offer to the DEA.

The Business model summary sheet shall be in accordance with the following requirements:

- The project's viability, i.e., return of enough revenue to meet its financial obligations, including relevant sensitivity analyses
- The calculations of the Subsidy per tonne stored CO₂
- All relevant information regarding any applications on subsidy relating to CCS Activities submitted before the offer.

The Business model summary sheet shall not exceed **XX** pages.

R-4: Description of Technical Design

For the CCS Activities, the Operator shall provide a description of Technical Design as part of its offer to the DEA.

As a minimum, the Technical Design shall cover:

- Description of the design for delivering the captured CO₂ for storage (e.g. direct pipeline to onshore storage facility, offshore intermediate storage facility or near storage field, or ship transport to storage site)
- Description of the assessment of the related main technical risks and proposed risk mitigation measures (main technical risks and mitigation measures should also be reflected in the Risk management plan)
- Name of the plant or plants, address of the plant or plants, the name and registration number for the plant(s) production unit (in Danish: "Produktionsenhed" og "P-nummer").



The description of Technical Design shall not exceed **XX** pages.

R-5: Documentation for biogenic origin or atmospheric origin of the Offered Quantity

The Operator shall provide documentation for the biogenic or atmospheric origin of the Offered Quantity as part of its offer to the DEA.

Operators with emissions of both fossil and biogenic origin may e.g. satisfy this requirement by providing the DEA with documentation for emissions of biogenic origin that is compiled and verified in accordance with implementing regulation (EU) 2018/2066 and implementing regulation (EU) 2018/2067.

R-6: Obligation to comply with Sustainability Criteria

The Operator shall comply with current Sustainability Criteria according to national legislation and the Renewable energy directive (directive (EU) 2018/2001) and later amendments thereof concerning use of gaseous and solid biomass fuels for the production of electricity, heating or fuels, including biogas.

If the Operator does not comply with current Sustainability Criteria, the DEA is eligible to suspend subsidy payments until the Operator resumes compliance with current Sustainability Criteria.

R-7: Report on Delivered Quantity

The Operator shall capture, transport, and permanently store the Contracted Quantity every year of the contracting period.

The Operator shall with each invoice to the DEA deliver a Report on Delivered Quantity from operational commencement date until end of contract.

The Report on Delivered Quantity shall cover:

- The quantity stored within the invoicing period
- The quantity stored in the financial year
- The total quantity stored since contract signing
- Documentation of Accredited Third Party¹ verification² of the measurement system for CO₂ storage.

¹ Accredited Third Party means an entity accredited by an accreditation body to provide written assurance of compliance.

² Verification means the composition of a systematic approach towards concluding whether a system (tangible or not) complies with and lives up to pre-established requirements and/or standards.



The Operator shall ensure that the quantities of stored CO₂ are measured and reported accurately to the DEA by use of a measurement system for CO₂ storage reporting, based on the principles stated below:

- The reporting of the quantities shall have a maximum uncertainty of +/- 2.5%
- The Operator shall apply the CCS Directive's Annex II, (f) CO₂ volumetric and (g) CO₂ pressure and temperature and (h) chemical analysis.
- The Operator shall obtain and provide to the DEA a validation and Verification of the measurement system for CO₂ storage reporting from an Accredited Third Party
- From start of the operation phase the Operator shall ensure that the measurement system for CO₂ storage reporting is verified every year by an Accredited Third Party and provide documentation for the verification to the DEA no later than **XX**.
- If requested by DEA, the Operator must, at no extra cost to the DEA, change the measurement system for CO₂ storage reporting. Such changes may include changes of the methodology, system, components, procedures, etc. of the measurement system for CO₂ storage reporting. The Operator shall provide an updated description validated by an Accredited Third Party before changes are implemented, for the review and approval of the DEA.

R-8: Annual report on Verification of origin of Delivered Quantity

The Operator shall annually from operational commencement date until end of contract provide documentation to the DEA of Verification of origin of Delivered Quantity. The Operator shall provide this documentation no later than 30th March in the year after storage in an Annual Report on Verification of origin of stored quantity of CO₂.

The Operator shall ensure and document that the CO₂ captured and stored as part of the Contracted Quantity is of biogenic origin or atmospheric origin. Furthermore, the Operator shall ensure and document that the full Delivered Quantity of CO₂ has been captured at the point source(s) or direct air capture plant encompassed by the Contract.

In case the CO₂ captured and stored as part of the Contracted Quantity is physically mixed with CO₂ of other origin (i.e. either CO₂ of fossil origin from the Operator or CO₂ that originates from other CO₂ point sources) during e.g. transport and storage operations, the Operator must ensure and document the biogenic origin or atmospheric origin of the Delivered Quantity.



The documentation pertaining to the origin of Delivered Quantity of CO₂ shall be verified by an Accredited Third-Party Auditor annually from operational commencement date until end of Contract.

The Annual Report on Verification of origin of stored quantity of CO₂ shall cover:

- The method, design, implementation, and operations used to ensure accurate reporting on the origin of CO₂ captured and stored as part of the contracted quantity.
- Documentation of audit of the origin of the stored CO₂.

The principles of the Verification of origin of stored quantity of CO₂ are:

- The Operator shall apply an internationally recognized method for handling the origin of CO₂.
- If no such method exists for the Operator's business, the Operator may apply the principles applicable to biogas, biomass, or similar, i.e. the principles of the "Renewable Energy Directive" directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources and any rules that may amend or supersede these rules.
- If the aforementioned principles are not relevant for the Operator's business, the Operator should describe the selected method for handling the origination of CO₂.
- If requested by DEA, the Operator must, at no extra cost to the DEA, change the method for handling the origination of CO₂. Such changes may include changes to the method, design, implementation, and operations used to ensure accurate reporting.

R-9: Documentation of CO₂ storage site's regulatory compliance

For the CCS Activities, the Operator shall obtain, maintain, and provide documentation for Documentation of the CO₂ storage site's compliance with the CCS Directive.

The Operator shall prior to the Commercial Operation Date provide documentation of the storage site's compliance with the EU's CCS Directive (Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide) as implemented by the home country of the storage site.