

Baseline and Additionality Assessment

The baseline and additionality assessment is a requirement for eligibility under the Puro Standard. The assessment is made by the CO₂ Removal Supplier and verified by the independent 3rd party auditor. The assessment made in this document will be publicly available in the Puro Registry.

The Puro Standard only certifies durable carbon removals from the atmosphere that are net-negative and does not certify emissions reductions or avoidance. The CORCs (Carbon dioxide removal certificates), issued therefore represent a net carbon removal (1 tCO₂eq. net) from the atmosphere to a durable storage of minimum 100 years, from which are subtracted any supply-chain emissions from the project, any re-emissions over the guaranteed storage time, and any baseline removals taking place in a baseline scenarios.

The CO₂ Removal Supplier must in this assessment:

- **Define** and quantify all reasonable **baseline alternatives** to the proposed project activity to remove carbon with carbon financing. A baseline is a scenario that reasonably represents the natural and anthropogenic carbon removals to a permanent storage (storage durability over 100 years) in the absence of the carbon removal activity proposed by the CO₂ Removal Supplier. Although anthropogenic emissions may take place in the baseline scenarios, these emissions do not constitute a reference point for the quantification of CORCs (only the baseline removals do).
- Demonstrate **carbon additionality to the baseline**, meaning that the project must convincingly demonstrate that it is resulting to higher volumes of carbon removals than the likely baseline alternatives (question A1.).
- Demonstrate **regulatory additionality**, meaning that the project is not required by existing laws, regulations, or other binding obligations (question A2.).
- Demonstrate **financial additionality**, meaning that the CO₂ removals achieved are a result of carbon finance and that the project activity would not be economically viable without the carbon finance. The project activity can have substantial other non-carbon income sources, if the carbon finance through CORCs is significant for the economic viability of the project. To demonstrate financial additionality, CO₂ removal Supplier must provide the responses in this form and must be able to provide full project financials for verification.

Reference documents: [Puro Standard general Rules v3.1](#), rule 2.1.3 and [Additionality Assessment requirements](#)

Activity name	Activity description	Removals to storage (100+ yr) due to project activity (human activity)	Natural removals to storage (100+ yr)
Baseline: <i>Ethanol production without CCS</i>	<i>Ethanol production venting all CO₂ produced to the atmosphere.</i>	None	None
Alternative scenario 1: <i>None</i>		None / Some (please quantify)	None / Some (please quantify)
Alternative scenario 2: <i>None</i>		None / Some (please quantify)	None / Some (please quantify)
Alternative scenario 3: <i>None</i>		None / Some (please quantify)	None / Some (please quantify)
Project activity: <i>Ethanol production with CCS</i>	<i>Ethanol production with carbon capture and storage. CO₂ will be captured from the fermentation process, compressed, dehydrated, and cooled to be sequestered permanently in the Broom Creek Formation, a saline formation directly beneath our facility.</i>	Some 180,000 tonnes	None

A1. Does the project lead to higher volumes of carbon removal than the baseline?	Yes / No
The baseline does not include any carbon removal. All carbon is vented to the atmosphere.	Yes

A2. Is the project required by existing laws, regulations, or other binding obligations ?	Yes / No
Red Trail has a Federal Title V Permit to Operate (Permit Number T5-X12002), issued by the State of North Dakota Division of Air Quality, to vent all CO ₂ produced to the atmosphere. There are no current or pending state or federal requirements to reduce our CO ₂ emissions.	No

A3. Is the project first-of-its-kind?	Yes / No
Red Trail is the first facility permitted under state primacy in the United States to capture and store CO ₂ .	Yes

A4. Is the project dependent on carbon finance?	Yes / No
Being a first-of-its-kind project, risk capital was needed to be approved and deployed solely based on the return of investment being secured by carbon finance. Research for the project began in 2017 with the decision to move forward with obtaining the Class VI permit in 2020. These decisions were based on budgetary projections prepared using the assumption RTE would be able to capture carbon emissions and monetize those reductions.	Yes

A5. Does the project need a large investment to achieve carbon removal ?	Yes / No
Total investment for the project including buildings, equipment, contractor work and research was \$39,061,438.	Yes

A6. If investment is needed, is/was carbon finance considered when the investment decision is/was made?	Yes / No
Funding was secured based on the ability to capture carbon emissions and monetize those CO ₂ Removals.	Yes

Some projects may demonstrate additionality through simple cost analysis: this is applicable for projects where ex-ante investment analysis is not applicable, because a large investment is not needed. Example of such project could be charcoal producers starting to produce biochar for soil applications using existing equipment with minor adaptations.

Financial Additionality – large investment is not needed (Answer to A5 is “no”)	Project response
Please describe adaptations needed and the related cost items and include evidence in attachment.	
Please summarize the simple cost analysis here and provide additional calculation spreadsheet in attachment. All formulas used in the spreadsheet shall be readable to the verifier and all relevant cells shall be viewable and unprotected. Mark confidential when needed.	

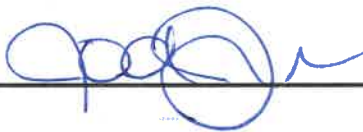
If large investment is needed, CO₂ Removal Suppliers can be guided by the CDM Methodological Tool 27 of the UNFCCC Clean Development Mechanism [“Investment Analysis”](#) to demonstrate financial additionality.

Financial Additionality – large investment is needed (Answer to A5 is “yes”)	Project response
Please show your calculations to determine the benchmark rate for either equity IRR or WACC, whichever you are using. Please include documentation of how the rate is suitable for the technology and region.	<p>Without carbon financing the project is not viable, and the IRR of the project would be negative.</p> <p>The project is a first of its kind engineered removals project. The project requires significant capital expenditure, operating expense, regulatory, and long-term monitoring for compliance.</p> <p>A confidential business feasibility study was completed for the CCS project by a 3rd party consulting firm. The study was shared with the verifier and auditing firms for verification of financial additionality. Carbon financing is required to support the operations of the carbon capture and sequestration unit. Conservative estimates were utilized in the study.</p> <p>45Q tax credits were reviewed during the feasibility study for the project. It was determined that 45Q tax credits are not sufficient incentive for the project investment. Red Trail Energy is taxed as a partnership and does not pay income tax at the corporate level. Thus, 45Q tax credits do not benefit the project at the entity level. 45Q tax credits do not have an impact on the amount of CO₂ sequestered by the firm and do not provide adequate assurance for continuous project operations of the carbon capture and sequestration unit into the future.</p>
Please state how CORC revenues change the expected IRR or NPV of the project.	A confidential business feasibility study was completed for the CCS project by a 3 rd party

	consulting firm. The study was shared with the verifier and auditing firms for verification of financial additionality. The project investment was made with carbon financing being critical to justify the investment and to support continuous operations. This project is not part of enhanced oil recovery and no additional revenues are associated with the carbon capture and storage unit.
Please conduct a sensitivity analysis in relation to the investment analysis and summarize the results here.	A confidential business feasibility study was completed for the CCS project by a 3 rd party consulting firm. The study was shared with the verifier and auditing firms for verification.
Please provide full calculation spreadsheet file as an attachment. All formulas used in the spreadsheet shall be readable to the verifier and all relevant cells shall be viewable and unprotected. Mark confidential when needed.	A confidential business feasibility study was completed for the CCS project by a 3 rd party consulting firm. The study was shared with the verifier and auditing firms for verification.

I hereby declare that all information provided is truthful and precise to the best of my knowledge.

11/13/2023

X 

11/13/2023, Richardton, ND :
Jodi Johnson, CEO, Red Trail Energy LLC