Frontier

Frontier CDR Purchasing

2023 Scientific Review Template

As a reminder, Frontier takes full responsibility for final purchase decisions. Your feedback helps us assess the strengths and weaknesses of a given proposal and decide how to best deploy Frontier capital.

This review template is organized to around the three lenses Frontier uses to make purchasing decisions:

- **Approach:** Does the carbon removal approach meet our target criteria?
- **Execution:** Can this team deliver on the proposal, given where the technology is today?
- **Portfolio:** Would this purchase help us build a diverse, risk-adjusted portfolio of carbon removal approaches?

Please note this is only a template; the actual review form where you will submit data is located here.

Purchasing Lens 1: Approach

Criterion	Description
Durability	Stores carbon permanently (>1,000 years)
Physical footprint	Takes advantage of carbon sinks and sources less constrained by arable land
Cost	Has a path to being affordable at scale (<$100 per ton)
Capacity	Has a path to being a meaningful part of the carbon removal solution portfolio (>0.5 gigatons per year)
Net negativity	Maximizes net removal of atmospheric carbon dioxide
Additionality	Results in net new carbon removed, rather than taking credit for removal that was already going to occur
Verifiability	Has a path to using scientifically rigorous and transparent methods for monitoring and verification
Safety and legality	Is working towards the highest standards of safety, compliance, and local environmental outcomes; actively mitigates risks and negative environmental and other externalities on an ongoing basis

In the first 3 questions below, we ask you to consider strengths and weaknesses of these criteria.

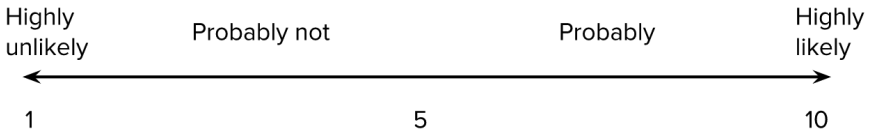
- You do not need to comment on every approach criterion, as some are more or less critical depending on the pathway.
    - For direct air capture, for example, we are not as concerned about Physical Footprint or Durability. But we are quite interested in Cost, Capacity, etc., so we would want you to focus your attention on those criteria.

    - For enhanced weathering, we are keen to understand your review particularly of verifiability (measuring removal and downstream leakage), ecosystem safety, and capacity (depending on the source mineralogy).
    - For ocean approaches, verifiability and cost, as well safety / monitoring ecosystem impacts.
    - For biomass-based approaches, capacity (how much CDR is possible based on availability of sustainable biomass and CDR efficiency), net negativity (minimizing anthropogenic emissions associated with the project), nutrient leaching, and opportunity cost of biomass use
- For Frontier's perspective on Verifiability and key uncertainties applicants' MRV approach should address, please check out the Verification Confidence Levels (VCLs) framework we released with CarbonPlan.

1. What are this application's strengths with respect to these approach criteria? Please specify the criterion and provide your reasoning. You do not need to include a comment for each criterion, though you are welcome to.

2. What are this application's weaknesses with respect to the approach criteria? Please specify the criterion and provide your reasoning. You do not need to include a comment for each criterion, though you are welcome to.

3. On a scale of 1-10, what is the likelihood this company's method for CDR could eventually achieve all of Frontier's CDR approach criteria listed above?



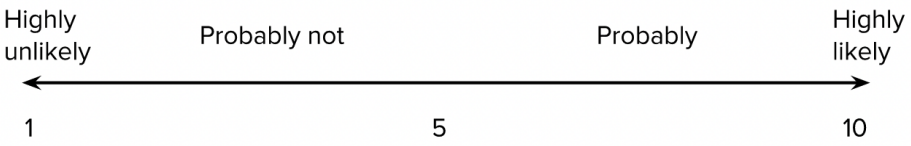
4. Setting this individual project aside, how does this sub-approach (e.g., electrochemical ocean alkalinity enhancement) compare to others within this pathway (e.g., ocean carbon removal) in your mind? We are trying to understand your perspective on how promising this specific approach is vs others you've seen.

Purchasing Lens 2: Execution

5. What are the strengths of this proposal with respect to execution? What are reasons to believe the applicants will be able to accomplish what they're proposing?

6. What are the weaknesses of this proposal with respect to execution? Why might the applicants not be able to execute what they're proposing?

7. On a scale of 1-10, what is the likelihood this company will be able to execute the project they're proposing?



Overall Recommendation

8. **Prepurchases only:** For CDR approaches with lower Verification Confidence Levels (VCLs) (e.g., biomass sinking, ocean alkalinity enhancement, enhanced weathering, etc.), has the applicant proposed a novel approach for reducing the MRV uncertainty associated with that pathway? If yes, please highlight that as a strength; if no, please highlight as a weakness. If the proposal has a high VCL (e.g., uses geologic sequestration), you can leave this blank.

9. What is the primary innovation being proposed here? Do you believe a purchase would be "catalytic" for the CDR field? We are trying to get a sense as to whether a purchase from this applicant would help us build a balanced portfolio of CDR purchases that supports project-level and field innovation, deliver tons to Frontier buyers, and maximize the climate returns of each dollar spent (our Lens 3: Portfolio).

10. Do you have any major questions about this project that were not addressed in the application? If so, please list them here so the applicant has a chance to respond.

The final three questions are for Frontier use only and **will not be shared with applicants**.

11. Should Frontier purchase from this applicant? (Yes/No/Maybe)

12. Please explain your rationale. For example:

- How compelling is this specific team and technology? Is this project novel and exciting relative to what others are working on?
- Does this project have a believable chance of being part of the global CDR mix in 2050?
- Are there any red flags?
- Could this project be game changing for the CDR field?

13. (Optional): Use the space below to include any comments you'd like to share with Frontier but not the applicant.