# Mote

## Carbon Removal Purchase Application

# General Application

**(The General Application applies to everyone, all applicants should complete this)**

Company or organization name

Mote, Inc.

Company or organization location (we welcome applicants from anywhere in the world)

Los Angeles, CA

Name of person filling out this application

Mac Kennedy, Josh Stolaroff, and Alison Chen

Email address of person filling out this application

[redacted]

Brief company or organization description

Converting woody biomass waste into carbon-negative hydrogen and geologically stored CO2.

## 1. Overall CDR solution (All criteria)

a. Provide a technical explanation of the proposed project, including as much specificity regarding location(s), scale, timeline, and participants as possible. Feel free to include figures and system schematics.

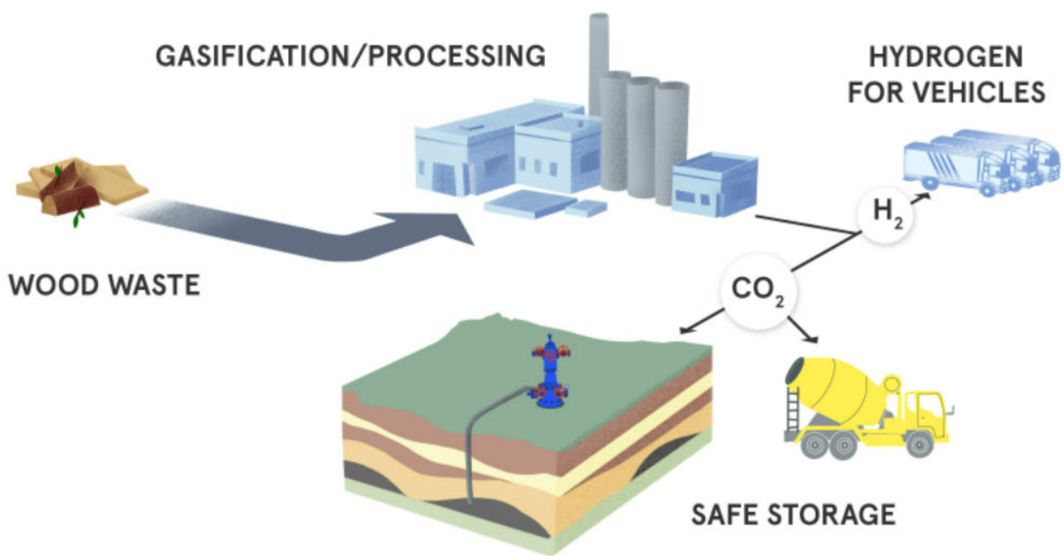
Mote, Inc. is planning to install a green field facility to produce carbon-negative hydrogen from woody biomass wastes, primarily agricultural residues. The publicly announced facility location is a generic site in western Kern County, California.

Mote, Inc. is a system integration technology company. Mote has partnered with a subsidiary of the Gas Technology Institute, for commercially-proven gasification equipment to convert biomass into synthesis gas (syngas). Syngas is a mixture of gases consisting primarily of hydrogen, carbon monoxide, and carbon dioxide. In a series of operations, the syngas is reacted, separated, and purified into hydrogen for sale as a transportation fuel and CO2 for storage. We recover the small amount of remaining ash and sell it as an additive for fertilizer.

Mote's patent-pending process recovers nearly all the carbon from woody biomass wastes. At the same time, our proprietary heat integration technologies make our plant substantially more energy-efficient.

By solving multiple problems at once, our solution creates several value streams, allowing us to sell clean hydrogen at market prices and lower the cost to remove carbon. Compared to other bioenergy strategies, we create the most value from a limited biomass resource. The trees and crops do the hard work of capturing carbon from air and turning sunlight into stored energy. We get the stored energy value in the form of hydrogen and keep nearly all the captured carbon out of the air.

Here is an article about Mote: [https://www.technologyreview.com/2022/02/15/1045317/fuel-plant-agricultural-beccs-waste-climate-change/](https://www.technologyreview.com/2022/02/15/1045317/fuel-plant-agricultural-beccs-waste-climate-change/).




b. What is your role in this project, and who are the other actors that make this a full carbon removal solution? *(E.g. I am a broker. I sell carbon removal that is generated from a partnership between DAC Company and Injection Company. DAC Company owns the plant and produces compressed $CO_2$. DAC Company pays Injection Company for storage and long-term monitoring.)*

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| Mote is a technology developer that designs, builds, owns, and operates biomass-to-hydrogen plants with biomass carbon removal and storage (BiCRS). Mote will partner with EPC firms and $CO_2$ storage partners. Mote will buy biomass, sell hydrogen and carbon removal credits. We produce compressed $CO_2$ for which we pay $CO_2$ storage partners for disposal and long-term monitoring. We hope to eventually sell our $CO_2$ for carbon-negative utilization. |

c. What are the three most important risks your project faces?

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| Mote's first commercial plant will be a first-of-a-kind deployment. Mote has proven through its Pre-Front End Engineering Design (Pre-FEED) that even though integrating the respective commercial units together for the first time has inherent risk, Mote's system is functional and scalable. Project finance is another challenge for us, as we will need to firm up our commercial letters of interest into the form of long-term offtake agreements. Schedule delays also pose a significant risk, as $CO_2$ geologic injection is nascent. We are working closely with the relevant regulators, and are derisking our permitting strategy by partnering with an experienced large, publicly-traded $CO_2$ storage solution provider. |

d. If any, please link to your patents, pending or granted, that are available publicly.

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| Patent applications are not yet published. |

e. Who's the team working on this? What's your team's unfair advantage in building this solution? What skills do you not yet have on the team today that you are most urgently looking to recruit?

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| Mac Kennedy, CEO, has broad judicial, legislative, and administrative expertise. Josh Stolaroff, CTO, helped develop Carbon Engineering's technologies over 15 years ago. David Mittelstadt, VP Resources, is the top expert on biomass markets in California. John Grabowski, Project Director, has experience taking multiple new billion-dollar energy systems from concept through commissioning. Alison Chen, Lead Process Engineer, was the lead process engineer on our gasification technology for seven years. Erika Pham, Senior Strategy Manager, has led the construction of hydrogen refueling stations and billion-dollar pipelines. We have unfair domain expertise. We are actively hiring for more process engineers and commercial management roles. |

## 2. Timeline and Durability (Criteria #4 and Criteria #5)

a. Please fill out the table below.

| | Timeline for Offer to Stripe |
|---|---|
| Project duration<br><br>*Over what duration will you be actively running your DAC plant, spreading olivine, growing and sinking kelp, etc. to deliver on your offer to Stripe? E.g. Jun 2022 - Jun 2023. The end of this duration determines when Stripe will consider renewing our contract with you based on performance.* | Our first commercial plant is estimated to be commissioned by July 2025 with a capacity of 323 $tCO_2$ per day. This plant will be operational for 20+ years.<br><br>**Offer to Stripe**: July 2025 |
| When does carbon removal occur?<br><br>*We recognize that some solutions deliver carbon removal during the project duration (e.g. DAC + injection), while others deliver carbon removal gradually after the project duration (e.g. spreading olivine for long-term mineralization). Over what timeframe will carbon removal occur?*<br><br>*E.g. Jun 2022 - Jun 2023 OR 100 years.* | Carbon removal occurs over the duration of plant lifetime from July 2025 through July 2045. |
| Distribution of that carbon removal over time<br><br>*For the time frame described above, please detail how you anticipate your carbon removal capacity will be distributed. E.g. "50% in year one, 25% each year thereafter" or "Evenly distributed over the whole time frame". We're asking here specifically about the physical carbon removal process here, NOT the "Project duration". Indicate any uncertainties, eg "We anticipate a steady decline in annualized carbon removal from year one into the out-years, but this depends on unknowns re our mineralization kinetics".* | Evenly distributed over 20 years. |
| Durability<br><br>*Over what duration you can assure durable carbon storage for this offer (e.g, these rocks, this kelp, this injection site)? E.g. 1000 years.* | Geologic storage, 1,000+ years |

b. What are the upper and lower bounds on your durability claimed above in table 2(a)?

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| Geologic storage: > 1,000 years |

c. Have you measured this durability directly, if so, how? Otherwise, if you're relying on the literature, please cite data that justifies your claim. *(E.g. We rely on findings from Paper_1 and Paper_2 to estimate permanence of mineralization, and here are the reasons why these findings apply to our system. OR We have evidence from this pilot project we ran that biomass sinks to D ocean depth. If biomass reaches these depths, here's what we assume happens based on Paper_1 and Paper_2.)*

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| Our CO2 storage partners have measured the durability directly by characterizing the caprock from various depths of the CO2 injection well. They have performed extensive modeling and experimental work on CO2 permeation in rock samples. |

d. What durability risks does your project face? Are there physical risks (e.g. leakage, decomposition and decay, damage, etc.)? Are there socioeconomic risks (e.g. mismanagement of storage, decision to consume or combust derived products, etc.)? What fundamental uncertainties exist about the underlying technological or biological process?

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| A detailed risk assessment has been performed on some of the key uncertainties associated with this injection. These risks include formation of sinkholes and impact of CO2 on nearby water resources. But these CO2 storage sites are located on very rural oil fields or similar desolate remote land, which are already sited for industrial use, so we will be able to minimize local impacts. |

e. How will you quantify the actual permanence/durability of the carbon sequestered by your project? If direct measurement is difficult or impossible, how will you rely on models or assumptions, and how will you validate those assumptions? *(E.g. monitoring of injection sites, tracking biomass state and location, estimating decay rates, etc.)*

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| Injection of CO2 in subsurface aquifers has been safely done by the energy industry for decades. Our CO2 storage partner has deep expertise monitoring CO2 injection. |

## 3. Gross Capacity (Criteria #2)

a. Please fill out the table below. **All tonnage should be described in metric tonnes here and throughout the application.**

| | Offer to Stripe (metric tonnes $CO_2$) over the |
|---|---|

| | **timeline detailed in the table in 2(a)** |
|---|---|
| Gross carbon removal<br><br>Do not subtract for embodied/lifecycle emissions or permanence, we will ask you to subtract this later | 4,000 $tCO_2$ for one month.<br><br>**Offer to Stripe:** July 2025 = 4,000 $tCO_2$ |
| If applicable, additional avoided emissions<br><br>e.g. for carbon mineralization in concrete production, removal would be the $CO_2$ utilized in concrete production and avoided emissions would be the emissions reductions associated with traditional concrete production | 2,254 $tCO_2$ for one month. |

b. Show your work for 3(a). How did you calculate these numbers? If you have significant uncertainties in your capacity, what drives those? *(E.g. This specific species sequesters X $tCO_2$/t biomass. Each deployment of our solution grows on average Y t biomass. We assume Z% of the biomass is sequestered permanently. We are offering two deployments to Stripe. X*Y*Z*2 = 350 $tCO_2$ = Gross removal. OR Each tower of our mineralization reactor captures between X and Y tons $CO_2$/yr, all of which we have the capacity to inject. However, the range between X and Y is large, because we have significant uncertainty in how our reactors will perform under various environmental conditions)*

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| Our initial commercial facility captures 323 tpd of CO2 for sequestration. This initial commercial deployment is one-third the full scale. The facility is designed for a plant life of 20 years.<br><br>323 tpd $CO_2$ * 30 days = 9690 $tCO_2$<br><br>Of which 4000 $tCO_2$ will be offered to Stripe.<br><br>The ratio of negative emissions to avoided emissions used is derived from the *Getting to Neutral* report (Baker et al., 2020). |

c. What is your total overall capacity to sequester carbon at this time, e.g. gross tonnes / year / (deployment / plant / acre / etc.)? Here we are talking about your project / technology as a whole, so this number may be larger than the specific capacity offered to Stripe and described above in 3(b). We ask this to understand where your technology currently stands, and to give context for the values you provided in 3(b).

Up to 110,000 $tCO_2$/yr for our first deployment. Then up to 314,000 $tCO_2$/yr for each subsequent plant. We are planning to develop five plants over the next five years. If fully deployed, our technology can remove 0.5 Gt of $CO_2$ per year in the U.S.

d. We are curious about the foundational assumptions or models you use to make projections about your solution's capacity. Please explain how you make these estimates, and whether you have ground-truthed your methods with direct measurement of a real system (e.g. a proof of concept experiment, pilot project, prior deployment, etc.). We welcome citations, numbers, and links to real data! *(E.g. We assume our sorbent has X absorption rate and Y desorption rate. This aligns with [Sorbent_Paper_Citation]. Our pilot plant performance over [Time_Range] confirmed this assumption achieving Z $tCO_2$ capture with T tons of sorbent.)*

The capacity is based on utilizing the full amount of economically available biomass waste and assumptions from *Transport Cost for Carbon Removal Projects With Biomass and CO2 Storage* (Stolaroff et al., 2021).

e. Documentation: If you have them, please provide links to any other information that may help us understand your project in detail. This could include a project website, third-party documentation, project specific research, data sets, etc.

- "*Getting to Neutral: Options for Negative Carbon Emissions in California*."
- "Transport Cost for Carbon Removal Projects With Biomass and CO2 Storage"
-

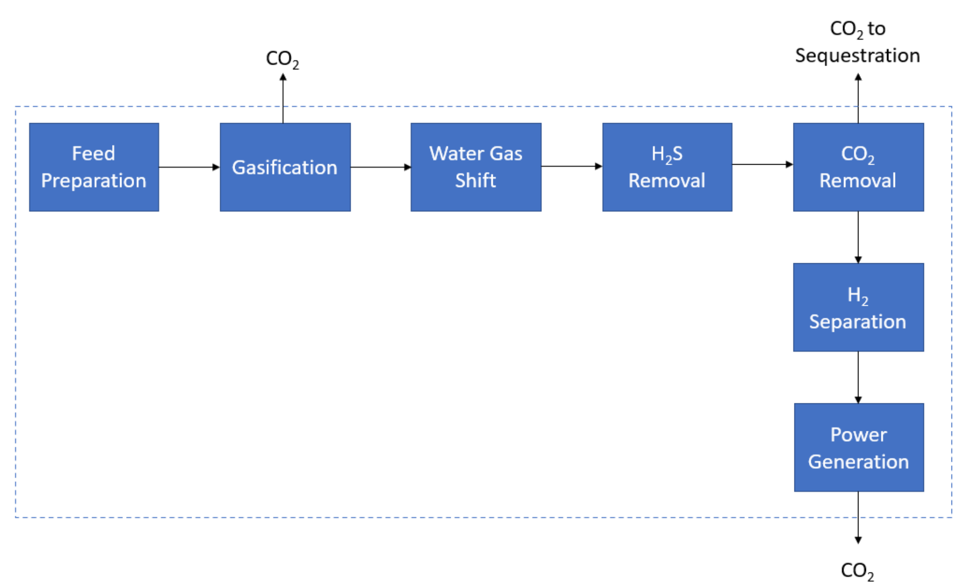
## 4. Net Capacity / Life Cycle Analysis (Criteria #6 and Criteria #8)

a. Please fill out the table below to help us understand your system's efficiency, and how much your lifecycle deducts from your gross carbon removal capacity.

| | **Offer to Stripe (metric tonnes $CO_2$)** |
|---|---|
| Gross carbon removal | 4,000 metric tonnes of $CO_2$ |

| | |
|---|---|
| Gross project emissions | 1,092 metric tonnes of $CO_2$ |
| Emissions / removal ratio | 0.27 |
| Net carbon removal | 2,908 metric tonnes of $CO_2$ |

b. Provide a carbon balance or "process flow" diagram for your carbon removal solution, visualizing the numbers above in table 4(a). Please include all carbon flows and sources of energy, feedstocks, and emissions, with numbers wherever possible *(E.g. see the generic diagram below from the [CDR Primer](), [Charm's application]() from 2020 for a simple example, or [CarbonCure's]() for a more complex example).* If you've had a third-party LCA performed, please link to it.




c. Please articulate and justify the boundary conditions you assumed above: why do your calculations and diagram include or exclude different components of your system?

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| Emission sources include CO2 from Gasification and CO2 in flue gas from Power Generation. A small amount of CO2 is recycled within the boundary and excluded from the calculation. Gross carbon removal is the amount of CO2 ready for sequestration. |

d. Please justify all numbers used in your diagram above. Are they solely modeled or have you measured them directly? Have they been independently measured? Your answers can include references to peer-reviewed publications, e.g. Climeworks LCA paper.

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| All of the numbers were provided by Fluor Corporation, an American multinational engineering and construction firm. |

e. If you can't provide sufficient detail above in 4(d), please point us to a third-party independent verification, or tell us what an independent verifier would measure about your process to validate the numbers you've provided.

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| Fluor Corporation |

## 5. Learning Curve and Costs (Backward-looking) (Criteria #2 and #3)

We are interested in understanding the learning curve of different carbon removal technologies (i.e. the relationship between accumulated experience producing or deploying a technology, and technology costs). To this end, we are curious to know how much additional deployment Stripe's procurement of your solution would result in. (There are no right or wrong answers here. If your project is selected we may ask for more information related to this topic so we can better evaluate progress.)

a. Please define and explain your unit of deployment. *(E.g. # of plants, # of modules)*

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| Our first commercial plant is estimated to be commissioned by July 2025. |

b. How many units have you deployed from the origin of your project up until today? Please fill out the table below, adding rows as needed. Ranges are acceptable.

| Year | Units deployed (#) | Unit cost ($/unit) | Unit gross capacity ($tCO_2$/unit) | Notes |
|---|---|---|---|---|
| 2022 | 0 | N/A | N/A | *<50 words* |
| 2021 | 0 | N/A | N/A | *<50 words* |
| 2020 | 0 | N/A | N/A | *<50 words* |
| … | | | | |

c. Qualitatively, how and why have your deployment costs changed thus far? *(E.g. Our costs have been stable because we're still in the first cycle of deployment, our costs have increased due to an unexpected engineering challenge, our costs are falling because we're innovating next stage designs, or our costs are falling because with larger scale deployment the procurement cost of third party equipment is declining.)*

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| N/A |

d. How many additional units would be deployed if Stripe bought your offer? The two numbers below should multiply to equal the first row in table 3(a).

| # of units | Unit gross capacity ($tCO_2$/unit) |
|---|---|
| 4 | Up to 110,000 $tCO_2$/yr for our first deployment. Then up to 314,000 $tCO_2$/yr for each subsequent plant.<br><br>We are planning to develop five plants over the next five years. |

## 6. Cost and Milestones (Forward-looking) (Criteria #2 and #3)

We are open to purchasing high cost carbon removal today with the expectation the cost per ton will rapidly decline over time. We ask these questions to get a better understanding of your potential growth and the inflection points that shape your cost trajectory. There are no right or wrong answers, but we would prefer high and conservative estimates to low and optimistic. If we select you for purchase, we'll expect to work with you to understand your milestones and their verification in more depth. If you have any reservations sharing the information below in the public application format, please contact the Stripe team.

a. What is your cost per ton of $CO_2$ today?

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| $420/$tCO_2$ (modeled) |

b. Help us understand, in broad strokes, what's included vs excluded in the cost in 6(a) above. We don't need a breakdown of each, but rather an understanding of what's "in" versus "out." Consider describing your CAPEX/OPEX blend, non-levelized CAPEX costs, assumptions around energy costs, etc.

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| This includes the entire lifecycle of the project, including capex, opex, and revenue from selling hydrogen at a fossil-competitive price and without any government incentives. This is for our demonstration-scale facility and baseline (non-proprietary) process design. We plan to |

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| improve this both with near-term engineering and with larger-scale facilities. |

c. How do you expect your costs to decline over time? Specifically, what do you estimate your cost range will be as you reach megaton and then gigaton scale? We recognize that at this point, these are speculative and directional estimates, but we would like to understand the shape of your costs over time.

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| Cost at multi-megaton scale is estimated at $40-60/ton. |

d. Where are the primary areas you expect to be able to achieve cost declines? E.g., what are the primary assumptions and sensitivities driving your cost projection? What would need to be true for a long-term cost of <$100/ton to be achievable with your technology? (i.e., you are able to negotiate an x% reduction in CAPEX at scale and purchase renewable electricity at $y/kWh)

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| CAPEX reduction through 1) better economy of scale for our full size plants, 2) competitive bids for packaged equipment such as compressors, 3) cost reduction with modularization. |

e. In a worst case scenario, what would your range of cost per ton be? We've been doing a lot of purchasing over the past few years and have started to see a few pieces that have tripped people up in achieving their projected cost reductions: owned vs leased land, renewable electricity cost, higher vendor equipment costs, deployment site adjustments, technical performance optimization, supporting plant infrastructure, construction overruns, etc. As a result, we'll likely push on the achievability of the cost declines you've identified to understand your assumptions and how you've considered ancillary costs. We would love to see your team kick the tires here, too.

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| The price today is the worst case. |

f. List and describe **up to three** key upcoming milestones, with the latest no further than Q2 2023, that you'll need to achieve in order to scale up the capacity of your approach.

| Milestone # | Milestone description | Why is this milestone important to your ability to scale? (200 words) | Target for achievement (eg Q4 2021) | How could we verify that you've achieved this milestone? |
|---|---|---|---|---|
| 1 | Revised pre-FEED plant design | Reduce capital cost and improve energy | Q3 2022 | Basis of Design document (as |

| | | | | |
|---|---|---|---|---|
| | | efficiency prior to FEED stage – makes the project more financable. | | needed for next EPC phase) |
| **2** | FEED study completed | So EPC can build the build | Q4 2022 | We will share it with you |
| **3** | Final Investment Decision on first facility | So we can start operations in 24 months | Q1 2023 | Public announcement |

i. How do these milestones impact the total gross capacity of your system, if at all?

| Milestone # | Anticipated total gross capacity prior to achieving milestone (ranges are acceptable) | Anticipated total gross capacity after achieving milestone (ranges are acceptable) | If those numbers are different, why? (100 words) |
|---|---|---|---|
| **1** | N/A | | *<100 words* |
| **2** | | | *<100 words* |
| **3** | | | *<100 words* |

g. How do these milestones impact your costs, if at all?

| Milestone # | Anticipated cost/ton prior to achieving milestone (ranges are acceptable) | Anticipated cost/ton after achieving milestone (ranges are acceptable) | If those numbers are different, why? (100 words) |
|---|---|---|---|
| **1** | 420 | 290 | *Reduced CapEx from process improvements* |
| **2** | *290* | *250* | *Improved plant efficiency from detailed engineering* |
| **3** | *250* | *250* | |

h. If you could ask one person in the world to do one thing to most enable your project to achieve its ultimate potential, who would you ask and what would you ask them to do?

Having a robust price on carbon (i.e., ~$100/tCO2) would give us the reliability and economics to immediately deploy almost anywhere.

i. Other than purchasing, what could Stripe do to help your project?

Stripe continuing to lead the way in the voluntary carbon removal market. Keeping a high bar on the durability of CO2 removal is super helpful for us. Continuing to support the development of strong carbon removal policy at the state and federal level. Our association with Stripe will enable Mote to scale much faster and attract follow-on voluntary carbon removal purchases.

## 7. Public Engagement (Criteria #7)

In alignment with Criteria 7, Stripe requires projects to consider and address potential social, political, and ecosystem risks associated with their deployments. Projects with effective public engagement tend to do the following:

- Identify key stakeholders in the area they'll be deploying
- Have mechanisms to engage and gather opinions from those stakeholders and take those opinions seriously, iterating the project as necessary.

The following questions are for us to help us gain an understanding of your public engagement strategy and how your project is working to follow the White House Council on Environmental Quality's draft guidance on responsible CCU/S development. We recognize that, for early projects, this work may be quite nascent, but we are looking to understand your early approach.

a. Who have you identified as your external stakeholders, where are they located, and what process did you use to identify them? Please include discussion of the communities potentially engaging in or impacted by your project's deployment.

Currently our key stakeholders are potential commercial partners (e.g., hydrogen customers, EPCs, CO2 storage partners, and process equipment vendors). We frequently engage with nonprofit environmental groups and our government regulators to better understand permitting strategies for deploying our technology. We are engaging with the local Kern County community (e.g., Cal State Bakersfield), where we intend to deploy our first commercial project.

b. If applicable, how have you engaged with these stakeholders and communities? Has this work been performed in-house, with external consultants, or with independent advisors? If you do have any reports on public engagement that your team has prepared, please provide. *See Project Vesta's community engagement and governance approach as an example.*

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| We have engaged our stakeholders through in-house resources, external consultants, and advisors. |

c. If applicable, what have you learned from these engagements? What modifications have you already made to your project based on this feedback, if any?

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| We realized early on that $CO_2$ storage is an existential priority for large energy companies, so we decided to partner with them for co-locating our projects and storing $CO_2$ at their hubs across the globe. |

d. Going forward, do you have changes planned that you have not yet implemented? How do you anticipate that your processes for (a) and (b) will change as you execute on the work described in this application?

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| We want to modularize our system and make it as cookie cutter as possible. Initially, many parts of our plants will inevitably be "stick-built" but we plan to work aggressively with stakeholders to allow us to deploy more widely and much faster. We also plan to work with more external consultants on building support among environmental groups for carbon-negative $CO_2$ storage projects, in contrast to projects that extend the life of fossil fuels. |

## 8. Environmental Justice (Criteria #7)

a. What are the potential environmental justice considerations, if any, that you have identified associated with your project? Who are the key stakeholders?

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| Mote fights environmental racism by significantly improving local air quality. We address environmental justice concerns by developing and deploying technology that enables production of waste-derived carbon-negative hydrogen. We help local communities by hiring workers formerly employed in highly-polluting fossil fuel industries. |

b. How do you intend to address any identified environmental justice concerns?

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| Our business addresses environmental justice concerns by design; we are putting an end to open air burning, and removing polluting diesel trucks and other fossil fuel infrastructure. We have engaged experts to provide us with environmental justice strategies based on our exact local concerns. We will work with other local experts as we scale into different geographies. |

## 9. Legal and Regulatory Compliance (Criteria #7)

a. What legal opinions, if any, have you received regarding deployment of your solution?

Our CO2 storage partner has already filed Class VI EPA injection permits. Our sites are already zoned for industrial use. We have been encouraged by the support of our relevant regulators. We plan to actively engage the local community to build community support for our plants.

b. What domestic permits or other forms of formal permission do you require, if any, to engage in the research or deployment of your project? Please clearly differentiate between what you have already obtained, what you are currently in the process of obtaining, and what you know you'll need to obtain in the future but have not yet begun the process to do so.

We still need to do an Environmental Impact Review and file for air and water permits. There are nominal ancillary permitting requirements in addition to these primary three outstanding ones.

c. Is your solution potentially subject to regulation under any international legal regimes? If yes, please specify. Have you engaged with these regimes to date?

No, but we do have multiple projects in our pipeline in countries outside the U.S.

d. In what areas are you uncertain about the legal or regulatory frameworks you'll need to comply with? This could include anything from local governance to international treaties. For some types of projects, we recognize that clear regulatory guidance may not yet exist.

Whether forest biomass will count as RINS-eligible feedstock is an important legal decision. CPUC creating a biomethane standard will have a consequential, positive effect on us.

e. Has your CDR project received tax credits from any government compliance programs to-date? Do you intend to receive any tax credits during the proposed delivery window for Stripe's purchase? If so, which one(s)? (50 words)

No. We will not receive any tax credits during the delivery window that would not be additional to Stripe's purchase.

## 10. Offer to Stripe

**This table constitutes your offer to Stripe, and will form the basis of our expectations for contract discussions if you are selected for purchase.**

| | Offer to Stripe |
|---|---|
| **Net carbon removal**<br>*metric tonnes $CO_2$* | 4,000 metric tonnes of $CO_2$ |
| **Delivery window**<br>*at what point should Stripe consider your contract complete?* | July 2025 |
| **Price** (\$/metric tonne $CO_2$)<br>***Note on currencies:*** *while we welcome applicants from anywhere in the world, our purchases will be executed exclusively in USD (\$). If your prices are typically denominated in another currency, please convert that to USD and let us know here.* | \$250/metric tonne $CO_2$ |

# Application Supplement: Biomass

## (Only fill out this supplement if it applies to you)

### Feedstock and Physical Footprint (Criteria #1)

1. What type of biomass does your project rely on?

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| Woody biomass derived from agricultural orchard waste and urban forestry / wood recovery programs. |

2. Are you growing that biomass yourself, or procuring it, and from whom?

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| Procuring it from bankable entities in or near Kern County. |

3. Please fill out the table below regarding your feedstock's physical footprint. If you don't know (e.g. you procure your biomass from a seller who doesn't communicate their land use), indicate that in the table.

| | Area of land or sea ($km^2$) in 2021 | Competing/existing project area use (if applicable) |
|---|---|---|
| Feedstock cultivation | N/A (procuring waste biomass) | N/A |
| Processing | 0.05 $km^2$ for raw feed receiving, handling, and drying. | N/A |
| Long-term Storage | Thirty (30) days of raw feed biomass storage is maintained at the facility. | N/A |

4. Imagine, hypothetically, that you've scaled up and are sequestering 100Mt of $CO_2$/yr. Please project your footprint at that scale (we recognize this has significant uncertainty, feel free to provide ranges and a brief description).

| | Projected # of $km^2$ enabling 100Mt/yr | Projected competing project area use (if applicable) |
|---|---|---|

| | | |
|---|---|---|
| Feedstock cultivation | There is sufficient supply of feedstock in California alone for Mote to sequester 84Mt of $CO_2$/yr. | N/A |
| Processing | 30 $km^2$ for raw feed receiving, handling, and drying. | N/A |
| Long-term Storage | Thirty (30) days of raw feed biomass storage is maintained at each facility. | N/A |

## Permanence, Additionality, Ecosystem Impacts (Criteria #4, #6, and #7)

5. How is your biomass processed to ensure its permanence? What inputs does this process require (e.g. energy, water) and how do you source these inputs? (You should have already included their associated carbon intensities in your LCA in Section 6.)

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| Our biomass is processed before we get it. We do a little further secondary processing (additional drying and grinding). |

6. (Criteria 6) If you didn't exist, what's the alternative use(s) of your feedstock? What factors would determine this outcome? *(E.g. Alternative uses for biomass include X & Y. We are currently the only party willing to pay for this biomass resource. It's not clear how X & Y would compete for the biomass resources we use. OR Biomass resource would not have been produced but for our project.)*

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| Pile-burned, decomposed, or landfilled. |

7. We recognize that both biomass production and biomass storage can have complex interactions with ecological, social, and economic systems. What are the specific negative impacts (or important unknowns) you have identified, and what are your specific plans for mitigating those impacts (or resolving the unknowns)? *(200 words)*

| |
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| We are committed to promoting food security, rural livelihoods, biodiversity conservation and other important values. We are virtually eliminating all air pollution from existing biomass management strategies. |

8. Biomass-based solutions are currently being deployed around the world. Please discuss the merits and advantages of your solution in comparison to other approaches in this space.

Unlike conventional BECCS or liquid biofuel projects, Mote gets both the carbon and energy storage value chains — this is a step change in economics. Also pyrolysis is not as scalable, economical, or efficient as gasification.

# Application Supplement: Geologic Injection

### (Only fill out this supplement if it applies to you)

## Feedstock and Use Case (Criteria #6 and 8)

1. What are you injecting? Gas? Supercritical gas? An aqueous solution? What compounds other than C exist in your injected material?

Purified, compressed $CO_2$ gas.

2. Do you facilitate enhanced oil recovery (EOR), either in this deployment or elsewhere in your operations? If so, please briefly describe. Answering Yes will not disqualify you.

No.

## Throughput and Monitoring (Criteria #2, #4 and #5)

3. Describe the geologic setting to be used for your project. What is the trapping mechanism, and what infrastructure is required to facilitate carbon storage? How will you monitor that your permanence matches what you described in Section 2 of the General Application?

$CO_2$ will remain underneath the caprock the $CO_2$ is being injected beneath. Our $CO_2$ storage partner will monitor our permanence.

4. For projects in the United States, for which UIC well class is a permit being sought (e.g. Class II, Class VI, etc.)?

Class VI permits already filed.

5. At what rate will you be injecting your feedstock?

| |
|---|
| 13.5 $tCO_2$/hour |

## Environmental Hazards (Criteria #7)

6. What are the primary environmental threats associated with this injection project, what specific actions or innovations will you implement to mitigate those threats, and how will they be monitored moving forward?

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|---|
| Our $CO_2$ storage partner will assure we are not contaminating groundwater resources or triggering injection-induced seismicity. |

7. What are the key uncertainties to using and scaling this injection method?

| |
|---|
| CCS is a well-understood, bankable injection method. |