



SUMMARY OF COMMENTS & RESPONSES REFORESTATION FORECAST METHODOLOGY VERSION 2.0

Four sets of comments were received during the public comment period for the Climate Forward draft Reforestation Forecast Methodology version 2.0. Staff provided responses to the comments below. The public comment period for the draft methodology took place from January 20 through February 21, 2022.

The comment letters can be viewed on Climate Forward's website at <https://climateforward.org/program/methodologies/reforestation/>.

COMMENTS RECEIVED BY:

1. Yale Carbon Containment Lab (**CC Lab**)
2. DroneSeed Co (**DroneSeed Co**)
3. Minnesota Association of Resource Conservation and Development Councils (**MARCD**)
4. The Climate Trust (**TCT**)

General Comments

1. This Methodology is already a market leader in incentivizing reforestation by allowing landowners to recuperate upfront planting costs within a few years, rather than after lengthy verification periods. With minor amendments, this Methodology could become the first offset methodology to successfully incentivize healthier, more resilient reforestation techniques in high-stress ecosystems, and help avoid complete project reversals by reducing the risk of severe wildfire. **(CC Lab)**

RESPONSE: The Reserve would like to thank the Yale Carbon Containment Lab for reviewing the updates to the methodology and for providing constructive feedback. Please see our responses below to your more detailed comments.

2. The changes incorporated into version 2.0 will help Project Proponents interest and enlist eligible participants to carry-out Climate Forward Reforestation projects. We hope the draft will become the next version. **(MARCD)**

RESPONSE: We thank the Minnesota Association of Resource Conservation and Development Councils for your review and support of the updates to the methodology.

Section 2.1 Project Definition

3. The revision in Section 2.1 to allow for persons with relevant educational and professional experience similar to those required for professional foresters and ecologists as described in the glossary to sign a Reforestation Project Goals Form is positive. **(MARCD)**

RESPONSE: Thank you for your comment. It was brought to our attention that there are many resource professionals with relevant qualifications similar to those intended to be captured by our definitions of professional foresters and ecologists in the methodology but that simply do not meet those exact definitions. The clarifying provision allows such properly qualified individuals, including many who work for Resource Conservation and Development Councils, Resource Conservation Districts, Non-Profit Collaborative Groups, and similar organizations, to fulfill the role envisioned for the professional foresters and ecologists who are already eligible.

Section 3.3.3 Enhancement Payments

4. I hope that the reserve would recognize at this time most Climate Forward reforestation projects on Non-Industrial Private Forestland (NIPF) will not likely happen without Enhancement payments. Future FMU demand and value increases would potentially change this, but that's not the case at this time. **(MARCD)**

RESPONSE: We thank you for your comment and appreciate the concern expressed. We certainly recognize the importance of enhancement payments in providing critical funding to support the implementation of reforestation activities in many instances. Our primary concern is that such funding will make such activities non-additional from a climate mitigation project perspective, i.e., reforestation would have occurred even without revenue from any sales of FMUs. However, we recognize how payments can help make reforestation possible, especially among smaller landowners, and do not expressly prohibit stacking of such payments with projects. As stated in the methodology, we encourage anyone

considering stacking enhancement payments with a project to reach out to the Reserve for guidance.

Section 3.8.1 Tonne-Tonne Accounting

5. The changes to the required terms of the easement are a positive change from the prior version and recognize the financial uncertainty imposed on the easement holder. However, we question the need for the buffer pool contribution if reforestation is mandatory, as it seems like the project owner is getting penalized twice. Please consider the use of the Buffer Risk Pool instead to deal with this risk. We also note that State laws govern whether or not reforestation is required after a wildfire event, and if salvage logging occurs post-wildfire (as is allowed by the required terms of the easement), then reforestation is required (in Oregon). Therefore, the easement requirements should only apply when reforestation is not legally required. **(DroneSeed Co)**

RESPONSE: We thank you for your comment and are encouraged by your support of the proposed changes around easement terms required under the methodology. We appreciate the concern that requiring reforestation in the event of a disturbance meeting certain conditions after the project has been established and requiring contribution to the Permanence Risk Pool appears to be doubly penalizing the project proponent. However, even with easement terms that require reforestation, there is still a risk that any carbon stocks released during a disturbance event would be recovered during a timeframe not fully relevant to the crediting period for the associated project and the permanence period associated with the FMUs issued. Furthermore, as your comment regarding the Permanence Risk Pool also highlights, there is a risk associated with future seed/seedling availability, suggesting challenges to the ability to reforest a site after a future natural disturbance, even if reforestation is required by the easement. To maintain a conservative crediting approach, we still require a Permanence Risk Pool contribution by projects employing easements with the required terms, but that contribution is lowered from a maximum of 10% to a maximum of just 5%.

Additionally, with the forthcoming incorporation of programmatic monitoring efforts by the Reserve, we would need to be able to address any wildfires detected on project sites in the future, even those with easements.

6. The clarity and flexibility provided in this section using Table 3.1 along with Section 5.2.1 is positive. **(MARCD)**

RESPONSE: Thank you for your comment. Our intent was to enable the updated methodology to allow for a broader set of project conditions and configurations to participate than under the previous version of the methodology, including with respect to projects wishing to employ conservation easements as a way to extend the crediting period and/or become eligible for the application of tonne-tonne accounting.

Section 3.8.3 Conservative Crediting and Permanence Risk Pool

7. The Permanence Risk Pool is intended to provide insurance in case of natural disturbance, so we suggest striking the requirement for reforestation in easement terms. As a compromise, we suggest a requirement that the Forest Owner hold seed (at an approved

seed storage facility) for the appropriate seed zone and elevation for the duration of the easement as insurance in the event reforestation is necessary. This creates proactive steps to ensure seed supply in diverse seed zones, incentivize new seed collection efforts, and the creation of infrastructure and record-keeping for long-term cold storage of critical seed banks. Another alternative, previously discussed, is to permit buffer credits to be sold (rather than retired) to fund additional reforestation. **(DroneSeed Co)**

RESPONSE: Thank you for your comment and for raising some intriguing ideas. Please see the above comments regarding the reasoning for requiring reforestation in the conservation easement terms while also requiring Permanence Risk Pool contributions. Additionally, we recognize the risk you point out regarding future seed stock availability and contributing to such a storage facility is a laudable suggestion for addressing a critical potential weak point in future reforestation efforts. However, it would not directly address the recovery of the carbon stocks emitted during a natural disturbance. Furthermore, seed storage facilities would need to be held to certain standards to provide assurances regarding their long-term functionality and ability to provide seed stock when needed, and those standards are not currently defined.

The concept of selling buffer pool credits is also very interesting. However, it is unclear if there would be a market for such credits and whether the prices garnered would be sufficient to reforest a disturbed site. This is something we may wish to consider as a programmatic option for sequestration-based projects in the future, but not at this time.

Section 5.1.3 Shrub Carbon

8. The updated Methodology includes a requirement to assess baseline shrub cover by collecting pre-project photos before any site preparation or planting has occurred. This requirement will jeopardize the eligibility of many potential projects. The Climate Trust often partners with organizations that have already begun some level of project activity before becoming aware of the still new opportunities through Climate Forward. For example, partners that work with TCT often initiate site preparation activities such as salvage logging and slash burning soon after a wildfire event occurs and prior to exploring a Climate Forward reforestation project. Therefore, the requirement for pre-planting photos would unfortunately exclude many of the very projects that Climate Forward is seeking to incentivize. Perhaps where reforestation is being done after a wildfire event, the shrub baseline can be assumed to be *de minimis* as site preparation is taking place after most of the shrub layer has been removed by fire. In such instances, baseline shrub carbon stocks are almost certainly lower than project stocks and it would be conservative to exclude them, as discussed in Section 5.2.2 of the methodology. This could be determined using post-fire aerial imagery or deduced through fire intensity. Recent aerial imagery is acceptable to the Reserve when determining shrub cover for the calculation of combustion emissions associated with machinery use in site preparation (Section 5.5.1). It would be preferable to either estimate shrub carbon using a similar approach with aerial imagery or to assume that shrub stock changes are *de minimis* and covered by the conservative nature of project estimates. **(TCT)**

RESPONSE: Thank you for your comment. We understand the challenges associated with the timing required for installing photo plots to capture pre-project conditions. We anticipate that for most projects this will not be a problem. However, to provide greater flexibility to projects and improve confirmation efficiency, we have replaced the photo plot approach with a remote-sensing based approach in line with your suggestion. The approach will require an

estimate of canopy cover (which can be based on the same analysis as for the 'before' image for the mobile combustion emissions estimate in Section 5.5.1) and the application of a ratio estimator that indicates the carbon stocking per acre of shrub cover based on a determination of the average shrub height made by the professional forester or ecologist associated with the project. Please see Section 5.1.3 of the final updated methodology, as well as the associated version of the Reforestation Communities Data File, which contains the ratio estimators that are to be applied to estimate baseline shrub stocking.

9. Clarify how the project proponent needs to demonstrate the lack of shrub cover within the project area. Would this again be with random photo plots? Can the same photo plots be used as were taken to assess naturally regenerating seedlings? **(DroneSeed Co)**

RESPONSE: Thank you for your feedback. Projects proponents would be able to use the same photo plots as were taken to assess baseline natural regeneration or remote sensing imagery captured within several months prior to the project start date.

Section 5.2.4 Determining Gross Forecasted GHG Removals

10. The current Methodology already allows for relatively low-density planting (40 trees per acre), but it assumes uniform planting density across the project area. We recognize that solely planting in clusters or islands would be insufficient to consider the project area fully reforested under any offset methodology. A baseline of at least 40 trees per acre could be required on all project acres, while allowing for stands within the project area to be planted at locally higher densities. Adding this option would require two changes: Extend the option to "stratify" the project area, outlined in Section 5.2.4 "Determining Gross Forecasted GHG Removals," to also designate stands with different planting densities. At the time of project submission, maps included with the project portfolio would outline the boundaries of stands with different planting densities. **(CC Lab)**

RESPONSE: Thank you for your comment. To clarify, the assumption for the use of the default projections currently built into the Reforestation Communities Data File is that at least 200 trees per acre are planted. The methodology updates include guidance that specifically allows projects not meeting this assumption (on all or even a portion of the project area) to conduct project-specific modeling to estimate forecasted carbon stock increases for the project. For such cases where planting density deviates from the default assumption, the confirmation body would then use Table A.1 to determine the sample plot size to be used when confirming site stocking.

To further clarify, the methodology already allows projects to be stratified by forest type and planting condition (including planting density), though stratification based on planting condition is not explicitly stated as an option. However, the guidance with respect to project-specific modeling being allowed in cases where planting densities are below what is assumed for use of the default projections provides a path for projects to stratify based on different planting conditions. Clarifying language has been added to Section 5.2.1 to indicate the potential use of project-specific modeling for portions of the project for which existing projections for a forest type planted on the project area are not available and/or the planting densities applied by the project do not meet the planting condition assumptions relevant to the default projections.

Section 5.3 Estimating Performance Decline, Section 3.8.2 Tonne-Year Accounting

11. While it is important to fully account for the potential risks faced by reforestation projects, including through buffer pools and sufficient discounting for conversion risk, crediting based on tonne-year accounting already steeply discounts FMUs issued based on the increased risk of project failure over time. The new programmatic *ex ante* risk discount additionally penalizes the project for the same pool of risks, namely project abandonment, harvest, and conversion. Further discounting will likely make certification under this Methodology economically untenable for many parties, especially in cases where the planting is additional and would not happen without other external support. *Recommendation:* There is a concerning potential redundancy between the new programmatic *ex ante* risk discount (Section 3.8.3, “Conservative Crediting and Permanence Risk Pool”) and the de facto crediting discount baked into tonne-year accounting (Section 3.8.2). The Methodology should either remove the additional programmatic *ex ante* risk discount, which is already encapsulated within tonne-year accounting, or otherwise change the crediting equation (below) to remove the time-dependent penalty component “-y+1”. **(CC Lab)**

$$ER_f = \sum_{y=1}^{CP_f} (\Delta AC_{f,y} \times 1\% \times (CP_f - y + 1))$$

RESPONSE: Thank you for your comment. The purposes for tonne-year accounting and the Programmatic *Ex Ante* Risk Discount are perhaps being conflated here. The crediting period for projects using tonne-year accounting is based on an assumed increased likelihood of harvest. Tonne-year accounting is then applied to the projected carbon stocks based on the assumption that all carbon stocks are removed at the end of the crediting period. Although this has the appearance of a discount being applied, it is simply the application of a 100-year permanence timeframe to the carbon predicted to be sequestered and maintained by a project for a period of time less than 100 years. The programmatic *ex ante* discount, on the other hand, is intended to address the risk of a project underperforming relative to the amount of carbon projected to be sequestered at the start of the project up to the end of the crediting period. In other words, it addresses the possibility that actual sequestration on the project site over the length of the crediting period will be something less than anticipated. Furthermore, the discount is scaled to the length of the crediting period to reduce the burden to projects with crediting periods less than 100 years since the risk of underperformance decreases as crediting periods become shorter.

Lastly, the suggested modification to the equation would result in significant over-crediting since the elements proposed to be removed are part of a summation function and every ton sequestered would then be awarded the tonne-year value based on the length of the crediting period, irrespective of when within the crediting period a given ton is sequestered, rather than the length of time remaining in the crediting period, after which all carbon stocks are assumed to be removed. In other words, while 100 tons sequestered in the first year of a project with a crediting period of 50 years would result in 50 FMUs being quantified for issuance (not considering any applicable discounts), which would be correct; however, 100 tons sequestered in year 49 would also result in the quantification of 50 FMUs even though it would only be assumed to be maintained for another year.

Section 5.6 Permanence Risk Pool

12. The introduction of programmatic monitoring by the Climate Action Reserve is another welcome addition that will increase consumer confidence in FMUs. **(TCT)**

RESPONSE: Thank you for your comment. We agree that programmatic monitoring can play a significant role in ensuring the integrity of Climate Forward and the FMUs issued through the program. While there is growing interest in the ability to convert FMUs to offset credits, for which we have also provided guidance with this methodology update, projects nevertheless have no obligation to conduct ongoing monitoring, reporting and/or verification to be issued FMUs. Conducting programmatic monitoring not only allows entities acquiring FMUs to have increased confidence in the integrity of the credits they are purchasing, it also gives the Reserve a way to monitor, from a high level, the performance of the suite of projects participating in Climate Forward. As a result, we will be able to manage the program and the project requirements specified within individual methodologies in an adaptive way over time, with the ability to incorporate adjustments to programmatic *ex ante* and permanence risk discounts as well as eligibility standards as needed in response to what our programmatic monitoring activities reveal.

Section 6.4 Conversion of FMUs to Offset Credits

13. Remotely sensed data provides a reliable and efficient means of assessing forest cover and evaluating trends in forest growth. Furthermore, the relatively homogenous stands that develop following reforestation as prescribed in this methodology are especially well suited to analyses based on remotely sensed data. Instead of requiring a ground-based inventory to convert FMUs to CRTs, it would be more efficient to combine the multiple lines of information available for forests regenerated under Climate Forward to generate ex-post estimates of carbon on the landscape. A reliable estimate of forest carbon can be achieved by combining aerial imagery with planting data (date and acreage planted to each species) and the forest growth projections from Smith et al. (2006) that have been thoroughly vetted and are already being used to calculate FMUs in CAR's Reforestation Communities Data File. Once a project has provided appropriate aerial imagery as documentation of acceptable forest cover, a calculator based on the Reforestation Communities Datafile could do the FMU-CRT conversion automatically based on the number of years since planting and the number of acres that remain forested. Given the relatively homogenous nature of newly planted stands, CRTs could be issued assuming conservative stocking values. This approach could be limited to acres that have not been thinned or subjected to natural disturbance to further ensure they do not exceed Smith et al.'s conservative values. **(TCT)**

RESPONSE: Thank you for your comment. We appreciate your thoughtfulness around a potential approach to quantifying CRTs. Ultimately, the CRT quantification process will be defined by the relevant forest protocol in place at the time that the credit transition is proposed. That process is currently defined by Version 4.0 of the Reserve's Forest Protocol or by Version 2.0 of the Mexico Forest Protocol. However, future updates to the forest protocol will consider options for remote sensing-based inventory approaches, which are anticipated to increase project efficiency and bring down inventory costs. In the end, CRT issuance is based on having reasonable assurances that the reported emissions reductions and carbon removals are real. In particular, we would want to have confidence that the assumption of conservative stocking under the approach you are proposing would actually result in conservative stock estimates. If the innovative approach you are suggesting is able to provide such assurances, it is something that could be considered for a future update to

the forest protocol, subject to review by the stakeholder workgroup that would support the protocol update process.

14. The clarity provided is positive. **(MARCD)**

RESPONSE: Thank you for your comment. The ability to convert FMUs to CRTs is a topic for which we have received numerous inquiries and comments since releasing the reforestation methodology, including as a means to ensure the permanence and integrity of FMUs over time for credit buyers. In response, the Reserve is developing a programmatic monitoring approach to provide a way for the Reserve to review the performance and durability of projects over time and allow for programmatic and methodological requirements to be adapted in response to any trends that are observed. The Reserve has also incorporated guidance around project-specific monitoring options, ranging from voluntary monitoring and reporting without third-party verification to conversion of projects and associated FMUs to the Reserve's offset program and CRTs, which would entail the full monitoring, reporting and verification obligations required of offset projects.

Although this latter pathway was not originally envisioned when Climate Forward was first established, project participants and credit buyers have highlighted the utility of such a conversion process. As such, we are making the necessary programmatic adjustments to allow this type of conversion by providing guidance within the Climate Forward Program Manual (December 2021 update) and within individual Climate Forward forecast methodologies under which this type of credit conversion is possible for registered projects. Please note that this type of conversion is only possible for forecast methodologies, and associated projects, for which a companion offset protocol from the Reserve is available. In the case of reforestation projects, only Climate Forward reforestation projects registering in the US and Mexico will currently be able to transfer into the Reserve's offset program and convert FMUs to CRTs since only projects in those two countries are able to register under the Reserve's forest offset protocols at the moment.

Appendix A Confirmation of Site Stocking

15. Alter the protocol for "Confirmation of Site Stocking" described in Appendix A. Under a density-stratified scenario, "least-stocked areas" would need to be identified within each density stratum (according to how they were designated during project submission). Sample plots within sample areas could maintain their gridded formulation, but would need to be displaced from the edges of the stratum by at least the sample plot radius appropriate for the stratum's stocking density (outlined in the Methodology's Table A1). Sample plots should not be allowed to fall directly on stratum boundaries because they will disproportionately fail the site stocking test. **(CC Lab)**

RESPONSE: Thank you for your comment. Please see the response above to Question #10. Additionally, your suggestion regarding adjustments for sample plot locations is well received and we have added guidance to Appendix A to give confirmation bodies the discretion to displace plots originally located such that a portion of the sample area crosses out of the stratum or project area. Plots may be displaced by a distance of no more than the sample plot radius, thereby allowing the displaced sample plot to remain along the stratum boundary while not crossing over the boundary.