

Summary and Response to Public Comments

A draft of the *Tool for Reversal Risk Analysis and Buffer Pool Contribution Determination Version 2.0* was developed by ACR, with contributions from Anew Climate, Finite Carbon, Green Assets, Terra Carbon, and The Climate Trust.

The tool was posted for public comment February 14, 2023 – March 14, 2023. Comments and responses are documented here. Additional public comments received after the formal close of the public comment period are also documented herein and were considered in the final version of the tool.

#	ORGANIZATION / COMMENTER	COMMENT	AUTHOR RESPONSE
1	Land Trust Alliance	<p>Please replace the text in bullet 4 immediately following Equation 3 with the following:</p> <p><i>“For land trusts and other non-profit conservation organizations eligible for accreditation by the Land Trust Accreditation Commission, demonstrate accreditation in good standing at the time of verification (Financial Risk = 3.5%). In the event the organization does not maintain or otherwise loses its status as accredited by the Land Trust Accreditation Commission, it will no longer qualify for reduced risk.”</i></p> <p>Rationale for this suggested change: Conditional renewal, as referenced in the public comment draft of the Risk Tool 2.0, is not a public status, so the Land</p>	<p>ACR updated the text given the content brought up by the commenter. This text is now located within section 3.1.</p>

		<p>Trust Accreditation Commission cannot share information about whether and which land trusts are conditionally renewed, or not.</p> <p>Similarly, “all outstanding issues related to the Finance Requirements must be addressed” would be a difficult condition to meet. In some cases, there may be minor issues that the Land Trust Accreditation Commission addresses with an expectation for improvement that could be challenging for a land trust to verify it has addressed (the Commission would confirm whether a land trust has sufficiently addressed areas for improvement at the time of a land trust’s next renewal of accreditation).</p>	
2	Mercuria	<p>While we are broadly supportive of the introduction of a robust risk tool, we note that our comments have not benefited from a deep analysis, and are focused on a single item. Therefore, we highly recommend considering comments submitted by stakeholders that analyzed the implications of the proposed requirements based on existing project portfolios and pipelines</p> <p>Comments on Appendix A.9: Buffer-Insured Area Adjustment</p> <p>We are not aware of data indicating that smaller landowners suffer more frequent or more intense damage from disturbance events than that suffered by large landowners. While smaller parcels that suffer</p>	<p>ACR has removed the Buffer-Insured Area Adjustment. This is consistent with the ACR Standard definition of reversal, which only occurs at the Project (rather than Site or Cohort) level. It also addresses the concerns in this comment.</p>

a disturbance event may have a higher probability of triggering a reversal, the probability of a disturbance event occurring on a smaller site in any year should be lower given its smaller size within the landscape.

The proposed risk rating is applicable to only aggregated and PDA projects (in cases where a project proponent is unable to carry the liability of project level reversals). It is unclear why a standalone project that is smaller than 5,000 acres would not also be subject to this same risk.

Similarly, if the key argument for this risk rating adjustment is related to property size, then why is there a 5,000-acre threshold and on what basis has ACR determined that this risk dissolves at 5,001 acres?

ACR has also chosen to include the combined natural risk score as the multiplier in this adjustment, which effectively applies this risk factor twice to the overall risk score (see below).

$$\text{Buffer-Insured Area Adjustment} = \left(0.1 \times \left[\frac{\text{Median Cohort or Site Size}}{5000} \right] - 0.1 \right) \times \text{Total Natural Disaster Risk}$$

Applying this factor twice increases the total risk score for aggregated and PDA projects by 50-100%, an increase almost certainly not commensurate to the

		<p>increase in actual reversal risk observed on the ground.</p> <p>Finally, it is unclear why the buffer area adjustment and the diversified risk adjustment are not linked. On one hand, having a diversified aggregated project results in a maximum decrease of 4.25% in overall risk. Yet, the exponential equation used to estimate increasing risk associated with smaller property size results in a risk rating of up to ~20% (4x the diversified aggregated risk adjustment) and which would double the buffer contribution for some projects.</p> <p>We recommend that ACR defer including a buffer-insured risk adjustment for PDA projects to provide time to observe actual reversal frequency. ACR could then evaluate this risk category once PDA projects have applied this option for a few years. This allows for the identification of actual and empirically driven estimates of disturbance risk for small forest owners in the US. Until then, we suggest applying a deduction that is directly linked to the diversified risk adjustment.</p>	
<p>3</p>	<p>BeZero</p>	<p>It is our suggestion that ACR support a higher level of transparency regarding how percentages applied for natural hazards risk levels and financial disclosures are reached. Please also note that in the wildfire section the equations referred to in the text appear to be mislabeled (for example the equation to calculate a regional wildfire hazard potential appears to be</p>	<p>Detailed methods for calculating and confirming risk percentages are provided in Risk Tool v2.0. In instances, they were updated based on public comment feedback. For more context on financial and natural hazard risk calculations, please refer to comments 15, 19, 21 and 24.</p>

		<p>equation 7, however in the text, it is said to use equation 8, which appears to relate to biotic risk).</p>	<p>Requirements for Reversal Risk Analysis Reporting are in section 1.3 of the Tool. For transparency, the calculated and applied percentages are required to be reported in the GHG Project Plan and subsequent updates must be reported in Monitoring Reports. All calculations are subject to verification by an approved VVB, prior to issuance.</p> <p>Additionally, ACR corrected the reference to the Wildfire Risk equation.</p>
<p>4</p>	<p>BeZero</p>	<p>We suggest greater transparency to detail the methods underlying the derivation of the 25% reduction in the risk level for mitigation techniques of natural hazards, namely wildfire potential. In addition, disclosure on the management techniques applied and the level of continued maintenance that the project intends to conduct would ensure a higher reliability of techniques applied.</p>	<p>25% is viewed as a moderate reduction in risk contribution in consideration of the nature of required fuel treatments. The Tool recognizes a general consensus that fuel treatments are effective at reducing the impacts of wildfire within and often beyond the area treated (Jain et al. 2021). Additionally, empirically based research has observed reductions in wildfire caused tree mortality in treated vs non-treated forest areas, where average mortality differed from 22% to 73% due to fuels treatment (Stafford et al. 2012). The 25% risk reduction incentivizes wildfire resilience efforts while still requiring a significant contribution, specifically in areas with high or very high risk.</p> <p>Additionally, a more prescriptive description of what qualifies as an effective fuel treatment has been added to the tool that focuses on the key principles of fuel reduction treatments (section 3.4; Agee and Skinner 2005).</p>

5	BeZero	<p>BeZero suggests that any cap placed on the maximum level of risk allowable should be disclosed/highlighted in the tool’s documentation. Similarly, where the approach requires a minimum risk buffer allocation in cases where projects assess low risk, this or the lack of a minimum allocation should be specified.</p>	<p>Thank you for the comment. However, to clarify, there are no specific maximums or minimums for overall risk contribution calculations of a project. This is because one category (biotic) uses continuous variables, such that its risk deduction is not set to a single range of default(s). For example, if Biotic risk were to predict 100% mortality and a project were to exclude dead wood from its carbon pools, there could be up to a 100% deduction.</p> <p>The text and equations do transparently specify where a risk category can have a minimum and maximum contribution percentage range. For example, 3% is the stated minimum and 8.5% is the maximum financial risk contribution percentage (Section 3.1), 8% is stated as the maximum Social and Political Risk contribution percentage (Section 3.2), 4.25% is the stated maximum contribution percentage for potential Illegal Logging Risk (Section 3.3), 12% is the stated maximum potential Wildfire risk contribution percentage (Section 3.4), and 5% is the stated maximum potential Hydrologic Risk contribution percentage (Section 3.6).</p>
6	BeZero	<p>We recommend that project documents are encouraged to be more detailed in their financial analysis. For example, where financial risks are assessed, a minimum level of disclosure regarding where project cash flows, break-even points and risks associated with dependence on carbon revenues versus harvest scenarios have been taken into</p>	<p>The Tool’s financial risk contribution (and associated public reporting) is aimed at assessing the financial stability of the Project Proponent, rather than the project itself. This is because the ACR Buffer Pool considers and covers unintentional financial risk within the context of bankruptcy and inability to pay. Intentional actions are covered separately under the</p>

		<p>consideration. Alongside this, any consideration of the NPV of species specifically on site could be disclosed to enable assessment of the opportunity costs incurred by the project’s implementation.</p>	<p>ACR Risk Mitigation Agreement, which holds the Project Proponent legally responsible for compensating for intentional actions within their control.</p> <p>ACR methodologies do require and contain specific public reporting of NPV analyses, where relevant. For example, the current version of ACR’s Improved Forest Management in Non-federal U.S. Forestlands v2.1 specifically states “The results of the financial analysis (NPV) for the baseline and with-project scenarios must be provided with the GHG Project Plan.”</p>
7	BeZero	<p>We note that the removal of the project management risk category is stated to be covered by ACR’s agreement signed by proponents. It is our recommendation that this documentation be made publicly available, to confirm that these risks are appropriately covered outside of a buffer pool contribution.</p>	<p>ACR’s Buffer Pool Terms and Conditions are available at the website below. Section E discusses Reversals, including those due to an Intentional Reversal or Early Project Termination, which are compensated for by the Project Proponent rather than the Buffer Pool.</p> <p>https://acrcarbon.org/program_resources/acr-buffer-pool-terms-and-conditions-may-2024/.</p>
8	BeZero	<p>We recommend that project documentation detailing how risk buffer allocations are calculated be made publicly available. This allows a greater level of disclosure that brings greater indication that project risks are mitigated appropriately.</p> <p>Further to this, we believe it is important for all project documentation to be available, including GIS shape files for the project boundaries, allowing end</p>	<p>Current GHG Project Plan templates include a section on Permanence. This section includes risk and adjustment values for each risk category and the resulting buffer pool contribution percentage incurred. The methods for calculating the risk deductions and adjustments are specified and publicly available within the tool itself. Any updates to the reversal risk analysis, and accompanying buffer pool contribution, are required to be included in subsequent, publicly available Monitoring Reports.</p>

		<p>users to interrogate the project geography and associated natural risks (e.g. wildfires) independently.</p>	<p>GIS shapefile and project specific boundaries are currently not public per the ACR Standard. However, ACR has a process in place for project-specific documentation requests that involves first obtaining the permission of the relevant party prior to sharing with a rating agency or other such entity. Such requests can be sent to ACR@winrock.org.</p>
<p>9</p>	<p>BeZero</p>	<p>We are in broad agreement with ACR’s view that Conservation Agreements can strengthen a project’s permanence at a basic level due to the protection ‘in perpetuity’. However, we recommend that projects elaborate on the terms of the easement and indicate any level of management and maintenance above that which the carbon project requires.</p>	<p>The following has been added to section 3.8 to further solidify reporting requirements regarding conservation Commitment Adjustments. “Projects applying a Conservation Commitment Adjustment must describe the terms that are applicable to the risk reduction applied in the GHG Project Plan or Monitoring report addendum with other risk assessment reporting.”</p>
<p>10</p>	<p>BeZero</p>	<p>BeZero acknowledges that updates have been made to the risk tool which may enable more specific assessments to the project location. Beyond our above recommendations related to the updated risk tool, we suggest that the tool is most effective if applied in a unified and transparent manner across projects. We are aware that ACR allows alternative reversal mitigation options for projects such as the option to contribute the calculated buffer allocation from another ACR registered project. Where such alternative reversal mitigation options are applied, we strongly recommend that the projects and the Standards Body detail which projects and related vintages credits are sourced from. Transparency</p>	<p>ACR’s approach to reversal risk mitigation is detailed in the ACR Standard (Permanence section). The updates to v2.0 of this Tool further ensure a systematic and transparent approach.</p> <p>Justification regarding eligible sources of contributions and alternative ACR-approved risk mitigation mechanisms can be found here: https://acrcarbon.org/resources/acrs-approach-to-non-permanence-risk-mitigation/.</p> <p>Respectfully, BeZero’s assessment of the number of projects contributing to the buffer pool was inaccurate and has since been taken down. Please see also response to comment 12. The quantities of credits</p>

across project specific buffer pool accounting methods allow end users to ascertain that any reversals that may occur are accounted for with credits of similar characteristics and effectively mitigate the risks presented.

BeZero conducted an assessment of the proportion of projects that are observed to contribute to the Standards Body buffer pool; we find that the projects that do not contribute any buffer credits are in the Improved Forest Management sub-sector (ca. 28% of projects). Without any transparency on where credits are alternatively sourced from, traceable allocations from other schemes, this presents a risk of significant under-resourcing of the buffer pool or alternatively, that reversals are not mitigated with credits of similar quality or vintage parameters.

We find that in the absence of a fully transparent issuance record, evidence of transaction, and the source of the buffer contribution, this can make navigating the market very complex and undermine the trust that a project is delivering its intended carbon benefits for the duration of its commitment period. BeZero suggests that there needs to be a fully transparent record of buffer pool contributions in order for the end user to be confident in the insurance of the purchased credits.

BeZero Carbon is aware that the ACR registry also permits the use of a variety of insurance mechanisms

issued and/or transferred to the Buffer Pool for each issuance are available from the ACR Registry: <https://acr2.apx.com/myModule/rpt/myrpt.asp?r=112>.

The characteristics of credits that may be contributed are detailed in the ACR Buffer Pool Terms and Conditions. The account balance and contents of the Buffer Pool are available from the ACR Registry: <https://acr2.apx.com/myModule/rpt/myrpt.asp?r=219>. The ACR Buffer Pool Terms and Conditions describes the buffer credit use criteria.

		<p>as an alternative to the buffer pool, including bonds and letters of credit which are designed to act as proof that a project developer could cover the costs of sufficient credits to offset a reversal event. As for the case of some IFM projects in our analysis, it was stated in the project design document that all buffer pool credits will be used from another reserved pool and will not be issued out of the project generated credits.</p>	
<p>11</p>	<p>BeZero</p>	<p>Overall we recommend a consistent level of disclosure across risk buffer accounting be required in the updated risk assessment tool. The permission from ACR to allow project developers to use a variety of insurance mechanisms should be supported by transparency and a record of alternative scheme transactions In broad terms, our recommendations to the ACR to address and overcome these obstacles relate to the following:</p> <ul style="list-style-type: none"> • Greater transparency in project risk tool calculations to enable greater assurance that risks are being mitigated appropriately. • Greater transparency and disclosure of project credits transaction and evidence for buffer pool contribution and releases • Provide documentation on the source of buffer contribution if other insurance mechanism were utilized 	<p>Please see responses to comments 8 and 10 regarding transparency and disclosures, and section 1.3 of the Tool regarding required reporting.</p>

12	BeZero	<p>In the webinar conducted by ACR on the updates to the risk tool, it was stated that the conversation of using alternate insurance mechanisms had been undertaken but never applied as the buffer pool has always been used. Our analysis finds that there is not a transparent record of payments into the buffer pool for a total of 21 projects registered under ACR. In the case of ACR368 (Middlebury College) it is stated that these credits will be taken from another project on ACR, although no further indication of issuance record is given. To further investigate the buffer pool contribution of the developer’s projects, a study was conducted based on 96 projects that were listed across the big 4 registries (i.e. American Carbon Registry, Climate Action Reserve, Verra, and Gold Standard). As of 27/02/2023, the results show that the expected amount of credits that should be deposited into the buffer pool is around 4.6 million tCO₂e, whereas only 3.6 million tCO₂e were deposited (i.e. under-resourced by 23%). Notably, 100% of the projects that have potential of under-resourcing buffer credits contribution were all registered at ACR.</p> <p>The remaining number of credits that should have been paid by the developer’s projects (i.e. 1.01 million tCO₂e) were also found to be significantly more than the amount of credits cancelled and removed from the big 4 registries (i.e. ~10,199 tCO₂e). This further</p>	<p>As communicated to BeZero when ACR was previously provided with this analysis, this assessment is inaccurate. Please see the ACR Registry reports referenced in response to comment 10. ACR appreciates BeZero having removed the respective figure from their platform after being previously corrected about the analysis.</p>

		rejects the hypothesis that the credits from non-NBS Blue Source developed projects were cancelled to sufficiently cover the NBS projects with under-resourced buffer pool contribution.	
13	Finite Carbon	We thank ACR for the opportunity to provide feedback on this tool and appreciate the efforts to make sure ACR’s program reflects the best available science. The changes proposed in this tool have the potential to greatly impact the reversal risk percentage of a given project. From feasibility through verification, the project development process requires a good deal of lead time, and changing something like the risk percentage late in the game creates a challenging variable for project proponents to work around. We request that ACR provide a clear timeline for implementation of the risk tool so that existing projects and projects in the middle of the development process have greater certainty as to the relevant percentage they should consider. A grace period for listed projects or projects actively undergoing validation would help make the rollout more equitable.	The ACR Standard (current version 8.0) outlines a clear timeline to the application of the updated risk tool. The Standard states the following “In the event that an update to ACR’s Tool for Reversal Risk Analysis and Buffer Pool Contribution Determination is released during a verification, Project Proponents shall use the version available at the end of the Reporting Period being verified.”
14	Finite Carbon	ACR presented this tool in a recent webinar, stating results would largely be similar to the Risk Tool v1.0. However, we are noting an overall increase in buffer pool contributions for current and prospective projects based on the proposed changes here. We are happy to share results from some of our projects with	ACR appreciates Finite’s engagement throughout this process and acknowledges that with a more refined calculation of risk, certain projects may have to contribute a higher (or lower) percentage than previously. ACR has reviewed the risk analyses and associated contribution percentages against the ACR

		<p>ACR that demonstrate this. While we are in favor of changes that are supported by research and data, we are not finding that to be the case for some of these calculations (see comments 9, 12, and 15 on minimum risk levels across various categories). This seems to indicate that ACR is concerned the buffer pool is underfunded, despite the fact that it has not been used to date. We are concerned that in an effort to be conservative, projects will be overly penalized. This could have the unintended effect of disincentivizing higher cost carbon project activities, like reforestation and ecosystem restoration projects. We request that ACR assess whether some more reasonable minimum risk levels can be implemented where supported by the data.</p>	<p>portfolio and overall have found the output to be reasonable and logical. The prescribed risk assessments (and associated tools) are more spatially specific than the previous Tool version, specifically for fire and biotic risk, and specific responses to the comments on these topics can be found in comments 21, 24 and 25 of this response log.</p>
<p>15</p>	<p>Finite Carbon</p>	<p>The default financial risk rating of 5.75% is much higher than what ACR had used in version 1.0 of the risk tool. We understand that this reflects the midpoint of risk in Table 4, if Table 4 were expanded to include all credit ratings. However, we think this is an unnecessarily high default value, given that ACR has not had to use the buffer pool to date for any reversals (let alone due to financial risk). It is also not clear what the percentages in Table 4 reflect, and is therefore challenging to assess whether the new default is a meaningful reflection of bankruptcy/default risk. We suggest reverting to the previous default value of 4%, or to consider tying an</p>	<p>The default 5.75% financial risk rating was derived as the midpoint between the minimum and the maximum (3% and 8.5%, respectively). Project Proponents can reduce this risk deduction by calculating financial risk using the credit rating approach. Please note that the project management risk category, which previously had contributed to financial risk, has also been removed.</p> <p>The fact that there have not been any projects that have declared bankruptcy is not an indication that such risk does not exist. Therefore, ACR has taken steps to conservatively insure compensation against such instances.</p>

		indicator of average default risk rather than a midpoint of credit ratings.	
16	Finite Carbon	<p>It is not uncommon for landowners to establish new LLCs to serve as Project Proponents. Newly formed entities will not have credit ratings or established business credit scores, and will have to use the 5.75% default value. As noted above, this percentage seems to be overly conservative given the historical use of the buffer pool. It would be great if ACR could consider an alternative option here because as written, this is incentivizing moving the project proponent role to large institutions with AAA credit ratings to take advantage of lower risk scores.</p> <p>TIMOs or large farms for instance are able to leverage debt to make acquisitions, but the average small landowner cannot typically borrow money to purchase vacant land without hardship. Smaller companies operating without lines of credit will have to contribute a disproportionate percentage of offset credits to the buffer pool. This approach essentially penalizes anyone who isn't taking out loans. We're concerned this will make ACR's program less accessible to smaller scale projects, for whom each percentage point to the buffer pool is a big hit to the viability of the project.</p>	<p>While new/small entities are unlikely to receive a credit rating, they are likely to receive a business credit score relatively quickly, which provides a potential option to avoid the 5.75% default value. The Buffer Pool Contribution Percentage is updated at each full verification, such that it can be adjusted if a credit rating or business credit score is not available at project start, but becomes available over time.</p>
17	Finite Carbon	Has ACR given any consideration as to how private landowners, whether industrial or non-industrial,	For purposes of determining risk for the ACR Buffer Pool Contribution Percentage, the primary financial

normally obtain the financial backing needed to acquire lands, and researched the relative frequency and applied risk factors associated with default? In our experience, many forest landowners will elect to use the services of agricultural lenders like Farm Credit. We would strongly suggest that ACR spend more time investigating how these types of financial arrangements, specific to forest land use, ordinarily function before proposing a new Financial Risk approach, since forest projects are the largest users of the Risk Tool. Additionally, we would strongly suggest engaging with a sample of certified timberland appraisers to better understand an applied perspective on the impacts of financial risk as it relates to timberland valuation, as well as other risk categories represented in the ACR risk tool.

Farm Credit

<https://www.farmcrediteast.com/FINANCING/Land-Loans>

Appraisers

<https://www.timbertax.org/getstarted/appraisal/>
<https://www.atterbury.com/index.php>
<https://www.sizemore1949.com/timberland-appraisals>

risk is that of an ACR project discontinuing due to the bankruptcy or financial failure of a Project Proponent. ACR understands that lenders utilize similar metrics of failure for deciding who to lend to and the rates available to their clients.

While similar, the financial risk assessed for the purpose of timberland valuation and lending is distinct from the financial risk of a Project Proponent declaring bankruptcy. For instance, a lender may be concerned with non-payment on a loan, which is not a concern for ACR. For ACR's purposes, individualized credit ratings and business credit scores address the relevant risk using best available third-party measures and data available.

18	Finite Carbon	The third bullet point refers to Equation 4, but should refer to Equation 3.	Thank you for the careful eye. This has been corrected.
19	Finite Carbon	It appears that Equation 3 does not function well across the variety of business credit scores referenced here. The Dun & Bradstreet Failure Score ranges from 1,001 – 1,875, the Experian Financial Stability Risk Score ranges from 300-850, and the Equifax Business Credit Risk Score ranges from 101 to 992 ¹ . The Equifax Business Failure Score (similar, but not specifically mentioned by ACR) ranges from 1000 to 1880. Dun & Bradstreet and Experian do, however, offer percentiles, although ACR indicates the score should be used. At a minimum, it appears that the equation needs to be reworked to account for the variety in score metrics.	Please reference the following sentence in section 3.1 of the Risk Tool, in which credit scores are normalized prior to use in the equation. “Prior to use in Equation 3, business credit scores must be scaled from 0 to 100, where 0 is the most risky and 100 is the least risky. Business credit scores are expressed as a percent deduction, multiplied by 5.5% and added to the minimum financial risk rating (3%).”
20	Finite Carbon	We note that ACR has introduced a lower financial risk rating for accredited land trusts, but has removed the lower financial risk rating for tribes and public entities. In prior discussion with ACR, it was noted that the minimum 3% risk in section A.1 (for AAA credit ratings or in Equation 3) was drawn from the minimum risk rating assigned to tribes and public entities in the Risk Tool v1.0. However, it’s not clear why that same minimum percentage is no longer extended to those groups. We request that ACR extend the same consideration to tribal and public lands, consistent with the prior version of the tool.	In ACR’s due diligence in setting defaults for this tool, we observed that credit ratings and credit scores for tribes and public entities were among the more accessible and easier to obtain. It is more accurate and conservative to rely on direct data rather than defaults for this land ownership type.

<p>21</p>	<p>Finite Carbon</p>	<p>Risk Tool v1.0 set low fire risk at 2%. While there may be justification for raising the highest fire risk category to 12% as ACR has done here, we don't understand why "low risk" has doubled (for "very low") or tripled (for "low"). Can ACR provide further justification for how these numbers were selected and why there is a linear increase in values?</p>	<p>The updates to ACR's Risk Tool v2.0 are intended to more precisely allocate risk deductions and adjustments. ACR has raised risk contributions in some categories and reconsidered or eliminated risk contributions for others (e.g., project management).</p> <p>The updated Wildfire Risk calculation and allocation is based on the current USDA Forest Service Wildfire Hazard Potential map. This map depicts relative potential for high-intensity wildfire and is used by USFS to inform large-scale estimates of wildfire hazard.</p> <p>For ACR's purposes, we are conscious the map was not designed to directly estimate the wildfire risk to carbon pools. But, in ACR's professional judgement, it is the best available dataset that can be leveraged to set conservative and science-based deductions for wildfire risk to carbon stocks. The deduction percentages were assigned with this in mind.</p> <p>ACR looks forward to future products produced by the USDA Forest Service, USGS or other trusted sources that are currently in development and aim to address risk more specifically for forest carbon pools in relation to wildfire. As such tools become available, ACR will continually re-evaluate updates to the Wildfire Risk allocation and percentages.</p>
<p>22</p>	<p>Finite Carbon</p>	<p>In the natural risk categories, ACR describes a process for using the identified datasets, with an allowance for other approaches that produce the "same results."</p>	<p>The language "or an equivalent approach producing the same results" was intended to be inclusive of the use of different GIS software and/or functions that</p>

		<p>We agree that there is more than one way to perform this analysis. However, it is not clear how ACR will assess whether results are the same as what ACR intended. Just within Finite, we had different staff members testing the impacts of the proposed changes to the risk tool, and saw that they interpreted these steps differently and arrived at different results for the same project area. Can ACR elaborate on how this will be assessed or provide more details for ensuring consistency?</p>	<p>produce equal results. ACR has clarified this in the text in the respective sections as “The following generalized steps are required and can be implemented across various geographic information system (GIS) platforms and tools, so long as they produce equivalent and verifiable results”.</p>
<p>23</p>	<p>Finite Carbon</p>	<p>Due to the coarse resolution of these datasets, we have found that a significant portion of the pixel area falls outside of the property areas when utilizing the defined area weighted approach, particularly for smaller polygon sizes. The impact of this, in conjunction with how variable the risk percentage breakouts are, can significantly skew the risk percentage value calculated using this method. Has ACR considered a vector approach that would more precisely calculate fire or biotic risk for a site area as defined by these datasets? While we understand a property may be impacted by risk factors relevant to adjoining land which would be represented in some of this “pixel overflow,” the datasets referenced here should already adequately factor in proximity-related risk factors. This also seems to create a slippery slope in logic – if projects must account for adjoining risk factors due to this pixel overflow, can they not also</p>	<p>ACR is aware of and has considered the potential implications of pixel overlap beyond the project area. ACR considered the prescribing steps for “clipping” the raster to the project area based on this comment.</p> <p>In doing so, ACR’s internal analyses, as well as materials provided from Finite, suggested the impact of using full pixel tiles versus “clipping” on categorical risk percentages were negligible (often fractions of a percent).</p> <p>For simplification and to avoid unnecessary geospatial analyses/steps, ACR has retained the pixel-level approach (as opposed to “clipping” to the project area).</p>

		account for fire and pest mitigation measures implemented by their neighbors? It would be more straightforward to limit all assessments to within the project boundary.	
24	Finite Carbon	Many of the lands participating in our projects are in areas with very minimal biotic risk. In testing out ACR’s proposed Risk Tool v2.0, we are finding that Step 4, setting the base risk to 4% is increasing biotic risk 2-8x relative to the results of the NIDRM dataset. This seems overly conservative, and we request ACR consider removing the base risk level or adjusting it to something more supported by the project’s results from the dataset.	The default 4% pest and disease risk deduction was the default value for the Risk Tool v1.0, it is not an increase from ACR’s prior operating rules on this category. Basing biotic risk on the NIDRM database is an improvement in both verifiability and data informed decision making, in regard to capitalization the buffer pool.
25	Finite Carbon	We appreciate the inclusion for assessment of flood-tolerant species as a means to potentially reduce hydrologic risk. Such properties should not experience a loss of carbon during flooding events. To confirm our understanding of how this would apply across the range of projects assessing hydrologic risk: the National Wetland Plant List is cited as a source for flood-tolerant species, which could be used as evidence for reducing the application of hydrologic risk factors on a project. However, the NWPL cannot be applied as broadly as the NFHL dataset. The NFHL dataset provides flood risks for wetland and non-wetland areas alike, whereas the NWPL is limited in scope to wetland ecosystems. The proposed Risk Tool states “Areas that include flood tolerant species (which are included in carbon	ACR evaluated this proposal in-depth and ultimately decided to simplify the risk reduction application for the hydrologic risk to only include species present within inventories, with the intention to increase the ease of verifiability and reduce subjectivity.

		<p>project stocking) may reduce their risk.” This helps limit the scope of the assessment. In other words, forest projects attempting to demonstrate flood-tolerant species would be limited to the tree species on these lists.</p> <p>ACR states that species presence would be demonstrated with forest inventory data or remote imagery. However, we do not anticipate remote imagery being able to capture sufficient details to assess species and plant designations. We would appreciate if ACR could provide further guidance on how this assessment should be made in cases where a forest inventory is not available. Other options, like wetland surveys, would be cost-prohibitive. We wonder if separate hydrologic risk assessments should be made for wetland restoration projects vs. forested wetlands, as the application of a one-size-fits-all approach seems to not be working for this flood-tolerant plant assessment.</p>	
<p>26</p>	<p>Finite Carbon</p>	<p>In prior discussion regarding the changes made in this section, we inquired as to how these numbers were calculated in Table 8. ACR stated this was based on an assumption that flood events on average cause a 1/8th reduction in carbon stocks. Is there a citation for this figure? Does that loss apply equally to wetland and non-wetland forests, as presented in this tool?</p>	<p>While there is not a definitive published source for defining a value for ACR’s specific purpose, available studies, including those studying tree mortality following flooding events (Harms et al. 1980; Frangi and Lugo 1991; Damasceno-Junior et al. 2004; Tzeng et al. 2018), suggest a wide range of values similar to those employed by Table 8. As the studies suggest, individual flood events are highly variable and so are individual species responses to them. As flooding-induced mortality does not necessarily result in similar rates of carbon loss, ACR is comfortable prescribing a lesser</p>

			value for Table 8 than the mortality rates observed in the literature. 12.5% carbon loss per flooding event is conservative and justified given the evidence available.
27	Finite Carbon	Projects in the USA are required to default to 5% in cases where NFHL data is not available. However, forest projects outside the USA are able to default to 3% (Table 9). We request that where NFHL data is not available, forest projects should default to 3% or 0% rather than 5%, for consistency with areas outside the US.	To maintain consistency ACR has altered the default value for projects residing outside the U.S. to also be 5% in Table 9.
28	Finite Carbon	We appreciate the recognition of multiple types of legally-binding commitments in this section and support this addition to the risk tool.	ACR acknowledges this comment. Thank you.
29	Finite Carbon	It is not clear why this 5,000 acre area-based risk threshold was set for PDA projects and not individual projects. Given the costs associated with undertaking a carbon project, it is often challenging to make a smaller project financially feasible. Aggregation and the PDA option under ACR’s program are excellent ways to help bridge this gap. Finite Carbon’s motivation behind drafting the Methodology for IFM on Small Non-Industrial Private Forestlands was to help bridge this gap further in making carbon markets accessible to small landowners. Applying an additional large risk percentage to PDA projects negates any efficiencies gained by undertaking a PDA project. In our estimations, this category has the	ACR has further considered the utility of utilizing the buffer pool to mitigate unintentional reversals at the cohort or site level and, as a consequence, has removed the Buffer-Insured Area Adjustment. Reversals will be evaluated at the project level per the ACR Standard.

		<p>potential to easily double or triple a project’s risk rating. We understand ACR’s need to keep the buffer pool solvent, but this seems to be a swing too far in the direction of conservativeness, without any evidence to back up the claims of exacerbated risk for PDA projects. While we appreciate ACR’s perspective that a small site might be more severely impacted by a given disturbance, it would seem that the odds of a given disturbance actually hitting much smaller sites would be lower than compared to a large project. We ask ACR to reconsider the magnitude of this risk category, at least until there is more justification to support the higher risk profile for PDA projects using Option 2 or 3 per section 1.6 of the Risk Tool.</p>	
<p>30</p>	<p>Finite Carbon</p>	<p>We appreciate the consideration of the diversified risk profile of PDA projects. In many ways, this section is the theoretical inverse of section A.9. However, the risk percentages presented in each are wildly different. Under section A.10, a risk reduction of 1.5-4.25% is possible. However, under section A.9, risk could easily be increased by 15-20% depending on the median cohort/site size. We ask that ACR consider a way to bring these two categories more in line in terms of magnitude.</p>	<p>The tables in section 3.9 Diversified Risk Adjustment section has been restructured for simplicity. Adjustments now may range from 2% to 6%. And, the buffer insured area adjustment has been removed.</p>
<p>31</p>	<p>Finite Carbon</p>	<p>For this category, ecoregions, acreage, and non-adjacent different landowners are considered. PDA projects can be expected to have more diverse species, stocking, natural conditions, and geographic</p>	<p>ACR has updated this requirement in section 3.9 (Diversified Risk Adjustment) as “The number of distinct and non-adjacent parcels enrolled in the GHG Project”. Thus, dispersed parcels owned by the same</p>

		<p>and topographic diversity than a similar sized standalone project. Ecoregions make sense for capturing diversified natural risk exposure. Acreage and non-adjacency make sense for helping to ensure that a single natural disaster wouldn't target and impact a cluster of project parcels. However, it is unclear why the landowners must be distinct, since this factor has no bearing on a PDA project's exposure to risk of unintentional reversals. We ask ACR to consider ecoregions, acreage, and non-adjacency of project parcels in Table 10, without regard for the number of separate landowners.</p>	<p>landowner and enrolled in the GHG Project are considered to have dispersed risk, in regard to diversified risk adjustment.</p> <p>ACR has also revised the approach from use of Bailey Ecoregions (Bailey, 2016) to EPA Level II Ecological Regions (Omernik, 1987), for consistency across our program.</p>
<p>32</p>	<p>GreenTrees</p>	<p>GreenTrees commends ACR for updating its reversal risk tool to make it more objective, and to include adjustment for the reduce risk of programmatic projects that reduce risks by spreading the project across non-contiguous parcels.</p> <p>Our analysis indicates that the proposed version 2 of the ACR risk tool still has a fundamental flaw, and a serious flaw. These problems are discussed below.</p> <p>The fundamental flaw is that different project types have profoundly different risks to credits in response to the same adverse event. For many different plausible adverse events, different project types have vastly different risks of more than a <i>de minimus</i> number of credits being reversed. For any particular chance of a particular adverse event occurring, the current draft of the risk tool does not assign different</p>	<p>Thank you for this feedback. ACR has purposely taken steps in strengthening the scientific basis for risk deductions, such as now utilizing the Wildfire Hazard Potential dataset, National Flood Hazard Layer dataset, and National Insect & Disease Risk and Hazard Mapping dataset. To the ACR team's knowledge, these are the best publicly-available and scientifically vetted datasets available in predicting naturally occurring risk to forest carbon stocks.</p> <p>In regard to risk across project types, ACR would like to clarify that the ACR Buffer Pool only compensates for carbon credits issued (not necessarily the full amount of stocks present at time of Reversal). In the IFM example proposed, the Buffer Pool would not compensate for credits in excess of what was issued to the project.</p>

buffer withholding percentages as a function of project type.

Within forestry project types, IFM has a much higher risk of credits being reversed than AR, and for a particular set of risks, IFM projects should get substantially different buffer withholding percentages than AR projects. For example, an IFM project that is about a decade old might have on the order of 10% of the woody biomass within the project area counted as credits (including buffer credits), and if that project is one contiguous parcel a single large wildfire could cause emission of more than 10% of the carbon stock within the project area. This would reverse more than all the credits issued to the project, including both credits contributed to the buffer and traded credits.

Over time, as fire-killed trees decompose, net emissions could continue to increase. If an afforestation project of the same age experienced the same fire, and lost the same percentage of the biomass carbon stock present within the project area, the reversal is roughly the buffer contribution, with the traded credits remaining un-reversed. Also, if the afforestation project also gets credits from increasing soil carbon sequestration, a fire would not noticeably decrease the soil carbon stock, so the soil fraction of the AR project credits would suffer no reversal at all.

We can envision no situation where a grassland soil carbon restoration project would have a noticeable risk of unintentional reversal other than in the case of

Regarding potential soil carbon emissions, ACR agrees it stands to reason that this carbon pool is more resilient to disturbance, but soil carbon is not immune to disturbance and potential losses. This is an area in need of greater research, and ACR will continue to review this aspect of the Risk Tool in subsequent updates.

ACR has not experienced unintentional reversals anywhere close to the magnitude that would lend itself to actuarial analysis. This is likely because many ACR projects are large and geographically and ecologically diverse. As a result, only the most catastrophic and widespread disturbances would cause reversals, especially for PDA projects. Small and localized disturbances that may occur are typically overcome by annual forest growth; they do not cause overall carbon stocks to decline during the reporting period to the extent that it would constitute a reversal.

ACR has a large and growing volume of credits issued to aggregated or programmatic projects, which by definition have a wide geographic spread and inherent diversity, decreasing the likelihood of a single catastrophic event causing a reversal.

ACR will continue to refine risk and adjustment percentages in future versions of the Risk Tool as more data becomes available.

trespass or expropriation. Thus grassland soil carbon projects should get a lower buffer withholding percentage for natural disaster risks.

Similarly to soil carbon projects, we are aware of no significant risks to wetland project other than hydrologic risks of actors outside the project area or climate change substantially lowering water levels within the project area, including reduced water levels potentially stopping flooding. The proposed risk tool penalizes projects for flooding but, in reality, flooding may be important to wetland projects achieving expected amounts of carbon sequestration.

The serious problem we see with the proposed risk rating tool is lack of scientific basis for the assigned reversal risk values. At minimum, the tool should be accompanied by a companion paper showing the actuarial analysis behind each reversal risk rating criterion and buffer withholding percentage.

GreenTrees engaged an insurer to perform an actuarial analysis to quantify reversal risks faced by the GreenTrees project, for the basis of setting insurance premiums. The actuarial analysis of actual losses evaluated the GreenTrees project as having the risks shown in the table below.

Risk Type	Probability of Reversal
Wildfire	0.1%
Flood	0.1%

		<table border="1" data-bbox="506 240 961 358"> <tr> <td>Earthquake</td> <td>0.1%</td> </tr> <tr> <td>Disease/Pest</td> <td>0.2%</td> </tr> <tr> <td>Hurricane</td> <td>0.1%</td> </tr> </table> <p data-bbox="506 375 1188 610">Contrast these numbers with the proposed risk tool assigning the GreenTrees project wildfire risk on the order of 1.5%, biotic risk on the order of 1%, flooding risk on the order of 2%, and other natural disaster risk of 2%, and a total buffer withholding rate of approximately 10%.</p> <p data-bbox="506 626 1188 699">We encourage ACR to use actual data about reversals to develop more accurate reversal risk factors.</p>	Earthquake	0.1%	Disease/Pest	0.2%	Hurricane	0.1%	
Earthquake	0.1%								
Disease/Pest	0.2%								
Hurricane	0.1%								
33	S&A Carbon	<p data-bbox="506 737 1188 1424">For Hydrologic Risk, Step 6. The extent of OBL, FACW and FAC species within the project area for forest projects seems like a logical and sound way to reduce hydrologic risk. Based on published data set (ACOE) and “<i>Species presence must be demonstrated with forest inventory data, remote imagery, or other verifiable sources</i>”. While a reasonably scientific and robust approach I do think it will likely add complexity and time both to development and verification (additional calculations to quantify - looking up species’ rating, tabulating, estimating risk reduction, field identification of species during inventory/verification – e.g., willow shrubs vs willow trees). Also, some developers may utilize remote imagery, which may help improve the accuracy of the assessment of wetland plants, but I think it may add some uncertainty and risk (depends on method, and</p>	<p data-bbox="1203 737 1902 1138">ACR appreciates the input provided here regarding complexity and time regarding development and verification. ACR has explored the suggested option in-depth and has decided to further simplify this part of the tool to only include species included in the inventory. These are statistically representative of the carbon stocks to each project and therefore should be reasonably representative of carbon stocks subject to hydrologic risk. This will increase verifiability of this requirement.</p>						

verifiers would need to have the expertise to evaluate such methods to come to reasonable assurance on the results).

Moreover, isn't the assessment and quantification of wetland plants for this step really reflecting the potential flood buffering capacities within the project area that is being utilized to reduce risk? If this is the case, I'm wondering if ACR reviewed or considered just assessing the areal extent percentage of wetlands within the project area instead of using species specific quantification. Essentially reducing hydrologic risk by quantifying the wetlands in the project area, specifically freshwater emergent wetlands and forested wetlands (and ponds/lakes?). This information is available via public database – US Fish & Wildlife Service -National Wetlands Inventory <https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper> . Seems like a relatively easy approach to use, at least in the States. Also, many States often have their own GIS water resource databases that include wetlands). Such methods would offer a simpler approach, verifiable, and would be consistent. It would also be comprehensive assessment, looks at entire project area rather than plot based data that may or may always pick up wetlands (e.g., plot may have no trees but be wetland, such as a shallow emergent wetland (shrubs/herbaceous plants).