Chapter 173-446 WAC: Cap-and-Invest US Forest Offsets Protocol Formal Comment Period

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We appreciate Ecology's engagement with the technical working group as part of this process and see some improvements in the draft protocol as a result of this process. **We have a number of crucial suggestions for strengthening the scientific rigor of the protocol, which is urgently needed given that offsets must deliver on many core aspects of quality so that weak offsets do not compromise the efficacy of the Climate Commitment Act target of 95% greenhouse gas emission reductions by 2050.** These comments are based on a recent expert synthesis that we led about the crucial components for forest carbon offsets (Anderegg et al 2025) and a recently-published meta-analysis (Levine, Zahnd et al. 2026), which can be found below. Please see our specific comments below and we look forward to further engaging with Ecology to help provide expertise and data to improve the draft protocol.

References:

Anderegg, W. R., Blanchard, L., Anderson, C., Badgley, et al. (2025). Towards more effective nature-based climate solutions in global forests. *Nature*, *643*(8074), 1214-1222.

Levine, J. I., Zahnd, C., Blanchard, L., Fickle, J. C., Lengyel, T., Liu, M., ... & Anderegg, W. R. (2026). Variable impacts of forest treatments on carbon and mortality following disturbance. *Environmental Research Letters*.

Revision 2. Revise IFM - private lands projects baseline quantification and crediting approach

Regarding crediting periods for Improved Forest Management projects, we still encourage the Department of Ecology to adopt 5 year crediting periods and baseline reassessment intervals for most project types. Shorter crediting periods limit the time that baselines can be misaligned with actual conditions, and the trend across the carbon market is toward more frequent (e.g. 5 year) baseline reassessment intervals. Given the amount of uncertainty within the proposed 10 year time period, even within IFM projects on private lands, we discourage this for all project types, and especially nature-based carbon crediting projects, given the large potential for changing baselines, given uncertainty of natural growth (Brancalion and Holl 2020; Holl and Brancalion 2020) and

socio-economic changes that could affect projects. Shorter baseline reassessment intervals limit the time that baselines can be misaligned with actual conditions, including changing policies and market dynamics. This would make crediting more scientifically rigorous.

References:

Holl, K.D. and Brancalion, P.H.S. Tree planting is not a simple solution. *Science* (2020).

Brancalion, P. H., & Holl, K. D. (2020). Guidance for successful tree planting initiatives. *Journal of Applied Ecology*, *57*(12), 2349-2361.

Haya, B. K. et al. Comprehensive review of carbon quantification by improved forest management offset protocols. Front. For. Glob. Change 6, 958879 (2023).

Coffield, S. R. et al. Using remote sensing to quantify the additional climate benefits of California forest carbon offset projects. Glob. Change Biol. 28, 6789–6806 (2022).

Stapp, J. et al. Little evidence of management change in California's forest offset program. Commun. Earth Environ. 4, 331 (2023).

Revision 6. Set buffer pool contributions in consideration of regional risks

Given that most buffer pools are severely undercapitalized and inadequate, this is a step in the right direction, particularly the consideration of regional variation of risk. Regarding buffer pool contributions, Haya et al. (2023) found that about 26% was probably a conservative floor for stand-clearing disturbance and timber harvest disturbances in REDD+ projects, while Wu et al. (2023) observed that roughly 36% of area in California's compliance offset projects was projected to lose carbon over the twenty-first century in a mid-range emissions scenario. Therefore, total maximum buffer pool contributions may well need to be over 30% to robustly account for risk.

However, the predetermined maximum buffer pool contributions for fire (12%) and biotic risks (8%) are not scientifically defensible or robust. **The buffer pool contribution for all risks, especially fire risks, should represent scientifically-assessed risk, and not be limited to a predetermined cap. We have a forthcoming peer-reviewed paper in the next several months that provides robust, wall-to-wall US-wide buffer pool size maps that reveal the actual risks far exceed these caps and provide datasets that provide a robust solution** (Wu et al. in press). Furthermore, we urge the Department of Ecology to reconsider the 80% buffer pool contribution reduction offered

for implementing risk reduction treatments, which very likely overcompensates for the actual risk reduction accomplished by treatments and is not based on robust scientific evidence. **Risk reduction to buffer pool contribution should be updated to be based on rigorous scientific evidence for each specific risk factor, which a recent meta-analysis found was a maximum of 23% for wildfire risk reduction and zero for all other disturbances (Levine, Zahnd et al. 2026).**

Thus, these two elements of the buffer pool are inconsistent with the best-available science.

References:

Hurteau, M. D., Hungate, B. A. & Koch, G. W. Accounting for risk in valuing forest carbon offsets. Carbon Balance Manag. 4, 1 (2009).

Anderegg, W. R. et al. Climate-driven risks to the climate mitigation potential of forests. Science 368, eaaz7005 (2020).

Badgley, G. et al. California's forest carbon offsets buffer pool is severely undercapitalized.
Front. For. Glob. Change 5, 30426 (2022).

Anderegg, W. R. L., Trugman, A. T., Vargas G., G., Wu, C. & Yang, L. Current forest carbon
offset buffer pool contributions do not adequately insure against disturbance‐driven carbon losses. Glob. Change Biol. 31, e70251 (2025).

Wu, C. et al. Uncertainty in US forest carbon storage potential due to climate risks. Nat. Geosci. 16, 422–429 (2023).

Wu, C. et al. Carbon reversal risks from climate-sensitive disturbances in US forests. In AGU Fall Meeting Abstracts Vol. 2023, GC54D-06 (2023).

Wu, C. et al. *Nature* (in press)

Levine, J. I., Zahnd, C., Blanchard, L., Fickle, J. C., Lengyel, T., Liu, M., ... & Anderegg, W. R. (2026). Variable impacts of forest treatments on carbon and mortality following disturbance. *Environmental Research Letters*.

Revision 12. Alternative approaches for quantifying certain types of reversals

We believe that the language “avoidable” and “unavoidable” is a better categorization to differentiate reversals, and encourage the Department of Ecology to apply this language. Such language is important, as there are examples, such as personal or business insolvency leading to the defaulting of an activity participant on their obligations, which illustrate that while a reversal may not have been “Intentional”, it nevertheless is a result of actions by the activity participant for which they are responsible.

Proposed topics for continued research, not within the scope of this rulemaking

Topic 5. Allow insurance mechanisms in lieu of buffer pool contribution

Buffer pool accounts are far more robust than the insurance products described in the public consultation draft. Insurance policies would need to be required to be held for the entire 100+ year lifetime of a project. Yet, critically, insurance products only insure for a short period of time (e.g. 5-10 years).

In contrast, an adequately capitalized buffer pool could theoretically insure nature-based carbon credits for 50-100 years, which is likely the period of time carbon will need to be stored in such projects to make a real climate mitigation impact depending on emission scenario (Anderegg et al 2025). Instead of allowing insurance products to address durability, the Department of Ecology should better capitalize their buffer pool, based on rigorous, peer-reviewed, independent data sources to have adequate credits to insure risk of reversal given increasing climate risks.

References:

Anderegg, W.R.L., Blanchard, L., Anderson, C. *et al.* Towards more effective nature-based climate solutions in global forests. *Nature* 643, 1214–1222 (2025). https://doi.org/10.1038/s41586-025-09116-6

Topic 8. Revise 100-year project commitment within the US Forest Protocol

We agree with the Department of Ecology that project time commitments shorter than 100 years for projects that are at risk of reversal are not compatible with the requirements of the cap-and-invest program. The best science suggests that the project commitment period for any project at risk of reversal should be 100 years. This is not only to have a consistent project duration across jurisdictions linked to the program; it is also the scientifically robust choice. Carbon from a project must be sequestered until at least peak warming to have a real climate mitigation impact. The IPCC SSP2-4.5

emissions pathway mapping scenarios with intermediate GHG emissions suggests that peak warming will occur some time after 2100. Therefore, a 100 year durability requirement is a robust and scientifically grounded choice.

References:

IPCC, 2023: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 184 pp. doi: 10.59327/IPCC/AR6-9789291691647