

(carbon)plan

DEC 15 2022

Shelby Livingston
Manager, Compliance Offset Program
California Air Resources Board (by email)

RE: November 2022 workshop on the forest carbon offsets program

Dear Ms. Livingston and CARB staff,

Thank you for the opportunity to submit comments in response to CARB's recent workshop on the forest carbon offsets program.¹ A public discussion of the program and its substantial flaws is long overdue. Despite spending significant time discussing one of our research papers,² staff failed to provide any evidence or quantitative analysis to support their complete dismissal of our peer-reviewed findings — let alone feature any critical voices at any point during the workshop. Instead, CARB continues to engage in a well-documented pattern of engaging only political supporters and financially interested parties in public policy processes designed to promote the “integrity” of a program staff apparently feel no obligation to defend on the merits.³

At this point, it's hard to know what anyone could do to prompt staff to engage with criticism in good faith. We shared a preprint of our first major study documenting flaws in the forest offsets program with staff in March 2021.⁴ Some twenty months later, the staff response consists only

¹ California Air Resources Board, [Discussion of U.S. Forest Projects Compliance Offset Protocol and Relevant Science, Data, and Tools](#) (Nov. 30, 2022).

² Grayson Badgley et al. (2022), [Systematic over-crediting in California's forest carbon offsets program](#), *Global Change Biology* 28: 1433-1445.

³ See, e.g., [Resignation letter of Compliance Offset Protocol Task Force environmental representative Brian Nowiciki](#) (Feb. 8, 2021) (describing CARB's Compliance Offset Protocol Task Force report “a wish list of ideas for expanding and deregulating the offset program” that was written by representatives “that have a vested interest in expanding the use of offsets or have ties to industries and organizations that stand to benefit financially from offsets”).

⁴ As part of an in-depth reporting project led by veteran climate journalists Lisa Song and James Temple, CarbonPlan made a preprint of its over-crediting study available to CARB, carbon offset project developers, and four independent scientists chosen by the journalists to provide independent commentary on the work. Lisa Song and James Temple, [The Climate Solution Adding Millions of Tons of CO₂ into the Atmosphere](#), *ProPublica* and *MIT Technology Review* (Apr. 29, 2021). This story was subsequently selected for inclusion in an annual collection of outstanding science writing, [The Best American Science and Nature Writing 2022](#) (Ayana Elizabeth Johnson, ed.).

of a curated selection of email responses to journalists published on CARB's website⁵ and a formal statement that outsources its argument to a press release issued by a financially conflicted market participant.⁶ At no point have staff provided a quantitative critique of our findings or called for a correction with the reporting from *ProPublica* and *MIT Technology Review*.⁷ Instead, staff continue to rely on rhetorical, legalistic, and *ad hominem* attacks — all of which we have addressed previously.⁸

Meanwhile, our study has been peer-reviewed and published in a widely respected ecology journal,⁹ where the editors commissioned an independent perspective from a pair of scientists who encouraged policymakers to address the problems we identified.¹⁰ Three state Senators, including the current Vice Chair of the Joint Legislative Committee on Climate Change Policies, sent a public letter to CARB raising the same concerns;¹¹ and the Independent Emissions Market Advisory Committee, which is charged by statute with reviewing the cap-and-trade program, included our study's criticisms in a consensus report.¹² Finally, a bill that would have required CARB to review and reform the offsets program passed the California Senate with 28 votes in the last legislative session, but fell short by just seven votes on the Assembly floor.¹³

An outside observer reading the workshop materials would not have any sense of the extent to which academics, journalists, and legislators have raised serious questions about the forest

⁵ [CARB responses to questions from ProPublica on California's Forest Offset Protocol](#) (Apr. 29, 2021).

⁶ CARB, [California's Compliance Offset Program FAQ](#) (Oct. 27, 2021) at 6-7 (referencing a [press release](#) from the Pacific Forest Trust, which has developed projects in the offsets program).

⁷ Lisa Song and James Temple, [The California Air Resources Board Challenges Our Carbon Credits Investigation. We respond](#), *ProPublica* and *MIT Technology Review* (May 12, 2021) (noting that while CARB disputes CarbonPlan's study and their reporting, the Board "has not asked for any corrections").

⁸ Grayson Badgley et al, [Systematic over-crediting of forest offsets — FAQ](#), CarbonPlan (May 12, 2021) (responding to each of the arguments raised by the CARB staff workshop presentation).

⁹ Grayson Badgley et al. (2022), [Systematic over-crediting in California's forest carbon offsets program](#), *Global Change Biology* 28: 1433-1445.

¹⁰ Kristina J. Anderson-Teixeira and Ethan P. Belair (2022), [Effective forest-based climate change mitigation requires our best science](#), *Global Change Biology* 28: 1200-1203 (describing our study as a "a call to action to redouble efforts at integrating the latest carbon science into effective and timely policy solutions").

¹¹ [Letter from Senators Robert Hertzberg, Josh Becker, and Bob Wieckowski to CARB Chair Liane Randolph](#) (Aug. 6, 2021).

¹² Independent Emissions Market Advisory Committee, [2021 Annual Report of the IEMAC](#) (Feb 4, 2022) at 27-35. Note that one of us (Cullenward) is Vice Chair of the IEMAC. This letter does not represent the views of the IEMAC, but the 2021 Annual Report does.

¹³ [Senate Bill 1391](#) (Kamlager) (2021-2022 session). Note that one of us (Cullenward) testified in support of this bill and advised its author.

carbon offsets program.¹⁴ Instead of responding to the specific criticisms we and others have made, staff make vague assertions about the purported conservativeness of their analytical methods¹⁵ and incorrectly argue that state courts have insulated the offsets program from legal scrutiny.¹⁶ There is no accountability here, no analytical rigor — only raw politics that suggest regulatory capture, not regulatory confidence.

This letter addresses three topics. First, we document how the workshop casually dismissed serious additionality concerns that have been documented by researchers, journalists, and offset market participants.¹⁷ Second, we discuss the apparent enthusiasm for remote sensing applications as a possible replacement for on-the-ground forest carbon surveys. A shift to remote sensing risks opening up the floodgates to non-additional projects if the fundamental flaws with the program's baselines and additionality screening are not addressed first. And third, we address the proposed update to the program's buffer pool insurance program. While we thank staff for agreeing to tackle this topic in a program update, we urge CARB to impose a moratorium on new project development in high-risk areas while that work is ongoing. We identify projects-in-development that have already been hit by wildfires and will almost certainly burn again, which would only further drain the buffer pool if allowed to earn credits on the basis of the scientifically inaccurate risk factors that prevail today.

1. CARB's workshop downplayed and ignored significant additionality concerns.

The central problem with carbon offsets is that credits are awarded to projects in relation to a counterfactual baseline scenario that describes what they *could* do (or at least what projects say they could do). That scenario can never be seen or verified, and must be estimated instead. In practice, CARB's program rules let projects tell unreliable stories about what they could do,

¹⁴ CARB, Public Workshop Staff Presentation (Nov. 30, 2022).

¹⁵ *Id.* at slide 13. This response is all the more hollow because CARB does not actually quantify credit uncertainty nor implement a formal framework against which evidence can be evaluated. See Barbara Haya et al. (2020), Managing uncertainty in carbon offsets: insights from California's standardized approach, *Climate Policy* 20: 1112-1126.

¹⁶ CARB Staff Presentation, *supra* note 14 at 6 (discussing *Our Children's Earth Foundation v. California Air Resources Board* (1st Dist. 2015) 234 Cal.App.4th 870); *but see* Lisa Song and James Temple, A Nonprofit Promised to Preserve Wildlife. Then It Made Millions Claiming It Could Cut Down Trees, *ProPublica* and *MIT Technology Review* (May 10, 2021) (quoting University of San Francisco Law Professor Alice Kaswan: "If there's new scientific information that suggests serious questions about the integrity of offsets, then, arguably, CARB has an ongoing duty to consider that information and revise their protocols accordingly. The agency's obligation is to implement the law, and the law requires additionality.").

¹⁷ We also refer staff to detailed comments we filed with the Washington Department of Ecology, which are included here as Appendix 2.

without any apparent concern for whether these scenarios represent what projects *would* do in the absence of the billions of dollars' worth of credits CARB has issued to date.

Our over-crediting study documented how the bulk of credits in the forest offsets program are issued upfront to projects based on the difference between their current carbon stocks and so-called “common practice” baselines. CARB’s calculation of common practice is critical to the program’s integrity because the program rules allow projects to claim that they would harvest timber down to these levels in their baseline scenarios. Nearly all projects make this claim. Using official project data — including all of the “logical management unit” information CARB claims will prevent cherry-picking¹⁸ — we showed that projects preferentially cluster in areas where trees are naturally more carbon-rich than the program's coarse assumptions about average regional carbon stocks. Projects earn credits based on that false difference.

As a result, our study concluded that “nearly a third of all credits we analyzed do not reflect real climate benefits and are, instead, the consequence of methodological shortcomings.”¹⁹ We also documented several examples where project developers appear to have preferentially selected lands that earned spurious, non-additional credits due to these methodological shortcomings.

But you don’t have to take our word for it. Multiple program participants have publicly confirmed that they or others are exploiting weaknesses in the program’s rules. For example, Lisa Song and James Temple reported that:

“Zack Parisa, chief executive of the carbon offsets company SilviaTerra, previously consulted for project developers and landowners enrolling forests in California’s system. But he said he stopped out of frustration, after seeing the ways it was regularly being gamed, including the cherry-picking techniques CarbonPlan highlighted.”²⁰

Similarly, Jim Hourdequin, the CEO of Lyme Timber, has also indicated that CARB’s program rules allow projects to claim unrealistic baseline scenarios — including his own. He explains that while baseline scenarios are technically feasible and conform with the program's legal and financial rules, those scenarios are often commercially unrealistic and therefore unlikely to happen. In a public presentation at a major forestry conference, Mr. Hourdequin argued that:

¹⁸ CARB Staff Presentation, *supra* note 14 at slide 31; see also Badgley et al., *supra* note 8 (FAQ #04).

¹⁹ Badgley et al. (2022), *supra* note 2 at 1442.

²⁰ Song and Temple, *supra* note 4.

“[H]arvest reductions determined under the protocol are largely theoretical, and on many of the properties [enrolled in the program] it would be difficult to materially reduce standing timber to the level of common practice baselines.”²¹

In other words, many practices being credited are non-additional and do not lead to increased carbon storage, despite earning carbon credits that increase pollution in the cap-and-trade program. Mr. Hourdequin discussed in detail how these concerns could manifest across his own company’s portfolio, such that California’s protocol would allow Lyme Timber to earn more than twice the number of credits it should be given on the basis of its typical forest management practices.²² These non-additional credits are the result of the difference between what the protocol allows projects to say they *could* do in the absence of carbon incentives, and what Mr. Hourdequin’s expert analysis indicates such a timber owner *would* do under commercially reasonable conditions.

Mr. Hourdequin has also come forward with a truly mind-boggling story about a California forest offset project on his company’s land, CAR582.²³ Although the parcel in question was subject to a conservation easement at the time it was developed for the California program, with onerous terms that precluded timber harvesting going forward, Lyme Timber was able to claim, for the purposes of the baseline scenario, that it would aggressively harvest this land. While most non-additional harvest claims result from the difference between *could* and *would*, this example is particularly egregious because the baseline scenario the project submitted to CARB is actually prohibited by law. Nevertheless, the 2011 and 2014 forest protocols contain a loophole that enables projects to skip the usual requirement that baseline scenarios account for all legally binding requirements and thus generate obviously non-additional credits.

The extent to which this exemption plainly and facially violates the additionality standard likely explains why Washington’s Department of Ecology, which adopted California’s forest carbon offset protocols for use in its forthcoming cap-and-trade program, carefully excised this loophole from its regulatory approval.²⁴ Given how closely regulators in California and Washington collaborated on the Washington rulemaking, we believe it is implausible that CARB

²¹ Jim Hourdequin, [You Get What You Pay For: A TIMO Perspective](#), World Forestry Center 2021 Conference, Who Will Own the Forest? (Oct. 26, 2021) (discussion beginning at 07:15).

²² *Id.* (discussion beginning at 11:58).

²³ Ben Elgin, [This Timber Company Sold Millions of Dollars of Useless Carbon Offsets](#), *Bloomberg* (Mar. 17, 2022).

²⁴ [WAC 173-446-505 § 3\(b\)\(ii\)\(J\)](#) (eliminating the loophole in CARB’s 2014 forest protocol); *id.* at § 3(b)(iii)(N) (eliminating the loophole in CARB’s 2011 forest protocol).

staff are not aware of this outcome. Nonetheless, staff make no mention of this error nor offer any discussion of potential remedies to address the use of facially non-additional credits.²⁵

For the sake of argument, however, let's assume that none of the above concerns are valid. At the end of the day, we can still ask: is the program increasing carbon sequestration on participating lands? New peer-reviewed research from a team based at the University of California, Irvine, set out to answer this question using satellite data to compare outcomes across California forests that participate in the offsets program and similar in-state forests that do not.²⁶ As the study's lead authors put it in a recent summary, "we found that carbon isn't increasing in the state's 37 offset project sites any more than in other areas, and timber companies aren't logging less than they did before."²⁷

In other words, even if the program's methodology is robust to our criticisms, it isn't delivering additional carbon benefits on the ground — yet it produces carbon credits that have justified substantially higher climate pollution in the cap-and-trade program.²⁸ And even though the study's authors shared their paper with CARB before publication and also wrote a prominent op-ed in *The Los Angeles Times* that called on the workshop to explore program updates,²⁹ CARB staff did not acknowledge or engage with this evidence during the workshop.

These are not simple criticisms that can be ignored or easily resolved through minor program updates. They require acknowledgement and rigorous, evidence-based engagement from staff. Instead, the workshop fell into a longstanding pattern in which staff promoted the views of market participants and allied organizations that support their work, while ignoring and dismissing any critical evidence. As a result, the state's multi-billion-dollar carbon offsets market is completely insulated from accountability despite failing to deliver meaningful climate benefits.

²⁵ CAR582 was an early action project that transitioned into the compliance period under a separate OPR ID of CAR1130. Regulated emitters in the cap-and-trade program have surrendered credits from both listings for compliance purposes (see [CAR582](#) and [CAR1130](#) for a list of compliance users).

²⁶ Shane Coffield et al. (2022), [Using remote sensing to quantify the additional climate benefits of California forest carbon offset projects](#), *Global Change Biology* 28: 6789-6806.

²⁷ Shane Coffield and James Randerson, [Satellites detect no real climate benefit from 10 years of forest carbon offsets in California](#), *The Conversation* (Dec. 1, 2022).

²⁸ Cap-and-trade compliance entities have surrendered almost 128 million forest offset credits to comply with program regulations and hold over 47 million more forest offset credits in private accounts. CARB, [Q3 2022 Compliance Instrument Report](#) (Oct. 5, 2022).

²⁹ Shane Coffield and James Randerson, [Op-Ed: California's carbon-offset forests aren't trapping much carbon. Here's how to do better](#), *The Los Angeles Times* (Nov. 29, 2022).

2. Remote sensing technologies hold significant potential, but could lead to algorithmic gaming and widespread non-additional crediting in the absence of comprehensive program reforms.

Rather than provide a comprehensive response to extensive criticism about non-additional crediting outcomes, staff instead prompted participants to provide forward-looking guidance on how new science and measurements might lower costs and further expand the program.³⁰ During the public comment period, there was an especially vocal contingent of project developers, verifiers, and industry groups advocating for future program revisions to allow remotely derived estimates of carbon storage, instead of the current reliance on relatively expensive on-the-ground forest surveys.

While we appreciate the potential for these technologies to facilitate carbon measurement going forward, we are concerned that the premature adoption of remote sensing techniques could exacerbate non-additional crediting outcomes. We believe that the current cost of project development has effectively limited developers from exploiting smaller-scale arbitrage opportunities, where local forest conditions deviate from the program's coarse common practice calculations. Allowing low-cost, high-spatial-resolution carbon measurements to reduce or replace on-the-ground measurements could suddenly make smaller-scale carbon arbitrage opportunities financially attractive, taking further advantage of the weaknesses in current program rules. While we are open to proposals for using remote sensing techniques to improve current measurement requirements, any such changes should only be considered *after* reforms are adopted to address widespread additionality problems.

Absent wholesale reform, it's easy to imagine how projects could exploit known problems with the program rules using remote sensing technologies. For example, a well-financed project developer who knows that tanoak occurs in great abundance along the divide between the Northern California and Southern Cascades supersections could commission an extensive aerial LiDAR survey of the region. After building a detailed carbon map, the developer might then intersect their carbon data with a land ownership database³¹ to identify large properties with above-common-practice carbon stocks and a preponderance of tanoak — a carbon-dense species that lacks commercial value and therefore is not at any plausible risk of harvest. The developer could then propose turnkey carbon projects with tanoak owners that require no changes to current management practices.

³⁰ CARB Staff Presentation, *supra* note 14 at slides 36-37.

³¹ For example, a developer might take advantage of the publicly available CalLands database. Luke Macaulay and Van Butsic (2017), Ownership Characteristics and Crop Selection in California Cropland, *California Agriculture* 71: 221–30.

The developer could then run proprietary baseline optimization software, generating a legally permissible (even if commercially implausible) scenario for liquidating landowners' standing trees.³² The financial feasibility of these scenarios could be demonstrated by pointing to any of the timber harvest plans already used to justify the financial feasibility of other tanoak-dominated projects (such as CAR1339 or ACR378), even though tanoak lacks any meaningful commercial market. After programmatically generating baseline scenarios and going through third-party verification, a wave of non-additional credits could flood the market, earning the developer (and their investors) a hefty return at the expense of the atmosphere and overburdened communities throughout California.

Similarly lucrative carbon prospecting opportunities likely exist elsewhere, especially in coastal Alaska, where large Sitka spruce are averaged together with more diminutive trees like cottonwood and paper birch.³³ These measurement-enabled arbitrage opportunities emerge directly from the protocol's calculation of common practice, which averages together a wide diversity of tree species (assessment areas) over large geographic areas (supersections).

As the staff workshop presentation acknowledged, "[a]ny method of defining boundaries for Assessment Areas is imperfect and regional averages will never represent every location accurately."³⁴ As a result, any attempt to incorporate remote sensing into CARB's forest offsets protocol must include strong safeguards to ensure that those inevitable imperfections are not exploited by low-cost, high-spatial-resolution carbon measurements — which could facilitate the adverse selection of particular localities where conditions depart from regional averages.

To be clear, our objection isn't to the potential for remote sensing to reliably measure carbon, nor specifically to any measurement cost reductions remote sensing might facilitate. What we are concerned about is the potential of these technologies to facilitate algorithmic gaming of weak protocol rules. Those rules are already being gamed through much more manual and

³² Song and Temple, *supra* note 16 (reporting that a Bluesource marketing and communications manager, Emily Six, confirmed that Bluesource uses optimization software to generate profit-maximizing baseline scenarios); see also Badgley et al. (2022), *supra* note 2 at 1442 (discussing how project documentation for ACR373 acknowledges similar optimization techniques). While CARB argues that our observation that nearly all projects submit baseline scenarios that reach the minimum common practice numbers allowed under program rules is a sign of the methodology's strength, rather than its weakness — see CARB Staff Presentation, *supra* note 14 at 28 — the fact that developers are using optimization software to generate those outcomes illustrates that developers are not actually trying to project realistic harvest conditions but rather earn the most credits that the rules allow. It also substantiates the risk that developers might use optimization techniques to exploit any new opportunities for adverse selection.

³³ Badgley et al. (2022), *supra* note 2 at 1439-40.

³⁴ CARB Staff Presentation, *supra* note 14 at slide 28.

labor-intensive strategies today, and could be gamed much more cost-effectively on the basis of remote sensing technologies in the future.

Given the robust evidence that project developers have already gamed baselines via adverse selection and the use of optimization software to design baseline scenarios to maximize credit issuance, CARB should anticipate that any proposed adoption of remote sensing measurement options could facilitate accelerated gaming in the future.

3. CARB should implement a moratorium on high-risk project development while it completes an update to its buffer pool risk factors.

We welcome the news that staff plan to revise the buffer pool's reversal risk factors that dictate the number of credits set aside to cover unintentional reversals. Until those revisions take place, however, CARB should impose a moratorium on new project development in fire-prone areas. We also offer suggestions for how CARB could address the deep uncertainty facing any effort to predict future forest disturbance rates.

Allowing the continued development of exceptionally fire-prone projects threatens to further undermine the already-fragile buffer pool.³⁵ CAR1614 provides a clear example of why a moratorium must be put in place. CAR1614 is a "listed" project that is currently under development, spanning almost 130,000 acres of semi-arid mixed California conifer forest in Siskiyou and Jackson counties. Although the project is still eligible to change its final project boundaries, the proposed project area³⁶ was partially burned by two large wildfires in 2022, the McKinney (~60,000 acres) and the Mountain (~13,000 acres) fires. The listed project area was also affected by the 2014 Beaver fire (~34,000 acres), the 2016 Gap fire (~33,000 acres), and the 2018 Klamathon fire (~38,000 acres). Given the frequency and size of these events, it simply is not credible to assert that the project's actual wildfire reversal risk approaches anything as low as 4 percent.

Similarly, Sierra Pacific Industries has a lot of land in the development pipeline. Many of these projects, like CAR1384,³⁷ hug the arid foothills of the Sierra, which are especially fire-prone and ill-suited for long-term carbon storage. In fact, part of the proposed boundary for CAR1384 intersects the footprint of the 2018 Camp fire, the 150,000-acre megafire that devastated the town of Paradise. We know that residential fire insurance markets are collapsing in these areas,

³⁵ Grayson Badgley et al. (2022), [California's forest carbon offsets buffer pool is severely undercapitalized](#), *Frontiers in Forests and Global Change* 5: 930426.

³⁶ Climate Action Reserve, [Klamath Forest Carbon Offset Project \(CAR1614\)](#), Attachment E (July 2022).

³⁷ Climate Action Reserve, [Mosquito 2019 \(CAR1384\)](#).

contributing to substantial community displacement³⁸ — yet the buffer pool continues to allow projects to socialize future wildfire losses based on scientifically invalid risk factors.

Forest projects that have burned during project development have a poor track record with wildfires after they enter the California offsets program. Both ACR255 (Colville) and ACR260 (Warm Springs) burned during project development and later experienced large unintentional reversals from severe wildfire events. While in development, part of ACR255's proposed project area was incinerated by the North Star megafire, which ultimately consumed over 200,000 acres. The final project area has burned several times since, including the 2019 Williams Flat and the 2021 Summit Trail fires. Those events resulted in pending reversals of 3.74 million offset credits.³⁹ Like ACR255, ACR260 also burned during project development, when the Bear Butte fire burned part of the project's listed area. Despite the clear demonstration of fire risk, ACR260 was enrolled in California's forest offsets program — only to have a significant portion of the project area burn in the 2020 Lionshead fire.⁴⁰

Development in fire-prone areas threatens the program's buffer pool. CARB has appropriately recognized the need to revise its outdated risk factor assumptions, but needs to issue an immediate moratorium on projects in high-risk areas until those risk factors can be properly calibrated to the reality facing forests in the American West.

We are also encouraged that staff have already engaged with leading experts studying forest disturbance dynamics, as evidenced by the inclusion of wildfire risk experts like Dr. Karin Riley as a speaker at the workshop.⁴¹ We anticipate that a number of other experts will submit comments and hope CARB staff will consider what the research community has to say about the unprecedented level of disturbance they are observing in American forests.

As you review the risks facing forests participating in California's offsets program, we want to make two points. First, any update needs to reflect the deep uncertainty surrounding the future evolution of forested ecosystems in the United States. Second, in light of substantial scientific uncertainty, it is essential that the analytical assumptions and risk management framework underlying whatever future risk factors are adopted be transparent and completely documented in public. Because the current risk factors were not based on any traceable evidence or

³⁸ Pauline Bartalone, [Their Home Survived The Camp Fire — But Their Insurance Did Not](#), NPR Weekend Edition (Feb. 17, 2019).

³⁹ Grayson Badgley and Danny Cullenward, [California forest carbon buffer pool update](#), CarbonPlan (Dec. 1, 2022)

⁴⁰ Claudia Herbert et al., [Carbon offsets burning](#), CarbonPlan (Sept. 17, 2020).

⁴¹ Karin Riley, [Opportunities for updating forest offset protocols: tree-level model of CONUS and fire risk modeling](#), CARB workshop presentation (Nov. 30, 2022); see also U.S. Forest Service, [Wildfire Risk to Communities](#).

analysis, it has proven difficult to have a robust conversation about whether or not the risk factors are adequate in the face of observed evidence.

Going forward, it will be essential for policymakers and the research community to be able to monitor, evaluate, and update the risk management framework CARB adopts. This is particularly important in light of surprises, which continue to mount. For example, U.S. Forest Service researchers recently announced massive and unexpected losses of fir trees across Southern Oregon and Northern California, which they termed “firmageddon.”⁴² This event has a direct bearing on the forest offsets program, as white fir (*Abies concolor*) embody a significant fraction of the credited carbon in several offset projects throughout the region. To list a few examples, white fir constitutes approximately 70 percent of the basal area of CAR1066, 20 percent of ACR274, 14 percent of ACR273, and 21 percent of CAR1614, a listed project that has yet to receive credits.

Because this particular mortality vector was not anticipated, it is important that any risk management framework be able to respond to and account for the all-but-inevitable surprises that lie ahead.⁴³ To help assist CARB in its work, we include an incomplete list of studies that help frame the substantial uncertainty facing future forest disturbance risks in an appendix.⁴⁴

Thank you for the opportunity to submit comments.



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⁴² Nathan Gilles, [Record Number of Firs Dying in Oregon, Washington in What Experts Call ‘Firmageddon’](#), *The Oregonian* (Nov. 25, 2022).

⁴³ Richard J. Hobbs et al. (2009), [Novel ecosystems: implications for conservation and restoration](#), *Trends in Ecology & Evolution* 24: 599-605.

⁴⁴ See Appendix 1 to this letter.

Appendix 1 – Studies documenting deep uncertainty in forest disturbance risks

- William R.L. Anderegg et al. (2022), A climate risk analysis of Earth’s forests in the 21st century, *Science* 377: 1099-1103.
- Songlin Fei et al. (2019), Biomass losses resulting from insect and disease invasions in US forests, *Proceedings of the National Academy of Sciences* 116: 17371-17376.
- William M. Hammond et al. (2022), Global field observations of tree die-off reveal hotter-drought fingerprint for Earth’s forests, *Nature Communications* 13: 1-11.
- Henrik Hartmann et al. (2022), Climate change risks to global forest health: emergence of unexpected events of elevated tree mortality worldwide, *Annual Review of Plant Biology* 73: 673-702.
- Rupert Seidl et al. (2017), Forest disturbances under climate change, *Nature Climate Change* 7: 395-402.
- Anna T. Trugman et al. (2022), Why is tree drought mortality so hard to predict?, *Trends in Ecology & Evolution* 36: 520-532.

Appendix 2 – CarbonPlan comment letter to Washington Department of Ecology

- CarbonPlan comment letter to Washington Department of Ecology (July 15, 2022)
(PDF attached)

(carbon)plan

JULY 15 2022

Joshua Grice
Washington Department of Ecology
Air Quality Program
P.O. Box 47600
Olympia, WA 98504-7600

RE: The proposed adoption of California's forest carbon offset protocols

Dear Mr. Grice,

Thank you for the opportunity to comment on the Department of Ecology's proposed Chapter 173-446 WAC Climate Commitment Act Program Rule.¹ Our comments today focus on the proposed adoption of California's forest carbon offset protocols for eligibility in Washington's cap-and-trade program,² which we respectfully believe is inconsistent with Washington law.

For context, CarbonPlan is a non-profit research organization with expertise in climate science, forest ecology, and carbon offsets. Over the past two years, we have conducted research and published peer-reviewed studies in leading academic journals that document statistical and ecological shortcomings in the design of California's forest carbon offsets protocols. We write today to summarize key findings from our work, which demonstrates that California's forest offsets protocols do not meet the relevant statutory standards: just as in California, Washington law requires that all carbon offset credits "[r]esult in greenhouse gas reductions or removals that: (i) Are real, permanent, quantifiable, verifiable, and enforceable; and (ii) Are in addition to greenhouse gas emission reductions or removals otherwise required by law and other greenhouse gas emission reductions or removals that would otherwise occur[.]"³

Our peer-reviewed research demonstrates that California's forest offsets protocols fail to meet statutory requirements that offsets be real, permanent, and additional. In addition to describing these findings, we also review extensive reporting from journalists at *ProPublica*, *MIT*

¹ Washington Department of Ecology, [Chapter 173-446 WAC Climate Commitment Act Program Rule, Rule Proposal Phase \(CR-102\) \(May 16, 2022\)](#) (hereinafter "Proposed Rule").

² Proposed Rule at § 173-446-505(3)(b).

³ RCW § [70A.65.170\(2\)\(b\)](#). California's climate law includes almost identical provisions. See Cal. Health & Safety Code §§ [38562\(d\)\(1\)-\(2\)](#).

Technology Review, *The Los Angeles Times*, *Grist*, *Bloomberg*, and *National Geographic*, all of whom have described shortcomings in the California forest carbon offsets program.

The scope and severity of the problems we have documented cannot be easily fixed through a handful of tweaks or changes. And although evidence of the California program's shortcomings is comprehensive and growing, the California Air Resources Board (CARB) has broadly disputed criticism without addressing substantive concerns or providing a technical response. The only official position we are aware of is a short FAQ document.⁴ CARB has not conducted a rulemaking process to review the forest carbon offset program since the adoption of the most recent protocol in 2015, despite issuing over 195 million forest offset credits worth over \$3 billion at recent market prices.⁵

Rather than perpetuating a flawed carbon offset framework that the California Air Resources Board has shown no interest in fixing, Washington should instead pursue a strategy of directly funding good forest management practices under the cap-and-invest strategy of the Climate Commitment Act — an option already anticipated by the Act's natural climate solutions account.⁶ This approach would allow Washington to support climate-smart forest management and achieve meaningful climate action without engaging in questionable greenhouse gas accounting that falls short of the clear statutory requirements in place in both Washington and California.

The rest of our letter details concerns with respect to carbon offset baselines, permanence, and additionality. We address each topic in turn.

Baselines

California's forest carbon offset protocols generate over 80% of all credits issued to date, with the bulk of credits awarded to improved forest management (IFM) projects that purport to change forest management practices.⁷ The logic of IFM credits is straightforward and begins with the construction of a baseline scenario. IFM forest offset projects submit paperwork outlining how they *might* manage their lands over the course of the next 100 years. This

⁴ CARB, [California's Compliance Offset Program](#) (Oct. 27, 2021).

⁵ CARB, [Offset Credit Issuance Table](#) (July 13, 2022) (reporting 195.3 million forest offset credits issued); CARB, [Summary of Transfers Registered in CITSS By California and Québec Entities During the First Quarter of 2022](#) (May 2, 2022) (reporting a weighted average credit price of \$16.05).

⁶ RCW § [70A.65.270](#). To the extent Washington policymakers intend to rely on carbon offsets as cost containment, we respectfully suggest that cost concerns are better addressed in the design of the state's emissions containment reserve, allowance price containment, and price ceiling features. RCW §§ [70A.65.140](#), [70A.65.150](#), and [70A.65.160](#).

⁷ Independent Emissions Market Advisory Committee, California Environmental Protection Agency, [2021 Annual Report of the IEMAC](#) (Feb. 4, 2022) at 29 (see Table 2).

constitutes the project’s baseline scenario — a counterfactual description of what *could* happen to a forest in the future.

Any excess carbon is deemed to provide additional climate benefits and receives carbon credits, so long as a project’s baseline scenario meets three criteria:

- First, it must be legally possible to carry out the imagined baseline scenario.⁸ Thus, if a government regulation prohibits a certain pattern of aggressive timber harvesting, a project cannot propose that it would conduct such harvesting in its baseline scenario.
- Second, the project must show that its baseline scenario is financially feasible.⁹ Projects typically satisfy this requirement by showing that the modeled net present value of the harvest scenario is greater than zero. It is only required that the harvest scenario have a positive return; there is no requirement that the baseline scenario represents the highest financial return or even typical commercial timber management practices. This requirement helps establish that a baseline scenario is possible, but is by no means adequate to ensure that a scenario is reasonable or likely.
- Finally, in cases where a forest is well stocked, average carbon stocks in the baseline scenario cannot fall below regional average stocking levels known as “common practice.”¹⁰ In essence, the common practice requirement places an upper bound on crediting and prevents projects from claiming they would entirely liquidate standing carbon stocks. This requirement is intended to constrain unrealistic or ecologically problematic baseline scenarios, but depends on an accurate determination of common practice.

Our research revealed substantial statistical and ecological errors in how the California regulator calculated common practice.¹¹ Rather than considering the distinct environmental conditions and tree species in an individual project, the protocol calculates average carbon

⁸ CARB, Compliance Offset Protocol U.S. Forest Projects (June 25, 2015) at § 3.4.1 (Legal Requirement Test); *id.* at § 5.2.1(e)(1) (specifying legal constraints on the baseline scenario). As discussed further below, however, California’s forest offset protocols contain a loophole whereby the requirements of certain conservation easements can be ignored for the purposes of satisfying the Legal Requirement Test. See discussion at note 43, *infra*.

⁹ *Id.* at § 3.4.2 (Performance Standard Evaluation); *id.* at § 5.2.1(e)(2) (specifying financial constraints on the baseline scenario).

¹⁰ *Id.* at § 5.2.1(f)(1) (requiring that average carbon stocks do not fall below the minimum baseline or “MBL”); *id.* at § 5.2.1(d) (defining minimum baselines based on common practice values).

¹¹ Grayson Badgley et al. (2022), Systematic over-crediting in California’s forest carbon offsets trading program, *Global Change Biology* 28: 1433-45. The journal editors also commissioned an independent commentary from researchers who support the use of carbon offsets, but believe that carbon offset credits need to address the issues raised by this study. See Kristina J. Anderson-Teixeira and Ethan P. Belair (2022), Effective forest-based climate change mitigation requires our best science, *Global Change Biology* 28: 1200-03.

stocks by combining dissimilar species across large geographic areas. Because the mixture of tree species present within a project might not match the mixture of species used to construct the regional average, it is common for project carbon stocks to exceed protocol averages simply because of sampling bias, as opposed to the project having actually taken steps to improve management or actively promote carbon storage. These significant statistical flaws have been widely exploited by market actors and are best illustrated by example.

For instance, we identified a project in coastal Alaska where about 95% of the trees enrolled in the project are Sitka spruce, huge trees capable of storing vast quantities of carbon.¹² When calculating the regional average, however, the California regulator combined together large Sitka spruce with species that contain significantly less carbon, like paper birch and cottonwood. Thus, the project was allowed to construct a baseline scenario in which Sitka spruce were harvested far more aggressively than is typical because of the protocol's biased common practice calculation. Including less-carbon-dense species in the comparison lowered the regional average and allowed the project to claim hundreds of thousands of spurious offset credits. This sort of comparison makes about as much sense as trying to figure out whether your elephant is of an above-average size by comparing it to a pig.

Similar dynamics play out in projects scattered across Northern California, where the California protocols' common practice numbers average together large, carbon-dense trees like redwood and Douglas fir that occur near the coast with scrubby, inland species like Ponderosa pine. Projects have almost exclusively been developed along the western edge of this region, where milder temperatures and greater precipitation support naturally higher-carbon forests that are nevertheless compared against unrepresentative regional averages. These projects take advantage of the California protocol's ecologically flawed common practice calculations to generate millions of excess carbon credits.¹³

We even identified a case where the California regulator assumed forests in parts of New Mexico contained no carbon at all.¹⁴ Despite this clear error, a project in the region was awarded over 4 million offset credits on the basis of an unreasonable baseline.¹⁵

¹² ACR361, [Forest Carbon Partners - Port Graham Corporation IFM Project](#).

¹³ See Figure 6 in Badgley et al. (2022), *supra* note 11; ACR189, [Miller Forest](#).

¹⁴ This is physically impossible because trees are made up of roughly 50 percent carbon by mass. Nevertheless, California's 2011 and 2014 forest offset protocols assumed that forests in New Mexico contain no carbon on average. See, e.g., CARB, [Compliance Offset Protocol U.S. Forest Projects \(Nov. 14, 2014\) - Assessment Area Data File](#) (indicating a common practice of zero carbon per acre of Central New Mexico Pinyon / Juniper Woodland in cell G125). Under protocol rules, a property in New Mexico with even just a handful of trees would have been eligible to receive carbon credits.

¹⁵ CAR1183, [Forest Carbon Partners - Mescalero Apache Tribe IFM Project](#).

Reporting by *ProPublica* and *MIT Technology Review* revealed that knowledge of these errors is an “open secret” within the forest offsets project developer community.¹⁶ The journalists quote one market participant as describing how their project would have received substantially fewer credits “if you cross the street” — meaning if it had been located just a mile or two away. And this reporting revealed that the questionable New Mexico project mentioned above was initiated a full year after CARB staff publicly acknowledged the protocol error, and just two weeks before the protocol rules were changed to close the loophole from which it benefitted.

Our peer-reviewed research demonstrates that a substantial number of forest offset credits issued under California’s protocols are based on statistical flaws that project developers understand and exploit, rather than new climate benefits caused by changes in land management decisions. Our findings indicate that between 20 and 38 percent of total credits are the product of statistical flaws in the way California’s protocols determine common practice, and as such, do not represent real or additional climate benefits.

Nonetheless, these faulty credits are still being used to justify real emissions throughout the state of California and, if adopted as part of the Climate Commitment Act, those same credits will be used to justify ongoing carbon pollution in Washington state.

Permanence

As in California, Washington’s Climate Commitment Act requires carbon offsets to be “permanent,” but does not define this critical term.¹⁷ CARB interpreted “permanent” to require only a minimum duration of carbon storage of 100 years.¹⁸ While the Proposed Rule does not appear to define this term, it explicitly designates California’s forest offset protocols as satisfactory.¹⁹ Thus, the Proposed Rule appears to be implicitly adopting California’s 100-year definition of permanence — despite also making explicit reference to a separate regulatory definition of permanence based on a 1000-year time horizon.²⁰

¹⁶ Lisa Song and James Temple, *The Climate Solution Actually Adding Millions of Tons of CO₂ Into the Atmosphere*, *ProPublica* and *MIT Technology Review* (Apr. 29, 2021).

¹⁷ RCW § 70A.65.170(2)(b)(i); Cal. Health & Safety Code § 38561(d)(1).

¹⁸ Cal. Code Regs., title 17, § 95802 (see definition of “Permanent”).

¹⁹ Proposed Rule at § 173-446-505(3)(b).

²⁰ The Proposed Rule appropriately excludes from the definition of “covered emissions” any carbon emissions that are permanently sequestered. *Id.* at § 173-446-040 (citing WAC § 173-407-110). The definition of “permanent” sequestration in question is achieving “a high degree of confidence that substantially ninety-nine percent of the greenhouse gases will remain contained for at least one thousand years.” WAC § 173-407-110. We respectfully suggest that the Department of Ecology should adopt a similar interpretation of the word “permanent” in its Proposed Rule.

We believe a 100-year time horizon directly contradicts the plain meaning of the word “permanent,” which is used elsewhere in the Proposed Rule to mean “forever” rather than “temporary.”²¹ It also bears no relationship to the timeframe over which ongoing CO₂ pollution authorized by the use of carbon offsets will affect the global atmosphere, biosphere, and oceans — effects that last for thousands of years and beyond.²² But even if it is appropriate to ignore the ongoing harm of climate pollution after an artificial cut-off of 100 years, California’s forest offset protocols fall to satisfy this minimum standard and should be rejected.

The general requirement for permanence originates from the physical reality that a substantial fraction of the CO₂ released by the combustion of fossil fuels remains in the atmosphere for millennia.²³ Burning fossil fuels effectively creates a permanent change in atmospheric CO₂ concentrations that results in a near-linear increase in global temperatures.²⁴

The lifetime of the CO₂ stored by trees and used as carbon offsets is decidedly shorter than millennia. Trees take up CO₂ via photosynthesis and incorporate a fraction of that carbon into long lasting tissues, like wood. However, the carbon stored in trees is subject to episodic and catastrophic re-release into the atmosphere through natural disturbances like wildfire and drought. If we want to use forest carbon to counteract the climate harms of fossil fuel emissions, we need some assurance that the carbon temporarily stored in trees generates climate benefits that are roughly equivalent to the climate harms of emissions.

California’s forest offsets protocol attempts to manage this mismatch in timescales using a type of insurance mechanism called a buffer pool. Each time a forest project receives offset credits, the project contributes some portion of those credits to the buffer pool. This pool of credits represents a bank of unclaimed climate benefits that are used to compensate for carbon losses from natural (or “unintentional”) disturbances across the entire portfolio of forest projects. The loss of forest carbon due to a fire, for example, acts to eliminate climate benefits. Retiring an equal number of buffer pool credits compensates for that loss, leaving intact the environmental claims of the program as a whole.

²¹ See, e.g., Proposed Rule at § 173-446-600 (indicating that the Department of Ecology will “permanently retire” compliance instruments used for compliance purposes). It would be illogical for this provision to be interpreted as the Department of Ecology’s intention to temporarily remove compliance instruments for entity accounts for a period of at least 100 years, and yet that is what consistency with the adoption of California’s definition of permanence implies.

²² Zeke Hausfather, Let’s Not Pretend Planting Trees Is a Permanent Climate Solution, *The New York Times* (June 4, 2022).

²³ David Archer et al. (2009), Atmospheric Lifetime of Fossil Fuel Carbon Dioxide, *Annual Review of Earth and Planetary Sciences* 37: 117-34; Raymond T. Pierrehumbert (2014), Short-Lived Climate Pollution, *Annual Review of Earth and Planetary Sciences* 42: 341-79.

²⁴ Myles Allen et al. (2009), Warming caused by cumulative carbon emissions towards the trillionth tonne, *Nature* 458: 1163-66; H. Damon Matthews et al. (2009), The proportionality of global warming to cumulative carbon emissions, *Nature* 459: 829-33.

In theory, a buffer pool is a perfectly valid mechanism to maintain the environmental integrity of temporary carbon storage. In practice, implementation is extremely difficult. Designing a sound buffer pool requires precisely estimating the disturbance risks faced by every forest type across the continental United States over the course of the next century, in the face of unprecedented ecological and climatological change.

Three lines of evidence indicate that California's forest carbon offsets protocols have failed to address the risk of forest carbon reversal, even over an inadequate timeframe of 100 years.

First, the protocols' reversal risk factors are not based on any explicit scientific analysis or evidence. In describing the risk factors and the associated credit contributions required to be made to a common buffer pool, California's forest offset protocols make no reference to a formal analysis nor do they discuss any scientific literature. Reporting from *Grist* suggests that the buffer pool risk factors were based largely on expert intuition, as opposed to explicit analysis that accounted for the distinct risk facing different tree species and locations.²⁵ From an ecological perspective, ignoring species-specific risks is the equivalent of a life insurance company writing policies without considering an applicant's age or medical history.

Second, the California buffer pool risk factors are static across space and through time. That means that forests in the arid foothills of the eastern Cascades are assigned the same fire risk as forests in the rainy upper peninsula of Michigan. The average 100-year integrated wildfire risk across the continental United States has more than doubled in recent decades — from 3.9 to 8.1 percent — when comparing observed fire events from a baseline period of 1984-2000 to a more recent period spanning 2001-2017.²⁶ Historical fire risks in arid western forests are already substantially higher, with some areas exceeding 30 and even approaching 50 percent. We know that in general fires will grow larger, more frequent, and more severe as the Earth continues to warm.²⁷ Yet the California forest carbon offset protocols require that projects contribute only 2 to 4 percent of their credits to the buffer pool to account for wildfire.²⁸

Third, we recently completed a formal analysis of the California buffer pool that evaluated the risk exposure of the projects credited under California's forest offset protocols.²⁹ We looked at

²⁵ Emily Pontecorvo and Shannon Osaka, California is banking on forests to reduce emissions. What happens when they go up in smoke?, *Grist* (Oct. 27, 2021).

²⁶ William R.L. Anderegg et al. (2020), Climate-driven risks to the climate mitigation potential of forests, *Science* 368: eaaz7005 (see Figure 4).

²⁷ William R.L. Anderegg, Orianna S. Chegwidden, et al. (2022), Future climate risks from stress, insects and fire across US forests, *Ecology Letters* 25: 1510-20; John T. Abatzoglou et al. (2021), Projected increases in western US forest fire despite growing fuel constraints, *Communications Earth & Environment* 2: 27.

²⁸ See, e.g., CARB, *supra* note 8 at 135 (Table D.7).

²⁹ Grayson Badglet et al. (in press), California's forest carbon offsets buffer pool is severely undercapitalized, *Frontiers in Forests and Global Change*. As of this writing, our article has

each risk factor included in the buffer pool — wildfire, disease and insects, other natural disturbances, and financial and management risks — and concluded that the buffer pool is severely undercapitalized.

For the wildfire component, we quantified carbon losses from fires that have already burned through California forest offset projects. Six such events have occurred to date. Two of those fires, which occurred in 2015 and 2018, have already resulted in the retirement of over 1.1 million credits from the buffer pool. The regulator has yet to verify the number of credits lost from four additional fires that occurred during the 2020 and 2021 fire seasons.³⁰ For those projects, we calculated likely carbon losses using satellite-derived estimates of tree mortality produced by the U.S. Forest Service. Based on the expected carbon losses from these projects, we calculated that at least 95 percent of the buffer pool credits allocated to insure against wildfire for the next 100 years will be depleted. In other words, an insurance mechanism that was meant to last 100 years didn't last a decade.

The disease and insect component of the buffer pool looks no better. We focused our analysis on tanoak, a tree species endemic to coastal Oregon and California. Despite their limited geographic range, tanoak are heavily represented in California's forest offset program. At least 20 projects contain a significant amount of tanoak, with 14 million tons of CO₂ credited to this species. Unfortunately, tanoak are incredibly susceptible to a disease called sudden oak death, which kills tanoak with devastating efficiency.³¹ We developed three plausible scenarios for future tanoak mortality, taking into account the unique epidemiology of sudden oak death. Even under our most conservative estimates, we found that the effects of this one disease on tanoak alone could encumber 82 percent of the buffer credits set aside for disease and insects. Under our high mortality scenario, which more closely corresponds with expert predictions for the future of tanoak, as much as 159 percent of the disease and insect buffer pool credits could be consumed by dying tanoak, leaving the buffer pool perilously undercapitalized to handle losses from other forest diseases. Thus, the entire disease and insect component of the buffer pool appears to be fully subscribed by a single pathogen's anticipated effect.

In addition to our quantitative analysis of the wildfire and disease and insect components of the buffer pool, we briefly reviewed the program's preparedness for other natural risks, like drought. Drought as a major cause of tree mortality was only starting to be understood by

completed peer review and been accepted for publication. A preprint that incorporates all feedback received from peer reviewers is available on [bioRxiv](https://www.biorxiv.org/).

³⁰ Projects have 23 months after reporting wildfires to submit verified carbon losses, which are still outstanding but not yet late as of this writing. Cal. Code Regs., title 17, § 95983(b).

³¹ Richard C. Cobb et al. (2020), [The Magnitude of Regional-Scale Tree Mortality Caused by the Invasive Pathogen *Phytophthora ramorum*](https://doi.org/10.1016/j.esr.2020.1001500), *Earth's Future* 8: e2020EF001500.

scientists when California designed its forest offsets protocol.³² In the subsequent decade, forest ecologists have come to realize that forests across the globe are no longer in equilibrium with prevailing climatic conditions due to the effects of climate change. As the world continues to warm and rainfall patterns shift, we should expect large-scale forest mortality events that will ultimately cause the rearrangement of forest ecosystems as they adjust to novel climate conditions. Given the recent nature of these findings, it's all but impossible that the buffer pool has adequately priced the risk of drought. One of our academic collaborators, University of California, Santa Barbara ecologist Dr. Anna Trugman, studies drought and the future of forests. She put the challenge of addressing forest risks succinctly:

“I’m a forest ecologist and thinking right now on a 100-year time scale of what forests will look like—it’s really hard. ‘Best science’ can’t tell you what this buffer pool should be. You’d need some infinite fudge factor.”³³

California’s forest offset protocols lack any formal analysis supporting the design of the buffer pool and, by extension, the program’s claimed ability to protect forest carbon for at least 100 years. The meager risk factors that exist don’t include geographic variation in wildfire or drought risks, despite the obvious differences across American forests. And there is no consideration of how these risk factors are expected to worsen in the face of a changing climate. All available evidence indicates that the buffer pool is severely undercapitalized, and thus incapable of meeting its promised 100-year protections.

Meanwhile, carbon offset credits issued under these standards justifies more fossil CO₂ pollution — with impacts that are truly permanent.

Additionality

The Climate Commitment Act requires that offset credits be additional.³⁴ The Proposed Rule defines additionality in the context of carbon offsets as:

“[G]reenhouse gas emission reductions or removals that exceed any greenhouse gas reduction or removals otherwise required by law, regulation or legally binding mandate, and that exceed any greenhouse gas reductions or removals that would otherwise occur in a business-as-usual scenario.”³⁵

³² Henrik Hartmann et al. (2022), Climate Change Risks to Global Forest Health: Emergence of Unexpected Events of Elevated Tree Mortality Worldwide, *Annual Review of Plant Biology* 73: 673-702.

³³ Craig Welch, Polluters are using forests as ‘carbon offsets.’ Climate change has other plans., *National Geographic* (May 4, 2022).

³⁴ RCW § 70A.65.170(2)(b)(ii); see also Cal. Health & Safety Code § 38562(d)(2).

³⁵ Proposed Rule at § 173-446-020; see also Cal. Code Regs., title 17, § 95802.

Because carbon offsets are used to justify additional fossil CO₂ emissions and climate harms, it is essential that offsets lead to novel climate benefits to fully counteract those harms. Unfortunately, the California forest offset protocols fail to achieve this requirement in practice.³⁶

Journalists have documented several examples of non-additional forest carbon offset projects operating under California's rules. In an article written jointly for *ProPublica* and *MIT Technology Review*, Lisa Song and James Temple documented how Massachusetts Audubon received over 600,000 credits for preserving trees that it had long since "designated as high conservation value forest."³⁷ Despite the land's promised conservation status, project documentation imagined a heavy logging scenario that would have removed hundreds of thousands of trees. Similar reporting by Evan Halper for *The Los Angeles Times* found evidence of non-additionality in the Upper St. John Forest project, which is located in Maine and was developed by The Nature Conservancy.³⁸ Although The Nature Conservancy purchased the property in 1998 in a much-celebrated transaction, it filed paperwork in 2020 indicating it would need to harvest 50 percent of the project's standing timber volume if it didn't receive carbon offset income — despite earning more than \$1.2 billion in revenue the same year.³⁹ This claim generated over 1.2 million offset credits in the project's first reporting period alone.⁴⁰

Even more striking evidence of non-additionality comes by way of admissions from market participants. Most notably, Jim Hourdequin, the CEO of a large timber investment company called Lyme that has developed several projects under California's forest offset protocols,⁴¹ has publicly explained how his company's offset projects have required little change in forest management practice. In an interview published by *Bloomberg*, Mr. Hourdequin explained how one of Lyme's projects received credits despite a restrictive easement that prohibited all timber harvests.⁴² Although one might think that a restrictive easement would prohibit a project from producing a baseline scenario that contradicts its terms, California's forest offset protocols

³⁶ We note that California's erroneous common practice calculations cause spurious carbon offset credits to be issued to non-additional activities, as discussed in Badgley et al. (2022), *supra* note 11. The rest of this section addresses separate non-additionality concerns.

³⁷ Lisa Song and James Temple, [A Nonprofit Promised to Preserve Wildlife. Then It Made Millions Claiming It Could Cut Down Trees.](#), *ProPublica* and *MIT Technology Review* (May 10, 2021); ACR274, [Finite Carbon - Massachusetts Audubon Society IFM.](#)

³⁸ Evan Halper, [Burned trees and billions in cash: How a California climate program lets companies keep polluting.](#) *The Los Angeles Times* (Sept. 8, 2021); ACR427, [The Nature Conservancy – Upper St. John Forest IFM Project.](#)

³⁹ The Nature Conservancy, [Saving the St. John](#) (Nov. 22, 2019); The Nature Conservancy, [2020 Annual Report](#) at 15.

⁴⁰ ACR427, [Offset Verification Statement, Reporting Period 1](#) (Aug. 27, 2020).

⁴¹ Lyme Timber, [2020 Impact Report for Investment Funds Sponsored by The Lyme Timber Company LP](#) (Apr. 2021) at 9.

⁴² Ben Elgin, [This Timber Company Sold Millions of Dollars of Useless Carbon Offsets](#), *Bloomberg* (Mar. 17, 2022).

contain a loophole that allows for exactly that⁴³ — and as a result, we suggest that these protocols facially violate the additionality requirement found in Washington and California law.

Mr. Hourdequin described another offset project that would have been cost-prohibitive to harvest, given its location in a rugged, mountainous stretch of West Virginia where logging would have been feasible only by helicopter. Those lands were also enrolled in an offsets project, with Mr. Hourdequin readily admitting that “[s]ociety probably didn’t need to pay us for that.”⁴⁴ At an industry conference held in 2021, Mr. Hourdequin gave a presentation that detailed how the baseline harvest scenarios imagined in Lyme’s offset project documentation would be “materially difficult” to execute in practice, going on to explain how the protocols’ rules typically translated into no or minimal changes in actual timber management.⁴⁵

Yet more evidence of non-additionality is provided by examining the documentation submitted to the regulator as part of the project development process. The permissiveness of the additionality criteria enshrined in California’s forest offsets protocol is on full display when closely examining ACR255, a project located on the Colville reservation in eastern Washington that is the second-largest project by credit issuance in California’s program.⁴⁶

As part of enrolling in California’s forest offset program, ACR255 submitted paperwork in 2017 that outlined a baseline harvest schedule that might transpire in the absence of carbon payments. Around the same time, the Confederated Tribes of the Colville Reservation developed an Integrated Resource Management Plan (IRMP) that projects timber operations through 2029.⁴⁷

Both of these documents contain forecasted timber harvest volumes for the period between 2016 and 2029, but they tell a very different story (Figure 1). According to the offset project paperwork, ACR255 imagined harvesting 200 million board feet (MMBF) in 2016.⁴⁸ In contrast,

⁴³ All three forest offset protocols allow for conservation easements recordation from December 31, 2006 through December 31, 2010, to be used to denote the commencement of “pre-existing” projects. CARB, *supra* note 8 at § 3.6(a)(2)(C); *id.* at § 3.4.1(b)(2); CARB, Compliance Offset Protocol U.S. Forest Projects (Nov. 14, 2014 at § 3.5); CARB, Compliance Offset Protocol U.S. Forest Projects (Oct. 20, 2011) at § 3.5. In effect, these provisions allow projects to claim offset credits for prior legal commitments recorded during certain time periods. While it might make sense to allow for a reasonable grace period to enable the simultaneous pursuit of *new* carbon offset projects that are backed by *new* conservation easements, allowing projects to claim credits on the basis of *old* conservation easements can and lead to non-additional projects, including Lyme Timber’s project.

⁴⁴ Elgin, *supra* note 42.

⁴⁵ Jim Hourdequin, [You Get What You Pay For: A TIMO Perspective](#), World Forestry Center WWOTF Conference (Oct. 20, 2021). Detailed remarks about the California program begin at about 05:28.

⁴⁶ ACR255, [Finite Carbon - Colville IFM Project](#).

⁴⁷ Confederated Tribes of the Colville Reservation, [Integrated Resource Management Plan](#) (2015).

⁴⁸ ACR255, [Public Attachments — Appendix I, ACR255 Baseline and Project Harvest Volumes](#).

the publicly available IRMP reports expected harvest volumes of 70.6 MMBF for the same year, nearly two-thirds less than the volume projected in the offset project documentation.⁴⁹

The IRMP provides additional details about historic timber harvest volumes, going as far back as 1919. Over this century-long record, timber harvest peaked around 1980 with a volume around 145 MMBF.⁵⁰ Harvesting 200 MMBF, as imagined in the offset project documentation, would eclipse this maximum historic harvest by over 27 percent. In fact, 38 of the 100 years reported in the project’s counterfactual baseline scenario forecast harvest volumes that exceed the maximum historic harvest of 145 MMBF. In other words, the baseline scenario set forth in the offset project documentation represents a truly anomalous and historically unprecedented harvest scenario that directly contradicts the tribes’ stated management plan.⁵¹ This contradiction provides a specific, quantitative example of how non-additional management activities can receive offset credits under California’s forest offsets program.

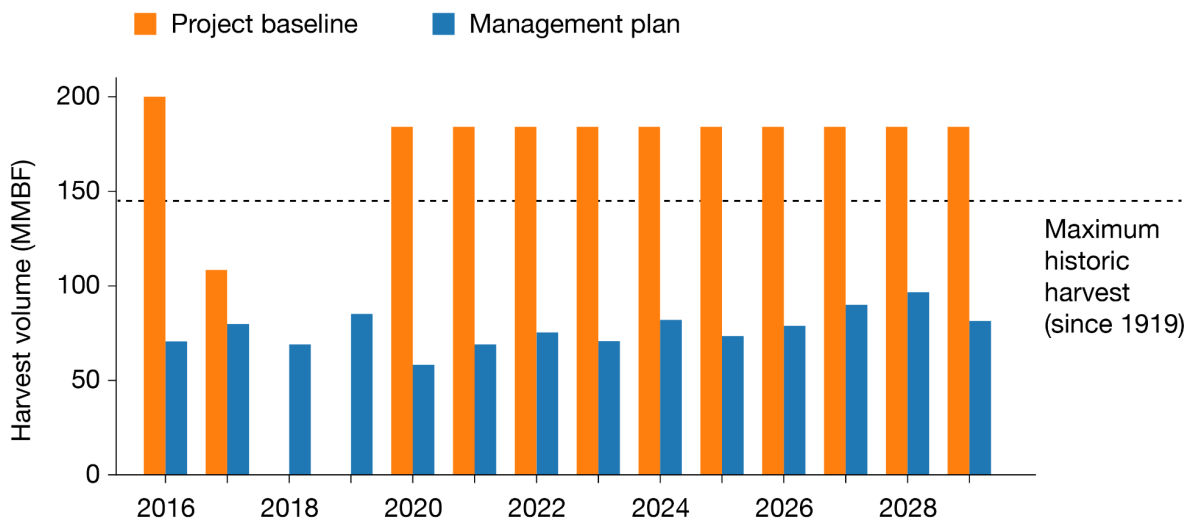


Figure 1. Comparison of baseline harvest volumes assumed in the carbon offset project paperwork (orange) and reported in the Confederated Tribes’ 2015 Integrated Resource Management Plan (blue). The maximum historic harvest peaked in the early 1980s at only 145 MMBF, substantially less than anticipated in the offset project baseline.

In each one of these examples we have a baseline harvest scenario that technically *could* happen, meaning that the imagined harvest scenario meets the legal and financial

⁴⁹ Bureau of Indian Affairs, Confederated Tribes of the Colville Reservation, Integrated Resource Management Plan 2015, Final Programmatic EIS (Dec. 17, 2018) at 209.

⁵⁰ *Id.* at 162.

⁵¹ *Id.* at 40 (describing a harvest scenario of 100 MMBF per year as “well above the sustainable harvest level identified in the forest inventory analysis, even with a greatly reduced rotation age.”).

requirements of California's forest offset protocol. But in each example we also have evidence that suggests that the baseline scenario more than likely would not have actually occurred — and in the case of the Lyme Timber project with a restrictive easement, the baseline scenario would actually be illegal. When it comes to crediting purposes, however, California's forest offset protocol treats these scenarios as if they *would* have happened. Treating actions that *could* happen, even at very low probabilities, as if they *would* happen results in the crediting of business-as-usual behavior and higher atmospheric carbon concentrations.

These shortcomings are all the more unfortunate because many of the organizations involved in these non-additional projects are, in fact, promoting climate-smart forest management. The Nature Conservancy's preservation of forests in Maine has distinct climate benefits that should be lauded, for example. The extended 120-year-long harvest rotations of the Confederated Tribes of the Colville Reservation not only promote carbon sequestration, but also yield numerous co-benefits like improved wildlife habitat. This type of forward-looking stewardship deserves praise and financial support — especially when it comes to addressing the historical injustices experienced by the Confederated Tribes of the Colville Reservation, including the ecological degradation caused by settlers' historical land and fire management choices.

To state our position clearly: The fault here is not with the individual projects, but with the rules adopted by the California regulator and proposed for adoption under the Climate Commitment Act. The problem ultimately turns on efforts to credit land management as a means of justifying ongoing fossil CO₂ emissions. Exaggerated baselines and lax additionality standards translate directly into exaggerated climate benefits. When projects are rewarded via offset credits for existing land stewardship, those rewards come at the cost to the atmosphere and directly undermine the very purpose of taking action to address climate change in the first place.

Breaking that link is possible if the offset credits are replaced with direct public investment. Instead of relying on forest offsets, Washington should promote climate smart forestry and land management through its cap-and-invest strategy under the Climate Commitment Act. Doing away with the tenuous and fraught atmospheric accounting required for carbon offsetting dramatically simplifies the problem. Rather than appealing to counterfactuals and questionable baselines, the state could directly pay landowners for beneficial practices, such as extended harvest rotations. Under this approach policymakers could also decide to reward existing activities and land management practices in fire-prone areas without worrying about non-additional activities undermining climate progress.

To conclude, we have provided multiple lines of evidence — from peer-reviewed research, project documentation, investigative reporting, and even the candid admissions of program participants — that California's forest offsets protocols result in the large-scale crediting of business-as-usual activities. These flawed projects have generated tens of millions of non-real, non-additional offset credits. Furthermore, the buffer pool insurance program is wholly

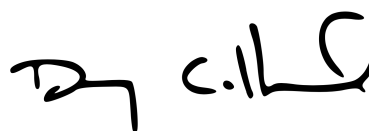
insufficient as currently designed to guarantee that credited forest carbon will remain out of the atmosphere for 100 years, which is too short a duration to fully mitigate the consequences of ongoing CO₂ emissions in any case.

Because carbon offset credits are used in a compliance context and in lieu of making emission reductions, flaws in California's forest offset protocols translate into higher net emissions and contradict the policy goals of Washington's Climate Commitment Act. We respectfully urge the Department of Ecology to amend its Proposed Rule to eliminate these protocols from the list of eligible protocols, and replace them with an increased commitment to public investment in climate-smart forest management in the Act's natural climate solutions account.

Thank you for the opportunity to submit comments.



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⁵² I am signing this letter in my professional capacity with CarbonPlan, not on behalf of California's Independent Emissions Market Advisory Committee. The Committee has separately written about California's offsets program in its 2021 annual report, *supra* note 7 at 27-35.