American Forest Resource Council

Please find the attached comments of the American Forest Resource Council related to the rulemaking for the Climate Commitment Act. Thank you.

January 26, 2022

Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

RE: Informal Comments on Climate Commitment Act Program Rulemaking, Chapter 173-446 WAC

The American Forest Resource Council (AFRC) appreciates the opportunity to provide informal comments related to the forestry offsets portion of the Climate Commitment Act rulemaking. AFRC participated in the November 8, 2021, and December 16, 2021 webinar meetings on the Climate Commitment Act rulemaking process.

AFRC is a regional trade association representing forest products manufacturers, forestry contractors, local governments, and others who rely on and support the many benefits of active forest management in California, Oregon, Washington, Idaho, and Montana. AFRC works closely with federal and state forestry agencies, including the U.S. Forest Service, Bureau of Land Management, and Washington Department of Natural Resources (DNR) to promote sustained yield timber harvests on public timberlands throughout the West. Sustained yield forestry results in benefits to local economies, produces climate-friendly wood products (CORRIM 2005, 2010, 2017), and enhances forest health and resiliency to climate change, fire, insects, and disease. We also work to improve federal and state laws, regulations, policies and decisions regarding access to, and management of, public forest lands, the protection of all forest lands, and impacts to available timber supplies for our members. AFRC has an active presence in Olympia and was engaged in the legislative process that led to the passage of the Climate Commitment Act (SB 5126). AFRC also worked on the underlying legislation that led to RCW 70A.45.090 and RCW 70A.45.100, which we cite further in these comments. We offer the following comments and recommendations related to the development of forest offset protocols.

We understand from the webinars on November 8 and December 16, 2021, that the Department of Ecology (Ecology) plans to use the California Air Resource Board (CARB) Compliance Offset Protocol for U.S. Forest Projects (hereafter CARB 2015 Forest Protocol) as a model to begin developing a similar program for Washington state. It may sometimes be beneficial to review programs that exist in other jurisdictions to avoid 'reinventing the wheel', particularly for a program of this magnitude. That said, there are fundamental differences between California and Washington forests, forest sector, economies, and ecologies that will require fundamentally different approaches. We are concerned that the CARB 2015 Forest Protocol does not fully account for the carbon stored in wood products, recognize the carbon sequestration benefits of rotational forestry, or acknowledge the vast differences in the contribution that Washington and

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California forests make to the US wood supply. As discussed later in these comments, the CARB 2015 Forest Protocol also does not reflect the productivity, and unique forest types across Washington state. We caution that too great a reliance on the CARB 2015 Forest Protocol will set the Washington Forest Carbon Offset Model (hereafter WAFCOM) up for failure. We identify seven key variables that should be considered when developing offset protocols here in Washington state. These variables are:

1. **Recognize and support the contributions of the entire forest products sector and the climate mitigation benefits of wood products;**
2. **Consider net carbon sequestration, rather than focusing narrowly on forest carbon stocks;**
3. **Recognize the legal and constitutional mandates that apply to Department of Natural Resources state trust lands;**
4. **Recognize the unique nature of Washington's forests, wood products industry, and forest practice laws;**
5. **Account for the ability to "multiply" the sequestration capacity of any given acre and focus on long-term sequestration potential;**
6. **Account for leakage and substitution and consider the costs of management changes; and**
7. **Focus on active forest management to reduce wildfire risks and carbon emissions, make forests more resilient to climate change, and promote reforestation following wildfires.**

We describe the reasoning for inclusion of these variables below, including scientific support where appropriate. We stand ready to work with your staff to integrate these variables into the draft WAFCOM that will be released later this year.

1. Forest offset protocols should recognize and support the contributions of the entire forest products sector and the climate benefits of wood products. The Climate Commitment Act (RCW 70A.65.170) specifically requires that protocols for offsets developed by the Department of Ecology (Ecology) "must align with the policies of the state established under RCW 70A.45.090 and 70A.45.100." Both statutes recognize the carbon sequestration benefits of working forests, including the carbon sequestered in wood products through rotational forestry. RCW 70A.45.090(1)(c) goes further, recognizing the interdependent, synergistic nature of the forest products sector and the industry components that collectively enable the storage of captured carbon in forests and wood products:

> *It is the policy of the state to support the contributions of all working forests and the synergistic forest products sector to the state's climate response. This includes landowners, mills, bioenergy, pulp and paper, and the related harvesting and transportation infrastructure that is necessary for forestland owners to continue the rotational cycle of carbon capture and sequestration in growing trees and allows forest products manufacturers to store the captured carbon in wood products and maintain and enhance the forest sector's role in mitigating a significant percentage of the state's carbon emissions.*

RCW 70A.45.090(1)(a) also cites research from the University of Washington that analyzed "the global warming mitigating role of wood products from Washington's private forests" and found that the forest sector "currently operates as a significant net sequesterer of carbon." The University of Washington research (Ganguly et al. (2020)) specifically found that the wood products output and net forest growth of private working forests had a total mitigation benefit of about 13% of Washington's total greenhouse gas emissions in 2015, even after factoring in the emissions associated with harvest, manufacturing, and decay of wood products in use. ***It is critical that this significant contribution to our state's climate response is not disrupted by forest offset protocols that result in reductions in timber harvests that negatively impact one or more components of the forest products sector***. This concern reflects the experience of the forest sector during recent major supply disruptions, including the loss of access to federal lands with the Endangered Species Act listing of the Northern Spotted Owl and the loss of state lands with the implementation of the western Washington Department of Natural Resources State Trust Lands Habitat Conservation Plan. In locations with supply shocks, milling infrastructure is lost - permanently. For example, as of 2016 there are 88 mills remaining (DNR 2016) down from 125 mills in 2010 (DNR 2010) and 248 mills in 1992 (DNR 1992).

Any forest offset protocols should also recognize the climate mitigation benefits of wood products through carbon storage (CORRIM 2005, 2010, 2017), and the avoidance of emissions compared to more energy-intensive building products such as concrete and steel. Substantial emission reductions and carbon storage in the built environment can be achieved by increasing the use of wood products, including Cross-Laminated-Timber, in non-residential construction. We provide more detail on the substitution or displacement effect that occurs when non-wood products are used in place of a wood product with different levels of embodied emissions later in our comments.

2. Consider net carbon sequestration, rather than focusing narrowly on forest carbon stocks. Increasing net sequestration (i.e. removal of carbon from the atmosphere) is the purpose of any offset program, so it is important that protocols focus on the rate of carbon sequestration through forest growth and storage in wood products, rather than existing accumulated forest carbon stocks. In the forest, sequestration is correlated with forest growth. Younger forests grow and sequester carbon at a much higher rate than older forests, which see their net sequestration slow significantly as growth slows and ultimately, through tree mortality and decay, become a carbon source. (Gray et al. 2016*)*

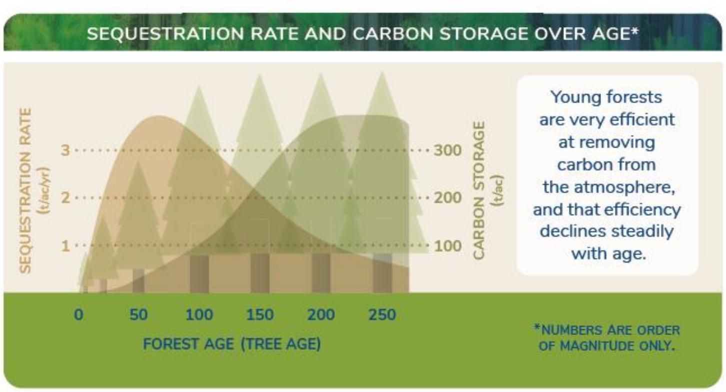

Chart: NCASI, Forest Carbon from Young vs. Old Forests (https://www.ncasi.org/resource/forest-carbon-from-young-vs-old-forests/)

About one-half of the dry weight of wood is carbon. This carbon remains stored within wood products even as new carbon is captured as the forest regrows. Numerous studies have examined the carbon dynamics resulting from various forest management scenarios and clearly demonstrate that carbon storage occurs well beyond the boundary of the forest – particularly through the carbon stored in wood products (e.g. Perez-Garcia et al. (2005a; 2005b), Hammond and Jones (2008), Oliver et al. (2014), Lippke et al. (2010, 2011a and 2019, 2021), Laurent et al., 2018, Puettmann et al. 2021). Carbon stored in wood product carbon pools can be calculated using established Life Cycle Analysis (LCA) methodologies that track the carbon stored and released throughout the life of wood products (CORRIM, 2005, 2010, 2017). Accounting using LCA automatically tracks emissions associated with growing the forests, harvesting, and manufacturing wood products (ibid).

Any offset protocols established by Ecology should recognize that carbon is stored in both forest and wood product carbon pools (Domke et al. 2020, Ganguly et al. 2020). In addition, Ecology should recognize that there are two harvested wood pools that are included when estimating carbon flux (stock change): harvested wood products in use and harvested wood products in solid waste disposal sites (SWDS) (ibid.). Both pools are an important contributor to the net sink in the land sector***. Offset protocols should incentivize active forest management, which is more effective in capturing and storing atmospheric carbon in forest and wood product carbon pools than a policy of hands-off management that precludes periodic harvests and the use of wood products.*** This assertion is supported by analysis of the most recent FIA reports (Oswalt et al, 2019, Palmer et al. 2019) that summarize differences in growth (and hence sequestration) between owner types reflecting these different management strategies. This is also consistent with a finding of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change of the United Nations:

"In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained mitigation benefit."

In addition, wood products can replace fossil fuel intensive materials with renewable forest products. Mass timber stores large amounts of carbon for generations and drastically reduce the carbon footprint. A recent European study revealed that up to 47% of CO_2 emissions from the European cement industry can be captured in wood buildings. (Ali Amiri et al. (2020), Environ. Res. Lett. 15 094076).

3. Recognize the legal and constitutional mandates that apply to Department of Natural Resources state trust lands. The Department of Natural Resources (DNR) manages over two million acres of forested state trust lands for sustainable timber production to generate revenue for schools, local governments, and other public services. These lands were granted to the State of Washington at statehood by Congress or through escheat by counties following the Great Depression. The management of these lands is guided by a trust mandate spelled out in the federal Washington State Enabling Act, the Washington State Constitution, and state laws that establish a fiduciary obligation between the State of Washington, through DNR, and the beneficiaries.

In addition to DNR's fiduciary obligation to the trust beneficiaries, state law also requires that these lands be managed for ongoing, sustained yield harvests. RCW 79.10.320 requires DNR to "manage the state-owned lands under its jurisdiction which are primarily valuable for the purpose of growing forest crops on a sustained yield basis insofar as compatible with other statutory objectives. To this end, the department shall periodically adjust the acreages designated for inclusion in the sustained yield management program and calculate a sustainable harvest level." RCW 79.10.310 defines "sustained yield plans" as the "management of the forest to provide harvesting on a continuing basis without major prolonged curtailment or cessation of harvest."

Any forest offset protocols must not conflict with the fiduciary and sustainable yield management mandates that apply to state trust lands. It is also important to recognize that nearly half of the state trust lands are no longer available for sustained yield timber harvests following the development of habitat conservation plans to comply with federal law and provide certainty for the remaining acreage. It would not be appropriate to defer harvests or encumber additional acres of state trust lands.

4. Recognize the unique nature of Washington's forests, wood products industry, and forest practice laws. While RCW 70A.45.090 directs Ecology to "(t)ake into consideration standards, rules, or protocols for offset projects and offset credits established by other states, provinces, and countries with programs comparable to the program established in this chapter," Ecology should develop forest offset protocols that recognize that Washington's forests, wood products industry, and forest practices are different from other jurisdictions.

The CARB 2015 Forest Protocol includes acreage limitations on even-aged management, which is the primary silvicultural practice in Douglas-fir forest types in western Washington. These forests are different from the drier, mixed-conifer forests that dominate California. Douglas-fir is a shade intolerant species, meaning trees need full sunlight to grow, which requires even-aged management. All tree species in our native forests grow faster, and thus sequester more carbon in full sunlight, but the preponderance of Douglas-fir in our temperate forests make even-aged management especially crucial for its continued propagation and growth. Artificial limits on opening size both reduce forest growth rates for all regeneration near adjacent forest edges and increase land area removed for access roads (Arney, 2021) negating any perceived benefit from overstory removal limitations. Additionally, Washington's Forest Practices Rules (WAC 222-30-025) have limits on harvest opening size and adjacent green-up requirements consistent with biological and operational conditions in Washington state. Implementation of WAFCOM should remain consistent with the implementation of these other state regulations. Washington's Forest Practices Act (RCW 76.09) and implementing regulations (WAC-222) recognize the differences in management between Washington's westside and eastside forests and recognize the use of even-aged management systems across much of the landscape. Washington's forest practices also affirmatively require reforestation following harvest, including harvest conducted in response to wildfire and other disturbances. California has different reforestation requirements.

Most of Washington's private forests are being actively managed utilizing even-aged, rotational forestry practices that are highly effective at sequestering carbon in long-lived wood products and through net forest growth. That assertion is supported by data that show Washington produces 14% of US lumber and plywood, and 9% of US poles and pilings on 3% of US forest land (calculated from Oswalt et al, 2019 and Washington DNR timber harvest reports 2010-2018 and Oregon Department of Forestry timber harvest reports 2010-2018). Over 82% of

Washington's wood products come from private lands that represent 2% of US forest land (Ibid) that is managed under a sustained yield model ensuring that our forest inventory is not declining despite this massive contribution of our wood products to US and global markets. Under Washington's Forest Practices Act and the Forest and Fish Agreement, these positive carbon outcomes are achieved while also protecting water quality and habitat for sensitive species. Instead of relying on a CARB 2015 Forest Protocol that may discount this carbon-friendly approach to forest management, Ecology should develop protocols that incentivize and reward existing carbon-friendly practices, support the forest products sector as required by RCW 70A.45.090, and recognize the unique nature of Washington's forests.

5. Account for the ability to "multiply" the sequestration capacity of any given acre and focus on long-term sequestration potential. Harvesting trees and transferring the stored carbon to wood products also allows a land manager to "multiply" the sequestration potential of that land. For example, assume an objective to maximize carbon sequestration on 100 acres over a 150-year period starting at year zero. Without active management and timber harvest, those trees would grow to 150 years and represent the only carbon sequestered on those 100 acres at the end of the 150-year cycle. Alternatively, the trees could be harvested on a 50-year rotation and stored in wood products. After 150 years, there would be carbon stored in an existing 50-year-old stand, *plus* carbon stored in wood products from an additional two 50-year-old stands previously harvested.

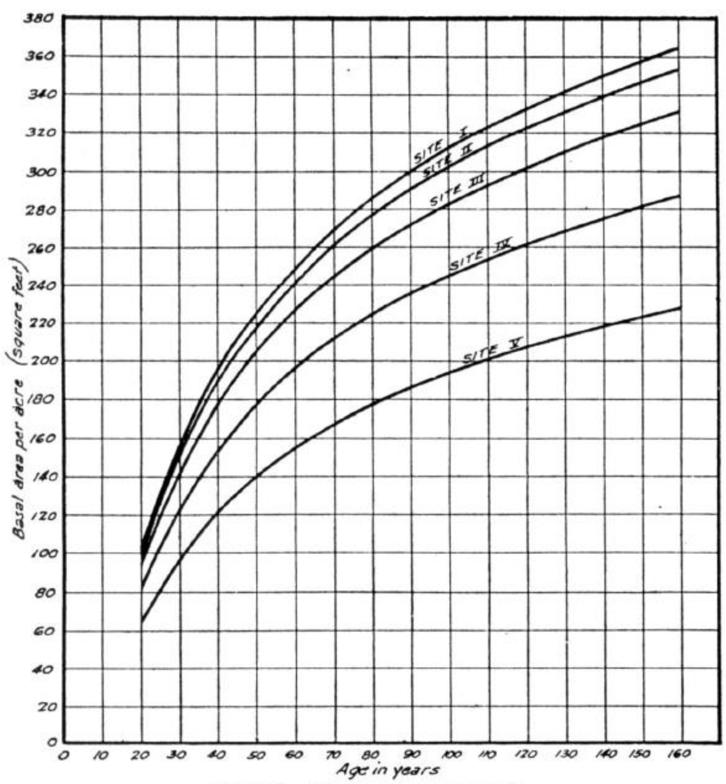

FIGURE 5.—Total basal area per acre

To further illustrate, Figure 5[1] shows the volume growth of a Douglas-fir forest across five different "site" growing ground scenarios. Basal area is a measurement of the "volume" of tree stems across a given acre. Basal area correlates to carbon sequestration as it describes how much tree volume exists. Consider the curve for "Site III." At 50 years, that acre has accumulated about 205 square feet (sqft) of basal area. At 150 years, that acre has accumulated about 325 sqft of basal area. If the trees on that acre were left to grow for 150 years, 325 sqft worth of carbon would be sequestered by the end of the cycle. If those trees were cut and replanted every 50 years in a 150-year period, 615 sqft worth of carbon would be sequestered (205 sqft x 3=615 sqft) by year 150. With this scenario, a land manager could

[1] McArdle, Richard E. et al, (1961). The Yield of Douglas Fir in the Pacific Northwest. U.S. Department of Agriculture.

capture nearly twice as much tree growth, and sequester nearly twice as much carbon, on a 50-year harvest cycle than by leaving those trees to grow for 150 years.

Since basal area is only a measure of tree volume above ground, it does not account for tree volume below ground in the form of roots. Root growth is also a form of carbon sequestration. The concept we applied to above-ground growth could be replicated to below-ground growth. Consider the scenario where an acre of Douglas-fir is left to grow for 150 years. At the end of the cycle, there would be one network of roots below the ground. When trees are harvested the roots are left underground. So, in the scenario where trees are harvested every 50 years over the 150-year cycle, there will be three root networks underground at the end of the cycle instead of one. That additional below-ground growth further contributes to the overall sequestration capacity of any given acre of land.

This example presumes that landowners are willing to invest in the necessary silvicultural activities to ensure a fully stocked stand that can reach any one of these trajectories with a 150-year return on investment. This long-range ROI scenario is unlikely and without investment, the possibility of attaining full stocking, and predicted yields is severely compromised. In contrast, intensive forest management has been shown to at least double yields in the Pacific Northwest (Lippke et al. 2011a) and could potentially improve even more with more intensive management (see Fox et al. 2007 and Carter et al. 2021).

6. Account for leakage and substitution and consider the costs of management changes.
Some studies suggest that additional carbon sequestration is possible through harvest deferrals and extended rotations across Washington's forests (e.g. Law et al. 2018, Diaz et al 2018). These studies are largely based on models and assumptions. Likewise, proponents of "proforestation" (e.g. Moomaw et al. 2019) suggest that we should end active management or timber harvesting to allow existing 'intact' forests to continue to accumulate carbon. They do not offer a clear definition of 'intact' forests as they appear to conflate forests established after harvesting 50-80 years ago as 'intact', regardless of their ownership and rely on assertions from the tropics that find there is more carbon accumulation from natural forests than from plantation forestry. While that may be true in tropical South America, actual Pacific Northwest data tell a different story (e.g. Oswalt et al. 2019, Palmer et al 2019, Gray et al. 2016). Furthermore, studies that support the viewpoint that the only solution to climate change is proforestation and halting all harvest fail to consider carbon stored in long-life wood products, leakage, and substitution, as well as the economic costs of these management changes. Any forest offset protocol must include careful consideration of these factors, their impact to the forest products sector, and whether management changes will achieve the desired greenhouse emission reductions consistent with data driven scientific outputs (ibid) that will be used as government funded impartial information sources to assess benefits and measurable progress in meeting our greenhouse gas emission reduction and sequestration goals.

These data driven outputs come from the U.S. Forest Service Forest Inventory and Analysis Program (hereafter FIA) which has conducted inventories across the U.S. since 1953 and reports results every 10 years as part of federal Resource Planning Act requirements. The latest report (Oswalt et al. 2019) shows that Washington's forests continue to sequester more carbon than is lost through harvest, insects, disease and wildfire on average. However, the report does not support the idea that older forests sequester carbon faster than forests that are managed for wood products. In fact, the opposite is occurring due to massive mortality events in our old forests. Specific comparisons in Gray et al. (2016), using real inventory data as opposed to models, show that Pacific Northwest forests accumulate (sequester) carbon at an increasing rate until they are about 30-50 years old and then the rate of accumulation declines rapidly.

In western Washington, storage of carbon in long-lived species like Douglas-fir will continue absent significant disturbance impacts such as the 2020 Labor Day fires in Oregon, but accumulation in live trees nearly ceases – i.e. most of the accumulation is in dead wood pools which are gradually decaying and releasing their carbon back to the atmosphere. Data from the Washington analysis of the most recent FIA report (Palmer et al. 2019) show that in eastern Washington U.S. Forest Service reserved forests (those that are not eligible for harvest due to policy constraints), and timberlands that are managed with very little harvest (U.S. Forest Service timberlands, other public lands, and DNR lands) are losing more carbon than they sequester due to mortality, not harvest.

Domke et al. 2020 found that harvested wood products represent 4% of all biobased forest carbon storage (i.e. 4% of carbon in above and belowground forest, soils, dead wood, litter, products in use, and products in landfill) but they represent 13% of U.S. flux (removals of carbon from the atmosphere). This national value is consistent with the value estimated for private forest lands in Washington. We anticipate that a broader analysis that accounts for public forest lands, and public harvest would result in Washington contributing a much higher percentage relative to the national average due the preponderance of carbon dense forests in the region.

Deferred harvest results in higher carbon stocks in forests not subject to natural disturbance, but *lower sequestration rates* once forest stands reach peak growth rates (Gray et al. 2016). Private landowners manage timber harvests to maintain high forest productivity (and growth/carbon sequestration rates), meet economic objectives, and respond to demand for carbon-friendly wood products. In western Washington it may be possible to achieve some short-term increases in forest carbon storage through deferred harvest, but the resulting reduction in timber production results in the economic forces of leakage and substitution that negate any perceived carbon benefits. In eastern Washington it is simply not feasible to consider extending rotations given the current inventory impacts from natural disturbances like wildfire, insects, and disease. Just like the RCW 76.09 and WAC 222 governing forest practices, the WAFCOM will need to develop a bifurcated approach that recognizes and accounts for the differences between eastern and western Washington forests and their potential contributions to climate mitigation.

Leakage occurs when emissions that are prevented in one locale, are simply transferred to another region. One potential outcome of an ill-conceived WAFCOM is that when deferred harvests result in reduced timber supply here in Washington, Washington mills will look to neighboring states and provinces to secure needed timber supplies. This merely shifts harvest emissions from Washington to elsewhere while also likely resulting in additional transportation-related emissions. Alternatively, other regions in the U.S. or globally will produce more wood products at the expense of Washington's forest sector. If Washington mills must reduce lumber production due to a lack of available timber, this lumber production and the related emissions will merely shift to another state or country to meet domestic demand – again, with additional transportation-related emissions. Haya and Stewart 2019 have calculated that there is nearly 82% leakage in California from the implementation of the CARB 2015 Forest Protocol. That means that 82% of the projects do not confer global greenhouse gas benefits because the emissions occur elsewhere. Now, California has approximately 42% more forested area than Washington but produces only 4% of the long-lived U.S. wood products (excluding fuel wood and pulp). In contrast, Washington produces 14% of long-lived US wood products (excluding fuel wood and pulp) (5% of global supply) on one-third the land base of California. To limit wood supply to mills and pull this amount of product away from the global market will have immeasurable leakage impacts. Particularly as our productivity per acre in the Pacific Northwest is about 74% higher than the U.S. average and therefore for every acre removed from harvest in the Pacific Northwest, an average of 3.85 acres with average U.S. productivity are required elsewhere to fill the void (calculated from data in Oswalt et al. 2019). If the wood supply comes from more boreal regions (e.g. Russia and Canada) we can expect the impact to be even larger.

Substitution occurs when a different product is used in place of the wood product that is withheld from the market by harvest deferral. In the case of softwood lumber, this substitution may occur with concrete, steel, or other composite materials that have much higher emissions associated with their production – leading to a net increase in carbon emissions due to the harvest deferral (e.g. Perez-Garcia et al. (2005a; 2005b), Hammond and Jones (2008), Oliver et al. (2014), Lippke et al. (2011a and 2019), Laurent et al. (2018), Puettmann et al. (2021)). Published displacement and substitution factors are available to quantify the efficiency of using a wood-based product to reduce greenhouse gas emissions to the atmosphere compared to a non-wood alternative product (Sathre and O'Connor 2010; Leskinen et al. 2018) and they vary by end use (e.g. Lippke et al. 2011a, 2019, 2021). Lippke et al. (2021) used recently published life cycle assessment data for analysis that compares the carbon consequences of a 'no-harvest' alternative for Pacific Northwest forests to a range of alternative uses. They found that accounting for only the harvested wood products (e.g. no substitution or SWDS storage) generates 1.2 times greater benefits than no harvest alternatives. When substitution is considered, the carbon benefit increases to 1.6 – 5.9 times better than no harvest alternatives depending on end uses. These climate mitigation benefits are real, measurable, and predictable. Incorporating them into an offset protocol would be necessary to more accurately reflect the net carbon benefits of the forest sector in Washington state.

The National Council for Air and Stream Improvement (NCASI) recently conducted an analysis of the effect of deferred harvests on carbon storage, carbon sequestration rates, carbon emissions, and costs in a review document entitled "NCASI Review of Carbon Implications of Proforestation." Below is a summary of its findings:

> *The analysis was based on recent forest inventory data on private, planted Douglas-fir forests in Oregon and Washington. One of the scenarios included a 10% reduction in overall harvest volumes compared to a current baseline, resulting in extending the average harvest age by 12 years. Emissions from substitute products were estimated using published displacement factors, which express the emissions from a non-wood product per unit of emissions from the use of a comparable wood product. Positive values indicate that using a non-wood substitute causes more GHG emissions than using a wood product. Reported average factors for construction lumber substitutes range from 0.54*

(Smyth et al. 2017) to 1.2 (Leskinen et al. 2018) to 2.1 (Sathre and O'Connor 2010). The deferred harvest scenario resulted in about a 4.5% reduction in annual net sequestration rates after considering substitution effects (using the most conservative displacement factor).

The NCASI analysis compared net carbon sequestration over 100 years for four forest management alternatives: proforestation (continuous forest growth, no timber harvest), a 10% reduction in harvest through extended rotations, the current baseline of forest management practices on private, planted forests, and a 10% increase in harvest levels through more active forest management. Table 2 and Figure 8 from the NCASI review clearly show that alternatives that reduce timber harvests result in a net reduction in the carbon sequestered in private, planted Douglas-fir forests in the Northwest.

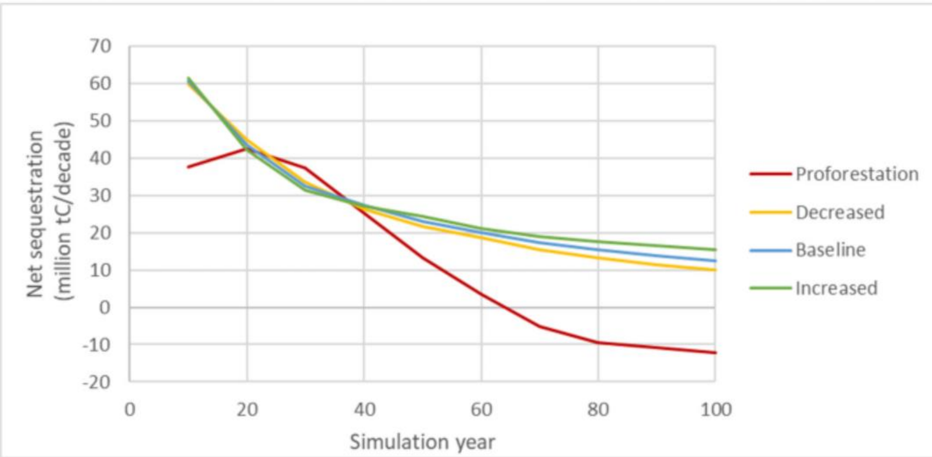

***Figure 8.** Net Sequestration for the Four Scenarios (in million tC per decade).*

***Table 2.** Summary of 100-Year Average Annual Sequestration, Emissions, and Net Sequestration by Scenario.*
(all values in million MT CO_2e/yr)

	Baseline	Increased	Decreased	Proforestation
Annual sequestration (growth)	31.3	32.2	30.4	22.7
Annual emissions from dead wood	1.8	1.8	1.8	2.84
Annual emissions from HWP	20.7	22.7	18.6	0.0
Annual emissions from substitution	0.0	-1.6	1.6	15.8
Annual net sequestration	8.9	9.2	8.5	4.1

Not only did the NCASI analysis show the deferred harvests resulted in a net reduction in annual sequestration, it also showed that the deferred harvest came at a significant cost to landowners in forgone timber stumpage revenue and other costs (costs far greater than the average payments through carbon markets). Meanwhile, a 10% reduction in harvest volumes from private lands would have significant negative impacts on the milling, trucking, and forest contractor components of the forestry sector. Any further loss of forest products industry infrastructure would threaten timber markets for private forestland owners and our ability to treat overstocked forests at risk of catastrophic wildfire, including federal forestlands. The loss of forest product milling markets for private forestland owners increases the pressure to convert these lands to non-forest uses, including development. Meanwhile, the lack of forest products industry infrastructure makes it much more difficult and costly to treat overstocked federal forests. This is currently playing out across a large area of central Washington following the loss of milling infrastructure that impacts forest health treatments on the Okanogan-Wenatchee National Forest.

Put simply, some have erroneously suggested that reducing Washington state's timber harvests on private and public lands – and, thus, reducing the state's lumber production levels – would improve the state's carbon footprint. Data driven science that would be used to measure program effectiveness shows the opposite is true: reducing timber harvests and lumber production in Washington state will likely ***increase*** carbon emissions and ***reduce*** carbon storage opportunities in the long-term.

7. Focus on active forest management to reduce wildfire risks and carbon emissions, make forests more resilient to climate change, and promote reforestation following wildfires. Climate change is contributing to extreme conditions that are impacting our forests and communities. As temperatures rise, wildfire seasons are growing longer, snowpack is melting sooner, and we are experiencing extended periods of drought throughout the West. Catastrophic wildfires are becoming more frequent and larger in size.

Wildfires have created new, complex challenges for CARB and forestry offset protocols. Several national stories have described the political, economic, and environmental challenges of establishing, monitoring, and validating the carbon benefits of forestry offset projects at-risk of, or impacted by, catastrophic wildfires. The Department of Ecology would be wise to observe these challenges and lessons when devising forestry offset protocols as Washington also faces catastrophic wildfire risk.

According to DNR, in the 1990s, an average of 86,000 acres burned annually in Washington state. In the 2000s, the average annual acres burned increased to 189,000. In the last five years, the annual average grew to more than 488,000 acres burned. This trajectory of escalation continued in 2020, with 14 wildfires burning more than 812,000 acres.

Also, according to DNR, wildfires in Washington state generated 39.2 million metric tons of carbon from 2014-2018, the equivalent of more than 8.5 million cars on the road a year. In 2015, when 1.13 million acres burned in Washington, wildfires were the second largest source of greenhouse gas emissions, second only to transportation.

These wildfires generate massive carbon emissions – while fires are actively burning and for years to come if fire-killed trees are left to decay and emit carbon back into the atmosphere. These emissions dwarf any perceived potential carbon benefits of deferred harvests. While many of the most at-risk acres are on federal lands where conflicting laws, regulation, litigation, and bureaucratic red tape make progress on proactive forest management challenging, there are additional needs on non-federal lands.

Last year, the legislature passed House Bill 1168 and provided a record $125 million investment this biennium to fund increased wildfire suppression, preparedness, and forest health treatments to reduce the size and severity of wildfires. These treatments will lower the amount of carbon stored in the forest while reducing wildfire risk. The entire estimate of carbon benefit (forest +

product storage and wildfire emissions avoided) will be needed for complete accounting as part of the protocol (e.g. Oneil and Lippke, 2010)

To summarize, forest offset protocols should recognize the benefits of active forest management, including thinning, reforestation, and other silviculture practices, to reduce the risk of catastrophic wildfire and prevent the associated carbon emissions, help recover and reforest following wildfire, and make forests more resilient to climate change. The offset protocols should recognize the climate mitigation benefits of the increased use of Washington-grown wood products in commercial construction. The offset protocols should be tailored to Washington's forest types, regulatory environment, and opportunities. The initial protocols should not simply apply California approaches, which are based on entirely different forest types and regulations. Washington's working forests - private and state - and the forest products industry sector already significantly contribute towards mitigating for our state's carbon emissions. We look forward to working with you to ensure that any forest offset protocols recognize and build on this mitigation through active forest management and the use of wood products.

Sincerely,

Travis Joseph
President

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