"Stewards of the land... for generations to come."

Washington FARM FORESTRY ASSOCIATION

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Sent via online comment portal:
https://wq.ecology.commentinput.com/?id=juMmcHx2Ff
Cc: Emma Pokon, Administrator, Region 10, United States Environmental Protection Agency
Owen Roe, Senior Policy Advisor for Natural Resources, Office of the Governor
Senator Mike Chapman, Chair Senate Agriculture and Natural Resources committee
Representative Kristine Reeves, Chair House Agriculture and Natural Resources committee

Re: Public comment on Washington Department of Ecology Tier II analysis on Non-fish Perennial (Np) Buffers.

The Washington Farm Forestry Association (WFFA) is a membership based non-profit organization that has served as the voice for small forest landowners since 1953. Our objectives include educating small landowners about improved management of forest land and representing small forest landowners in the public policy arena. That includes active participation in the legislative process and by participation in the Adaptive Management Program Cooperative Monitoring, Evaluation and Research (CMER) and TFW Policy committees. WFFA also supports educational efforts directed towards the general public regarding the contribution of small forest landowners to the environment and rural economies in Washington. Our members are a part of the forest sector. They represent a cohort of (mostly) larger small forest landowners who contribute to the forest economy while providing intergenerational stewardship of the forests under their care. WFFA submits the following information for the record for the Department of Ecology's Tier II Analysis on the Non-fish Perennial (Np) buffer rule that is before the Forest Practices Board (hereafter Np rule).

WFFA leaders were part of the 1999 Forests and Fish law negotiations, culminating in the signing of the Forest Practices HCP at the (Ken and Bonnie) Miller Tree Farm near Olympia. In short, we believe in the Forests and Fish agreement. We believe in it because it was designed to protect salmon habitat in forested areas, protect endangered species, provide for clean water, and ensure logging could continue commensurate with a viable forest products industry (RCW 76.09.010). In this voluntary, negotiated agreement, private forest landowners gave up billions of dollars in timber and land value, and spent millions of dollars to address roads and water crossings. In return, we were promised 50 years of stability in rules, a science based collaborative adaptive management process to adjust the rules as necessary, and support for small forest landowners. That support was to include a map-based water typing rule that accurately identified if streams were fish or non-fish, and a Forest Riparian Easement Program (FREP) that was supposed to pay for the lost timber value. Fast forward 25 years and we are on the cusp of, not an

adjustment - but a massive taking, with no clear reason to support it, no clear plan for the future, no map-based water typing rule, and an uncertain future for FREP.

Our position is that the Np rule proposal and the Tier II analysis that purports to support it are fatally flawed. They represent a clear failure by state agencies to interpret applicable laws and rules in good faith, support solutions which meet all Forests and Fish goals, and live up to the spirit and intent of Timber Fish and Wildlife (TFW) and Forests and Fish agreements. If adopted the Np Rule will cause significant harm to our rural forest dependent economies with no measurable benefit. It will destroy the trust our members have had in this process and the potential it had for win/win solutions.

Our opposition is driven by the following concerns with the Tier II:

1. **The Tier II Analysis is based on a fatally flawed Cost Benefit Analysis (CBA) and Small Business Economic Impact Statement (SBEIS) used to develop the Np rule.**
2. **The Np rule emerged from a premise that was forced into the Adaptive Management Program (AMP) by the Department of Ecology (ECY) after a 2019 Settlement Agreement with Northwest Environmental Advocates which removed the 2.8°C warming allowance for nonpoint sources like the Forests and Fish Agreement. Since the 2019 Settlement Agreement ECY has asserted that there can be no temperature change following timber harvest (i.e. no warming beyond 0.3°C which is estimated to be the limit of measurable change). ECY's assertion that no temperature change is allowed in Tier II waters is contrary to WAC 173-201A-320 and the Clean Water Act that they cite in support of the Np rule. It is also contrary to historic precedent set during Forests and Fish negotiations.**
3. **The position on temperature change was reversed in May 2025 in the discussion of the Tier II Analysis where Ecology acknowledges 0.3°C temperature change is a trigger for further analysis in Tier II.**
4. **The scientific data collected in Np studies contains a very small sample of potential outcomes that do not support a rule change of this magnitude.**
5. **ECY's policy position asserting that there can be no measurable temperature change is contrary to the biological opinion on Np streams included in the Forests and Fish Habitat Conservation Plan (HCP) which was promised to deliver 50 years of regulatory assurances.**

FATALLY FLAWED COST BENEFIT ANALYSIS (CBA) AND SMALL BUSINESS ECONOMIC IMPACT STATEMENT (SBEIS)

Industrial Economics Corp (IEc) was retained to complete the Cost Benefit Analysis (CBA) and Small Business Economic Impact Statement (SBEIS) for the Np rule as required for rule changes under Washington RCW 34.05.328. While we appreciate that the SBEIS used North American Industry Classification System (NAICS) codes relevant to the secondary impacts of the rule (i.e. are part of the multiplier effect of the proposed rule change), they miss the primary impacted stakeholder - the small forest landowners (SFL) themselves. Why? We note that in **RCW 19.85.040 "** *(c) A list of industries that will be required to comply with the rule. However, this subsection (2)(c) shall not be construed to preclude application of the rule to any business or industry to which it would otherwise apply;* "[emphasis added]. We have heard an interpretation of the RCW that suggests SFL aren't a covered group because they don't have a specific NAICS code. This is a ridiculous assertion as SFL collectively own 15% of Washington State's forestland; are important enough to have their own RCW (76.13); will clearly be subject to these new rules; and bear significant impacts from

the rule. Therefore, we assert that it is necessary to include them in the SBEIS per the underlined section of RCW 19.85.040 above.

Vic Musselman, a WFFA volunteer with over 50 years of forest land appraisal expertise, participated in the ad hoc advisory committee to IEc while they completed the CBA and SBEIS. That means since the ad hoc committee inception WFFA has provided detailed comments to IEc for their analysis, including links to data sources on small forest landowners that IEc couldn't seem to find while asserting there were no data available. Given that the legislature had spent $500K (SB 5330 (2019)) to fund a UW study to address the question of the impact of regulations on small forest landowners, it was an egregious oversight on the part of IEc to ignore that publicly available data. From the 2019 data we know that current forest acreage in riparian buffers for SFLs averages 14% in western WA but in some southwest counties that average is as high as 27%. We have individual landowners with more than 60% of their forested acres in buffers along streams. These forested acres are unavailable for harvest but are taxed and maintained by the landowner at their own expense. Currently (2025) there are over 200,000 forested acres in buffers along all streams (fish, non-fish, streams of statewide significance) and wetlands in western Washington. The 2019 study identified 2.2 times as many miles of non-fish to fish streams, so we expected there would be a significant impact if the Np buffer rule were to go into effect. For many of the wetter regions of the state, we are already at a point where harvest is no longer economically viable and therefore even FREP cannot be used to address this regulatory taking because it requires an adjacent harvest.

IEc's cavalier attitude asserting that there were no data to assess small forest landowner impacts was so egregious that we were forced to contract for data analysis ourselves. We had the University of Washington Natural Resource Spatial Infomatics Group (UW team) complete an assessment of immediate impacts of the Np rule building on prior work they have done in this space. The UW Team developed Washington's forest land database starting with its first iteration in 2007, with major updates in 2019 (ie. SB 5330) and then a significant improvement in timber volume assessment completed in 2024 in response to the Climate Commitment Act request for methods to aggregate carbon data for small forest landowners. Their unique state-of-the-art database was used to generate spatially explicit estimates of the impact of the proposed Np rule on western Washington's private forest landowners, including small forest landowners.

Unlike the other analyses submitted for this rule, (i.e. IEc CBA and the WFPA CBA), the UW Team's forestland database isn't a sample. It's a census. It maps every parcel, who owns it, identifies all forest land down to an acre in size, and integrates it with about 60 data layers in a sophisticated GIS system that can assess nearly any natural resource within Washington's boundary. The database has been used by nearly every natural resource state agency in Washington over the past 2 decades to answer critical questions. From it we know that over 400,000 stream segments in the DNR hydro layer are untyped, meaning that they are predicted to be non-fish (N), but it is unknown if they are seasonal (Ns) or perennial (Np). Only a very small percentage of N streams have been field verified and delineated as Np or Ns. Therefore, assumptions must be made to estimate the ratio of Np to Ns in the unknown stream segments. The UW Team assumed the same ratio of Np to Ns as are found in typed streams for the untyped streams. It is also known from prior studies that the DNR hydro layer underestimates the number of streams found when field work commences prior to a timber harvest so estimates built from the hydro layer are likely to be an under-estimate of total impact.

Given that caveat, the UW Team applied the complicated formulas proposed in the Np rule to develop a robust estimate of the change in harvestable acres, timber volume, timber value and carbon value under current rule and under the Np rule proposal. Using the ratio of typed Np to Ns (60%) found in the hydro

layer to estimate Np stream length and combining those values with currently typed Np waters the UW Team found that there are 204,000 – 206,000 acres that would no longer be harvestable under the Np rule. This accounts for partial harvest opportunities in the outer parts of the Np rule buffer. This is near the midpoint of the WFPA CBA and more than the IEc estimated upper bound.

Gradient Nearest Neighbor (GNN) data were used by IEc to generate their timber volume and value estimates. The UW Team used their (2024) AI model based on remote sensing, digital aerial photogrammetry (DAP), and all available DNR and US Forest Service (USFS) Forest Inventory and Analysis (FIA) plot data, to create species and volume estimates. The UW Team estimates are 25% better than the GNN (gradient nearest neighbor) data according to an independent evaluation of each method by the USFS FIA team.

Using Department of Revenue (DOR) data by species, the UW Team calculated total stumpage value that would be lost to private landowners under the proposed rule. They were also able to generate an estimate of carbon value that would be taken from landowners if the rule is adopted. The changes in harvestable timber value are shown in Table 1 by county. Estimated lost value in Table 1 used the assumption that Type Np streams would be closest to the Type F waters (Np Packed) rather than a percentage of each stream segment in the dataset. Using this assumption 204,000 acres were removed from production. Values were calculated for all privately owned forested parcels over 5 acres (minimum size of Designated Forest Land (DFL) parcels). These high-quality data sources were used to estimate the real costs as shown below.

The Real Costs

Table 1 shows that the current standing inventory that would be taken by the Np Rule has a current value of $1.8 Billion across all private forest landowners. Lost land value, estimated at a conservative $900/acre, increases the immediate asset value loss to $2.0 Billion, or **double the upper limit of the IEc CBA cost estimate**. The impacts are unequally distributed with four counties in SW Washington carry the brunt of the economic impact: Lewis (20.5%), Pacific (14.3%), Cowlitz (13.5%) and Grays Harbor (11.9%). Together these counties carry over 60% of the total timber volume and value loss attributable to the proposed Np rule.

The cost to landowners in lost asset value is just part of the economic cost associated with this rule. Each timber harvest generates Harvest Excise tax revenue to state and county coffers of approximately 5% or nearly $91M for current standing inventory (Table 1). The jobs associated with timber management, harvest, manufacturing, and downstream community impacts are also costs that will be borne disproportionately by the rural communities who depend on the timber economy as their mainstay. A 2021 study on the contribution of working forests to Washington's economy found that every million board feet harvested created 15 direct jobs, 36 total jobs and $106,481 in tax revenue. Using data from Table 1 and the 2021 study we can estimate that the tax reductions and job losses associated with the Np rule resulting from reduced timber harvest as shown in Table 2 – for the total asset loss and a yearly estimate based on a 40 year rotation.

Table 1: Immediate timber asset forfeiture resulting from application of the Np rule on western Washington's Private Forest Landowners by County.

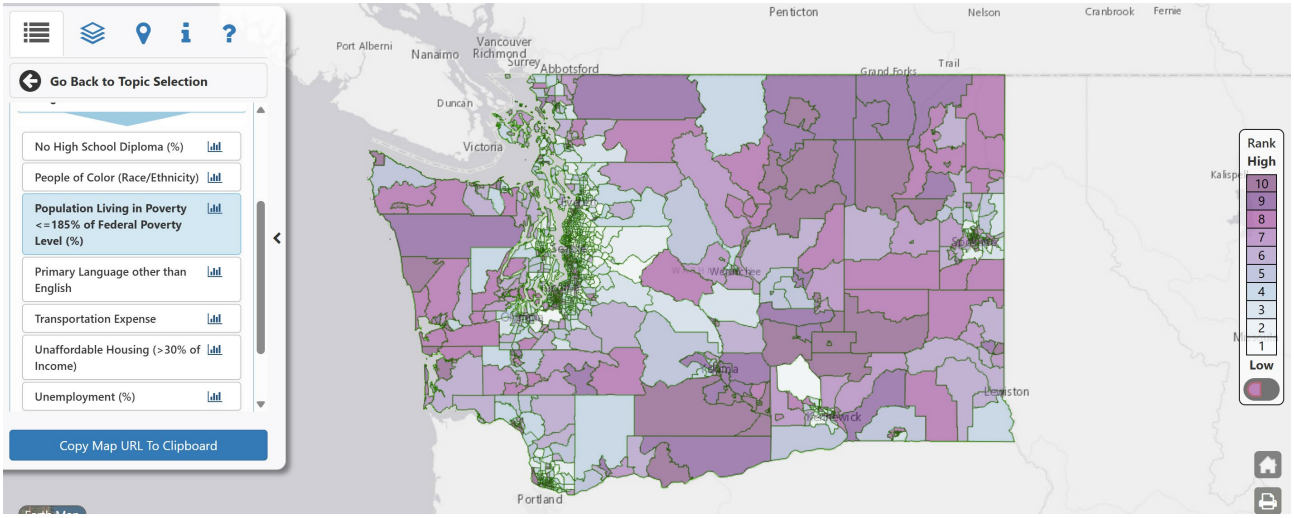
Buffer 60% of Unknown As Np Packed (closest to fish streams) For all Western Washington Private Forest Lands for parcels with forest cover of 5 acres or more.							
Estimated immediate stumpage volume and value lost to the proposed Np buffer rule based on species specific log prices from DOR stumpage value tables Jan-June 2025 applied to forest inventory estimates generated from the UW NRSIG database.							Excise Tax Impact calculated at 5%
Impact ranking by lost asset value	**County**	**Upland acres removed from production**	**Change in harvestable volume (MBF)**	**Change in Harvestable Value**	**Percent Change per County**	**Percent of Total Lost Value**	**Total for current standing inventory**
6	**Clallam**	(9,726)	(200,073)	-$80,516,382	-4.4%	4.4%	-$4,025,819
16	**Clark**	(4,110)	(82,987)	-$33,573,601	-3.6%	1.9%	-$1,678,680
3	**Cowlitz**	(28,029)	(539,961)	-$245,379,803	-6.8%	13.5%	-$12,268,990
4	**Grays Harbor**	(24,123)	(481,721)	-$216,034,134	-6.3%	11.9%	-$10,801,707
19	**Island**	(219)	(7,993)	-$4,040,159	-0.5%	0.2%	-$202,008
10	**Jefferson**	(5,530)	(123,932)	-$54,796,467	-3.8%	3.0%	-$2,739,823
9	**King**	(6,644)	(158,713)	-$66,651,683	-3.0%	3.7%	-$3,332,584
17	**Kitsap**	(1,060)	(31,967)	-$15,275,802	-1.6%	0.8%	-$763,790
1	**Lewis**	(43,961)	(808,685)	-$371,170,148	-7.2%	20.5%	-$18,558,507
14	**Mason**	(3,839)	(85,393)	-$40,861,803	-2.2%	2.3%	-$2,043,090
2	**Pacific**	(32,136)	(601,160)	-$259,652,702	-11.9%	14.3%	-$12,982,635
7	**Pierce**	(8,741)	(179,462)	-$76,547,688	-3.2%	4.2%	-$3,827,384
18	**San Juan**	(249)	(8,166)	-$4,118,707	-0.4%	0.2%	-$205,935
5	**Skagit**	(9,083)	(230,261)	-$98,440,721	-4.3%	5.4%	-$4,922,036
15	**Skamania**	(4,175)	(79,342)	-$35,361,668	-5.2%	1.9%	-$1,768,083
12	**Snohomish**	(4,309)	(111,069)	-$47,836,337	-2.1%	2.6%	-$2,391,817
13	**Thurston**	(5,982)	(96,012)	-$44,907,647	-3.2%	2.5%	-$2,245,382
8	**Wahkiakum**	(7,249)	(156,599)	-$68,362,217	-10.9%	3.8%	-$3,418,111
11	**Whatcom**	(4,899)	(119,240)	-$50,614,605	-3.5%	2.8%	-$2,530,730
	Grand Total	(204,066)	(4,102,736)	-$1,814,142,273	-5.0%	100.0%	-$90,707,114

Table 2: Jobs and Tax losses from application of the Np rule on western Washington's Private Forest Landowners.

	* 2021 study	Np Volume reduction (from Table 1)	per year impact for 40-year rotation
Board Feet	1,000,000	4,102,736,408	102,568,410
direct jobs	15	61,541	1,539
Direct and indirect jobs	36	147,699	3,692
excise tax revenue		$90,707,114	$2,267,678
total tax revenue	$106,481	$436,863,475	$10,921,587

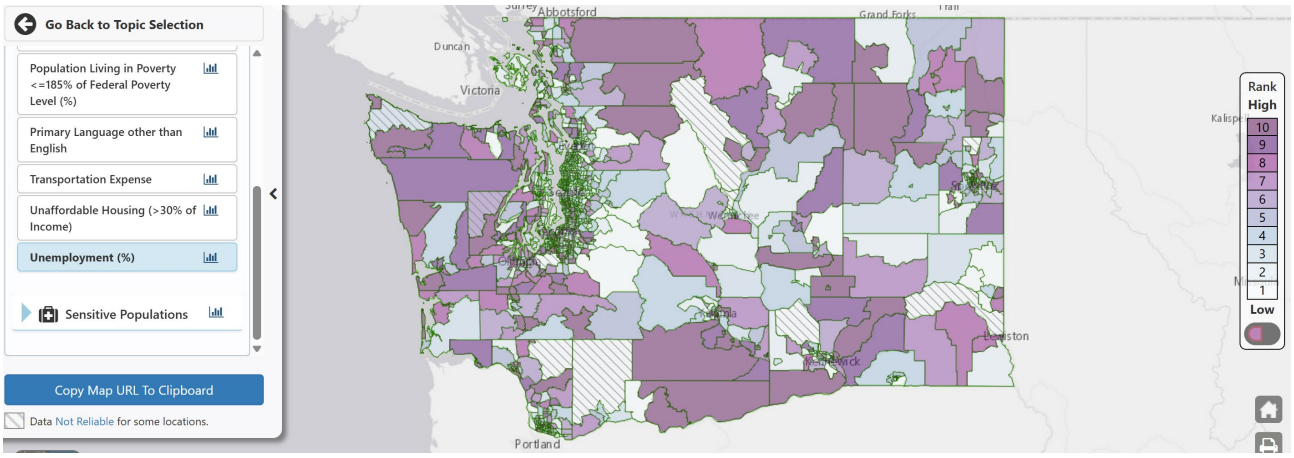
Washington's Environmental Health Disparities Maps support the intent of the HEAL Act. Predicted job losses from Table 2 will amplify the risks associated with living in poverty (Figure 1) and unemployment (Figure 2). That impact is especially profound for most of SW Washington and the Olympic Peninsula since these regions already have many at risk communities and most of the economic impact (over 70%). These health disparities and economic impacts have not been addressed, or even discussed, in the Np rule CBA or the Tier II analysis.

Figure 1: Percent of population currently living in poverty, by census tract.



https://fortress.wa.gov/doh/wtnibl/WTNIBL/Map/EHD

Figure 2: Percent unemployment by census tract.



https://fortress.wa.gov/doh/wtnibl/WTNIBL/Map/EHD

IEc CBA Incorrectly Categorizes Costs as Benefits

While the most recent IEc CBA asserts that carbon values are of minimal importance, they still include the carbon estimate as a benefit from the Np rule by asserting that the carbon value of retained buffers provided a worldwide benefit in reduced carbon emissions. That is false. If carbon were worth $380/ton as asserted in the social cost of carbon analysis, fiscally rationale timber companies would lock up all their timber land and just sell the carbon. They don't do that because the carbon value and purported benefit is not real. It is especially problematic for PNW westside forests because life cycle analysis of PNW forests conducted to international (ISO) standards shows the greatest carbon benefit to the atmosphere arises from keeping forests in long term management and also depends on how wood is used and for how long[1].

The IEc assertion is not only false, but the carbon value is on the wrong side of the ledger. Here's why. Removing the timber from production through regulatory fiat means that it's sale on a carbon market would not be possible because of additionality requirements. This means that the supposed benefit presented in the CBA is actually a cost (loss to the landowner) if a real market analysis were to be conducted. And that is even before we start to figure in the highly uncertain values on leakage and growth used in the estimation procedures, and the ignoring of displacement and substitution carbon benefits.

Using a conservative estimate of $50/ton of carbon, the UW Team calculated that the carbon value taken from landowners under the Np rulemaking is $461M. Table 3 shows that the total asset value forfeited by western Washington private forest landowners if this rule passes is easily $2.275B in today's dollars, exclusive of estimated lost land value of $184M. This DOES NOT include the downstream lost jobs, economic multiplier effects and loss in future values shown in Table 2. It also does not estimate the additional impacts of lost revenue due to stranded timber (timber made inaccessible due to too many adjacent buffers), and/or additional road construction costs to reach otherwise stranded timber. The estimated overall economic impact for western Washington's rural economy using the UW Team data is about $6 billion based on relationships developed in the WFPA CBA submitted as part of this rule evaluation. These costs assume that our mill infrastructure can survive the supply shock that this Np rule would deliver. If the mill infrastructure were to decline as expected from this kind of supply reduction, the lost value would be even higher.

Table 3: Immediate timber and carbon asset forfeiture resulting from application of the Np rule by landowner type for western Washington's Private Forest Landowners.

	WWA SFLO (<2500 acres; 5-acre minimum parcel)	WWA Industry	Other (Conservation/Utility/ Real Estate and NIPF> 2500 ac)	WWA All Private
total lost timber value	-$276,884,015	-$1,455,510,007	-$81,748,251	-$1,814,142,273
total lost carbon value	-$69,221,564	-$372,289,183	-$19,913,690	-$461,424,438
total lost timber and carbon value	-$346,105,579	-$1,827,799,191	-$101,661,941	-$2,275,566,711

[1] https://corrim.org/wp-content/uploads/2022/11/The-Plant-a-Trillion-Trees-Campaign-to-Reduce-Global-Warming-Fleshing-Out-the-Concept.pdf

In addition to the costs borne by landowners and the economy the Np rule would increase FREP liabilities by about $250 million (90% of $277 million) for the small forest landowner category, and by an unknown amount from the "other" category if entities meet certain criteria. Typical biennial funding allotments for FREP are in the $3-5M range.

In short, **the proposed Np rule would remove 200,000+ acres from the harvestable land base, remove nearly $2.3B in asset value (timber, land, carbon) from private forest landowners and at least 4.1 Billion Board Feet from the timber market**. It will result in the loss of up to 3692 jobs, and the associated logging, milling, and marketing infrastructure. These impacts would reduce taxes paid to Washington state and its timber counties. It would also hold the state liable for FREP payments which are estimated to triple (or more) under this rule. For many of the wetter regions of the state, we are moving towards a condition where at some point harvest is no longer economically viable and therefore FREP cannot be used to address this regulatory taking because it requires an adjacent harvest. It also assumes that FREP continues to be funded – which is a big "if" given current state budget realities.

The Real Benefits

The IEc CBA claims that benefits exceed costs. That assertion is based on much lower estimates of costs than shown above. It is also based on general assumptions about perceived benefits that don't stand up to scrutiny – even using IEc data. Willingness-to-Pay (WTP) is a standard method used in economic analyses to estimate values for ecosystem services that have no market. WTP studies suffer from hypothetical bias because they measure human attitude rather than behavior and therefore are often a poor substitute for actual market data. This method is used to generate a numeric estimate of benefits in order to estimate a Cost-Benefit (CB) ratio. Ratios less than one indicate that benefits do not exceed costs. While not shown in the executive summary, the IEc numeric willingness-to-pay assessment in the appendix can be used to calculate that costs exceed benefits even using their data from regions with no similarity to our west coast forests. From our WFFA volunteer with 50+ years of forest appraisal expertise (See Vic Musselman testimony) who sat on the IEc CBA ad hoc committee.

> *In their April report, IEc states that the benefits identified by qualitative analysis outweigh the costs arrived at by a quantitative analysis that did not follow accepted forest valuation methodology. They estimated that the annualized cost of the loss in land value at a 2% discount rate ranges from $11 million to $35 million and at a 4.5% discount rate from $17 million to $54 million. In summarizing the benefits of the proposed new rule, IEc does attempt to quantify values for the benefits analyzed by estimating the present value of all benefits at $210 million over ten years at a 2% discount rate and $190 million at a 4.5% discount rate. Those numbers would work out to approximately an average of $21 million per year at 2% and $19 million per year at 4.5%.*
>
> *Using the reported annualized costs and my annual calculation of their benefits at a 2% DR, I have derived a series of cost benefit ratios as follows:*
>
> > *$21,000,000 / $11,000,000 = 1.91; $21,000,000 / $35,000,000 = 0.60*
> >
> > *At an average of the estimated annualized costs equal to $23 million, the ratio would be:*
> >
> > *$21,000,000 / $23,000,000 = 0.91*

Using the reported annualized costs and my annual calculation of their benefits at a 4.5% DR, the cost benefit ratios would be:

$19,000,000 / $17,000,000 = 1.12; $19,000,000 / $54,000,000 = 0.35

At an average of the estimated annualized costs to $36 million, the ratio would be:

$19,000,000 / $36,000,000 = 0.53

It is obvious that the benefits do not outweigh the costs as reported by IEc.

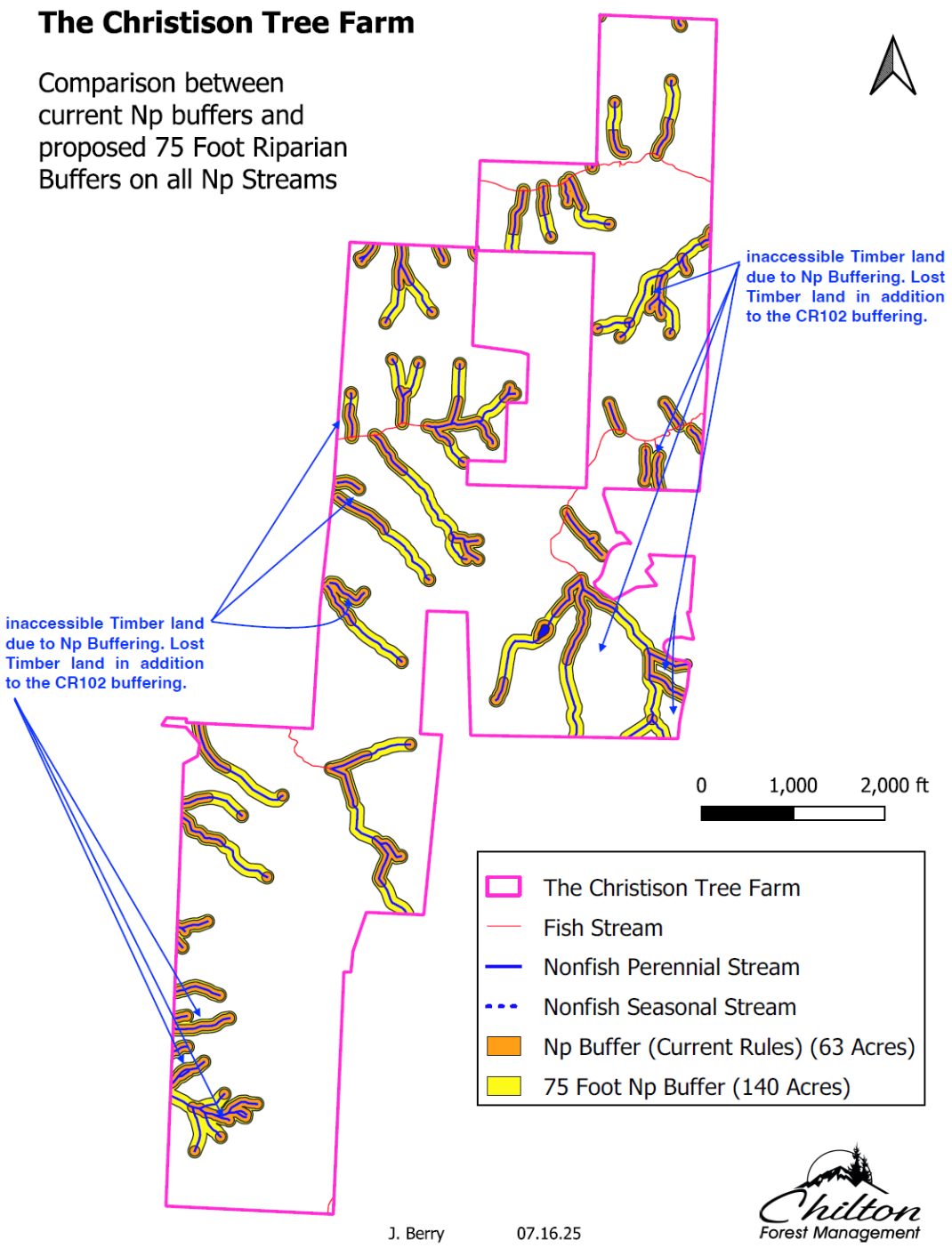
These calculated CB ratios are based on IEc willingness-to-pay estimates which were drawn from east coast sources where Forest Practices rely on Best Management Practices, not regulation. As such, they represent the willingness to pay for rare ecosystem elements, not common ones. **Preserved forests are common in Washington, not rare**. Washington currently has over 50% of its forests in some kind of reserved status including over 200,000 forested acres in riparian reserves. Washington state has **a subset of acres where payments for ecosystem services are provided** to a subset of small forest landowners that meet certain criteria – namely the **Forest Riparian Easement Program (FREP)**. FREP pays for an easement on the timber required to be left standing to support the ecosystem services inherent in buffers. Since its inception the FREP program has disbursed an average **$1.6M/year** of state appropriated funds. This amount **more accurately represents what our state's citizens are willing to pay for the ecosystem services** these riparian buffers provide, sometimes after significant lobbying efforts by WFFA when budgets are lean. If the 204,000 acres removed by the Np rule were harvested on a 40-year rotation the overall Benefit payment at Washington's current willingness-to-pay rate is equivalent to $320/acre or if a 50-year rotation, $400/acre. This calculation assumes that FREP would become available to all to support the purported ecosystem benefits these Np buffers provide. Clearly Washington's overall willingness-to-pay is much less than the current standing inventory value of $8,889/acre. Regardless of the qualitative values that one might feel are appropriate in this instance, real data from real examples in Washington state where ecosystem services are paid for by the general public indicate a willingness to pay ratio of 0.04 to 0.03 depending on if the timber is harvested on a 40 or 50-year rotation. In other words, using a willingness to pay methodology, **benefits are approximately 3-4% of costs, when examining only lost assets values, not downstream costs**. Simply put, these data do not support the Department of Ecology relying on a faulty CBA finding as sufficient to proceed with their Tier II analysis as a least cost alternative.

Forest Riparian Easement Program

The IEc SBEIS supporting the Np rule asserts that there will be a disproportionate impact on small forest landowners, though they provide no data to support it. The IEc SBEIS asserts that because Washington has a Forest Riparian Easement Program (FREP), landowners will be compensated for this taking. In theory, 90% of the lost timber value could be obtained from the state under RCW 76.13.120 and RCW 76.13.140, if and when small forest landowners have an **adjacent commercially viable harvest**. This assumes that the stranded timber between adjacent buffers would be economically accessible and also assumes that the harvesting and milling infrastructure survives this supply shock so that an economically viable harvest is still possible. No analysis of either assumption has been included or even considered in the CBA and SBEIS. The additional economic costs – primarily additional road building, or more expensive harvest techniques, have not been considered either. As demonstrated by public testimony from a WFFA member (Christison Tree Farm) during the Longview hearing, a 10% reduction in available timber due to the Np buffer could easily become a 20% reduction due to stranded timber made inaccessible due to terrain and road limitations. This can be shown in Figure 3. There is no estimate of FREP liability for stranded timber, and no clear guidance of how much of it would be reimbursable under the program. While IEc claims that the process to develop the

proposed Np rule included an economic analysis, a quick check with the Type Np workgroup lead indicates this is false. A simple model of ranking likely impact by number of acres removed from production is all that was considered in that workgroup. The majority report, which is the only Np proposal under consideration for this rulemaking did not choose options with the fewest number of acres, so the point is moot anyway.

Figure 3: Example of additional buffers and stranded (inaccessible) timber due to terrain and road access limitations. See full description in Christison Tree Farm testimony from 7/23/25. Used with permission.



Without considering the extra costs as noted above, and stranded timber as depicted in Figure 3, the estimated **extra** costs from the state budget to cover the regulatory taking from the Np rule change would be in the range of $250M (90% of $277M) based on current forest inventory and value, or about $12.5M extra per biennium for true SFL only. It will be higher if FREP funds continue to be used for the "other" category identified in this analysis. WFFA works hard every biennium to advocate for full funding of FREP to meet current needs. In state budget deficit years, we struggle to meet that goal. In state budget surplus years, it's easier, but it is never easy to ensure that the funds are there to meet the need. Testimony on the Np rule identified that on many occasions FREP reimbursements were delayed for so long, that the SFL applicant had died before the state paid for the timber. Assuming FREP will have the funds to triple (or quintuple) its payments ($3-5M/biennium to $15.5-17.5M/biennium) to small forest landowners is not supported by historical precedent, or by current budget realities. The analysis of this impact and discussion with state legislators responsible for budget decisions on FREP are needed prior to advancing this rule.

In short, the Np rule is the most significant taking of private forestland, since the 1999 Forests and Fish law. How did we get here?

No change at no time in no place

Ecology's Tier II rule itself allows measurable temperature change in Tier II waters, so long as the regulated action does not violate the water quality criteria (i.e. 16°C) and there are compensating public benefits.[2] The entire premise for the FPB's Np rule making proposal rests on Ecology's novel interpretation of the Tier II antidegradation rule. Specifically, that temperature change ≥0.3 °C in Tier II waters means current Np buffers violate water quality standards (WQS), and the only cure is to increase buffer widths and lengths as specified by Ecology.[3] That interpretation of Tier II antidegradation is inconsistent with the Tier II rule and Ecology's interpretation and application of that law since its adoption more than 20 years ago.

Everything we do has an environmental impact. It can be measured - either on an ad hoc basis as has been done in these research studies - or in a more structured form. For example, life cycle analysis consistent with International Standards Organization (ISO) standards including 14040, 14044, and 21930 is used to calculate the environmental impact of wood as a construction material. Insisting on 'no measurable change' as a public policy goal challenges the very notion of permitting human activities anywhere, at any time. It is unachievable. If these activities were to happen on public lands this would be problematic at best. That fact that the Np rule is being forced onto private forest landowners who, under our constitution, have private property rights generates a whole additional set of issues. The Np rule, and the Tier II analysis that supports it, are tantamount to forfeiture through eminent domain without just compensation, especially for those lands where FREP or a FREP like program is not in place and/or inadequately funded.

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[2] *See e.g.*, WFPA letter to Ecology, p. 4 (Dec. 14, 2023) (quoting an Ecology email correctly stating how Tier II operates: "Also wanted to reiterate that we do allow degradation beyond measurable change – Tier II – so long as it meets [the overriding public interest analysis]"); WFPA letter to FPB, p. 6 (Aug. 4, 2023) (same); Tupper Mack Wells letter on behalf of WFPA to FPB, p.5 (April 7, 2023) (quoting Ecology's response to comments document on its 2003 adoption of the Tier II law: "Allowing degradation that doesn't violate the water quality criteria established to protect uses is consistent with state and federal laws and regulations on antidegradation. Tier II just ensures that such degradation is necessary and that it provides compensating public benefits."); K&L Gates letter on behalf of WFPA to FPB, p. 7 (March 15, 2023) (same).

[3] This does not concede that Ecology's Tier II antidegradation rule applies.

A BRIEF HISTORY

Discussions on these Np study findings were in play at the Policy table of the Adaptive Management Program (AMP)when Ecology introduced a new interpretation of the Tier II Antidegradation standard in 2019. That interpretation was that no temperature change is allowed beyond 0.3^{o}C (i.e. no measurable change), no matter if the water is already cold enough. Ecology's interpretation followed from a settlement agreement (SA) between EPA, Ecology, and Northwest Environmental Advocates. The SA included a provision to strike the specific cumulative warming allowance for nonpoint sources of 2.8°C, or the designated use criteria whichever is less. Up to 2019, the warming allowance provision had been in WAC 173-201A-200 for many years, it still contains a warming allowance for point sources. The interpretation of Tier II began to shift, coincidentally, when it became clear harvest treatments of entire Np basins (something that is rarely done in practice, but was implemented for the science test) were not resulting in widespread exceedance of designated use temperature standards.

The glaringly obvious problem with using the no measurable change criterion (<0.3^{o}C) is that none of the treatments, including the reference (no-harvest) site met Ecology's modified Water Quality Standard criteria most of the time (Table 4). Only two reference (unharvested) sites meet the no-temperature-change criteria in year 2 post-harvest (pink highlight), only 1 in 4 of the continuous buffer sites meet the no-temperature-change criteria in year 8 and even more surprising, only 1 in 4 of the continuous buffer sites and 2 of 4 unbuffered (cut to the stream bank) met the no-temperature-change criteria for year 15.

Table 4: Temperature Differences by Site relative to Pre-harvest – Hardrock Np sites

	Avg Temps by Period		
Treatment type	2yr change	8 yr change	15 year change
Control (unharvested) site	0.40	0.60	2.55
Control (unharvested) site	0.12	0.67	not measured
Control (unharvested) site	1.07	0.77	not measured
Control (unharvested) site	-0.10	0.95	0.50
Control (unharvested) site	0.38	0.88	0.53
Control (unharvested) site avg	0.37	0.77	0.66
Continuous 50' Buffer	0.45	0.50	1.00
Continuous 50' Buffer	1.33	0.53	0.43
Continuous 50' Buffer	1.38	0.13	-0.77
Continuous 50' Buffer	2.75	0.65	1.25
Continuous 50' Buffer Avg	1.48	0.45	0.48
Current Rule	0.97	1.32	0.77
Current Rule	2.50	2.75	1.20
Current Rule	0.40	0.70	1.90
Current Rule Avg	1.29	1.59	1.29
No buffer	1.57	0.52	0.17
No buffer	4.92	1.12	2.47
No buffer	3.20	1.05	1.90
No buffer	4.10	2.50	-2.20
No buffer Avg	3.45	1.30	0.58
Avg All	1.65	1.03	0.75

By these data, one could as easily assert that even reference sites (i.e. no human action) will not achieve Ecology's stated anti-degradation standard most of the time, but more often harvesting all the way to the stream bank will get you there (eventually). This odd result for the no-buffer scenario is likely a result of those stands reaching full canopy closure by 15 years, whereas buffers are more likely to suffer losses from disturbance during the same time frame. This suggests that we need to take a closer look at this unattainable, and as the Np workgroup stated - biologically irrelevant - temperature standard.

The Ecology 2019 Cost/Benefit Analysis (CBA) for the rulemaking which gave effect to this SA provision stated that there would be no societal costs or benefits associated with the rule amendment.[4] This finding does not align with the FPB's preliminary CBA for the proposed Np buffer rule making and it certainly doesn't align with the impacts generated using the UW Team's evaluation of current private forest land takings. This is perhaps why, at the last minute (April 24, 2025 Tier II preliminary findings memo from Ecology to the FPB), that Ecology modified their interpretation of antidegradation of Tier II waters to suggest the 0.3°C was a trigger and not a limit. Ecology's acknowledgement that tier II does allow for some temperature change >0.3 °C is an about face that must be reconciled with multiple verbal and written edicts provided to the AMP and the FPB from ~2019 - 2023 that 0.3 °C is a limit on temperature change. The policy preference for no change has significant consequences as noted below in our discussion on the Type Np workgroup and its findings.

Type Np Workgroup

The Type Np working group endeavored to use CMER Np science to come up with alternatives that worked for everyone. The original December 2018 FPB-approved charter for the Type N Technical Workgroup was to deliver a set of proposed Np Buffer alternative recommendations that met state water quality standards. There was no mention of designing alternatives specifically to prevent measurable temperature change. However, by the time the Technical Workgroup produced its May 2021 Final Report for TFW Policy, the goal had changed to meet the "measurable change standard," which the Technical Workgroup, following Ecology's direction, misinterpreted as prohibiting temperature increase ≥ 0.3°C.

The **Technical Workgroup noted the biological irrelevance of measurable temperature change in streams well below the designated use temperature criteria**. That is because the core summer salmonid habitat designated use criterion of 16 °C is geographically the most common criterion applicable on forestland subject to the Forest Practices Rules. The Hard and Soft Rock studies confirmed forest practices Np stream buffering and harvest treatment of entire Np stream basins in a single entry - an extreme harvest scenario rarely encountered in actual practice - are generally not exceeding this temperature criterion. Most Hardrock study sites using current Np buffer rules remained below the designated use temperature standard before, during and after harvest.[5] The Softrock study determined, "even the current Np stream harvest rules were unlikely to pose a great threat, thermally, to stream biota including amphibians" in the Np stream segments.[6] While the Hardrock and Softrock studies showed timber harvesting may temporarily increase water

[4] WAC173-201A-revisions - Washington State Department of Ecology
[5] Aimee McIntyre et al., Type N Experimental Buffer Treatment Project in Hard Rock Lithologies: Phase II Extended Monitoring, Landscape and Wildlife Scientific Association Group, p. 7 (Nov. 9, 2021) (hereafter "Hard Rock Phase II"); Minority Recommendations to the Forest Practices FPB: Large Forest Landowners, Small Forest Landowners, Washington State Association of Counties, p. 9 (Oct. 10, 2022) (hereafter "Minority proposal").
[6] Technical Type Np Prescription Workgroup, Review of current and proposed riparian management zone prescriptions in meeting westside Washington State anti-degradation temperature criterion, Final Report, p. 43 (May 20, 2021) (hereafter "Technical Workgroup Final Report").

temperatures (by ~0.5 - 1 °C on average), most study streams were in the ~12-14 °C range before and after harvest. Temperature changes were also temporary, recovering in 3-4 years for Softrock treatment sites and 3-10 years for the Hardrock sites.[7] Temperature changes were also spatially limited, dissipating after the stream left the harvest area and passed through 100+ meters (~300 feet) of Type F stream buffer.[8]

The Type N Technical Workgroup noted that "[t]he Hard Rock and Soft Rock studies found the number of available sites that met study criteria extremely limited due to the limitation that harvests needed to virtually encompass entire basins.[9] The Technical Workgroup acknowledged that, in real-world forest practices, basin-wide harvest are rare.[10] The Technical Workgroup acknowledged that Hard and Softrock studies "**ability [to] inform us about treatment performance regarding the measurable change standard is limited.**"[11] "The metrics used in the Hard Rock and Soft Rock studies introduce additional uncertainty into our assessment of the measurable change standards, as they did not directly test compliance with the standard, rather approximate it."[12] The Type N Technical Workgroup stated, for example, that habitat protection could be achieved without avoiding measurable temperature change.[13] **The Technical Workgroup called measurable temperature change an arbitrary threshold; questioned its biological relevance; noted that measurable change dissipates quickly; noted salmon adapt to small temperature changes; and recommended alternative measurements be considered.**[14] Alternative approaches such as exposure duration or other methods of establishing thermal criteria and that lower the cost of proposed rules could be developed if TFW Policy was not seeking only to minimize measurable temperature change.[15]

Despite these Np Workgroup findings that question the underlying premise of no measurable change, the FPB, driven by Ecology's insistence that they, and only they, controlled the process for water quality standards, moved forward with this rulemaking. We assert that this is in error for the following reasons.

- In 1999, the Legislature adopted the FFR and directed changes to state laws and rules to satisfy the Endangered Species Act (ESA) with respect to salmon and other aquatic resources and the Clean Water Act (CWA) with respect to nonpoint sources of pollution attributable to forest practices.[16] The Legislature sought to manage water quality in harmony with "a viable forest products industry,"[17] "the public and private interest in the profitable growing and harvesting of timber,"[18] and in "compliance with all applicable requirements of federal and state law with respect to nonpoint sources of water pollution from forest practices."[19] The Legislature directed the FPB to

[7] Minority proposal, p. 10, 12 (recovery of 100% buffer sites within 2-3 years, current Np Buffer sites within 4-5 years, and 0% buffer sites within 9-10 years); Hard Rock Phase II, p. 9.
[8] Aimee P. McIntyre, et al., Effectiveness of Experimental Riparian Buffers on Perennial Non-fish-bearing Streams on Competent Lithologies in Western Washington, Cooperative Monitoring, Evaluation, and Research Committee, CMER#18-100, p. 7-35 (Sep. 2018) (hereafter "Hard Rock Phase I").
[9] Technical Workgroup Final Report, p. 40.
[10] *Id*. at p. 40.
[11] *Id*. at p. 48.
[12] *Id*. at p. 49.
[13] *Id*. at p. 25, 70.
[14] *Id*. at p. 24, 25, 70.
[15] *Id*. at p. 15, 24, 68.
[16] RCW 77.85.180(2).
[17] RCW 76.09.010(1).
[18] RCW 76.09.010(2)(c).
[19] RCW 76.09.010(2)(g).

adopt rules that accomplish the statute's goals and objective "**without jeopardizing the economic viability of the forest products industry**."[20]

- The parties to the FFR - including Ecology - did not select measurable temperature change of ≥0.3 °C as the limit for forest practices.[21] The parties identified Overall Performance Goals as represented by Resource Objectives and Performance Targets in Schedule L-1.[22] The parties' Overall Performance Goals were forest practices "will not ***significantly impair the capacity*** of aquatic habitat to: (a) Support harvestable levels of salmonids; (b) Support the long-term viability of other covered species; or (c) Meet or exceed water quality standards (protection of beneficial uses, narrative and numeric criteria, and antidegradation)."[23] The Goals contain the FFR's only reference to antidegradation.

- The parties - including Ecology - agreed *the FPB* would assess forest practices, and do so based on ***significant impairment***, not an indication of measurable change. By including the "significant impairment" language, the parties expected that streams subject to forest practices might show insignificant impairment, and this insignificant impairment would not necessarily require rule revisions. In other words, no change at no time in no place (i.e. any measurable change) is not the standard for rule revisions and should not compel forest practices rule revisions.

- The Np Buffer rule proposed for adoption cannot be necessary to meet the statute's goals and objectives until the FPB determines current forest practices are not meeting the resource objectives.[24] The FPB never made the required determination (that existing rules are causing ***significant impairment of capacity*** to meet water quality standards) before determining the form of and need for rulemaking. Without the FPB having applied the standard (significant impairment of capacity), the FPB cannot determine that the rule is necessary to meet the objectives of the statute or evaluate the viability of different alternatives.

- We assert that there has been no failure of resource objectives. The resource objective is to "[p]rovide cool water by maintaining shade, groundwater temperature, flow, and other watershed processes controlling stream temperature." The performance target is "[w]ater quality standards - current and anticipated in next triennial review (e.g., for bull trout)." [25] The example reference to bull trout clearly means the performance target is the aquatic life designated use temperature criteria in WAC 173-201A-200 (e.g., 16 °C for core summer salmonid habitat), not the measurable change criteria in Tier II. By definition, Tier II waters are meeting the L-1 target and objective, and the overall performance goal for stream temperature because they are generally colder than the designated use temperature criteria.

We believe that removing the specific warming allowance for non-point sources while leaving the remaining language in WAC 173-201A-200 and 320 unchanged has the legal effect of the designated use criteria (e.g., 16 °C) becoming the warming allowance if found to be in the overriding public interest. Under this assumption, a path forward can be designed. It would mean that a temperature change ≥0.3 °C is a

[20] RCW 76.09.370(2).
[21] *See* Forest and Fish Report, Schedule L-1, p. 156, codified in WAC 222-12-045(2)(a)(ii).
[22] Forest Practices HCP Schedule L-1
[23] Forest and Fish Report, Schedule L-1, p. 156 (emphasis added); *see also* WAC 222-12-045(2)(a)(ii).
[24] RCW 76.09.370(7).
[25] Forest and Fish Report, Schedule L-1, p. 158.

trigger for further analysis, not a hard limit. It means that a further examination of what CMER science is really telling us is in order.

CMER Science Findings on Np streams

In contrast to 1999, the Np rule taking does not address salmon recovery as the streams involved are - by definition - non-fish bearing. The data used to compel this rule were generated from 3 study locations (Willapa Hills, Olympic Peninsula and Cascades) with 16 total replicates across treatments. Rule proponents say adding these continuous buffers will result in cooler water flowing into our fish-bearing streams. There is no clear evidence in either direction to support this claim as for those few sample sites where downstream measurements were taken there was insignificant measurable change downstream; **none of which exceeded the threshold for beneficial designated uses (16°C) needed for our cold-water fish species**. Where maximum harvest levels were tested, including full basin harvests, there were instances of too much temporary warming for some of our fish species, if they had been in these waters (Figure 4). These same tests also showed that current Np buffer rules on non-fish streams meet the maximum temperature thresholds (designated use threshold for cold water fish species of which there are none in non-fish streams), even during the hot summers we've had over the past 15 years (Figure 4 – orange circled data). In fact, the current rule does as well as the no-treatment sites when averaged across the few locations used to develop these data (Figure 5), and even better than the continuous buffer proposal put forth in the Tier II analysis which is 'apparently' based on the Hardrock and Softrock findings of continuous buffer strategies for whole basin harvest.

Figure 4: Np Hardrock 7 Day rolling average of Maximum Daily Temperature, Pre-harvest, Years 1&2 post-harvest, years 7&8 post-harvest and year 15 post-harvest by site and treatment type.

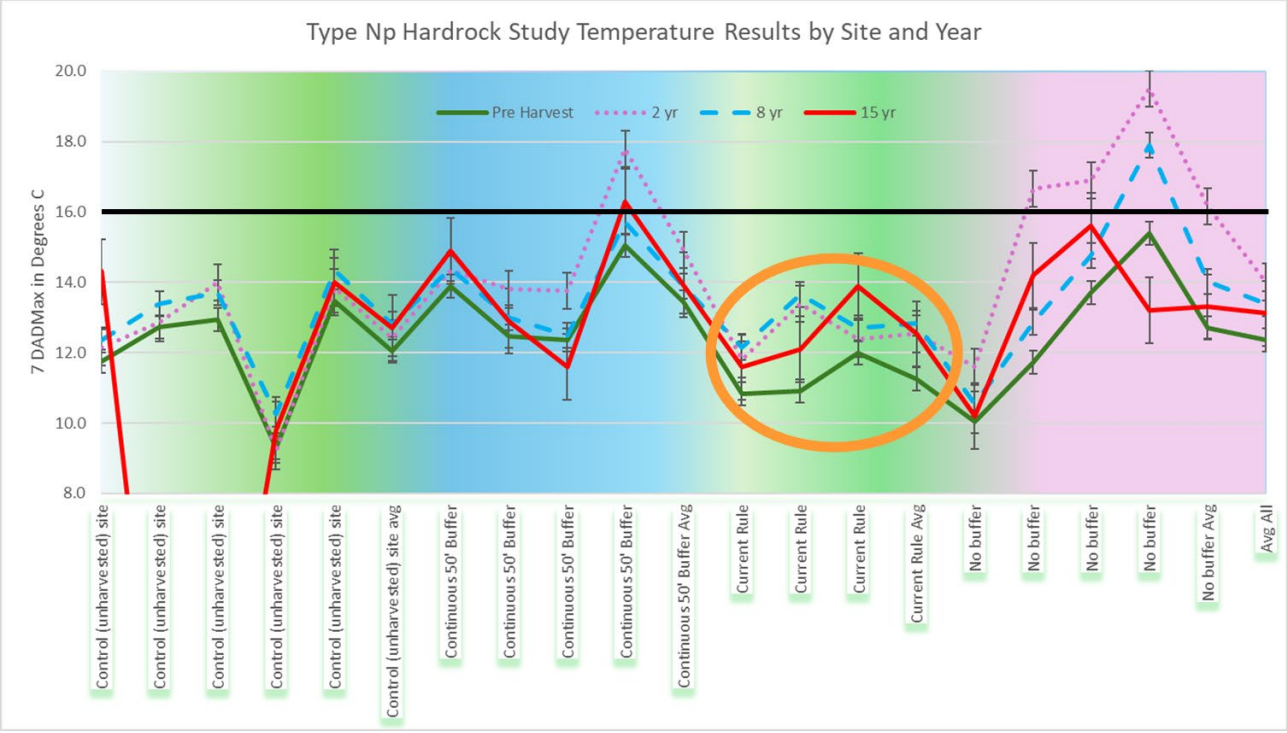
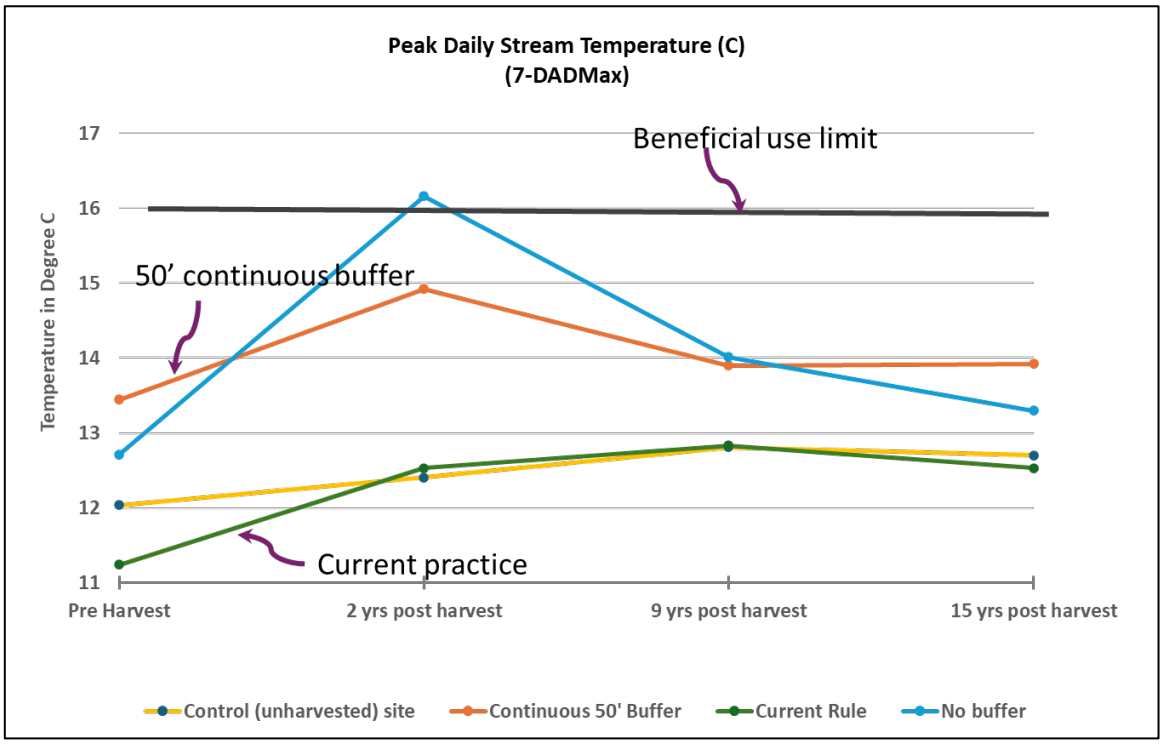


Figure 5: Np Hardrock 7 Day rolling average of Maximum Daily Temperature, Pre-harvest, Years 1&2 post-harvest, years 7&8 post-harvest and year 15 post-harvest average by treatment type.



Given the data shown in Figures 4 and 5 from CMER Np studies, one must ask "what is the benefit we are procuring for this enormous landowner, sector, county, and taxpayer cost?" By definition there are no fish in Np streams so what is the beneficial use that has to be quantified to compare to the costs? Will we have cooler water for downstream uses? Do we even know if the extra shade will be offset by reduced flows from keeping extra trees on site (i.e. extra evapotranspiration) within the system so that no measurable benefit occurs downstream where it is presumably needed? A hydrologic study of every basin would probably be needed to answer these questions with any certainty. However, based on what we see on the landscape we know that either alternative is likely – it is after all why we have this concept of hydrologic green-up. Each of these questions deserves further study which should be initiated as part of the CMER workplan, or via outsourced research if CMER decides to move in that direction. The results and the demands for greater certainty demand a broader understanding of impacts that can only be obtained with monitoring studies – that to date have been very low priority for everyone but the landowner caucuses.

The CMER hardrock and softrock site data show that there are naturally warm(er) sites and cool(er) sites within stream networks. This finding is consistent with monitoring studies completed by large landowners as part of their individual HCP commitments. Naturally cool streams and naturally warm streams exist across the landscape. Data mining of site-specific attributes for each type of stream could be combined with a spatially explicit dataset such as that developed by the UW Team to identify areas of potential high/low concern. Utilizing these AI capable technologies combined with data mining techniques is likely to support targeted action with measurable benefits while minimizing costs when those areas of significant concern are identified. The alternatives proposed in this Tier II analysis are equivalent to taking a bulldozer to kill a gnat.

WFFA participants in CMER believed that the Np results showed 'no smoking gun' – i.e. the rules were creating the expected results on the ground per Figures 4 and 5. However, that is not how the findings were taken up in the policy side of the AMP. Insertion of this 'no temperature change' criteria into policy discussions forced discussions into a narrowly constrained set of alternatives that ultimately led to the majority and minority reports on the Np buffer rule that came before the FPB in November 2022. Which begs the question: Why were WFFA participants so clear that these temperature increases noted in the Type Np studies were expected and of little consequence?

Forests and Fish HCP Biological Opinion

This section is a synthesis of comments from Bill Vogel, a retired wildlife biologist who formally worked with the US Fish and Wildlife Service (USFWS) where he was responsible for the majority of the Biological Opinion (B.O.) that supports the incidental take permit associated with our Forest Practices Habitat Conservation Plan (FPHCP). We recommend you read his testimony in full as it has details that can move us past the current impasse.

The FPHCP is an agreement between Washington State and the US Fish and Wildlife Service and NOAA Fisheries that authorizes 'an incidental take permit' of listed species if timber harvest is conducted consistent with the Forest Practices Rules (FPR). The Biological Opinion (BO) for the incidental take permit discussed factors affecting stream temperatures, the large variability in those factors, and the poor relationship between temperature and shade. In the BO it was expected that the current Type Np rule would result in some warming of some Type Np streams. Specifically, "… a number of Type Np and Ns streams may experience warmer water temperatures for a number of years following timber harvest." (p. 253, B.O.) This B.O. finding is consistent with the variability shown in Figures 4 and 5 for our hardrock studies.

This temporary warming is one of the factors that could lead to "take" for which an incidental take permit was provided to the State in the FFHCP. There are also some situations where warming could reach Type F streams that might result in an increase in stream temperatures within the Type F stream, but also situations where that was less likely. On Page 255 of the B.O., "In some unknown number of cases, increases in temperature may be delivered to downstream Type F waters. This is most likely in moderate-sized bedrock channels, where multiple streams converge in one area, where a single stream changes from Type Np to Type F, and where the sensitive site protections at the confluence of Type Np and F streams have been degraded." So from the outset, the USFWS knew the perennial non-fish portion of the HCP had some risk of stream temperature increases immediately after harvest in some instances. However, they expected that as part of project implementation questions of "statistical significance" and "biological relevance" would be answered.

The Type Np workgroup did note that the warming was biologically irrelevant. Given that there are so few replicates on so few sites, statistical gymnastics are needed to find cause and effect relationships with the data available from these studies. In short, the proposed Np rule is not supported by the findings of the FPHCP biological opinion. Further, it makes a mockery of the "No Surprises" assurances of HCP and its expected 50-year lifespan. And it makes a mockery of the CMER science that is purported to support this rule change.

How Does the Department of Ecology Propose to Respond to Public Comments?

Actual CB ratios, using IEc's own data indicate that benefits do not exceed costs. Ratios calculated using real data from Washington on willingness to pay metrics show benefits are about 3-4% of costs.
Given the fatal flaws in the IEc CBA used in the Tier II Analysis coupled with the inconsistent application of 0.3°C as a limit and then a trigger for review it is unclear what value this Tier II Analysis can provide. It is also unclear how public comments will be incorporated into the Tier II analysis. These uncertainties require answers. Specific questions where responses are necessary include:

1. **How will public comments be used to adjust or inform this Tier II Analysis?**
2. **The CBA and SBEIS used for this analysis are flawed beyond repair. We have requested that the Forest Practices Board re-initiate a proper CBA. Will you integrate a new CBA into the Tier II analysis? If so, how?**
3. **The Department of Ecology's 2019 CBA on the Settlement Agreement that removed the 2.8°C warming allowance from the Tier II analysis framework found that there would be zero costs to the public. How do you reconcile that finding with massive economic harms identified here, or even with the significant harms identified in the IEc CBA? What are you planning to do in response to these economic findings?**
4. **On what basis does the Department of Ecology justify that the immediate asset forfeiture value of $2.275B to private forest landowners, and downstream impacts as high as $6B are somehow less than some amorphous, feel-good qualitative benefits as stated in the CBA you are using to justify the Tier II Analysis for the Np rule?**
5. **How do you plan to reconcile this changed interpretation around 0.3°C as first a limit and now a trigger, and how it affects the options that were evaluated as part of AMP, FPB, and the Tier II analysis?**
6. **How do you plan to reconcile no measurable temperature change criteria with the clear acknowledgement and acceptance of change in Np streams identified in the FPHCP biological opinion?**

Thank you.

Elaine Oneil, PhD
Executive Director
Washington Farm Forestry Association
Stewards of the Land, For Generations to Come

Attachments (4):

Oral testimony from Dr. Elaine Oneil for:
July 31, 2025 via ZOOM meeting

"Stewards of the land... for generations to come."

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Testimony on Department of Ecology Tier II Analysis, presented July 31, 2025, online only hearing.

I'm Dr. Elaine Oneil, Executive Director of the Washington Farm Forestry Association representing small forest landowners across the state. The insertion of this **no change and no time in no place temperature limit** by the Department of Ecology has been a boondoggle since Mark Hicks who, along with Ecology leadership, is long gone from leadership and even government, brought it to the AMP in 2019 or so. At the time we argued that no measurable change (i.e. 0.3C) was inconsistent with the Forests and Fish HCP which specifically allows for temperature change in Np streams and was also unlikely to be biologically insignificant. But Ecology persevered – through AMP and a lot of grandstanding at the FPB that they had veto power over what went forth because they implement CWA assurances. It was only later that we found out that this 0.3C limit was also inconsistent with Tier II waters allowances under the CWA. In fact, it's only been since May that you have decided that no change at no time in no place is just a recommendation and not a limit. So, there is complete inconsistency in how and why this Tier II analysis came into being. That said, we challenge the veracity and conclusions of Np rule CBA to justify this analysis, and we are especially concerned about how benefits supposedly accrue to the state as a whole but costs are born by poverty-stricken census tracks in our rural counties. This doesn't seem to correspond with the HEAL act requirements at all.

The Np rule CBA used Willingness-to-Pay to estimate benefits. It is a standard method used in economic analyses to estimate numeric values for ecosystem services that have no market so that a CB ratio can be calculated. Using the Np rule willingness-to-pay values and their low-cost estimate shows costs exceed benefits even based on their faulty analysis using low quality irrelevant data from regions with no similarity to our west coast forests.

Better data exists – for costs and benefits. Independent analysis by UW shows the costs are astronomical: **200,000+ acres and 4.1 BBF removed from our working forests; $2.3Billion of immediate loss in asset value; a $250M increase in FREP liabilities; a $90M dollar reduction in forest excise tax to counties; and a $6B economic hit to our rural economies from lost economic activity.** Twice the upper cost estimate of your CBA.

And we have excellent data on payments for ecosystem services that better represent our forests – namely the FREP program. Over the past 25 years FREP has paid for a portion of the timber required to be left standing to support the ecosystem services inherent in buffers on eligible small forest landowners forested lands. The FREP program has disbursed an average of $1.6M/year of state appropriated funds which accurately represents what our state's citizens are willing to pay for the ecosystem services these riparian buffers provide, sometimes after significant lobbying efforts by WFFA when budgets are lean. If the 204,000 acres removed by the Np rule were harvested on a 40-year rotation the benefits would be equivalent to $320/acre or if a 50-year rotation, $400/acre or nearly $8500/acre less than current timber value of $8,889/acre. So, real data from real examples in Washington state where ecosystem services are paid for by the general public indicate a willingness to pay ratio of 22 or 28 to 1 for a CB ratio of 0.03 to 0.04. This means 96-97% of the purported benefit is either qualitative or fake. **Given these overwhelming bad CBA ratios, what overriding public interest are we serving by advancing the Np rule towards implementation?**