**DEPARTMENT OF
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**MEMORANDUM**

**May 28, 2025**

**TO:** Forest Practices Board

**FROM:** Maggie Franquemont, Forest Regulation Policy Program Manager MF

**SUBJECT:** Type Np Cost Benefit Analysis: Additional Information

At the Board's May 14, 2025 meeting, Industrial Economics Inc. (IEc), presented the preliminary Cost Benefit Analysis (CBA) for the Board's consideration as part of the Type Np rulemaking decision scheduled for the Board's June 6, 2025 special meeting. During the May meeting, the Board asked IEc several technical questions regarding the analysis and received responses during the discussion. IEc documented the responses and submitted the attached Q&A with additional information to support the Board's discussion and provide references for the Board.

Please reach out to me if you have any questions at Maggie.franquemont@dnr.wa.gov.

MF/

**c:** Katie R. Allen, Acting Deputy Supervisor Forest Resilience, Regulation and Aquatics
Saboor Jawad, Forest Regulation Division Manger
Tami Miketa, Acting Forest Regulation Assistant Division Manager, Policy and Landowner Services
Donelle Mahan, Forest Regulation Senior Policy Planner
Terry Pruit, Assistant Attorney General, Forest Practices Board Attorney

**Attachments:**

1. Reponses to Board Comments on the Preliminary CBA for the  Type Np Water Buffer Proposed Rule

*At the May 15, 2025 Forest Practices Board meeting, IEc presented the results of the Preliminary Cost-Benefit Analysis and Small Business Economic Impact Statement (SBEIS) of the Type Np Water Buffer Proposed Rule. At the meeting, the Board asked IEc several technical questions regarding the analysis, and we provided responses during the discussion. We are now documenting and clarifying those responses here to support the Board's deliberative process and ensure the information is readily available for reference.*

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**1) Why doesn't the economic analysis rely on the Washington State approved measures of the social cost of carbon to monetize the carbon benefits of the proposed rule?**

Section 4.3 of the Cost-Benefit Analysis (CBA) evaluates the effects of the rule on carbon sequestration. A textbox on page 51 of the CBA includes description of the definition and use of social cost of carbon measures. This textbox describes that, if applied to the quantified changes in carbon sequestration due to the proposed rule, the annualized global benefit would be on the order $1.5 million to $23 million. However, we note two key considerations regarding this value:

a) We categorize the effect of the rule on carbon sequestration and storage as "negligible to minor" not because the economic value of removing carbon from the atmosphere is low, but because the extent to which the proposed rule reduces atmospheric carbon is significantly uncertain. Forest carbon flux, in both managed and conserved forest, is dependent on site-specific factors, both due to differences in management of the land and in the ecological characteristics of the site. In particular, our analysis highlights multiple data sources evaluating the potential extent of "leakage," meaning the amount of timber that, if not harvested within the riparian buffer, would instead be harvested elsewhere (e.g., in the region, in the State of Washington, or even outside of the region and country). That is, these reduced carbon emissions due to the protected buffer may be offset by increased emissions from the additional timber harvested elsewhere. Some literature identifies this "leakage rate" to be as high as 100% (i.e., all of the timber not harvested in the riparian buffer would be harvested elsewhere). While we find the "probable" effect of the rule on atmospheric carbon is beneficial (i.e., a net reduction in carbon emissions), we cannot rule out that the effect is negligible.

b) The social cost of carbon reflects the value of avoided climate-related damages (e.g., to crops, human health, and infrastructure) at a global level. We note that this value reflects a different frame of reference than the other categories of costs and benefits described in the analysis (which generally accrue to businesses and residents of Washington State). Nonetheless, social cost of carbon values have been used to understand benefits and costs of national- and state-level regulations and policies that influence global atmospheric greenhouse gas levels. While reasonable to consider the global benefit of the carbon reduction, the values should be considered in this context.

Additionally, and as noted by the Board, Washington State formally adopted global measures of the social cost of carbon to be included by utilities in resource planning, evaluation, and selection (WAC 194-40-100). We note that the social cost of carbon values that we reference in the Preliminary CBA are updated versions of the measures that are written into the WAC. The WAC relies on a 2016 version of federal guidance for incorporation the social cost of greenhouse gases into regulatory impact analysis; the Preliminary CBA relies upon the 2023 version of this guidance published by the U.S. Environmental Protection Agency, which incorporates more recent scientific advances and recommendations from the National Academies.[1]

**2) Are the economic values for species conservation "willingness to pay" values, and are willingness-to-pay values reliable measures of what people would in fact pay for a benefit?**

Willingness to pay (or WTP) is the maximum amount an individual will pay for a good or service and is a direct expression of value reflected in all market transactions. When individuals make purchases they reveal that their WTP is at least as much as the market price. While fundamental to economics and the standard practice of benefit-cost analysis, WTP is critical in business and marketing settings as well. Studies and data on WTP inform pricing decisions, which in turn determine revenues.

When markets for a good or service do not exist, as in the case of species or habitat protection, similar methods are used to measure WTP. Contingent valuation (CV) has been used for over 50 years to estimate WTP for natural resources and environmental quality. Due to its use in major environmental policy and litigation cases the method has been

[1] We recognize that, on May 5, 2025, the U.S. Office of Management and Budget issued a directive to federal agencies limiting the use of social cost of greenhouse gas measures for agency decision-making, except where required by statute.

continuously evaluated and refined over time- in particular to address concerns that individuals' stated WTP may not reflect their actual WTP. The consensus is that well-designed and implemented studies provide reliable measures of WTP. As one example, a study in Corvallis, OR found parity in WTP between an actual public referendum and an identical CV survey administered prior to the vote for funding a riverfront restoration and improvement project (Vossler and Kerkvliet 2003).

**3) Are the literature-based values in Table 24*, Willingness to Pay for Restoration or Enhancement of Riparian Buffers*, relevant to the Np Buffer Rule?**

Values held by the public for riparian conservation depend on a number of factors, including demographic and attitudinal factors (e.g., income, support for environmental protection), the scale of conservation (e.g., acres protected), and the broader ecological and social context (e.g., accessibility, surrounding habitat quality, baseline protections). The studies cited in our analysis vary along these dimensions, and none are directly transferable to the specific context of the proposed rule. This is why we do not adopt the findings from these studies to quantify this benefit of the proposed rule. However, together these provide insight from existing empirical research on the value the public holds for protection of riparian habitat.

The proposed rule generally applies to privately owned forestland with the following characteristics: contain harvestable timber, adjacent to non-fish bearing streams, existence of baseline buffer requirements (to varying degrees), and located within largely forested watersheds. Of the empirical research we identified, the Preliminary CBA notes that Trenholm (2013) is most closely aligned. The study elicits information from the public (households) for implementing a 60-meter buffer (no harvest zone) on privately owned forests with active timber operations. The 60-meter buffer represents a doubling of the baseline 30-meter requirement. Notable differences between this study and the proposed rule context include the presence of fish along many of the buffered streams in the Trenholm et al. study and the limited timeframe of the protection program evaluated (10 years).

None of the remaining studies focuses exclusively on lands with harvestable timber, but all identify opportunity costs (i.e., all are assessing value of conserved or restored riparian habitat in place of economic use of this area). Lewis et al. (2017) and Blaine and Smith (2006), for example, elicit values for establishing riparian protection areas within urbanized (or urbanizing) watersheds. Holland and Johnston (2017) quantify the value for riparian conservation programs in watersheds that are largely protected but face increasing development pressure. All three studies differ from the proposed rule context by mentioning fish habitat as one (of several) potential benefits, and none explicitly includes mention of baseline protections. The final two studies (Holmes et al., 2004; Weber and Stewart, 2009) represent contexts that differ more from the proposed rule but provide additional evidence of public values for riparian protection across a range of scenarios.

**4) What is the differences between regional economic impacts and economic welfare measures in the analysis (e.g., the revenue and job impacts and the land value effects) and can these measures be summed?**

Economic *impacts* and economic *values* are not typically additive because, although they are both measured in dollars, they measure fundamentally different things. Economic impacts reflect changes in economic activity (e.g., jobs, output, income, or tax revenue) while economic values capture the effects of the rule on individual or societal well-being, for example of improved environmental quality or enhanced recreational opportunities. In other words, **economic impact** speaks to economic stimulation (level of activity in particular economic sectors, while **economic value** speaks to welfare improvement.

While both can result from the same rule or policy and can provide complementary insights, summing them would risk double-counting or misrepresenting the true effects. Instead, they should be reported separately to provide a more complete picture of a rule's consequences.

**5) What is the rationale for including the list of mitigation measures in the Preliminary CBA if some of them are not relevant to the proposed rule?**

The Small Business Economic Impact Statement (SBEIS) finds that the rule is likely to result in more than minor costs to businesses in the regulated industry and that the costs are likely disproportionately borne by small businesses. Given this finding, RCW 19.85.030 states that "the agency shall, where legal and feasible in meeting the stated objectives of the statutes upon which the rule is based, reduce the costs imposed by the rule on small businesses." The RCW goes on to list possible cost mitigation strategies (RCW 19.85.030[2]), which we present in the SBEIS for the Board's consideration, including:

(a) Reducing, modifying, or eliminating substantive regulatory requirements;

(b) Simplifying, reducing, or eliminating recordkeeping and reporting requirements;

(c) Reducing the frequency of inspections;

(d) Delaying compliance timetables;

(e) Reducing or modifying fine schedules for noncompliance; or

(f) Any other mitigation techniques including those suggested by small businesses or small business advocates.

We additionally include this list into Section 6.3.2 of the Preliminary CBA following our discussion of the distributional impacts of the rule (i.e., major costs experienced by the timber industry and benefits experienced broadly by society). The Preliminary CBA does not recommend any particular mitigation measure(s) but instead highlights that it would be prudent to consider potential cost mitigation options in light of the Preliminary CBA findings regarding major costs and distributional effects of the rule.