From:	Lauren Anderson <la@oregonwild.org>
Sent:	Thursday, November 30, 2023 5:00 PM
To:	Oregon GWC * ODOE
Cc:	Cathy Macdonald
Subject:	Public comment - forest recommendations in INR NWL report
Attachments:	Feedback on forest recommendation in INR report 11.30.23.pdf

Hello,

The attached comment letter provides feedback on the forest recommendation section of the recent Institute for Natural Resources (INR) Final Report: *Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal.* This letter is from the following organizations. Please reach out with any follow up questions.

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Climate Forests Program Manager
Oregon Wild

Teryn Yazdani
Staff Attorney and Climate Policy Manager
Beyond Toxics

Alan Journet
Co-facilitator
Southern Oregon Climate Action Now (SOCAN)

Rand Schenck
Forestry and Natural Lands Lead
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Brenna Bell
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To: Chair Macdonald and Members of the Commission
Re: INR Report on Natural and Working Lands **(Forest Recommendations)**
Date: November 17th, 2023

Dear Chair Macdonald and Members of the Commission,

Thank you for the opportunity to provide feedback on the recent Institute for Natural Resources (INR) Final Report: *Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal*. It is encouraging to see the Commission prioritize natural climate solutions as a core strategy of addressing the climate crisis in Oregon, however there are several elements of the report's section on forests that could benefit from a more up to date and detailed assessment of forest climate science and practices. The *"Blue Carbon Ecosystems"* section of the report mentions conservation and restoration in every practice — but there are no mentions of restoration or conservation in the forest section. As written, the report is extremely biased towards pro-logging practices and overemphasizes industry supported science.

The recommendations for the following practices are too broad to properly account for the complexity of using forests as a natural climate solution and, if misinterpreted, risk undermining the state's climate adaptation and mitigation strategies:

- Improved forest management
- Reduce wildfire risks
- Increase utilization of discarded forest biomass (slash material)

We encourage you to incorporate a more comprehensive assessment of climate science around these topics. Please consider the following points as you review the reports recommendations:

1. **Distinguish between management practices on public lands and practices in tree plantations on private lands** (see **"**improved forest management" recommendation in report)**.** In terms of what practices are appropriate as a climate strategy for forests, we encourage you to distinguish between different land use types. What is appropriate for plantations on private industrial lands is not appropriate for public forests that are managed for multiple use and held in trust for the public. For example, lengthened logging rotations on private lands is an excellent climate strategy, however on public lands, mature and old growth forests should be preserved for their carbon and biodiversity benefit (not treated as a crop to be harvested).
2. **Include mature and old-growth forest preservation on public lands as a climate strategy** (see **"**improved forest management" recommendation in report)**.** As a tree ages and grows larger, research indicates that it will continue to absorb carbon at an increasing

rate.[1] As it develops, a tree's total leaf area increases, which means more light can be intercepted, which, through photosynthesis, means more atmospheric carbon is absorbed.[2] Moreover, the increase in the rate of carbon accumulation continues even as a tree's overall growth rate per unit leaf area declines.[3] Older, larger trees thus hold significantly more carbon than their younger counterparts in the forest, and the older stands that these trees dominate hold a substantial and disproportionate portion of a forest's carbon.[4] Mature and old-growth conservation is becoming a central climate strategy for the US Forest Service and Bureau of Land Management,[5] and should be specifically mentioned in this report.

3. **Account for risk of maladaptation** (see **"**manage wildfire risk" recommendation in report). The recommendations for wildfire management should also underscore the need to retain the oldest, largest trees on public lands,[6] and focus restoration efforts on younger, small-diameter trees that are in overly dense forests due to past fire suppression and logging practices. There is a deficit of mature and old-growth trees on the landscape, and these bigger, older trees tend to be the most fire resistant — their protection and recovery must be encouraged as part of any wildfire strategy. Removing these trees from the landscape will only hinder climate adaptation efforts in forests. Further, the report fails to account for the need to treat different forest types with different forest

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[1] Stephenson, N.L. et al. "Rate of tree carbon accumulation increases continuously with tree size." Nature (2014) 507: 90–93. https://doi.org/10.1038/nature12914.

[2] Xu, C.-Y. et al. "Age-related decline of stand biomass accumulation is primarily due to mortality and not to reduction in NPP associated with individual tree physiology, tree growth or stand structure in a Quercus-dominated forest." Journal of Ecology (2012) 100(2): 428–440. https://doi.org/10.1111/j.1365-2745.2011.01933.x; Pregitzer, K.S. and E.S. Euskirchen. "Carbon cycling and storage in world forests: biome patterns related to forest age." Global Change Biology (2004) 10(12): 2052–2077. https://doi.org/10.1111/j.1365-2486.2004.00866.x; Mildrexler, D.J. et al. "Large Trees Dominate Carbon Storage in Forests East of the Cascade Crest in the United States Pacific Northwest." Frontiers in Forests and Global Change (2020) 3:594274. https://doi.org/10.3389/ffgc.2020.594274.

[3] Stephenson, N.L. et al. "Rate of tree carbon accumulation increases continuously with tree size." Nature (2014) 507: 90–93. https://doi.org/10.1038/nature12914.

[4] Mildrexler, D.J. et al. "Large Trees Dominate Carbon Storage in Forests East of the Cascade Crest in the United States Pacific Northwest." Frontiers in Forests and Global Change (2020) 3:594274. https://doi.org/10.3389/ffgc.2020.594274; Lutz, J.A. et al. "Global importance of large-diameter trees." Global Ecology and Biogeography (2018) 27(7): 849–864. https://doi.org/10.1111/geb.12747; Brown, S.A. "Spatial distribution of biomass in forests of the eastern USA." Forest Ecology and Management (1999) 123(1): 81–90. https://doi.org/10.1016/S0378-1127(99)00017-1.

[5] USFS 2023. https://www.fs.usda.gov/sites/default/files/defining-mature-and-old-growth-forests-factsheet.pdf

[6] Recently announced USDA efforts to address the wildfire crisis include efforts to protect older forests. According to the USDA Press Release, (1/19/23) "Secretary Vilsack is also directing the Forest Service to use and prioritize a suite of provisions authorized in the Bipartisan Infrastructure Law to more quickly apply targeted treatments to the high-risk firesheds identified in the Wildfire Crisis Strategy, while opening up additional opportunities to pursue science-based reforestation, restoration of old growth forests and recovery of other areas impacted by wildfire.These treatments are required to be ecologically appropriate, maximize the retention of large trees, protect old growth, and to consider possible effects on historically underserved communities and Tribes. Treatments are also to be carried out collaboratively alongside participating communities and partners." https://www.usda.gov/media/press-releases/2023/01/19/biden-harris-administration-launches-new-efforts-address-wildfire

management practices. Wet temperate rainforests should not be treated in the same manner as dry, fire-adapted forests in Eastern Oregon.

4. **Do not consider burning of woody biomass to be a climate solution** (see "Increase utilization of discarded forest biomass"). Woody biomass can emit significant amounts of carbon when burned to produce energy. A detailed analysis of biomass energy generation commissioned by Massachusetts (the Manomet Study) compared the lifetime greenhouse gas effects of a continuous harvesting and replanting scenario to burning natural gas to generate the same energy. This analysis showed that, considering the first 35 years of operation, the biomass plant would have one and a half times the net CO2 emissions of a natural gas plant generating the same amount of energy.[7] Based on this study and many others,[8] incentivizing biomass energy generation will put Oregon *further behind* on its current 2050 greenhouse gas goals, which aim to reduce greenhouse gas emissions in the state by at least 45 percent below 1990 levels by the year 2035, and by 80 percent by 2050.[9] It should also be noted that there are also significant, potential environmental justice concerns associated with biomass burning facilities and their placement in vulnerable communities.

The INR report fails to account for forest conservation as a climate strategy. Prioritizing wood products and biomass for energy production over practices like longer logging rotations and old forest conservation will only put Oregon further behind in achieving our climate goals. The failure of this report to account for ecological, social and environmental justice co-benefits severely undermines the validity of these recommendations. Please ensure that the final recommendations from the commission account for these important considerations.

Sincerely,

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[7] Manomet Study 2018. https://www.manomet.org/wp-content/uploads/2018/03/Manomet_Biomass_Report_Full_June2010.pdf

[8] McKechnie J, Colombo S, Chen J, Mabee W and MacLean H L 2011 Forest bioenergy or forest carbon? Assessing trade-offs in greenhouse gas mitigation with wood-based fuels Environ. Sci. Technol. 45 789–95 https://pubs.acs.org/doi/abs/10.1021/es1024004,
Bernier P and Paré D 2013 Using ecosystem CO2 measurements to estimate the timing and magnitude of greenhouse gas mitigation potential of forest bioenergy *GCB Bioenergy* 5 67–72 https://onlinelibrary.wiley.com/doi/full/10.1111/j.1757-1707.2012.01197.x,
Walker T, Cardellichio P, Gunn J S, Saah D S and Hagan J M 2013 Carbon accounting for woody biomass from Massachusetts (USA) managed forests: a framework for determining the temporal impacts of wood biomass energy on atmospheric greenhouse gas levels J. Sust. Forest 32 130–58 https://www.tandfonline.com/doi/abs/10.1080/10549811.2011.652019,
Stephenson A L and MacKay D J C 2014 Life Cycle Impacts of Biomass Electricity in 2020 (London: UK Department of Energy and Climate Change) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/349024/BEAC_Report_290814.pdf, and
Laganière J, Paré D, Thiffault E and Bernier P Y 2017 Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests GCB Bioenerg. 9 358–69 https://onlinelibrary.wiley.com/doi/full/10.1111/gcbb.12327.

[9] EO 20-04 https://www.oregon.gov/gov/Pages/carbonpolicy_climatechange.aspx

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From:	Megan Kemple <megan@oregonclimateag.org>
Sent:	Thursday, November 30, 2023 2:58 PM
To:	Oregon GWC * ODOE; Cathy Macdonald; tom.rietmann@gmail.com; Nora Apter, OEC; OSWA
Subject:	Public Comment on the INR's Final Report
Attachments:	OrCAN's public comment to OGWC on INR NWL Report.pdf

Chair Macdonald and OGWC Natural and Working Lands subcommittee:
Please find attached OrCAN's Public Comment on next steps related to INR's Final Report on Natural and Working Lands.

Thank you for the OGWC's work in this area!
And thank you so much for your consideration of these comments.

Zach, if you could confirm receipt, I'd appreciate it. Thanks so much.

Megan Kemple (she/her)
Executive Director
Oregon Climate and Agriculture Network (OrCAN)
541-225-8807 (direct)

OrCAN
Oregon Climate & Agriculture Network

November 30, 2023
To: Chair Macdonald and members of the Oregon Global Warming Commission (OGWC)

Public Comment on next steps related to the Institute for Natural Resources' Final Report on Foundational Elements to Advance the OGWC's Natural and Working Lands Proposal

Including comments on these foundational elements:

NWL Advisory Committee

As a member of the previous NWL Stakeholder Advisory Committee, I'll share some lessons learned, from my perspective, to inform the upcoming process to form a new Committee.

Scientific expertise

Scientific expertise will be important, but I recommend not establishing a separate Technical Advisory Committee (TAC) and instead including scientific expertise on the NWL Advisory Committee (AC) and/or identifying scientific resource people/reviewers outside of the AC, and in either case, *encouraging open lines of communication between them*. During the recent process facilitated by INR, it was difficult to navigate the relationship between the two committees. The SAC was not allowed to communicate with the TAC and it led to lots of disagreement/ misalignment which may have been resolved if we'd been able to communicate with each other in a facilitated process. The Agriculture TAC provided recommended practices and the Stakeholder Advisory Committee (SAC)'s agriculture subcommittee recommended a different set of practices, leaving the Commission with two sets of practices to reconcile.

Additional perspectives

The role of landowners and land managers and technical assistance providers on the NWL Advisory Committee will be critical, but we also recommend including organizations who represent them. These organizations have likely been hearing from broader groups of their constituents and can provide a perspective beyond that of individuals.

Seeking recommendations

HB 3409 Section 62(1) directs the Commission to "seek recommendations for committee members from industry and advocacy associations where appropriate." We recommend requesting recommendations from the Natural Climate Solutions Coalition, in addition to industry organizations/associations for any of the positions they would like to provide recommendations for. There could be a two week period prior to the request for applications where the Commission could request recommendations. I don't think the recommendation opportunity needs to be expanded to other stakeholders/public.

Previous experience on NWL AC and terms

Having at least some people who had previous service on the NWL AC will be helpful for continuity, along with the opportunity to renew. I recommend staggering terms at 2 & 3 years. Consider a larger group for year 1 because of the front-loaded workload of the Commission.

Balanced viewpoints

The NWL Advisory Committee should be composed of balanced viewpoints and experiences and be developed with an equity lens. A balanced composition would include those who are committed to strong climate mitigation and equity outcomes as well as those who are familiar with challenges and/or barriers that landowners and land managers may face as new financial incentives and programs are implemented.

Land Sector Practices and Activity Based Metrics

A new directive for Activity-based Metrics

The question the INR answered in its process was "What are the recommended activities to capture and store more carbon and reduce GHGs in Oregon's NWL sector?" (see Page 8 Section 2.2 of INR's report). But on September 30, 2023, shortly after INR's Report was published, HB 3409 went into effect. Section 58 of HB 3409 directed the OGWC to establish and maintain activity-based metrics and specified that the "Activity-based metrics shall be used to evaluate progress toward increasing net biological carbon sequestration and storage in natural and working lands."

Focus on net biological carbon sequestration and storage

Note the directive in HB 3409 is a different question than the question answered in INR's process. The OGWC's new directive is to focus on "net biological carbon sequestration and storage" rather than activities to capture and store more carbon and reduce GHGs, although they are related, as *net* biological carbon sequestration and storage considers the net additional storage of carbon from atmospheric carbon dioxide after accounting for any greenhouse gas losses. However, the focus on biological carbon sequestration (in HB 3409) is important. Biological carbon sequestration is defined in HB 3409 as "the removal of carbon from the atmosphere by plants and microorganisms and storage of carbon dioxide in vegetation, such as grasslands, marshes or forests, or in soils and oceans." The OGWC should use this filter as it establishes activity based metrics, focusing on net carbon sequestration and storage.

Focus on Natural and Working Lands Sector

Note that in the TAC's list of Practices to Increase Carbon Stocks and/or Reduce Greenhouse Gas Emissions from Oregon's Agricultural Lands starting on pg 86 of INR's Report, there is only one practice for the Natural and Working Lands Sector, which is "Increase Riparian Areas Beyond the Edge of Field – Reforestation" on pp 87-88. The rest are for "Other Sectors". We recommend focusing on the natural and working lands sector, rather than other sectors. The TAC's recommendations may not have reflected the perspective of the scientific community, where there is more recognition of the carbon sequestration potential of soil health practices.

The SAC's recommended practices focus entirely on the Natural and Working Lands Sector.

Open communication with scientific community

Determining activity baselines and metrics should include open lines of communication between the scientific community and the NWL Advisory Committee to ensure that the metrics are both rooted in relevant science and practical to implement and track for land owners and land managers. If the NWL Advisory committee does not include multiple members of the scientific community, we recommend that members of the scientific community have the opportunity to review draft activity based metrics and the draft inventory. The OGWC/OCAC should request a review by the scientific community of their final draft activity-based metrics before adoption to ensure the final activity-based metrics support measurable carbon sequestration benefits.

Soil health practices with net carbon sequestration and storage potential

Soil health practices with net biological carbon sequestration and storage potential include:

- Establishing or maintaining woody plants (including riparian forest buffers), which store above- and below-ground carbon
- Establishing or maintaining perennial crops, which reduces disturbance and keep carbon in the soil
- Reducing or eliminating tillage, which protects existing soil carbon and reduces GHG emissions from the soil.

Protecting existing carbon stocks is as important as sequestering additional carbon. The definition of Natural Climate Solutions in HB 3409 is "an activity that enhances or protects (emphasis added) net biological carbon sequestration on natural and working lands, while maintaining or increasing ecosystem resilience and human well-being." *These practices are all included in the NWL Stakeholder Advisory Committee's list of recommended practices.*

Leverage federal funding

The OGWC's NWL Proposal, INR's Report, and HB 3409 all recognize the importance of leveraging federal funding. We strongly recommend aligning the activity based metrics with the activities that USDA is incentivizing through the historic investment of funding through the Inflation Reduction Act. USDA's Natural Resources Conservation Service (NRCS) has a list of Climate Smart Agricultural and Forestry Mitigation Activities eligible for Inflation Reduction Act funding through the Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP). NRCS provides an explanation of the review process they use for adding practices to this list. *Most of the practices recommended by the NWL Stakeholder Advisory Committee on pp. 98-110 of INR's report, are included on NRCS' list and provide the opportunity for farmers and ranchers to leverage federal funds.*

Tribal input is needed

Tribal input was completely lacking, as far as we're aware, from INR's process of creating a list of recommended practices. HB 3409 requires the Commission to consult with Tribes to identify "opportunities to support indigenous practices and knowledge from tribal nations to sequester and store carbon on natural and working lands." The NW Intertribal Agriculture Council may be a resource for the agriculture sector.

More research is needed

There is more research needed on the carbon sequestration potential of soil health practices in Oregon's diverse crop types, soils, and climates. OrCAN is working to advance research in this area. Practices can be added or removed from the list as new research becomes available.

Error on page 10: soil health considerations

The "soil health considerations" on page 10 of INR's report were not updated to reflect edits made by the SAC. Please disregard the language on page 10 and read the updated language on page 98 beginning with: "Soil Health: Healthy soils are vital to resilient ecosystems, and many agricultural practices that improve soil health enhance its ability to store carbon…".

Community Impact Metrics

Narrow the list

INR's report included a long list of community impact metrics recommended by the Natural and Working Lands Advisory Committee. We recommend narrowing the list of community impact metrics and prioritizing environmental justice considerations (impacts to jobs, liveability, access, clean water, clean air). A narrowed version of the list could be provided to agencies for the purpose of managing the fund and the full list from INR's report could be made available as a resource to agencies for use with other programs.

Ecological metrics

At the OGWC meeting on November 11th, Chair Macdonald shared the NWL subcommittee's suggestion to exclude the Ecological community impact metrics (see page 31 of INR's Report) because they will be included in the activity based metrics. We agree that most of the Ecological community impact metrics will be measured pretty well by the activity based metrics, but a few in the "land use" section of the Ecological metrics may not be. Those include:

- # of different entities/organizations participating in climate-resilient management practices
- # of natural and working landowners/managers using climate-resilient management practices
- # of projects that incorporate indigenous and local practices and knowledge

These could fit in Community Support and Connections under Socio Economic or Social Justice and Equity. Note also that two of them focus on resilience over mitigation, which is not included in the activity based metrics. We recommend including some metrics for climate adaptation/resilience. Our organization is happy to be a resource.

Proposed Methodologies for the GHG Inventory

Advanced approach,

We recommend utilizing the Advanced Methodology Option as it appears to be more thorough and will provide more comprehensive data.

Concerns about public data

The Commission should be aware that landowners, and organizations representing them, have concerns about the public availability of data related to practices, crops and soils. INR's Jimmy Kagan issued a memo to the Natural and Working Lands Advisory Committee titled: Oregon Carbon Stock Inventory – Assuring Data from Private Lands Is Not Shared, outlining sources of inventory data and the ways the privacy of these data are protected. And INR's report states "No field data would be collected as part of this effort." Any sources of inventory data need to ensure landowner/land manager privacy is protected.

Agriculture has an important role

Farmers have an important role to play in mitigating climate change and Oregon's farms and ranches are ready to be part of the solution. OrCAN is a network of over 800 farmers, farm service/technical assistance providers, and others interested in adopting, or supporting the adoption of, practices to promote soil health, carbon sequestration and climate resilience. The inclusion of natural and working lands in the State's effort to monitor and meet its climate goals is critical to making sure that Oregon's farms and ranches can be part of the solution. Thank you for the OGWC's work in this area.

And thank you so much for your consideration of these comments.

Megan Kemple, Executive Director
Oregon Climate and Agriculture Network (OrCAN)

From: Mike Badzmierowski <Mike.Badzmierowski@wri.org>
Sent: Thursday, November 30, 2023 3:34 PM
To: Oregon GWC * ODOE
Cc: BAKER Zachariah * ODOE
Subject: Public comment for the INR Final Report - Natural and Working Lands
Attachments: Badzmierowski_Mike_Public_Comment_OGWC_INR_Final_Report_11_29_23.pdf; Response to comments made by Stakeholder Advisory Committee (SAC) and External Reviewers (ER) for the Agricultural Land Use.pdf

Hello Chair Macdonald and OGWC Commission members,

I am submitting my detailed comments to be considered by the Commission. As a significant contributor of the technical portions of this final report, I welcome any questions and hope that my commentary provides useful insight.

Thank you,

Mike Badzmierowski

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29 November 2023

Re: Public comment for the final report: "Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal"

Dear Commission Chair Macdonald and Oregon Global Warming Commission Members,

My name is Dr. Mike Badzmierowski. I was the agriculture land use technical lead and a lead author for the technical portion related to practices and metrics of this final report. I did this work while I was the Soil Health Specialist at the Oregon Department of Agriculture. I received my Doctoral degree in soil carbon and nitrogen research, along with associated greenhouse gas emissions (GHG) in agriculture. I have also trained in assessing data quality related to these topics during my postdoctoral research. I now serve as the U.S. Agricultural Policy Manager at the World Resources Institute where I am to use my expertise to guide U.S. funding towards agricultural practices that meaningfully reduce GHG emissions in agriculture. Most agricultural emissions are from enteric emissions primarily from cattle, manure, and nitrogen fertilizers. Without addressing these big three, GHG emissions will not be meaningfully reduced in agriculture.

I would like to provide five main highlights in relation to the process of this project and the activities/metrics portion of this report. I will follow-up this public comment with a written detailed account of this process and the final report.

1. **I strongly do NOT support this *current* version of the final report based on scientific and ethical reasons and would suggest that this be used as a first step towards a 'living' set of eligible practices and related metrics that gets continuously updated with increased data availability.**
2. **The Institute of Natural Resources (INR) did NOT have the expertise needed to carry out this project and report. This led to a difference in expectations and outcomes from the technical team and stakeholder advisory committee (SAC). This was most apparent in the lack of understanding what "net carbon sequestration" means and that the goal of practices and metrics proposed was focused on net carbon sequestration and/or GHG emission reduction.**
3. **The overall process facilitated was extremely flawed. The technical team across the land uses did not have robust subject matter expertise in net carbon sequestration in each respective land use. There is a misrepresentation of expertise and lack of transparency on the affiliations/interests of the comments from the "external reviewers." Based on a conversation I had with the Principal Investigator, the INR facilitators appeared to have "lost objectivity" due to the agriculture land use technical team practice recommendation of "promote/incentivize/adopt diet shifts of Oregonians towards lower GHG commodities and**

create demand for Oregon farmers to grow commodities with a reduced GHG footprint." I was mandated at the last minute to change the wording of this practice, otherwise it would be removed entirely. This clearly became a political discussion rather than a scientific discussion despite the agreement that the technical document would remain scientific-based and provide practices across all land uses that the technical team was confident would lead to net carbon sequestration. Without this practice, agriculture and society will most likely not meet its goals in keeping warming well below 2 degrees Celsius.

4. **There is no clear determination of how the final practices were recommended by the INR. The list of practices appears in three different places Executive Table 1, Table 2, and Figure 5 and has significant differences with widely different implications. It is unclear what is being recommended. I would advise to use the technical document as a start and provide clear definitions and goals to stakeholders.**

5. **The final report does NOT use the final version created by the agriculture land use team after repeated attempts to have the INR fix this issue. This also includes the lack of inclusion of an 11-page response to the Stakeholder Advisory Committee that provided extensive rationale on why certain practices were not included in the technical recommendations.**

Details regarding the process

I was approached early in the Institute of Natural Resources' (INR) project to be the lead for the agriculture land use in the Fall of 2022. I realized in the first several project meetings that my expertise, along with my collaborator Dr. Rose Graves, was essential to ensure a potential usable technical document. It was clear that the Institute of Natural Resources did not have the technical expertise to complete a satisfactory technical document. This was mentioned to me on a couple of occasions with the last being August 1, 2023, by the Principal Investigator, Mr. James Kagan where he expressed that this project needed the expertise of myself and Dr. Graves. This project and proposal that was funded was a large undertaking and I commend Mr. Kagan and the INR for trying to take on this ambitious endeavor. However, this document may have potential far-ranging effects in the State of Oregon and for other states as we are seen as a leader in the GHG reduction community. Therefore, a detailed account from my perspective is necessary so members of the Oregon Global Warming Commission (OGWC) can make well informed decisions regarding this report.

One of the most important points I need to make is regarding subject matter expertise. The principal investigator, Mr. Kagan, indicated on multiple accounts that Dr. Rose Graves and I were the key subject matter experts that allowed this technical portion to be as complete as it is (though even the technical portions could use improvement). To contextualize the goal of this report/project, it is important to look at the original goals of the OGWC and the INR's funded proposal.

In July 2020 and in subsequent writings, the OGWC adopted principles for developing a **net carbon sequestration and storage goal** for Oregon's natural and working lands (NWL). In the 2021 OGWC NWL proposal, there is a consistent use of the term "net sequestration." Using the term "net" is important as NWL and associated sectors like agriculture have multiple gases of concern (i.e., carbon dioxide, methane, and nitrous oxide). Limiting only to "carbon sequestration" could give a false implication of GHG reduction if not including nitrous oxide emissions or not properly accounting for the stronger warming potential of methane. The INR included in their funded proposals to the US Climate Alliance

and Natural Resources Conservation Service and working documents online that their work would focus on addressing **"net sequestration"** and storage in NWL and that activity-based metrics would be developed with the outcome-based goal of net carbon sequestration in Oregon's NWL.

I called to approach this project in a systematic manner from the first several meetings I participated in (September 19 and 26, 2022). This included clear definitions of terms that would be used (e.g., "net carbon sequestration" vs "carbon sequestration" vs "carbon stock," "additionality," "durability," "climate-smart," etc.), to how the different technical groups would approach working together and soliciting expert input. There were many terms that needed to be addressed. This should have included a basic agreement on what is considered carbon stored (i.e., durability of that carbon, 1-year, 5-years, 20-years, 100-years?). These comments can be found in the meeting notes from September 19 and 26, 2022 of the INR Dropbox files. Ultimately, the systematic approach I called for did not materialize and led to different products produced by the Technical and Stakeholder Advisory Committees. This was most likely due to a lack of subject matter expertise by the INR facilitators.

Meetings of the SAC are publicly available online (Advisory Committee Meetings | Institute for Natural Resources | Oregon State University). On December 1, 2022, I stated to the SAC multiple times that the goal was to identify practices that reduce GHG emissions and/or lead to net carbon sequestration and this language was reiterated by Chair Macdonald (minute 23:35). This statement did not receive opposition from the SAC or INR facilitators. Dr. Rose Graves in the same meeting stated that we are focused on mitigation (i.e., net carbon sequestration/GHG reduction) and **not** adaptation (minute 55) for the activities recommended and inventory.

For a **new** practice/activity to achieve net carbon sequestration, an overall net decrease in GHG emissions (after accounting for changes in carbon stocks) must occur compared to a baseline/business-as-usual scenario. The INR stated in an internal Dropbox document called, "Technical Approach," dated September-October 2022 with last update January 23, 2023, that the main question for the activity/metric goal was, "what are the recommended activities to capture **AND** store more carbon **AND** reduce GHGs in Oregon's natural and working lands sector?" Though I would not use the term "capture," this question is the appropriate question that aims to address what practices we can recommend that will achieve net carbon sequestration. **I would advocate that the final "and" should be an "and/or" as some practices can result in just a reduction in GHG emissions and not necessarily store additional carbon (e.g., fertilizer usage, energy efficiency, etc.).**

Throughout the INR facilitation process, the full SAC did not understand the goal/term of net carbon sequestration. Consistently, SAC members wanted to discuss resilience or soil health practices which are **not** necessarily practices that lead to net carbon sequestration. Dr. Karen Lewotsky, member of the SAC, on March 2, 2023, at minute 24 noticed that the overall SAC was missing the understanding and stated that this document and goal is "sequestration and reduction of GHG emissions, that's what we want to get to…that's what this document is about, right?" and the facilitator Ms. Lisa DeBruyckere said "yup, it is." Mr. Gary Clarida then agreed with Karen about this intent and reinforcing the idea across all the land uses. On July 6, 2023, the publicly available SAC meeting further illustrates Ms. DeBruyckere's fundamental misunderstanding of what the goal (for recommended practices to achieve net carbon sequestration). Ms. DeBruyckere states at minute 21:50 that the agriculture land use technical team focused on practices related to "GHG emissions vs. carbon sequestration." Ms. DeBruyckere clearly does not understand that to achieve **net** carbon sequestration that the net GHG emissions after accounting

for changes in carbon stocks (plant and/or soil) must be less than the baseline/counter-factual scenario. **The agriculture land use technical team focused completely on practices that we felt would confidently result in net carbon sequestration or practices that would reduce GHG emissions (e.g., energy efficiency).**

In a January 2023 technical team meeting, I asked for an expansion of what could be considered for activities in the agriculture land use. **This is because most emissions related to agricultural production come from cattle enteric emissions, manure from cattle, and nitrogen fertilizer – all of which are in the agriculture sector and not the NWL sector.** The technical team, the INR, and Chair Macdonald agreed to this expansion but preferred to not include potential energy/transportation sector related activities (e.g., diesel to electric tractors). With this expansion of focus, the agricultural technical experts had much more recommendations on reducing emissions in agriculture. This included the promotion of dietary shifts from high GHG emitting commodities (ruminant animals) to lower GHG emitting commodities, use of feed additives to reduce enteric emissions from ruminant animals, improved manure use, and a focus on nitrogen use efficiency.

At the June 1, 2023 INR/SAC meeting, it was discussed that activities recommended would now have to be practices an individual landowner or manager could take. This was later communicated to me in an email on June 26, 2023. This appeared to center on one practice that was recommended to reduce GHG emissions in the agriculture sector, "Promote/incentivize/adopt diet shifts of Oregonians towards lower GHG commodities and create demand for Oregon farmers to grow commodities with a reduced GHG footprint. This should be done with the guidance of nutritional experts to ensure human dietary needs are met." At the last minute, most likely due to outside influences, the INR was mandating that the practice be removed. This was despite six months of discussion, agreement, and approval that the goal was to recommend practices that would reduce GHG emissions in the agriculture sector. To be clear, emissions because of cattle is the largest portion of GHG emissions in agriculture. The practice recommendation explicitly said in **bold** and underline writing that "this is **not** a call to give up all animal products, but a reduction that is within recommended dietary needs." Based on conversations with the PI, my understanding has come to be that many stakeholders/interests were upset by this practice, including some INR facilitators. It was told to me that my inclusion of this practice may have caused the loss of objectivity by the INR facilitators. Due to the situation and to maintain a practice that targets the largest emissions in the agriculture sector, the new practice phrase had to become, "Reduce Production of High GHG Emitting Commodities such as Ruminant Animals." Below is the original text for this specific practice, prior to being mandated to change it. The original practice is in highlight with references, and I would suggest the inclusion of this writing.

> **Promote/incentivize/adopt diet shifts of Oregonians towards lower GHG commodities and create demand for Oregon farmers to grow commodities with a reduced GHG footprint.** This should be done with the guidance of nutritional experts to ensure human dietary needs are met.[i], [ii], [iii], [iv], [v], [vi], [vii], [viii]
>
> The evidence is clear that the average United States diet is creating too much associated GHG emissions. There is strong evidence that adopting healthy diets can significantly reduce GHG emissions while meeting human dietary guidelines. This means eating less meat, especially ruminant species. This is **not** a call to give up all animal products, but a reduction that is within

recommended dietary needs. Without this change, there is significant confidence we will not meet global GHG mitigation goals.[ix]

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[i] Armstrong McKay, D.I., et al. 2022. Exceeding 1.5 C global warming could trigger multiple climate tipping points. *Science*. 377(6611): eabn7950. https://doi.org/10.1126/science.abn7950.

[ii] Tilman, D. and M. Clark. 2014. Global diets link environmental sustainability and human health. *Nature*. 515: 518–522. https://doi.org/10.1038/nature13959.

[iii] Clune, S., et al. 2017. Systematic review of greenhouse gas emissions for different fresh food categories. *Journal of Cleaner Production*. 140(2): 766–783. https://doi.org/10.1016/j.jclepro.2016.04.082.

[iv] Poore, J. and T. Nemecek. 2018. Reducing food's environmental impacts through producers and consumers. *Science*. 360(6392): 987-992. https://doi.org/10.1126/science.aaq0216.

[v] Boehm, R., et al. 2018. A comprehensive life cycle assessment of greenhouse gas emissions from U.S. household food choices. *Food Policy*. 79: 67–76. https://doi.org/10.1016/j.foodpol.2018.05.004.

[vi] Nelson, M.E., et al. 2016. Alignment of healthy dietary patterns and environmental sustainability: a systematic review. *Advances in Nutrition* 7(6): 1005–1025. https://doi.org/10.3945/an.116.012567.

[vii] Willett, W., et al. 2019. Food in the Anthropocene: the EAT-Lancet Commission on health diets from sustainable food systems. *The Lancet Commissions*. 393(10170): 447–492. https://doi.org/10.1016/S0140-6736(18)31788-4.

[viii] Aleksandrowicz, L., et al. 2016. The impacts of dietary change on greenhouse gas emissions, land use, water use, and health: a systematic review. *PloS one* 11(11): e0165797. https://doi.org/10.1371/journal.pone.0165797

[ix] Armstrong McKay, D.I., et al. 2022. Exceeding 1.5 C global warming could trigger multiple climate tipping points. *Science*. 377(6611): eabn7950. https://doi.org/10.1126/science.abn7950.

On April 6, 2023, the SAC discussed the list of people the technical team leads contacted to help inform the technical activities list and metrics. This meeting and this final report mistakenly suggest that the whole list, (i.e., forest land use) included the involvement of the listed experts. This was not the case. While the agriculture land use contains a list of experts that included input related to practice inclusion, the forestry list of experts is anyone that contact was attempted. As the agriculture land use lead, I attempted to contact approximately 30 experts and received actual feedback from the list included in this report. An individual on the SAC committee, Ms. Megan Kemple, on several occasions such as April 6 and July 6th, suggested that I may have been biased in my selection of experts consulted. I take great issue with this implication as I from the beginning pushed for a systematic approach for all land uses and used a systematic approach when contacting experts in the agricultural net carbon sequestration subject matter which I shared with fellow technical leads. If Ms. Kemple would have asked for more

transparency regarding expert consultation and how information is coalesced from all the land uses, I would have strongly agreed.

The last point I will make is that the INR continuously sent documents prior to the technical team's approval or notice. I do believe this contributed to additional misunderstanding between the technical team and the SAC.

Issues with the final report

In the report, there is a consistent misuse of terms. For example, in the first page, the five different land uses are referred to as land "sectors." More importantly are the misuse of terms surrounding net carbon sequestration. Net carbon sequestration is the overall GHG impact related to soil and biomass carbon sequestration, i.e., the carbon dioxide equivalent of changes in soil and biomass carbon net of changes in other GHGs like carbon dioxide, methane, and nitrous oxide. The report contains many terms not even used in relation to natural and working lands net carbon sequestration, e.g., "net carbon capture" and "climate gas fluxes." These terms should not be used in this context. It is important that the goal of the proposal and that of the technical team was to address "net carbon sequestration" and that 'climate gas fluxes' should be called "greenhouse gases." **Recommendation: make sure that all instances in the report use the proper terms "greenhouse gases," "net carbon sequestration," and "land uses." Replace all incorrect terms, "sectors," "net carbon capture," "carbon sequestration," "sequestration," and "climate gas." This also includes any reference to "emissions" and making sure that it includes all relevant GHG emissions (carbon dioxide, methane, and nitrous oxide).**

The INR team misrepresents the qualifications of who reviewed the draft practices and metrics. On page vii, INR states that 31 scientists, experts, and other professionals reviewed the draft practices and metrics, but INR conflates stakeholders with subject matter expertise. It should be noted that some land uses within the technical team did not have net carbon sequestration subject matter expertise. **Recommendation: provide transparency in this and future iterations on the technical expertise of technical team members and the stakeholder advisory committee. Additionally, it is important to provide transparency of conflicts of interest. from the technical team, outside consultants, and stakeholders.**

It is unclear what process the INR used to determine their recommended practices list. Further, the list of practices appears in three different places Executive Table 1, Table 2, and Figure 5 and has significant differences with widely different implications. It is unclear what is being recommended. **Recommendation: I would advise to use the technical document as a start and provide clear definitions and goals to stakeholders. Then, use this smaller practice list as a 'living document' that can add or remove practices as the scientific community gathers more data. I would also strongly advise a prioritization of funding of practices. For example, in the agricultural land use, the practices most likely to provide SIGNIFICANT GHG emission reductions or lead to net carbon sequestration would be to "promote, incentivize, adopt diet shifts of Oregonians towards lower GHG commodities and create demand for Oregon farmers to grow commodities with a reduced GHG footprint," "reduce enteric emissions from ruminant production systems via approved enzyme feed additives," "reduce food loss and waste," and "improve nitrogen management." These four practices with increased adoption could lead to significant GHG emission reductions that are PERMANENT. The permanence issue is one of the most difficult issues when thinking about net carbon sequestration in natural**

systems as gains in carbon stocks can be lost instantaneously (e.g., wildfires, tillage, etc.). It should also be noted that the recommendation of "anaerobic digestion of manure and beneficial use of methane or flaring and appropriate land application of digestate" contains significant cautions. In the short term, digestors can be sources of emissions, digestors if not properly maintained at all times can lead to significant leaks of methane, there are many human safety concerns in the construction and maintenance of digesters, and there are implications both environmentally and socioeconomically about a potential further consolidation of farms to large, confined animal feeding operations.

On page 13, "considerations proposed by advisory committee," the approach does not meet the original goal of increasing net carbon sequestration set out by the OGWC and the INR proposals. The activities (practice) list was to recommend practices that would lead to net carbon sequestration. Soil health and co-benefits do NOT inherently lead to net carbon sequestration. If recommended practices lead to improved soil health or lead to co-benefits that will be great, but the focus of this project activities list and the money being allotted is specifically for practices that can most likely reduce GHG emissions and/or lead to net carbon sequestration. **Recommendation: activities/practices should first be considered based solely on their ability to lead to net carbon sequestration and/or reduce GHG emissions. Once a list is identified, worker safety and environmental justice should be examined, followed by socioeconomic impacts (and proper payment structures for implementing practices), co-benefits/tradeoffs, and feasibility. Additionally, a timeline must be set for how long a practice should be allowed to take to lead to net carbon sequestration and/or GHG emission reduction (e.g., forest management could lead to increased emissions for decades) and the permanence/durability of the practice to stay a net carbon sequestration practice (i.e., the practice should not just lead to a reduction for one year and be a possible emitter a following year).**

The OGWC should adopt recent IPCC guidance on global warming potentials as it will help Oregon focus on true emissions and allow Oregon to target practices that will most effectively lead to net carbon sequestration. This is especially important for methane. In recent guidance, IPCC recommends modeling methane as a short-lived atmospheric gas (lifetime of approximately 12 years). This new guidance says that the methane global warming potential is approximately 80 carbon dioxide equivalents on a 20-year basis vs. 27 carbon dioxide equivalents on a 100-year basis. Methane reductions present our best option for society to limit immediate planetary warming. This is why, shifting diets away from enteric animal production systems is imperative. Details for this topic is on page 15 and 16.

The section titled, "Co-Benefits," was not written and/or approved by the entire technical team. This section appears to be in the "Considerations Proposed by Technical Teams," but the technical team did NOT consider co-benefits. **Recommendation: the co-benefits section must be removed from the current section as it was NOT considered by the technical team or be given a different section title to properly reflect who may have written this.**

On page 24, the INR states, "65 scientists, researchers, and other experts" were "reached out to." This statement has four issues:

1. It does not indicate that all 65 provided responses,

2. There is no indication that those reached out to have subject matter expertise on net carbon sequestration in Natural and Working Lands,

3. It is unclear the potential conflicts of interests of those providing input, and

4. It was indicated in the report that at the end of Appendix D, the list of names would be provided, and it is not there. Based on Appendix E, it appears that most of the comments were from special interest groups (i.e., commodity trade organizations) and not necessarily from subject matter experts.

Recommendation: Do NOT consider these comments until full transparency of comments are received and publicly available. Additionally, I would not consider the comments for the purpose of technical recommendations unless subject matter expertise is identified, i.e., must have graduate level education and/or has conducted research on topics within net carbon sequestration in natural and working lands.

On page 24, the INR states that the agriculture stakeholder advisory subcommittee because the "technical team initially proposed for agricultural practices (focus on GHG emissions) and what the Advisory Committee deemed appropriate for agricultural practices based on the Proposal (GHG emissions and carbon sequestration and storage) the Agricultural Subcommittee created its own version of practices and metrics." This is a clear misunderstanding of terms by both the INR and the SAC. The technical team focused net carbon sequestration. A net carbon sequestration practice and a practice that leads to net GHG emission reductions is the same thing. Many of the practices that was recommended by the agriculture technical team was mostly in the agriculture sector rather than the NWL sector. The only recommended practice by the technical team that we felt confident in leading to net carbon sequestration was "Increase riparian areas beyond the edge of field – reforestation." Many edges of fields are marginal producing land and has large potential for net carbon sequestration if reforested. It is important that only reforestation is considered and not riparian "grasslands" as current Oregon research does not indicate net carbon sequestration benefits (though there are different environmental benefits).

Furthering the point of the lack of understanding by the INR and the SAC is Appendix E-2 in the final report, "Practices and Metrics Proposed by the Advisory Committee's Agriculture Subcommittee" the subtitle is "Oregon NWL Proposed Practices to Increase **NET** Carbon Sequestration **AND** Storage **AND/OR** Reduce GHG Emissions from Oregon's Natural Resource Sectors" with an additional following first statement that practices should "sequester **AND** store carbon **AND** reduce GHG emissions." This first statement already contradicts the subtitle of their proposed practices. The second "and" clause should have been an "and/or." The INR and the SAC did not understand the verbiage they were using in relation to net carbon sequestration due to inconsistent use of terms throughout their final reports and recommendations.

On page 24 the SAC agricultural subcommittee made inaccurate concerns.

> "Soil health was seemingly overlooked." **Response: soil health practices do not inherently lead to net carbon sequestration. Soil health is a much different topic.**
>
> "Practices strongly supported by the Natural Resources Conservation Service (NRCS) as climate-smart strategies that sequester and store carbon were not included." **Response: First, storing more carbon does not inherently make it a net carbon sequestration practice. If for example you incrementally increase carbon stocks, but it leads to increased GHG emissions that outweigh the gains in carbon stocks, this is not a net carbon sequestration practice. The SAC**

clearly did not consider changes in GHG emissions when thinking of eligible practices. Second, the NRCS lacks quality data for most agricultural practices and uses numerical calculations known to have many biases and flaws. More importantly, there is extremely limited Oregon data related to most practices proposed by the SAC agricultural subcommittee.

"The agriculture practices focused on practices that reduce GHG emissions versus the broader task defined in the Proposal, which was to include practices that both reduce GHG emissions and sequester and store carbon." **Response: As illustrated thoroughly before, there is a clear lack of understanding by the SAC agricultural subcommittee. I have thoroughly outlined how the agriculture technical team stuck to the Proposal written by the OGWC and the proposal INR was funded by the NRCS and the US Climate Alliance.**

"Practices that promote dietary shifts or selection of one commodity versus another are outside the scope of the project." **Response: This is not accurate. The goal of this project was to identify ways to reduce GHG emissions across the various land uses. The section on activities/practice recommendations was not a socioeconomic, feasibility, environmental justice, etc. project but a portion of the project solely focused on identifying practices that the technical team was confident would lead to net carbon sequestration in Oregon. It is a fact that certain commodities have much larger GHG impact compared to others. It is important that we provide the well-known fact that enteric-based production systems (e.g., cattle and dairy) have significantly larger GHG emissions than almost all other food commodities on a per calorie or per protein basis. If enteric emissions are not addressed, specifically reduce the production, Oregon will not meaningfully reduce GHG emissions in agriculture. This practice must occur with a shift in diets by Oregonians.**

On page 25, there is a recommendation relating to the increase of long-lived harvested wood products. It should be noted in a recent *Nature* article by the World Resources Institute that faulty GHG accounting has not shown the full emissions related to harvesting and that improved accounting needs to be done.[1]

On page 28, the INR states, "the practices listed in Figure 5 are the recommended practices listed in Table 2 minus any practices that select one commodity over another, represent a consumer choice, are not specific to a particular land sector." This statement indicates influence of stakeholders' financial interests and/or a lack of understanding about a given practice. "Choosing one commodity over another" is necessary to reduce GHG emissions in almost all sectors. For example, transportation must convert to electric engines versus internal combustion engines, heating must move to electric over fossil-fuel. This suggestion makes no-sense in a document aimed at only providing insight as to practices that will most likely lead to net carbon sequestration and is not an assessment of what the implications are socially, ethically, or financially. The INR has decided to skip multiple process and ethical steps and allowed financial interests to influence this document. Despite widespread approval across all land uses, the INR removed riparian reforestation. **Recommendation: as stated previously, use the technical document as a starting 'living document' and make the decisions that are in the best interest for all current and future Oregonians, which is funding the practices that will make meaningful GHG emission reductions to make our contribution to limiting the consequences of global warming.**

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[1] Peng, L., *et al.* The carbon costs of global wood harvests. *Nature* **620**, 110–115 (2023). https://doi.org/10.1038/s41586-023-06187-1

The practice “reduce enteric emissions…via approved enzyme feed enzymes,” by the INR’s definitions should not be recommended but listed as an “emerging practice” as the enzyme referenced is not currently legal in the United States. **Recommendation: this practice should receive conditional elevation to ‘recommended practice’ upon approval by the United States.**

On Figure 5, there should be an asterisk next to “alternative manure management” as this was not a technical team recommendation. Though the technical team agrees that emissions need to be reduced in manure management, it is important that the alternative management options confidently reduce GHG emissions. Currently, there is not sufficient evidence to support certain pathways. Within the next couple of years new datasets may be made available to make the best recommendation for best manure management practices.

On page 39, it is important to note that cultivated farmlands have a large impact on the carbon *and nitrogen* cycle.

On page 48, the INR states that the Ad Hoc Technical Groups role was “gather, compile, and share scientific and technical expertise that informs the development of Natural and Working Lands project deliverables. Make recommendations for Advisory Committee consideration.” This is not what was stated to the Technical Team. It was stated that the technical team’s recommendations would be given to the OGWC, and that the Advisory committee would provide input and feedback. This statement makes it appear that the Advisory Committee received final say on what should be “considered.”

On page 52, the INR explicitly state the technical teams were to propose **“science-based practices and metrics that have the potential to meet OGWC net carbon sequestration and GHG reduction goals.”** Further on page 53, is important that the intended goals of the project were to identify practices that had net carbon sequestration benefits that were permanent to semi-permanent (not defined). Short-term increases were not the goal.

On page 55, the INR indicates a “vetting practice,” but it does not indicate if/how they determined if the people they asked for input had subject-matter expertise in net carbon sequestration by training.

I would like to highlight the clear document scope on page 57 by the technical team. It gives a clear guidance that the section on practices and metrics was to recommend practices that will most likely result in a net GHG reduction. Additionally, “Many practices may provide climate resiliency or wide-ranging environmental benefits, however, if the practice is currently not viewed as resulting in a net GHG reduction, the practice was not listed as a recommended practice. Many of the proposed practices will have socioeconomic and environmental justice and equity issues. There also may be environmental tradeoffs if the only focus is the reduction of GHG emissions. Tradeoffs and impacts should be evaluated in future documents with the appropriate expertise. Likewise, many of the recommended practices have not undergone feasibility assessments but should in the future.”

Page 88-94 contains the recommendations of the technical agriculture land use team. However, it does NOT use the last version submitted to the INR. It needs to show the last version which includes proper metrics for enzyme feed additives, reducing food loss and waste, and the practice – “support on-farm renewable energy and energy efficiency.”

The SAC agriculture subcommittee submitted their practices and metrics and can be found on pages 99-109. To be concise, the agriculture technical team had reasoning to not include many of the practices the

SAC agriculture subcommittee proposed. An extensive written comment to the SAC was provided by the technical team as to why many of those practices were not included. This comment should be made public as it has been sent to the OGWC.

Overall, there are pieces of this report that can be used as a starting point. However, caution should be given for the numerous reasons outlined. Many of the agricultural practices have many environmental benefits, however it is important that money allotted to net carbon sequestration is spent on practices that will confidently lead to net carbon sequestration. **As part of my public comment, I have also submitted the 11-page response as a separate document so that the public may see why certain practices were not included and the questions the SAC had about the agriculture technical team process.** I welcome any further questions about my experience with this project and report.

Sincerely,

Mike Badzmierowski, PhD

mike.badzmierowski@wri.org

Response to comments made by Stakeholder Advisory Committee (SAC) and External Reviewers (ER) for the Agricultural Land Use

SAC introductory comment: "The introduction to the Ag section has some philosophizing and general statements about potential temperature increases."

Response: The introductory paragraph contains important information regarding the need to reduce GHG emissions in agriculture. It is imperative to understand that current agricultural choices will most likely use a significant portion of the global GHG budget to limit warming well below 2 degrees Celsius through 2100 unless we make significant changes.

SAC introductory comment: "Enteric/manure numbers are questionable, and the sum of them overstates livestock impacts."

Response: These are the estimated values by the Oregon Department of Environmental Quality (DEQ). Contrary to the comment, it is most likely understating the impact of enteric and manure GHG emissions as the OR DEQ uses global warming potentials on a 100-year time horizon whereas the latest Intergovernmental Panel on Climate Change (IPCC) report recommends using a 20-year timeframe for short-lived gases i.e., methane.

ER overall comment: "The recommended practices in the agricultural lands section focus primarily on reducing GHG emissions, yet there is a growing body of science related to sequestration and the positive contributions of a wide variety of agricultural crops and practices. These positive contributions should be considered as part of the overall assessment of working lands. Any starting baseline should not discount these positive contributions. Further, a focus on reduction of GHG emissions in agriculture without the inclusion of practices to reduce food losses at the farm level seems to ignore a significant area for progress."

Response: The purpose of this document is solely focused on practices that have significant evidence to most likely reduce GHG emissions. This document is not meant to discuss any potential co-benefits or negative trade-offs. It is unfortunate that the version sent out did not include "reduction of food loss and waste" at the farm level as it was uploaded to the document prior to the deadline for sending out for review. This practice is included in the latest document as it is a priority area to reduce emissions.

ER overall comment: "We want to ensure the practices and metrics are not narrowly focused on only reducing GHG emissions, and the recommended practices in the agricultural lands section seem to focus entirely on them. The practices and metrics proposal should also include practices promoting positive efforts toward carbon sequestration on natural and working lands."

Response: The purpose of this document is solely focused on practices that have significant evidence to most likely reduce GHG emissions which means net carbon sequestration. This document is not meant to discuss any potential co-benefits or negative trade-offs. We will at

least provide feedback for some of the most common agricultural practices and why they do not meet our threshold of being included as a practice to reduce GHG emissions.

It is important to understand that an increase in soil carbon stock does **not** equate to net carbon sequestration. Even if agricultural natural and working land practices, such as cover crops and reduced tillage, were to be a net carbon sequestration practice, there are durability concerns. The cessation of natural and working land practices can negate gains in soil carbon stocks. If the business-as-usual scenario or the land already has cover crops, uses reduced tillage, the practice would not meet the requirements of additionality. Lastly, there is a need for more data including greenhouse gas emissions and carbon stocks and because of that, there is not enough evidence to include many broadly defined practices for the inclusion of reducing greenhouse gas emissions.

Cover cropping

Fargione et al. (2018) (cited 367 times) and Graves et al. (2020) (cited 27 times) are often cited as evidence that cover cropping has a large potential to be a natural climate solution in the United States and Oregon.[i,ii] These papers are not a good representation of cover crops' potential to reduce GHG emissions. Both Fargione et al. (2018) and Graves et al. (2020) use the average carbon sequestration rate of 0.32 Mg C ha^{-1} yr^{-1} based on the review conducted by Poeplau and Don in 2015.[iii] Fargione et al. (2018) claim, "Poeplau and Don (2015) is the most comprehensive and rigorous meta-analysis of carbon sequestration from cover crops to date." This comment will provide brief reasoning as to why the rate of 0.32 Mg C ha^{-1} yr^{-1} is not representative of the United States and specifically the conditions in Oregon. Additionally, this comment will show that the methodology of Poeplau and Don (2015) is significantly flawed and uses inadequate data to upscale potential soil organic carbon stock effects at a global level. This has led to flaws in additional reviews and analyses like Fargione et al. (2018) and Graves et al. (2020).

It is important to understand what criteria Poeplau and Don (2015) considered for their cover crop meta-analysis. The objective of Poeplau and Don (2015), among other things, was to quantify soil organic carbon stock changes from winter cover crops that were not harvested. The whole cover crop must have remained as green manure or mulch.

Assessing the quality of methodology and reporting of the Poeplau and Don (2015) review leaves much to be desired. The following were not stated in their meta-analysis: search terms, databases searched, the number of articles screened, the reason for exclusion of studies screened at the full-text level, a full view of data extracted, critical appraisal of studies, an understanding of the limitations of their meta-analysis, and more critical components that should be in a systematic review. Ideally, environmental evidence syntheses would follow the guidelines and reporting standards as outlined by the Collaboration for Environmental Evidence "Guidelines for Systematic Review and Evidence Synthesis in Environmental Management" and the "Reporting Standards for Systematic Evidence Syntheses in environmental research." The supplementary material does not give outcome data and extracted data corresponding to the

study ID. Therefore, the provided supplementary data does not allow for reproducible analyses and checking of data. The meta-analysis misses many key steps to doing an extensive systematic review of cover crops' effects on soil organic carbon stocks just based on the methodology of their review.

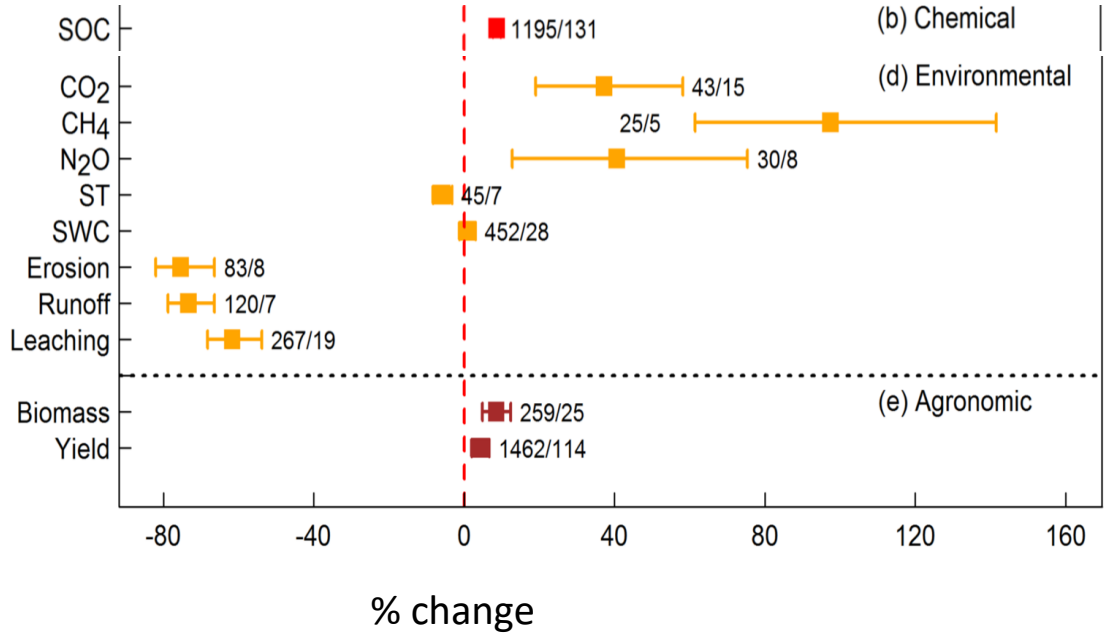
Poeplau and Don (2015) state, “only 13 studies (30%) reported bulk densities” with missing bulk densities estimated using a pedotransfer function (introducing a potentially large source of error into 70% of SOC stock estimates). Bulk density (if not measured by equivalent soil mass – which is rare) is a critical component of determining SOC stocks. Poeplau and Don (2015) state in their introduction section, “After all, most existing case studies evaluated a change in carbon concentration, while soil bulk density, which is needed to calculate SOC stocks, was not measured. For these reasons, a comprehensive meta-analysis to quantitatively evaluate the effect of cover crops on SOC stocks is needed.” Their meta-analysis is contradictory to this statement since the data they used to model their stock changes is based on only 30% of studies reporting soil bulk density.

The following table contains a brief study validity assessment of the record "Carbon sequestration in agricultural soils via cultivation of cover crops – A meta-analysis" by Poeplau and Don (2015). The purpose of this assessment was to determine the quality of the selected studies by Poeplau and Don and to confirm the metadata and outcome data published in their paper and available supplementary materials. The findings of Mike Badzmierowski (to be confirmed by other experts) suggests that a possible retraction may be in order due to misreporting data, double counting of studies/data points, the inclusion of confounding research, and overall lack of transparency and proper methodology. The study validity assessment contains the metadata presented by Poeplau and Don in Table 1 of their publication (blue column headers) as well as metadata columns (beige column headers) added by Mike Badzmierowski. Use the following color code for interpretation of the study validity assessment.

Color code	**Meaning**
Blue column headers	Metadata extracted by Poeplau and Don
Beige column headers	Metadata extracted and study validity assessment by M. Badzmierowski
Rows highlighted in red	Recommendation for the removal of the study from the meta-analysis
Rows highlighted in yellow	Cause for concern about how the study was included
Cells highlighted in red	Review of the literature suggests a different value
Cells highlighted in yellow	The lack of clarity in Poeplau and Don's extracted metadata and reasoning led to unclarity but most likely I would suggest a different value

Systematic study validity assessment of Poeplau and Don (2015) by M. Badzmierowski.

Figure from Jian et al. 2020 "Quantifying cover crop effects on soil health and productivity."

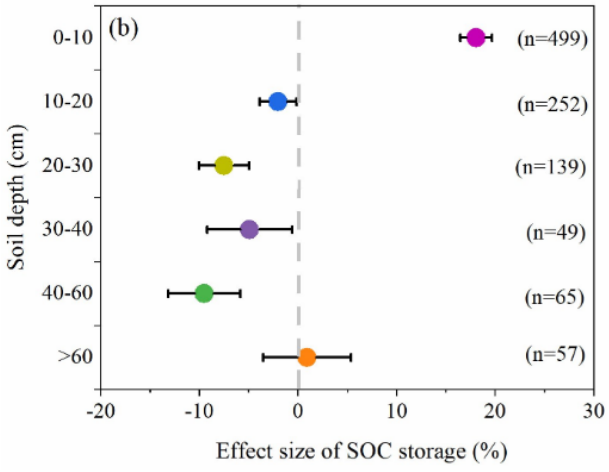


If we look at another review (that also has flaws in methodology such as those found in Poeplau and Don 2015) by Jian et al. 2020,[iv] we can see that an 8.8% increase in SOC stock occurred but an increase of 35-100% in various GHG emissions (CO_2, CH_4, and N_2O) also occurred. It should be noted that the GHG data contained a significantly reduced number of experiments and should be further researched. Though not determined, the increase in GHG emissions most likely outweighs the soil organic carbon gains and a slight increase in yield from a net GHG reduction viewpoint. It should be noted that in this dataset only half of the data points contained the data needed to calculate the soil organic carbon stocks, while the other half was estimated. Lastly, this review shows the true power of cover crops in that they significantly reduce erosion, runoff, leaching, and weeds (not shown in this figure). Cover crops have a place in Oregon agriculture for a variety of soil health benefits and human, water, and environmental quality improvements, but a reduction in GHG emissions **may not** be one of them.

No-tillage and reduced tillage

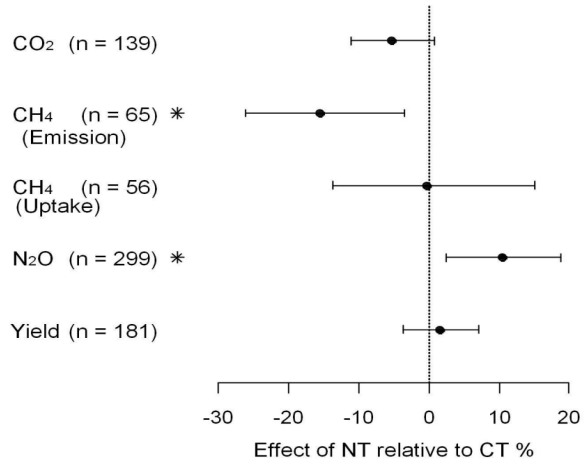
No-tillage is no longer seen as a convincing tool to meaningfully increase soil organic carbon stocks among most soil carbon scientists. The latest data suggests that converting from a tillage production system to a no-tillage production system concentrates soil organic carbon in the surface soil but depletes soil organic carbon deeper in the soil profile (see figure from Cai et al. 2022 below).[v] Ceasing tillage disconnects the incorporation of surface soil carbon to deeper depths. Cai et al. 2022 found that it would take approximately 14 years until no-tillage was able to close the gap in soil organic carbon stock losses.

Figure from Cai et al. 2022. “Declines in soil carbon storage under no-tillage can be alleviated in the long run.”



If we look at the review from Huang et al. 2018, there is variability in different GHGs' directionality of source or sink. It appears that often, no-tillage will reduce CO_2 and CH_4 emissions but the more powerful GHG, N_2O, will often increase in emissions. Higher N_2O emissions in no-till are usually ascribed to enhanced soil microbial activity (denitrification) due to increased soil moisture and decreased soil aeration. This review did not determine CO_2 equivalents, so it is hard to determine whether it is a sink or source of total GHG emissions but when combined with decreased soil organic carbon stocks, it could be hypothesized that these systems may lead to increased GHG emissions. However, more data is needed to determine Oregon-specific data as there may be production systems best suited for potential reduction in GHG emissions. As with cover crops, there are also many soil, human, and environmental benefits that can result from practicing no-tillage.

Figure from Huang et al. 2018. “What are the effects of no-tillage systems on greenhouse gas emissions and crop yield?”



Biochar

The term "biochar" is an imprecise term generally referring to the black residual remaining after the pyrolysis of biomass. The properties of biochar can be significantly influenced by the feedstock and burning conditions (e.g., temperature) that can change how they interact in the soil environment when applied. Careful experimental research design is needed to determine properties best suited for reducing GHG emissions and not relied upon as a single catch-all term such as "biochar." Additionally, the climate advantage of adding biochar to soil is not clear. Life cycle analyses (e.g., Roberts et al., 2010) suggest that biochar may increase or decrease net emissions depending on alternative uses of the original biomass and life cycle system boundaries.[vi] Nevertheless, the GHG mitigation potential of biochar merits further study.

Other practices

Organic amendments (e.g., manure, biosolids, mulch), rock dust from enhanced weathering, livestock incorporation, agroforestry practices, crop rotations, seaweed feed additive to ruminant operations, improving forage quality in grazing systems, composting of manure, daily spread of manure, and other similar practices cannot be included at this time for similar purposes as described previously in other practices. Data is needed across all these practices for GHG emissions and changes in soil and plant carbon stocks, ideally in Oregon. Even with improved datasets, full life cycle analyses would need to be conducted comparing different end uses (e.g., removing slash from forests to mulch and applying to agricultural fields), changes in yields of the cash crop (e.g., decreased yields due to potential shading from windbreaks), displacement of food crops, land use change (e.g., seaweed grown in other parts of the world displacing native ecosystems and their carbon stocks), and other related additionality and leakage concerns must be considered to determine if a given practice is a source or sink of emissions.

Additional notes

There are also additional notes to consider. Currently, much of the state has reduced water quantity to irrigate agricultural lands. Soil organic carbon stocks in many irrigated portions of the state have been increased compared to native background areas. If these areas were to lose access to irrigation, it could result in the loss of soil carbon stocks. However, from a GHG perspective, it is unclear if the given agricultural land would be a net source or sink of GHG emissions and would be system dependent. Soil warming experiments, including in forests, have also found that soil carbon stocks can decrease with increasing soil temperatures.[vii, viii] If temperatures of soil were to increase and be warmer for longer periods of time, microbial activity will increase, making soil carbon stocks across the state more vulnerable to decay.

SAC comment: "Yield Enhancements. We have invested in decades of research in wheat varietal development, allowing us to produce more grain per acre using fewer inputs. We are developing plants that are more drought tolerant, disease resistant, and higher yielding.

Investment into the whole system, from research to planting, is an area for consideration of inclusion."

Response: In general, improvements in yields should reduce GHG emissions as it then requires less area to produce a given crop. The biggest issue is proof of additionality. The SAC comment states, "they have invested in decades of research in wheat varietal development." This indicates the business-as-usual scenario is an investment of money to test varietals for improved yields/resiliency to different threats (e.g., pests, environmental, etc.). Money allocated to improved yields would not only have to prove increased yield but that without "GHG allocated money" there would not have been the development of the given varietal. This makes it particularly challenging to prove additionality for this practice.

SAC comment: "Improving Disease and Pest Management. The same arguments made for improving nitrogen management apply to disease management and pest management. The application of herbicides and fungicides are needed for crop productivity in modern cropping systems. The precise application directly reduces emissions by cutting back the required passes. It indirectly reduces emissions from chemical production and distribution and improves yields."

Response: The reduction of required passes would be included in the recommended practice of reduced fuel use and increased efficiency of farm equipment. Regarding the reduced application of herbicides and fungicides, we agree if less is used overall supply chain emissions would go down (if yields are not significantly reduced). However, it would be expected that the emissions reductions would be significantly less compared to nitrogen fertilizers as the production and resulting emissions are significantly higher from nitrogen fertilizers. The production of nitrogen fertilizer is one of the most intensive energy-related processes related to agricultural production. Likewise, the N_2O emissions related to fertilizer land application is significant, whereas once pesticides and herbicides are applied, there are minimal associated GHG emissions.

SAC overall comment: "Preservation of Natural and Working Lands – Focusing on management practices and GHG reductions for natural and working lands without clearly calling out the importance of preserving these lands is an incomplete approach. Loss of resource lands to urban encroachment, commercial and industrial development should also be measured and considered. Additionally for these lands to remain viable for addressing climate change, they must remain in production and economically important and that includes, having healthy rural communities that provided the necessary infrastructure for land management."

Response: The technical team is considering the inclusion of the practice of "zero expansion of agricultural lands." From a GHG perspective, it is more important to prevent the transformation of forested or grassland areas to agricultural lands as land use change is one of the biggest contributors of agricultural land use to GHG emissions. This comment suggests the preservation of Natural and Working Lands. There are multiple considerations that must be accounted for that makes this practice too complex to consider adding at this point. First, additionality would

be a difficult thing to prove with such a practice, especially with Oregon land use laws. Additionally, if the conversion was to grassland or forest land use, it could reduce emissions depending on the crop that is being replaced and once potential leakage was considered. Overall, this practice suggestion would be extremely difficult to assess if GHG emissions would be reduced and require significant life cycle assessments.

ER comment: "Could also focus more on treebreaks/shelterbreaks, etc. Reduction of wind will lessen erosion, improve wildlife habitat."

Response: This document focuses on practices most likely to reduce GHG emissions, it is not a document that considers co-benefits.

SAC comment: "The practice of 'Increase Riparian Areas Beyond the Edge of Field – Reforestation' is unclearly worded and could use further explanation. The cited paper by Dybala appears to focus on carbon benefits of reforestation of riparian areas in warm, wet climates. The connection to Oregon agriculture with that reference is unclear. We support efforts to restore riparian areas with native riparian vegetation to the extent that these efforts do not lead to unreasonable removal of productive farm acres. Oregon already has regulatory programs related to agricultural water quality which address best practices for riparian areas within agricultural operations."

Response: The interpretation is correct. We are only suggesting the reforestation of riparian areas beyond the edge of field in suitable locations in the state (i.e., areas with sufficient rainfall). We are not suggesting the planting of trees in dry and arid climates. We are not recommending the practice of "increase riparian areas beyond the edge of field – grasslands" as the current published science does not support the conclusion of a reduction in GHG emissions.

SAC comment: "We could use manure more in ag land to build up organic matter. Horse manure can be used – but it can spread weeds. If managed properly, you can address the weeds. Sites that organically break down manure or places where it is incorporated into soil directly can contribute."

Response: Manure can often just be a movement of carbon from one place to another. It is merely a transfer of organic matter. Full life-cycle assessments would be needed to determine if there was any reduction of GHG emissions based on previous use and end use of the manure. Timescale is also important to consider as the organic matter over long periods of time can often revert to the original carbon stock level.

SAC comment: "Recommend removing this from this document." This is in reference to the practice, "Promote/incentivize/adopt Diet Shifts of Oregonians Towards Lower GHG Commodities and Create Demand for Oregon Farmers to Grow Commodities with a Reduced GHG Footprint."

Response: The Institute of Natural Resources changed its guidance on the goals of the practices recommended. The technical team has revised this practice to "Reduce Production of High GHG Emitting Commodities such as Ruminant Animals and Replace with Low GHG Emitting Food Crops, where Possible." The goal of the practice recommendation document is to identify the practices most likely to reduce emissions in each land use. High GHG emitting commodities like ruminant animals (e.g., cattle) and the resulting manure have been proven throughout scientific literature to exert significantly more GHG emissions on both a calorie and protein basis compared to other lower emitting GHG food commodities (e.g., nuts). To achieve a meaningful reduction of emissions in agriculture land use, experts have agreed that a reduction in these high-emitting GHG commodities is needed. As discussed throughout the practice document and in these comments, the recommendation of this practice does not consider external factors. This practice is recommended as it is a practice that will reduce GHG emissions if leakage and additionality factors are met.

SAC suggested practice: "Promote Regenerative Farm Practices - Larger chain operations don't produce the healthiest food – it needs to come from a different source. Raise cattle using the same practices as elk (properly raised red meat gives you healthy fats and omega-3s). Regenerative farm practices make a world of difference. Building soil, cover crops that reduce fertilizers and pesticides is a better product. It's like grazing – if we're grazing properly (whether in forests or ag lands or rangelands), they'll be reducing fire risk, adding to soil health, etc."

Response: Regenerative agriculture has no legal or regulatory definition at the state or federal level. There is not even a widely accepted definition that has emerged in common usage. No clear definition prevents proper usage of the phrase "regenerative agriculture." Different organizations or people refer to it as a process-based method, while others have clear outcome-based methods for what meets "regenerative agriculture." Additionally, nitrogen fertilizers have been crucial to the development of soil organic carbon stocks as you cannot build soil organic carbon stocks without nitrogen. There simply is not enough manure in the world to replace nitrogen fertilizers and maintain yields and soil organic carbon stocks.

ER comment: "Plant more trees and work on our soil to address GHG vs. enzymes" in reference to the practice, 'Reduce Enteric Emissions from Ruminant Production Systems Via Approved Enzyme Feed Additives.'"

Response: It is unclear what is meant by this comment. Three-nitrooxproponal provides a potentially excellent opportunity for the reduction of methane emissions in ruminant production systems if approved for use in the United States. All tools should be leveraged to reduce GHG emissions in the agricultural land use.

ER comment: "Curious why you would not want to use these –_kind of shocked – why not implement cover cropping and crop rotation? Many of these will improve soil health. If we don't utilize these, what are our other options? Fertilizers and pesticides? That's why we have dead soil" in reference to not including biochar, biosolids, compost, composting of manure, cover cropping, crop rotation, etc.

Response: Please see the details described above as to why these practices are not recommended. It is also important to state that the suggestion for soils being "dead" is highly inaccurate and perpetuates a false notion that if you do not practice those listed practices and use 'fertilizers and pesticides' that your soil is 'dead.' Microbes, fauna, and other organisms can live and thrive under a host of conditions. Crops have continued to produce food and crops with the use of fertilizers and pesticides.

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[i] Fargione, J.E., S. Bassett, T. Boucher, S.D. Bridgham, R.T. Conant, S.C. Cook-Patton, P.W. Ellis, A. Falcucci, J.W. Fourqurean, T. Gopalakrishna, and H. Gu. Natural climate solutions for the United States. *Science Advances*. 4(11), eaat1869 (2018).

[ii] Graves, R.A., R.D. Haugo, A. Holz, M. Nielsen-Pincus, A. Jones, B.Kellogg, C. Macdonald, K. Popper, and M. Schindel. Potential greenhouse gas reductions from Natural Climate Solutions in Oregon, USA. *PLoS one*. 15(4), e0230424. (2020).

[iii] Poeplau, C. and A. Don. Carbon sequestration in agricultural soils via cultivation of cover crops—A meta-analysis. *Agric. Ecosyst. Environ.* **200**, 33–41 (2015).

[iv] Jian, J., X. Du, and R.D. Stewart. 2020. Quantifying cover crop effects on soil health and productivity. *Data in Brief*. 29, 105376. https://doi.org/.101610/j.dib.2020.105376.

[v] Cai, A., T. Han, T. Ren, J. Sanderman, Y. Rui, B. Wang, P. Smith, M. Xu, and Y. Li. 2022 Declines in soil carbon storage under no tillage can be alleviated in the long run. *Geoderma*. 425, 116028. https://doi.org/10.1016/j.geoderma.2022.116028

[vi] Roberts, K.G., B.A. Gloy, S. Joseph, N.R. Scott, and J. Lehmann. 2010. Life cycle assessment of biochar systems: estimating the energetic, economic, and climate change potential. *Environmental Science & Technology*. 44(2):827-833. DOI: 10.1021/es902266r.

[vii] Zeng, X., J. Feng, D. Yu, S. Wen, Q. Zhang, Q. Huang, M. Delgado-Baquerizo, and Y. Liu. 2022. Local temperature increases reduce soil microbial residues and carbon stocks. *Global Change Biology*. 28(21): 6433-6445. https://doi.org/10.1111/gcb.16347.

[viii] Soong, J.L., C. Castanha, C.E.H. Pries, N. Ofiti, R.C. Porras, W.J. Riley, M.W.I. Schmidt, and M.S. Torn. 2021. Five Years of Whole-Soil Warming Led to Loss of Subsoil Carbon Stocks and Increased CO2 Efflux. *Science Advances* **7**, 21. DOI: 10.1126/sciadv.abd1343.

From: jan.lee@oacd.org
Sent: Friday, December 1, 2023 8:48 AM
To: Oregon GWC * ODOE; Cathy Macdonald
Subject: Comments on INR Report
Attachments: OGWC Comments 12-1-23 (002).pdf

I hope I have the correct email address for comments -- copying Cathy just in case I don't. Thank you for the opportunity to comment. I look forward to hearing the commission's discussion December 11th. Jan

Oregon Association of Conservation Districts

December 1, 2023

Attention: Chair Macdonald and Oregon Global Warming Commission Members

RE: Comments on the Final Report on Foundational Elements to Advance the OGWC's Natural and Working Lands Proposal (the INR Report)

The Oregon Association of Conservation Districts (OACD) represents the 45 Soil and Water Conservation Districts, special districts authorized under Oregon statutes with elected board members. Our role is to provide technical assistance to constituents in each of our counties for agriculture, forestry, and urban projects. We also work hand-in-hand with the Natural Resources Conservation Service (NRCS) with their staff generally co-housed with our own district staff members. That provides districts the opportunity to not only provide technical assistance, but to also assist constituents in securing funds from federal programs for conservation.

We are very supportive of the Natural Climate Solutions Fund as it provides the opportunity for a state match or direct funding for some of the conservation programs that will promote soil health, carbon sequestration and climate resilience, among many other co-benefits. The program provides on-the-ground opportunities toward greenhouse gas mitigation for which districts can assist local landowners and managers in implementation. Technical assistance providers such as the districts lower the barriers to entry for growers to practice conservation by filling knowledge gaps and aggregating resources. Our districts look forward to being a vibrant component of the upcoming work this program supports.

We have some specific comments on some sections of the report.

NWL Stakeholder Advisory Committee

I was a member of the previous NWL Stakeholder Advisory Committee representing OACD. I felt the selection process went well in providing opportunities to a wide variety of representatives of different backgrounds, including environmental justice and equity. Perhaps some of us who were participants would have the opportunity to continue our work in the future selection process having gained experience and the ability to work together to provide continuity. It was especially helpful to have some associations who were able to represent their members effectively by drawing from member experiences, as well as including individuals with on-the-ground experience.

What I did find difficult was the ability to communicate and coordinate between the Technical Advisory Committee (TAC) and the NWL Advisory Committee (AC). We need the scientific expertise of those individuals on the TAC, but the process would be more effective if both the TAC and the AC worked together in the same committee. The limited ability to have that coordinated structure resulted in inconsistent recommended practices between the Stakeholder Advisory Committee (SAC) agriculture section and the TAC agriculture section without the opportunity for coordination. That leaves the OGWC with the role of reconciling effective practices.

As a member of the board of the Clackamas Soil and Water Conservation District, I find it extremely discouraging that the Agricultural TAC did not encompass the majority of the conservation and climate smart practices that are a part of the NRCS catalog of practices for this work. That diminishes the funding opportunities and tools needed for our Oregon work.

For example, the TAC's list of Practices to Increase Carbon Stocks and/or Reduce Greenhouse Gas Emissions from Oregon's Agricultural Lands recommends only one practice for the Natural and Working Lands Sector--"Increase Riparian Areas Beyond the Edge of Field – Reforestation". The focus on the natural and working lands sector needs to encompass many other project types, especially all of those that are part of the NRCS package of climate smart practices. OACD recently completed a carbon website (https://OACDCarbon.org) and an accompanying guidebook detailing many of the NRCS practices as well as funding opportunities.

Activity Based Metrics

Biological carbon sequestration as defined in HB 3409 is "the removal of carbon from the atmosphere by plants and microorganisms and storage of carbon dioxide in vegetation, such as grasslands, marshes or forests, or in soils and oceans." This should be the filter used to establish activity-based metrics with the focus on net carbon sequestration and storage.

Established soil health practices (establishment of woody plants, maintenance of perennial crops, and reduction of tillage) will protect our existing carbon stocks and are as important as sequestering additional carbon and fit with the definition of net biological carbon sequestration in HB 3409. These practices were included in the NWL SAC recommended practices but excluded by the TAC.

Leverage of Federal Funding

To further leverage federal funding, it is important to tie practices under the state's program to those recognized by the federal agencies, such as NRCS, who are currently incentivizing conservation and carbon smart practices. The NRCS list of Climate Smart Agricultural and Forestry Mitigation Activities are incentivized through the Inflation Reduction Act and the Farm Bill programs. We should be in coordination with those practices to better leverage federal dollars. The NWL SAC included those practices as opportunities to further leverage opportunities for landowners and managers, but they were excluded by the TAC.

Tribal Input
While the OGWC made a special secondary approach to try to secure tribal interests in participation, there was little tribal participation. Perhaps in the coming process of advisory work for the Commission a different process can be used to secure that input.

We appreciate the work the OGWC continues to undertake to build a viable program for ensuring progress toward. We look forward to a role for the districts to provide the technical assistance that will be needed to effectively carry out the programs envisioned. Thank you for the opportunity to comment.

Sincerely,

Oregon Association of Conservation Districts

Jan Lee

Jan Lee

From: Alex Clayton <aclayton2@pewtrusts.org>
Sent: Friday, December 1, 2023 11:27 AM
To: Oregon GWC * ODOE
Cc: Cathy Macdonald; Elizabeth Ruther; Sylvia Troost; Brett Swift
Subject: The Pew Charitable Trusts' comments on INR's NWL Roadmap
Attachments: Pew comments OGWC INR Roadmap - final 12.1.23.pdf

To Whom It May Concern-

On behalf of The Pew Charitable Trusts, attached are comments on the Institute for Natural Resources report titled "A Roadmap to Increase Carbon Sequestration and Carbon Storage on Oregon's Natural and Working Lands."

Thank you for the opportunity to provide feedback.

Thanks,
Alex

Alexandra Moya (Clayton)
Officer, U.S. Conservation – Wetland Climate Solutions
The Pew Charitable Trusts
901 E. Street, NW Washington, DC 20004
p: 202-381-6876 | *e:* aclayton2@pewtrusts.org

Pew

December 01, 2023

Ms. Catherine Macdonald, Chair
Oregon Climate Action Commission
550 Capitol St. NE
Salem, OR 97301

RE: Comments from The Pew Charitable Trusts on the Institute for Natural Resources' Roadmap to Enhance Carbon Capture and Storage and Reduce Greenhouse Gas Emissions on Oregon's Natural and Working Lands

Submitted via email: oregon.GWC@oregon.gov

Dear Chair Macdonald and Commissioners:

Thank you for the opportunity to comment on the Institute for Natural Resource's (INR) Roadmap (Roadmap) for implementation of the Natural and Working Lands Proposal (NWL Proposal) adopted in 2021 by the Oregon Climate Action Commission (Commission). The Roadmap is the culmination of the NWL Project, a grant-funded project led by INR. The Pew Charitable Trusts (Pew) was a member of the committees for the blue carbon sector and we appreciate all the work conducted to reach this point.

The Roadmap is an important step in developing a methodology for establishing a state-wide inventory of net sequestration in Oregon's NWL; developing practices and activity-based metrics to increase net sequestration in NWL; defining a scope of work to evaluate technical assistance capacity and training needs; and identifying community impact metrics to evaluate the benefits and burdens upon communities.

Pew's main interest relative to the Roadmap is to elevate the critical role that healthy coastal, tidal, and subtidal landscapes play in capturing and storing carbon, and to advance science-based approaches for including these "blue carbon" habitats in key strategies and programs needed to achieve the Commission's net goal for sequestration and storage in the state's NWL. On a per acre basis, blue carbon habitats can store up to 10 times more carbon[1] in the soil than forests, while also protecting frontline communities from sea-level rise and flooding, filtering water, and providing vital habitat for salmon and other wildlife.[2] By ensuring robust implementation of climate-smart management practices, the Commission can build a strong foundation for Oregon to leverage the greenhouse gas (GHG)

[1] The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service: Coastal Blue Carbon (https://tinyurl.com/y6a2zkgs)
[2] https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2022/05/9-ways-estuaries-enhance-oregons-coastal-communities

mitigation potential of its blue carbon resources and advance the suggested strategies in the state's 2021 Climate Change Adaptation Framework to support ocean health and blue carbon ecosystems.[3]

Pew urges the Commission to consider the recommendations below with respect to the INR Roadmap's proposed blue carbon practices, activity metrics, plan for development of the state's NWL inventory, and Tribal Nation engagement.

Blue Carbon Practices

The blue carbon 'recommended' practices included in the INR Roadmap are sound and science-based. While the blue carbon 'emerging' practices are not recommended *at this time* because of critical science gaps, we urge the Commission to regularly review research advancements and data refinement to move additional blue carbon practices into implementation. The Pacific Northwest Blue Carbon Working Group (PNWBCWG) and the Oregon Coastal Management Program (OCMP) are working together to refine and curate improved data.

Pew recommends the Commission consider developing a schedule to routinely review and incorporate any new data for these practices. For example, although the carbon sequestered and stored in kelp forests and seaweed beds cannot yet be formally measured and accounted for, it is expected that scientific understanding of the carbon cycling in these systems may progress to a level where they can be formally incorporated into Intergovernmental Panel on Climate Change GHG Accounting Guidelines and therefore managed for their mitigation contribution.[4]

Co-benefits

As the Commission considers how to proceed, we recommend that the NWL practices advocated for by both the technical team and advisory committee members are incorporated, as long as there is research to support that the practice is carbon positive. Unlike other traditional GHG sectors, like transportation, where there may be substantial risk that state investments will not meet their intended GHG emissions reductions, **there is no downside to maintaining or restoring natural lands or implementing sustainable working lands practices**. The benefits of working lands practices have been sufficiently demonstrated by USDA's Natural Resource Conservation Service and Oregon's Soil and Water Conservation Districts and the thousands of working lands participants in federal programs.

We recommend that the Commission ensure that other ecosystem benefits besides carbon sequestration are formally tracked and valued. For example, conservation and protection of coastal blue carbon habitats offer other benefits of value to coastal communities such as flood protection, improved water quality, and habitat for economically important fisheries.

[3] 2021 State Agency Climate Change Adaptation Strategy. Natural World Section; See pg. 27 "Engage in collaborative groups such as the Pacific Northwest Blue Carbon Working Group to better understand, manage, and protect blue carbon ecosystems. Blue carbon ecosystems not only provide for carbon sequestration they also provide a range of social, economic, and environmental benefits, such as fish rearing sites and buffers against sea level rise." https://www.oregon.gov/lcd/cl/pages/adaptation-framework.aspx

[4] Schindler Murray, L., Milligan, B. et al. 2023. "The blue carbon handbook: Blue carbon as a nature based solution for climate action and sustainable development." Report. London: High Level Panel for a Sustainable Ocean Economy.

California can serve as an example for how to integrate co-benefits that contribute to coastal resilience, as shown by recently enacted legislation (AB1757) that requires the state's Natural Resources Agency to develop an ambitious range of targets for natural carbon sequestration and natural climate solutions that support both the reduction of GHG emissions and climate adaptation and resilience. To implement the law's requirements, California convened an Expert Advisory Committee to recommend targets, inclusive of co-benefits, for each NWL sector. An expert advisory committee may be helpful to state agencies as they work to set activity targets.

Other Natural Lands: Freshwater Wetlands

We also recommend the inclusion of freshwater wetland protection into NWL practices. Peatlands and forested freshwater wetlands in particular store significant amounts of carbon, both of which are present in Oregon and greatly diminished from historic extent. Research indicates that, due to the sheer area of inland wetlands, these habitats in the U.S. store nearly twelve times the amount of carbon as coastal wetlands do.[5] Given that freshwater wetlands are also more likely to emit methane, not all freshwater wetland restoration efforts would result in a net greenhouse gas reduction, but protecting these habitats and building resilience to climate change is important not only to ensure carbon sequestration services continue, but also to avoid further emissions through habitat degradation and loss. Intact freshwater wetlands also contribute to wildfire resilience in forested areas and provide flood control benefits.[6] Despite the existence of regulatory protections, such as the state's "function based wetlands compensatory mitigation framework," Oregon's freshwater (and coastal) wetlands still face threats. Although Oregon lacks information on the full historic extent of these habitats, making their inclusion in a GHG inventory difficult at this time, the most efficient and cost-effective strategy for Oregon is to consider protecting all remaining freshwater and coastal wetlands from further degradation and loss.

Community Impact Metrics

We appreciate the work to include community impact metrics. As the Commission considers how to track and measure impacts of NWL interventions on public health and wellness, we encourage it to assess studies conducted by the California Air Resources Board (CARB) for its 2022 Climate Change Scoping Plan, which outlines a sector-by-sector roadmap for the state to achieve carbon neutrality by 2045. In this study, CARB modelled public health benefits related to two natural and working lands strategies – urban greening (e.g., increase in tree canopy) and impacts on extreme heat, and forest/grasslands resilience to catastrophic wildfire and impacts on air quality.

GHG NWL Inventory Development

Although the INR Roadmap proposes two options for developing a NWL GHG inventory (basic versus advanced), we recommend that the state consider a hybrid approach based on data availability for key landscape types. Given already-compiled blue carbon data in the

[5] A.M. Nahlik and M.S. Fennessy, "Carbon storage in US wetlands," *Nature Communications* 7, no. 1 (2016): 13835, https://doi.org/10.1038/ncomms13835.

[6] J. Endter-Wada, K.M. Kettenring, and A. Sutton-Grier, "Protecting wetlands for people: Strategic policy action can help wetlands mitigate risks and enhance resilience," *Environmental Science & Policy* 108 (2020): 37-44, https://www.sciencedirect.com/science/article/pii/S1462901119309463.

white paper titled "Incorporating Coastal Blue Carbon Data and Approaches in Oregon's First Generation Natural and Working Lands Proposal," the Commission could recommend an advanced approach for coastal habitats and other sectors with more refined data, such as forestry. Other NWL sectors, such as croplands and rangelands—where data on sequestration rates is not as developed—could utilize a basic approach for inclusion into the NWL inventory. If the state chooses to pursue a hybrid approach, it will be imperative to be transparent about methods and data sources used, as well highlighting which sections of the inventory should be improved in future years.

Thanks to the Department of Land Conservation and Development's Oregon Coastal Management Program (OCMP), which funded coastal habitat extent work via the Coastal Zone Management Act, and the Institute for Applied Ecology (IAE) and the Pacific Northwest Blue Carbon Working Group (PNWBCWG), which diligently inventoried coastal habitat extent and researched coastal carbon cycles, sequestration, and emission rates over the last decade, coastal Oregon has advanced data available to contribute to the state NWL Inventory.

The OCMP has stored the blue carbon data necessary for the state NWL inventory in a newly created blue carbon data portal so that refinements to foundational habitat extent, habitat change over time, and carbon data can be easily accessed. The OCMP, IAE, PNWBCWG, and other experts, funded through a grant from the Oregon Watershed Enhancement Board, are working toward the development of a blue carbon calculator so that restoration practitioners and land managers can calculate blue carbon potential at the project level in coastal areas. The Commission should capitalize on this work, which leads the country in blue carbon data, making Oregon a model for other states working toward their own blue carbon GHG inventories. Other NWL sectors could duplicate the calculator, as data refinement allows, to estimate emissions and removals as a result of land management actions.

We also recommend that Oregon explores the extent to which spatial land cover datasets for forests overlap with coastal wetlands, to avoid double counting as well as to ensure accurate accounting of carbon stocks and sequestration rates. This issue was brought to our attention in a similar effort we have engaged in with researchers in North Carolina to develop the state's first coastal wetland-specific greenhouse gas inventory. Through this effort, the workgroup has identified appreciable spatial overlap in lands classified as forest as part of the U.S. Forest Service's Forest Inventory and Analysis (FIA), which is the land representation used to delineate forest land, and lands classified as forested, scrub/shrub, and emergent palustrine wetlands as part of NOAA's Coastal Change Analysis Program (C-CAP) spatial layers, the land representation used to delineate wetlands. The Environmental Protection Agency (EPA) is aware of this issue and is currently working on a harmonized land representation at the national scale that is expected to be complete by 2025.

Tribal Engagement

Achieving robust, sustainable, and meaningful NWL goals demands the incorporation of Indigenous practices. HB 3409 requires the Commission to "establish a process for consultation with representatives of federally recognized Indian tribes in this state to advise the commission on the performance of its duties …. including the identification of

opportunities to support indigenous practices and knowledge from tribal nations to sequester and store carbon on natural and working lands." We strongly support the Commission's plans to treat Tribal Nation engagement as a separate process in its work plan. To do so, we recommend the Commission begin engaging Tribes now to determine interest, capacity constraints for participation, and what shape meaningful Tribal consultation and inclusion of indigenous expertise and knowledge may take for these sovereign entities relative to the state's NWL goals. As the Commission works to further develop community impact metrics and selects a contractor, we strongly encourage the Commission to also contract with an indigenous group or consultant who can help develop the best approach for inclusion of Tribal land management and stewardship. Tribally-affiliated organizations with climate programs, like The Affiliated Tribes of Northwest Indians, may also provide direction and guidance helpful to the Commission in this matter.

The 2021 NWL proposal identified four broad strategies, listed below, with ten supporting elements to achieve the outcome-based goals. Pew recommends these areas be prioritized for investment as the Commission considers how to allocate funds in the newly created Natural Climate Solutions Fund. We put forward the additional recommendations below:

Position the state to leverage federal lands and investments in climate-smart natural and working lands practices

Given the unprecedented funding for coastal resiliency from the Infrastructure Jobs and Investment Act and Inflation Reduction Act, the Commission should encourage state agencies involved in NWL implementation develop a coordinated plan to leverage federal dollars. For example, practices outlined in the Roadmap, in combination with a blue carbon inventory, can create the foundation for coastal wetland projects put forth in Oregon's Priority Climate Action Plan under the EPA's Climate Pollution Reduction Grant program. In such a plan, we recommend the state develop a project pipeline so there is a master list of shovel-ready projects from which to select when funding becomes available. As part of this effort, the state could help support communities and project proponents in determining "shovel-worthy" projects.

Investigate options and create a sustained source of state funding to increase sequestration in natural and working lands

Pew was pleased to see the passage of HB 3409, which will create a permanent fund for the state's natural climate solutions efforts. Given that the Oregon Department of Land Conservation and Development (DLCD) administers the state's Coastal Management Program, we recommend that DLCD be a part of the NCS Fund meetings, in order to coordinate and identify opportunities to leverage the state's federally funded Coastal Zone Management Act program to advance blue carbon sector goals. As the Governor's office works to compile and coordinate needs and opportunities for development of this Fund, it is critical that all NWL sectors are represented at these meetings.

Fund and direct the agencies to take actions to advance natural and working lands strategies

We recommend that the Commission and state agencies request additional capacity to accelerate the outcomes of NWL goals and the work of the inter-agency group facilitated by

Department of Energy to implement NWL work. The following planning exercises may help align agencies and outcomes, and help prioritize needs relative to the aims set forth in HB3409 for ensuring diverse participation, equitable benefits, and expanding use of NCS in the state:

- Create a strategy to secure funds across agencies (federal and private).
- First identify, then use, criteria to prioritize existing agency programs that can advance natural climate solutions (NCS) strategies and practices and identify if new programs need to be established.
- Create criteria by which to assess equitable benefits of climate mitigation during implementation.
- Create a strategy to ensure diverse participation, including but not limited to identifying and then removing barriers for Tribal Nations; identifying resources that provide incentives for landowners to participate, and creating an approach to strengthen engagement and technical assistance to Tribal Nation and environmental justice communities.
- Create a land acquisition strategy with land management partners including land trusts, Tribal Nations, and land holding state and federal agencies.
- Create a strategy for deploying NCS in and around urban/built environment.
- Identify co-benefits related to each NCS strategy/practice and create a methodology to account for and track co-benefits.

Invest in improvements to Oregon's natural and working lands inventory

Investing in "science to policy" networks will help create a solid foundation the state can draw on for future improvements to the NWL inventory and fill data gaps mentioned in the INR Roadmap. For example, eelgrass habitats are an integral blue carbon ecosystem, but the state lacks data on the area extent of these habitats over time. To facilitate their inclusion into future updates of the NWL inventory, the state should invest in regular mapping of areal extent of eelgrass beds (as well as marshes, swamps, and kelp forests) and develop regionally specific estimates for biomass carbon stocks. Groups like the PNWBCWG, a coalition of blue carbon researchers in the region that continually struggle to find consistent funding and who provided much of the data and mapping for the blue carbon inventory, are well positioned to fill these data gaps. Utilizing existing data and expertise from the PNWBCWG and looking to other states who have done this successfully (see North Carolina as an example) can help the state create a path forward for successful inclusion of eelgrass beds into the state's NWL inventory.

Existing State Agency Programs, Co-Benefits, and GHG Reduction Goals

Leveraging existing state agency programs to achieve climate goals can streamline efforts and maximize efficiency. State agencies possess established infrastructures, expertise, and resources, enabling them to swiftly integrate climate-related initiatives into their ongoing operations. By building upon existing programs, governments can avoid duplicative efforts and unnecessary bureaucratic hurdles, as well as maximize limited resources, thus accelerating the implementation of climate actions. Additionally, leveraging these programs fosters collaboration and coordination among different sectors and stakeholders, promotes a more cohesive and holistic approach to climate challenges, and allows for the identification and optimization of co-benefits across various sectors, creating a more comprehensive and impactful response to climate change. Ultimately, utilizing existing state agency programs enables governments to demonstrate a commitment to sustainable

practices and climate action, inspiring broader public engagement and support, while yielding tangible and measurable results in the pursuit of a more sustainable future.

Existing Agency Programs to Leverage

The Natural Climate Solutions provisions within HB3409 directs agencies to prioritize existing programs.[7] Most, if not all, existing programs were established based on what the INR Roadmap has considered co-benefits of carbon sequestration on NWL. The table provided in the appendix describes existing agency programs that can be leveraged to achieve the state's Natural Climate Solutions goals. Note that some of these may need updated governance structures to improve collaboration to fully serve this purpose. This aligns with the recommendations of Oregon's Climate Adaptation Framework, which the NWL work should leverage more, including government structures that will be developed in support of adaptation.

We summarize state agency programs (grant programs or implementation programs) whose outcomes include NWL Practices or Emerging Practices described by the Technical Advisory Committee or Stakeholder Advisory Committee. At this time, only state agency programs are included in the summary; however, it is important to note that special districts, extensions, and federal agency partners, particularly the Natural Resource Conservation Service, may also have programs that can be leveraged for this purpose or are already part of a given state agency program. In Oregon, each of these agency programs operates within the overarching framework of land use planning. Each agency coordinates with DLCD regularly to ensure they are adhering to the statewide land use planning goals, which ultimately guides land cover change over time.

The table presents a non-exhaustive list of existing agency programs. Often an agency program services more than one natural and working lands sector, so that distinction is not made.

Conclusion

We applaud Oregon for its comprehensive efforts to address the climate crisis, including elevating the role of NWL in reducing and avoiding emissions and advancing community and ecological resiliency. Developing a robust GHG inventory and climate-smart management practices for Oregon's NWL will require partnerships spanning local, regional, state, and federal agencies, Tribes, and constituencies, and we commend the Commission for recognizing the critical role that coastal wetlands can play in this effort. This work is actively being leveraged and incorporated into coastal management effort via local updates to estuary management plans, as well as state-led resilience action plans that identify nature-based solutions to increase community and coastal resilience. Both of these efforts provide an opportunity for agencies and communities to elevate protection and enhancement of estuarine ecosystem services and advance adaptation, resilience, and greenhouse gas mitigation goals. Given its remit under the National Coastal Management Program, DLCD will be critical in advancing the blue carbon portion of the NWL inventory and implementation of climate-ready practices.

[7] HB 3409; Section 54 (3)(b) "Incentivize and implement natural climate solutions by: (b) Prioritizing the use of existing programs;"

Thank you for the opportunity to actively participate in the Stakeholder Advisory Committee and to comment on the INR Roadmap. Pew looks forward to working together to advance science-based policies in support of Oregon's coastal habitats.

Sincerely,

Alex Moya
Officer, U.S. Conservation Program
aclayton2@pewtrusts.org

Elizabeth Ruther
Officer, U.S. Conservation Program
eruther@pewtrusts.org

Appendix

	Water Quality and/or Quantity	Adaptation to Climate Effects	Community Protection from any Hazard	Habitat and Biodiversity	Natural Resource Dependent Economies	Cultural Services
Department of Land Conservation and Development						
Green Infrastructure Grant Program (established by 2023 legislation)	X	X	X	X	X	X
Oregon Coastal Management Program	X	X	X	X	X	X
Local Natural Hazard Mitigation Planning		X	X	X		X
Transfer of Development Rights to Protect Farm and Forestland	X	X	X	X	X	X
Department of Forestry						
Urban Tree Program (established by 2023 legislation)		X	X	X		X
Forest Conservation Tax Credit Program	X	X	X	X	X	
Small Forestland Investment in Stream Habitat Program	X	X	X	X	X	
Department of Environmental Quality						
Clean Water State Revolving	X	X		X	X	X

	Water Quality and/or Quantity	Adaptation to Climate Effects	Community Protection from any Hazard	Habitat and Biodiversity	Natural Resource Dependent Economies	Cultural Services
Fund						
Nonpoint Source Implementation 319 Grants	X	X		X	X	X
Outstanding National Resource Waters Designations	X	X	X	X		X
Oregon Watershed Enhancement Board						
Coastal Wetlands Grants	X	X	X	X	X	X
Forest Collaborative TA Grants	X	X	X	X	X	X
Oregon Agricultural Heritage Program	X	X		X	X	
Land Acquisition Grants		X	X	X		X
Restoration Grants	X	X	X	X	X	X
Oregon Department of Fish and Wildlife						
Fish Screening and Passage Grant Program	X	X	X	X	X	X
Western Oregon Stream Restoration Program	X	X	X	X	X	X
Riparian Tax Incentive Program	X	X	X	X		X
Wildlife Habitat		X		X		X

	Water Quality and/or Quantity	Adaptation to Climate Effects	Community Protection from any Hazard	Habitat and Biodiversity	Natural Resource Dependent Economies	Cultural Services
Conservation and Management Tax Incentive Program						
Oregon Department of State Lands						
Submerged Lands Enhancement Fund	**X**	**X**		**X**	**X**	**X**
Oregon Department of Transportation						
Forthcoming Wildlife-Vehicle Reduction Program, ORS 366.161		**X**	**X**	**X**		**X**

From: Dani Madrone <DMadrone@farmland.org>
Sent: Friday, December 1, 2023 3:16 PM
To: Oregon GWC * ODOE
Subject: Comments on INR report from American Farmland Trust
Attachments: INR report comments_12.1.23.pdf

Hello Oregon Global Warming Commission,

Please accept the attached comments on the *Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal* report.

Kindly,
Dani Madrone

Dani Madrone
Pacific Northwest Policy Manager
her/she/hers
American Farmland Trust

Phone: *+1 3609391668*
Email: *DMadrone@farmland.org*
Website: *www.farmland.org*

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American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

December 1, 2023

To: Oregon Climate Action Commission
Catherine Macdonald, Chair

RE: Comments on the Final Report Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal

Dear Chair Macdonald and Commissioners,

Thank you for the opportunity to comment on the Institute for Natural Resource's *Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal*. Our mission at American Farmland Trust is to to save the land that sustains us by protecting farmland, promoting sound farming practices, and keeping farmers on the land. Last May, we were invited to submit comments on the draft report titled *Proposed Practices to Increase Carbon Stocks and/or Reduce Greenhouse Gas Emissions*. It is great to see that many of our concerns were addressed in this final report. We hope it can serve as a foundation for Oregon to have a strong, holistic framework to mitigate climate change.

Our feedback is focused on the recommended strategies for reducing greenhouse gas emissions. It gave us pause to see the asterisks behind many of the agricultural practices, especially given our concerns with the tone and lack of consistency with the April 2023 draft. It's unusual that recommendations from an advisory body and a technical body would not be integrated in a final product. As presented, the advisory committee recommendations could easily be interpreted as a separate and lower priority. If these strategies are left behind, Oregon will fall behind on the implementation of important soil health practices that not only sequester carbon and enhance carbon storage, but also offer environmental co-benefits, support climate resilience, strengthen rural economies, and secure the long-term viability of food production. The Commission should ensure that this full range of benefits be identified, measured, and valued.

As part of a holistic approach to mitigate climate change, the Natural and Working Lands Proposal has a strategy to position the state to leverage federal funding. In order to leverage funding through the Farm Bill, Inflation Reduction Act, and other future funding opportunities, Oregon should advance the recommendations that align with the activities identified in USDA's Natural Resources and Conservation Service (NRCS) *Climate-Smart Agriculture and Forestry (CSAF) Mitigation Activities List*. If these practices are deprioritized, the state will leave federal funding on the table, leaving Oregon farmers and ranchers out of national climate initiatives. As evidenced by recent support from farmers and ranchers at the legislature, many are willing and eager to implement these practices.

In addition to soil health practices, protecting natural and working lands from conversion to urban development should be a clear climate priority. This recommendation is marked with an asterisk in the farmland category, but not for rangelands or forestry. It's unclear why these recommendations were not regarded similarly. Protecting all natural and working lands from urban development will avoid the increase of greenhouse gas emissions associated with vehicle miles traveled, heating and electricity, and disruption of soil carbon.

Addressing climate change is going to require every tool in our toolbox. Our hope is that Oregon will keep every strategy on the table to leverage resources and emerging opportunities, maximizing outcomes that support multiple goals for a climate resilient future. Thank you for your work and the opportunity to be engaged in this effort.

Sincerely,

Dani Madrone
Pacific Northwest Policy Manager
American Farmland Trust

From: Laura Tabor <laura.tabor@TNC.ORG>
Sent: Friday, December 1, 2023 10:57 PM
To: Oregon GWC * ODOE
Subject: Public Comment on Natural & Working Lands Report
Attachments: TNC Comment - OGWC NWL Report 2023 12 01.pdf

Hello,

Please find attached comments on the OGWC response to the recent natural and working lands report submitted by the Institute for Natural Resources.

Thank you!

Laura Tabor
Climate Action Director | *she/her*
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The Nature Conservancy
Protecting nature. Preserving life.™

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December 1, 2023

Oregon Global Warming Commission

Public Comment on "Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal" report

Submitted by Laura Tabor, Climate Action Director

Chair Macdonald and Members of the Commission,

Thank you for the opportunity to provide comments on the final Institute for Natural Resources report on Foundational Elements to Advance the Oregon Global Warming Commission's Natural and Working Lands Proposal. We applaud the Oregon Global Warming Commission (OGWC) for recognizing that effective management of Oregon's natural and working lands (NWL) is a critical component of our state's overall response to climate mitigation and adaptation and taking steps to advance engagement and policy to support this work.

The Nature Conservancy in Oregon (TNC) is a science-based, non-partisan organization with 80,000 supporters and members in every county. Based in communities around the state, we manage lands and waters in varied ecosystems and partner with Tribes, ranchers, farmers, fishers, timber, and environmental interests on some of the most challenging conservation issues facing people and nature. Addressing the climate change crisis is a core component of TNC's work to create a world where people and nature can thrive, and we believe that Oregonians have a responsibility to enact policies to reduce greenhouse gas emissions and help our communities adapt to climate change.

We offer comments on this report and to inform the OGWC's next steps in the following areas:

- Establishing clarity on the balance between climate mitigation and adaptation goals in the context of NWL climate action
- Omission of Riparian Reforestation as a recommended practice
- Technical comments on specific practices and metrics
- Community impact metrics

In addition, we would like to express support and amplify the comments submitted by The Pew Charitable Trusts, in particular regarding blue carbon, tribal engagement, and opportunities to leverage existing state agency programs.

Clarity in Balancing Climate Mitigation and Adaptation Goals

Addressing climate change mitigation and adaptation are deeply intertwined for NWL. As the landowner and manager of over 148,000 acres in Oregon, TNC recognizes the need to adapt our own practices to help mitigate and prepare for changing conditions and want to increase support for other land managers to do this, too.

As the OGWC looks ahead to implementation of HB 3409, it must establish a framework to provide clarity on which programs are focused on mitigation, adaptation, or both. A shortcoming of the process in the past year was lack of clarity on this balance, and technical sector groups' different approaches led to inconsistency across sectors and tension between technical and stakeholder advisory group processes. This made defining and recommending practices difficult given the fact that some practices have small carbon mitigation benefits and dramatic adaptation and resilience benefits, and in many practices, overly prioritizing carbon benefits without nuance for what is ecologically appropriate in the context of a changing climate can reduce resilience, including to the point of risking the loss of previous carbon gains (e.g. through wildfire).

This framework should also consider co-benefits beyond resilience. HB 3409 defines natural climate solutions as activities with mitigation benefit and directs agencies to optimize the "social, health, ecological, climate resilience and economic benefits" of natural climate solutions. Defining how programs should consider these factors in relation to the climate mitigation benefits is an important early step, both for clarifying the nuances of the broad practices listed in this report and for working towards a NWL portfolio with a mix of practices that may vary in emphasis across subsectors.

Lastly, this framework should include clear technical guidance for evaluating the mitigation potential of different practices that is consistent across sectors. Table 3 in the technical report (Appendix E, p. 56) provides a good example used by the blue carbon technical team. The technical teams generally applied this framework as described in Section 2.2.1, though this did not occur until well into the process and it is unclear if all teams interpreted this in similar ways. Across all sectors, we encourage the Commission to develop transparent metrics and to use caution and best practices when estimating benefits of practices, particularly if local or regional supporting data are lacking.

Riparian Reforestation

TNC was surprised and disappointed to see the omission of riparian reforestation as a recommended practice in Table Ex-1 and Figure 5. While we agree with the note that reforestation broadly is not appropriate to include as a practice for agricultural lands, reforesting riparian buffers, including though broader riparian restoration projects, is an important practice with significant ecological and climate benefits across land sectors. TNC research in 2020 showed that this practice, defined as "conversion from non-forest to forest along riparian areas," offers the second largest mitigation potential by 2050 among practices analyzed and has the highest carbon sequestration benefit per unit area. It is unclear if this practice was omitted due to perceived duplicative or overlapping recommendations, or due to a misunderstanding about its applicability to specific sectors. We strongly urge the OGWC to ensure this practice is recommended across all applicable land sectors.

Comments on Specific Sectors and Practices

TNC was grateful for the opportunity to provide staff input through the technical team process across sectors, and in particular for blue carbon, rangelands, and forest lands. In reviewing the final documents, we offer the following comments, in some cases reiterating concerns shared at other points in the process.

Forest Sector

TNC would like to emphasize a few important topics relevant to the Forest Subcommittee description on pp. 16-18.

- We strongly support including the phrase "ecologically appropriate" in the name of the Afforestation/Reforestation practice, e.g., "Ecologically Appropriate Afforestation/Reforestation."
- We note that "Improved Forest Management" is a broad practice, and other practices which the Forest Subcommittee discussed are relevant, such as optimizing harvest frequency and harvest intensity on private lands.
- Addressing wildfire risk comprehensively requires ecological and cultural considerations. TNC would prefer this practice be called "Restore Eco-Cultural Fire Regimes" or "Restore Ecological Process and Function" primarily because simply reducing wildfire risk could be inconsistent or incompatible with the underlying ecology or eco-cultural fire regime. It could also be misconstrued to be achievable simply through mechanical fuels reduction treatments in some forest systems where reintroduction of low to moderate intensity fire is essential to treatment effectiveness. Using the term "eco-cultural fire" acknowledges both the natural and Indigenous stewardship dimensions of fire regimes.

In addition, we offer the following comments on the Forest Lands section of the final technical team report in Appendix E1.

Afforestation / Reforestation (p. 88)

- We support the caveat that afforestation needs to include consideration of "appropriate species composition" and would also include ", density and spatial patterns" as in the section on post-harvest/post-fire planting.
- This is the only place riparian restoration is mentioned in the context of forests and could go beyond simply reforestation. Restoring functioning riparian areas could be considered a standalone practice, as it is in the rangeland context. See additional comments on Riparian Reforestation above.
- Consider adding an additional example of detrimental afforestation practices beyond juniper encroachment in rangelands, such as afforestation in oak savannah or reforesting to increase stocking in dry ponderosa pine woodlands that are not resilient or climate adaptive at higher densities.

Improved Forest Management (p. 89)

- There is a nod here to belowground carbon pools, with the caveat that more research and inventory data is needed. More investment into this work is needed in fire-prone systems that, once restored, tend to have bunchgrass dominated understories comparable to rangeland systems where belowground pools are more clearly recognized for their overall contribution to carbon sequestration and storage.
- This section needs to address management to improve ecological resistance and resilience. There is significant overlap between this practice and restoring ecologically appropriate fire regimes, we suggest also including thinning and prescribed fire as appropriate activities for "improved forest management" provided that agencies have sufficient technical rationale to account for the GHG benefits of these activities via avoided wildfire emissions.

Reduce Wildfire Risk (p. 93)

- Ensuring appropriate tree density and stocking is one aspect of reducing risk and increasing resilience to disturbance, but it is also important to prioritize ecological appropriate and/or climate adaptive species composition and spatial pattern of trees, which has also changed dramatically over the fire exclusion era. Consideration of

species composition and the spatial patterning of trees is especially needed for the activity of "mechanical understory removal."
- We greatly appreciate the inclusion of and attention to "carbon debt."
- The time period of measurement for this practice, and likely others, would need to be 50 years, or a minimum greater than 20 years.

Rangelands

TNC offers one correction and two comments on the sections regarding rangeland practices.

- Correction:
    - On p. 66, replace "above ground" with "below ground" in the sentence, "Annual-dominated communities, which produce less above ground biomass and are more prone to wildfire, store less carbon than perennial communities, although effects of invasion on carbon dynamics vary with climate and soil patterns."
    - Sometimes annual-dominated communities produce more above ground herbaceous biomass than a similar uninvaded perennial-dominated state, but the annual sites still store less carbon and the carbon they do store, is much less secure because of increased risk of and susceptibility to wildfire.
- Comments
    - We would like to reinforce the importance of nuance in using herbaceous biomass to estimate carbon storage as described on p. 38. Using remote sensing-derived biomass measures in rangelands is very useful as a comparative index of different rangeland types or annual-invaded versus native communities. However, it is not appropriate to derive discrete carbon storage metrics using existing remote sensing technology, or to compare rates of carbon storage following management action. An exception to the latter scenario would be if the management action results in a change in rangeland type. In these cases, comparative indices are useful.
    - Extrapolating carbon storage results from intensely managed, productive, irrigated rangelands to arid rangelands will likely result in overestimates of the climate mitigation benefits. We encourage the OGWC to use caution and be conservative in estimating benefits of practices for arid rangelands when supporting data are from different settings.

Community Impact Metrics

The INR report provides a good starting point for continued work on developing community impact metrics for NWL programs and NCS practices. Given the breadth of metrics reviewed and summarized, we recommend the Commission pursue continued, more focused conversation in the new Advisory Committee and with agencies implementing the NCS portion of HB 3409 to refine specific metrics most applicable to each sector and to individual practices. It will be important to balance maintaining flexibility to choose appropriate metrics for individual practices while ensuring consistent focus across agencies and programs. One way to do this could be to require agencies to define or select metrics from within specified categories. Several sections of HB 3409 offer guidance for categories to include in this approach:

- The definition of natural climate solutions requires that activities maintain or increase ecosystem resilience and human well-being (Section 53.5).
- Section 54.3 emphasizes the importance of equitable benefits and participation from a diversity of landowners and managers, including Indian tribes, and highlights the priority

of “social, health, ecological, climate resilience, and economic benefits of natural climate solutions.” (Section 54.5(F))

- Section 58.4 reiterates that "Community impact metrics may include, but need not be limited to: (a) Metrics to measure the effects of net biological carbon sequestration and storage strategies on jobs, local economies, environmental integrity and public health; and (b) Metrics to evaluate the accessibility of a diverse range of landowners to net biological carbon sequestration and storage programs.”

From: Craig Cornu <cecornu@gmail.com>
Sent: Saturday, December 2, 2023 8:53 AM
To: Oregon GWC * ODOE
Subject: Fwd: PNW Blue Carbon Working Group Comments Letter
Attachments: Blue Carbon Working Group Comments 20231201.pdf

Hi again Cathy - I just realized I sent our comments letter yesterday to your TNC email address instead of to oregon.GWC@oregon.gov. Sorry about that.

See letter attached and message below sent this time to the proper email address.

Craig

---------- Forwarded message ---------
From: <cecornu@gmail.com>
Date: Fri, Dec 1, 2023, 4:52 PM
Subject: Working Group Comments Letter
To: <cmacdonald@tnc.org>
Cc: Diefenderfer, Heida L <Heida.Diefenderfer@pnnl.gov>, Janousek, Christopher N <Christopher.Janousek@oregonstate.edu>

Hi Cathy—thank you and the Commission for providing the opportunity to comment on the Institute for Natural Resources' Roadmap to Enhance Carbon Capture and Storage and Reduce Greenhouse Gas Emissions on Oregon's Natural and Working Lands. See the attached letter which includes a little background on the Working Group and recently articulated and vetted blue carbon research priorities for the region along with our comments.

Please let us know if you have any questions.

Thanks again!

Craig

Craig Cornu

Estuary Technical Group

Institute for Applied Ecology

cecornu@gmail.com

541 260-2916

PNW Blue Carbon Working Group

1 December 2023

Ms. Catherine Macdonald, Chair
Oregon Climate Action Commission
550 Capitol St. NE
Salem, OR 97301
Submitted via email: oregon.GWC@oregon.gov

RE: Comments by the Pacific Northwest Blue Carbon Working Group, regarding the Institute for Natural Resources' Roadmap to Enhance Carbon Capture and Storage and Reduce Greenhouse Gas Emissions on Oregon's Natural and Working Lands

Dear Chair Macdonald and Commissioners,

We are writing to offer feedback on the Roadmap document from our perspective as science leaders of the Pacific Northwest Blue Carbon Working Group[1] (Working Group) founded nearly a decade ago through efforts by the South Slough National Estuarine Research Reserve (South Slough NERR, managed by NOAA and the Oregon Department of State Lands) and partners. The Working Group has since grown to include some 145 members.[2] According to the Coastal Carbon Network at the Smithsonian Environmental Research Center, the Working Group is regarded as a model for other regions with Oregon ranking among the best positioned states because of the coordination and communication to ensure open access to quality data that is led by our Working Group[3]. The chairman of the national Coastal and Estuarine Research Federation (CERF) professional conference held recently in Portland asked us to organize its blue carbon session, which ran to 1.5 days long and attracted scientific and policy presenters from across the USA, Canada, and Australia as well as many presentations from Washington and Oregon[4].

The Working Group has provided an informal, collaborative forum for natural and social scientists and policy makers to identify and begin to address data gaps in Pacific Northwest (PNW) coastal wetlands and priorities for research and data provision since its inception. These discussions and workshops have included leading researchers from universities, nonprofits, and governmental agencies throughout the region and collaboration with partners nationally and internationally. **A particularly important community of end users of data generated and compiled by the Working Group is coastal ecosystem restoration practitioners who are**

[1] https://pnwbluecarbon.org
[2] https://www.pnwbluecarbon.org/background
[3] https://smithsonian.github.io/CCRCN-Pew-Project
[4] https://www.xcdsystem.com/cerf/program/3f1ze0N/index.cfm

working with public and private landowners to voluntarily restore converted former tidal wetlands, providing numerous co-benefits, from fish and wildlife habitat to carbon sequestration and flood mitigation; this strongly intersects with the Natural and Working Lands aims of the Commission.

Working Group scientists have successfully begun to address three of the highest regional data needs—quantifying the carbon stocks[5], carbon sequestration, and methane emissions[6] of PNW coastal wetlands—through a series of grants provided by NOAA's NERRS Science Collaborative and Effects of Sea Level Rise programs since 2016. The Working Group has particularly emphasized collecting data across different coastal management levels to allow various natural and working land use types to be compared, including diked dry and wet agricultural lands, recently restored tidal wetlands, and "least disturbed" reference wetlands including forested and shrub-dominated tidal wetlands, emergent marshes and seagrass beds. **These data types are required to accurately evaluate net changes in carbon processes resulting from past and proposed land use changes.**

Earlier this month at the CERF meeting, the Working Group gathered feedback from 40 members and guests and updated our priorities for the coming years, and we would like to share two key needs with the Commission in this letter.

First, knowledge gaps. Despite significant advances in blue carbon knowledge by the Working Group since 2016, gaps in data on carbon sequestration rates, stocks, and/or emissions remain in the following coastal ecosystems and land-use categories:

- Disturbed coastal wetlands
- Restored tidal wetlands (of varying age)
- Tidal swamps - forested and scrub-shrub tidal wetlands
- Unvegetated tidal flats
- Seagrass beds
- Kelp forests and near-shore algal beds
- Understudied estuaries

Furthermore, there is a need to better understand the sources and lateral transfer of carbon between different ecosystems and land-use types, including fluxes out of upland forests, estuaries, and kelp forests to nearshore ocean and shelf environments. Addressing this research question is of great importance for accurate inventory and mapping, another key knowledge gap particularly given the overlap and proximity of resources such as Sitka

[5] Kauffman JB et al. 2020. Total ecosystem carbon stocks at the marine-terrestrial interface: Blue carbon of the Pacific Northwest Coast. Global Change Biology 26:5679-5692. https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/gcb.15248

[6] Williams T, McKeon M, Janousek C, Bridgham S. 2023. Methane emissions from least-disturbed, restored, and disturbed wetlands in the Pacific Northwest, USA. Nov 2023 CERF presentation.

spruce dominated tidal forested wetlands which are also sampled by the U.S. Forest Service inventory.

Second, communication gaps. Because the Working Group is led by volunteers, the growing number of interested parties and data requests has stretched our capacity to maintain up-to-date flow of information from the latest scientific findings to the public and policy makers. This has delayed our capacity to respond to inquiries, which is particularly important with the fast-developing need to share blue carbon data with governmental and non-governmental entities in recent years. Members agreed that developing a more deliberate presence for the Working Group, especially among planning and policymaking organizations and initiatives, and including assistance from communications professionals is a top goal.

As leaders of the Working Group, we write today to suggest that the top two priorities identified above be considered as potential top priorities for implementation of the Oregon Climate Action Commission's Natural and Working Lands Proposal. We would be happy to discuss this and contribute to the conversation however you may recommend.

There is precedent for future collaboration in the Working Group's partnership with Oregon to develop data for the coastal wetland greenhouse gas inventory including helping to ground truth and refine data on coastal wetland extent and change that provided the basis for estimating GHG emissions and removals and providing data on carbon stocks and sequestration rates. Over the past 20 years, Working Group founding members Craig Cornu and Laura Brophy have collaborated closely with Oregon's Coastal Management Program and others to develop[7] and refine[8] modernized maps of Oregon's coastal estuaries, and to estimate historical change[9] and potential future changes[10] in these habitats.

Our blue carbon data have helped provide the technical foundation for statewide NWL policies and goals, and the tracking of associated greenhouse gas mitigation benefits over time related to coastal wetland conservation and restoration. The ongoing work we are conducting to map tidal wetland extent, restoration opportunities and to develop blue carbon mapping layers and a blue carbon calculator tool are necessary to help inform investments in specific projects to conserve/restore coastal wetlands that cumulatively will help advance Oregon's NWL goals.

We ask the Commission to consider investing in coordination of the Working Group. It will be necessary to continue to coordinate the researchers who are filling key data gaps and refining existing data and continuing to monitor habitat changes over time to ensure the most efficient expenditure of research funds by state, federal, and tribal agencies and timely transfer of high-quality accessible data from scientists to policy makers, planners, and decision makers.

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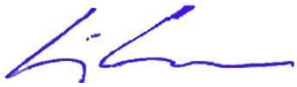
[7] https://www.coastalatlas.net/documents/cmecs/PhaseI/EPSM_CoreGISMethods.pdf
[8] https://www.coastalatlas.net/documents/cmecs/PhaseII/EPSM_Core_Methods_PhaseII_20181231.pdf
[9] https://doi.org/10.13140/RG.2.2.25732.68481
[10] https://ir.library.oregonstate.edu/concern/technical_reports/tt44ps38k

Additionally, we would like to ask the Commission to consider investing in addressing the research and data collection priorities identified herein, which are continuously updated and refined by Working Group members as scientific understanding moves forward, so that we can continue to create science-based tools for decision making by state land management and funding agencies and others.

Forthcoming publications from our NOAA-funded research will (1) quantify methane, nitrous oxide, and carbon dioxide emissions from PNW coastal wetlands, which will help produce even more refined accounting of contributions of coastal wetlands and land use changes such as coastal habitat restoration to climate mitigation, (2) quantify carbon sequestration rates of tidal wetlands of varying classes under a range of salinity conditions, (3) synthesize blue carbon stock data in the PNW and across the Pacific coast of North America more broadly, and (4) quantify the role of coastal wetland restoration in flood protection for coastal communities and transportation corridors under various climate change and sea-level rise scenarios. It is exactly this type of complex decision, requiring the intersection of co-benefits and trade-offs of land use management and restoration decisions, that our Working Group strives to illuminate through scientific research driven by the information and data needs of end users. To date, Oregon has led the way nationally and we would like to assist the Commission however possible through the national and international knowledge networks Working Group members participate in every day and ultimately through the impact of our scientific work.

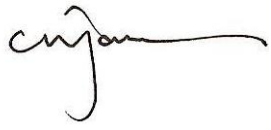
Our contact information is detailed at www.pnwbluecarbon.org/ and a full list of Working Group reports and publications can be found at www.pnwbluecarbon.org/documents

Sincerely yours,



Craig Cornu
Founding Coordinator PNW BC Working Group
Institute for Applied Ecology

Heida Diefenderfer
Co-Coordinator PNW BC Working Group
Pacific Northwest National Laboratory/
University of Washington



Christopher Janousek
Co-Coordinator PNW BC Working Group
Oregon State University

Note: This letter reflects the personal views of the signees, not their affiliated institutions.

From: Lauren Anderson <la@oregonwild.org>
Sent: Thursday, November 30, 2023 2:45 PM
To: Oregon GWC * ODOE
Subject: Re: Public comment — OGWC NWL Work Plan
Attachments: OGWC NWL Work Plan Comment 9.15.23.pdf

Hello,

I am re-submitting the attached work plan comments for the December 11th OGWC meeting. Please reach out with any follow up questions.

Thank you,
Lauren

On Fri, Sep 15, 2023 at 3:27 PM Lauren Anderson <la@oregonwild.org> wrote:

> Hello,
>
> We thank the Commission for issuing a draft work plan to expedite the implementation of the NCS components of HB 3409. The attached letter shares our priorities for the proposed work plan on behalf of the following organizations. Please reach out with any follow up questions.
>
> Lauren Anderson
> Climate Forests Program Manager
> Oregon Wild
>
> Megan Kemple
> Executive Director
> Oregon Climate and Agriculture Network
>
> Teryn Yazdani
> Staff Attorney and Climate Policy Manager
> Beyond Toxics
>
> Joe Liebezeit
> Assistant Director of Statewide Conservation
> Portland Audubon
>
> Greg Holmes
> Working Lands Program Director
> 1000 Friends of Oregon
>
> Dani Madrone
> Pacific Northwest Policy Manager
> American Farmland Trust
>
> Andrea Kreiner,
> Executive Director
> Oregon Association of Conservation Districts

Bob Sallinger,
Urban Conservation Director
Willamette Riverkeeper

Laura Tabor
Climate Action Director
The Nature Conservancy in Oregon

To: Oregon Global Warming Commission, Oregon Department of Energy

Re: NWL Components of OGWC/OCAC DRAFT Work Plan Through 2024

September 15th, 2023

Dear Chair Macdonald and members of the Oregon Global Warming Commission,

We thank the Commission for recognizing the importance and urgency of this work by issuing a draft work plan to expedite the implementation of the NCS components of HB 3409. This letter shares our priorities for each component of the proposed work plan.

Priorities for NWL Fund allocation and reporting

- **Leverage federal funding resources (IIJA, IRA, Farm Bill)**
- **Maximize carbon sequestration outcomes**
- **Center environmental justice considerations**
- **Ensure accessibility of grants for landowners and land managers**
- **Utilize existing programs and leverage existing capacity wherever possible**
- **Prioritize outcomes over research**

The passage of HB 3409 added further direction and clarity to the work initiated by the Commission in the NWL Proposal, and included an initial $10 million dollar investment to ensure this work moves forward.

Natural climate solutions are defined as activities that **enhance or protect net biological carbon sequestration on natural and working lands**, while maintaining or increasing ecosystem resilience and human well-being. Biological carbon sequestration is defined as the removal of carbon from the atmosphere by plants and microorganisms and storage of carbon dioxide in vegetation, such as grasslands, marshes or forests, or in soils and oceans.

In Section 4, the Commission is further directed to apply an environmental justice lens to Fund allocation. Priority should be given to *"technical assistance for environmental justice communities or Indian tribes; and incentives for programs or activities supported by an*

environmental justice community or supported by a resolution of an Indian tribe, with priority given to those projects or activities administered or proposed by an environmental justice community or an Indian tribe." These criteria should be guiding principles for the Commission as it works to prioritize allocation of the Fund to state agencies, recognizing that it is important to balance the importance of progress towards carbon sequestration goals with equitable distribution of funds. These priorities may at times be in tension, for example if there is higher cost per ton of sequestration to fully engage smaller landowners, the Commission will need to consider both priorities as the work progresses. The Commission should work closely with state agencies to identify opportunities in the near term for investment, with special consideration given to deadlines for leveraging additional federal funding.[1]

The recent passage of the Infrastructure Investment and Jobs Act (IIJA) in 2021 and the Inflation Reduction Act (IRA) in 2022 has significantly boosted the amount of federal funding available for natural climate solutions investments. We already know at least $150 million will be available to Oregon through 2026 from just three Natural Resources Conservation Service (NRCS) programs. Another example is the Urban and Community Forestry Program, which is typically funded at $32 million annually; however, the Inflation Reduction Act provided an additional $1.5 billion for the program. These examples underscore the need to identify and access this additional funding across natural and working lands programs.

In order to ensure equitable distribution of benefits from the Fund, we encourage the Commission to invest in opportunities and projects that are not already receiving significant investments from other sources. For example, USDA has limited capacity to distribute federal funds, so the agency tends to prioritize funding fewer projects on larger farms. Therefore, it would be beneficial for the Fund to be used to invest in projects on smaller family-owned farms, who may not have access to federal funds and/or to provide the matching funds needed to help smaller scale and marginalized farmers and foresters access federal funding. In addition, forest lands in Oregon are already receiving significant wildfire mitigation funds from numerous federal and state resources. We encourage the Commission to identify new and innovative ways the state can invest in natural climate solutions.

We recognize that funding for agency capacity is limited and hope that agencies will utilize existing programs and staff capacity wherever possible. To this end, we recommend conducting a crosswalk between existing state agency program practices and the practices that the NWL Project has drafted to understand how many existing state programs already meet NCS objectives as well as whether new programs might need to be established. This exercise would also provide guidance on what kind of capacity state agencies will need to implement NCS Fund directives and to expand the use of NCS in the state. While in the long-term agencies may seek additional capacity from the legislature, we are optimistic that with thoughtful and creative approaches, agencies can effectively distribute these funds. This will require increased cross-

[1] Complete list of federal funding opportunities, including subscription announcements: https://www.grants.gov/web/grants/home.html
Open IIJA funding opportunities: https://www.whitehouse.gov/build/resources/nofos-to-know/
Open IRA funding opportunities: https://www.whitehouse.gov/cleanenergy/open-funding-opportunities/
Full list of IIJA programs: https://www.whitehouse.gov/build/guidebook/
Full list of IRA programs: https://www.whitehouse.gov/cleanenergy/inflation-reduction-act-guidebook/
National Wildlife Federation Nature Based Solutions database: https://fundingnaturebasedsolutions.nwf.org/

agency coordination and leadership and support from the two new positions created to support this work at ODOE. The undersigned organizations would be glad to share knowledge and support the development of the crosswalk between agency programs and NCS practices, as well as relevant federal funding opportunities.

The Fund will only be effective if it is accessible to landowners and land managers. Input from landowners and land managers, and organizations supporting them, will be critical as any grant programs or other incentive programs are developed, to ensure they are structured in a way that is accessible. Landowners and land managers, and organizations supporting them, should be given the opportunity to provide input on the structure of any grant programs or other incentive programs with a process for considering and incorporating that feedback.

As the NCS Fund is developed and distributed, our hope is that Oregon will become a national leader in this work and an example other states and federal agencies look to.

Rulemaking: While HB 3409 also gives the Commission authority to determine the Fund allocation prioritization by rulemaking, we do not feel that there is any need for this additional step. The legislation clearly establishes a direction for allocating funds. Undertaking a rulemaking process before funds can be allocated would place an unnecessary administrative burden on the Commission and state agencies, and would delay implementation. Such a delay could lead to Oregon missing out on time sensitive federal funding opportunities.

Priorities for NWL Baseline, Metrics, and Sequestration Goals

- **Use the sequestration goals established in the NWL Proposal**
- **Ensure environmental justice considerations are central to community impacts metrics development (impacts to jobs, livability, access, clean water, clean air)**
- **Ensure activity-based metrics have clear measurable carbon sequestration benefits**
- **Apply consistent analytical frameworks with clear criteria across sectors**
- **Ensure communication between the technical/scientific community and the NWL Advisory Committee**
- **Ensure robust public participation**

Before finalizing the net biological carbon sequestration and storage baseline, activity-based metrics and community impact metrics, HB 3409 also requires the State Department of Energy and the commission to make **draft versions publicly available and receive comments from the public**.

We would like to note that the Commission has already issued non-binding sequestration goals (5 million metric tons of CO2 equivalent by 2030 and up to 9.5 million metric tons by 2050), therefore we encourage you to focus on establishing a baseline and metrics moving forward, rather than spending time on a process to propose new goals. There is no need to duplicate past efforts. We would also encourage the Commission to provide a clear timeline for public comment on the goals in the work plan.

Nearly a year of work has already taken place by the Natural and Working Lands Advisory Committee formed in October 2022 to recommend activity-based and community impact

metrics. The work of this committee, along with the Institute for Natural Resource (INR) and a Technical Advisory Committee (TAC) convened to support the project, provides a good starting point for implementation of HB 3409. The OCAC should take full advantage of that work and not recreate it. Having said that, it should be noted that the work done by the Advisory Committee in different sector areas is not at the same point of development, and much work remains to reconcile input provided by the technical and stakeholder groups–a synthesis the current effort will not provide. Our understanding is that a consultant will draft baselines, activity-based metrics, and community impact metrics between March-May 2024. This large body of work will only be feasible in a three-month period if the OCAC uses the next six months to review and deliberate on INR's report in order to provide the consultant clear guidance on how to build on and move forward from the INR report findings. Public comment opportunities on the many pieces of the INR report will be an essential piece of this process.

We would like to emphasize three learnings from the prior NWL Advisory Committee process:

- It is essential to apply consistent analytical frameworks with clear criteria across sectors, for example when coming up with proposed NCS practices and appropriate activity-based metrics. This should be paired with dedicated capacity to convene and advance sector-specific conversations that account for the varied progress to date. For example, the agriculture subcommittee of the NWL Advisory Committee was able to achieve informed consent on a list of recommended NCS practices, whereas the forest subcommittee was not. The timeline needs to allow for everyone to weigh in and identify areas of consensus.
- Determining activity baselines and metrics should include open lines of communication between the scientific community and the NWL Advisory Committee to ensure that the metrics are both rooted in relevant science and practical to implement and track for land owners and land managers. Building on the technical work done by the Technical Advisory Committee convened to support the current INR project, the OGWC/OCAC should request a review by the scientific community of their final draft activity-based metrics before adoption to ensure the final activity-based metrics support measurable carbon sequestration benefits.
- The Institute for Natural Resources included in its recent report to the OGWC a long list of community impact metrics recommended by the Natural and Working Lands Advisory Committee. We recommend narrowing the list of community impact metrics and prioritizing environmental justice considerations (impacts to jobs, livability, access, clean water, clean air). A narrowed version of the list could be provided to agencies for the purpose of managing the fund and the full list from INR's report could be made available as a resource to agencies for use with other programs.

<u>Priorities for the NWL Advisory Committee</u>

- **Ensure this committee is not a substitute for public outreach and engagement**
- **Ensure tribal outreach and engagement is treated as a independent component of this work**
- **Ensure committee composition of balanced viewpoints/ experiences**
- **Establish a nomination process in addition to application process**

Section 62 of HB 3409 states: "(1) The Oregon Global Warming Commission may appoint a natural and working lands advisory committee to advise the commission in the performance of the commission's duties under sections 53 to 63 of this 2023 Act. The commission shall seek recommendations for committee members from industry and advocacy associations where appropriate. (2) The advisory committee shall consist of at least 15 members appointed as follows:..." (listing specific areas of expertise and experience) and "(3) The commission may appoint additional members as needed to provide additional expertise or represent other interests."

We recommend that the Commission use the process to seek recommendations for committee members required by Section 62(1) to solicit broad input on perspectives, *beyond* those required in statute, that should be represented on the NWL Advisory Committee. The NWL Advisory Committee should be composed of balanced viewpoints and experiences and be developed with an equity lens. A balanced composition would include those who are committed to strong climate mitigation and equity outcomes as well as those who are familiar with challenges and/or barriers that landowners and land managers may face as new financial incentives and programs are implemented. Recognizing that an Advisory Committee cannot represent all perspectives, and is not a substitute for public input, we appreciate that the work plan includes multiple opportunities for public comment.

If the NWL Advisory committee does not include multiple members of the scientific community, we recommend that members of the scientific community have the opportunity to review draft activity-based metrics and the draft inventory. It will be important to clarify the role of any scientific reviewers in relation to the NWL Advisory Committee and have open lines of communication between them. In general, it will be important to have open lines of communication between all of the following: technical experts, practitioners and other stakeholders.

Tribal consultation process needs to be added as a separate item under the NWL work plan

Further, we would encourage you to develop a separate work plan and timeline for this component **"Consultation with federally recognized Indian tribes in Oregon regarding NWL work"** that is independent from the work the Advisory Committee is undertaking. Section 11 of HB 3409 states "The Oregon Global Warming Commission shall establish a process for consultation with representatives of federally recognized Indian tribes in this state to advise the commission on the performance of its duties under sections 1 to 11 of this 2023 Act, including the identification of opportunities to support indigenous practices and knowledge from tribal nations to sequester and store carbon on natural and working lands."

Tribes must be consulted as sovereign governments rather than as part of a typical stakeholder outreach process. This consultation should be a thread throughout your work on natural and working lands and natural climate solutions. Traditional ecological knowledge should be considered alongside other expert resources.

Priorities for the NWL Workforce Study

- **Center environmental justice outcomes**

Developing the workforce and training programs needed to support adoption of natural climate solutions is an important component of this work. We request that the Commission ensure this work is implemented in a matter that centers equity and prioritizes the needs of Oregon's frontline, environmental justice communities. The jobs created by this work must be able to support families and be accessible to communities across the state.

Last year at the UN's Biodiversity Conference, COP15, a new report, *Decent Work in Nature-based Solutions*, underscored the need for a "Just Transition," meaning the "creation of new jobs that support the economy in a way that is fair and inclusive, creating meaningful work opportunities and leaving no one behind." We encourage the Commission to use this lens when conducting the workforce study. Further, we request that the Commission explicitly create natural and working lands opportunities for rural Oregonians in the workforce study. While rural communities are included in Oregon's definition of "environmental justice community," the Commission should be intentional with prioritizing rural worker opportunities in this study.

Priorities for a NWL Inventory

- **Account for standing carbon stocks and annual GHG fluxes across Oregon's natural and working lands**
- **Include use of remote sensing data where feasible**

HB 3409 requires the Commission to develop a natural and working lands net biological carbon sequestration and storage inventory, allowing for a public comment process. The inventory must 1) Be based on the best available field-based and remote sensing data on biological carbon sequestration; 2) Be developed using methods consistent with methods used to assess greenhouse gas fluxes related to land use, land change and forestry for the United States Environmental Protection Agency's Inventory of U.S. Greenhouse Gas Emissions and Sinks.

Greenhouse gas (GHG) emission inventories are critical to the State's ability to measure progress toward emission reduction goals. While Oregon currently tracks GHG emissions in other sectors, to meet the greenhouse gas emissions (GHG) reduction and sequestration goals of the state, Oregon must consider GHG emissions and sinks from natural and working lands. Without establishing this inventory and baseline, we will not be able to measure meaningful progress towards meeting our sequestration and climate goals, therefore we request the commission prioritize this work moving forward.

The Commission should follow best practice guidelines[2] to account for carbon storage and annual GHG fluxes in natural and working lands. Following these guidelines, the inventory methods should allow for reporting within each land category (i.e., forest and woodlands, rangelands, cultivated croplands, coastal wetlands, freshwater wetlands, urban and suburban areas) as well as account for change in carbon stocks and GHG fluxes due to conversion from one land category to another. Consistent with the international guidelines, we recommend

[2] See the 2006 IPCC Guidelines which can be adapted to include the best available information (regional and local data where available, default values where necessary) and the World Resources Institute's updated NWL Inventory guidance. It would be good to encourage the Commission and any consultants working on the NWL GHG inventory to build from these excellent resources.

accounting across the pools defined by the 2006 International Panel on Climate Change guidelines for landscape GHG accounting. These include:

- Above-ground live and below-ground live vegetation pools;
- Dead organic matter (standing or downed dead wood, litter);
- Soil organic matter.

We recommend that the NWL Inventory make use of the best available data for each land category and direct investments to help improve the inventory over time. We encourage the Commission to include data derived from remote sensing to augment empirical field data for most land categories.

In California's Natural and Working Lands Inventory,[3] the state was not able to assess some known carbon pools due to lack of data or method. It is likely the Commission will encounter similar data barriers, and we recommend leaving guidelines and criteria in place so that new data can be incorporated into the inventory as it becomes available.

It is also important to note that ideally, the NWL GHG inventory carbon stocks and GHG fluxes should be:

- Annual,
- Spatially-explicit whenever possible, and
- Should have high enough spatial resolution to allow different landowner types to be distinguished from each other.

The Commission should also be aware that landowners and organizations representing them have concerns about the public availability of data related to practices, crops and soils. INR's Jimmy Kagan issued a memo to the Natural and Working Lands Advisory Committee titled: Oregon Carbon Stock Inventory – Assuring Data from Private Lands Is Not Shared, outlining sources of inventory data and the ways the privacy of these data are protected. Any additional sources of inventory data need to ensure landowner/land manager privacy is protected.

Thank you for your consideration of these recommendations, please reach out with any follow up questions.

Sincerely,

[3] An Inventory of Ecosystem Carbon in California's Natural & Working Lands 2018 Edition. California Air Resources Board. https://ww3.arb.ca.gov/cc/inventory/pubs/nwl_inventory.pdf

Lauren Anderson, Climate Forests Program Manager
Oregon Wild

Megan Kemple, Executive Director
Oregon Climate and Agriculture Network

Teryn Yazdani, Staff Attorney and Climate Policy Manager
Beyond Toxics

Joe Liebezeit, Assistant Director of Statewide Conservation
Portland Audubon

Greg Holmes, Working Lands Program Director
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American Farmland Trust

Andrea Kreiner, Executive Director
Oregon Association of Conservation Districts

Bob Sallinger, Urban Conservation Director
Willamette Riverkeeper

Laura Tabor, Climate Action Director
The Nature Conservancy in Oregon

From: Squarespace <form-submission@squarespace.info>
Sent: Monday, November 27, 2023 7:19 PM
To: Oregon GWC * ODOE
Subject: Form Submission - New Form - USDA FS CAP

Follow Up Flag: Follow up
Flag Status: Flagged

Sent via form submission from *Keep Oregon Cool*

Name: Charles LeBold

Email Address: cclebold@gmail.com

Subject: USDA FS CAP

Message: I am asking your commission to consider requesting the Regional Forester for Region 6 to conduct a series of "town hall meetings" around OR in order to provide an overview of the recent FS Climate Adaptation Plan FS-1196.
I have not had any luck going through my elected officials and the FS.
We in NE OR are being asked to provide informed input to a revision plan for 3 National Forests. Climate information in this region is lacking and countered with considerable disinformation.
I feel some meetings hosted by respected authorities (FS) would be helpful in starting some dialogue around this important matter. Science is telling us decisions made in the next two decades may have consequences far into the future for the management of our very important natural resources.
ThankYou.

Manage Submissions

Does this submission look like spam? Report it here.

From: ANDREA D AMICO <anddamico@msn.com>
Sent: Wednesday, November 29, 2023 10:59 AM
To: Oregon GWC * ODOE
Subject: Ordinance 882
Attachments: City of Tigard _ Written Testimony to BCC _ 10.24.2023 Hearing.pdf; Westside bypass_ 000238.pdf; Washington County Ordinances 882 Memo + How to Comment V6.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Good Morning-
My name is Andrea D'Amico, and our community has formed an Alliance " Save Scholls stop 882" Ordinance 882 would extend a road thru rural land thru forested area and over a wetland. The county has changed this proposal several times from traffic corridor, connector road and now refinement area. The city of Tigard has proposed and alternative road " Mountainside Way that wouldn't affect the forest, farm or wetland area. I've attached a letter from the Mayor of Tigard.
It is very clear that the County is attempting to create a Westside bypass, and it is very easy to see the effect this will have on our climate. Increased traffic emissions, and take away our forest area providing a cooling area. I have attached a map showing the by pass and a memo from 1000 friends of Oregon explaining the ordinance.
As our environment dwindles, from Climate change we need to be preventive to protect our natural area and not destroy them with asphalt and further destroy the environment.

Here is a link to the ordinance

https://www.washingtoncountyor.gov/lut/land-use-ordinances/882

Washington Co should update the climate action plan instead of building roads and taking away forests--

There are 2 more meetings one on Dec5th at 10:15 and Dec12th at 6:30
Does Oregon Global Warming commission ever make comment or send letters to protect our environment?

Please let me know
Thank you
Andrea

October 23, 2023

Kathryn Harrington, Chair
Washington County Board of Commissioners
155 N. First Avenue, Suite 250 MS 16
Hillsboro, OR 97124-3072

Honorable Board Chair Harrington and County Commissioners:

On behalf of the City of Tigard, I would like to thank you for your continued engagement with us to solve the region's pressing needs, including more carbon responsible development patterns to address the climate emergency, increased housing production, and a more just and sustainable transportation system that serves all modes. As you know, our city is committed to making progress on these and other goals to ensure that our residents are served well into the future by our decisions today.

I want to emphasize that our vision is not myopic; we see the need for coordination with everyone in the region to meet these goals, and we share the County's goals for transportation connectivity. While our first priority is to serve our residents and workers, we cannot do so without a regional perspective. What serves the region, serves Tigard.

It is with this in mind that I write to you in advance of your October 24, 2023 consideration of the engrossed Ordinance 882 to correct the record and provide further clarity on the city of Tigard's position on this proposal.

In your work session on October 17th, the Chair asked about the City's proposal for neighborhood connectivity, and County staff responded that the City was undecided about the proposed extension of Mountainside Way, which will connect at Scholls Ferry and Bull Mountain Road. This is not the case.

City staff shared that, at the outset of the Concept Plan, there was question about whether the extension of Mountainside Way would be feasible, but emphasized that the City had determined through the planning process that the connection would be necessary to provide neighborhood connectivity and make the Main Street commercial areas viable. This connection has also repeatedly been touted as the logical extension of transit service from Scholls Ferry south to Bull Mountain, River Terrace Boulevard, and on to the Kingston Terrace Town Center.

At issue is not the extension of Mountainside Way, but the extension of Tile Flat from Scholls Ferry to Mountainside Way. The City believes strongly in connectivity and has advocated over the years for more frequent intersection spacing on County facilities, including Scholls Ferry Road, Roy Rogers Road, and Beef Bend Road. Our requests for more connectivity on Roy Rogers Road were declined by County staff, who applied an intersection spacing of 1,200 feet, double the spacing required on arterials by the County TSP.

In addition, for several years we have been advocating for pedestrian connectivity at Scholls Ferry and River Terrace Boulevard, an intersection with a regional trail on both sides of the road. We believe this connection is critical to provide a safe crossing for pedestrians connecting from the River Terrace Boulevard trail to the trail on the Beaverton side of Scholls Ferry. To date, our requests for pedestrian connectivity have been refused.

We have also requested from the County a commitment to neighborhood connectivity along Beef Bend Road between the River Terrace 2.0 neighborhood and Kingston Terrace, with intersection spacing of 600 feet to match the urban context of the proposed land uses around this road. While those conversations are ongoing, we

have not been able to receive a commitment to date.

Each of these examples demonstrate the difficulties our staff have had in achieving our neighborhood connectivity goals in these areas, and so it was somewhat surprising to hear our position portrayed as it was. I can assure you that we are committed to connecting the areas west of Roy Rogers Road through an extension of Mountainside Way.

I also want to address the discussion on serving regional connectivity. We agree that as our region grows, we will need facilities that safely serve the needs of all modes. However, we do not agree that the Tile Flat extension does much, if anything, to serve the region.

The road will not offer alternate routes that alleviate projected congestion on the primary arterial facilities in the area – Scholls Ferry and Roy Rogers Road. A car crossing Scholls Ferry on a Tile Flat extension will pass through the River Terrace 2.0 neighborhood, only to be routed out to Roy Rogers Road at Bull Mountain. This same vehicle could just as easily be routed to Scholls Ferry and on to Roy Rogers at their intersection. A car using the Tile Flat route would achieve no savings of distance and traverse no fewer intersections to end up at the same point. However, this same car would impact the walkability of the neighborhood and increase queuing at the Bull Mountain and Roy Rogers intersection, as now not one, but two routes carrying regional traffic suddenly converge on that facility.

The heart of the issue in this area is the bottleneck created at the Tualatin River Bridge on Roy Rogers Road. Adding the Tile Flat extension will do nothing to alleviate congestion on this facility, and our preliminary analysis indicates that it will actually worsen that traffic through induced demand. We heard concerns from the Board about the impact that not building the Tile Flat extension would have on drivers in the Sherwood area, yet no explanation of how the Tile Flat extension addresses this pinch point in the system.

Our Concept Plan for River Terrace 2.0 actually proposed further study of the road, to include a build / no-build alternatives analysis. Our proposal would have included a study of all of the factors that we believe should inform a decision on a facility with this much potential for impact on the community – equity, cost, climate impacts, and safety, among others. We believed our approach was in keeping with the region's mobility policies, Climate Smart Strategies, the Governor's executive orders on greenhouse gas emissions, and subsequent Transportation Planning Rule amendments focused on climate and equity.

This special study would have been in line with what is now being proposed in the refinement area. County staff did not agree with this approach and worked to ensure that a special study was not included in the Community Plan. As a result of the contention around the further study of the road, Metro declined to provide any funding for a Tile Flat special study, requiring a line-item deletion of any reference to Tile Flat in our grant agreement with them.

Given the state of this project, the dearth of budgetary support for improvements of existing facilities, and the lack of funding to pursue a refinement area study, our ask of the Board is to formally decline to adopt the road into the county TSP, decline to create a refinement area, and remove Tile Flat Extension from the County's work program.

I thank you for your consideration.

Best regards,

Heidi Lueb, Mayor
City of Tigard

ATTACHMENT 1

City of Tigard Concerns with the proposed Tile Flat Road extension project

This section summarizes feedback provided to Washington County in the URTS memo dated March 17, 2020 and in subsequent communications throughout the River Terrace Concept Planning process.

General concerns about the URTS work were related to the auto-oriented focus of the analysis, the reliance on congestion standards rather than broader community goals and values to drive decision-making, the potential of new and expanded facilities to increase vehicle miles travelled and greenhouse gas emissions through induced demand, and the planning of facilities well ahead of concept planning work to design the communities that those facilities would serve and impact.

The use of congestion standards as the sole justification for new vehicular facilities is not in line with the intent of our shared regional approach to greenhouse gas and vehicle miles travelled reductions, nor is it in line with the intent of the Governor's Executive Order 20-04 on greenhouse gas emissions or the associated Climate Friendly and Equitable Communities reforms to the state Transportation Planning Rule.

Specific to the Tile Flat extension proposal, the city's comments focused on the need for more study, including an alternatives analysis that included a no-build option. The city has consistently expressed concerns with the potential impacts of the Tile Flat extension, particularly related to the following factors:

- **Topography** – The Tile Flat extension as proposed appears to cross two steep drainages, one near its widest point, potentially increasing costs and environmental impacts.
- **Cost** – Because of the aforementioned challenges with topography as well as the cost of right-of-way acquisition, the Tile Flat Road extension is projected to be very costly to build. The costs of this facility are presumed to be partially borne by development, causing the per-door cost of housing in River Terrace 2.0 to increase significantly, and impacting the city's goals of an accessible and inclusive neighborhood.
- **Walkability** – A facility carrying regional traffic through the middle of the River Terrace 2.0 neighborhood has the potential to impact the livability of the area and decrease walkability. While we are aware that the roadway could be designed as lower-speed, potentially making it safer, there is still the matter of volume. High-volume facilities tend to create significant barriers in communities. SW Roy Rogers already carries high volumes of traffic and has few opportunities for pedestrian connections. We are concerned that the Tile Flat extension, even if designed thoughtfully, by its nature would create pedestrian impediments.
- **Climate** – As shown through decades of studies, newly-built regional facilities like this have been shown to induce demand for driving, leading to increased vehicle miles travelled and greenhouse gas emissions.

While the city's final position on the need for the extension of Tile Flat Road from Scholls Ferry to the city's Mountainside Way connector is not yet determined, it is clear that additional analysis is needed. To wit, the city's transportation consultant DKS Associates on the River Terrace 2.0 Concept Plan, actually found that construction of the extension from Tile Flat to Mountainside actually increased vehicular congestion on SW Roy Rogers Road, perhaps due to the impacts of induced demand.

Whatever the reason, it is clear that a broader analysis, to include regional congestion impacts, climate impacts, greenhouse gas emissions, urban design, equity, and cost impacts should be conducted before any final decision is made on this potential road corridor.

City *of* Tigard
Memorandum

To: Metro Council President Peterson
Metro Councilors
Marissa Madrigal, Metro COO
Ted Reid, Principal Regional Planner

From: Schuyler Warren, Senior Planner

Re: River Terrace 2.0 Transportation Elements

Date: October 10, 2022

This memorandum provides a summary of the transportation element of the River Terrace 2.0 Concept Plan and provides some background on the city's position relative to Washington County's proposed extension of Tile Flat Road.

River Terrace 2.0 is planned to be an inclusive neighborhood for everyone, with options for housing, transportation, and commerce, developed in alignment with Tigard's vision for social equity and climate mitigation.

At the outset of the concept planning work for River Terrace 2.0, the City of Tigard envisioned a community developed in alignment with the city's goals around equity and emissions reduction. The result is a plan that provides housing diversity and access, a truly multi-modal transportation system with transit-supportive development patterns, and key destinations within a short distance of travel.

Consequently, the concept plan de-emphasizes automobile travel in the design of the transportation network, while recognizing that this option will still be used by many, and should be part of a fully-formed network. This approach is informed by the city's adopted Strategic Plan and its Complete Streets Policy. Further, reducing vehicle miles travelled and greenhouse gas emissions are important steps in mitigating climate impacts and making the city more carbon-responsible.

The City of Tigard is committed to a transportation network that meets regional and statewide goals.

Tigard has been a consistent voice in this region on the primacy of walkability, and the requirements of well-integrated trail networks and reliable transit access. These values have been

incorporated into the Concept Plan for River Terrace 2.0 and will be key considerations in developing the Community Plan. We are invested in seeing the Metro region achieve its goals as set out in the Regional Transportation Plan and the Climate Smart Strategies.

Because there has been some public confusion about the relationship between the City of Tigard's River Terrace 2.0 Concept Plan and Washington County's Tile Flat Road extension project, it is important to provide some clarifying background on each.

The Tile Flat Road extension is a Washington County proposal.
Washington County first identified a potential Tile Flat Road extension as part of its Cooper Mountain Transportation Study (2018). This potential extension was further studied by the County as part of the Urban Reserves Transportation Study (URTS, 2019). The City of Tigard participated in the Technical Advisory Committee for URTS, although the Tile Flat Road extension was not proposed or endorsed by the city at that time. Through its participation in the URTS study, the City of Tigard identified concerns about the road's alignment, impact, and cost, as well as general concerns about the timing of the planning for the road since it was occurring prior to completion of concept planning for the design of the urban reserves.

The River Terrace 2.0 Concept Plan is not dependent on construction of the Tile Flat Road extension.
The River Terrace 2.0 Concept Plan proposes building a neighborhood-scale transportation backbone by extending Mountainside Way from Scholls Ferry south to terminate at SW Bull Mountain Road and SW Roy Rogers Road. This neighborhood collector is sufficient to serve these areas on its own, without a connection to Tile Flat Road, and its cost can be effectively borne by development in the district.

The River Terrace 2.0 Concept Plan accommodates the County's Tile Flat Road extension, but does not propose its construction.
The Concept Plan identifies a potential connection point for the Tile Flat extension at a roundabout along the Mountainside Way neighborhood collector. This connection was identified in the Plan to demonstrate that the neighborhood's design could accommodate the Tile Flat extension, should it be constructed.

The River Terrace 2.0 Concept Plan highlights the need for more study of the Tile Flat Road extension to ensure that it meets local, regional, and statewide goals centered on social equity and climate mitigation.
Recognizing that a more robust analysis was needed to consider congestion at a larger scale, and to weigh non-congestion related factors, the City identified the Tile Flat Road extension proposal as a Special Study Area to be considered in more detail during the Community Plan stage. The potential Tile Flat Road extension is therefore designated on all River Terrace 2.0

Concept Plan document maps in this manner, and is color-coded to set it apart from the core network proposed in the plan.

As currently proposed, the Tile Flat Road extension is not in alignment with the spirit of state guidance on climate. The City's proposal for a Special Study on the short- and long-term costs and benefits of the proposed facility for the climate and the community are in alignment with the requirements of the Climate Friendly and Equitable Communities rules that will apply to any adoption of this project into the City's Transportation System Plan. The City will continue to work with the County on this Special Study through the Community Planning process. We hope make progress on a transportation system that serves mobility goals and the vision of the River Terrace community.

Attachment E

Washington County's proposed road extensions (Ord. 882 and 883) Connecting Cornelius Pass Road on the north to I5 on the south - the Westside Bypass

The orange line starts on Cornelius Pass Road as it passes by the Orenco Woods Nature Park area heading south to TV Hwy. From there the road goes straight south through the South Hillsboro Development complex to the south boarder on SW Rosedale Rd.

Ordinance 883 shows the proposed extension of Cornelius Pass Rd from SW Rosedale RD and Farmington Road.

At the intersection at Farmington Road and the proposed extension of Cornelius Pass Rd, is the connection to SW Clark Hill Rd. The proposed Westside Bypass route then proceeds south on SW Clark Hill Rd to its intersection with SW Tile Flat Rd.

The proposed Westside Bypass then proceeds east on SW Tile Flat Rd to the intersection with SW Scholls Ferry Rd.

Ordinance 882 shows the proposed extension of Tie Flat Rd between SW Scholls Ferry Rd southeast to the intersection of SW Roy Rodgers Rd and SW Bull Mountain Rd.

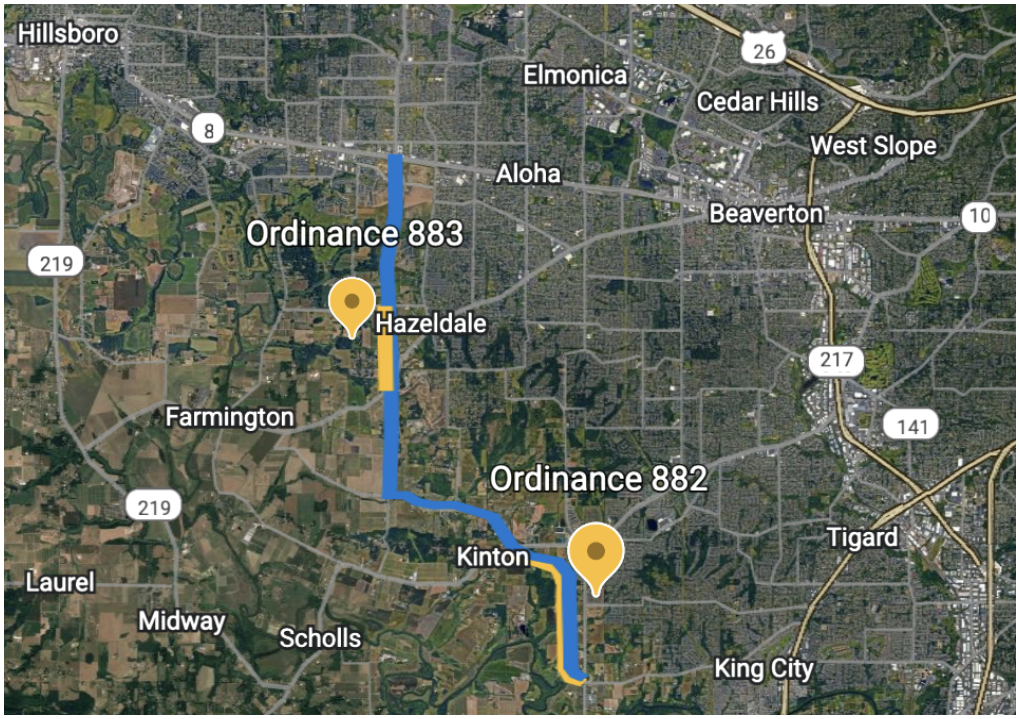
SW Bull Mountain Rd travels east to Hwy 99, which then routes northeast to Hwy 217. Both Hwy 99 and Hwy 217 provide connections to Interstate 5.

Washington County Ordinances 882 Memo
Westside Collector Road
Created by: 1000 Friends of Oregon, Updated 9.19.23

What it is:
Washington County Ordinances 882 and 883 were first proposed and heard in the Winter of 2021/2022. TSP Amendments are first publicly heard and voted on by county planning commissions. During this phase and after being heard twice, the planning commission voted down the ordinances, but it was still advanced to the entire board of commissioners.

In the time since it was first introduced, Ordinance 883, a connected county legislative TSP amendment, failed. Likewise, Ordinance 882 has been changed from a TSP amendment to a study refinement area, which means some land use laws only apply to the action once the county refines its transportation planning in more detail. The change allows staff and the county to advance the Tile Flat Road Extension and does nothing to change the core concerns raised by the community or the City of Tigard.

Why it's a concern:
While Ordinance 882 and 883 represent small segments of collector road additions to the TSP, they are piecemeal attempts to create a significant road facility through productive farmland. They again are attempting to open a road corridor through productive and in-use farmland in SW Washington County. 882 would also supersede local planning efforts by the City of Tigard as they seek to bring dense and more affordable housing to the River Terrace 2.0 Community, which would overlap with the area impact by Ord. 882.[1]



[1] https://drive.google.com/file/d/1XX8YwzmekQOjXtBAG3uVb4vMccgnX3H7/view?usp=sharing

What would this do, and why does 1000 Friends ask the commission to reject these ordinances?

- **Begins to commit the county to a $72.9 million project.** Despite large safety operations and maintenance needs.[2] The project cost developed through 882 is likely much higher than the 2020 estimate.

- **Hurts County and State climate goals:** A one percent increase in roadway lane miles increases vehicle miles traveled by almost one percentage point as well.[3] If the full collector road is completed, 25 lane miles (8.5 miles per lane, with three lanes including the turn lane) will induce an additional 58 to 87 million vehicle miles traveled per year, or about 4 million more gallons in gas burned per year.[4] It is unclear how this facility aligns with Climate Friendly and Equitable Community Rulemaking, which says local governments must adopt a TSP that shows reduced vehicle miles traveled (VMT) per capita by 2029.
- **Ignores the consideration of Washington County's Planning Commission:** Hearing our concerns and the connection to the Westside Bypass, the planning commission voted these ordinances down. Rather than address the planning commission's concerns, the county continues to force consideration of ordinances. County staff will respond by saying this doesn't mean the road will be built and that this only allows them to plan. Yet this feels contradictory, you don't plan things you don't intend on building.
- **Hurts farmland and farm operations**: Negatively impacts farmland and farm operations by breaking apart parcels and bringing suburban commuter traffic into farmland areas, which impedes the ability of farms to continue to operate as they have in the Tualatin River Valley for over 100+ years. This has been at the core of 1000 Friend's opposition to other transportation projects, like the Westside Bypass.
- **Negatively impact natural resources** in the area by bringing an estimated 22,000 cars per day across several important Tualatin River Drainages. This would affect water quality and erosion and introduce chemical and biological pollution to already sensitive ecosystems.[5] The specific alignment and purpose of these roadways will move more cars through sensitive areas.
- **Diverts local attention away from where they are needed:** There are well-scoped safety, transit, and maintenance needs. Several facilities, such as TV Highway, have long been dangerous for all users, and folks regularly are killed in traffic violence there and elsewhere throughout the county.[6] Improving current facilities improves livability and helps us meet our climate goals.
- **Fails to learn from the past & LUTRAQ:** while what is being proposed in these ordinances is on a much smaller scale than the westside bypass, it's clear that the lessons learned from 1000 Friend's report, the Land Use Air Quality Connection (LUTRAQ) are not shining through.[7] This report found that the types of roadway projects proposed in 882 and 883 would worsen air quality, increase transportation costs for all users, and lock in development patterns.

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[2] Page 81, https://drive.google.com/file/d/16a47xXZD-Sm7JaplOQk4DyowwhRAQzlf/view?usp=sharing
[3] Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions
[4] RMI Shift Calculator: This model is specific to class 3 facilities in Washington County Oregon.The tile flat extension will facilitate a the creation of a larger network, so the cumulative impact of the project is much larger than just the project area within 882.
[5] Transportation and Water Pollution
[6] Metro: High Injury Corridors & Intersections Report
[7] 1997 - Reports - MAKING CONNECTIONS: A SUMMARY OF THE LUTRAQ PROJECT

How to comment on Ordinance 882 before the commission.

Washington County Board of Directors Meeting on Ordinance 882 will happen on December 5th (Specific timing will be announced, but assume 6:30 PM). There are several options to testify:

Oral format	Written format
a. Testify in Person • i. Members of the public are welcome to testify in person at Board meetings ii. Location: Charles D. Cameron Public Services Building, Auditorium 155 North First Avenue, Hillsboro, Oregon 97124. iii. Upon arriving at the Board Auditorium, there will be a signup sheet to give your name, information, and topic to speak about iv. The Board Clerk will call your name when it is your turn to testify at the meeting b. Testify in Zoom i. Complete the Board of Commissioners Public Testimony Sign-Up two hours before the meeting. ii. Following your registration, you will receive an email with further instructions including how to access the Zoom link. iii. Your name on Zoom must match your registration login. c. Follow up with written comments, even if you're not called on for oral comments or can't attend the hearing.	a. Testify in writing: b. Submit testimony to the Clerk of the Board by 2 PM on Monday (Monday the 23rd) before the meeting for your testimony to be considered for the following meeting. c. Email testimony to: WashCoClerk@washingtoncountyor.gov d. All testimony will be part of the record. Testimony received after the deadline will be shared with the Board but not considered in their decision.